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**User's  
Manual**

**FA-M3 Programming Tool  
WideField2**



IM 34M6Q15-01E

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# Applicable Product:

- **Range-free Multi-controller FA-M3**

- Model Name: SF620-MCW
- FA-M3 Programming Tool WideField2

The document number and document model code for this manual are given below.

Refer to the document number in all communications; also refer to the document number or the document model code when purchasing additional copies of this manual.

- Document No.: IM 34M6Q15-01E
- Document Model Code: DOCIM

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# Important

## ■ About This Manual

- This Manual should be passed on to the end user.
- Before using this product, read this manual thoroughly to have a clear understanding of the product.
- This manual explains the functions of this product, but there is no guarantee that they will suit the particular purpose of a user.
- Under absolutely no circumstances may the contents of this manual be transcribed or copied, in part or in whole, without permission.
- The contents of this manual are subject to change without prior notice.
- Every effort has been made to ensure accuracy in the preparation of this manual. However, should any errors or omissions come to the attention of the user, please contact the nearest Yokogawa Electric representative or sales office.

## ■ Safety Precautions when Using/Maintaining the Product

- The following safety symbols are used on the product as well as in this manual.



**Danger.** This symbol on the product indicates that the operator must follow the instructions laid out in this user's manual to avoid the risk of personnel injuries, fatalities, or damage to the instrument. Where indicated by this symbol, the manual describes what special care the operator must exercise to prevent electrical shock or other dangers that may result in injury or the loss of life.



**Protective Ground Terminal.** Before using the instrument, be sure to ground this terminal.



**Function Ground Terminal.** Before using the instrument, be sure to ground this terminal.



**Alternating current.** Indicates alternating current.



**Direct current.** Indicates direct current.



The following symbols are used only in the user's manual.



### **WARNING**

Indicates a "Warning".

Draws attention to information essential to prevent hardware damage, software damage or system failure.



### **CAUTION**

Indicates a "Caution"

Draws attention to information essential to the understanding of operation and functions.

### **TIP**

Indicates a "TIP"

Gives information that complements the present topic.

### **SEE ALSO**

Indicates a "SEE ALSO" reference.

Identifies a source to which to refer.

- For the protection and safe use of the product and the system controlled by it, be sure to follow the instructions and precautions on safety stated in this manual whenever handling the product. Take special note that if you handle the product in a manner other than prescribed in these instructions, the protection feature of the product may be damaged or impaired. In such cases, Yokogawa cannot guarantee the quality, performance, function and safety of the product.
- When installing protection and/or safety circuits such as lightning protection devices and equipment for the product and control system as well as designing or installing separate protection and/or safety circuits for fool-proof design and fail-safe design of processes and lines using the product and the system controlled by it, the user should implement it using devices and equipment, additional to this product.
- If component parts or consumable are to be replaced, be sure to use parts specified by the company.
- This product is not designed or manufactured to be used in critical applications which directly affect or threaten human lives and safety — such as nuclear power equipment, devices using radioactivity, railway facilities, aviation equipment, sea navigation facilities, aviation facilities or medical equipment. If so used, it is the user's responsibility to include in the system additional equipment and devices that ensure personnel safety.
- Do not attempt to modify the product.

## **■ Exemption from Responsibility**

- Yokogawa Electric Corporation (hereinafter simply referred to as Yokogawa Electric) makes no warranties regarding the product except those stated in the WARRANTY that is provided separately.
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- Yokogawa Electric makes no other warranties expressed or implied except as provided in its warranty clause for software supplied by the company.
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## ■ General Requirements for Using the FA-M3 Controller

### ● Avoid installing the FA-M3 controller in the following locations:

- Where the instrument will be exposed to direct sunlight, or where the operating temperature exceeds the range 0°C to 55°C (32°F to 133°F).
- Where the relative humidity is outside the range 10 to 90%, or where sudden temperature changes may occur and cause condensation.
- Where corrosive or flammable gases are present.
- Where the instrument will be exposed to direct mechanical vibration or shock.
- Where the instrument may be exposed to extreme levels of radioactivity.

### ● Use the correct types of wire for external wiring:

- Use copper wire with temperature ratings greater than 75°C.

### ● Securely tighten screws:

- Securely tighten module mounting screws and terminal screws to avoid problems such as faulty operation.
- Tighten terminal block screws with the correct tightening torque as given in this manual.

### ● Securely lock connecting cables:

- Securely lock the connectors of cables, and check them thoroughly before turning on the power.

### ● Interlock with emergency-stop circuitry using external relays:

- Equipment incorporating the FA-M3 controller must be furnished with emergency-stop circuitry that uses external relays. This circuitry should be set up to interlock correctly with controller status (stop/run).

### ● Low impedance grounding:

- For safety reasons, connect the [FG] grounding terminal to a Japanese Industrial Standards (JIS) Class 3 Ground. For compliance to CE Marking, use braided or other wires that can ensure low impedance even at high frequencies for grounding.

### ● Configure and route cables with noise control considerations:

- Perform installation and wiring that segregates system parts that may likely become noise sources and system parts that are susceptible to noise. Segregation can be achieved by measures such as segregating by distance, installing a filter or segregating the grounding system.

### ● Configure for CE Marking Conformance:

- For compliance with CE Marking, perform installation and cable routing according to the description on compliance to CE Marking in the "Hardware Manual" (IM34M6C11-01E).

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- **Keep spare parts on hand:**

- Stock up on maintenance parts including spare modules, in advance.

- **Discharge static electricity before operating the system:**

- Because static charge can accumulate in dry conditions, first touch grounded metal to discharge any static electricity before touching the system.

- **Never use solvents such as paint thinner for cleaning:**

- Gently clean the surfaces of the FA-M3 controller with a cloth that has been soaked in water or a neutral detergent and wringed.
- Do not use volatile solvents such as benzene or paint thinner or chemicals for cleaning, as they may cause deformity, discoloration, or malfunctioning.

- **Avoid storing the FA-M3 controller in places with high temperature or humidity:**

- Since the CPU module has a built-in battery, avoid storage in places with high temperature or humidity.
- Since the service life of the battery is drastically reduced by exposure to high temperatures, take special care (storage temperature should be from  $-20^{\circ}\text{C}$  to  $75^{\circ}\text{C}$ ).
- There is a built-in lithium battery in a CPU module and temperature control modules F3CT04, F3CR04 and F3CV04 which serves as backup power supply for programs, device information and configuration information. The service life of this battery is more than 10 years in standby mode at room temperature. Take note that the service life of the battery may be shortened when installed or stored at locations of extreme low or high temperatures. Therefore, we recommend that modules with built-in batteries be stored at room temperature.

- **Always turn off the power before installing or removing modules:**

- Failing to turn off the power supply when installing or removing modules, may result in damage.

- **Do not touch components in the module:**

- In some modules you can remove the right side cover and install ROM packs or change switch settings. While doing this, do not touch any components on the printed-circuit board, otherwise components may be damaged and modules may fail to work.

- **Do not wire unused terminals:**

- Do not wire unused terminals of external connection terminal blocks or unused pins of connectors of the module. Doing so may affect the function of the module.

## ■ Waste Electrical and Electronic Equipment



### **Waste Electrical and Electronic Equipment (WEEE), Directive 2002/96/EC**

(This directive is only valid in the EU.)



This product complies with the WEEE Directive (2002/96/EC) marking requirement. The following marking indicates that you must not discard this electrical/electronic product in domestic household waste.

#### **Product Category**

With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a "Monitoring and Control instrumentation" product.

Do not dispose in domestic household waste.

When disposing products in the EU, contact your local Yokogawa Europe B. V. office.

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# Introduction

## ■ Overview of This Manual

This manual is the operation manual for the Range-free Multi-controller FA-M3 Programming Tool (known as WideField2 in this manual). It describes how to use WideField2 to create, run, monitor, and debug ladder programs. For enquiries, please contact the store where you purchased the product or the nearest Yokogawa sales office listed at the back of this manual. We recommend using this manual together with the operation manuals of your computer or printer, as required.

## ■ Structure of the Manual

This manual consists of 3 parts: A, B and C.

Part A is targeted at first-time users of WideField2, as well as users migrating from WideField (SF610) to WideField2. It describes steps for program creation and basic operations to help a user install the software and create simple programs. It also describes object ladder programs.

Part B describes operations including program creation, transfer, and monitoring.

Part C describes advanced and efficient use of WideField2.

## Part A Startup Manual

### A1. Overview

Gives an overview of WideField2 and describes differences in its functions from those of WideField (SF610).

### A2. Operating Environment

Describes the operating environment of WideField2.

### A3. Basic Specifications

Describes the screen layouts, list of functions, as well as basic specifications such as key operation.

### A4. Installing and Starting WideField2

Describes how to install and setup WideField2, how to uninstall and remove WideField2 from a personal computer, as well as to how to start and exit from WideField2.

## PART B Operation Manual

### B1. Initial Setup of WideField2

Describes how to perform initial setup of WideField2.

### B2. Overview of Projects

Gives an overview of projects and describes how to create a project and how to open an older-version CADM3 executable program.

**B3. Creating and Managing Blocks and Macros**

Describes file operations of block or macro files containing ladder programs.

**B4. Editing Programs**

Describes how to edit a ladder program.

**B5. Tag Name Definition**

Describes how to allocate addresses and assign I/O comments to tag names.

**B6. Constant Definition**

Describes how to assign constant values and comments to constant names.

**B7. Building and Managing a Project**

Describes how to build and use a project.

**B8. Comparing Files**

Describe the comparative check function for project data and the comparative display and editing function for programs.

**B9. Simple Find**

Describes how to search for a device and search within a project using the Find toolbar. It also describes how to change the search condition.

**B10. Printing**

Describes printing of programs created in WideField2 and information displayed in WideField2 windows.

**B11. Overview of Online Functions**

Describes how to connect to FA-M3 online and gives an overview of the online functions.

**B12. Downloading**

Describes how to transfer an executable program from a personal computer to FA-M3.

**B13. Uploading**

Describes how to transfer a project, blocks, macros or tag name definitions from FA-M3 to a personal computer.

**B14. Comparing File and CPU**

Describes the comparison of programs stored in the CPU to programs stored in the personal computer.

**B15. Setting Operating Mode and Monitoring Operation Status**

Describes how to set up the operating mode and monitor operation status of the CPU.

**B16. CPU Properties**

Describes how to set up CPU properties.

**B17. Program Monitor**

Describes how to display the contents of blocks as ladder programs using a program monitor.

**B18. Device Monitor**

Describes how to specify and display various device types using a device monitor.

**B19. Tag Name Definition Monitor**

Describes how to monitor devices defined with tag name definitions.

**B19. Registered Device Monitor**

Describes how to specify and monitor various devices (relays or words) using a registry monitor.

**B20. Using the Debugging Functions**

Describes functions available for debugging.

**B22. Online Edit**

Describes how to use online editing to directly modify programs downloaded to the CPU.

**B23. Logs and Alarms**

Describes maintenance functions for monitoring the operating status of the FA-M3 and errors.

**B24. Using the ROM**

Describes ROM management, including how to transfer a created program to the ROM pack and how to clear the ROM pack.

**B25. I/O Module Setup**

Describes how to setup the advanced function I/O module.

**B26. Sampling Trace Tool**

Describes how to specify devices to be sampled and store a history of their states and values in the CPU sampling trace buffer using the sampling trace tool.

**B27. Device Manager**

Describes how to upload device data in the CPU and store it to files, as well as how to edit, download and compare device data.

**B28. Using Macros**

Describes the creation and use of macros.

**B29. Using Local Devices**

Describes how to setup local devices, how local devices work and how to use local devices in programs.



**B30. Using Group Tag Names**

Describes how to group tag names into a single group tag name to be used like single data structure.

**B31. Storing Comments and Tag Name Definitions**

Describes how to store edited circuit comments, subcomments and tag name definitions in the CPU of the FA-M3.

**B32. Structures**

Describes structures in WideField2.

**B33. Using Remote OME**

Describes how to monitor and maintain a remote instrument via a remote line (remote OME).

**B34. E-mail Technical Support**

Describes how to send an E-mail to Yokogawa's technical support team.

**PART C Advanced User's Manual****C1. Developing Programs for a Multi-CPU System**

Describes precautions when creating a configuration for a multi-CPU system.

**C2. Recovering from Communications Errors**

Describes how to recover from communications errors between the personal computer and FA-M3.

**C3. How to Use the Find Function Effectively**

Describes how to search circuits effectively.

**C4. Storing Comments to CPU and Restoring Comments**

Describes the various states of comment data as stored in CPU, as well as the precautions and operation when comments are displayed or manipulated online.

**C5. Updating Programs after a Change in the I/O Module Slot Position**

Describes how to easily update a program when an I/O module is moved to a different installed slot position.

**C6. How to Enter Instructions Quickly**

Describes how to enter instructions quickly.

**C7. How to Use Customization Effectively**

Describes various customization functions.

**C8. How to Use Macro Components Effectively**

Describes effective use of component macros.

**C9. Collaborative Program Development**

Describes how to use WideField2 in collaborative system development.

**C10. Troubleshooting**

Describes common errors when using WideField2 and how to perform troubleshooting.

## ■ How to Read This Manual

Be sure to read the “Introduction” as well as “How to read this manual” before using WideField2.

Part A of the manual describes how to set up the application, as well as gives an overview of the software.

Part B of the manual describes all functions provided with the application.

Part C describes advanced and efficient use of the application.

This manual is structured so that each chapter or section can be read independently for details on the specifications and individual functions of the application.

We have tried to make the user interface, operations and editing functions of the WideField2 application as similar as possible to other generally available Windows software. This manual does not contain information on general Windows editing operations, which are not specific to WideField2.

## ■ Notation

### ● Notation for Windows Screens and Operation

- Items in initial caps denote symbols, names and window names.  
Example: WideField2, Program Monitor dialog
- Bracketed items denote menu bar items, dialog box fields, commands, and buttons.  
Example: Select [File]–[New] from the menu bar.  
Click [OK].

### ● Representations in WideField2 Figures and Screens

Screen examples given in this manual assumes that the application is running under Windows XP operating system environment. Under Windows 2000 and Windows Vista operating systems, you may observe slight differences such as differences in icon names or application names.

Some figures in this manual may, for reasons of convenience, be emphasized or simplified, or parts of it may be omitted. Some screen images in this manual may differ from actual screens due to differences in the operating machine environment.

### ● Notation for Procedures

Procedure pages are laid out with the procedure steps on the left and the corresponding screen images on the right.

Procedure :User actions are displayed in bold.

Description of the results of user actions is provided after the  $\Rightarrow$  mark.

Screens :The procedure step(s) corresponding to a screen image is indicated by step numbers below the screen.

### ● Function Keys and Shortcut Keys

In addition to using a mouse, you can operate WideField2 menus using function keys and shortcut keys.

In general, this manual describes operations using a mouse, and does not include equivalent operations using function keys or short cut keys.

## ■ Other User's Manuals

You should read the following user's manual.

- FA-M3 Programming Tool WideField2 Read Me First (IM34M6Q15-11E)

For individual sequence CPU modules, please refer to the relevant user's manuals.

### ● F3SP66, 67

- Sequence CPU – Functions (for F3SP66-4S, F3SP67-6S) (IM34M6P14-01E)
- Sequence CPU – Network Communication Functions (for F3SP66-4S, F3SP67-6S) (IM34M6P14-02E)
- Sequence CPU – Instructions (IM34M6P12-03E)

### ● F3SP28, 38, 53, 58, 59

- Sequence CPU – Functions (for F3SP28-3N/3S, F3SP38-6N/6S, F3SP53-4H/4S, F3SP58-6H/6S, F3SP59-7S) (IM34M6P13-01E)
- Sequence CPU – Instructions (IM34M6P12-03E)

### ● F3SP05, 08, 21, 25, 35

- Sequence CPU – Functions (for F3SP21, F3SP25 and F3SP35) (IM34M6P12-02E)
- Sequence CPU – Instructions (IM34M6P12-03E)

Refer to the following manuals as required.

### ● Specifications and Layout\*<sup>1</sup> of the FA-M3, Mounting and Wiring, Testing, Maintenance and Inspection, and System-wide Restrictions for Mounting Modules

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

- Hardware Manual (IM34M6C11-01E)

### ● Fiber-optic FA Bus Functions

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

### ● FA Link Functions

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

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# FA-M3

## Programming Tool

### WideField2

IM 34M6Q15-01E 4th Edition

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**FA-M3**

**FA-M3 Programming Tool WideField2**

**PART-A Startup Manual**

**IM 34M6Q15-01E 4th Edition**

The startup manual gives an overview of WideField2 and describes the operating environment, basic specifications, as well as setup and startup procedures.



# A1. Overview

This chapter gives an overview of the FA-M3 programming tool WideField2, and describes its difference from its predecessor, the WideField (SF610) software.

## A1.1 Overview of WideField2

The WideField2 software provides a Windows environment for developing 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. WideField2 allows online connection to be made to FA-M3 using USB (RS-232C for some CPU types), Ethernet or FL-net.

The WideField2 software supports a rich set of functions that facilitates efficient program development such as multi-window editing, monitor functions and integration with other tools.

The WideField2 software not only allows you to divide a large program into smaller modules for collaborative development, but also supports object ladder program development with high data and program independence. Thanks to these features, you can now create highly reusable programs.

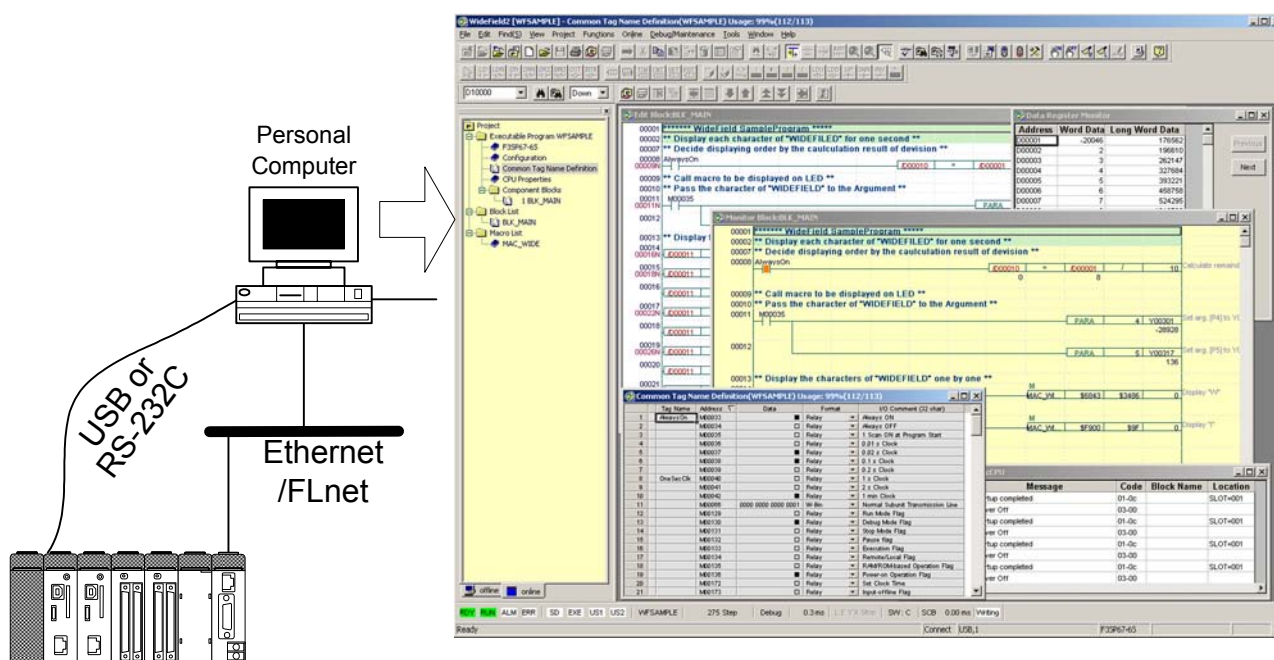


Figure A1.1 WideField2 Operating Diagram

A01\_01.VSD

## A1.2 New and Updated Functions in WideField2

This section describes the differences in functionalities between various WideField and WideField2 versions in five separate subsections:

- Differences between WideField2 R1 and WideField
- Differences between WideField2 R2 and R1
- Differences between WideField2 R3 and R2
- Differences between WideField2 R4 and R3
- Differences between Widefield2 R5 and R4

### A1.2.1 Differences between WideField2 R1 and WideField

This subsection describes functional differences between WideField2 R1 and WideField (SF610).

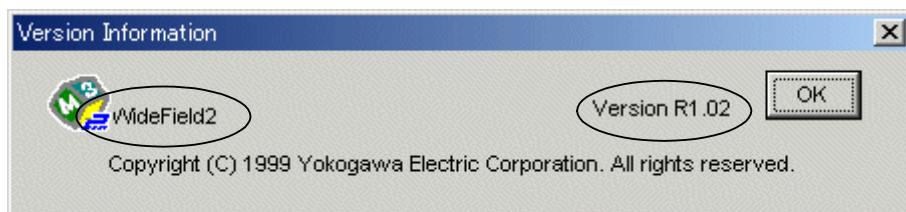
#### SEE ALSO

For details of individual differences, see sections given in the “SEE ALSO” column in Table A1.1.

#### TIP

WideField2 R1 is a successor of WideField (SF610) software. This book describes in detail the functions available in WideField2 R1.

To confirm the software version in WideField2 R1, select [Help]–[About WideField2] from the menu bar. A dialog box as shown in Figure A1.2 appears. Verify that the software name is displayed as “WideField2” and the version is displayed as “R1.xx”.



A01\_02.VSD

Figure A1.2 WideField2 R1 Version Information

The file format compatible to WideField is known as the “lower version format” in WideField2.

WideField2 features many improved functions over WideField and hence, has a slightly different user interface. Please read the explanations in this book carefully before using the software.



#### CAUTION

- A project file created or saved in WideField2 cannot be directly used in WideField. On the other hand, a project file created in WideField is automatically converted to WideField2-compatible format when opened in WideField2. To use a project file previously edited in WideField2 in WideField, you must first select [Downgrade and Save Project] from the menu to save it in WideField-compatible format.
- Do not run the WideField2 software and the WideField (SF610) software concurrently.



**Table A1.1 New and Updated Functions in WideField2 R1**

Category	Function Details	Summary	SEE ALSO
Operating environment	Windows 2000 Windows Me	Supports additional Windows operating systems listed on the left.	A2. Operating Environment
New functions	Structure	Introduces structure as a new concept.	B30. Structures
	E-mail function	Remote maintenance using E-mails.	B31. Using Remote OME
Window-related functions	Display of "New" window	Allows to define the display position when a window is opened.	B1.2.4 Circuit Display/Input Setup
	Displays connected CPU type	Displays the type of the connected CPU on the status bar.	B14.1 Displaying the Action Monitor
	Resume settings	Recalls screen settings.	—
	Project window icon	New icon to show or hide a project window.	B1.2.7 Toolbar Setup
Use of programs	Saving and restoring a compressed project	Allows compressing and saving of a project. Also allows splitting and saving a project on multiple floppy disks.	B2.2.7 Compressing and Saving a Project B2.2.8 Restoring a Compressed Project
	Saving a project with a different name	Allows saving of a project currently being edited with a different name.	B2.2.6 Saving a Project with a Different Name
	Converting a project to a lower version format and saving it	Converts a project file used in WideField2 into a data format usable in WideField and saves it.	B2.2.9 Saving a Project in a Lower Version Format
	Project edit history	Displays project edit history and allows opening a project from the displayed list.	B2.2.3 Project Editing History
Environment setup	Set up circuit display/Set up input	Setup format has been changed.	B1.2.4 Circuit Display/Input Setup
	Set up restrictions on operations	Allows specifying whether to permit or prohibit opening ladder program edit window and monitor window concurrently for the same block.	B1.2.5 Online Comment Input

Category	Function Details	Overview	SEE ALSO
Editing programs	Displaying properties	Displays a properties setup screen when a new block/macro file is created.	B3.1 Creating New Block and Macro Files
	Displaying instruction parameters	Displays instruction parameters (tag names or addresses), exactly the same way they are entered.	B7.4.3 Formats for Storing Parameters of Block Files
		Displays tag names assigned with addresses and tag names not yet assigned with addresses in different colors for easy distinction.	B4.2.3 Distinguishing Devices
	Entering instruction parameters	Allows entering a tag name first, without immediately allocating an address.	B4.3 Entering Tag Names and Addresses B7.4.2 About Tag Name Design B1.2.4 Circuit Display/Input Setup
	Displaying TipHelp	Displays tips containing tag name definition information for circuit parameters on a ladder program edit screen.	B4.2.1 Ladder Program Edit Screen Layout B1.2.4 Circuit Display/Input Setup
	Editing multiple cells	Allows a user to select, cut and paste multiple cells.	B4.2.22 Selecting Circuits B4.2.23 Deleting Circuits B4.2.25 Copying and Moving Circuits
	Entering I/O comments	Supports continuous comment input in I/O comment input mode.	B4.2.31 Entering and Deleting I/O Comments
		Allows to enter I/O comments too when entering instruction parameters (tag names or addresses)	B7.4.2 About Tag Name Design B1.2.4 Circuit Display/Input Setup
	Find/Replace	Display of the dialog boxes has been changed.	B4.7.1 Finding Device B4.7.4 Replace
		Supports wildcard search of tag names.	B4.7.1 Finding Device
		Supports loop search.	B4.7.1 Finding Device
		Supports replacement method setup.	B4.7.4 Replace
		Does not perform find/replace when in address display mode.	B4.7 Find and Replace
	Switching tag name definition reference	Allows a user to select either common tag name definition or block tag name definition as reference tag name definition for a block.	B4.4 Circuit and Tag Name Definition Reference B5.1.2 Common Tag Name Definition and Block Tag Name Definition B7.2.1 Checking Programs B7.4.1 About Tag Name Definition Reference

Category	Function Details	Overview	SEE ALSO
Tag name definition	Batch editing	Allows batch editing of all tag name definitions without changing pages.	B5.1 Fundamentals of Tag Name Definition
	Find	Supports searching of I/O comment strings.	B5.2.4 Find Function
	Error display	Displays lines with errors in a different color.	B5.2.3 Error Handling
	Setting up the maximum number of common tag name definitions	The maximum number of common tag name definitions is no longer fixed but customizable.	B5.6 Changing Maximum Number of Common Tag Name Definitions and Storing to CPU
	Deleting unused tag name definitions	Supports batch deletion of all tag name definitions that are not used in a block.	B5.4 Deleting Unused Tag Names
	Merging other tag name definitions	Supports merging of common tag name definition and other block tag name definitions.	B5.3 Merging Tag Name Definitions
	Reading circuits	Allows deletion of all unused tag name definitions when reading a circuit.	B5.2.7 Read Circuits Function
	Obsolete (Reflect common tag name definition to block tag name definition function)	Removes function to reflect common tag name definitions to block tag name definitions. Allows direct reference to common tag name definitions even without reflection.	B5.1.2 Common Tag Name Definition and Block Tag Name Definition
	Obsolete (Change address assignment function)	The change address assignment function has been removed. Changes to address assignments for tag names during tag name definition are automatically applied to circuits.	B7.4.2 About Tag Name Design
	Obsolete (address comparison function)	The tag name comparison function has been removed. Tag name definitions that are used in a block are marked when a circuit is read.	B5.2.7 Read Circuits Function
File conversion	Converting to tag name format	Regenerates a block file in tag name format.	B7.4 Tag Names and Addresses
	Converting to address format	Regenerates a block file in address format.	B7.4 Tag Names and Addresses
Project search	Jumping to circuit monitor	Supports jumping to a circuit monitor from the Search Results window.	B7.2.2 Finding in Project B7.2.3 Find an Instruction in a Project
Project replace	Replacement method setup	Supports setup of replacement method.	B7.2.4 Replacing in Project
Program syntax checking	Detailed display	Displays detailed program information.	B7.2.1 Checking Programs
Device monitor	Advanced function module register monitor	Supports monitoring and debugging of internal registers of installed advanced function modules from the device monitor.	B17.6.1 Advanced Function Module Register Monitor Window
Online editing	Editing by multiple users	Allows multiple users to perform online-editing on the same CPU.	B20. Online Edit
	Line editing function	Allows editing in line units.	B20. Online Edit
	Multiple-cell editing	Allows a user to select, cut and paste multiple cells.	B20. Online Edit
Print	Printing project	Limits printing of instruction parameters as either tag names or addresses. Input data is printed as-is.	—
Opening CADM3 executable programs	Results of tag name definition file conversion	Stores all results of block tag name definition conversion into common tag name definitions.	B2.3 Opening an Executable Program in CADM3 Format
Registered device monitor	Registered device monitor	Registers devices for monitoring.	B18. Registered Device Monitor
Sampling trace	Conversion into Windows program	Module has been converted to a Windows program that can be started directly from WideField2.	B24. Sampling Trace Tool
	MS-Excel output	Supports output of trace results to a Microsoft Excel file for creation of graphs and charts.	B24.5 Printing and Creating Graphs using MS-Excel
	Supports all file registers	Handles all file registers (256K points).	—
Device manager	Conversion to Windows program	Module has been converted to a Windows program that can be started directly from WideField2.	B25. Device Manager
	Supports all file registers	Handles all file registers (256K points).	—

## A1.2.2 Differences between WideField2 R2 and R1

This subsection describes functional differences between WideField2 R2 and R1. There is only a Japanese version and no English version for WideField2 R2.

### SEE ALSO

For details of individual differences, see sections given in the “SEE ALSO” column in Table A1.2.

### TIP

To confirm the software version in WideField2 R2, select [Help]–[About WideField2] from the menu bar. A dialog box as shown in Figure A1.3 appears (the screen capture is in Japanese as there is no English version for WideField2 R2). Verify that the software version is displayed as “R2.xx”.

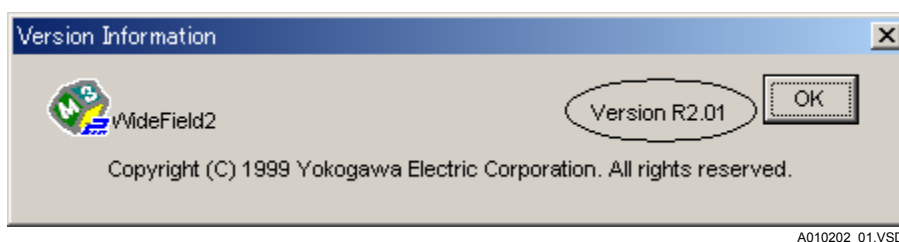


Figure A1.3 WideField2 R2 Version Information

**Table A1.2 New and Updated Functions in WideField2 R2**

Category	Function Details	Summary	SEE ALSO
Operating environment	Windows XP	Supports additional Windows operating systems listed on the left.	A2. Operating Environment
New functions	Concurrent execution	Allows multiple copies of WideField2 to be running concurrently. Also allows multiple extended tools (I/O module setup, device manager, and sampling trace) to be running concurrently.	A4.3 Starting WideField2
	Concurrent online connection by WideField2 and ToolBox	Allows WideField2 and ToolBox to be connected online concurrently to FA-M3.	A4.4 Exiting from WideField2 B10.1 Connecting and Disconnecting
	Simple Find	Allows searching for a device and searching a project from the Find Bar.	B8. Simple Find
	E-mail to Technical Support	Sends an E-mail query to Yokogawa's technical support directly from within WideField2.	B32. E-mail Technical Support
Environment setup	Online comment input setup	Allows setup of input and reference of online comments.	B1.2.5 Online Comment Input
Editing programs	Adding restrictions on opening of projects	Disallows opening of project while a block monitor or macro monitor window is open.	B2.2.2 Opening a Project
	Input completion of instructions	Completes instruction string based on a partially-entered instruction.	B4.2.6 Entering Instructions Using Input Completion Function
	Input completion of instruction parameters	Completes instruction parameter string based on a partially-entered parameter string	B4.2.7 Entering Instruction Parameters Using Input Completion Function B4.2.8 Entering Structures Using Input Completion Function
	Entering connection lines	Allows insertion and deletion of vertical lines, as well as insertion of horizontal lines and continuation lines using keyboard.	B4.2.18 Inserting Connection Lines B4.2.19 Entering Continuation Circuit
	Undo	Allows deletion and paste operations for a selected range to be reverted.	B4.2.27 Canceling An Operation
	Find	Allows searching even in address display mode.	B4.7 Find and Replace
		Allows searching using tag name or address regardless of the display format of circuits.	B4.7 Find and Replace
		Allows searching and replacement for index registers in addresses with index modification.	B4.7 Find and Replace
		Allows searching of devices within the range of used devices, over and beyond the first device displayed on the screen.	B4.7.1 Finding Device
		Allows searching for the next candidate in downward or upward direction using different shortcut keys.	B4.7.3 Finding the Next Candidate
		Allows searching for the next candidate, starting from the cursor position, using one keyboard operation.	B7. Simple Find
Tag name definition	Merging tag name definitions of another block	Allows merging block tag name definitions of another block or common tag name definitions.	B4.4 Circuit and Tag Name Definition Reference B5.3 Merging Tag Name Definitions
	Find	Allows searching for the next candidate in downward or upward direction using different shortcut keys.	B5.2.4 Find Function
		Allows searching for the next candidate, starting from the cursor position, using one keyboard operation.	B8. Simple Find

Category	Function Details	Summary	SEE ALSO
Find and replace in project	Find Next and Find Previous	Supports searching for the next candidate or the previous candidate from the Results of Project Find window.	B7.2.2 Finding in Project B7.2.3 Finding An Instruction in A Project
	Find operation	Allows searching using tag name or address regardless of the display format of circuits.	B7.2.2 Finding in Project B7.2.3 Finding An Instruction in A Project
		Allows searching and replacement for index registers in index modified addresses.	B7.2.2 Finding in Project B7.2.4 Replacing in Project
		Allows searching of devices within the range of used devices, over and beyond the first device displayed on the screen.	B7.2.2 Finding in Project
		Moves the cursor from the beginning of the circuit to the corresponding location to be displayed.	B7.2.2 Finding in Project B7.2.3 Finding An Instruction in A Project
Program syntax checking	Find Next and Find Previous	Supports searching for the next candidate or the previous candidate from the Results of Program Checking window.	B7.2.1 Checking Programs
Print	Printing circuits	Both tag name and address are printed on circuit printouts.	B9. Printing
Compare	Jumping to corresponding location	Supports jumping to the location of a discrepancy from the Results of Comparison window.	B14.3 Results of Comparison B22.3 ROM Compare (Between Computer and ROM)
	Find Next and Find Previous	Supports searching for the next candidate or the previous candidate from the Results of Comparison window.	B13.3 Results of Comparison B22.3 ROM Compare (Between Computer and ROM)
Device monitor	Advanced function module register monitor	Supports advanced function module register monitoring of temperature monitoring module, temperature control and PID module and FL-net (OPCN-2) interface module	B17.6.1 Advanced Function Module Register Monitor Window
Online editing	Entering I/O comments	Allows entering of new tag names and I/O comments during online editing	B20.3.3 Precautions for Online Editing
	Changing circuit comments or subcomments	Provides option not to save to CPU circuit comment and subcomment changes made during online-editing	B20.3.3 Precautions for Online Editing
Alarm monitor	Jumps to corresponding location	Supports jumping to the location of an alarm from the Alarm display window.	B21.1 CPU Alarms
Device manager	Using files created using WideField or CADM3	Allows reading of device files created using WideField or CADM3.	B25.8 Opening Device Files Created Using WideField Or CADM3

## A1.2.3 Differences between WideField2 R3 and R2

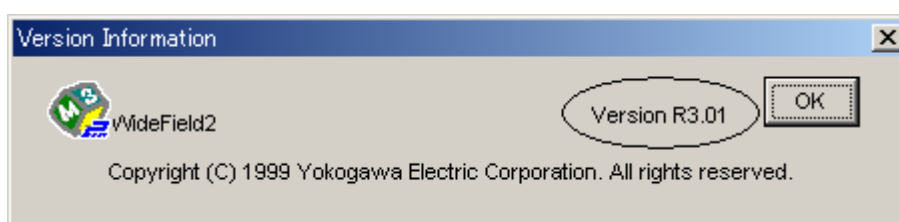
This subsection describes functional differences between WideField2 R3 and R2.

### SEE ALSO

For details of individual differences, see sections given in the “SEE ALSO” column in Tables A1.3 and A1.4.

### TIP

To confirm the software version in WideField2 R3, select [Help]–[About WideField2] from the menu bar. A dialog box as shown in Figure A1.4 appears. Verify that the software version is displayed as “R3.xx”.



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**Figure A1.4 WideField2 R3 Version Information**

WideField2 R3 is released as R3.01 and R3.02 for the Japanese version. However, only R3.01 but not R3.02 has been released for the English version. The two tables below show the new and updated functions in R3.01 and R3.02 respectively.

**Table A1.3 New and Updated Functions in WideField2 R3.01**

Category	Function Details	Summary	SEE ALSO
New functions	FL-net communications	Allows connection of WideField2 to FA-M3 using FL-net, with support of all the same functions available when connected using other communications medium.	A2. Operating Environment B1.2.3 Communication Setup B10.1 Connecting and Disconnecting B12. Uploading B16.2.1 Starting the Program Monitor
	Count-up timers and counters	Allows current values of timers and counters to be displayed with count-up values in various monitor windows. Count-up display and count-down display options are provided in the environment setup. The default is count-down display. Count-up display, however, is not supported in the device manager and sampling trace tool.	B1.2.4 Circuit Display/Input Setup B16.3 Displaying Details of Application Instructions B17.1.3 Timer Monitor Window B17.1.4 Counter Monitor Window B18. Registered Device Monitor B19.3 Changing Current Values of Timers and Counters
Editing programs	Support for wheel mouse	Supports the use of wheel mouse in program edit windows and program monitor windows of the program monitor	—
Device monitor	Advanced function module register monitor	Supports advanced function module register monitor for LC12-1F, F3LA01-0N, F3LB01-0N and F3NC96-0N modules.	B17. Device Monitor B17.6.1 Advanced Function Module Register Monitor Window

**Table A1.4 New and Updated Functions in WideField2 R3.02**

Category	Function Details	Summary	SEE ALSO
Environment setup	Additional customization for circuit elements	Supports additional color customization for grid line and cursor.	B1.2 Environment Setup
Editing programs	Improved instruction palette icons	Icons on the instruction palette have been improved to also display the corresponding keyboard input such as instruction mnemonics.	B4.2.1 Ladder Program Edit Screen Layout
	Two-ended OR instruction, Left-ended OR instruction	Two-ended OR instruction and the left-ended OR instruction have been added.	B4.2 Editing Ladder Programs
	Editing labels and subcomments	Allows the cursor to be moved to the positions of labels or subcomments for easier editing.	B4.2.20 Entering Labels B4.2.30 Entering and Deleting Subcomments
	Character key input of comments and labels	Allows keyboard input of various comments and labels, just like instructions.	B4.2.20 Entering Labels B4.2.29 Entering and Deleting Circuit Comments B4.2.30 Entering and Deleting Subcomments B4.2.31 Entering and Deleting I/O Comments
	TipHelp display	In addition to tag name definition, displays context-sensitive instruction information according to the mouse cursor position. Displays context-sensitive instruction or tag name definition information based on the cursor position when a user presses the SPACE key.	B4.2.1 Ladder Program Edit Screen Layout
	Changing instruction property	Allows a user to toggle the pulse and long word instruction property without opening the Instruction Parameter Setup dialog. Similarly, allows a user to toggle between contact A and contact B or toggle between a SET instruction and a RST instruction.	B4.2.10 Entering Application Instructions
	Changing to an instruction of the same type	Inherits instruction parameter values when an instruction is changed to another instruction of the same type (for instance, when an OUT instruction is changed to a SET instruction).	B4.2.5 Input Using Alphanumeric Keys
	Help in the Instruction Parameter Setup dialog	Displays help information about instruction parameters in the Instruction Parameter Setup dialog.	B4.2 Editing Ladder Programs
Connection	Automatic switching of baud rate	When connecting using RS-232C, allows the CPU baud rate to be temporarily switched to the maximum value during connection, and restored after disconnection.	B10.1 Connecting and Disconnecting
Program monitor	Monitoring index modified devices	For a device modified with an index, the index register value is added to the address for monitoring purposes. In addition, also allows the real index modified address to be displayed.	B16.1.3 Display of Index Modified Devices
Advanced function module register monitor	Display of user comments	Shows/hides the display of comments in the advanced function module register monitor. Supports additional bit display format.	B17.6.1 Advanced Function Module Register Monitor Window
	New I/O modules	Supports advanced function module register monitor for F3LH02-0N, F3NC32-0N, F3NC34-0N and F3LE12-0T modules. Online help is, however, not available.	B17.6.1 Advanced Function Module Register Monitor Window



## A1.2.4 Differences between WideField2 R4 and R3

This subsection describes functional differences between WideField2 R4 and R3.

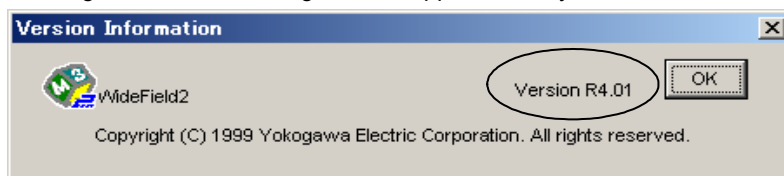
R4 also incorporates improvements in R3.02, which is only available for the Japanese version.

### SEE ALSO

For details of individual differences, see sections given in the “SEE ALSO” column in Tables A1.4 and A1.5.

### TIP

To confirm the software version in WideField2 R4, select [Help]–[About WideField2] from the menu bar. A dialog box as shown in Figure A1.5 appears. Verify that the software version is displayed as “R4.xx”.



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**Figure A1.5 WideField2 R4 Version Information**

**Table A1.5 New and Updated Functions in WideField2 R4**

Category	Function Details	Summary	SEE ALSO
Operating System	Windows Vista	The Windows operating system on the left has been added as one of the supported operating systems.	A2. Operating Environment
New CPU types	New CPU types	Supports F3SP66-4S/67-6S, with corresponding new functions and ladder instructions added.	—
Functions	USB communications	Allows connection of WideField2 to FA-M3 using USB, with support of all the same functions available when connected using other communications medium.	A2. Operating Environment B1.2.3 Communication Setup B10.1.1 Direct Connection
	Constant definition	Allows constant names to be defined for constant values.	B6. Constant Definition
	CPU properties	Allows editing, downloading and uploading of CPU properties.	B15. CPU Properties
	Escape sequence	Allows escape sequence codes to be used in constant values.	B4. Editing Programs
	Card load format	Allows project data to be saved as a data file in SD card format.	B2.2.7 Opening Projects in Other Formats B2.2.8 Saving Projects in Other Formats
Configuration	Function removal	Allows selected CPU functions to be removed (disabled).	B7.1.3 Configuration Setup
	Initial data setup	Allows initial data settings to be imported from or exported to a file in csv format.	
	DIO setup	Allows DIO setup for the CPU to be changed for multiple slots simultaneously. Operability has been improved.	
Action Monitor bar		The Action Monitor bar display varies with CPU type.	B14. Setting Operating Mode and Monitoring Operation Status
Editing circuits	Jumping within a circuit	Allows jump by circuit comment line unit.	B4.7.5 Jumps
	Jumping within a line	Allows jump to line start and line end.	
Tag name definition	Common tag name definition	Displays the number of tag name definitions in use and the current usage of the tag name definition area. Allows direct access to the screen for modifying the maximum limit.	B5.1.1 Tag Name Definition Window Layout
Advanced function module register monitor	New I/O modules	Supports advanced function module register monitor for F3RZ82-0F and F3RZ91-0F modules.	B17.6.1 Advanced Function Module Register Monitor Window
Help		Allows browsing of PDF files of user's manuals using Help function.	—

## A1.2.5 Differences between WideField2 R5 and R4

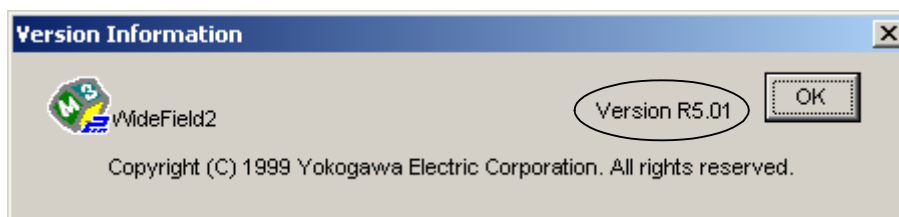
This subsection describes functional differences between Widefield2 R5 and R4.

### SEE ALSO

For details of individual differences, see sections given in the “SEE ALSO” column in Table A1.6.

### TIP

To confirm the software version in WideField2 R5, select [Help]–[About WideField2] from the menu bar. A dialog box as shown in Figure A1.6 appears. Verify that the software version is displayed as “R5.xx”.



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**Figure A1.6 WideField2 R5 Version Information**

**Table A1.6 New and Updated Functions in WideField2 R5**

Category	Function Details	Summary	SEE ALSO
Overall	Application key	Allows the use of pop-up menus by pressing the application key on the keyboard.	—
	[Close All] menu	Added the [Close All] menu.	A3.2 Function List A3.7 Types of Screens
	Project Window	The Project Window has been made into a window. In addition, an online project tree display has been added, and it can be viewed by switching tabs. Accordingly, icons are modified. Allows the use of pop-up menus from the project tree.	A3.1 Screen Layout B7.3 Managing Files
	Limiting number of windows	The number of windows that can be displayed simultaneously has been extended from 10 windows overall to 16 windows for online only.	A3.7 Types of Screens
	Key customization	Allows customization of the shortcut keys used on WideField2.	A3.2 Function List B1.4 Key Customization
	Change Language function	Allows switching of the language mode on WideField2.	A3.1 Screen Layout A3.2 Function List B1.3 Language Setup
Environment setup	Circuit display setup	Allows modification of default settings according to the condensed display of the edit screen. Also allows modification of the font type for comments in the circuits.	B1.2.4 Circuit Display/Input Setup B4.2.2 Set up Circuit Display and Input B4.5.3 Expanded Display for Instruction Parameter C7 How to Use Customization Effectively
	Communication setup	Allows selection of whether to use automatic optimization of communication speed when connected with RS-232C.	B1.2.3 Communication Setup B11.1 Connecting and Disconnecting
	Host Name Setup Function	Allows the host name setup on WideField2.	B1.2.3 Communication Setup

Category	Function Details	Summary	SEE ALSO
Comparing files	Comparing projects	Functions that compare offline project data and show a list of its results have been added. Allows expansion from the list to detailed comparison results confirmation screens.	A3.1 Screen Layout A3.2 Function List A3.7 Types of Screens B1.2 Environment Setup B1.2.7 Toolbar Setup B1.2.9 File Comparison Setup B8 Comparing Files
	Comparing programs	Allows comparison of offline program data in a ladder display. Allows editing of the comparison source program in the comparison results screen.	
Editing programs	Instruction parameter 1-line display	An instruction parameter 1-line display mode has been added to increase the amount of ladder program information displayed in a screen. (1-line display mode is the default setting.) Allows confirmation with TipHelp of modified display positions for constant values, floating points, and timer setting values that cannot be shown in 1-line display mode.	B4.5.3 Expanded Display for Instruction Parameter
	Circuit comment condensed display	The display height of the circuit comment line has been reduced to increase the amount of ladder program information displayed in a screen.	B4.5.3 Expanded Display for Instruction Parameter
	Modifying circuit column width	Allows modification of column width (of 1 column) in the environment setup.	B1.2.4 Circuit Display/Input Setup B4.2.2 Set up Circuit Display and Input
	Emphasized display for write parameter	Allows an emphasized (bold font) display for the instruction parameter used as the write parameter.	B4.5.3 Expanded Display for Instruction Parameter
	Escape Sequence Display	Allows the display of character string parameters as escape sequence codes.	B4.5.3 Expanded Display for Instruction Parameter
	Identification display for unconverted circuits	Allows identification of unconverted circuits being edited, and circuits not successfully converted due to conversion error.	B1.2.4 Circuit Display/Input Setup B4.2.2 Set up Circuit Display and Input B4.6.1 Emphasized Display of Modified Line
	Alleviation of restrictions during editing	The maximum number of continuous lines per circuit comment has been increased from 4 to 25. The number of lines that can be copied or deleted at once has been increased from 100 to 500.	B4.1.1 Limitations on Editing Ladder Program B4.2.22 Selecting Circuits B4.2.29 Entering and Deleting Circuit Comments
	Mnemonic editing	Support for the mnemonic editing function has been added in 1-circuit units.	B4.1.3 Circuits that Cannot be Amended Using Ladder Programming B4.2.34 Mnemonic Editing Function
	Improvement of auto completion function	Allows automatic display of input candidate when 2 or more characters are entered. In addition, operational improvements have been added, such as no automatic selection of candidates and deletion of candidates with the space bar.	B1.2.4 Circuit Display/Input Setup B4.2.2 Set up Circuit Display and Input B4.2.6 Entering Instructions Using Input Completion Function B4.2.7 Entering Instruction Parameters Using Input Completion Function B4.2.8 Entering Structures Using Input Completion Function
	Automatic setup of local devices	Allows automatic setup of the number of local devices used from the usage in the program.(Can be specified in the environment setup.)	B1.2.4 Circuit Display/Input Setup
	Canceling multiple operations	Allows the cancellation of up to 10 operations while editing.	B4.2.27 Canceling an Operation
	Improvement of Find display	Moves only the cursor, without scrolling the screen, when an area that matches the search conditions is found.	B4.7.1 Finding Device B7.2.2 Finding in Project C3.4 Quick Search Using Shortcut Keys
	Improvement of Find dialog	Initially displays the device in the cursor location as the condition in the Find dialog.	

Category	Function Details	Summary	SEE ALSO
Editing programs	Jumping to tag name definition	Allows jumping to a tag name definition with the device in the cursor location as the condition.	B4.7.6 Jump to Tag Name Definition
	Importing/exporting circuit comments and subcomments	A function that outputs circuit comments and subcomments in circuits as CSV data, and a function that loads comment information saved as CSV data have been added.	B4.8 Importing/Exporting Circuit Comments and Subcomments
	Improvement of pop-up menus	Menus displayed in pop-up menus have been organized by use and category.	—
Tag name definitions	Tag name definition monitor	The tag name definition window image that can be used with the device monitor. Allows the specification of monitor conditions for each device.	A3.2 Function List B19 Tag Name Definition Monitor
	Split display	Allows the tag name definition monitor window to be split into 2 – 4 windows. Allows the simultaneous monitoring of devices located far away from each other.	
	Improvement of pop-up menus	Menus displayed in pop-up menus have been organized by use and category.	—
	Find Next	Find Previous has been added for the Find function.	—
	Importing/exporting	A function that outputs tag name definition information as CSV data, and a function that loads tag name definition information saved as CSV data have been added.	B5.7 Importing and Exporting Tag Name Definitions
Project	Find in Project	Initially displays the device in the cursor location as the search condition.	B7.2.2 Finding in Project
	Improvement of search results window	Allows a mode-less dialog for search results, as well as simultaneous viewing with circuits.	—
	Close	Displays a confirmation message when a project is closed.	—
Print	Compact printing	Allows compact printing by removing unnecessary blank lines in the block/macro print screen.	B10.3 Detailed Print Setup
Program monitor	TipHelp for local devices	Displays local devices in TipHelp along with expanded global devices.	—
	Improvement of displaying instruction parameters	Displays in detailed format for the instruction parameter position and size.	—
	Exiting online editing	Allows the user to exit online editing and close the window by clicking the [X] button during online editing.	—
	Improvement of pop-up menus	Menus displayed in pop-up menus have been organized by use and category.	—
	Add instructions to conduction display	Instructions such as timer/counter, comparison instructions, and bit operations are added to conduction display.	B17.1.2 Display of Application Instructions
	Jumping to tag name definition monitor/device monitor	Allows jumping to a tag name definition monitor/device monitor with the device at the cursor location as the search condition.	B17.5.3 Jump to Tag Name Definition B17.5.4 Jump to Device Monitor
	TipHelp for detailed displays	Displays the content of detailed displays in TipHelp.	—
	Fixed index register modification display	A function that sets the content of the index register as an offset value, and a fixed index register modification mode that displays the monitor value of the device in a state that reflects that value have been added.	B17.1.3 Display of Index Modified Devices B17.3.4 Fixed Index Modification Monitor Display
Device monitor	I/O structure display	An I/O structure display menu has been added.	
	Device monitor for unused I/O	Allows monitoring of X/Y relays for unused slots.	B18.2.1 Starting a Device Monitor
Online	Disconnection	Allows disconnection from an online connection.	—

## A1.3 WideField2 Function Limitations

This section describes some limitations of WideField2.

These limitations refer to specific functions accessible from the WideField2 user interface, including incomplete functions intended for future use and known operational instability under specific conditions.

**Table A1.7 WideField2 Function Limitations**

Category	Function Details	Limitations
Windows 2000 Windows XP Windows Vista	Security setting for directories	To allow restricted users to use WideField2, you must set the access permissions on directories to grant restricted users access to all directories used by WideField2 such as the installation directory and program directory.
USB	Communications	Depending on the chip set used by the PC running the WideField2 software, reliable USB connection is not always guaranteed. A USB connection may be unreliable or even disconnected due to noise. If this happens, remove and re-attach the USB cable to the PC.
FL-net	Communications	Communications to the CPU may fail during FL-net (OPCN-2) setup when the WideField2 window is minimized.
FA Link	Communications	Communications to the CPU may fail during FA link setup when the WideField2 window is minimized.
Sampling trace	Communications	Communications to the CPU may fail when the WideField2 software is minimized.
Device manager	Communications	Communications to the CPU may fail when the WideField2 software is minimized.

## A1.4 Migrating from WideField

This section highlights differences between the use of WideField and WideField2 for the convenience of users migrating from WideField.

### ■ User File Compatibility

Project files, block files and tag name definition files have different formats in WideField and WideField2.

When you open a project, block or tag name definition created in WideField using WideField2, WideField2 automatically converts the file into WideField2 format to allow editing.



### CAUTION

A project that has been opened in WideField2 can no longer be used directly in WideField again.

To use a project created in WideField2 in the WideField software, you must first convert it to a lower version format.

### ■ Automatic Conversion of Tag Name Strings

All period (".") characters used in tag names in a project created in WideField are automatically converted to underscore ("\_") characters when the project is opened in WideField2. All the mappings between tag names and addresses are correct after conversion. Note that all programs are modified during conversion.

**Table A1.8 List of Automatic Tag Name Conversions**

Item	Before Conversion	After Conversion by WideField2
Tag name strings	" . "	" _ "

### ■ Automatic Conversion of Projects

Formats of all user files are automatically converted when a project created in WideField is opened in WideField2. The following table shows the setup information after conversion.

**Table A1.9 List of Automatic Project Conversions**

Item	Before Conversion	After Conversion by WideField2
Reference tag name definition	—	Block tag name definition
Store tag name definition	—	No
Store circuit comments and I/O comments	—	No
Maximum common tag name definitions	5120	Preset value +1

### ■ Tag Name Oriented Development

The WideField2 program development environment is designed as a tag name oriented development environment.

Entered data (tag names or addresses) is stored in block files which are displayed as programs with the entered data unchanged. However, addresses entered during online editing or uploading which already have tag names assigned are converted to tag names before saving.

Consistent to its tag-name oriented development design philosophy, the replace operation is not allowed in address display mode in WideField2.

## ■ Using Projects Created in WideField2 in WideField

Projects created in WideField2 and WideField projects which have been opened in WideField2 cannot be used directly in WideField. To use a project which has been opened in WideField2 in WideField, perform conversion by selecting [File]–[Save Project in Other Formats]–[Downgrade and Save] from the WideField2 menu.



### CAUTION

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If a project that is opened and then downloaded to a sequence CPU using WideField2 is uploaded using WideField, the project may sometimes fail to be generated properly. If this happens, perform [File]–[Save Project in Other Formats]–[Downgrade and Save] in WideField2 for the project saved on the personal computer before using it in WideField.

---





## A2. Operating Environment

This section describes the operating environment WideField2.

**Table A2.1 Operating Environment**

Item	Specifications
PC	PC/AT compatible
Operating System <sup>*1</sup>	Microsoft Windows Vista Microsoft Windows XP Microsoft Windows 2000
Required Software	Internet Explorer 5.01, or later
Software Media	CD-ROM
CPU <sup>*2</sup>	Pentium 133MHz or better, and can run an operating system listed above
Memory <sup>*3</sup>	32MB or more, and can run an operating system listed above
Hard Disk Capacity	400MB or more available
Display	800 x 600 dots or more (1024x768 recommended)
Communications <sup>*4*5</sup>	USB, RS-232C, Ethernet, FL-net
Printer	Any printer compatible with the operating systems listed above and supports A4 printing
Compatible CPU Modules	F3SP05-0P, F3SP08-0P, F3SP08-SP, F3SP21-0N, F3SP25-2N, F3SP35-5N, F3SP28-3N, F3SP38-6N, F3SP53-4H, F3SP58-6H, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S, F3SPV3-4H, F3SPV8-6H, F3FP36-3N, F3SP66-4S, F3SP67-6S.

\*1: Only the 32 bit (x86) versions of Windows XP/Vista can be used. The 64 bit (x64) versions cannot be used.

\*2: For FL-net communications, CPU speed must be Pentium III 750 MHz or higher.

\*3: For FL-net communications, memory must be 128MB or more.

\*4: For FL-net communications, network card must support TCP/IP protocol.

Usable communications conditions vary with CPU type.

\*5: Depending on the chip set used by the PC running the WideField2 software, reliable USB connection is not always guaranteed.



### CAUTION

Set the display font size to a small font size.

The text on the screen may be displayed incorrectly if a large font size is chosen.

Pay careful attention to the Windows folder security before installing and running the WideField2 software.



### CAUTION

Some operation environments may not display the font you choose on WideField2.

Start it by choosing the font which can be displayed.



### CAUTION

Do not run the WideField2 software and the WideField (SF610) software concurrently.

## ■ Connecting to FA-M3

FA-M3 sequence CPU module and WideField2 (running on PC) can be connected via RS-232C, USB, Ethernet, or FL-net.

### ● Connecting Using USB

Prepare a standard USB cable, which is available commercially.

- Connecting to the PC  
Connect the cable to the USB port of the PC.
- Connecting to the sequence CPU module  
Connect the cable to the USB port located on the front panel of the sequence CPU module. Inserting the cable when the RDY LED is lit initiates installation of the driver software. Follow the displayed messages to install the driver software.

#### TIP

- Depending on the chip set used by the PC running the WideField2 software, reliable USB connection is not always guaranteed.
- A USB connection may become unreliable or even disconnected due to noise. If this happens, remove and re-attach the USB cable to the PC.

### ● Connecting Using RS-232C

Prepare a proprietary FA-M3 CPU cable as shown in Table A2.2.

Select a cable with an appropriate serial port connector for the PC to be used.

**Table A2.2 Cables for CPU Port**

Type	Basic Specifications Code	Specifications
KM11	-2T (3m long)	DOS/V compatible, D-sub 9 pin
	-3T (5m long)	
	-4T (10m long)	
KM13	-1N (3m long)	DOS/V compatible USB1.1-compliant cable for use with USB port
	-1S (3m long)	

- Connecting to the PC  
Connect the cable to the serial port of the PC. The serial port is located at the back for most PCs but located in front for some PCs.
- Connecting to the sequence CPU module  
Connect the cable to the PROGRAMMER or SIO port of the sequence CPU module. Remove the protective cover from the sequence CPU module to be accessed or configured from WideField2, and connect the cable securely.

#### SEE ALSO

When using a USB cable for connection, you may need to configure the serial port on the PC. For more information on the USB-Serial converter cable, see "USB-Serial Converter" (IM34M6C91-01E).

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- **Connecting Using Ethernet via Ethernet Interface Module**

Connect the (10BASE5/10BASE-T) connector on the PC to the (10BASE5/10BASE-T) connector on the Ethernet interface module using a (10BASE5/10BASE-T) cable.

**SEE ALSO**

For details on Ethernet connection, see “Ethernet Interface Module” (IM34M6H24-01E, IM34M6H24-04E).

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- **Connecting Using Ethernet via Connector on Front Panel of CPU Module**

Connect the (10BASE-T/100BASE-TX) connector on the PC to the (10BASE-T/100BASE-TX) connector on the front panel of the CPU module using a (10BASE-T/100BASE-TX) cable.

**SEE ALSO**

For details, see “Sequence CPU – Network Functions (for F3SP66-4S, F3SP67-6S)” (IM34M6P14-02E).

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- **Connecting Using FL-net**

Connect the (10BASE5/10BASE-T) connector on the PC to the (10BASE5/10BASE-T) connector on the FL-net (OPCN-2) interface module using a (10BASE5/10BASE-T) cable.



**CAUTION**

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To connect to FL-net, use FL-net (OPCN-2) Interface Module version 01:00 or higher.

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**SEE ALSO**

For details on FL-net connection, see “FL-net (OPCN-2) Interface Module” (IM34M6H32-02E)

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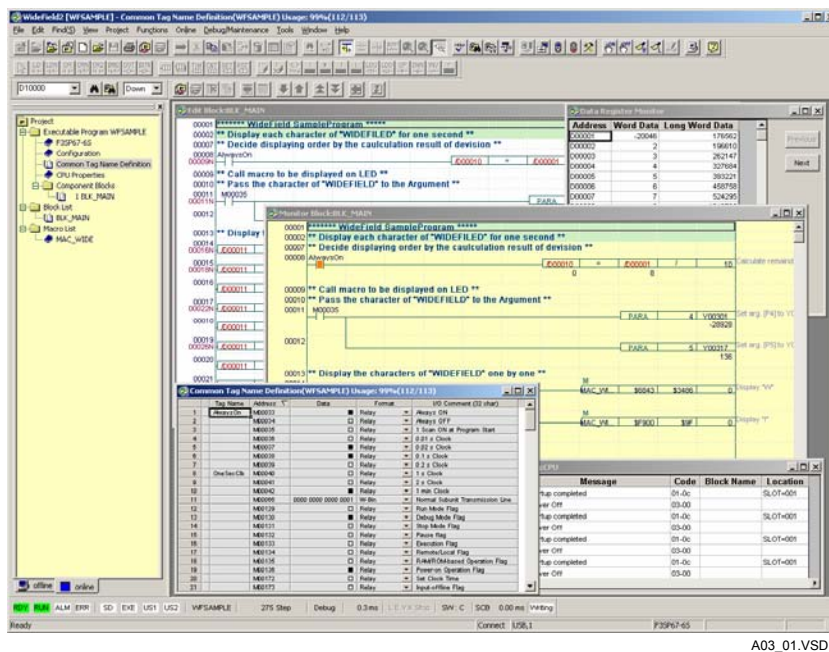


# A3. Basic Specifications

This chapter describes basic specifications, including screen layout, a list of all functions and operations of shortcut keys.

## A3.1 Screen Layout

This section describes the layout of a WideField2 screen.



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Figure A3.1 Screen Layout

### ■ Title Bar

The title bar displays the name of the open project, the name of the active window and the name of the file being edited.



A03\_02.VSD

Figure A3.2 Layout of Title Bar

## ■ Menu Bar

The menu bar displays names of menus which are available in WideField2. You can select a menu from the menu bar. The menus displayed in the menu bar are dependant on the function that is currently active e.g. online or tag name definition function.



Figure A3.3 Layout of Menu Bar

## ■ Toolbar

The toolbar displays icons of the most frequently used menus from the menu bar. You can select a menu from the menu bar or the toolbar.

To register a menu to the toolbar, use the Set up Environment dialog box.

To switch between showing and hiding the tool bar, use [View]–[Toolbar].



Figure A3.4 Layout of Toolbar (The figure shows the single row of icons divided into two.)

## ■ Instruction Palette

The instruction palette displays icons for instructions and comments. You can create a circuit by selecting instructions from the instruction palette.

To switch between showing and hiding the instruction palette, use [View]–[Instruction Palette].



Figure A3.5 Layout of Instruction Palette

## ■ Find Bar

The find bar displays an area for entering devices for search conditions and icons to specify for performing searches. You can also select devices for search conditions from past history.

To switch between showing and hiding the find bar, use [View]–[Find Bar].



Figure A3.6 Layout of Find Bar

## ■ File Comparison Bar

The file comparison bar displays icons for operations related to the file comparison function. You can use these icons to compare files and specify operations in the comparison results display screen.

To switch between showing and hiding the file comparison bar, use [View]–[File Comparison Bar].

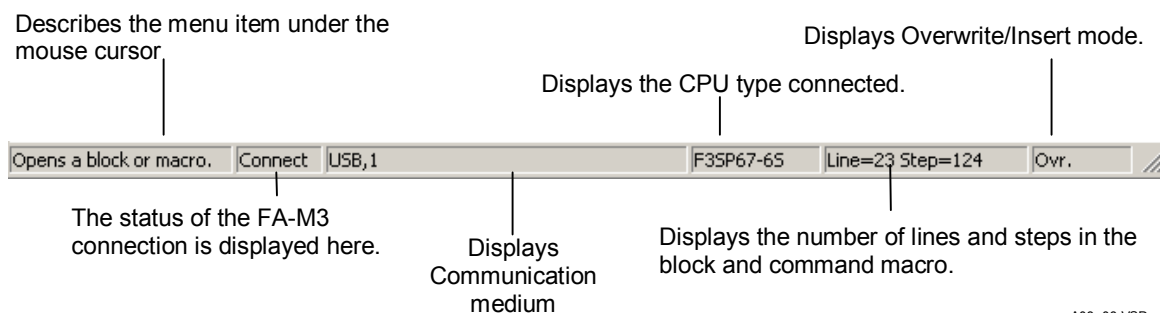


**Figure A3.7** Layout of File Comparison Bar

## ■ Status Bar

The status bar displays various status information of the WideField2 software.

To switch between showing or hiding the status bar, use [View]–[Status Bar].



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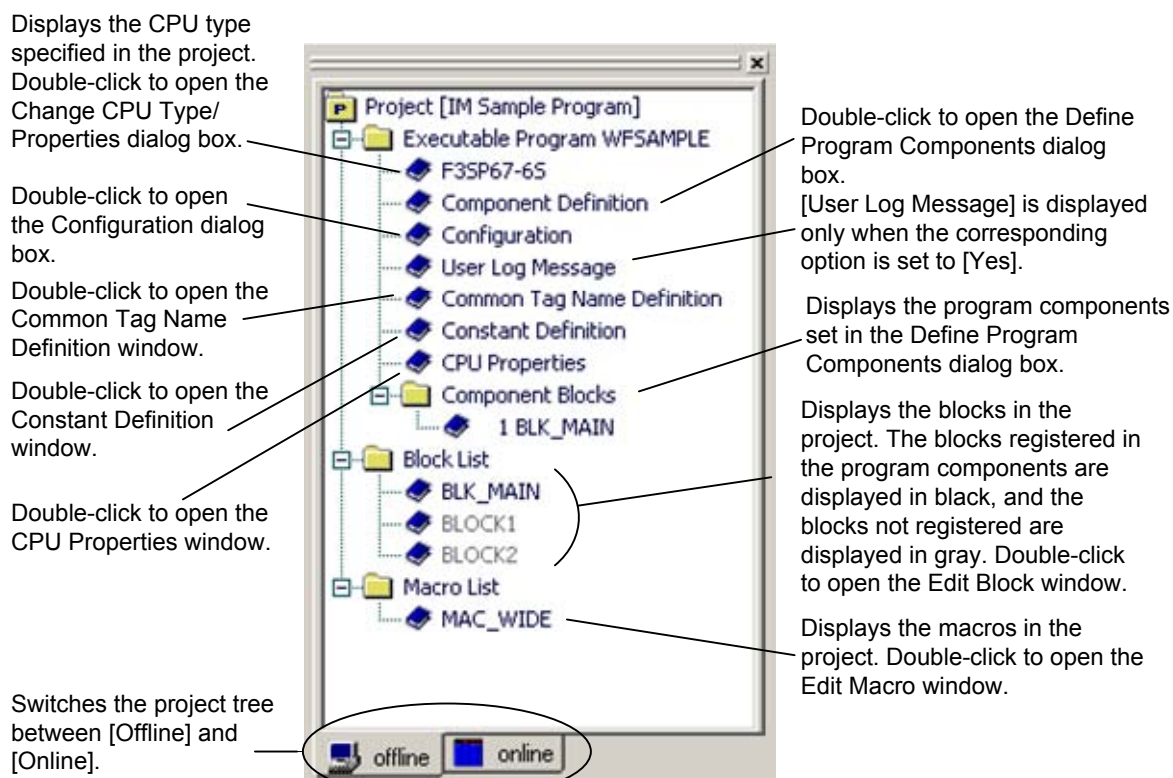
**Figure A3.8 Layout of Status Bar**

## ■ Project Window – Offline

In offline mode, the Project window displays the components of a project open in WideField2.

It displays the components of the executable program, and lists the blocks and instruction macros within the project.

To switch between showing or hiding the Project window, use [View]–[Project Window].



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**Figure A3.9 Layout of Offline Project Window**



You can call up the following functions directly from the offline project tree.

**Table A3.1 Function List of Offline Project Tree**

Tree Item	Operation	Function
Project	Select [Compare Project] from the popup menu.	Opens the Start Project Comparison dialog box.
	Select [Check Program] from the popup menu.	Performs a syntax check on the project.
	Select [Find in Project] from the popup menu.	Opens the Find in Project dialog box.
	Select [Find Instruction in Project] from the popup menu.	Opens the Find Instruction in Project dialog box.
	Select [Replace in Project] from the popup menu.	Opens the Project Replace dialog box.
	Select [Project Device Usage Status] from the popup menu.	Opens the Device Usage Status dialog box.
CPU Type Name	Double-click, or select [Open] from the popup menu.	Opens the Change CPU Type/Properties dialog box.
Component Definition	Double-click, or select [Open] from the popup menu.	Opens the Define Program Components dialog box.
Configuration	Double-click, or select [Open] from the popup menu.	Opens the Configuration dialog box. This operation is possible only when the Configuration is set to [Set up] in Define Program Components.
User Log Message	Double-click, or select [Open] from the popup menu.	Opens the User Log Message Definition dialog box. This operation is possible only when the User Log Message is set to [Yes] in Define Program Components.
Common Tag Name Definition	Double-click, or select [Open] from the popup menu.	Opens the Common Tag Name Definition edit window.
	Select [Compare] from the popup menu.	Compares files in Common Tag Name Definition.
	Select [Output CSV Data] from the popup menu.	Exports Common Tag Name Definition as CSV data.
	Select [Load CSV Data] from the popup menu.	Imports CSV data to Common Tag Name Definition.
Constant Definition	Double-click, or select [Open] from the popup menu.	Opens the Constant Definition edit window.
	Select [Compare] from the popup menu.	Compares files in Constant Definition.
CPU Properties	Double-click, or select [Open] from the popup menu.	Opens the CPU Properties edit window.
Component Blocks	Select [Define Program Components] from the popup menu.	Opens the Define Program Components dialog box.
Block under the Component Blocks	Double-click, or select [Open] from the popup menu.	Opens the Edit Block window.
Block List	Select [Insert File] from the popup menu.	Adds a block file to the project.
	Select [Rename File] from the popup menu.	Changes the file name of the specified block in the project.
	Select [Delete File] from the popup menu.	Deletes a block file in the project.
Block under the Block List	Double-click, or select [Open] from the popup menu.	Opens the Edit Block window.
	Select [Compare] from the popup menu.	Compares block programs.
	Select [Block Tag Name Definition] from the popup menu.	Opens the Block Tag Name Definition window.
	Select [Local Device/Properties] from the popup menu.	Opens the Local Device/Properties dialog box.
	Select [Rename File] from the popup menu.	Changes the block file name.
	Select [Delete File] from the popup menu.	Deletes the block.

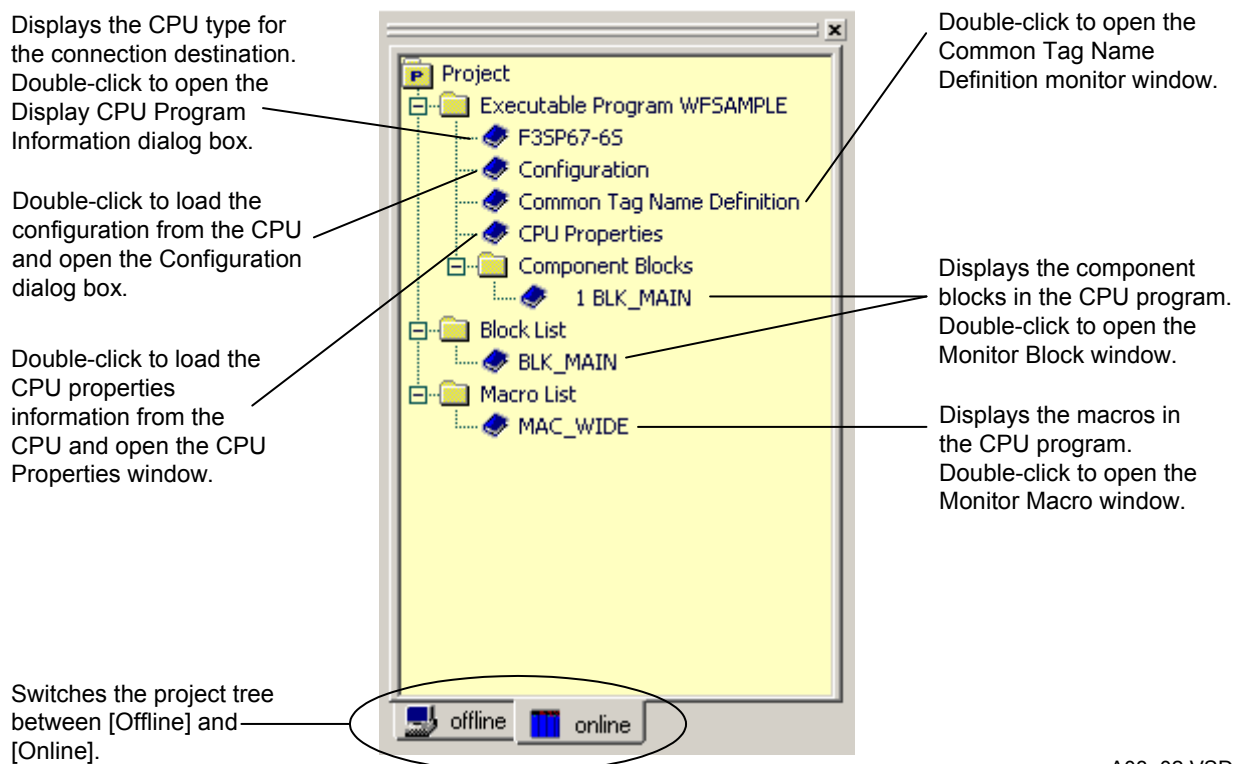
Macro List	Select [Rename File] from the popup menu.	Changes the file name of the specified macro in the project.
	Select [Delete File] from the popup menu.	Deletes a macro file in the project.
	Select [Extract Macro] from the popup menu.	Adds a macro file to the project.
Macro under the Macro List	Double-click, or select [Open] from the popup menu.	Opens the Edit Macro window.
	Select [Compare] from the popup menu.	Compares macro programs.
	Select [Block Tag Name Definition] from the popup menu.	Opens the Macro Tag Name Definition window.
	Select [Local Device/Properties] from the popup menu.	Opens the Local Device/Properties dialog box.
	Select [Rename File] from the popup menu.	Changes the macro file name.
	Select [Delete File] from the popup menu.	Deletes the macro.
	Select [Register Macro] from the popup menu.	Registers a macro in the macro folder.

## ■ Project Window - Online

In online mode, the Project window displays the information for the CPU module that WideField2 is connected to online.

It displays the CPU type name, components of the executable program, and instruction macro list as the information for the CPU module.

To switch between showing and hiding the Project window, use [View]–[Project Window].



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**Figure A3.10 Layout of Online Project Window**

You can call up the following functions directly from the online project tree.

**Table A3.2 Function List of Online Project Tree**

Tree Item	Operation	Function
CPU Type Name	Double-click, or select [CPU Program Information] from the popup menu.	Opens the Display CPU Program Information dialog box.
Configuration	Double-click, or select [Open] from the popup menu.	Loads configuration in the CPU, and opens the Configuration dialog box.
Common Tag Name Definition	Double-click, or Select [Common Tag Name Definition] from the popup menu.	Opens the Common Tag Name Definition monitor window.
CPU Properties	Double-click, or select [CPU Properties] from the popup menu.	Loads the CPU property information in the CPU, and opens the CPU Properties display window.
Block under the Component Blocks	Double-click, or select [Open] from the popup menu.	Opens the Monitor Block window.
	Select [Block Tag Name Definition Monitor] from the popup menu.	Opens the Block Tag Name Definition monitor window.
Block under the Block List	Double-click, or select [Open] from the popup menu.	Opens the Monitor Block window.
	Select [Local Device/Properties] from the popup menu.	Loads the local device/properties information in the CPU, and opens the Local Device/Properties dialog box.
	Select [Block Tag Name Definition Monitor] from the popup menu.	Opens the Block Tag Name Definition monitor window.
	Select [Download] from the popup menu.	Downloads the block when an offline project contains the same block.
	Select [Upload] from the popup menu.	Uploads the block and updates the data on the offline project.
	Select [Compare] from the popup menu.	Compares the blocks when an offline project contains the same block.
Macro under the Macro List	Double-click, or select [Open] from the popup menu.	Opens the Monitor Macro window.
	Select [Local Device/Properties] from the popup menu.	Loads the local device/properties information in the CPU, and opens the Local Device/Properties dialog box.
	Select [Block Tag Name Definition Monitor] from the popup menu.	Opens the Macro Tag Name Definition monitor window.
	Select [Download] from the popup menu.	Downloads the macro when an offline project contains the same macro.
	Select [Upload] from the popup menu.	Uploads the macro and updates the data on the offline project.
	Select [Compare] from the popup menu.	Compares the macros when an offline project contains the same macro.

## A3.2 Function List

The following table lists all the WideField2 functions.

**Table A3.3 Function List**

Menu Bar	Menu Command	Description
File	New Project	Creates a new project.
	Open project	Opens an existing project.
	Close Project	Closes an open project.
	Save Project	Saves an open project.
	Save Project As	Saves an open project with a different name.
	Open Project in Other Formats	Converts non-WideField2 format (card load format, CADM3 format) or compressed and segmented project data into WideField2 format and opens the project.
	Save Project in Other Formats	Saves an open project in non-WideField2 format (card load format, CADM3 format) or compressed and segmented project data.
	New	Creates a new block, instruction macro, group template or structure type definition.
	Open	Opens a file (block, CADM3 file, instruction macro, system log, user log, group template, or structure type definition, CPU properties).
	Close	Closes various open files and screens.
	Close All	Closes all open windows.
	Reflect on File	Saves an open file, overwriting the existing file. During program monitoring or macro monitoring, the menu display changes to [Reflect on File] and when selected, reflects online edited data on a file.
	Reflect on Another File	Saves an open block or instruction macro with a different file name. During program monitoring or macro monitoring, the menu display changes to [Reflect on Another File] and when selected, reflects online edited data on a file with a different name.
	Save	Saves an open file, overwriting the existing file. During program monitoring or block monitoring, the menu display changes to [Reflect on File] and when selected, reflects online edited data on a file.
	Save As	Saves an open block or instruction macro with a different file name. During program monitoring or block monitoring, the menu display changes to [Reflect on Another File] and when selected, reflects online edited data on a file with a different name.
	Print Setup	Performs printer set up.
	Print	Prints various screens and projects.
	Compare Project	Performs comparison between projects.
	Compare Window	Performs comparison against the active window.
Edit	Recent Opened Projects	Displays a project history listing up to 5 most recently opened projects.
	Exit	Exits the application.
	Undo	Cancels the previous operation and restores the original state.
	Convert	Converts a ladder diagram into an object.
	Cut	Cuts the designated area and pastes it on the clipboard.
	Copy	Copies the designated area and pastes it on 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.
	Revise Instruction/Circuit	Revises the attributes of instructions in the program.
	Insert Line	Inserts one line.
	Delete Lines	Deletes the lines in the designated area and removes the resulting empty spaces.
	Temporary Delete	Deletes lines in the designated area temporarily. The deleted lines simply change in color but do not disappear.
	Undo Temporary Delete	Restores items that were temporarily deleted.
	Ladder Symbols	Displays the circuit instruction symbols.
	Hide/Show Circuits	Hides all circuits after the circuit comment up to the next circuit comment, or redisplay circuits that have been hidden.
	Page Break	Inserts a page break mark in a circuit comment during printing.
	Output to CSV data for Circuit Comment/Subcomment	Exports circuit comment/subcomment information in the program as CSV data.
	Load CSV Data for Circuit Comment/Subcomment	Imports circuit comment/subcomment information from CSV data into the program.
	Hide Circuits	Hides all circuits between a circuit comment and the next circuit comment.
	Show Circuits	Restores hidden circuits and redisplay the screen.
	Hide All Circuits	Hides all circuits between a circuit comment and the next circuit comment, and redisplay the screen.
	Show All Circuits	Shows all hidden circuit comments and redisplay the screen.
	Block Tag Name Definition	Displays the tag name definition screen..
	Local Device/Properties	Defines the number of local devices in a block and the properties of the block.

Menu Bar	Menu Command	Description
Find	Find	Searches for a device.
	Find Instruction	Searches for an instruction.
	Find Next	Searches upwards/downwards for the previous designated search item.
	Jump to Tag Name Definition	Jumps to the appropriate location in the tag name definition for the device at the cursor position.
	Jump to Device Monitor	Jumps to the appropriate location in the device monitor for the device at the cursor position.
	Find Next	Searches downwards for the previous designated search item.
	Jump	Jumps to a designated place. The submenu provides options for jumping to the first line, the last line, a designated line number, a designated instruction number and a circuit comment.
	Replace	Replaces a circuit device with another.
	Device Usage Status	Displays a device list and marks devices currently used in a block.
View	Toolbar	Switches between displaying and hiding the tool bar.
	Instruction Palette	Switches between displaying and hiding the instruction palette.
	Status Bar	Switches between displaying and hiding the status bar.
	Find Bar	Switches between displaying and hiding the find bar.
	File Comparison Bar	Switches between displaying and hiding the file comparison bar.
	Action Monitor	Switches between displaying and hiding the action monitor.
	Project Window	Switches between displaying and hiding the project window.
	Display I/O Comment	Switches between displaying and hiding the I/O comments.
	Display (Expanded) for Instruction Parameter	Customizes the display format for the instruction parameters.
	Display Instruction Number	Switches between displaying and hiding the instruction numbers.
	Display Address	Switches between displaying tag names and addresses.
	Redraw	Redraws a circuit.
	Zoom	Enlarges or reduces circuits in the display. The submenu provides options for enlargement and reduction.
	Detail	Displays the current values of registers, etc.
	Display Format	Changes the display format. The different formats available are: decimal, hexadecimal, binary, character string, and floating point.
	Suspend Monitoring	Temporarily stops monitoring the entire screen. The menu display changes to [Resume Monitoring].
Project	Define Program Components	Defines the components of an executable program.
	Change CPU Type/Properties	Defines information on CPU type and project properties.
	Configuration	Sets project configuration.
	User Log Message	Creates a user log message in a project.
	Common Tag Name Definition	Defines common tag names for all blocks in a project.
	Constant Definition	Defines constant names and values in a project.
	Check Program	Checks program syntax of all blocks in a project.
	Find in Project	Searches all blocks in a project for a device, block name, or label and displays the result as a list.
	Find Instruction in Project	Searches all blocks in a project for a specified instruction and displays the result as a list.
	Replace in Project	Replaces tag names or addresses over all blocks in a project.
	Change I/O Installation Position	Changes all addresses of input/output relays to accompany a change in the I/O slot.
	Project Device Usage Status	Displays a device list and marks devices used in any block in a project.
	Insert File	Copies block, common tag name definition or constant definition file from other folders into a project.
	Rename File	Changes the name of a block or instruction macro file in a project.
	Delete File	Deletes a block or instruction macro file in a project.
	Register Macro	Registers instruction macros in a project to the macro folder.
	Extract Macro	Extracts an instruction macro from a macro folder into a project.
	Convert Data	Converts data from tag name format to address format or vice versa.

Menu Bar	Menu Command	Description
Online	Connect	Connects the PC and the FA-M3
	Disconnect	Disconnects the PC and the FA-M3.
	Program Monitor	Monitors the circuits of a block of the CPU.
	Macro Monitor	Monitors the circuits of an instruction macro of the CPU.
	X+Y Input/Output Relay	Displays I/O component information for the connection destination.
	Device Monitor	Monitors devices of the CPU.
	Registered Device Monitor	Designates devices to be monitored.
	Configuration	Displays the CPU configuration.
	CPU Program Information	Displays information of projects stored in the CPU in a list.
	Common Tag Name Definition	Displays items copied from the project folder to the monitor folder.
	CPU Properties	Reads and displays CPU properties stored in a destination CPU.
	Operating Mode	Switches the operating mode. The submenu provides options to change to Run mode, Stop mode or Debug mode.
	Download	Downloads executable programs from the PC to the CPU Transfers a designated block or macro from the PC to the CPU.
	Upload	Transfers executable programs from the CPU to the PC. Transfers a designated block or macro from the CPU to the PC. Transfers tag name definitions from the CPU to the PC.
	Compare File and CPU	Compares the executable programs in the PC and the CPU.
Debug/Maintenance	ROM Management	Manages the ROM pack. The submenu provides options to transfer from file to ROM, to transfer from CPU to ROM, to compare a file to the ROM, to erase the ROM, to switch to ROM Writer mode, and to cancel ROM writer mode.
	Extended Functions	Performs various controls over the CPU. The submenu provides options to temporarily change communication speed, to set the time, to clear the program in the CPU, to clear devices, to reset start, to manage exclusive access right control, to clear CPU properties, as well as to enable/disable CPU properties..
	Adv. Function Module Register Monitor	Defines the data type and comment to be displayed in the Advanced Function Module Register Monitor.
	Forced Set	Forces a device to set.
	Forced Reset	Forces a device to reset.
	Cancel Forced Set/Reset	Cancels a device that has been forced set or reset.
	Cancel All Forced Set/Reset	Cancels forced sets/resets on devices.
	Change Word Data	Changes the current value of a device with word data.
	Change Long Word Data	Changes the current value of a device with long word data.
	Change Current Value of Timer/Counter	Changes the current value of a timer or counter.
	Change Preset Value of Timer/Counter	Changes the preset value of a timer or counter.
	Start Online Editing	Starts online editing. In online edit mode, the menu display changes to [End Online Editing].
	Start Block	Restarts a stopped block.
	Stop Block	Stops a running block.
	Stop Refreshing	Stops refreshing. The submenu provides options to stop input, output, common and link registers and relays.
	Restart Refreshing	Restarts refreshing of all points.
	Display Alarm	Displays all current alarms generated by the CPU. When alarms are displayed, the menu display changes to [Redisplay Alarm].
	Cancel Alarm	Cancels CPU alarm data.
	Display System Log	Displays the error history for the CPU. When the error history is displayed, the menu display changes to [Redisplay System Log].
	Display User Log	Displays user history for the CPU. When the error history is displayed, the menu display changes to [Redisplay User Log].
	Clear Log	Clears the displayed user log or system log.

Menu	Menu Command	Description
Tools	Set up Environment	Set up the PC environment.
	Customize Keys	Customizes shortcut keys for WideField2.
	Language Change	Changes the language mode for WideField2.
	Reset Screen	Reset the layout of windows currently displayed to the default.
	Mail	Uses E-mail to debug the sequence CPU.
	E-mail to Technical Support	Starts the mailer program, and displays a screen for preparing a new message to be sent to technical support at Yokogawa.
	Set up I/O Module	Starts FA link and FL-net tools.
	Sampling Trace	Starts Sampling Trace.
Window	Device Management	Starts Device Manager
	Cascade	Displays windows, overlapped in a cascade manner.
	Tile	Displays windows alongside, in a tile manner.
	Arrange Icons	Arranges the icons.
	Window List	Displays a list of all windows currently open.
Help	WideField2 Help	Displays help information by function.
	Contents and Index	Displays help information by keyword.
	About WideField2	Displays WideField2 version information.

## A3.3 List of Generated Files

This section describes the generated files.








### CAUTION

User program files in WideField2 are managed as version 4 files in WideField series.

**Table A3.4 Specifications of Generated Files**

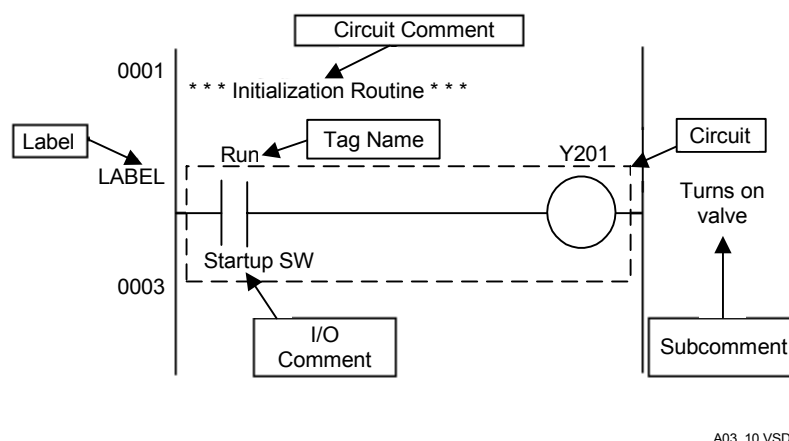
Generated File	Icon	Extension	Item	Specifications
Project file		.YPJT	File name	Up to 8 alphanumeric characters, beginning with a letter. May also contain special characters '-' (hyphen) and '_' (underscore).
			Project title	Up to 32 alphanumeric characters and special characters.
Executable program file		.YPRG	File name	Only one program file having the same name as the project can be created within a project.
			Number of component blocks	Up to 1,024 blocks (Limit depends on CPU type.)
			Configuration Settings	0 or 1 (setup is optional)
			User log message settings	0 or 1 (setup is optional)
		.YMPR	File name	Up to 254 alphanumeric characters and special characters. The characters must be within Windows specifications range (file for E-mail).
Configuration file		.YC□□	File name	Only one file having the same name as the project can be created within a project.
User log message file		.YUMS	File name	Only one file having the same name as the project can be created within a project.
			Number of message characters	Up to 32 alphanumeric characters and special characters.
			Number of messages	Up to 64 messages
Common tag name definition file		.YCMN	File name	Only one file with the same name as the project can be created within a project.
			Number registered	Up to 70,000
Constant definition file		.YCDF	File name	Only one file with the same name as the project can be created within a project.
			Number registered	Up to 2,048
Block file		.YBLK	File name	Up to 8 alphanumeric characters beginning with two letters. May also contain special characters '-' (hyphen) and '_' (underscore).
			Number of steps	Up to 56K steps, for models SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S. Up to 10K steps, for models other than the above.
			Number of lines	Up to 20,000 lines.
Block tag name definition file		.YSIG	File name	Can be created with the same name as the block.
			Number registered	Up to 5,120 data sets.
Instruction macro file		.YMCR	File name	Up to 8 alphanumeric characters beginning with 2 letters. May also contain special characters '-' (hyphen) and '_' (underscore).
			Number of steps	Up to 10K steps.
			Number of lines	Up to 20,000 lines.
Macro tag name definition file		.YMCS	File name	Can be created with the same name as the macro.
			Number registered	Up to 5,120 data sets.
Group template file		.YGRP	File name	Up to 8 alphanumeric characters beginning with a letter. May also contain special characters '-' (hyphen) and '_' (underscore).
			Number registered	Up to 64 data sets.



Generated File	Icon	Extension	Item	Specifications
Structure Type Definition File		.YGRS	File Name	Up to 8 alphanumeric characters beginning with a letter. String may also include special characters '-' (hyphen) and '_' (underscore)
System Log File		.YSLG	File Name	Up to 8 alphanumeric characters beginning with a letter. String may also include special characters '-' (hyphen) and '_' (underscore)
User Log File		.YULG	File Name	Up to 8 alphanumeric characters beginning with a letter. String may also include special characters '-' (hyphen) and '_' (underscore)
Sampling Trace Setup File		.YTST	File Name	Up to 254 characters. (The characters must be within Windows specifications range)
Sampling Trace Results File		.YTRC	File Name	Up to 254 characters. (The characters must be within Windows specifications range)
Device Management File		.YDVF	File Name	Up to 254 characters. (The characters must be within Windows specifications range)
		.YMDV	File Name	Up to 254 characters. (The characters must be within Windows specifications range)(File for E-mails)
CPU property file		YPRP	File Name	Up to 8 alphanumeric characters, beginning with a letter.
FA Link Setup File		.FAI	File Name	Up to 8 alphanumeric characters, beginning with a letter.

## A3.4 Elements of Edit Circuits

This section describes the elements of an edit circuit.



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Figure A3.11 Elements of Edit Circuit

Table A3.5 Specifications of Circuit Elements

Element	Item	Specifications
Tag Name	Number of Characters, Valid Characters	Up to 16 alphanumeric characters, beginning with two letters. String may also contain special characters '-' (hyphen), '_' (underscore) and '.' (period). A period character can be used as a separator between a structure name and a structure member name. However, strings that are not distinguishable from device names are not allowed.
	Number Registered	For block tag name reference, up to 5,120. For common tag name reference, up to 70,000.
Structure	Structure name	2 to 7 alphanumeric characters, beginning with a letter. String may also contain special characters '-' (hyphens) and '_' (underscore). However, strings that are not distinguishable from device names are not allowed.
	Structure member name	1 to 8 alphanumeric characters.
	Separator	Period
Constant name	Number of Characters, Valid Characters	Up to 16 alphanumeric characters, beginning with a '#' character. String may also contain special characters '-' (hyphen) and '_' (underscore).
Circuit	Number of Lines in 1 Circuit	Up to 25 lines.
	Number of Instructions in 1 Circuit	Up to 128 instructions.
	Continuation Lines	Up to 3 lines.
	Number of Horizontal Columns	Fixed at 11 columns.
Circuit Comment	Number of Characters	Up to 72 characters.
	Number Registered	For model, F3SP□□-□S, no restriction. For other CPU types, up to 3,000, including sub-comments in the entire executable program.
Subcomment	Number of Characters	Up to 24 characters.
	Number Registered	For model, F3SP□□-□S, no restriction. For other CPU types, up to 3,000, including sub-comments in the entire executable program.
I/O Comment	Number of Characters	Up to 32 characters.
	Number Registered	For block tag name definition reference, up to 5,120. For common tag name definition reference, up to 70,000.
Title	Number of Characters	Up to 24 characters.
Label	Number of Characters	Alphanumeric string beginning with a letter. Special characters '-' (hyphen) and '_' (underscore).
	Number Registered	There is a maximum limit over the entire executable program, which is dependant on the CPU Type.

## A3.5 Shortcut Keys





















Shortcut keys are assigned to certain menus or instructions to allow a user to select menus or enter instructions using the keyboard.

For example, pressing [Ctrl] + [N] selects the [New] menu. The following table lists typical shortcut keys and icons.

Some functions on menus are not assigned with shortcut keys.

Table A3.6 List of Shortcut Keys

Classification	Shortcut Key	Icon	Menu
Menu	Ctrl+N		New
	Ctrl+S		Save, Reflect on File
	Ctrl+Z		Undo
	Ctrl+U		Convert
	Ctrl+X		Cut
	Ctrl+C		Copy
	Ctrl+V		Paste
	Delete		Delete
	Shift+Insert		Insert Line
	Shift+Delete		Delete Lines
	Alt+Enter		Local Device/Properties
	Ctrl+F		Find
	F3		Find Next
	Shift+F3	—	Find Previous
	Ctrl+R		Replace
	Ctrl+Home		Top
	Ctrl+End		Bottom
	Ctrl+I		Display I/O Comment
	Ctrl+K		Display Instruction Number
	Ctrl+A		Display Address
	Ctrl+W		Detail
	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
	Alt+Ctrl+Z		Stop Block
	F1		Help

Classification	Shortcut Key	Icon	Description
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		Vertical Line
	Shift+F8		Delete Connect Line
	F9		Horizontal Line
	Shift+F9		Continuation Line
	F11		TIM
	Shift+F11		CNT
	F12		SET
	Shift+F12		RST
	Ctrl+F7		Circuit Comment
	Ctrl+F8		I/O Comment
	Ctrl+F9		Subcomment
	Ctrl+F6		Label

## ■ Access Keys

Access keys are letters assigned to menu items to allow a user to select a menu using the keyboard. Access keys are displayed as underlined letters on a menu.

For example, pressing the [ALT] key, followed by the [F] key opens the File menu.

Pressing the [H] key in this state selects the Open Project menu.

File	Edit	Find(S)	View	Online	Debug/Mainten
New Project(M)...					Ctrl+Shift+N
Open Project(H)...					Ctrl+Shift+O
Close Project					Ctrl+Shift+C
Save Project					Ctrl+Shift+S
Save Project As					Ctrl+Shift+A
Open Project in Other Formats					▶
Save Project in Other Formats					▶
New...					Ctrl+N
Open					▶
Close					Ctrl+Shift+E
Close All(Z)					Alt+Q
Save					Ctrl+S
Save As...					Ctrl+Shift+W
Print Setup...					
Print...					
Compare Project					Ctrl+5
Compare Window					Ctrl+6
1 WFSample					
2 R5_IM001					
3 A22					
4 UNIT02					
5 UNIT01					
Exit					Alt+X

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**Figure A3.12 Access Keys**

## A3.6 Basic Keys

The following table list the keys used in WideField2 and their functions.

**Table A3.7 Basic Keys**

Key	Purpose
Esc	- Interrupts execution. - Cancels the selection of an instruction.
Tab	- Switches between input areas in a dialog.
Insert	- Switches between overwrite and insert mode.
Ctrl	- Selects a menu item when used in combination with other keys.
Alt	- Selects a menu bar item when used in combination with other keys.
Page Up	- Scrolls the screen up.
Page Down	- Scrolls the screen down.
Delete	- Deletes the element at the cursor. - Deletes 1 character.
Shift	- Enters a shifted character.
Backspace	- Deletes the character to the left of the cursor position.
Enter	- Enters a carriage return character.
\$	- Prefixes a hexadecimal number.
%	- Prefixes in a floating-point number.
"	- Delimits a character string.
_ (underscore)	- Separates a group name and a member name.
. (period)	- Separates a structure name and a member name.
[ ]	- Delimits an array index for a structure array.
/	- Prefixes a local device name.

## A3.7 Types of Screens

This section describes the different types of screens and their restrictions. WideField2 uses the following types of screens.

- **Windows**

Windows can be enlarged or reduced. Multi-window operations are supported.

You can open up to 16 online windows concurrently.

To close a window, select [File]–[Close] from the menu bar.

To close all windows that are currently displayed, select [File]–[Close All].

- **Modeless Dialogs**

Menu operations sometimes move control to a modeless dialog. To close a modeless dialog, click on the corresponding button displayed on the dialog. Commands from menus have no effect on a modeless dialog.

The following table summarizes the types of screen and their limitations.

**Table A3.8 Types of Screens**

Category	Type of Screen	Purpose	Screen Type	Restrictions
Edit Block	Circuit edit screen	Creates circuits for a block	Window	1 screen per block
	Tag name definition edit screen	Performs block tag name definitions.	Window	1 screen per block
	Device usage status display screen	Displays a list of devices used in a block.	Modeless dialog	1 screen per block
Edit Instruction Macro	Circuit edit screen	Creates circuits for a macro.	Window	1 screen per macro
	Tag name definition edit screen	Performs macro tag name definitions.	Window	1 screen per macro
	Device usage status display screen	Displays a list of devices used in a macro.	Modeless dialog	1 screen per macro
Compare file	Program comparison results screen	Displays the comparison results for 2 programs as a ladder and/or a list.	Window	No restrictions
	Project comparison results screen	Displays the comparison results for 2 projects as a list.	Window	No restrictions
System Log or User Log Reference	System log reference screen	Reads the system log file.	Window	Up to 16 screens
	User log reference screen	Reads the user log file.	Window	Up to 16 screens
Edit Group Template	Group template edit screen	Sets the members in a group.	Window	No restrictions
Edit Structure Type Definition	Structure type definition edit screen	Defines the members of a structure type.	Window	No restrictions
Edit Constant Definition	Constant definition edit screen	Defines constant names for constant values	Window	1 screen
Project Configuration	Tag name definition edit screen	Defines tags common to all blocks.	Window	1 screen
	Syntax check results screen	Displays a list of errors detected during program syntax checking.	Window	1 screen
	Project search list screen	Displays the results of a project search.	Window	No restrictions
	Project device usage status display screen	Displays a list of devices used in all blocks.	Modeless dialog	1 screen
Program Monitor	Block operation status display screen	Displays a list of blocks with their execution status.	Window	1 screen
	Circuit monitor screen	Monitors circuits of blocks.	Window	1 screen per block
	Device usage status screen	Displays a list of devices used in a block.	Modeless dialog	1 screen per block
Macro Monitor	Circuit monitor screen	Monitors circuits of macros.	Window	1 screen per macro
	Device usage status screen	Displays a list of devices used in a block.	Modeless dialog	1 screen per macro
Device Monitor	I/O configuration display screen	Displays a list of the I/O configuration	Window	1 screen
	Device monitor screen	Monitors devices displayed as a list.	Window	Up to 16 screens
Registered Device Monitor	Registered device monitor screen	Registers and monitors devices.	Window	1 screen
Alarm Monitor	Alarm monitor screen	Reads the status of CPU alarms	Window	1 screen
Compare Online	Comparison results screen	Displays a list of differences found in comparisons	Window	1 screen
E-Mail	Inbox mails screen	Displays a list of incoming mails	Window	1 screen
Edit CPU Properties	CPU properties edit screen	Edits CPU properties	Window	No restrictions



## A4. Installing and Starting WideField2

This section describes how to install the WideField2 software, how to remove it from the PC when it is no longer required, how to start the WideField2 software, and how to exit from the WideField2 software. It also describes how to install the USB driver.



### CAUTION

Log in with Administrator privileges in order to set up, perform maintenance on, or remove the WideField2 software. Users without Administrator privileges cannot set up, perform maintenance on, or remove the WideField2 software.

In Windows Vista, select **Run as Administrator** in the installer program. Users without Administrator privileges will not be able to install this software.



### CAUTION

When User Account Control (UAC) is enabled in Windows Vista, the installer might not automatically run from the CD-ROM.

If this occurs, use Explorer to select **Setup.exe** on the CD-ROM, and then select **Run as Administrator** to start the installer.



### CAUTION

When performing setup in Windows, it is recommended to install the software in a folder for which restricted users have access rights. If the software is installed in a folder that cannot be accessed by restricted users, such users will be unable to use the WideField2 software.

## A4.1 Setting up WideField2

This section describes how to install and set up the WideField2 software on a personal computer.

### TIP

If you already have an older version of WideField2 installed on a PC, you may upgrade its version. Run the installation program as described below, and select the [Repair] option on the Welcome dialog to upgrade the software version.

### TIP

We describe here WideField2 setup in the Windows XP environment. Take note that there may be some differences in the procedure for different operating systems.



### CAUTION

Exit from all other applications such as virus protection software before installing the WideField2 software.

## ◆ Procedure ◆

### (1) Insert the product CD-ROM into the CD-ROM drive.

⇒ The installation program starts automatically.

### TIP

In Windows Vista, select **Run as Administrator**.

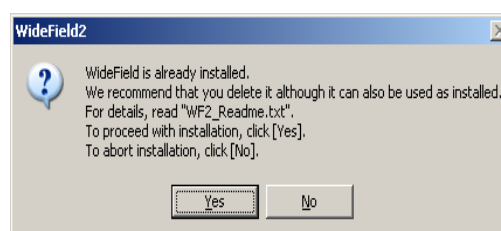
### TIP

Start the setup, and you can choose the language displayed and used on WideField2 after installing it.

### TIP

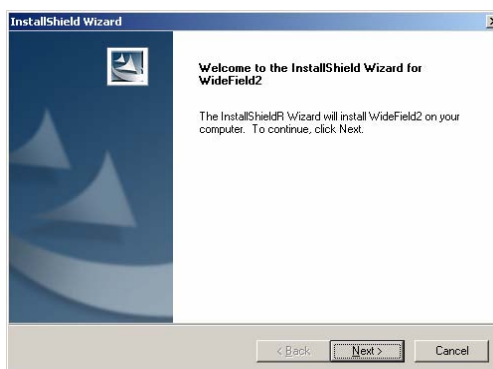
If an older version WideField (SF610) is already installed on the system, a confirmation dialog is displayed on the screen. Click [Yes] button to continue with installation.

⇒ The WideField2 InstallShield Wizard runs and displays the “Welcome to the InstallShield Wizard for WideField2”



Step (1)

A0402\_01.VSD



Step (2)

A0402\_02.VSD

**(2) Click [Next].**

⇒ The License Agreement dialog box opens.

**(3) Click [Yes].****TIP**

A license agreement document is provided with the product. Click [Yes] only if you have carefully read the license agreement and agree with the terms therein. Clicking [No] aborts the installation.

⇒ The Customer Information dialog box will be displayed.

**(4) Enter the CD-KEY and click [Next].****TIP**

The CD-KEY is given on the registration card provided with the product.

⇒ The Choose Destination Location dialog box is displayed.

**(5) Select the installation destination and click [Next].**

⇒ The Select Components dialog box is displayed.

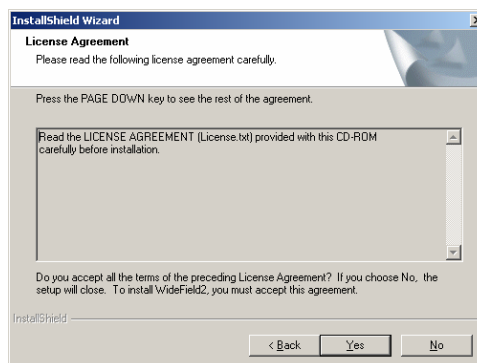
**(6) Select the components you wish to install and click [Next].****TIP**

The components available for installation include program files (WideField2 software and sample program files), instruction manuals and I/O module help files. Turn on the checkboxes for the components you wish to install.

⇒ Installation begins.

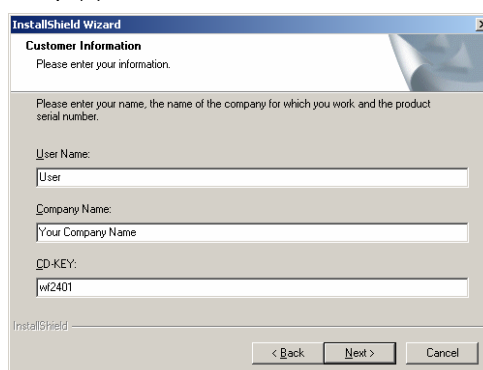
**TIP**

Restart the computer after installation ends.



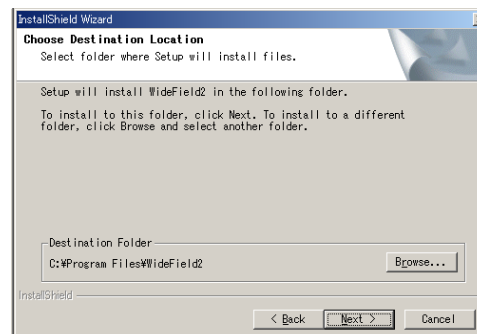
Step (3)

A0402\_03.VSD



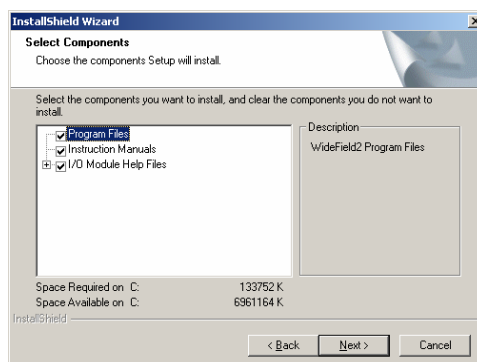
Step (4)

A0402\_04.VSD



Step (5)

A0402\_05.VSD



Step (6)

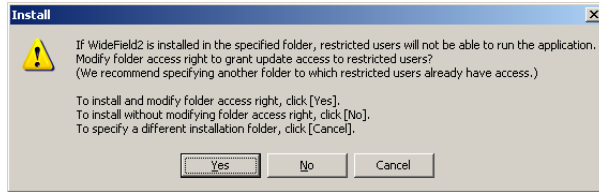
A0402\_06.VSD

## ■ Changing Folder Security

Windows allows a user to set access rights on folders. The WideField2 software should be installed in a folder for which restricted users have access rights.

You can also change the access right for an installation folder during the installation.

If you specify a folder for which restricted users do not have access right as the installation destination folder, the following message will be displayed.



A04\_05.VSD

**Figure A4.1 Changing Access Rights**

- [Yes] button  
Adds access rights to folder for restricted users, and allows restricted users to continue with installation.
- [No] button  
Continues installation without changing folder security.  
In this case, restricted users will not be able to run the WideField2 software.
- [Cancel] button  
Returns to an earlier screen to specify the installation destination folder.



### CAUTION

WideField2 frequently accesses system files in the folder where it is installed. Therefore, if restricted users are not granted update permission for the installation folder, they cannot use the WideField2 software.

We do not warrant that the operating system or other applications will operate correctly if and after folder security is changed.

## A4.2 Removing WideField2

This section describes how to remove the WideField2 software

### TIP

Removing the WideField2 software does not automatically delete project files or other application files previously created by a user. It also does not delete the USB driver software.

To remove WideField2 from your computer, use the following procedure.

### ◆ Procedure ◆

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

### TIP

In Windows Vista, select **Run as Administrator**.

- (2) Using Explorer or some other program, move to the root folder on the CD-ROM, and browse the files in the folder.

- (3) Select and run SETUP.EXE

### TIP

If your PC is running Windows Vista operating system, select [Run as Administrator].

- ⇒ The InstallShield wizard runs and displays the Welcome dialog box if WideField2 is already installed on your PC.

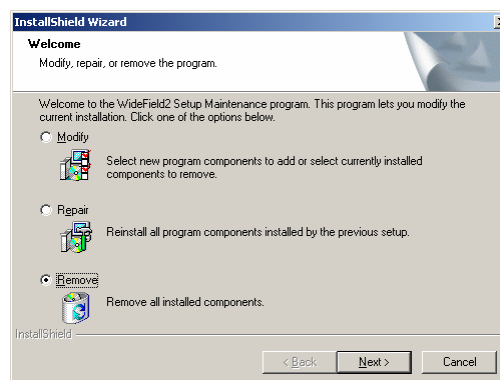
- (4) Turn on the [Remove] option button and click [Next].

- ⇒ The Confirm File Deletion dialog box will be displayed.

- (5) Click [OK].

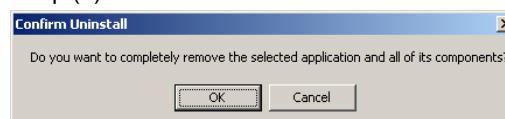
- ⇒ File deletion begins. The Maintenance Complete dialog box will be displayed when the program has been removed.

- (6) Click [Finish].



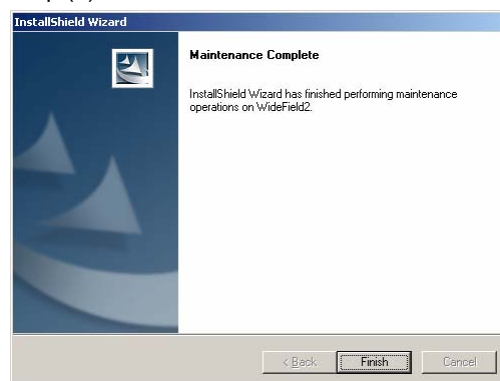
Step (4)

A0402\_07.VSD



Step (5)

A0402\_08.VSD



Step (6)

A0402\_09.VSD

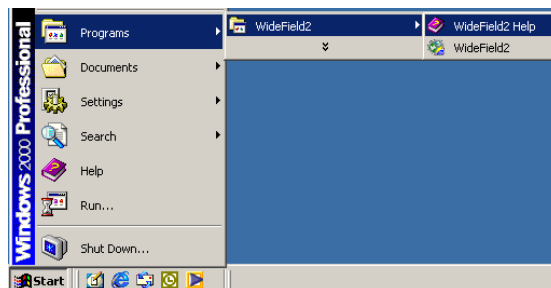
## A4.3 Starting WideField2

This section describes how to start the WideField2 software.

### ◆ Procedure ◆

- (1) Select [Programs]–[WideField2]–  
[WideField2] from the Start menu.

⇒ WideField2 runs.



Step (1)

A04\_04.VSD



### CAUTION

Do not run the WideField2 software and the WideField (SF610) software concurrently.

The following restrictions apply if you have multiple WideField2 applications running concurrently:

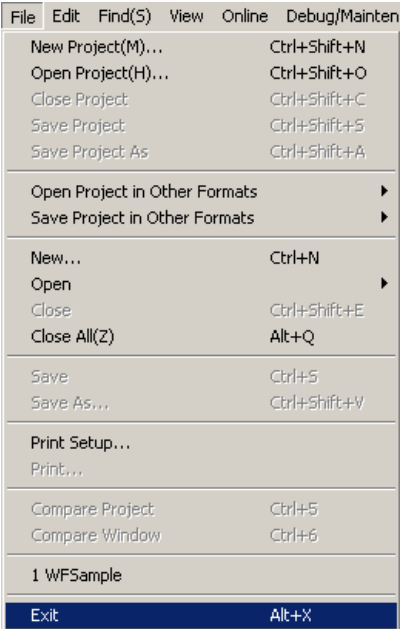
- You cannot open projects with the same name concurrently.
- Only one WideField2 application can connect online to the FA-M3.
- You can change the environment setup in each WideField2 application. Each WideField2 application will operate according to its respective environment setup until you exit from the application. When you initiate a new WideField2 application, it uses the environment setup of the WideField2 application most recently terminated.

# A4.4 Exiting from WideField2

This section describes how to exit from WideField2. The required procedure is given below.

## ◆ Procedure ◆

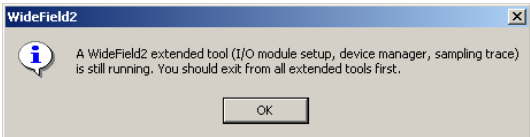
- (1) Select [File]–[Exit] from the menu bar.  
 Alternatively, click the close button on the title bar.  
 ⇒ WideField2 exits.



Step (1) A0404\_01.VSD

## CAUTION

If you attempt to exit from WideField2 with an extended tool (I/O module setup, device manager, sampling trace tool) running, WideField2 will display the following dialog box and abort exit processing.



A0404\_02.VSD

Figure A4.2 Confirmation Dialog Box

You must exit from all extended tools before exiting from WideField2.

## A4.5 Installing USB Driver

This section describes how to install the USB driver software.



### CAUTION

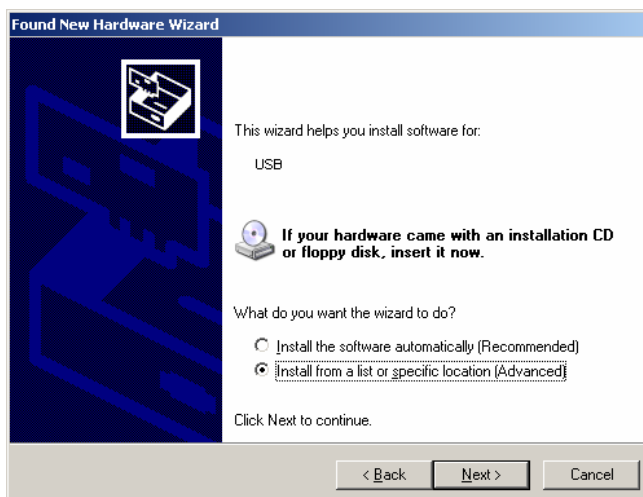
The USB driver software is installed when the PC detects a sequence CPU with USB support.

### ◆ Procedure ◆

- (1) Connect the sequence CPU with USB support to the PC using a USB cable.

⇒ The Found New Hardware Wizard is displayed.

- (2) Select [Install from a list or specific location (Advanced)], and click [Next].



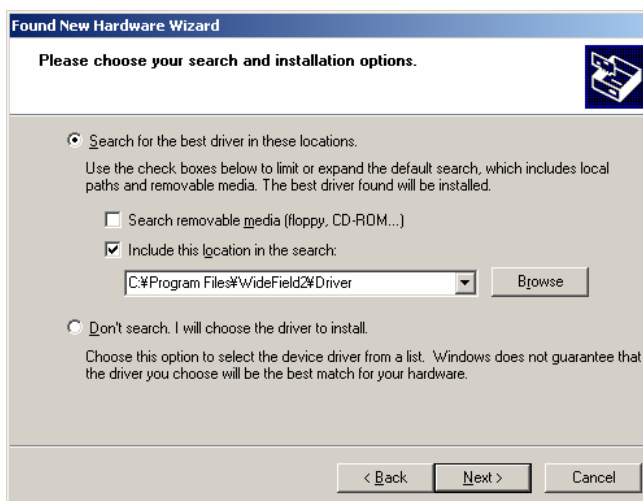
Step (2)

A04\_05.VSD

- (3) Select [Search for the best driver in these locations], turn on the [Include this location in the search] checkbox, and in the text box enter "<WideField2 installed folder>\Driver". Click [Next].

⇒ Installation begins.

- (4) Click [Finish] to exit from installation.



Step (3)

A04\_06.VSD



### CAUTION

Do not connect the same PC to two or more FA-M3 units using USB cables as only the first connected USB port can be used.

The USB driver of the second and subsequent connected USB ports will not be correctly detected. To rectify the problem, remove and reattach the USB cable.



**FA-M3**

**FA-M3 Programming Tool WideField2**

**PART-B Operation Manual**

**IM 34M6Q15-01E 4th Edition**

This manual describes user operations in WideField2, including program creation, transfer and monitoring.



# B1. Initial Setup of WideField2

This chapter describes the initial setup of WideField2.

While you can use WideField2 with its default settings, you may want to register often used icons, change color and input settings, or otherwise customize WideField2 to your specific needs and preferences.

## B1.1 WideField2 System Files and Generated Data

The figure below shows the sub-folders and files that are generated in the WideField2 folder during installation.

These files generated by WideField2 will be repeatedly deleted and generated automatically during operation.

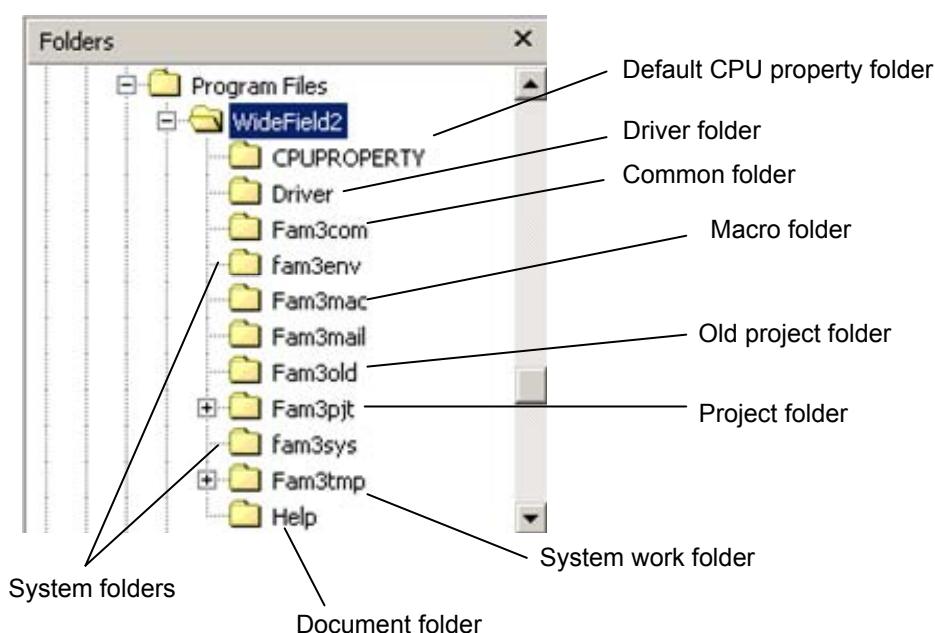


Figure B1.1 Folders Generated by WideField2

B0101\_01.VSD



### CAUTION

Always exit from WideField2 before deleting any folder or file from the WideField2 folder. Do not delete files in the WideField2 main folder, or files in system folders. Otherwise WideField2 may fail to start.

## B1.2 Environment Setup

To set up the operation environment of WideField2, use the Set up Environment dialog box.

You can customize the following environment setup. Different setup takes effect at different times after setup is performed on the Set up Environment dialog window.

**Table B1.1 Environment Setup**

Settings	Description	Takes effect when:	Caution
Folder setup (Folder Setup tab)	Defines the development environment such as locations for storing programs.	Basically when a new screen is opened.	Close all screens (revert to initial state of WideField2) before changing folder settings.
Communication setup (Communications Setup tab)	Defines communication destinations and conditions. Also defines communications conditions for the device manager tool, sampling trace tool, and FA link setup tool.	When you next connect to FA-M3.	Disconnect from FA-M3 before changing communication settings.
Circuit display/input setup (Circuit Display/Input tab)	Defines use of colors for circuit components, grid lines and various program edit window elements. Defines input and display modes in the ladder program edit window.	Immediately on all displayed screens.	
Online comment input (Online Comment Input tab)	Defines operating restrictions of the ladder program editor and program monitor, as well as references for various comments and tag name definitions during online editing.	When you next connect to FA-M3.	To change settings for online comment input, you must first disconnect from FA-M3 if a connection is active.
Program syntax check setup (Program Syntax Check tab)	Defines the severity of errors detected during program syntax checking.	When you next perform a program syntax check.	
Toolbar setup (Toolbar Setup tab)	Registers icons to the toolbar.	Immediately	
Email setup (Email Setup tab)	Defines the Email environment.	Immediately	
File Comparison	Defines comparison method, comparison targets, and display color for the file comparison function.	When you next perform a comparison.	

## B1.2.1 Basic Operations with the Set up Environment Dialog Box

This section describes how to open the Set up Environment dialog box and how to revert to default environment settings.

First, open the Set up Environment dialog box. Next, click [Default] to revert to default environment settings. The relevant procedure is given below.

### ◆ Procedure ◆

#### (1) Select [Tools]–[Set up Environment] from the menu bar.

⇒ The Set up Environment dialog box opens.

##### TIP

To select an individual Set up Environment dialog window, click the appropriate tab such as Folder Setup or Communications Setup.

##### SEE ALSO

For details on each tab, see Sections

- B1.2.2, "Folder Setup;"
- B1.2.3, "Communication Setup;"
- B1.2.4, "Circuit Display/Input Setup;"
- B1.2.5, "Online Comment Input;"
- B1.2.6, "Program Syntax Check Setup;"
- B1.2.7, "Toolbar Setup;"
- B1.2.8, "Email Setup" and
- B1.2.9, "File Comparison Setup"

#### (2) Click [Default].

⇒ A confirmation dialog box opens.

#### (3) Click [Yes].

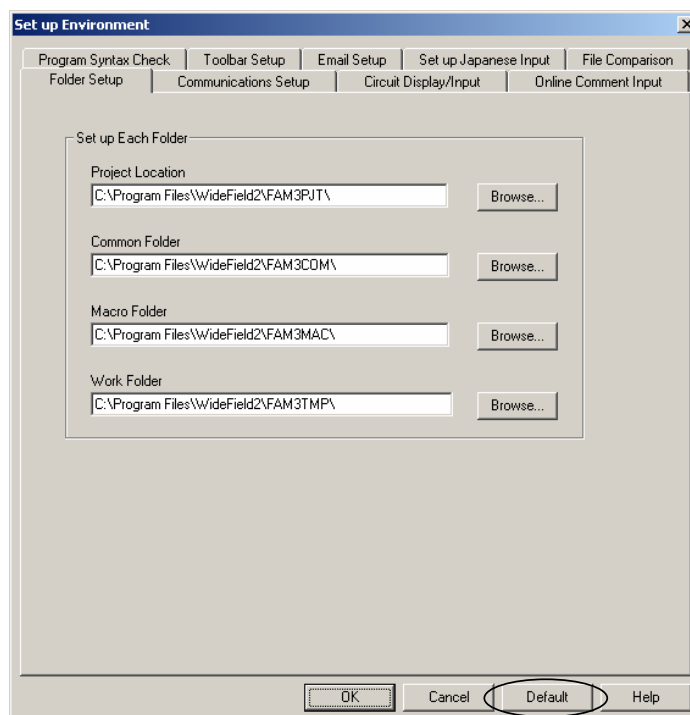
⇒ You are returned to the Set up Environment dialog box displaying factory default settings or the settings in effect when the Set up Environment dialog box was opened.

#### (4) Click [OK].

⇒ The settings are saved.

##### TIP

Clicking [Cancel] discards all changes made to the settings.



Step (2)

B0102\_01.V



Step (3)

B0102\_02.VSD

## B1.2.2 Folder Setup

Use the Folder Setup tab to specify folders for storing data.

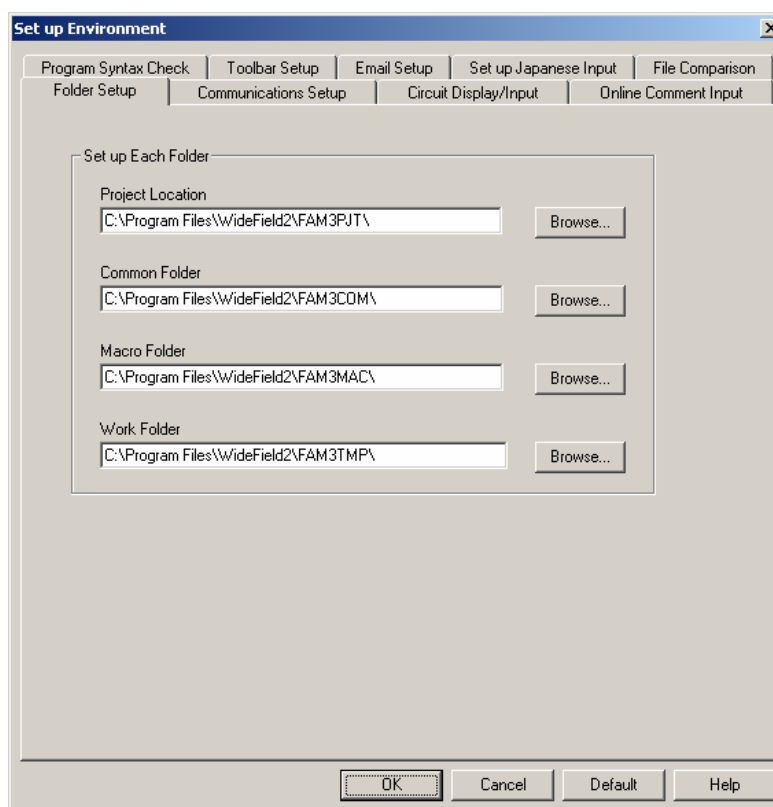


Figure B1.2 Folder Setup Tab

B0102\_12.VSD

### ■ Folders to be Defined

There are four folders to be set up. The table below lists the purpose, default setting of each folder, as well as, the operation when the [Default] button is clicked.

Table B1.2 Folder Settings

Folder	Purpose	System Default	Value When [Default] Is Clicked
Project Location	The root folder for creating a project. A folder with the same name as the project will be created under this project location.	\Fam3pjt	Value current when the Set up Environment dialog box was opened.
Common Folder	Folder for storing the system log file, user log file, group template files and structure type definition files.	\Fam3com	Value current when the Set up Environment dialog box was opened.
Macro Folder	Master registry for instruction macros.	\Fam3mac	Value current when the Set up Environment dialog box was opened.
Work Folder	Folder for storing temporary work files created during editing.	\Fam3tmp	Value current when the Set up Environment dialog box was opened.

## ■ How to Set Up the Folders

There are two ways to define the required folders.

### ● Entering a Folder Name Using Keyboard

To enter a folder name from the keyboard, click the text box for the folder to be defined, delete all characters in the text box, and enter a new folder name from the keyboard.

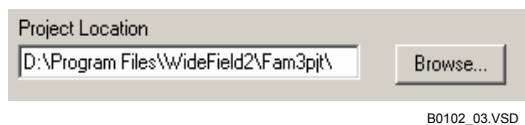


Figure B1.3 Entering a Folder Name (for [Project Location]) from Keyboard

### ● Selecting a Folder Name Using the [Browse] Button

To select a folder name using the [Browse] button, click the [Browse] button beside the text box to open the Folder Selection dialog box. Then, click the desired folder, and click [OK].

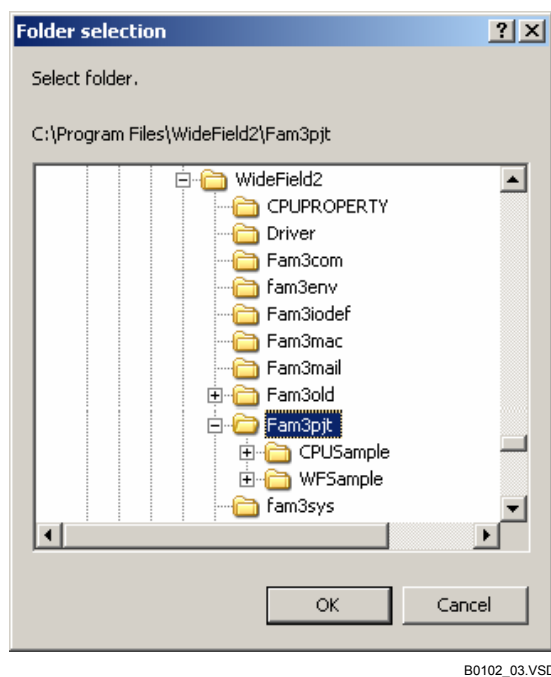
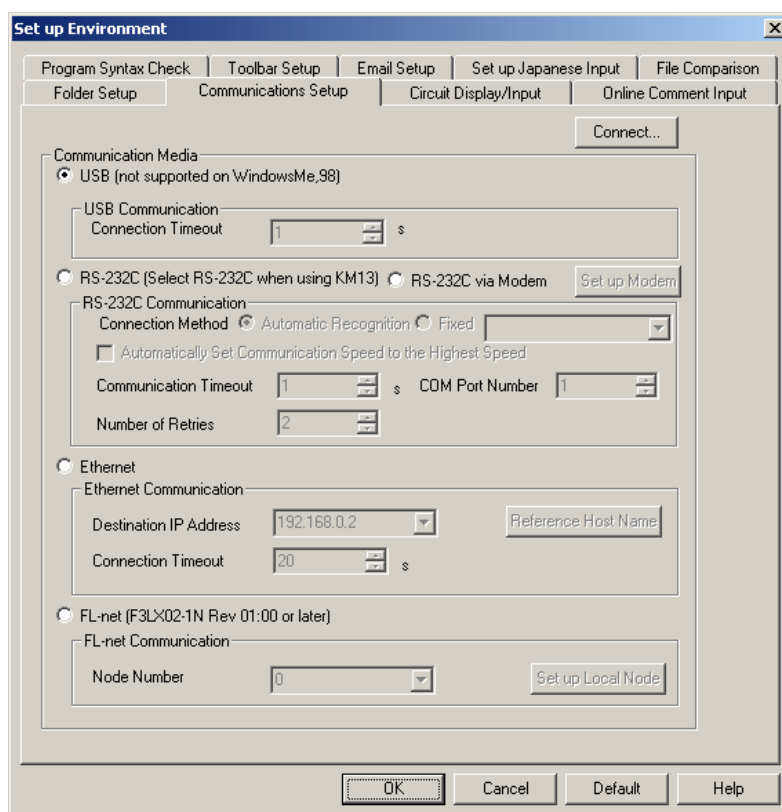


Figure B1.4 Folder Selection Dialog Box

## B1.2.3 Communication Setup

Use the Communications Setup tab to define communications with the FA-M3.



B0102\_13.VSD

Figure B1.5 Communications Setup Tab



## ■ Communications Setup Tab Settings

Each communication medium has different settings. You must first select a communication medium before modifying its corresponding communications settings.

### ◆ Communication Media

Select the communication medium by turning on one of the following option buttons: [USB], [RS-232C], [RS-232C via Modem], [Ethernet] and [FL-net].

#### TIP

Modified settings are reflected at the next connection to the FA-M3.



#### CAUTION

Connection to FL-net is available for FL-net (OPCN-2) Interface Module revision 01:00 or later.

#### ● [USB]

If [USB] is selected as communication medium, no other setting is required on this dialog.

#### ● [RS-232C]

If [RS-232C] is selected as communication medium, perform the following procedure:

- If you want to match the communications mode of the CPU, turn on the [Automatic Recognition] option button.
- Otherwise, turn on the [Fixed] option button.

If [RS-232C via Modem] is selected as communication medium, ignore the [Connection Method] setting.

The default connection method is [Automatic Recognition].

#### TIP

- If [Automatic Recognition] is selected, connection to FA-M3 takes some time.
- If you select [Fixed], you have to select a communications mode from the communications mode drop-down list. Select [Fixed] only if you know the current communications mode of the CPU.

#### Communication Timeout, Number of Retries, and COM Port Number

If the communications medium is [RS-232C], set up [Communication Timeout], [Number of Retries], and [COM Port Number]. Normally, the default settings should be used.

If communications medium is [RS-232C via Modem], set up the [Communication Timeout] and [Number of Retries] settings for ENQ-ACK communication.

By default, [Communication Timeout] is 1 second, [Number of Retries] is 2, and [COM Port Number] is 1.

You can set up RS-232C communication so that the communication speed is automatically set to the highest speed when the connection starts. To allow automatic switching, turn on the [Automatically Set Communication Speed to Highest Speed] option button. The default setting is off; when the option button is off, communication will be performed at the speed established when the connection is made.

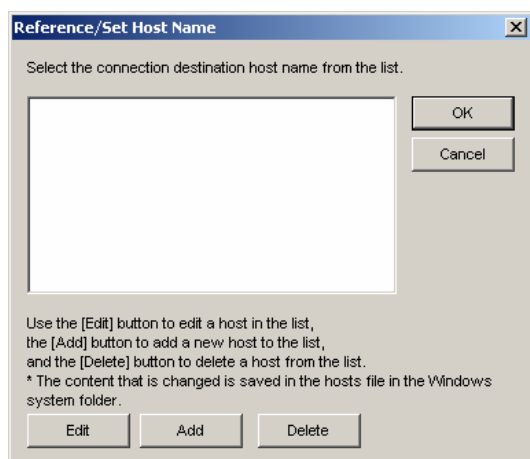
### ● [Ethernet]

If the communication medium is set to [Ethernet], specify [Destination IP Address].

You can define the [Destination IP Address] as either a host name or an IP address. You can select an IP address from the drop-down list containing previously defined IP addresses (up to 1024 addresses).

#### TIP

When the [Reference Host Name] button is clicked, you can view and set up host names for WideField2 specified in the hosts file in Windows.

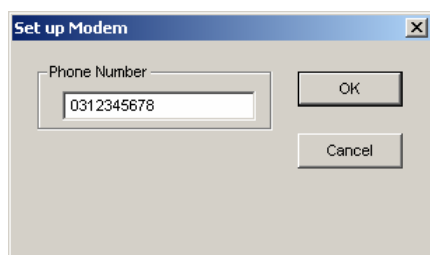


B0102\_17.VSD

For Ethernet communication, specify [Connection Timeout]. The default setting is 20 seconds.

### ● [RS-232C via Modem]

If the communication medium is [RS-232C via Modem], click the [Set up Modem] button to open the Set up Modem dialog box, and enter the destination phone number (numerical digits only).



B0102\_06.VSD

**Figure B1.6 Set up Modem Dialog Box**



### CAUTION

If you use a modem, define communications speed and other communications settings by selecting [Control Panel]–[Phone and Modem Options], followed by the [Modems] tab in Windows.

### SEE ALSO

For details on modem settings, see the Windows manual, Windows help, or the modem manual provided by the manufacturer.

## ● [FL-net]

When using FL-net as communication medium, you can set up the PC in the same way as specifying the destination when using Ethernet, or you can also set up the PC in another way.

Setting up the PC involves specifying the IP address and the node number of the PC.

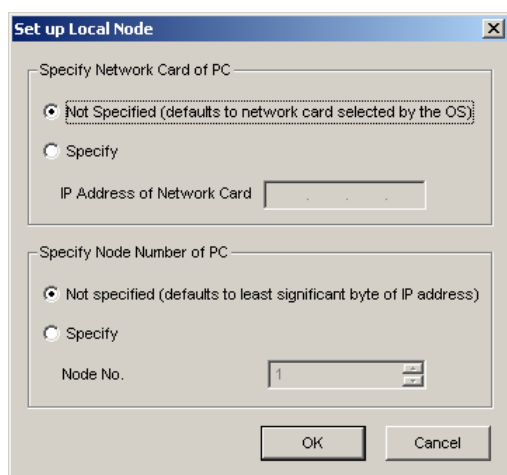
### (1) Specifying the IP address

If multiple network cards are installed in the PC, you can specify which network card is to be used by specifying the IP address of the network card (but not by specifying the host name). If only one network card is installed or the network card with the highest priority is to be used, you need not specify the IP address.

### (2) Specifying the node number

You can specify a node number (1 to 254), independent of the IP address of the PC. If no node number is specified, the least significant byte of the network card is used as the node number. When performing a temporary connection of the PC to the FL-net, you can specify a node number, independent of the IP address. You need to set different node numbers for the PC and FA-M3 so you should specify a number that is usually not used, such as a number close to 254.

Click the [Set up Local Node] button, and specify the IP address (numbers only) of the PC and the node number (1-254) on the displayed Set up Local Node dialog box. By default, the [Not Specified] option button is selected for both the PC network card and PC node number sections on the Set up Local Node dialog box.



B010203\_02.VSD

**Figure B1.7 Set up Local Node Dialog Box**

- In FL-net, the least significant byte of the destination IP address is taken as the node number of the destination (1-254) so you should specify a value that is different from the node number of the PC.



## CAUTION

If multiple network cards are installed in a PC and used as FL-net nodes, operation will not work properly.

## B1.2.4 Circuit Display/Input Setup

Use the Circuit Display/Input tab to specify colors and character sizes for circuit components, as well as the program input mode and display mode.

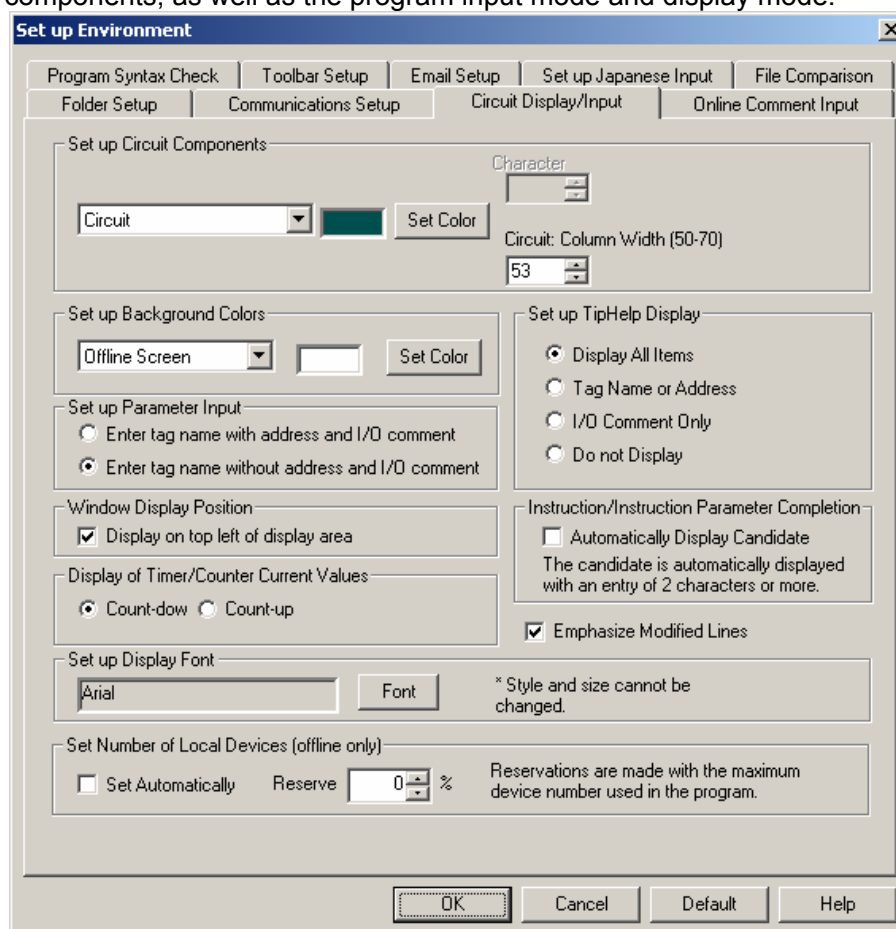


Figure B1.8 Circuit Display/Input Tab

### ■ Circuit Display/Input Tab

#### ● Set up Circuit Components

You can define the color and character size for each circuit component. What items can be defined depends on individual circuit components as shown below.

Table B1.3 Settings

Components	Color Setting	Other settings (default values are given in parentheses)
Circuit	Customizable	Column width (53)
Instruction Parameter	Customizable	Character size (11)
Circuit Comment	Customizable	Character size (11)
Subcomment	Customizable	Character size (10)
I/O Comment	Customizable	Character size (10), Number of lines displayed (2)
ON Indicator	Customizable	
Increasing Data Display Color	Customizable	
Decreasing Data Display Color	Customizable	
Local Device	Customizable	
Undefined Tag Name	Customizable	
Label	Customizable	
Line No.	Customizable	
Instruction No.	Customizable	
Modified Line (line number)	Customizable	
Modified Line (circuit)	Customizable	

**TIP**

- You can use circuit comments to add function names, etc. to a ladder program. You can enter up to 72 characters.
- You can use subcomments to insert comments in the right side margin of a ladder program. You can enter up to 24 characters.
- You can use I/O comments to add comments to devices. You can enter up to 32 characters.
- Increasing/Decreasing Data Display Color are display functions for recognizing changes in device values shown on the program monitor.

**SEE ALSO**

For details on circuit comments, subcomments and or I/O comments, see Chapter A3, "Basic Specifications."

- Color setting

To change a color setting, select a component from the drop down list, click the [Set Color] button to display the Color dialog box, select a color, and click [OK].



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**Figure B1.9 Set Color Dialog Box**

- To change character size or number of lines displayed, use the [Character Size] or [Display Lines] spin button respectively.

## ● Set up Background Colors

You can specify the background color of ladder program edit windows. Individual settings apply to different windows, as shown in the table below. The set up procedure is similar to that for circuit component colors.

**Table B1.4 Settings and Applicable Windows**

Settings	Applicable Windows
Offline	Edit Block window
	Edit Macro window
Online	Block Monitor window
	Macro Monitor window
Grid Color	All ladder windows
Cursor	All ladder windows
Index View	All ladder windows

## ● Set up Parameter Input

You can enable or disable the input of tag name definition information at the time of parameter input. The behavior of parameter input depends on the settings as shown below.

**Table B1.5 Specifying Parameter Input Method**

Settings	Operation
Enter tag name with address and I/O comment	The Address Assignment dialog box for address or I/O comment assignment opens when you enter a tag name or an address.
Enter tag name without address and I/O comment	The Address Assignment dialog box does not open when you enter a tag name. However, it is displayed when you enter a new tag name in online editing.

## ● Window Display Position

If you turn on the [Display on top left of display area] checkbox, windows are placed at the top left of the display when opened.

## ● Set up TipHelp Display

You can specify how TipHelp is to be displayed. Details are given in the table below.

**Table B1.6 TipHelp Display Setting**

Settings	Operation
Display All Items	Corresponding tag name, address, and I/O comment are displayed.
Tag Name or Address	Addresses are also displayed when tag names are displayed and vice versa.
I/O Comment Only	Only I/O comments are displayed.
Do not Display	No TipHelp is displayed.

### TIP

TipHelp is tag name definition, constant definition, instruction and other information text displayed when you place the mouse cursor over a circuit component for a certain time.

### SEE ALSO

For details on TipHelp, see Section B4.2.1, "Ladder Program Edit Screen Layout."

## ● Instruction/Instruction Parameter Completion

This is an input completion (auto completion) function for assisting the user when entering instructions/instruction parameters while editing a program. It can be set to automatically display candidates when two or more characters have been entered.

### SEE ALSO

For details about the input completion function, see Section B4.2.6, "Entering Instructions Using Input Completion Function" and Section B4.2.7, "Entering Instruction Parameters Using Input Completion Function".

## ● Emphasize Modified Lines

You can set whether to identify circuits being edited in a program, as well as circuits that are incomplete due to conversion error.

## ● Display of Timer/Counter Current Values

You can specify whether to display current values of timers (T) and counters (C) as count-up values or count-down values on monitor screens. When changing the current value of a timer or counter, you can also enter the new value according to the selected display mode (count-up or count-down).

**Table B1.7 Display of Timer/Counter Current Values on Monitor Screens**

Setting	Operation
Count-down	When a timer (T) or counter (C) is started, its current value changes from its preset value to 0.
Count-up	When a timer (T) or counter (C) is started, its current value changes from 0 to its preset value.



### CAUTION

All timers (T) and counters (C) of FA-M3 operate internally as count-down timers or counters, regardless of its display setup.

## ● Set up Display Font

You can set the display font on the program edit/program monitor screens.

You can set only the type of font. You cannot change the style.

To change the font size, specify the size in [Set up Circuit Components].



### CAUTION

Comments might not be displayed properly in the language mode selected on WideField2 depending on the font type selected.

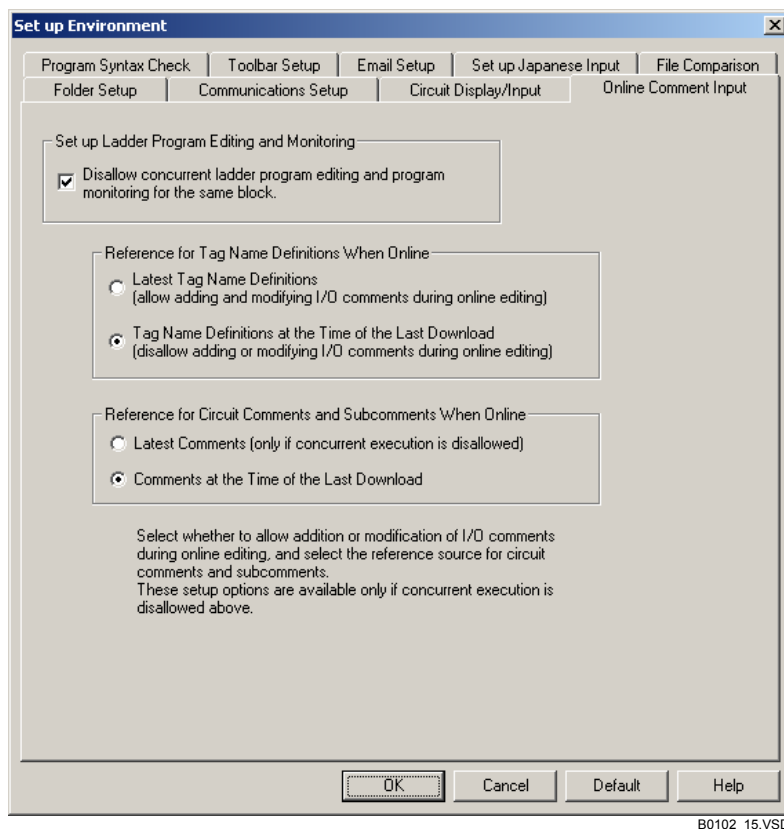
## ● Set Number of Local Devices

When using local devices in a program, this function automatically sets the number of local devices included in the block properties.

In addition, you can specify a reserve area automatically reserved for this number. For example, if you set the reserve area to 20% and the largest device number used in the program is /D00100, reservations are ensured for /D00001 ~ /D00120. However, since the number of reservations ensured is for the number of local devices that can be set, you should set the reserve area only as a guide.

## B1.2.5 Online Comment Input

Use the [Online Comment Input] tab to specify operating restrictions for ladder program editing and program monitoring. You can also specify the reference source for comments and the reference source for tag name definitions when connected online.



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**Figure B1.10 Online Comment Input Tab**

The following settings are available.

**Table B1.8 Setup Items**

Item	Default
Disallow concurrent ladder program editing and program monitoring for the same block	Disallowed
Reference for Tag Name Definitions When Online	Latest Tag Name Definitions
Reference for Circuit Comments and Subcomments When Online	Comments at the Time of the Last Download



## ● Set up Ladder Program Editing and Monitoring

Turning on the [Disallow concurrent ladder program editing and program monitoring for the same block] checkbox disallows concurrent execution; turning it off allows concurrent execution. When disallowed, you cannot open the common tag name definition window under online and offline conditions concurrently.

### TIP

This setting also applies to a block which is opened from the [Results of Program Syntax Checking], [Results of Project Search], [Results of Find Instruction in Project Operation], [Alarm Monitor], [Results of Comparison] (for File and CPU comparison, as well as CPU and ROM comparison) and other windows.

If the [Disallow concurrent ladder program editing and program monitoring for the same block] checkbox is turned on, any attempt to open the same block for ladder program editing and program monitoring at the same time would fail with the following messages.

**Table B1.9 Error Messages for Illegal Concurrent Startup Operations**

Action	Error Messages
Opening for ladder program editing	You cannot open an online screen and an offline screen concurrently.
Opening using program monitor	You cannot open an online screen and an offline screen concurrently.

## ● Reference for Tag Name Definitions When Online

You can specify the tag name definition to be referenced during circuit monitoring or online editing when connected online.

**Table B1.10 Reference for Tag Name Definitions When Online**

Settings	Operation
Latest Tag Name Definitions	Application refers to the tag name definitions within the project. Addition of new tag name definitions and editing of I/O comments are allowed.
Tag Name Definitions at the Time of the Last Download	Application refers to the tag name definitions current when downloading was last performed. Addition of new tag name definitions and editing of I/O comments are not allowed.

### TIP

If the [Disallow concurrent ladder program editing and program monitoring for the same block] checkbox is turned off, screen controls in this group are disabled, and the [Tag Name Definitions at the Time of the Last Download] option is selected by default.

## ● Reference for Circuit Comments and Subcomments When Online

You can specify the reference source for circuit comments and subcomments for circuit monitoring or online editing when connected online.

**Table B1.11 Reference for Circuit Comments and Subcomments When Online**

Settings	Operation
Latest Comments	Application refers to comments within the project.
Comments at the Time of the Last Download	Application refers to the comments current when downloading was last performed.

### TIP

If the [Disallow concurrent ladder program editing and program monitoring for the same block] checkbox is turned off, all screen controls in this group are disabled, and the [Comments at the Time of the Last Download] option is selected by default.

**CAUTION**

---

If circuit comments and subcomments are downloaded to the CPU, then the application will refer to the downloaded comments regardless of the settings under [Reference for Circuit Comments and Subcomments When Online].

---

## B1.2.6 Program Syntax Check Setup

Use the Program Syntax Check tab to change the severity of an error or disable/enable syntax check.

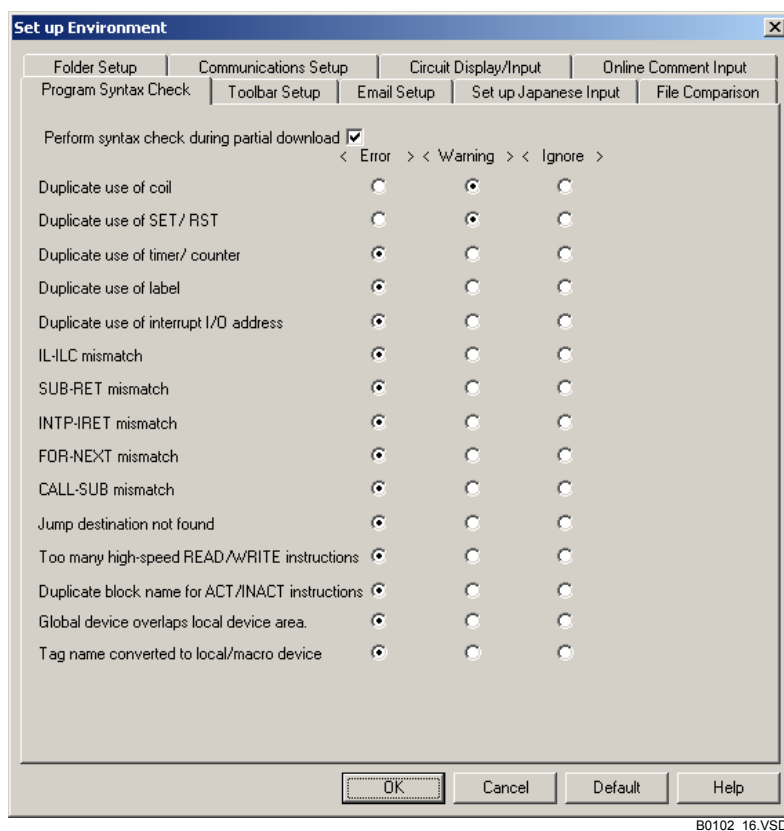


Figure B1.11 Program Syntax Check Tab

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## ■ Syntax Check Settings

The following syntax check settings are available.

Table B1.12 Syntax Check Settings

Item	Default
Duplicate use of coil	Warning
Duplicate use of SET/RST	Warning
Duplicate use of timer/counter	Error
Duplicate use of label	Error
Duplicate use of interrupt I/O address	Error
IL-ILC (interlock start - end) mismatch	Error
SUB-RET (subroutine start - end) mismatch	Error
INTP-IRET (interrupt routine start - end) mismatch	Error
FOR-NEXT (loop start - end) mismatch	Error
CALL-SUB (subroutine source - destination) mismatch	Error
Jump destination not found.	Error
Too many high-speed READ/WRITE instructions.	Error
Duplicate block name for ACT/INACT instructions	Error
Global device overlaps local device area.	Error
Tag name converted to local/macro device.	Error

## ■ Enabling/Disabling Syntax Check

To enable syntax check for an item, turn on the [Error] or [Warning] option button for that item. To disable syntax check for an item, turn on the [Ignore] option button for that item.

## ■ Syntax Check during Partial Downloading

Turning on the [Run program check for partial download] checkbox performs syntax check on project basis; turning it off performs syntax check on block basis.

The [Run program check for partial download] setting is applicable only to partial downloading.

### **SEE ALSO**

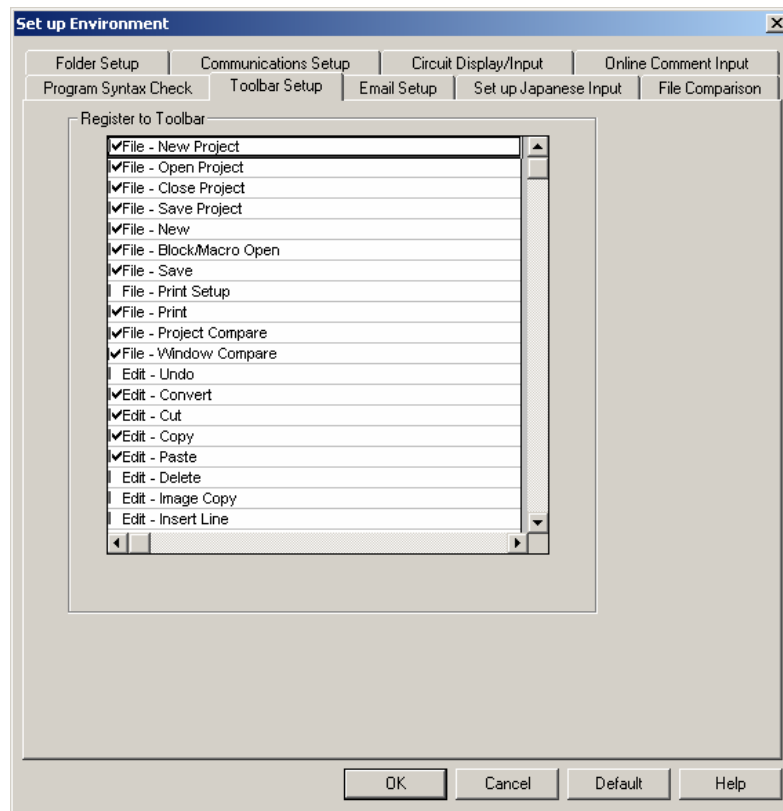
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For details on syntax check, see Section B7.2.1, "Checking Programs."

---

## B1.2.7 Toolbar Setup

Use the Toolbar Setup tab to specify instructions to be added to the toolbar.




























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











Figure B1.12 Toolbar Setup Tab


































## ■ Menu Instructions and Icons

The table below lists menu commands (commands which can be selected and executed from the menu bar) and their icons which you can add to the toolbar.

**Table B1.13 Menu Instructions and their Icons which You can Add to the Toolbar**

Menu Bar Item	Menu Command	Icons
File	New Project	
	Open Project	
	Close Project	
	Save Project	
	New	
	Open – Block/Macro	
	Save	
	Print Setup	
	Print	
	Compare Project	
	Compare Window	
Edit	Undo	
	Convert	
	Cut	
	Copy	
	Paste	
	Delete	
	Image Copy	
	Insert Line	
	Delete Lines	
	Temporary Delete	
	Undo Temporary Delete	
	Page Break	
	Hide Circuits	
	Show Circuits	
	Block Tag Name Definition	
	Local Device/Properties	

Menu bar	Menu instructions	Icons
Find	Find	
	Find Instruction	
	Find Next	
	Jump – Top	
	Jump – Bottom	
	Jump – Line	
	Jump – Instruction Number	
	Replace	
	Device Usage Status	
View	Action Monitor	
	Project Window	
	Display I/O Comment	
	Display Instruction Number	
	Display Address	
	Redraw	
	Zoom – Zoom Up	
	Zoom – Zoom Down	
	Detail	
	Display Format – Decimal	
	Display Format – Hexadecimal	
	Display Format – Character String	
	Display Format – Floating Point	
	Display Format – Binary	
	Suspend Monitoring	
	Resume Monitoring	
Project	Check Program	
	Find in Project	
	Find Instruction in Project	
	Replace in Project	
	Change I/O Installation Position	
	Project Device Usage Status	

Menu bar	Menu instructions	Icons
Online	Connect	
	Disconnect	
	Program Monitor	
	Configuration	
	Operating Mode – Run	
	Operating Mode – Stop	
	Operating Mode – Debug	
	Download – Project	
	Upload – Project	
	Compare File and CPU – Project	
Debug/ Maintenance	Forced Set	
	Forced Reset	
	Cancel Forced Set/Reset	
	Cancel All Forced Set/Reset	
	Change Word Data	
	Change Long Word Data	
	Change Current Value of Timer/Counter	
	Change Preset Value of Timer/Counter	
	Start Online Editing	
	Start Block	
	Stop Block	
	Stop Refreshing – Stop Input	
	Stop Refreshing – Stop Output	
	Stop Refreshing – Stop Shared	
	Stop Refreshing – Stop Link	
	Restart Refreshing	
	Display Alarm	
	Cancel Alarm	
	Display System Log	
	Display User Log	
	Clear Log	
Tool	Set up Environment	
Help	WideField2 Help	



## ■ Registering Icons

To register an icon to the toolbar, turn on the checkbox for the corresponding menu command. To remove or deregister an icon, turn off the checkbox for the corresponding menu command.

## B1.2.8 Email Setup

Use the Email Setup tab to set up the remote OME Email environment.

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Figure B1.13 Email Setup Tab

### ■ Recipient Information Settings

Set the Email recipient information: CPU mail address, CPU number, module password, and program password.

### ■ Sender Information Settings

Specify the mail address of WideField2, the server address, and dialup settings.

#### SEE ALSO

For details on the Email Setup tab, see Section B33.4.1, "Email Environment Setup."



#### CAUTION

The remote OME Email function provides standard Email send/receive service based on SMTP/POP. Thus, you may also send Emails to or receive mails from systems other than the FA-M3. However, such usage is not guaranteed.

## B1.2.9 File Comparison Setup

Use the File Comparison tab to set up comparison methods, comparison targets, and window components and display colors for the file comparison function.

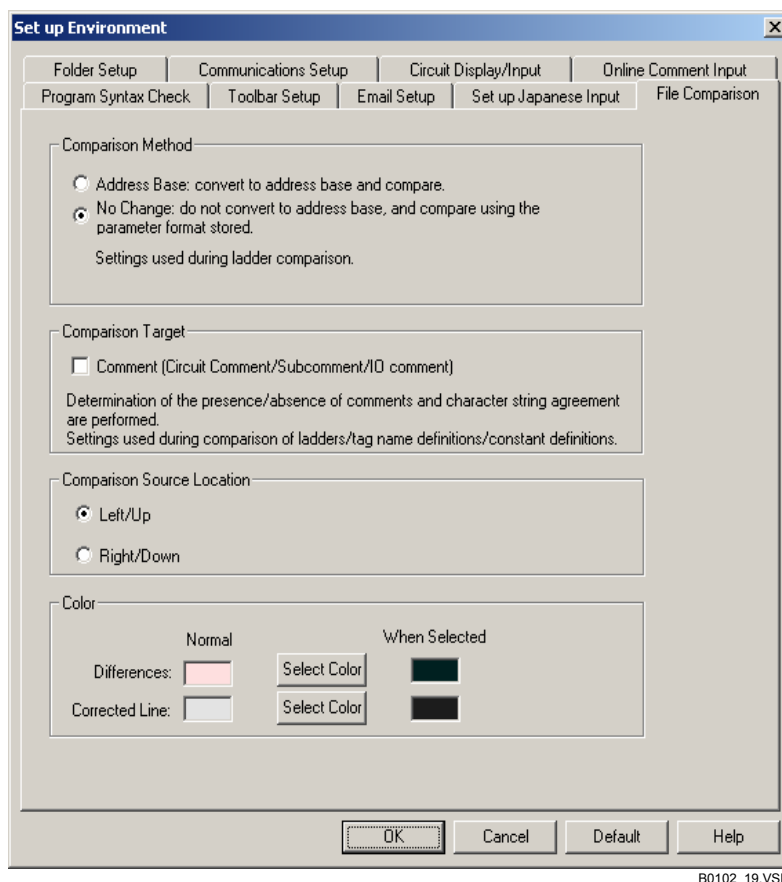


Figure B1.14 File Comparison Tab

### ■ Comparison Method

Set the comparison method used when comparing ladder programs. If you select [Address Base], programs that use tag names are converted to an address base before comparison is performed.

If you select [No Change], programs are not converted to an address base; comparison is performed using the parameter conditions that have been set.

### ■ Comparison Target

Turn on the [Comment] checkbox to include circuit, sub, and I/O comment and label comparisons.

### ■ Comparison Source Location

Specify [Left/Up] or [Right/Down] as the display area for the target comparison source in the comparison results display screen.

## ■ Color

Specify the background color for areas with differences and for areas with corrected lines in the comparison results display screen. Specify background colors for Differences and Corrected Line.

## B1.3 Language Setup

You can switch the language displayed in software menus and dialogs in WideField2.

After switching the language displayed, you must restart WideField2 for the change to take effect.

The relevant procedure is given below.

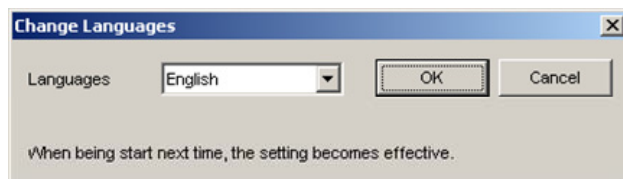
### ◆ Procedure ◆

**(1) Select [Tools]-[Language Change] from the menu bar.**

⇒ The Change Languages dialog box opens.

#### **TIP**

The appearance of this dialog box might be different depending on the language currently being used.



Step (1)

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**(2) Select the language you want to change to from the [Languages] combo box.**

**(3) Click [OK].**

⇒ The setting is saved, and the language you selected will take effect when WideField2 is restarted.

# B1.4 Key Customization

You can assign the shortcut keys used in WideField2 to any key you wish. In addition, you can save key assignments to a file.

## B1.4.1 Key Customization Setup

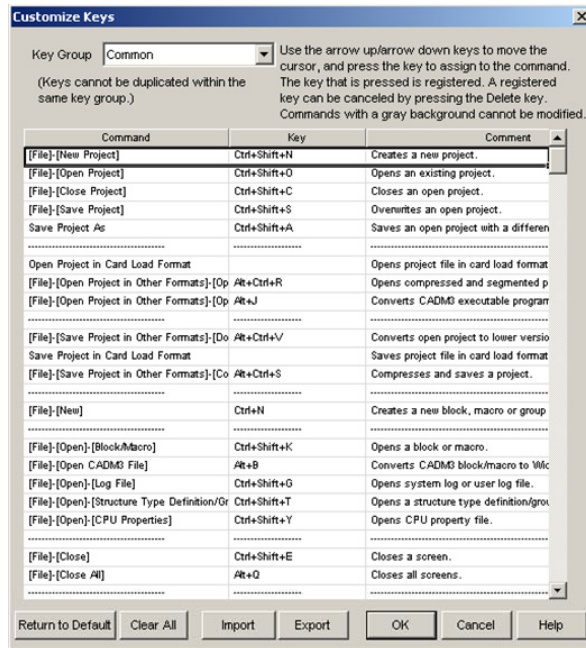
This subsection describes how to perform key customization.

The relevant procedure is given below.

### ◆ Procedure ◆

(1) Select [Tools]-[Customize Keys] from the menu bar.

⇒ The Customize Keys dialog box opens.



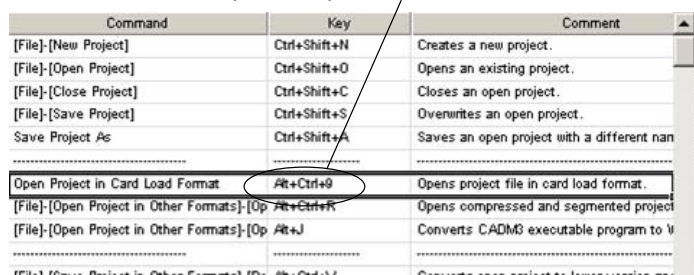
Step (1)

B0104\_01.VSD

(3) Move the cursor onto the command you wish to customize, and then press the keys you wish to assign to this command.

⇒ The keys are assigned to the applicable command.

Enter the keys directly for the selected command.



Step (3)

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### CAUTION

If multiple assignments are made to the same shortcut key, an error is displayed and the assignments cannot be confirmed.

Correct the settings so there are no multiple assignments for the same shortcut key.

## B1.4.2 Default Setup

The procedure for returning WideField2 to its default conditions for the key group currently displayed is given below.

### ◆ Procedure ◆

(1) Open the **Customize Keys** dialog box.

(2) Click the **[Return to Default]** button.

⇒ The key settings of the key group currently displayed are returned to their default conditions.

## B1.4.3 Clear All

The procedure for clearing all key assignments for the key group currently displayed is given below.

### ◆ Procedure ◆

(1) Open the **Customize Keys** dialog box.

(2) Click the **[Clear All]** button.

⇒ The key settings of the key group currently displayed are all cleared.

## B1.4.4 Exporting Key Customizations

The procedure for saving key assignments that have been set to a file is given below.

### ◆ Procedure ◆

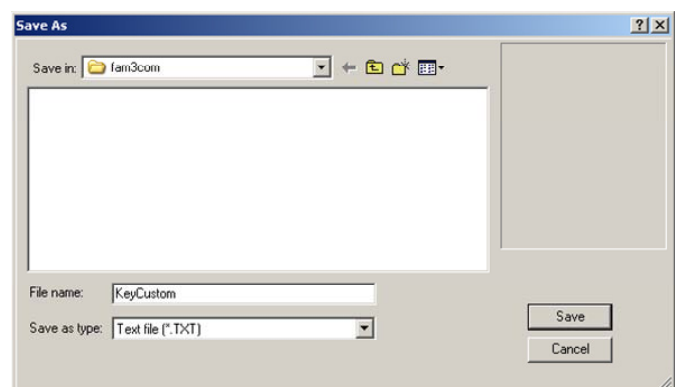
(1) Open the **Customize Keys** dialog box.

(2) Click the **[Export]** button.

⇒ The **Save As** dialog box is displayed.

(3) Enter a file name, and click the **[Save]** button.

⇒ The key assignment settings are saved to a file.



Step (2)

B0104\_03.VSD

## B1.4.5 Importing Key Customizations

The procedure for loading key assignments that are saved in a file into WideField2 is given below.

### ◆ Procedure ◆

(1) Open the **Customize Keys** dialog box.

(2) Click the **[Import]** button.

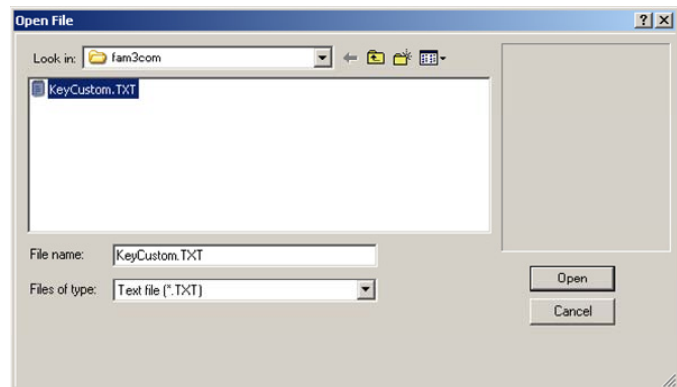
⇒ The Open File dialog box opens.

(3) Specify the file to load, and click the **[Open]** button.

⇒ The key assignment settings are loaded.

#### TIP

If the saved file contains an error or is corrupt, an error will be displayed and the file will not be loaded.



Step (2)

B0104\_04.VSD



## B2. Overview of Projects

This section gives an overview of a project and describes how to create a project as well as how to open FA-M3 project data saved in other formats.

## B2.1 What Is a Project?

A project refers to a development environment for creating programs which runs on the FA-M3.

### B2.1.1 Relationship between Projects and CPUs

One project is created for each CPU and consists of programs that run on the CPU.

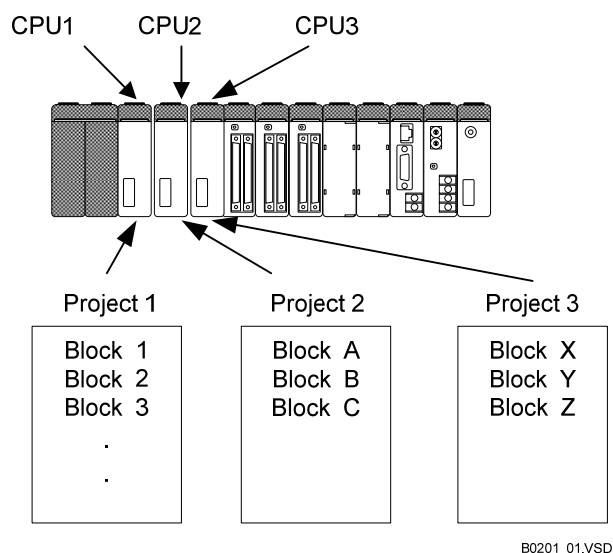


Figure B2.1 Relationship between Projects and CPUs

### B2.1.2 Configuration of a Project

A project is equivalent to a folder on a PC. A project stores programs (blocks, macros) created within the project, a configuration file, a user log message file, a common tag name definition file, a constant definition file and an executable program file.

It also stores a project file containing management information for the entire project which is used to manage all these data.

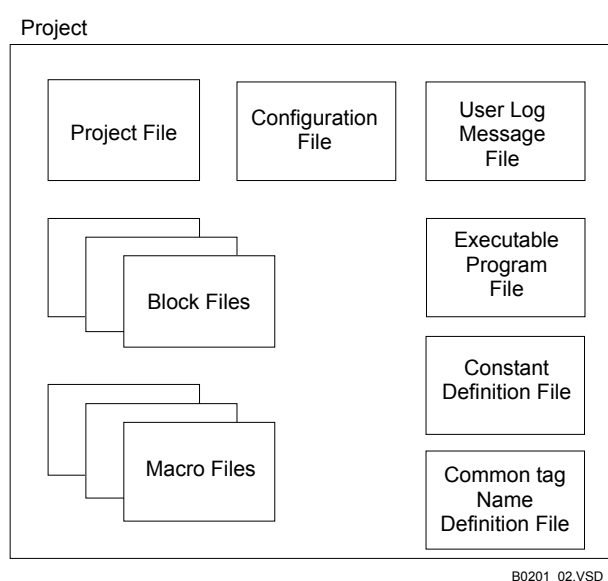


Figure B2.2 Configuration of a Project

**Table B2.1 Files Created in a Project**

Type	Extension	Description	Tip
Project File	.ypjt	Stores project information, such as the project title and CPU type.	
Executable program file	.yprg	Stores information defining the elements that composes the executable program, such as component blocks.	Only one file having the same name as the project can be generated.
Configuration file	.yc□□*1	Stores the environment for running programs, such as device capacities.	Only one file having the same name as the project can be generated.
User log message file	.yums	Sets and stores messages stored in the user log.	Only one file having the same name as the project can be generated.
Common tag name definition file	.ycmn	Stores tag name definition information shared by multiple blocks.	Only one file having the same name as the project can be created.
Constant definition file	.ycdf	Stores constant definitions.	Only one file having the same name as the project can be created.
Block files	.yblk	Stores circuits.	
Block tag name definition files	.ysig	Stores tag names used in a block, together with the allocated addresses and I/O comments for the tag names.	
Instruction macro files	.ymcr	Stores macro circuits.	
Macro tag name definition files	.ymcs	Stores tag names used in a macro, together with the allocated addresses and I/O comments for the tag names.	
CPU property file	.yprp	Download this file to set up the CPU.	This file is generated when an applicable CPU type is selected.

\*1: □□ denotes the numeric portion of a CPU type name. For example, the file extension for the F3SP58-6H CPU is ".yc58."

### TIP

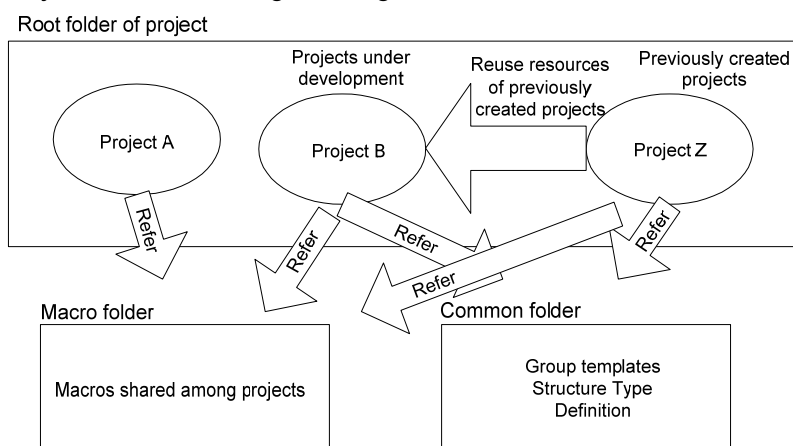
On the FA-M3, you can split a ladder program into smaller program units by function in your program design. These program units are known as blocks. You can perform program operations such as editing a program, starting (running) or stopping a program on individual blocks.

### SEE ALSO

For details on blocks, see "Sequence CPU – Functions".

## B2.1.3 Managing Projects in WideField2

Projects can be managed using WideField2 as follows:



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**Figure B2.3 Managing Projects Using WideField2**

Individual projects may use macros created to be shared among projects, and use templates for grouping tag names.

Further, programs created in other projects can be incorporated in a project. Reusing sections of data from projects created previously can also be achieved with ease.

---

**SEE ALSO**

- For details on incorporating files from other projects, see Section B7.3, "Managing Files."
  - For details on the use of macros, see Section B28. "Using Macros."
  - For details on the use of group templates, see Section B30 "Using Group Tag Names."
-

## B2.1.4 Limitations When a Project is Closed

Some WideField2 functions can be used even when a project is closed whilst others cannot. Basically, offline editing of project data (block/macro edit, configuration edit) and other functions cannot be done unless a project is open. Online functions can be used even when a project is closed, but there are some limitations; for instance, tag names cannot be displayed. The following table lists the limitations.

**Table B2.2 Project Limitations**

Category	Function	When Project is Open	When Project is Closed
Initial Setup	Environment setup	✓	✓
Create/read	Create block (including block tag name definitions)	✓	×
	Create instruction macro (including macro tag name definitions)	✓	×
	Define program components	✓	×
	Configuration	✓	×
	Create user log message	✓	×
	Edit common tag name definition	✓	×
	Edit constant definition	✓	×
	Create group template	✓	✓
	Create structure type definition	✓	✓
	Read system log	✓	✓
	Read user log	✓	✓
	CPU properties	✓	✓
	Print project	✓	×
Print	Print screen	✓	✓ (Blocks and macros cannot be printed.)
	Compare project	✓	×
Compare	Compare project	✓	×
Help	Help	✓	✓
Transfer	Download	✓	×
	Upload	✓	✓
	Compare file and CPU	✓	×
Online control	Connect and Disconnect	✓	✓
	Program monitor	✓	✓ (Limitations apply, e.g. tag names cannot be displayed.)
	Macro monitor	✓	✓ (Limitations apply, e.g. tag names cannot be displayed.)
	Device monitor	✓	✓
	Registered device monitor	✓	✓
	Configuration	✓	✓
	ROM management	✓	✓ (Transferring files to ROM or comparing files to CPU are not allowed.)
	Change operating mode	✓	✓
	Extended functions	✓	✓
Debug/Maintenance	Forced set	✓	✓
	Forced reset	✓	✓
	Change current value	✓	✓
	Change preset value	✓	✓
	Online editing	✓	✓
	Stop refreshing	✓	✓
	Display alarms	✓	✓
	Display system log	✓	✓
	Display user log	✓	✓
Extended functions	Extended functions	✓	✓
	Device manager	✓	✓
	Sampling trace	✓	✓ (Limitations apply. e.g. tag names are not allowed)
	E-Mail	✓	✓

## B2.2 Creating a Project

This section explains the operations required for creating and managing a project.

- Creating a new project
- Opening a project
- Project editing history
- Closing a project
- Saving a project
- Saving a project with a different name
- Opening projects in other formats
- Saving projects in other formats

### B2.2.1 Creating a New Project

When you create a new project, a folder with the same name as the project is created and the files that make up the project are automatically generated. The table below lists the files that are generated.

**Table B2.3 Files in a Project**

File	Description	Default
Project file	A file containing the CPU type and project title is generated. A generated folder with the project file missing will not be recognized as a project.	—
Executable program file	A default executable program file is generated.	Configuration: Setup User log message: No Component blocks: None
Configuration file	A configuration file for the specified CPU type is generated when a new project is created.	Default values for each CPU type
User log message file	A default user log message file is generated.	All user log messages are empty.
Common tag name definition file	A file containing I/O comments for special relays and special registers is generated.	—
Constant definition file	A file containing default constant definitions is generated.	
CPU property file	A file containing default property values is generated. (only for applicable CPUs)	

### ■ Creating a New Project

The procedure for creating a new project is given below.

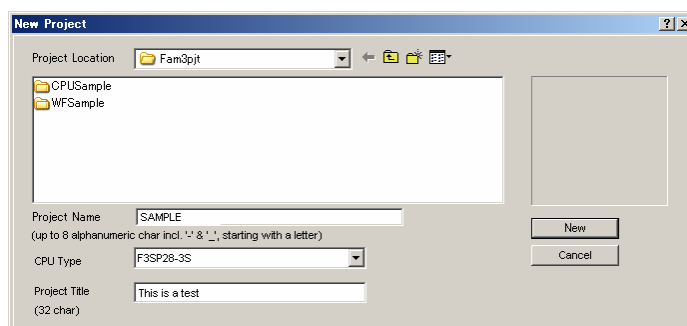
#### ◆ Procedure ◆

(1) Select [File]–[New Project] from the menu.

⇒ The New Project dialog box is displayed.

(2) Enter the project name in the [Project Name] text box.

(3) Select a CPU type from the [CPU Type] drop-down list.



Steps (2) to (5)

B0202\_01.VSD

(4) Enter the project title into the [Project Title] text box.

#### TIP

Entering a project title is optional.

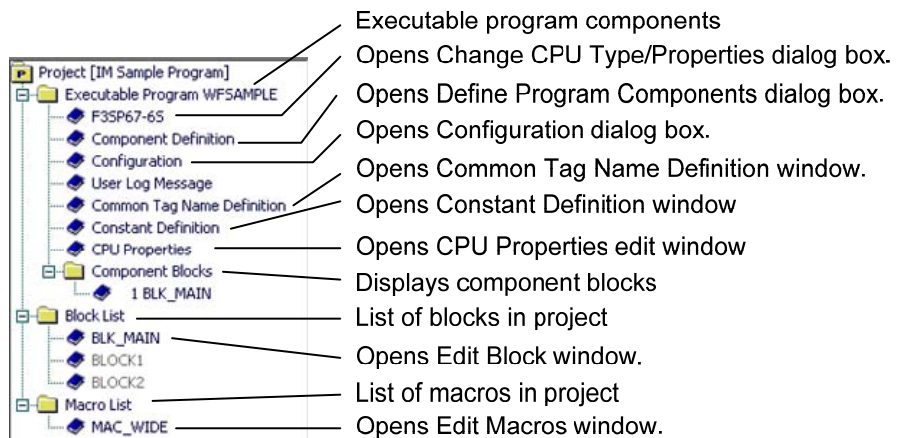
(5) Click [New].

⇒ A new project is created and the project window is displayed.

#### TIP

The project window displays the configuration of a project.

Double-clicking an icon in the project window opens a corresponding edit window or dialog box.



B0202\_02.VSD

Figure B2.4 Project Window



#### CAUTION

- A project created using WideField2 cannot be opened using WideField.  
To open a WideField2 project in WideField, you need to first convert the project to WideField project format. To do so, open the project file in WideField2 and select [File]–[Save Project in Other Formats]–[Downgrade and Save] from the menu bar.
- You cannot create a new project while a block monitor window or macro monitor window is open.

## B2.2.2 Opening a Project

### ■ Opening a Project

Opening a project and performing any of the following operations will update the date of the project.

- Changing the CPU type or project title.
- Changing the maximum number of common tag name definitions allowed.
- Setting or removing password protection for a project.
- Changing the setting for storing common tag name definition to the CPU.
- Changing the executable program component definition.
- Changing the project configuration.
- Changing a user log message.
- Changing the common tag definition data
- Changing constant definition data
- Changing a block/macro (including changing a block/macro tag name definition)
- Running the Registered Device Monitor or performing printing

Performing any of the above operations after opening a WideField project file in WideField2 will also have the effect that the same project file can no longer be opened in WideField. Without performing these operations, you would still be able to open a WideField project file in WideField even after opening it in WideField2.

The procedure for opening an existing project is given below.

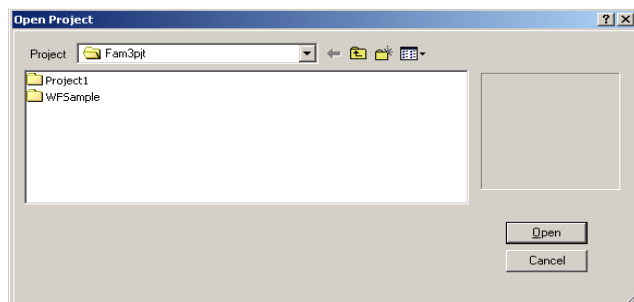
### ◆ Procedure ◆

**(1) Select [File]–[Open Project] from the menu.**

⇒ The Open Project dialog box is displayed.

**(2) Double-click the folder with the same name as the project.**

⇒ The project files are displayed.

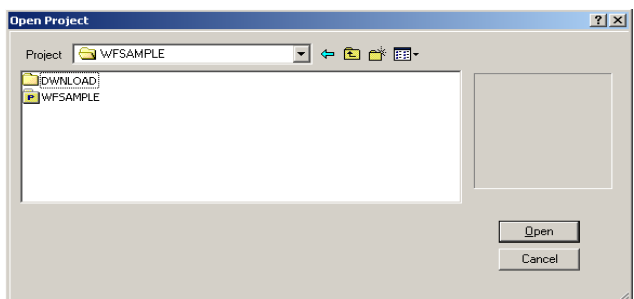


Step (2)

B0202\_03.VSD

**(3) Click on the project file to be opened.**

⇒ Information in the project file is displayed on the right.



Step (3)

B0202\_04.VSD



**TIP**

A project file contains the following information.

- Project file name
- Date the project file was last updated
- CPU type
- Project title

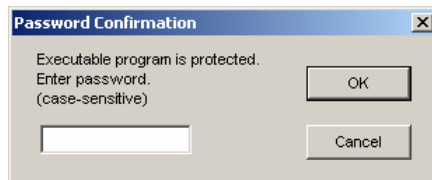
Only the first 16 characters of the project title are displayed.

**(4) Click [Open].**

⇒ The project is opened and the project window is displayed.

**CAUTION**

- If the executable program in a project is protected, the Password Confirmation dialog is displayed.  
Enter your password and click [OK]. The project is opened.



B0202\_05.VSD

**Figure B2.5 Password Confirmation Dialog**

- You cannot open a project while a macro/block monitor window is open.
- With multiple copies of WideField2 running concurrently, you can open different projects concurrently, but you cannot open the same project in more than one WideField2 application.
- A project data file that is read-only cannot be opened. Beware of this point especially when handling project data saved on CD-R/RW and other memory media.

## ■ Opening a Project Created in WideField

You can open a project created in WideField in WideField2. When the project is opened, the software automatically converts the file to a format usable in WideField2, taking care of version differences.

The following table summarizes the conversion performed for different user file types.

**Table B2.4** Converted Files

File Type	File Extension	Overview of Conversion
Common tag name definition file	.ycmn	The format is changed.
Block file	.yblk	Data is converted to tag name format. All period (".") characters in tag names are changed to underscore ("_") characters.
Block tag name definition file.	.ysig	The format is changed. All period (".") characters in tag names are changed to underscore ("_") characters.

If a block was previously saved with errors, the block file is not converted but the block tag name definition file is converted.

Even if a block file is not converted, you can open and edit the file in WideField2. An unconverted block file remains as a block file in address format created using WideField, and is displayed in address format in the WideField2 Edit Block window.

### TIP

To display parameters in tag name format in the Edit Block window, fix all errors in a block saved with errors, then select [Project]–[Convert Data]–[Tag Name Format] to convert the block file to tag name format.

Saving a block with errors refers to saving a block without correcting program errors in the block.

## B2.2.3 Project Edit History

You can open a project from the project edit history (projects opened recently) displayed on the [File] menu. The relevant procedure is given below.

### ◆ Procedure ◆

(1) Select [File] from the menu.

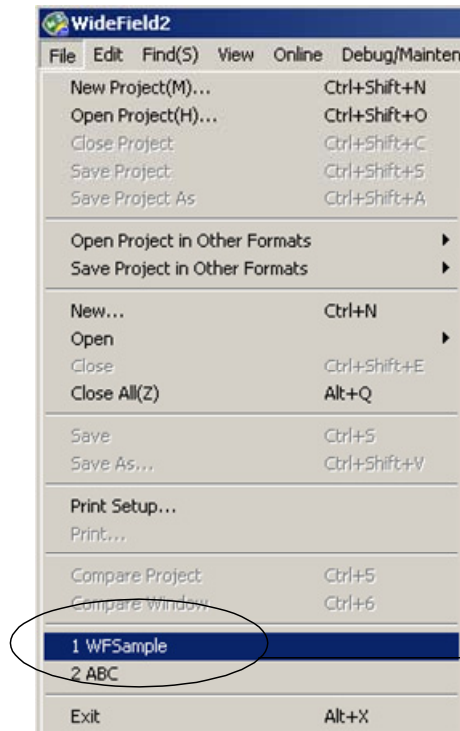
⇒ A list of projects recently opened is displayed.

(2) Click the project file to be opened.

⇒ The project file is opened.

#### TIP

The five files most recently opened are displayed.



Recently opened  
project files

Step (2)

B0202\_06.VSD

## B2.2.4 Closing a Project

The procedure for closing a project is given below.

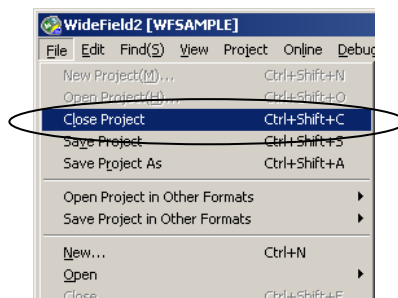
### ◆ Procedure ◆

#### (1) Select [File]–[Close Project] from the menu

⇒ If you are editing a block, an instruction macro, a common tag name definition or constant definition, the respective confirmation dialog box is displayed.

##### TIP

The figure shows an example of the message displayed when editing the “MAIN.YBLK” block.



Step (1)

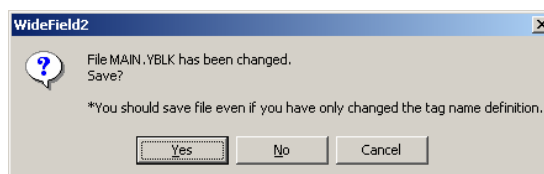
B0202\_23.VSD

#### (2) Click [Yes] on the confirmation dialog box.

⇒ The project is closed and the project window becomes empty.

##### TIP

- Clicking [Yes] saves the changes and closes the project.
- Clicking [No] closes the project without saving the changes.
- Clicking [Cancel] cancels the close operation.



Step (2)

B0202\_07.VSD

## B2.2.5 Saving a Project

The procedure for overwriting and saving a project is given below.

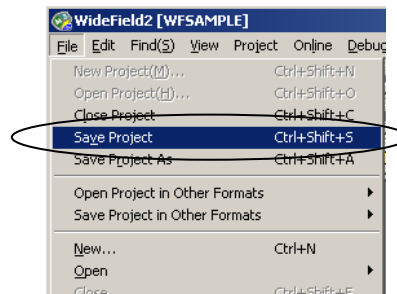
### ◆ Procedure ◆

(1) Select [File]–[Save Project] from the menu

⇒ All blocks, instruction macros, common tag name definition and constant definition being edited are saved.

#### **TIP**

You can continue editing after saving a project.



Step (1)

B0202\_23.VSD

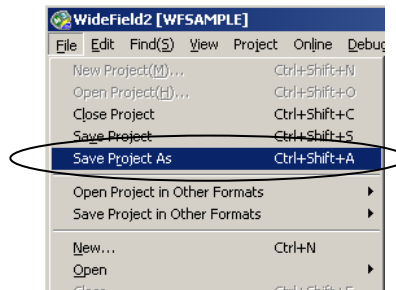
## B2.2.6 Saving a Project with a Different Name

You can save all displayed project contents using a new project name (creating a new project). The procedure is given below:

### ◆ Procedure ◆

(1) Select [File]–[Save Project As] from the menu.

⇒ The Save Project as dialog box is displayed.

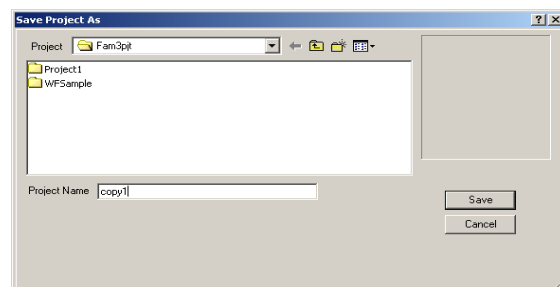


Step (1)

B0202\_23.VSD

(2) Enter the new project name into the [Project Name] text box and click [Save].

⇒ The project is created and saved with the new name.



Step (2)

B0202\_10.VSD



### CAUTION

- The name of the project being edited remains unchanged with the [Save Project As] operation.
- If errors are detected while saving each block, confirmation dialog boxes may be displayed to confirm whether to save the file with conversion errors or whether to delete tag name definition lines containing errors.  
Clicking [Yes] saves the project after all open blocks are saved. Clicking [No] cancels the save operation.

## B2.2.7 Opening Projects in Other Formats

You can convert FA-M3 project data created and saved (or compressed) outside WideField2 into a format usable by WideField2 and open it as a project. The table below lists the kinds of project data that can be converted and opened using WideField2.

**Table B2.5 Convertible Project Data**

Project Type	Overview	File Extension
Card load format	Opens project data backed up to SD card from a CPU module and saved in card load format using WideField2.	.ypjc
Compressed and segmented project	Opens project data compressed and saved using WideField2. Restores and opens a compressed project that was previously segmented and saved onto multiple floppy disks.	.yp01, .yp02, ...
CADM3 format	Opens an executable program created by CADM3.	.prg

### ■ Opening a Project in Card Load Format

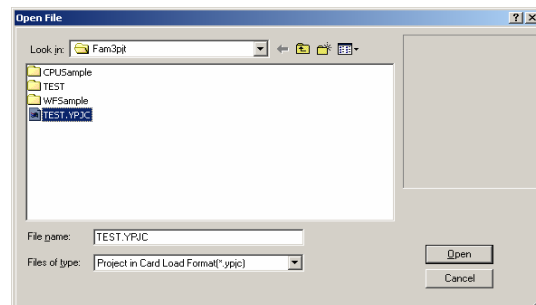
The procedure for converting into WideField2 format project data saved in card load format from a CPU module via an SD card and then opening the project is given below.

#### ◆ Procedure ◆

- (1) If a project is open, close it.
- (2) Select [File]–[Open Project in Other Formats]–[Open Project in Card Load Format] from the menu.  
⇒ The Open File dialog box is displayed.
- (3) Move to the folder containing the project data to be imported and select the file.
- (4) Click [Open].  
⇒ Conversion of project data begins. If conversion is successful, the newly created project is opened.

#### **TIP**

The project name of the converted project is based on the project name used when the project data was saved in card load format. To use a different project name, specify a new project name in the project selection dialog.



Steps (2) to (4)

B0202\_35B.VSD

## ■ Opening a Compressed Segmented Project

A compressed project file can be restored.

If a project was previously split and saved onto multiple floppy disks, standby all the floppy disks before performing restoration. The procedure is given below.

### ◆ Procedure ◆

(1) If a project is open, close it.

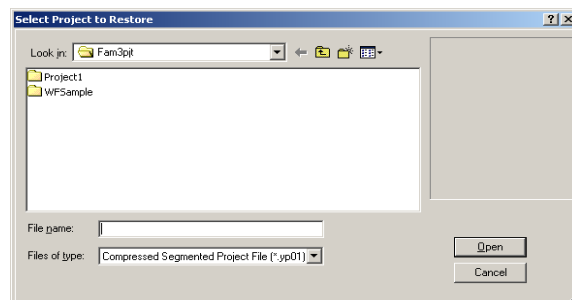
(2) Select [File]–[Open Project in Other Formats]–[Open Compressed Segmented Project] from the menu.

⇒ The Select Project to Restore dialog box is displayed.

(3) Select the file to be restored.

(4) Click [Open].

⇒ A confirmation dialog box is displayed.



Steps (2) to (4)

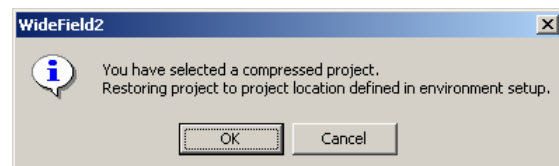
B0202\_17.VSD

(5) Click [OK].

⇒ Project decompression begins. The Restoration Status dialog box is displayed during project restoration.

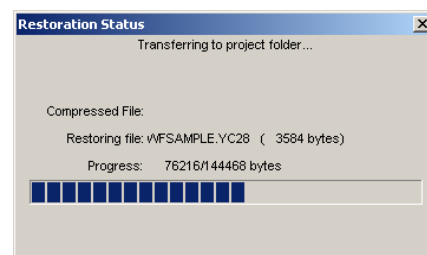
#### TIP

If the project was previously split and saved onto multiple floppy disks, a dialog box is displayed during restoration to confirm whether each floppy disk has been replaced in the drive. Follow the screen instruction, replace the floppy disk and click [OK].



Step (5)

B0202\_18.VSD



Step (5)

B0202\_19.VSD

⇒ When project restoration is completed, a completion dialog box is displayed.



Step (5)

B0202\_20.VSD



## ■ Opening a CADM3 Executable Program

To use an executable program of Ladder Diagram Support Program M3 (SF510-J3N, SF510-J3P) format in WideField2, the program must be loaded into WideField2. Only executable programs that do not generate errors during program syntax check can be opened.

### SEE ALSO

For details on how to open individual block files, see Chapter B3, “Creating and Managing Blocks and Macros.”



### CAUTION

Always perform CADM3 program syntax check before using an executable program created using CADM3. Otherwise, defined tag name definitions will be disabled after syntax check.

## ■ Generated Files

When an executable program of Ladder Diagram Support Program M3 format is opened in WideField2, it will be automatically converted into a WideField2 format file. The following table lists the files that are generated during conversion.

**Table B2.6 Generated Files**

Category	File	Extension	Overview
Project-related files	Project file	.ypjt	
	Executable program file	.yprg	
	Common tag name definition file	.ycmn	All block tag name definitions of registered blocks are combined into a common tag name definition file.
	Configuration file	.yc□□ <sup>*1</sup>	
	User log message file	.yums	
Block-related files	Block file	.yblk	File is generated in tag name format. The reference tag name definition is set to common tag name definition.
	Block tag name definition file	.ysig	An empty file is created.

\*1: □□ indicates the numerical portion of the CPU type. For example the file extension for the F3SP58-6H CPU module is “.yc58”.

## ■ Opening an Executable Program in CADM3 Format

The procedure for opening an executable program of Ladder Diagram Support Program M3 format is given below.

### ◆ Procedure ◆

(1) If a project is open, close it.

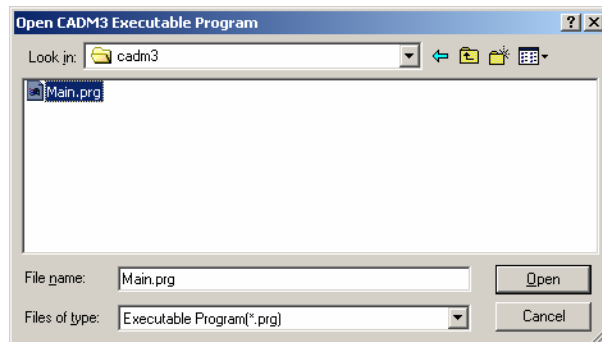
(2) Select [File]–[Open File in Other Formats]–[Open CADM3 Executable Program] from the menu.

⇒ The Open CADM3 Executable Program dialog box is displayed.

(3) Move to the folder containing the CADM3 executable program and select the file.

(4) Click [Open].

⇒ The New Project dialog box is displayed.



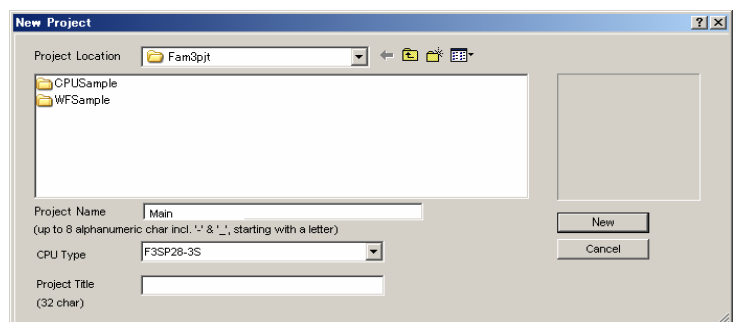
Steps (2) to (4)

B0203\_02.VSD

(5) Enter the name of the new project in the [Project Name] text box.

#### TIP

To save and overwrite an existing project, enter the name of the existing project file.



Steps (5) to (7)

B0203\_04.VSD

(6) Select the CPU type from the CPU Type drop-down list.

#### TIP

If the CPU type is changed, a confirmation dialog box is displayed. Clicking [Yes] returns the display to the New Project dialog box.

(7) Click [New].

⇒ The CADM3 format executable program, as well as its component blocks and tag name definitions are converted into WideField2 format. The conversion status is displayed in the Open CADM3 Executable Program dialog box. When conversion and reading are completed, a confirmation dialog box is displayed.

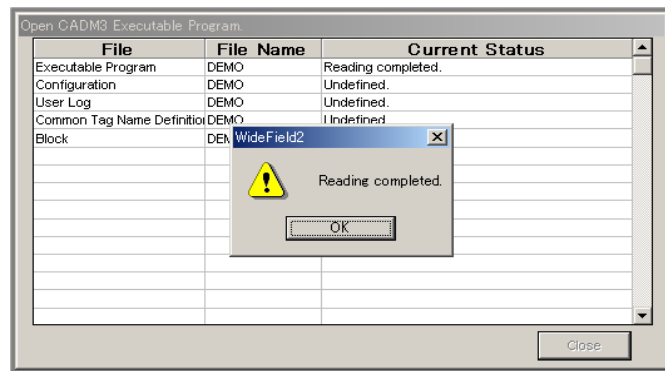
**(8) Click [OK].**

⇒ The confirmation dialog box closes.

**(9) Click [Close].**

⇒ The Open CADM3 Executable Program dialog box closes.

If conversion ends successfully, the newly created project is opened.



Step (8)

B0203\_03.VSD

**CAUTION**

- Configuration contains elements for configuring an executable program. The CPU type is one of these elements. Configuration data is inherited only if the CPU Type is changed to another CPU type within the same model group. Otherwise, you need to create a new configuration and modify it. If the CPU type is changed to a CPU type belonging to a different model group, the configuration data either changes to the previous configuration of the new CPU type, or reverts to default. The table below lists the CPU types in each model group.

**Table B2.7 Model Group of CPU Types**

Model Group Name	CPU Type
Group 1	F3SP05, F3SP08, F3SP21
Group 2	F3SP25, F3SP35, F3FP36
Group 3	F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67

- If you change the CPU type to a CPU type belonging to a different model group, a confirmation dialog box is displayed.
- Even if configuration data is inherited, the allowable value range for each setup item may differ between CPU types. Hence, errors may be reported during program syntax checking.
- When the CPU type is changed, WideField2 creates a configuration with default values for the new CPU type. You should set and adjust the configuration setup for the new CPU type.
- The CPU type can be changed even after conversion. Print the configuration information of the old CPU type from WideField2. Select [Project]–[Change CPU Type/Properties] and change the CPU type. Compare the configuration setup of the new CPU type with the printout and edit it accordingly.
- Ladder blocks saved by mnemonic editing cannot be converted. Save and amend blocks using the CADM3 ladder program edit function before performing conversion.
- The result of the conversion is saved in text format in a log file (HENKAN.log) in the project folder.
- You cannot open a CADM3 format executable program while a block monitor window or macro monitor window is open.

## B2.2.8 Saving Projects in Other Formats

You can save project data created using WideField2 into a format usable outside of WideField2.

The table below lists the kinds of project data that can be converted and saved.

**Table B2.8 Convertible Project Data**

Project Type	Overview	File Extension
Downgraded format	Converts and saves project data in a format usable by WideField, the predecessor of WideField2.	.ypjt, etc.
Card load format	Converts and saves project data to an SD card in a data format usable by the CPU module.	.ypjc
Compressed format	Compresses and saves project data	.yp01
Compressed and Segmented to Floppy Disks	Compresses project data, and then segments and saves the data on floppy disks.	.yp01, .yp02, ...

### ■ Downgrading and Saving a Project

The Downgrade and Save Project function converts and saves a WideField2 project in a data format usable in WideField, the predecessor of WideField2. The procedure is given below.

#### ◆ Procedure ◆

##### (1) Open the project and select

**[File]–[Save Project in Other Formats]–[Downgrade and Save] from the menu.**

⇒ Downgrading and saving operates on saved files. If you initiate downgrading with an open ladder program edit window (tag name definition window) after having made changes in the window, a dialog box is displayed to confirm whether to first save the edited file in WideField2 format.

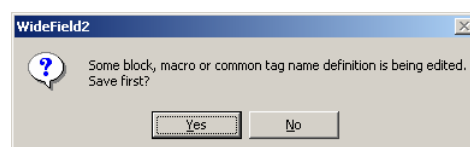
##### (2) To save in WideField2 format before downgrading, click **[Yes]**; to perform downgrading without first saving the changes, click **[No]**.

⇒ The Downgrade and Save Project dialog box is displayed.

##### (3) Select the destination folder for saving the project after conversion, as well as the target conversion format. Click **[Convert]**.

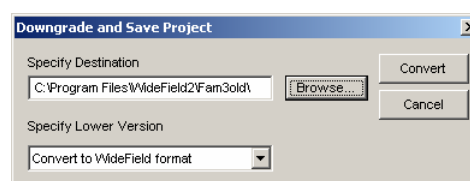
#### TIP

Clicking [Browse] displays a dialog box for folder selection.



Step (2)

B0202\_29.VSD



Step (3)

B0202\_31.VSD



## CAUTION

The destination folder cannot be the same as the location of the project being edited.  
Always specify a different folder name.

### TIP

If the CPU Type of the project does not support the selected downgraded version, an error message is displayed and conversion is aborted.

- ⇒ The Program Check dialog box is displayed and program syntax checking begins.

### TIP

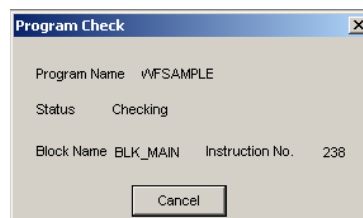
Conversion is aborted if any error is detected. Conversion continues if no error is detected or if only warnings are detected.

- ⇒ Next, the Status of Version Conversion dialog box is displayed, and conversion begins.

### TIP

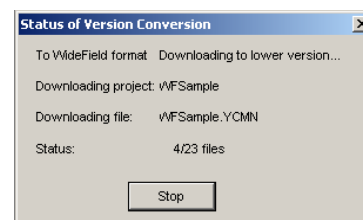
If an error is detected, the error is displayed and the conversion is aborted.

- ⇒ When conversion is completed, a completion dialog box is displayed.



Step (3)

B0202\_32.VSD



Step (3)

B0202\_33.VSD



Step (3)

B0202\_34.VSD



## CAUTION

If an error is detected during downgrade conversion, the error file name is displayed in a dialog box. Error information is displayed as and when errors are detected so if there are multiple errors within a project, they are not all displayed at the same time.

## ■ Saving a Project in Card Load Format

You can convert and save project data on a SD card data format usable by the CPU module.

### ◆ Procedure ◆

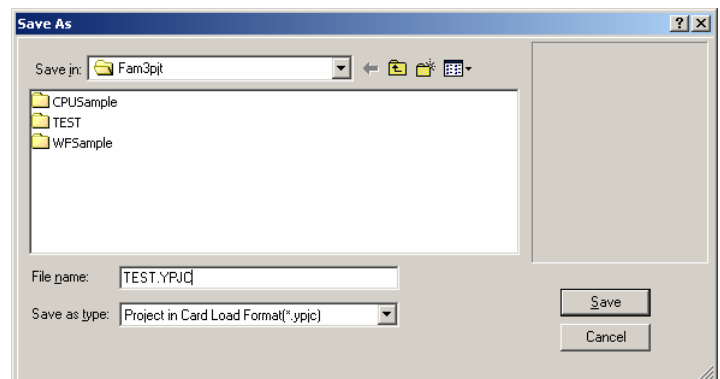
(1) Open the project to be saved in WideField2.

(2) Select [File]–[Save Project in Other Formats]–[Save Project in Card Load Format] from the menu.

⇒ The Save As dialog box is displayed.

(3) Enter a destination filename and click [Save].

⇒ Conversion of project data begins.



Step (2)

B0202\_36B.VSD

## ■ Compressing and Saving a Project to Hard Disk

You can compress and save a project to a hard disk.

All projects must be closed before compression and saving.



A project can only be compressed and saved to:

- hard disk;
- or floppy disks

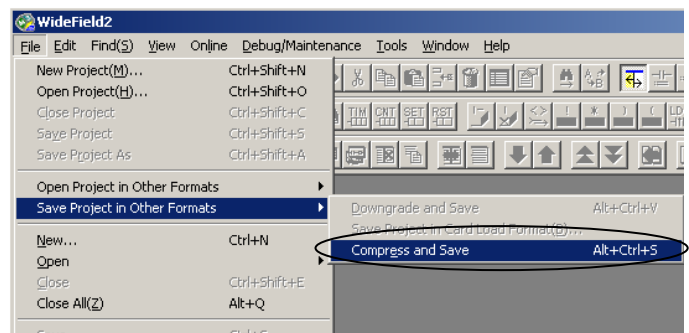
To compress and save a project to other memory media, you can first compress and save the project to a hard disk and then copy the saved file to the required memory media.

### ◆ Procedure ◆

(1) If a project is open, close it.

(2) Select [File]–[Save Project in Other Formats]–[Compress and Save] from the menu.

⇒ The Compress and Save Project dialog box is displayed.



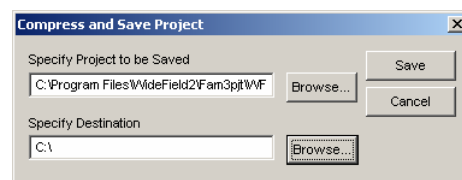
Steps (1) and (2)

B0202\_24.VSD

(3) Specify the project to be compressed and saved, as well as the destination folder for saving the project.

#### TIP

You can click [Browse] and select the project to be compressed and saved from the displayed Select Project dialog box.

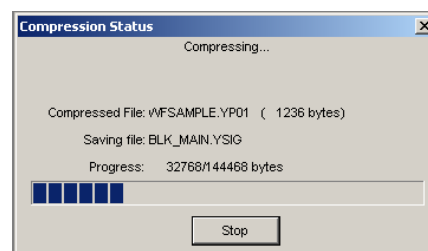


Steps (3) and (4)

B0202\_11.VSD

(4) Click [Save].

⇒ Project compression begins. The Compression Status dialog box is displayed during project compression. After compression is completed, saving begins. The Transfer Status dialog box is displayed during project saving. A confirmation dialog box is displayed when saving is completed.



Step (4)

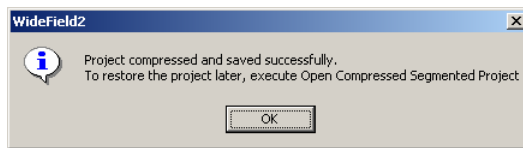
B0202\_12.VSD

**TIP**

Clicking [Stop] on the Compression Status dialog box or the Transfer Status dialog box aborts compression and saving.

**(5) Click [OK].**

⇒ The confirmation dialog box closes.



Step (5)

B0202\_13.VSD

**TIP**

The compressed project file is saved with the name "Project Name.yp01".



## ■ Compressing and Saving a Project to Floppy Disks

When saving a project to floppy disks, the project may be split into smaller pieces after compression and saved to multiple floppy disks if the project size exceeds the capacity of a floppy disk.

All projects must be closed before compression and saving.



### CAUTION

A project can only be compressed and saved to:

- hard disk;
- or floppy disks

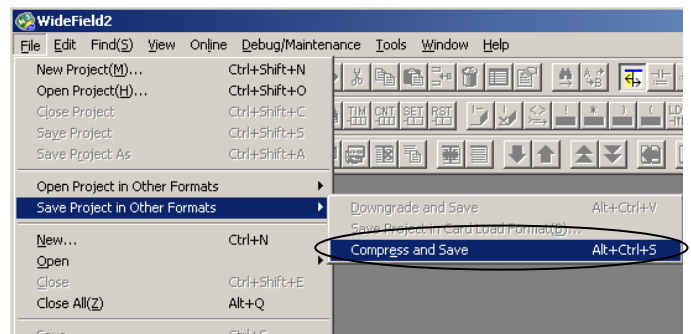
To compress and save a project to other memory media, you can first compress and save the project to a hard disk and then copy the saved file to the required memory media.

## ◆ Procedure ◆

(1) If a project is open, close it.

(2) Select [File]–[Save File in Other Formats]–[Compress and Save] from the menu.

⇒ The Compress and Save Project dialog box is displayed.



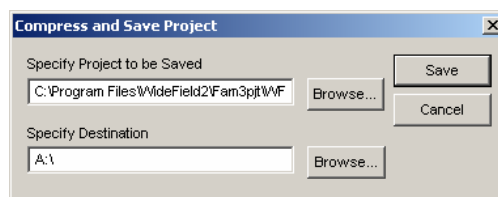
Steps (1) and (2)

B0202\_24.VSD

(3) Specify the project to be compressed and saved, as well as a destination folder.

### TIP

You can click [Browse] and select the project to be compressed and saved from the displayed Select Project dialog box. Specify the floppy disk as destination only if a floppy disk is inserted in the drive.



Steps (3) and (4)

B0202\_28.VSD



### CAUTION

Always use floppy disks of identical capacities when saving a project on multiple floppy disks as the software calculates the number of disks required based on the capacity of the first floppy disk inserted in the drive.

**(4) Click [Save].**

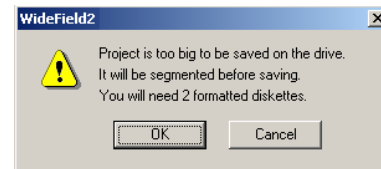
- ⇒ The Compression Status dialog box is displayed during compression.  
 A dialog box is then displayed to confirm the number of disks required based on the size of the compressed project.

**(5) Click [OK].**

- ⇒ A dialog box is displayed to confirm whether the first disk has been inserted.

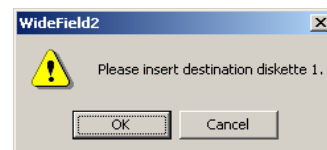
**(6) Check that a new floppy disk has been inserted in the drive and click [OK].**

- ⇒ Saving begins. The Transfer Status dialog box is displayed, followed by the [Copying] dialog box during the save operation.  
 If a project needs to be saved on multiple floppy disks, a dialog box is displayed to confirm that the next floppy disk has been inserted.



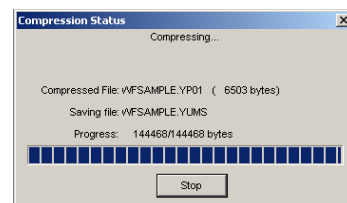
Step (5)

B0202\_25.VSD



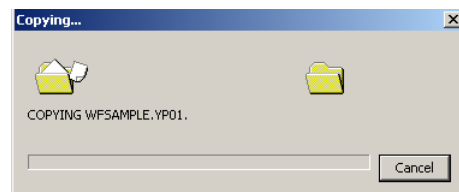
Step (6)

B0202\_15.VSD



Step (6)

B0202\_16.VSD

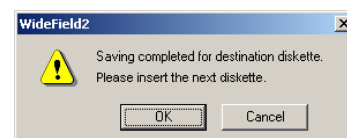


Step (6)

B0202\_26.VSD

**(7) Step 6 is repeated for each floppy disk.**

- ⇒ When saving is completed, a confirmation dialog is displayed.

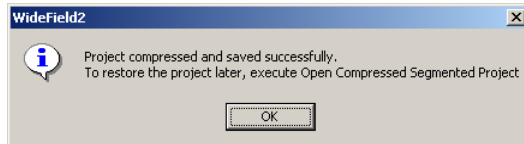


Step (7)

B0202\_27.VSD

**(8) Click [OK].**

⇒ The confirmation dialog box closes.



Step (8)

B0202\_21.VSD

**TIP**

Project files that are split and compressed are saved with names "Project Name.yp01", "Project Name.yp02", etc. If [Stop] is clicked during project saving, the compressed files may still remain in the work folder.



## **B3.     Creating and Managing Blocks and Macros**

A program to be executed by the FA-M3 consists of block and macro files. Block and macro files store programs in the form of ladder diagrams.



This chapter describes how to open, close, and save block and macro files.

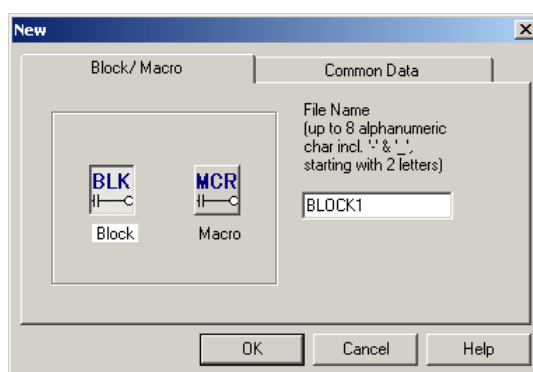
Before you can create a ladder diagram program, you must open a project. The following description assumes that a project is already opened.

## B3.1 Creating New Block and Macro Files

To create a new block or macro file, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that a project is open.
- (2) Select [File]–[New] from the menu bar.  
⇒ The New dialog box opens with the Block/Macro tab displayed.
- (3) Click the [Block]  or [Macro]  button.
- (4) Enter a name for a file to be created in the [File Name] text box .
- (5) Click [OK].  
⇒ The edit ladder program window and the Local Device/Properties dialog box open.



Step (5)

B0301\_01.VSD

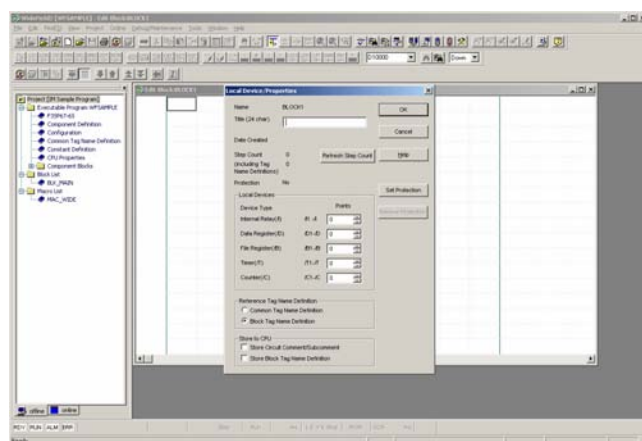
- (6) Sets the various items (properties) in the Local Device/Properties dialog box.

### TIP

You can also change block/macro file properties later. To do so, open a file, and select [Edit]–[Local Device/Properties] from the menu bar to open the Local Device/Properties dialog box.

### SEE ALSO

For details on the Local Device/Properties dialog box, see Section B3.4, "Editing Local Devices and Properties of Blocks and Macros."



Step (6)

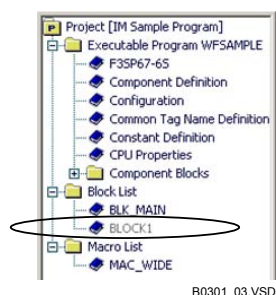
B0301\_02.VSD

**(7) Click [OK].**

⇒ The Local Device/Properties dialog box closes.

**TIP**

- New block and macro files that are created must be saved before they are displayed in the project window. Files that have been saved are displayed under [Block List] or [Macro List] in the project window.



**Figure B3.1 Project Window (Example of Saving the BLOCK1 Block File)**

- After creating a block or macro file, you can create a ladder program in the edit ladder program window.

**SEE ALSO**

For details on how to save a block or macro file, see Section B3.3, "Saving Block and Macro Files."

## B3.2 Opening Block and Macro Files

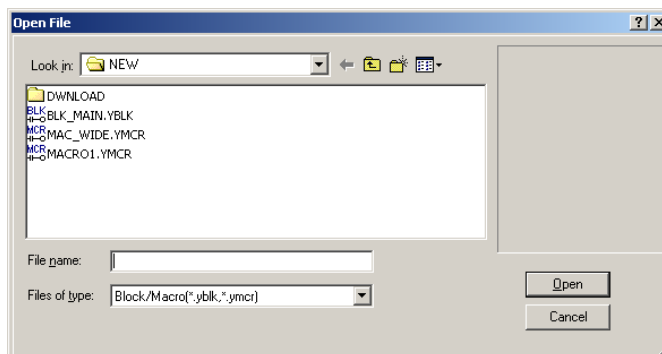
To open an existing block or macro file, use the following procedure.

### ◆ Procedure ◆

- (1) Select [File]–[Open]–[Block/Macro]  
from the menu bar.

⇒ The Open dialog box opens.

- (2) Select a file.

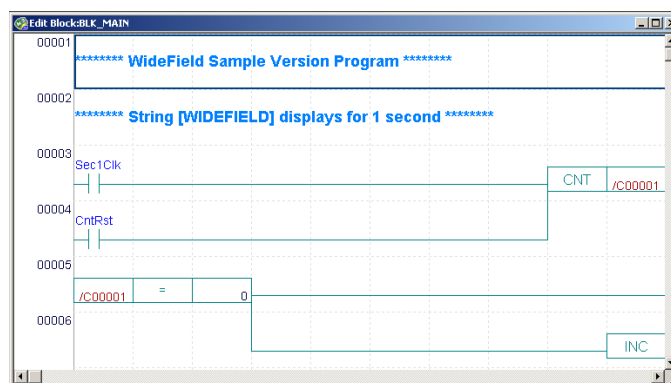


Step (2)

B0302\_01.VSD

- (3) Click [Open].

⇒ The file opens to show the ladder program edit window.

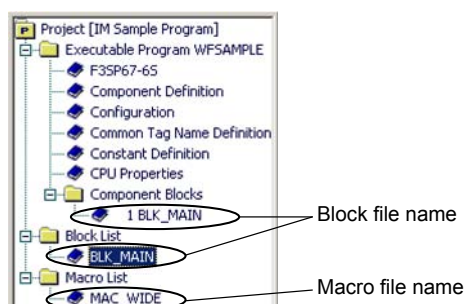


Step (3)

B0302\_04.VSD

### TIP

You can also double-click a block or macro file in the project window to open it.



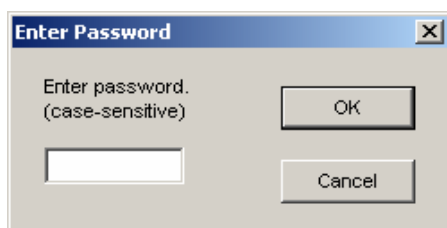
B0302\_03.VSD

Figure B3.2 Project Window



**CAUTION**

If you try to open a password-protected file, the Enter Password dialog box opens. Enter the correct password and click [OK] to open the file.



B0302\_02.VSD

**Figure B3.3** Enter Password Dialog Box

You can set or remove password protection in the Local Device/Properties dialog box. To open the dialog box, select [Edit]–[Local Device/Properties] from the menu bar.

**SEE ALSO**

For details on the Local Device/Properties dialog box, see Section B3.4, "Editing Local Devices and Properties of Blocks and Macros."

## B3.3 Saving Block and Macro Files

You can save an edited block or macro file with an existing file name (Save) or a new file name (Save As). In either case, the edited block or macro file are saved together with the tag name definition file.

### ■ Saving

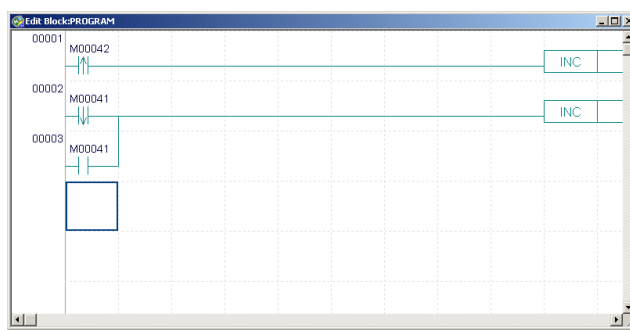
To save a block or macro file, use the following procedure.

#### ◆ Procedure ◆

(1) Ensure that the edit window for the block or macro file to be saved is active.

(2) Select [File]–[Save] from the menu bar.

⇒ The ladder program is converted and saved.



Step (1)

#### TIP

If a conversion error occurs, the error dialog box opens. Clicking [OK] displays a dialog box to confirm the save operation. Clicking [Yes] saves the file with error. Clicking [No] cancels the save operation.

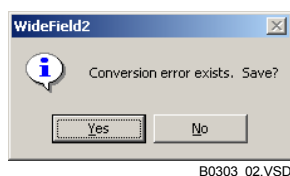


Figure B3.4 Confirmation Dialog Box



### CAUTION

If there are no conversion errors, the ladder diagram is converted to instruction words and saved. If a file is saved with errors, invalid parts of the ladder diagram is saved “as is”. The following operations cannot be performed for a block that has been saved with errors.

- Syntax checking of executable programs
- Downloading
- Data conversion
- Address conversion for project
- Changing I/O installation position in project

**TIP**

Instruction words are names of ladder instructions expressed as text.

**SEE ALSO**

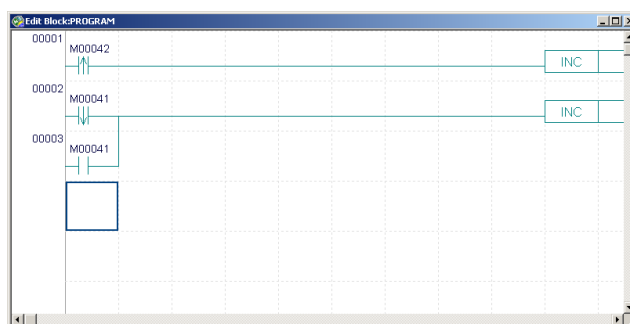
For details on instructions see Sequence CPU – Instructions” (IM34M6P12-03E).

## ■ Saving As

To save an edited file with a different file name, use the following procedure.

### ◆ Procedure ◆

- (1) Check that the edit window for the block or macro file to be saved is active.
  - (2) Select [File]–[Save As] from the menu bar.
- ⇒ The Save As dialog box opens.



Step (1)

B0303\_01.VSD

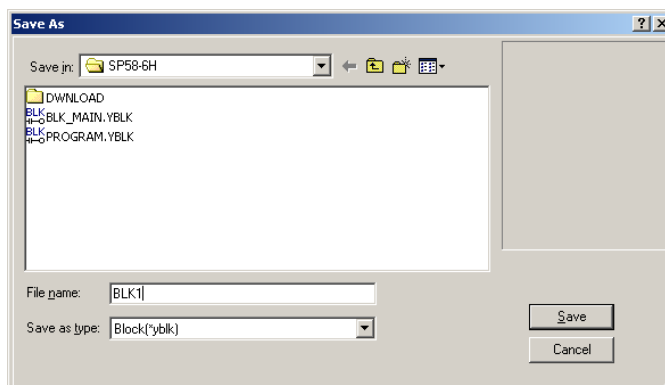
- (3) Enter a new file name in the [File name] text box.

**TIP**

You may not enter an existing file name.

- (4) Click [Save].

⇒ The ladder program is converted and saved with the new name. The edited block or macro file remains open in the edit window.



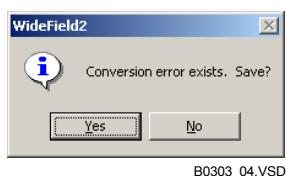
Steps (3) and (4)

B0303\_03.VSD

---

**TIP**

- If a conversion error occurs, an error dialog box opens. Clicking [OK] displays a dialog box to confirm the save operation. Clicking [Yes] saves the file with errors. Clicking [No] cancels the save operation.



**Figure B3.5 Confirmation Dialog Box**

- To edit a block or macro file that has been saved with a different name, select [File]–[Open]–[Block/Macro] and open the file using the new name.
- 

**CAUTION**

---

If there are no conversion errors, the ladder diagram is converted to instruction words and saved. If a file is saved with errors, invalid parts of the ladder diagram is saved “as is”. The following operations cannot be performed for a block that has been saved with errors.

- Syntax checking of executable programs
  - Downloading
  - Data conversion
  - Address conversion for project
  - Changing I/O installation position in project
-

## B3.4 Editing Local Devices and Properties of Blocks and Macros

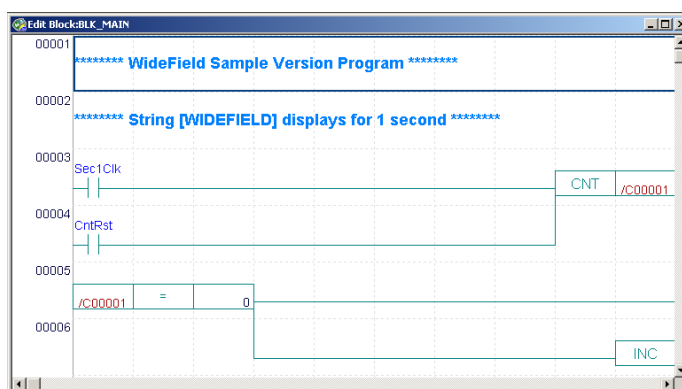
Use the Local Device/Properties dialog box to view or edit properties of block and macro files. To open the Local Device/Properties dialog box, use the following procedure.

### ◆ Procedure ◆

(1) Ensure that the editing window for the block or macro file to be viewed or edited is active.

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

⇒ The Local Device/Properties dialog box opens.

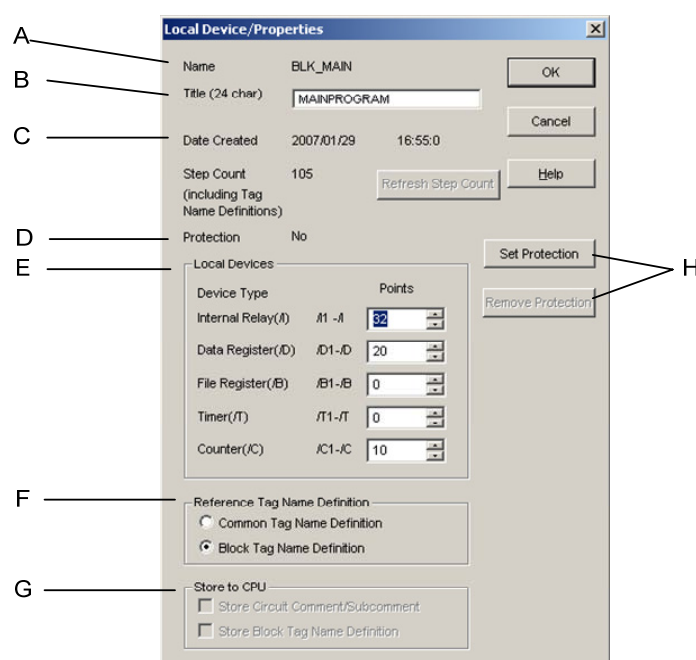


Step (1)

B0304\_02.VSD

### ■ Local Device/Properties Dialog Box Items

The layout of the Local Device/Properties dialog box is given below.



B0304\_01.VSD

Figure B3.6 Local Device/Properties Dialog Box

- A Name  
The name of a block or macro file, up to 8 characters long.
- B Title  
To change the title, enter a new title in the [Title] text box.  
The title may consists up to 24 characters.
- C Date Created  
Indicates the date the file was last edited.
- D Step Count (including Tag Name Definitions)  
When the [Refresh Step Count] button is clicked, the block program step count is displayed. If tag name definitions are stored, the tag name definition step count is added to the block program step count and displayed.
- E Protection  
Indicates whether the block or macro file is password-protected.
- F Local Devices  
Specify the number of local devices (i.e., internal relays, data registers, file registers, timers, and counters) to be used in the block being edited.  
  
You can use up to the specified number of local devices during block or macro editing. For example, setting [Internal Relays] to 32 allows you to use devices /I1 to /I32 as local devices; setting a value 0 does not allow the use of local devices within the block.

---

#### TIP

The number of local devices must be set in the following units:

- |                         |                         |
|-------------------------|-------------------------|
| - Local internal relays | In units of 32 relays   |
| - Local data registers  | In units of 2 registers |
| - Local file registers  | In units of 2 registers |
| - Local timers          | In units of 1 timer     |
| - Local counters        | In units of 1 counter   |

Only 10 ms timers can be used as local timers.

Before using local devices in a block, you must set up the block and configuration accordingly.

---

#### SEE ALSO

For details on local devices, see Chapter B27, "Using Local Devices."

---

- G Reference Tag Name Definition  
Selects the reference tag name definition for tag names used in a block or macro file. By default, the [Block Tag Name Definition] option button is on.
- H Store to CPU (enabled for SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S)  
Specifies whether to store comments and tag name definitions along with programs at downloading. If this item is not selected for a block or macro file, then comments and tag name definitions are not stored to the CPU even if you specify to do so when downloading the block or macro.
- J [Set Protection] button and [Remove Protection] button  
When you try to open a password-protected file, the Enter Password dialog box opens to prompt for a password. You must also enter a valid password to remove password protection.

## B3.5 Opening CADM3 Format Blocks and Macros

You can open blocks or macros that have been created with the ladder program tool M3 (SF510-J3N and SF510-J3P). The relevant procedure is given below.

### ◆ Procedure ◆

(1) Select [File]–[Open]–[CADM3 File] from the menu bar.

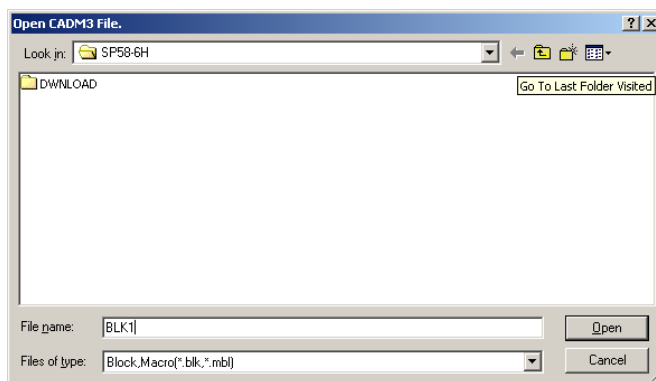
⇒ The Open CADM3 File dialog box opens.

(2) Select a CADM3-formatted file.

(3) Click [Open].

⇒ The CADM3 format file is converted to WideField2 format as a new block or macro file.

If the conversion ends successfully, a confirmation dialog box opens.



Steps (2) and (3)

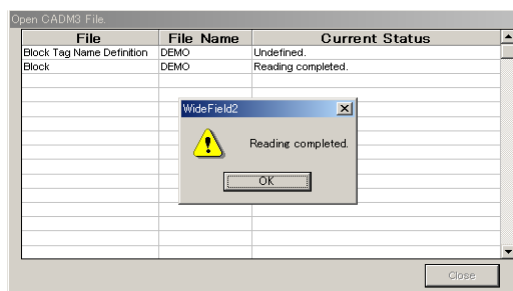
B0305\_01.VSD

(4) Click [OK].

⇒ The converted data is displayed in the Open CADM3 File dialog box.

(5) Click [Close].

⇒ The name of the converted file is included in [Block List] or [Macro List] in the project window. The ladder program edit window opens.



Step (4)

B0305\_02.VSD



### CAUTION

- This operation is available only when a project is open.
- The original CADM3 format file remains intact.
- The block or macro tag name definition is used as the reference tag name definition.
- The results of conversion are saved in text format in the "Henkan.log" file in the project folder.

### SEE ALSO

For details on how to open a CADM3 format executable program as a project, see Section B2.2.7, "Opening Projects in Other Formats."





## B4. Editing Programs

To create an executable program, you first edit a ladder program. Next, you define the program components.

Always have a project open when you create an executable program or edit a ladder program. Here, we describe how to edit a ladder program.

## B4.1 Cautions for Editing Ladder Program

This section describes the limitations in editing ladder programs and necessary precautions to avoid creating circuits that will cause conversion errors and circuits that cannot be amended.

### B4.1.1 Limitations on Editing Ladder Program

Editing a ladder program inserts circuits to create a block. The following limitations apply when editing ladder programs.

- Maximum number of lines that can be created per block  
Each block may contain up to 20,000 lines of circuits, including circuit comments. Circuits may not be entered nor edited beyond this maximum limit.
- Maximum number of steps that can be created per block  
The F3SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S CPUs support up to 57,344 steps (56K steps) of circuits per block; the F3SP05/21/25/35/08/28-3N/38-6N/53-4H/58-6H, F3FP36 CPUs support up to 10,240 steps (10K steps) of circuits per block. If the number of steps entered exceeds the upper limit, an error occurs during conversion. To create circuits larger than this maximum, divide into smaller blocks.
- Maximum number of lines per circuit  
One circuit can have up to 25 lines. If the number of lines entered exceeds the upper limit, an error occurs during conversion.
- Maximum number of instructions per circuit  
One circuit can have up to 128 instructions. If the number of instructions entered exceeds the upper limit, an error occurs during conversion.
- Maximum number of continuation lines per circuit comment  
One circuit comment can have up to 25 lines. If the number of continuation lines entered exceeds the upper limit, an error occurs during conversion.
- Maximum number of continued circuits  
One line of circuit can have up to 2 continuation circuits. If the number of continuation circuits entered exceeds the upper limit, an error occurs during conversion.

### B4.1.2 Circuits with Conversion Errors

The following circuits return errors (conversion errors) at the time of conversion.

#### ● Circuits with No Output Instruction

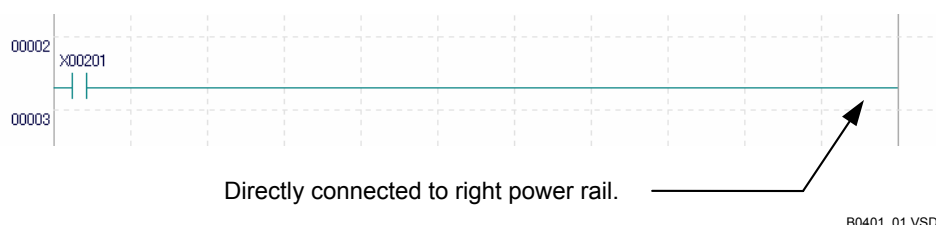


Figure B4.1 Circuits with No Output Instruction

#### TIP

Output instructions are instructions, such as OUT instructions that output data to devices. They are usually coded on the right hand side of a ladder program.

### ● Multi-layered Circuits with No Output in the First Layer

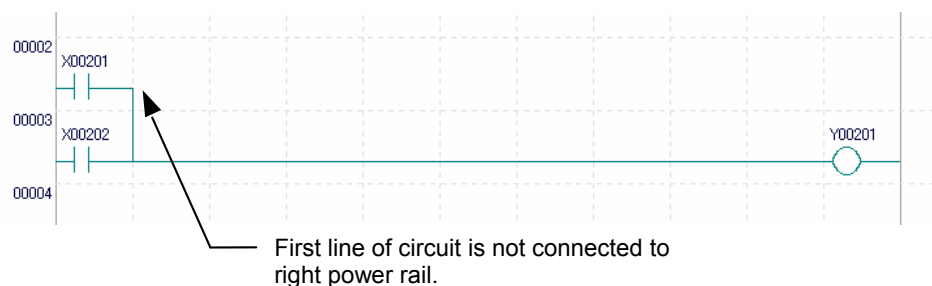


Figure B4.2 Multi-layered Circuits with No Output in the First Layer

B0401\_02.VSD

### ● Disjointed Circuits

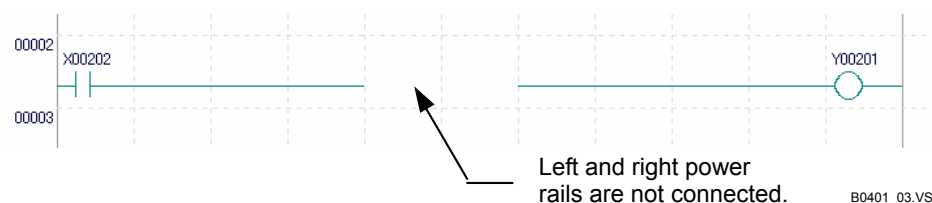


Figure B4.3 Disjointed Circuits

B0401\_03.VSD

### ● Circuits with Superfluous Branch Lines

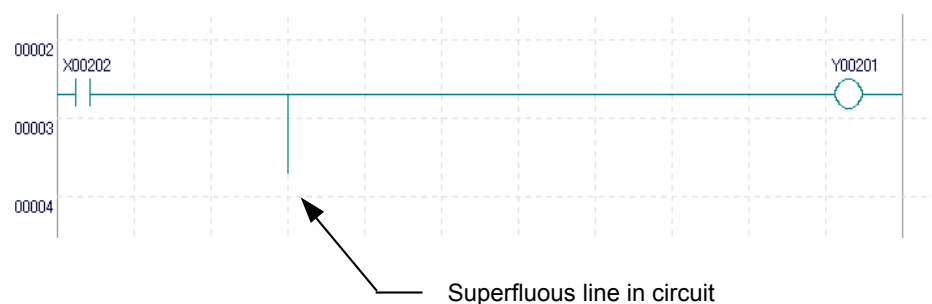


Figure B4.4 Circuits with Superfluous Branch Lines

B0401\_04.VSD

### ● Circuits with Reverse Flow from Right to Left

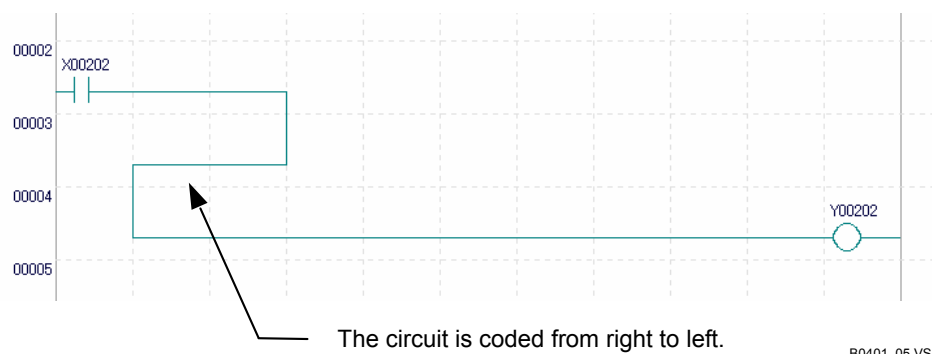
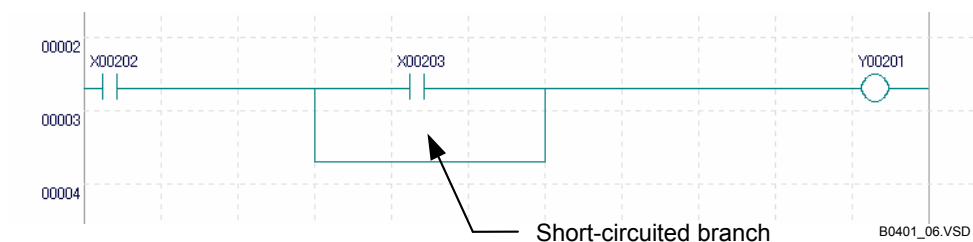


Figure B4.5 Circuits with Reverse Flow from Right to Left

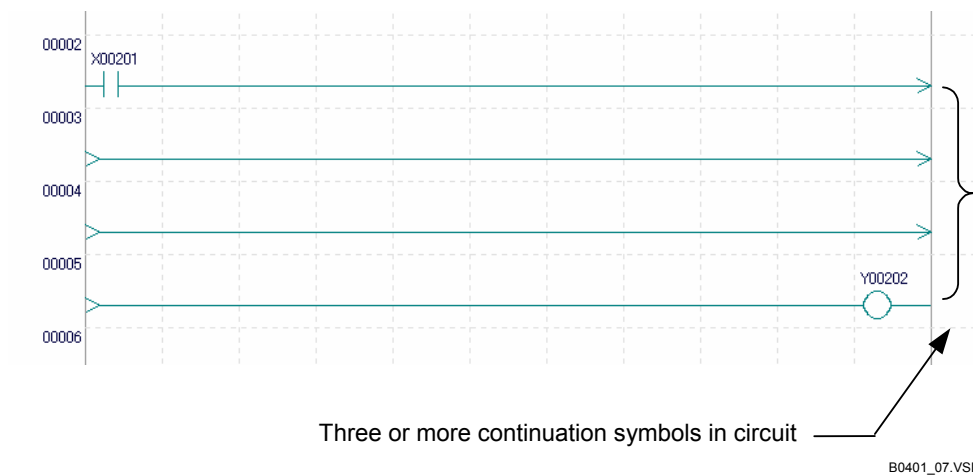
B0401\_05.VSD

### ● Circuits with Short-Circuit Line



**Figure B4.6** Circuits with Short-Circuit Line

### ● Circuits with 4 or More Continuation Lines

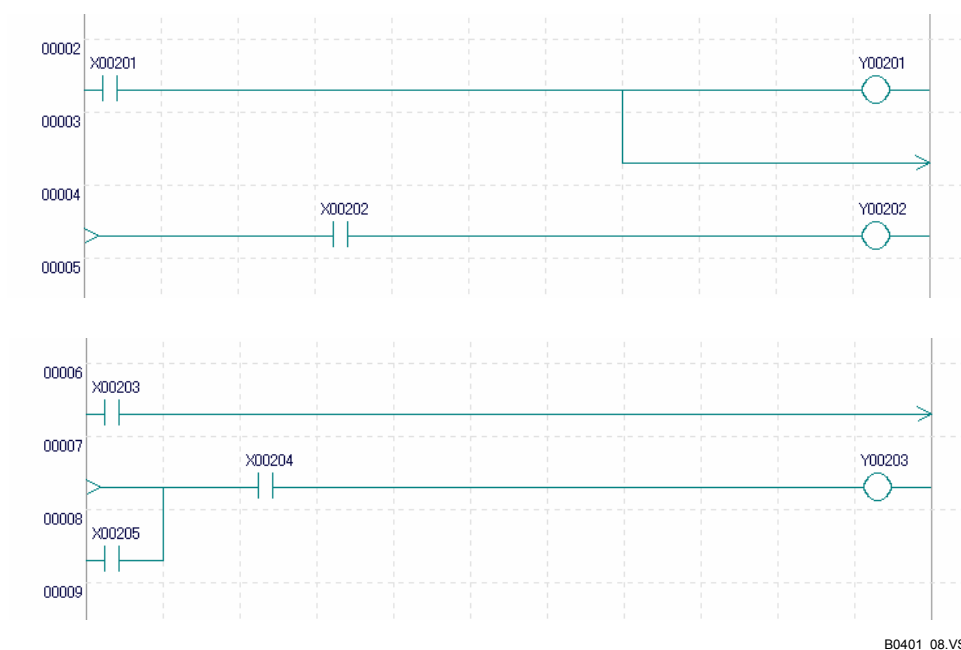


**Figure B4.7** Circuits with 4 or More Continuation Lines

### TIP

Continuation lines are circuits connected with a continuation symbol.

## ● Circuits with Invalid Continuation



**Figure B4.8** Circuits with Invalid Continuation

### TIP

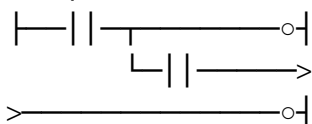
If a circuit is too wide to fit in the ladder program, you can continue the circuit on the next line using a continuation circuit.



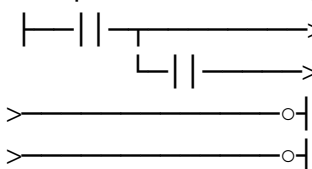
### CAUTION

Coding of continuation lines avoids errors similar to that shown below.

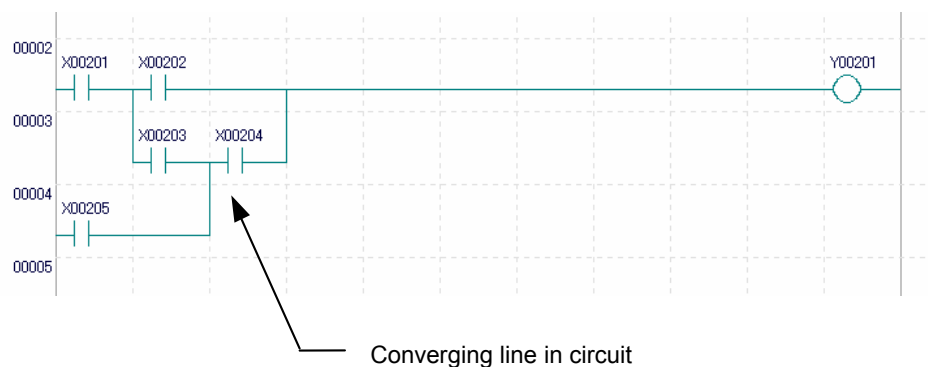
× Example of incorrect coding



✓ Example of correct coding



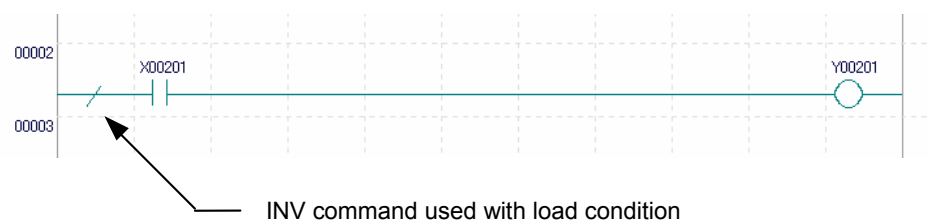
## ● Circuits with Converging Lines



B0401\_09.VSD

Figure B4.9 Circuits with Converging Lines

## ● Circuits with AND-type instruction (UP, DWN, UPX, DWNX, INV instructions and continuous type application instructions) at invalid position



B0401\_10.VSD

Figure B4.10 Circuits with And-type Instructions (e.g. INV instructions) at Invalid Position



### CAUTION

Sometimes, a circuit which is coded within 25 lines during editing may exceed 25 lines due to re-layout during conversion and fail to convert and return with a conversion error.

## B4.1.3 Circuits that Cannot be Amended Using Ladder Programming

Sections (circuits) that cannot be recovered with a ladder program are displayed as mnemonics. These sections displayed in mnemonics can be deleted but cannot be corrected and added using the ladder program edit function. Delete these sections after entering an equivalent process using a ladder program.

### TIP

Sections displayed in mnemonics can be changed with the mnemonic editing function if the program can be created as a circuit.

For details about the mnemonic editing function, see Section B4.2.34, "Mnemonic Editing Function".

## B4.2 Editing Ladder Programs

This function allows you to enter instructions and create ladder program circuits.

### B4.2.1 Ladder Program Edit Screen Layout

#### ■ Ladder Program Edit Screen Elements

The ladder program edit screen layout contains the following elements.

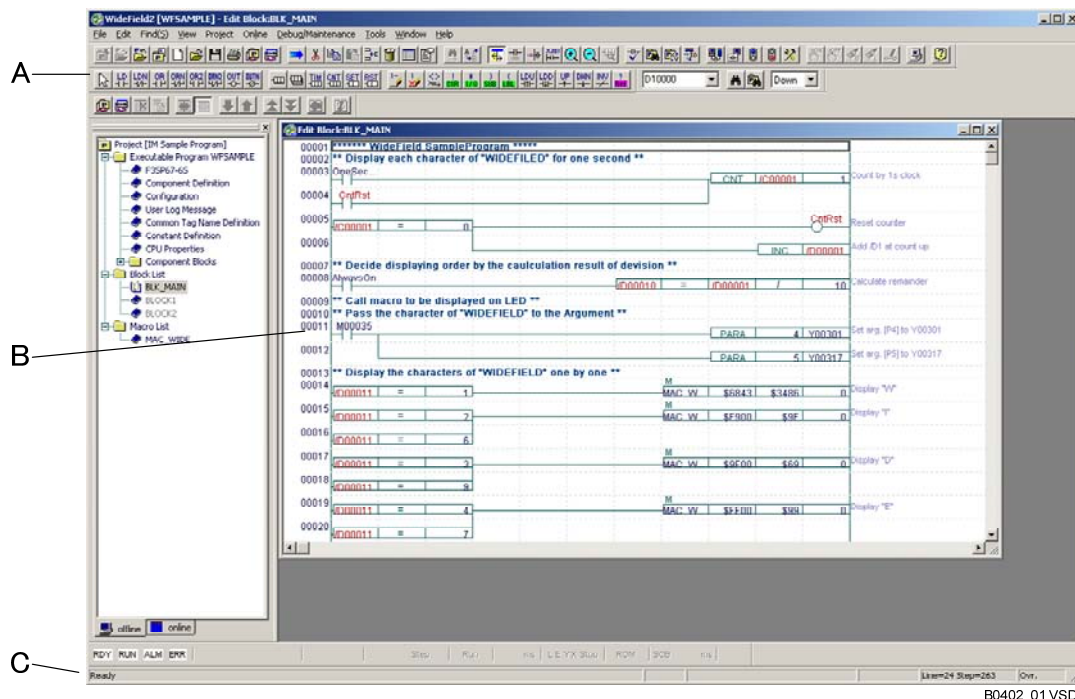

























Figure B4.11 Ladder Program Edit Screen Elements

- A Instruction Palette  
Stores drawing elements which you can use to edit circuits using the mouse.
- B Ladder Program Edit Window  
Window for editing a ladder program. The window title displays “Edit Block” when editing a block file and “Edit Macro” when editing a macro file.
- C Status Bar  
Displays information about the edit window.

## ■ Instruction Palette

The instruction palette stores as icons drawing elements which can be used to edit a ladder programs in the ladder program edit screen.

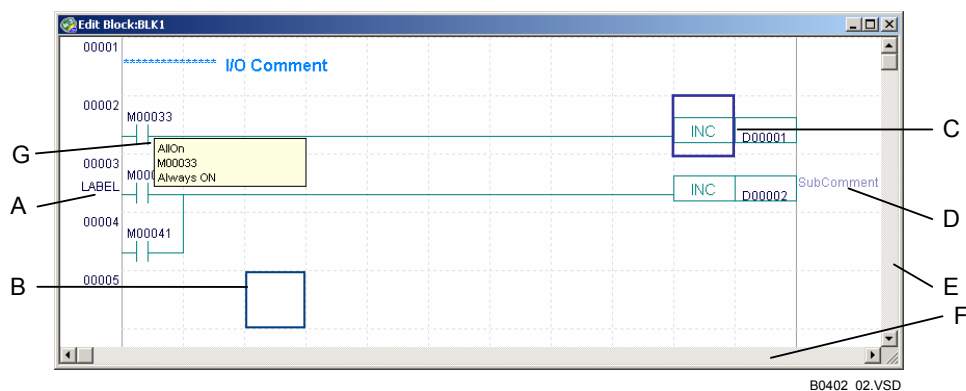
**Table B4.1 Instruction Palette**

Icon	Name	Description
	Selector	Returns the mouse indicator to the usual selector cursor. Clicking on a circuit element with the selector cursor selects a circuit element. Double-clicking a circuit element with the selector cursor displays the functions of the circuit element for user selection.
	Contact A (LD AND)	Changes the mouse indicator to the Contact A cursor. Clicking anywhere inserts a contact A.
	Contact B (LDN, ANDN)	Changes the mouse indicator to the Contact B cursor. Clicking anywhere inserts a contact B.
	Contact A OR (OR)	Changes the mouse indicator to the Contact A OR cursor. Clicking anywhere inserts a contact A OR.
	Contact B OR (OR)	Changes the mouse indicator to the Contact B OR cursor. Clicking anywhere inserts a contact B OR.
	Contact A OR (both ends)	Changes the mouse indicator to the Contact A OR (two ends) cursor. Clicking anywhere inserts a contact A OR (both ends).
	Contact B OR (both ends)	Changes the mouse indicator to the Contact B OR (two ends) cursor. Clicking anywhere inserts a contact B OR (both ends).
	OUT instruction (Output coil)	Changes the mouse indicator to the OUT instruction cursor (output coil cursor). Clicking anywhere inserts an OUT instruction in the last column.
	OUTN instruction (Out Not)	Changes the mouse indicator to the OUTN instruction cursor (Out Not cursor). Clicking anywhere on the screen inserts an OUTN instruction in the last column.
	Application Instruction	Changes the mouse indicator to the application instruction cursor. The Enter Instruction dialog box is displayed.
	Instruction List	Changes the mouse indicator to the instruction list cursor. The Instruction List dialog box is displayed.
	TIM instruction (Timer)	Changes the mouse indicator to the TIM instruction cursor. Clicking anywhere inserts a TIM instruction in the last column.
	CNT instruction (Counter)	Changes the mouse indicator to the CNT instruction cursor. Clicking anywhere inserts a CNT instruction in the last column.
	SET instruction	Changes the mouse indicator to the SET instruction cursor. Clicking anywhere inserts a SET instruction in the last column.
	RST instruction (Reset)	Changes the mouse indicator to the RST instruction cursor. Clicking anywhere inserts a RST instruction in the last column.
	Insert Connection Line	Changes the mouse indicator to the connection line cursor. Dragging the mouse anywhere draws a connection line.
	Delete Connection Line	Changes the mouse indicator to the delete connection line cursor. Dragging the mouse removes a connection line in an arbitrary location.
	Continuation Line	Changes the mouse indicator to the continuation line cursor. Clicking anywhere inserts a continuation line.
	Circuit Comment	Changes the mouse indicator to circuit comment cursor. Clicking on any line inserts a subcomment.
	I/O Comment	Switches to I/O Comment Input Mode. Double-clicking any element displays the I/O comment input field.
	Subcomment	Changes the mouse indicator to the subcomment cursor. Clicking anywhere inserts a subcomment.
	Label	Changes the mouse indicator to the label cursor. Clicking anywhere inserts a label.
	Load Differential Up instruction	Changes the mouse indicator to the Load Differential Up instruction cursor. Clicking anywhere inserts a Load Differential Up instruction.
	Load Differential Down instruction	Changes the mouse indicator to the Differential Down instruction cursor. Clicking anywhere inserts a Load Differential Down instruction.
	Logical Differential Up instruction	Changes the mouse indicator to the Logical Differential Up instruction cursor. Clicking anywhere inserts a Logical Differential Up instruction.
	Logical Differential Down instruction	Changes the mouse indicator to the Logical Differential Down instruction cursor. Clicking anywhere inserts a Logical Differential Down instruction.
	Inverter instruction	Changes the mouse indicator to the Inverter instruction cursor. Clicking anywhere inserts an Inverter instruction.
	Operation Guide Display	Displays the operation key guide on the program edit screen.



## ■ Ladder Program Edit Window

Ladder program edit windows are used to edit circuits. Here, ladder programs of up to 20,000 lines and 11 columns can be edited. Like all usual Microsoft Windows, the edit window can be resized, maximized to full screen, minimized to an icon or moved to new display position. The screen can be scrolled up and down using the vertical scroll bar, and moved sideways using the horizontal scroll bar.



**Figure B4.12 Ladder Program Edit Window (Edit Block window example)**

- A Line Number/Instruction Number Display Area  
Displays the line number, instruction number and labels currently being edited.
- B Cell  
Area for writing the instruction mnemonic 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 Subcomment Display Area  
Displays sub-comments.
- E Vertical Scroll Bar  
For scrolling the ladder program edit window up and down. The window 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 ladder program edit window sideways. The window can also be moved sideways a column at a time by pressing the left/right arrow keys.
- G TipHelp  
Displays tag name, device and I/O comment at the mouse cursor. You can choose to show or hide TipHelp in the environment setup.

### TIP

Other settings that can be done from the ladder program edit window include displaying or hiding display fields and enlarging or reducing the window size.

---

**SEE ALSO**

For details on showing or hiding display fields, enlarging or reducing the window size, see Section B4.5, "Switching Views".

For details on environment setup, see Section B1.2, "Environment Setup."

---

## ■ Status Bar

The status bar displays information about the block being edited.

The status bar displays the number of lines, number of steps, and drawing mode (overwrite or insert mode) during ladder editing, as shown in the figure below.



**Figure B4.13** Status Bar

- A Displays the number of lines, number of steps, number of comment steps for the block being edited. The number of steps is updated at conversion. It is not updated during editing. The number of comment steps is computed from the preset value of whether comments and tag name definitions are to be stored to the CPU.
- B Displays the drawing mode as 'Ins.' (Insert) or 'Ovr.' (Overwrite). You can toggle between the drawing modes by pressing the [Insert] key.

## B4.2.2 Set up Circuit Display and Input

Selecting [Tools]–[Set up Environment] displays the Set up Environment dialog box. You can customize circuit editing and parameter input as well as set window display colors using the Circuit Display/Input tab on the displayed dialog box.

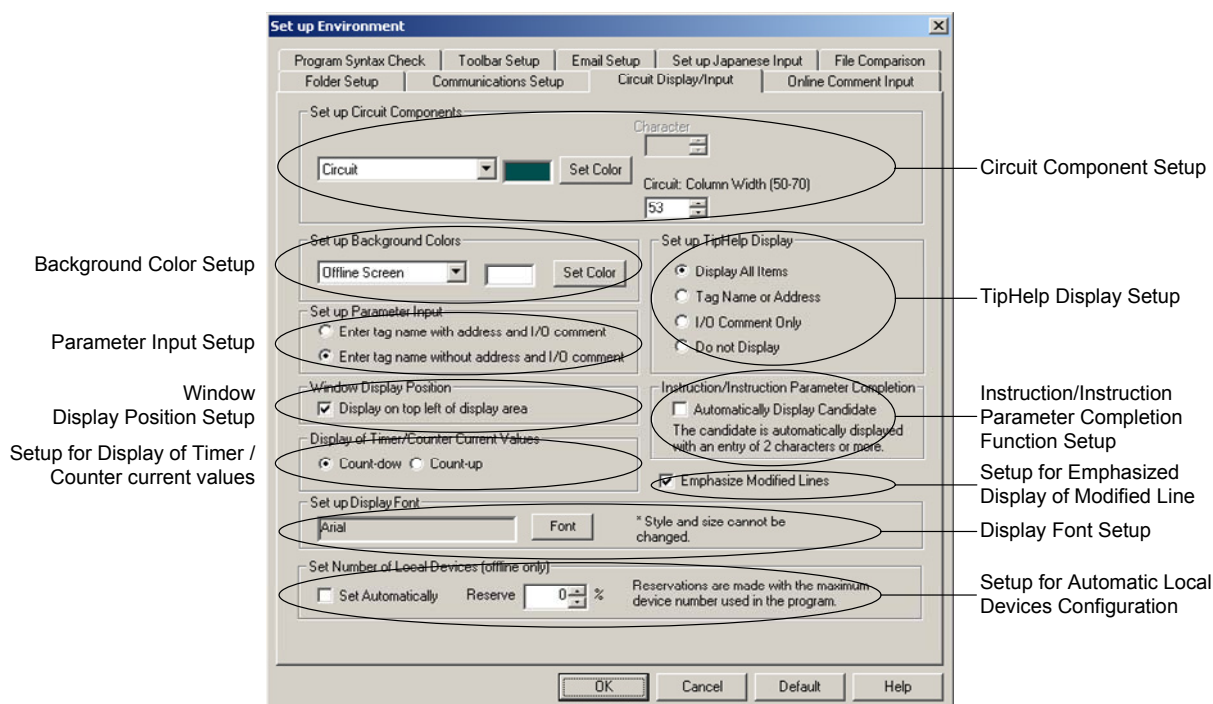


Figure B4.14 Circuit Display/Input tab

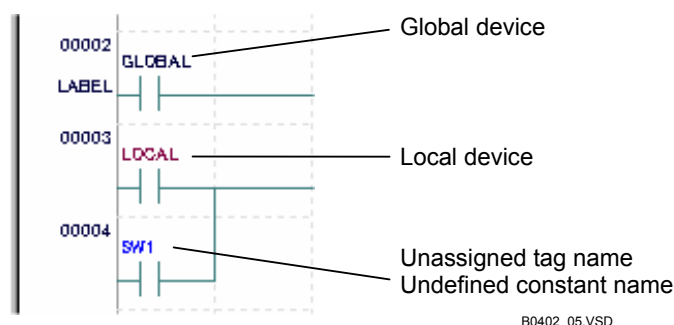
B0402\_04.VSD

### SEE ALSO

For more details on the Circuit Display/Input tab on the Set up Environment dialog box, see Section B1.2.4, "Circuit Display/Input Setup."

## B4.2.3 Distinguishing Devices

You can distinguish tag names of global devices, local devices, unassigned tag names and undefined constant names using colors.



B0402\_05.VSD

Figure B4.15 Device Status Display in Circuit Edit

You can customize the display colors of parameters in different states using the Circuit Display/Input tab on the Set up Environment dialog box.

---

**SEE ALSO**

For more details on the Circuit Display/Input tab on the Set up Environment dialog box, see Section B1.2.4, "Circuit Display/Input Setup."

---

## **B4.2.4 Basic Operations**

Instructions used when editing a ladder program include basic instructions, as well as application instructions such as comparison instructions and arithmetic instructions.

There are basically 3 ways to enter an instruction in a ladder program edit window: using mouse, function keys or keyboard.

Mouse operation can be used to enter drawing elements by simply clicking the buttons on the instruction palette.

Function key operation can be used to enter instructions and parameters simultaneously by pressing the function keys.

In keyboard operation, you enter the mnemonics directly using the alphanumeric keys.

---

**TIP**

Basic instructions refer to a group of instructions that function like electrical circuit elements such as relays and coils. Except for some instructions such as the TIM instruction, basic instructions are single bit operations.

---

---

**SEE ALSO**

- For details on basic instructions, see "Sequence CPU – Instructions" (IM34M6P12-03E).
  - For details on input using the mouse and the alphanumeric keys, see the descriptions in Section B4.2.9, "Entering Basic Instructions" and Section B4.2.10, "Entering Application Instructions."
  - For details on input using alphanumeric keys, see Section B4.2.5, "Input Using Alphanumeric Keys."
-

## ■ Special Operation Keys of Program Edit Window

The table below lists special operation keys that can be used in the program edit window.

**Table B4.2 Special Operation Keys of Program Edit Window**

Key	Outline of Function
←→	Moves the position cursor to the left or right. These keys do not move the cursor to the line number or subcomment area.
↑↓	Moves the position cursor upwards or downwards.
Shift + ←	Moves the position cursor to the line number/instruction number display area.
Shift + →	Moves the position cursor to the subcomment display area.
Ctrl + arrow keys	Selects a range of cells.
Shift + ↑↓	Selects a range of lines.
Home	Jumps to the beginning of the line.
End	Jumps to the end of the line.
Ctrl+ Home	Jumps to the first line.
Ctrl+ End	Jumps to the last line.
Page Up	Scrolls the edit screen upwards.
Page Down	Scrolls the edit screen downwards.
Ctrl+ Page Up	Moves the position cursor to the previous circuit comment.
Ctrl+ Page Down	Moves the position cursor to the next circuit comment.

### B4.2.5 Input Using Alphanumeric Keys

In alphanumeric key input, you enter or edit instruction words in mnemonic format directly from the keyboard. The procedure is as follows.

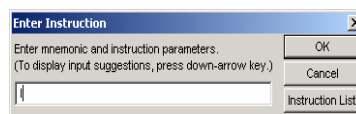
#### ◆ Procedure ◆

- (1) Move the position cursor to the desired input position.
- (2) Enter the first character of the mnemonic for the desired instruction using the keyboard.  
⇒ The Enter Instruction dialog box is displayed. The character entered earlier is displayed in the text box.
- (3) Proceed to enter the remaining letters of the instruction mnemonic.

#### TIP

For example, enter the following instructions.

```
LD X201
MOV D1 D2
```



Steps (3) and (4)

B040205\_01.VSD

- (4) Click [OK].

⇒ The instruction is entered at the location of the position cursor.

---

**SEE ALSO**

You can use alphanumeric keys to write programs by inserting Contact A instructions, Contact B instructions, and connection lines at the same time. The available input keys and function are listed in the table below.

**Table B4.3 Input Keys and Functions**

Input Keys	Function
LD	Inserts a contact A not connected to the line above.
LDN	Inserts a contact B not connected to the line above.
LD2	Inserts at the position cursor a contact A connected on the left to the line above.
LDN2	Inserts at the position cursor a contact B connected on the left to the line above.
OR	Inserts a contact A not connected to the line above.
ORN	Inserts a contact B not connected to the line above.
OR2	Inserts at the position cursor a contact A connected at both ends to the line above.
ORN2	Inserts at the position cursor a contact B connected at both ends to the line above.

---

## B4.2.6 Entering Instructions Using Input Completion Function

When entering an instruction, the input completion function speeds up the process by displaying a list of instruction candidates beginning with the character that has been entered for selection.

The relevant procedure is given below.

### ◆ Procedure ◆

**(1) Enter the first character of the instruction to be entered from the keyboard.**

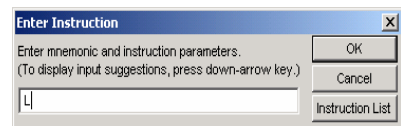
⇒ The Enter Instruction dialog box is displayed. The character entered earlier is displayed in the text box.

**(2) Press the [↓] key.**

⇒ A list of instructions beginning with the entered character is displayed.

#### TIP

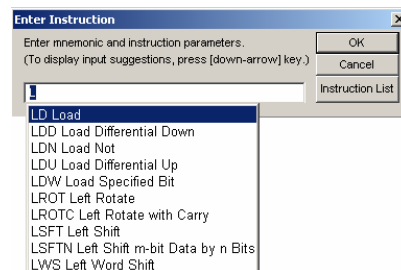
- You can narrow the displayed candidate list by entering an instruction string instead of a character.
- Instruction strings are not case-sensitive.
- To hide the displayed instruction list, press the [ESC] key.



Step (2)

B040206\_01.VSD

**(3) Use the [↑] and [↓] keys to move in the displayed candidate list and press [Enter] to select the desired instruction.**



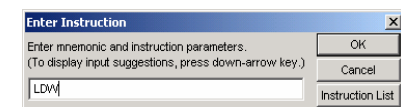
Step (3)

B040206\_02.VSD

⇒ The selected instruction is entered in the text box.

#### TIP

Instead of pressing the [ENTER] key, you can also press the [TAB] key or double-click the mouse button to select an instruction.



Step (3)

B040206\_03.VSD

#### TIP

If a checkmark has been added to [Automatically Display Candidate] for Instruction/Instruction Parameter Completion in the environment setup, a list of input candidates will automatically be displayed when two or more characters have been entered in the Enter Instruction dialog box.

## B4.2.7 Entering Instruction Parameters Using Input Completion Function

When you are entering a device (tag name or address) as an instruction parameter, the input completion function displays a list of instruction parameter candidates for your selection based on a tag name definition or a history of recent past entries after you have entered the first character.

In the case of tag name definition, input candidates are extracted from the reference tag name definition (common tag name definition or block tag name definition) defined in the block properties. In the case of input history, input candidates are taken from the 256 most recently entered devices. As a new entry is added to the input history, the oldest entry is automatically deleted.

The required procedure is given below.

### ◆ Procedure ◆

#### (1) Enter an instruction, followed by a space character.

⇒ The Enter Instruction dialog box is displayed with the instruction and space entered earlier displayed in the text box.

#### (2) Enter the first character of the desired instruction parameter and press the [↓] key.

⇒ A list of tag names and addresses beginning with the character entered earlier is displayed. I/O comments are also displayed in the list.

##### TIP

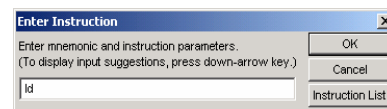
- Pressing the [↓] key before entering any character for the instruction parameter displays a list of instruction parameter candidates extracted from the input history.
- Address candidates are not extracted from tag name definitions.
- Up to 5000 input candidates can be displayed.
- Extraction of input candidates is not case-sensitive.
- To hide a displayed input candidate list, press the [ESC] key.

#### (3) Use the [↑] and [↓] keys to move in the displayed candidate list and press [Enter] to select the desired instruction parameter.

⇒ The selected instruction parameter is entered in the text box.

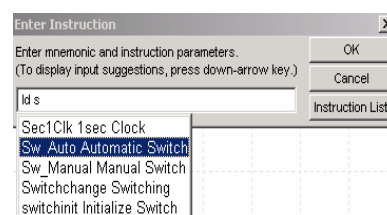
##### TIP

Instead of pressing the [ENTER] key, you can also press the [TAB] key or double-click the mouse button to select an instruction parameter.



Step (2)

B040207\_01.VSD



Step (3)

B040207\_02.VSD



Step (3)

B040207\_03.VSD

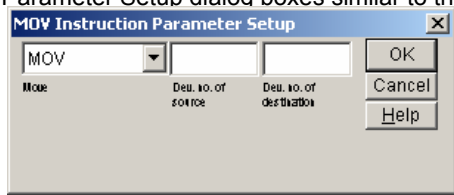
##### TIP

If a checkmark has been added to [Automatically Display Candidate] for Instruction/Instruction Parameter Completion in the environment setup, a list of input candidates will automatically be displayed when two or more characters have been entered in the Enter Instruction dialog box.



**TIP**

Other than the Enter Instruction dialog box, the input completion function is also available in Instruction Parameter Setup dialog boxes similar to the one shown below.



B040207\_04.VSD

**Figure B4.16 Instruction Parameter Setup Dialog Box**

## B4.2.8 Entering Structures Using Input Completion Function

You can make use of the input completion function when entering structure names or structure members as instruction parameters. The procedure is slightly different from the procedure for entering tag names and addresses using input completion.

The relevant procedure is given below.

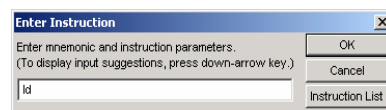
### ◆ Procedure ◆

- (1) Enter an instruction, followed by a space character.

The Enter Instruction dialog box is displayed and the instruction and space entered earlier are displayed in the text box.

- (2) Enter the first character of the structure name to be entered and press the [↓] key.

⇒ Structure names of instantiated structures beginning with the entered character is displayed along with tag names and addresses. Type names instead of I/O comments are displayed in structure names.



Step (2)

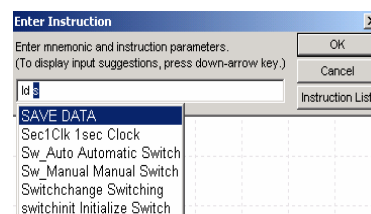
B040208\_01.VSD

**TIP**

Structure name candidates are not extracted from the input history, but only from structure names registered in the tag name definition.

- (3) Use the [↑] and [↓] keys to move in the displayed candidate list and press [Enter] to select the desired structure name.

⇒ The selected structure name is entered in the text box.

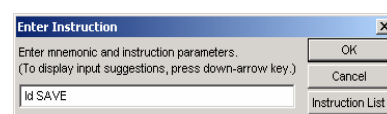


Step (3)

B040208\_02.VSD

**TIP**

Instead of pressing the [ENTER] key, you can also press the [TAB] key or double-click the mouse button to select a structure name.



Step (3)

B040208\_03.VSD

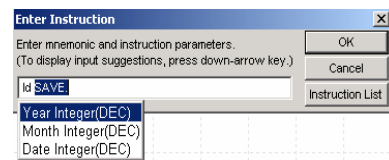
- (4) Next, enter the period ('.') character.

**(5) Press the [↓] key again.**

⇒ All the members belonging to the structure are displayed in a list. I/O comments or device types are also displayed in the list.

**TIP**

- Structure members are not extracted from the input history, but only from structure members defined in the type definition.
- If an input string contains the period character ('.'), the candidate list displays structure members; otherwise, it displays tag names or addresses.
- Extraction of candidates is not case-sensitive.
- To hide a displayed candidate list, press [ESC].

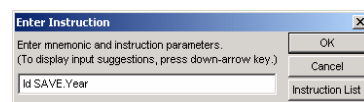


Steps (5) and (6)

B040208\_04.VSD

**(6) Select a member in the same way you would select a tag name or address, and press [Enter].**

⇒ The structure member is selected.



Step (6)

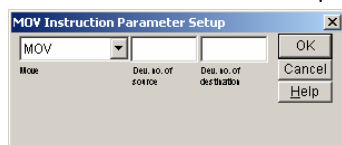
B040208\_05.VSD

**TIP**

If a checkmark has been added to [Automatically Display Candidate] for Instruction/Instruction Parameter Completion in the environment setup, a list of input candidates will automatically be displayed when two or more characters have been entered in the Enter Instruction dialog box.

**TIP**

Other than the Enter Instruction dialog box, the input completion function for structures is also available in Instruction Parameter Setup dialog boxes similar to the one shown below.



B040208\_06.VSD

**Figure B4.17 Instruction Parameter Setup Dialog Box**

## B4.2.9 Entering Basic Instructions

Basic Instructions include instructions like “Contact A”, “Contact B”, “OUT Instruction”, etc. There are 3 ways to enter basic instructions.

### SEE ALSO

For details on input using alphanumeric keys, see Section B4.2.5, “Input Using Alphanumeric Keys.”

## ■ Input Using Mouse

To enter input using mouse, use the following procedure.

### ◆ Procedure ◆

- (1) Click on the Basic Instruction button on the instruction palette.

⇒ The mouse cursor changes to the indicator for the selected instruction.



Step (1)

B040209\_01.VSD

- (2) Click at the location where the instruction is to be entered.

⇒ The selected instruction is written at the clicked position and the parameter input field appears.



### CAUTION

When entering an output instruction, the instruction is assigned to the last column and not at the clicked location. Furthermore, a horizontal connect line leads from the clicked position.

- (3) Enter the tag name or address into the parameter input field.

- (4) Press [Enter].

⇒ The parameter is entered.




Steps (3) and (4)

B0402\_22.VSD



### CAUTION

The selected instruction remains as the current instruction after input (the mouse cursor indicator remains unchanged). To continue writing the same instruction, click on the desired input location. To reset the instruction (and restore the mouse indicator to its usual form), perform any of the following operations.

- Press [ESC];
- Right click; or
- Click on the Selector button  on the instruction palette.



## CAUTION

A single line 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 shown below.

Up to 16 characters can be displayed for tag names or structure tag names. For tag names or structure tag names longer than 16 characters, the seventeenth and subsequent characters are not displayed.



B0402\_23.VSD

Figure B4.18 Examples of Display of Tag Names

## ■ Input Using Function Keys

To enter input using function keys, use the following procedure.

### ◆ Procedure ◆

(1) Move the position cursor to the desired input position.

(2) Press the function key for the instruction to be entered.

⇒ The instruction is coded at the specified location and the parameter input field appears.

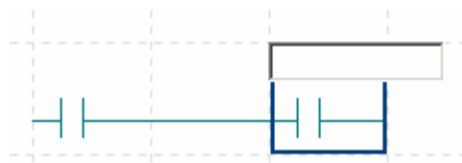
(3) Enter the tag name or device address and press [Enter].

⇒ The device is assigned to the instruction. The figure on the right shows an example for entering a Contact A instruction.



Step (1)

B0402\_24.VSD



Step (3)

B0402\_25.VSD

### TIP

Pressing [ESC] cancels instruction input.

When you confirm the input, the position cursor moves to the next cell.

## B4.2.10 Entering Application Instructions

You can enter application instructions using the Instruction List dialog box or the Enter Instruction dialog box.

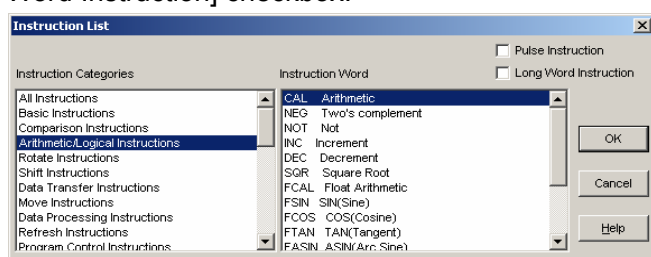
The Instruction List dialog box lists all the instructions in different categories and allows you to search for the desired instruction word.

The Enter Instruction dialog box allows you to directly enter the instruction and is convenient if you know which instruction to enter.

### ■ Input from the Instruction List Dialog Box

Application instructions are classified into comparison instructions, rotate instructions, data transfer instructions, etc.

The Instruction List dialog box displays the instruction categories on the left and the instruction words on the right. The [Pulse Instruction] checkbox is enabled only if the Pulse option is available for the selected instruction word. The same goes for the [Long Word Instruction] checkbox.



B0402\_26.VSD

Figure B4.19 Instruction List Dialog Box

You can enter application instructions from the Instruction List dialog box using the mouse or alphanumeric keys.

### (1) Input Using Mouse

To input using mouse, use the following procedure.

#### ◆ Procedure ◆

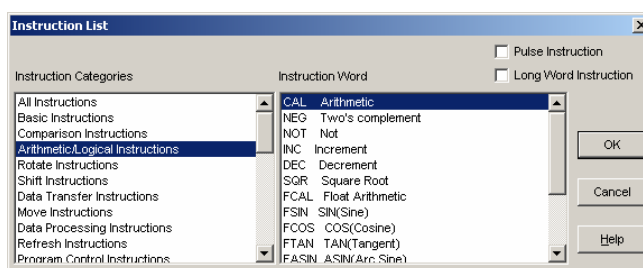
- (1) Click the Instruction List button  on the instruction palette.

⇒ The Instruction List dialog box is displayed.

- (2) Select the instruction category and instruction word from the respective list boxes.

- (3) Click [OK].

⇒ The Instruction List dialog box closes and the mouse cursor changes to the indicator for the selected instruction.



Steps (2) and (3)

B0402\_26A.VSD


(4) Click the mouse at the location where the instruction is to be entered.

⇒ The instruction is entered at the clicked position without parameters.

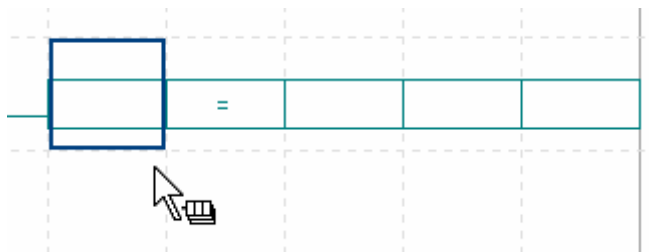


## CAUTION

The selected instruction remains as the current instruction after input (the mouse cursor indicator remains unchanged). To continue coding the same instruction, click on another input location. To reset the instruction (and restore the mouse indicator to its usual form), perform any of the following operations.

- Press [ESC];
- Right click; or
- Click on the Selector button  on the instruction palette.

When entering an output instruction, the instruction is assigned to the last column, not at the clicked location, and a horizontal connection line is drawn from the clicked position.



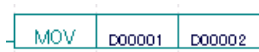
Step (4)

B0402\_27.VSD

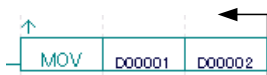
## TIP

An Application instruction is displayed as “instruction mnemonic, parameter 1, parameter 2, ...”. If the tag name is longer than 8 characters, it is displayed, beginning from the top line; if it has 8 or fewer characters, it is displayed on the bottom line.

- Ordinarily

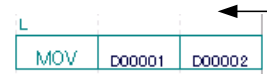


- Rising edge (pulse) instruction



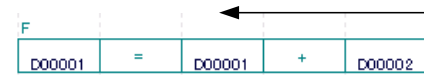
← An arrow is displayed above the instruction.

- Long word instruction



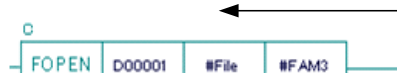
← “L” is displayed above the instruction.

- Floating point instruction



← “F” is displayed above the instruction.

- Continuous type application instruction



← “C” is displayed above the instruction.

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**Figure B4.20 Display Format of Application Instructions**

## (2) Input Using Function Keys

To input using function keys, use the following procedure.

### ◆ Procedure ◆

(1) Move the position cursor to where the instruction is to be entered.

(2) Press the [Shift]+[F4] (Instruction List) keys.

⇒ The Instruction List dialog box is displayed.

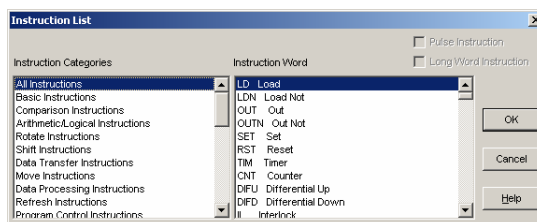
(3) Select the instruction category and instruction word and press [Enter].

⇒ The instruction is entered and the Parameter Setup dialog box opens.



Step (1)

B0402\_24.VSD



Step (3)

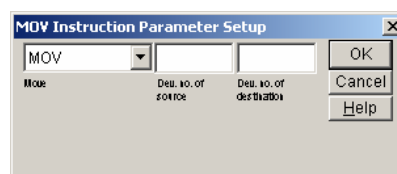
B0402\_29.VSD

(4) Enter the parameter and press [Enter].

#### TIP

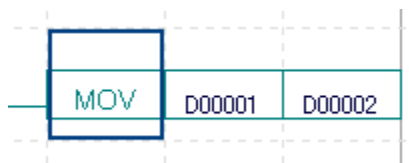
You can use the [Tab] key to move between the fields in the Parameter Setup dialog box.

⇒ The instruction and parameters are entered at the cursor position.



Step (4)

B040209\_30.VSD



Step (4)

B0402\_31.VSD

## ■ Input from the Enter Instruction dialog box

Similar to entering basic instructions, there are also three ways to enter application instructions using the Enter Instruction dialog box.

### (1) Input Using Mouse

To enter input using mouse, use the following procedure.

#### ◆ Procedure ◆

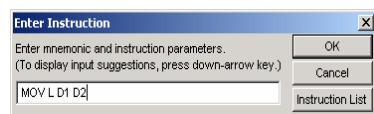
(1) Click on the Application Instruction button  on the instruction palette.

⇒ The Enter Instruction dialog box is displayed.

(2) Enter the instruction into the text box (instruction input field).

#### TIP

Enter the instruction parameter(s) after the instruction word. Separate the instruction word and parameters with a space. Clicking [Cancel] cancels the instruction input operation and restores the mouse cursor indicator to its usual form.



Steps (2) and (3)

B040209\_32.VSD

(3) Click [OK].

⇒ The mouse cursor changes to the indicator for the selected instruction.


(4) Click at the location where the instruction is to be entered.

⇒ The instruction will be entered at the clicked position.

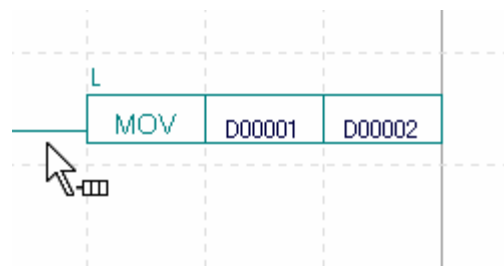


#### CAUTION

The selected instruction remains as the current instruction after input (the mouse cursor indicator remains unchanged). To continue coding the same instruction, click on the desired input location. To reset the instruction (and restore the mouse indicator to its usual form), perform any of the following operations.

- Press [ESC];
- Right click; or
- Click on the Selector button  on the instruction palette.

When entering an output instruction, the instruction is assigned to the last column, not at the clicked location, and a horizontal connection line is drawn from the clicked position.



Step (4)

B0402\_33.VSD



## (2) Input Using Function Keys

To enter an application instruction using function keys, move the cursor to the desired position and press [F4] (Application Input). Enter the instruction into the text box (instruction input field) on the Enter Instruction dialog box and press [Enter].

## (3) Input Using Alphanumeric Keys

To enter input using the alphanumeric keys, use the following procedure.

### ◆ Procedure ◆

(1) Move the position cursor to the desired instruction input position.

(2) Enter the first character of the mnemonic for the desired instruction.

⇒ The Enter Instruction dialog box is displayed. >The character entered earlier is displayed in the text box (instruction input field).

(3) Continue to enter the mnemonic.

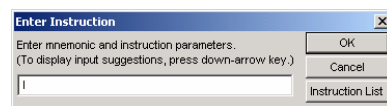
(4) Click [OK].

⇒ The instruction is entered at the location of the position cursor.



Step (1)

B0402\_24.VSD



Steps (3) and (4)

B040209\_34.VSD

## ■ Modifying Instruction Parameters

You can modify the parameters of an application instruction entered previously. There are two ways to change a parameter: using mouse or keyboard. The required procedure is given below.

### ◆ Procedure ◆

(1) Double-click the instruction of which the parameter is to be changed. Or, move the position cursor to the instruction and press [Enter].

⇒ The Instruction Parameter Setup dialog box is displayed.

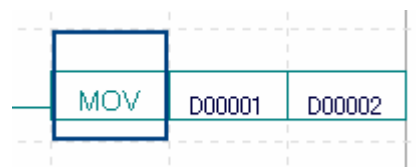
#### TIP

Up to 8 characters can be displayed in the Instruction Parameter Setup dialog box.

(2) Change the parameter.

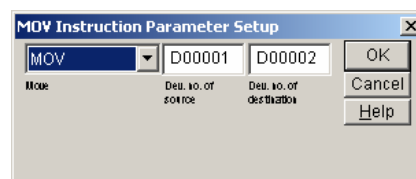
(3) Click [OK]. Or, press [Enter].

⇒ The parameter is changed.



Step (1)

B0402\_35.VSD



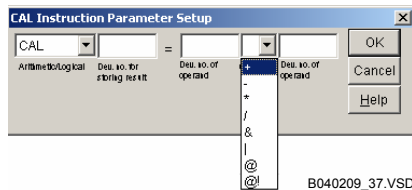
Steps (2) and (3)

B040209\_36.VSD

**TIP**

- The leftmost input field of the Instruction Parameter Setup dialog box is for entering the instruction word. It is in the form of a drop-down list and allows you to change the instruction properties (long word instruction, pulse instruction) easily.

Further, for the CAL instruction, the operator can also be changed from the drop-down list.



**Figure B4.21 CAL Instruction**


- You may either enter an address or a tag name for an instruction parameter; the parameter for the entered instruction will be displayed as an address or tag name, according to what was entered.

## B4.2.11 Entering Timer Instruction

The section describes how to enter the frequently used TIM instruction (Timer instruction) and change its parameters.

The procedure is given below.

### ■ Input Using Mouse

Click on the TIM Instruction button  on the instruction palette. Check that the mouse cursor indicator changes into the TIM instruction cursor. Click on the desired location to enter the TIM instruction.

### ■ Input Using Alphanumeric Keys

The procedure for input using the alphanumeric keys is given below.

### ◆ Procedure ◆

(1) Move the position cursor to where the instruction is to be entered.

(2) Press the [F11] (TIM instruction) key.

⇒ The TIM Instruction Parameter Setup dialog box is displayed.

(3) Enter the parameter.

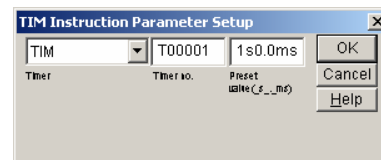
(4) Click [OK].

⇒ A TIM instruction is entered at the location of the position cursor.



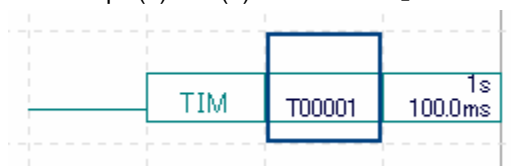
Step (1)

B0402\_24.VSD



Steps (3) and (4)

B040209\_38.VSD



Step (4)

B0402\_38A.VSD

## ■ Modifying Parameters


To modify the parameters of the TIM instruction, double-click the TIM instruction or press [Enter]. Modify the parameter in the TIM Instruction Parameter Setup dialog box and click [OK].

### B4.2.12 Entering Counter Instructions

The section describes how to enter the CNT instruction (Counter instruction) and change its parameters.

The procedure is given below.

## ■ Input Using Mouse

Click on the CNT Instruction button  on the instruction palette. Check that the mouse cursor indicator changes into the CNT instruction cursor. Click on the desired location to enter the CNT instruction.

## ■ Input Using Alphanumeric Keys

The procedure for input using the alphanumeric keys is given below.

### ◆ Procedure ◆

(1) Move the position cursor to where the instruction is to be entered.

(2) Press the [Shift]+[F11] (CNT instruction) keys.

⇒ The CNT Instruction Parameter Setup dialog box is displayed.

(3) Enter the parameter.

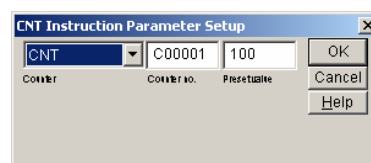
(4) Click [OK].

⇒ A CNT instruction is entered at the location of the position cursor



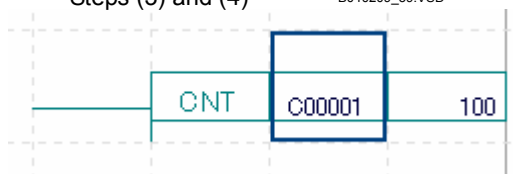
Step (1)

B0402\_24.VSD



Steps (3) and (4)

B040209\_39.VSD



Step (4)

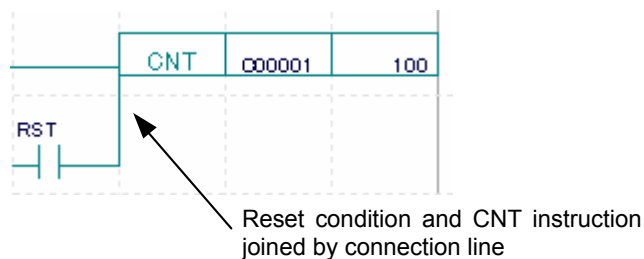
B0402\_40.VSD

## ■ Modifying Parameters

To modify the parameters of the CNT instruction, double-click the CNT instruction or press [Enter]. Edit the parameter in the CNT Instruction Parameter Setup dialog box and click [OK].

### TIP

The counter reset condition is entered on the next line.



B0402\_41.VSD

**Figure B4.22 Reset Condition for CNT Instruction**

## B4.2.13 Deleting Ladder Program Elements

To delete an element, say an instruction, of a ladder program, move the position cursor to the element to be deleted and select [Edit]–[Delete] on the menu or press the [Delete] key.

## B4.2.14 Entering Constants, Constant Names, Character Strings, Floating Points, Escape Sequence, Block Names and Label Names

In addition to devices, instruction parameters include the following:

- Constants (decimal, hexadecimal and timer preset values)
- Constant names
- Character strings
- Floating point numbers
- Escape sequences
- Block names
- Label names

Some instructions only allow input of a subset of the above parameters.

### ■ Entering Constants (decimal, hexadecimal and timer preset values)

#### ● Entering Decimal Constants

There are positive and negative decimal constants.

The ranges that can be handled are given below.

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

#### ● Entering Hexadecimal Constants

Hexadecimal constants are entered with the '\$' prefix.

Up to 4 digits can be entered for word instructions; up to 8 digits can be entered for long word instructions.

#### ● Entering Timer Preset Values

When using constants for timer preset values, suffix a value in seconds by "s" and a value in milliseconds by "ms". Values smaller than a millisecond are entered up to one decimal place.

The following figure shows an example with value 1s100.0ms (1 s and 100.0 ms)

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



B0402\_42.VSD

**Figure B4.23 Example of Display of Timer Constant**

#### TIP

Long word instructions are computed in 32-bit units.

## ■ Constant Names

Constant name definition allows meaningful names to be assigned to constants used in programs. You can map constant names to constant values using constant name definition, and once defined, constant names are common within the project. Using constant names as instruction parameters improves program readability and simplifies modification of the constant value of the same parameter throughout the project.

### SEE ALSO

For details on constant definition, see Chapter B6, "Constant Definition."

Constant names can be used in programs and entered just like address numbers and tag names.

To use a constant name in a program, a constant value must be assigned to the constant name in the constant name definition.

The constant value for a constant name need not be defined when the constant name is coded in a program but should be defined before program syntax check and downloading.



### CAUTION

- A program containing a constant name with no value assigned generates an error and cannot be transferred to the CPU. Always define constant values for constant names.
- Constant names can generally be used in place of constants as instruction parameters but cannot be used in some instructions.

**Table B4.4 Instructions that Disallow the Use of Constant Names as Constants**

Instruction		Parameters that Do Not Allow the Use of Constant Names in Place of Constants
HRD	High-speed Read Instruction	Parameters 1, 2 and 4
HWR	High-speed Write Instruction	Parameters 1, 2, 3 and 4

## ■ Entering Character Strings

WideField2 handles characters and text strings of alphanumeric and symbol characters. However, individual instructions may have their own restrictions. Text strings are enclosed within double quotation marks (" ").

Up to 2 ASCII characters can be entered for a word instruction; up to 4 ASCII characters can be entered for a long word instruction.

---

### **TIP**

- To use a character string constant, which is too long to be coded as an instruction parameter, assign the string constant to a constant name in the constant definition, and code the constant name in the program.
  - The semicolon (;) character cannot be entered directly as a character constant as it is used as a symbol for index modification. To use the semicolon as a character constant, you can either define a constant name for it or enter its hexadecimal character code (\$3B).
- 

---

### **SEE ALSO**

For details about constant definition, see Chapter B6, "Constant Definition."

---

## ■ Entering Floating Points

The use of floating point numbers is limited to a subset of instructions. Floating point numbers are entered with the '%' prefix. Negative values are entered with a '-' (minus) sign after the '%' prefix. Floating points can be used with long word instructions and floating point instructions.

Example:        %1.1E10; %1.2; %-3.4

Display is right-justified, with 8 characters for the mantissa and 4 characters for the exponent.

The display format is "%X.XXXXXXEYYY".

X.XXXXXX is the mantissa, YYY is the exponent. A minus sign, if any, is displayed immediately before "X.XXXXXX" and "YYY".

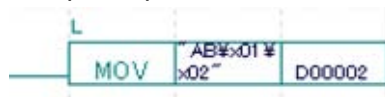
The range of data that can be entered is approximately as follows:

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

## ■ Entering Escape Sequences

Special characters that cannot be entered directly can be entered as hexadecimal codes, by prefixing each byte of hexadecimal code with "x" and enclosing the escape sequences within double-quote (") characters.

Escape sequences can be combined with character strings.



### TIP

B0404\_01.VSD

- To use an escape sequence character string, which is too long to be coded as an instruction parameter, assign the character string to a constant name in the constant definition, and code the constant name in the program.
- The double-quote (") character cannot be entered directly as a character constant as it is used as a symbol for escape sequence. To use the double-quote as a character constant, define a constant name for it and use the constant name instead.
- Parameters coded as character strings can be displayed in an escape sequence code by changing the display format. In addition, if parameters entered in escape sequence codes are codes corresponding to character strings, they can be displayed as character strings by changing the display format.

### SEE ALSO

For details on constant definition, see Chapter B6, "Constant Definition."

## ■ Entering Block Names

Block names are entered as parameters of ACT and INACT instructions. Entered names are always displayed in uppercase.

## ■ Entering Label Names in Jump or Subroutine Instructions

Labels name are entered as parameters of JMP or CAL instructions.



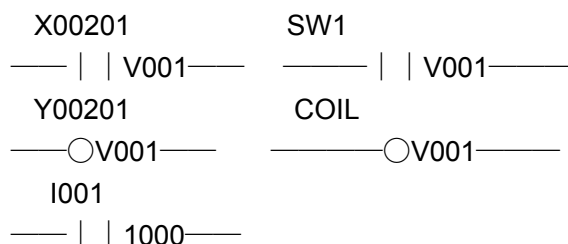
## B4.2.15 Input and Display of Indexed Devices

To enter an indexed device, insert a semi-colon after the device name or tag name, followed by an indexed register or a constant. Parameters of both basic instructions and application instructions are entered the same way.

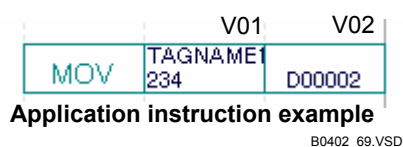
The following are some input examples:

- X201; V001            for entering an address
- SW1; V001            for entering a tag name
- I001; 1000            for entering a constant index

The devices as modified by the above indexes are displayed in the 2 figures below. Tag names can also be used for index registers; an address is displayed for an indexed device and a constant for a constant indexed device.



**Example of Display of Contact and Coil**



**Figure B4.24 Example of Display of Indexed Device**



### CAUTION

- Constant index modification is only supported on F3SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S modules.
- Constant index modification accepts any positive decimal number between 0 and 2,047 (inclusive). Any other input causes an input error.
- A constant indexed register cannot exceed the device area defined in the configuration.



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**Figure B4.25 Confirmation Dialog Box**

- If a constant indexed device overlaps a device on the output side, a “duplicate usage of coil” or “duplicate SET/RST” error occurs.
- If a constant indexed device exceeds the setup range for local devices or overlaps the range for global devices, an error is generated.

**SEE ALSO**

For details on index modification, see “Sequence CPU – Instructions” (IM34M6P12-03E).

## B4.2.16 Input and Display of Indirect Designation Devices

An indirect designation device stores the address number of a target device and through this, allows execution of various instructions via the device.

You can indicate an indirect designation devices by prefixing the device name or tag name with an “@” character. The D, B, R, W, /D and /B devices support indirect designation.

The FA-M3 provides 3 instructions for using indirect designation devices: SET@, ADD@ and MOV@.

**Table B4.5 Instructions for Using Indirect Designation Devices**

Instruction	Syntax	Function
SET@	SET@   D1   D2 D1: indirect designation not allowed D2: indirect designation	Sets an indirect designation device. The address representing D1 is stored in D2. The D2 device can now be used as an indirect designation device.
ADD@	ADD@   L   D1   n D1: indirect designation n: direct or indirect designation	Adds to indirect address stored in D1. The value to be added may be specified as n.
MOV@	MOV@   D1   D2 D1: indirect designation D2: indirect designation	Transfers stored addresses for indirect designation between devices. The address for indirect designation stored in D1 is transferred to D2.

### INPUT EXAMPLES:

```

———[SET@ P D0010 @B002]—
———[INC @B002]—

```

On line 1, the address number of D0010 is stored in B002. Next, the content of the indirect designation address (D0010) in B002 is incremented.

```

———[INC B002]—

```

If line 2 is not coded as an indirect designation address, the content of B002 will be incremented instead.

```

———[SET@ P D0020 @B003]—
———[ADD@ @B003 2 ]—
———[MOV@ P @B003 @B004]—

```

Devices used as operands in instructions used for indirect designation functions as indirect designation devices.

In the above sample code, the SET@ instruction stores in B003 the address of D0020, to be used in indirect designation.

In the ADD@ instruction on line 2, the value 2 is added to the value of D0020, the address used for indirect designation stored in B003 by the preceding SET instruction in line 1. Hence, D0022 is now stored in B003.

In the MOV@ instruction on line 3, the address stored in B003 for indirect instruction is transferred to B004. As a result, D0022 is stored in B004.

**CAUTION**

- Indirect designation devices are only supported on F3SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S modules.
- Indirect designation devices (prefixed by “@”) cannot be assigned to tag names.

**Table B4.6 Tag Name and Address**

	Tag Name	Address
✓	Data	D0001
×	Data	@D0001

## B4.2.17 Input and Display of Tag Names, Structure Names and Structure Member Names

Devices used in programs can be assigned with tag names or handled as structures.

### ■ Tag Names

Tag names are names assigned to devices used in programs. Multiple tag names can be assigned within a project using the tag name definition function. Coding programs with tag names improves program reusability and readability.

Multiple tag names can be grouped into a group tag name for convenience.

#### **SEE ALSO**

For details on tag name definition and group tag names, see Chapter B5, “Tag Name Definition.”

Tag names can be used in a program similarly to address numbers. Both global devices and local devices can be assigned to tag names.

You do not need to know the actual address assigned to a tag name when entering or editing a tag name in a program but you will need to assign an address to each tag name eventually using the tag name definition function.

You may either refer to a tag name in a program and then perform tag name definition later, or you may perform tag name definition before referring to the tag name in a program.

Tag name with no address assigned (blue)



## ■ Structure

Structures allow you to group devices used in programs by purpose and function and assign names to each group. It facilitates device management and improves program reusability.

To use a structure, you must perform structure type definition to create a basic template for the structure in a project as well as perform structure entity definition to instantiate the structure. Once defined, you can use the structure in place of a device in the program.

### SEE ALSO

- For details on structures, see Chapter B32, "Structures."
- For details on instantiation of structures, see Chapter B5, "Tag Name Definition."



### CAUTION

Structures are only supported on F3SP28-3S/38-6S/53-4S/58-6S/59-7S/66-4S/67-6S modules.

You can use either a structure name or the individual member names of an instantiated structure in a program.

## ● Using Structure Names

You can use a structure name to refer to the members of the structure as a group.

The following table lists structure instructions that can be used in a program to handle structures which group multiple devices of heterogeneous types together.

**Table B4.7 Structure Instructions**

Instruction	P	L	Syntax	Function
STMOV	✓	×	STMOV   D1   D2  D1: Source Structure Name D2 Destination Structure Name	Structure Move Instruction: Transfers structure data. Data of structure name designated by D1 is transferred to structure name designated by D2. Q structures, which are structure pointers, can also be used in D1 and D2.
STRCT	×	×	STRCT   D1   D2  D1: Q structure D2: Block Name	Structure Pointer Declaration: Declares a data type to be used in a structure macro. This instruction is used within a macro. The Q structure type designated by D1 becomes the same as the structure type designated by D2. Always declare a data type before using it in a structure macro.
SCALL	✓	×	SCALL   n   D1   D2  n: Macro Name D1: Structure parameter 1 D2: Structure parameter 2	Structure Macro Instruction: Passes structures as parameters to a macro. Passes D1 and D2 structure parameters to the macro designated by n.

**CAUTION**

- Structures used in an STMOV instruction must be of the same type. Otherwise, an error occurs.
- Structure instructions cannot be used in program monitoring or online editing.
- When using structure instructions, the step count depends on the members of the structure used in the instruction.

In STMOV and SCALL instructions, specify parameters using structure names as shown in the following figure (the table shows examples for structures AAA and CCC).

**Table B4.8 Example of Structure Instructions and Parameters**

Structure Instruction		Parameter Example
STMOV	✓	AAA
	✓	AAA[1]
	✗	AAA[1].addr
SCALL	✓	CCC
	✓	CCC[1]
	✗	CCC[1].addr

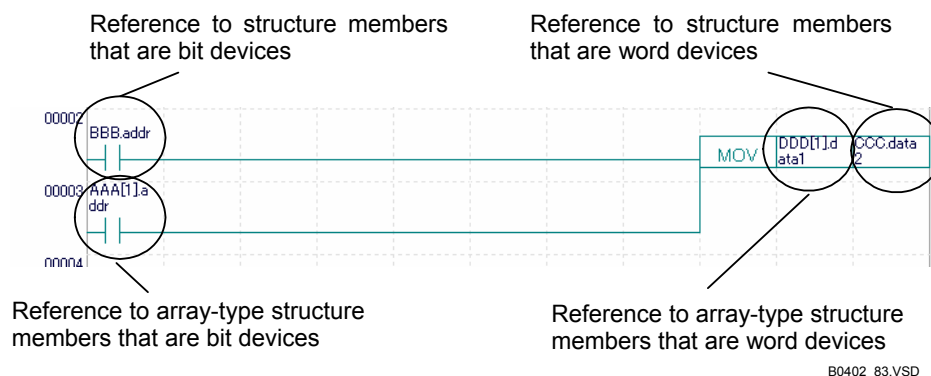
**SEE ALSO**

For details on structure instructions, see “Sequence CPU – Instructions” (IM34M6P12-03E).

## ● Using Structure Member Names

You can refer to a member of a structure similarly to a regular tag name.

As shown in the figure below, bit device structure members and word device structure members are coded in the program with bit device structure tag names and word device structure tag names respectively.

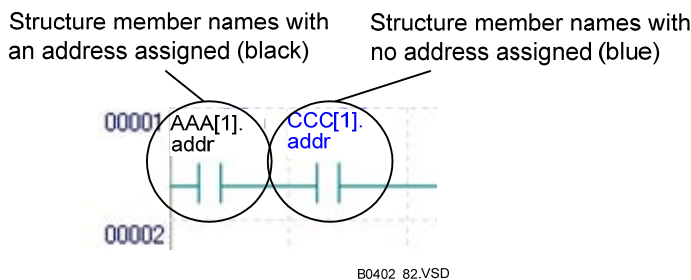


**Figure B4.27 Reference to Structure Members**

You do not need to know the actual address assigned to an instantiated structure tag name when entering or editing a structure tag name in a program but you will need to assign an address to each structure tag name eventually using the tag name definition function.

You may either refer to a structure tag name in a program and define the tag name later, or you may pre-define a structure tag name before referring to it in a program.

A structure tag name of an instantiated structure with an address already assigned using tag name definition is displayed in black, as shown in the left figure below. A structure tag name with no address assigned yet is displayed in green, as shown in the right figure below.



**Figure B4.28 Structure Member Names with and without an Address Assigned**

Tag names for structures used in a block may either refer to block tag name definitions defined for each block, or common tag name definitions defined for the entire project.

### SEE ALSO

For details on structure instantiation, see Chapter B5, “Tag Name Definition” and Section B32, “Structures.”



### CAUTION

A program containing an uninstantiated structure with no address assigned causes an error and cannot be transferred to the CPU. Always assign an address to a structure.

## B4.2.18 Inserting Connection Lines

There are three ways to edit (draw and delete) connection lines: using mouse, using function keys and using keyboard.

### ■ Input Using Mouse

Connection lines can be drawn or deleted in any direction, not limited to vertical and horizontal lines.

#### (1) Inserting Connection Lines Using the Mouse

To draw a connection line using the mouse, use the following procedure.

#### ◆ Procedure ◆

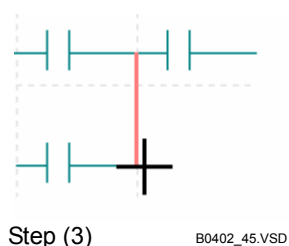
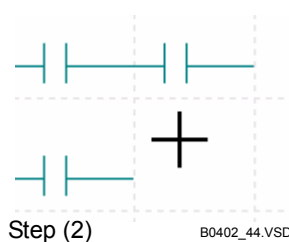
(1) Click on the Insert Connection Line button  on the instruction palette.

⇒ The mouse cursor changes to the Insert Connection Line cursor.

(2) Drag the cursor from the start point to the end point.

(3) Release the mouse at the end point.


⇒ A connection line is inserted. A bold line in reverse circuit color joining the start point and the current end point is displayed when the mouse is dragged.



#### CAUTION

The Insert Connection Line cursor indicator remains unchanged after a line insertion. You can continue to draw more lines. To cancel, press the [Esc] key or right-click the mouse button.

#### (2) Deleting Connection Lines Using the Mouse

To delete a connection line using the mouse, click on the Delete Connection Line button  on the instruction palette. Check that the mouse cursor has changed to the Delete Connection Line cursor and drag the cursor from the start point to the end point. Release the mouse at the end point to erase the connection line. A bold line in reverse circuit color joining the start and end points is displayed when the mouse is dragged.



#### CAUTION

The mouse Delete Connection Line cursor indicator remains unchanged after the line deletion. You can continue to delete more lines. To cancel, press the [Esc] key or click the right mouse button.



## ■ Input Using Function Keys

The procedures for drawing and deleting a connection line using function keys differ for vertical connection lines and horizontal connection lines.

### (1) Inserting Vertical Connection Lines Using the Function Keys

To insert a vertical connection line using function keys, use the following procedure.

#### ◆ Procedure ◆

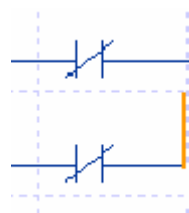
**(1) Press the [F8] (Insert Vertical Connection Line) key.**

⇒ The position cursor changes into the Vertical Line cursor.

**(2) Move the cursor to the desired input position using the arrow keys.**

**(3) Press the [Enter] key.**

⇒ A vertical connection line is inserted.



Step (2)

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#### CAUTION

The Vertical Connection Line cursor indicator remains unchanged after inserting a vertical line. To continue drawing vertical connection lines, move the vertical connection line cursor using the arrow keys and press the [Enter] key. To cancel, press the [Esc] key.

### (2) Deleting Vertical Connection Lines Using Function Keys

To delete a vertical connection line using function keys, press the [Shift]+[F8] (Delete Vertical Connection Line) keys. Check that the position cursor has changed to the Delete Vertical Connection Line cursor, move the cursor to the line to be deleted using the arrow keys and press the [Enter] key.

#### TIP

The Delete Vertical Line cursor is displayed as dotted lines.

### (3) Inserting Horizontal Connection Lines Using Function Keys

To insert a horizontal connection line using function keys, use the following procedure.

#### ◆ Procedure ◆

**(1) Move the position cursor to where a line is to be inserted.**

**(2) Press [F9] (Insert Horizontal Connection Line) key.**

⇒ A horizontal line is inserted at the position cursor. The position cursor moves to the cell on the right.



Step (2)

B0402\_47.VSD

## ■ Input Using Keyboard

The procedures for drawing and deleting a connection line using the keyboard differ for vertical connection lines and horizontal connection lines.

### (1) Inserting or Deleting Vertical Connection Lines Using the Keyboard

To insert or delete a vertical connection line using the keyboard, use the following procedure.

#### ◆ Procedure ◆

- (1) Move the cursor to the desired input position (or the vertical connection line to be deleted) using the arrow keys.

- (2) Press the [/] key.

⇒ A vertical connection line is inserted (or deleted).

#### TIP

The [/] key is used either to insert or delete a vertical connection line. If the position cursor is on a vertical connection line, pressing [/] deletes the line. Otherwise, pressing [/] inserts a vertical connection line.

### (2) Inserting Horizontal Connection Lines Using the Keyboard

To insert a horizontal connection line using the keyboard, use the following procedure.

#### ◆ Procedure ◆

- (1) Move the position cursor to where a line is to be inserted.

- (2) Press the [-] key.

⇒ A horizontal line is inserted.


#### TIP

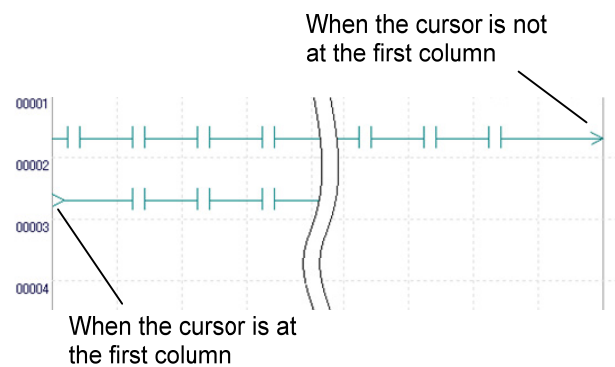
To delete a horizontal connection line, press the [DELETE] key.

## B4.2.19 Entering Continuation Circuit

There are 3 ways to enter a continuation circuit: using mouse, using function keys or using keyboard. The respective procedures are given below.

### ◆ Procedure ◆

- (1) When using the mouse, click on the Continuation Line button  on the instruction palette and then click on the position where the continuation line is to be inserted.
  - (2) When using function keys, move the cursor to the position where the continuation line is to be inserted and press the [Shift]+[F9] (Continuation Line) keys.
  - (3) When using the keyboard, move the position cursor to the position where the continuation line is to be inserted and press the [>] key or the [<] key.
- ⇒ A continuation line is displayed.



Steps (2) and (3)

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### TIP

#### - Input Using Mouse

Clicking on the beginning of a line generates a continuation line to the previous line.

Clicking mid-way in the line generates a continuation line to the next line.

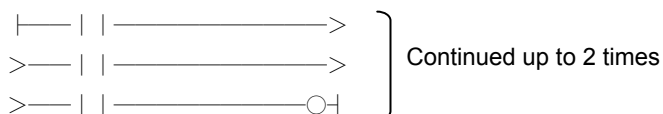
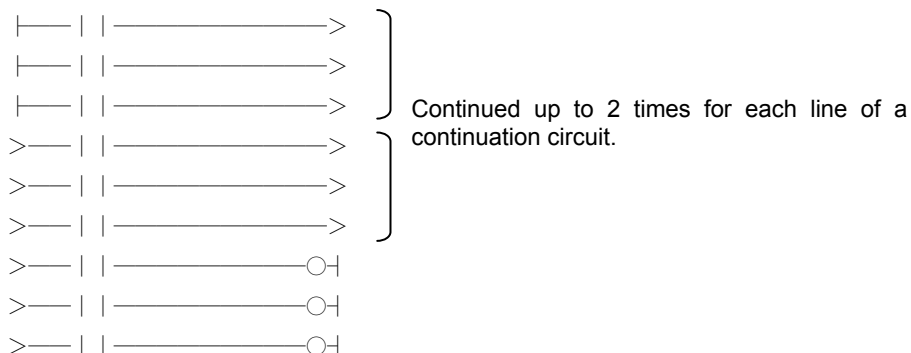
#### - Input Using Keyboard or Function Keys

When the position cursor is in the first column, a continuation line is generated from the previous line.

When the position cursor is in any column other than the first column, a continuation line is generated to the next line.

**CAUTION**

- Each line of a continuation circuit can be continued up to 2 times.

**(1) 1:1 Continuation Line****Figure B4.29 1:1 Continuation Line****(2) N:N Continuation Lines****Figure B4.30 N:N Continuation Lines**

- In a continued circuit, the number of symbols continuing to the next line must tally with the number of continuation lines leading from the previous line. Otherwise, an error results.

## B4.2.20 Entering Labels


Up to 6 ASCII characters can be entered for a label.

You can enter a label using any of the following ways:

- clicking the Label button on the instruction palette;
- double-clicking the label area of a circuit;
- using function keys ([Ctrl]+[F6]);
- moving the cursor to the label area and pressing the [Enter] key;
- entering '(' from the keyboard.

An entered label may be edited and deleted similarly. To enter a label, use the following procedure.

### ◆ Procedure ◆

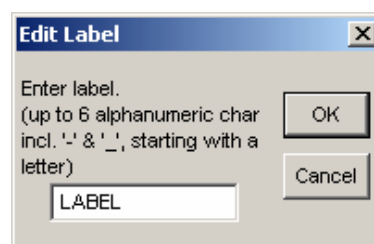
- (1) Click on the Label button  on the instruction palette and then click on the line where the label is to be inserted. Or, move the position cursor to the line where the label is to be inserted and press the [Ctrl]+[F6] (Label) keys. Or, move the mouse cursor to the label area and double-click the mouse button.

⇒ The Edit Label dialog box is displayed.

- (2) Enter the label in the text box.

- (3) Click [OK]. Or, press the [Enter] key.

⇒ The Edit Label dialog box closes and the label is entered.



Steps (2) and (3)

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Step (3)

B0402\_50.VSD

## ■ Editing Labels

To edit a label, open the Edit Label dialog box in the same way as entering a label. Edit the label displayed in the text box and click [OK] or press the [Enter] key.

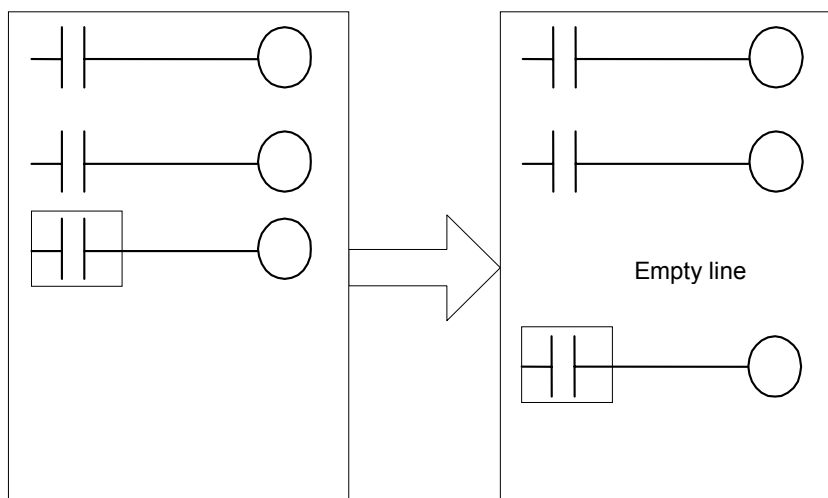
## ■ Deleting Labels

To delete a label, move the position cursor to the label area and press the [Delete] key.

Alternatively, open the Edit Label dialog box in the same way as entering a label. Delete all the characters of the label displayed in the text box and click [OK] or press the [Enter] key. The label is deleted.

### B4.2.21 Inserting Empty Lines

To insert an empty line, move the position cursor to where the line is to be inserted and select [Edit]–[Insert Line] from the menu.



B0402\_07.VSD

**Figure B4.31** Inserting Empty Lines

#### **TIP**

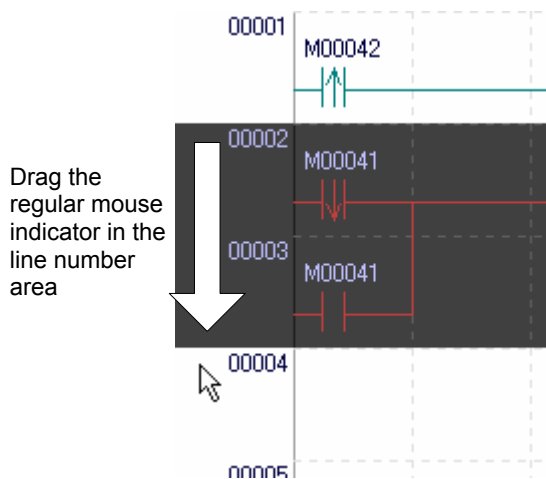
To remove a blank line(s) immediately after insertion, select [Edit]–[Undo] from the menu bar.

## B4.2.22 Selecting Circuits

### ■ Selecting Lines

You must select lines before performing line operations (copy, move, delete). Lines can be selected using the mouse or the keyboard.

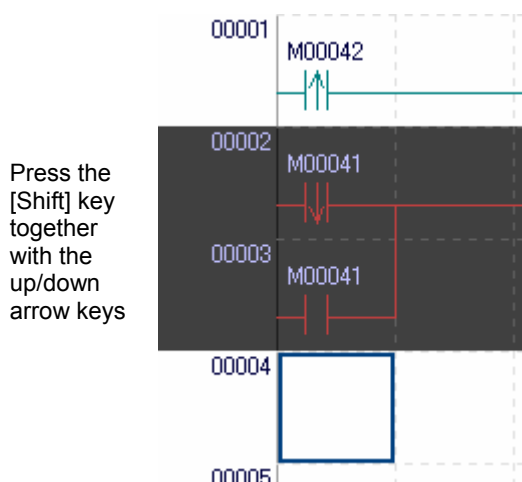
To select lines using the mouse, drag the regular mouse indicator in the line number area. Up to 500 lines can be selected at a time. It is not possible to select more than 500 lines at a time.



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**Figure B4.32 Selecting Lines Using Mouse (Example for Selecting Lines 2 and 3)**

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



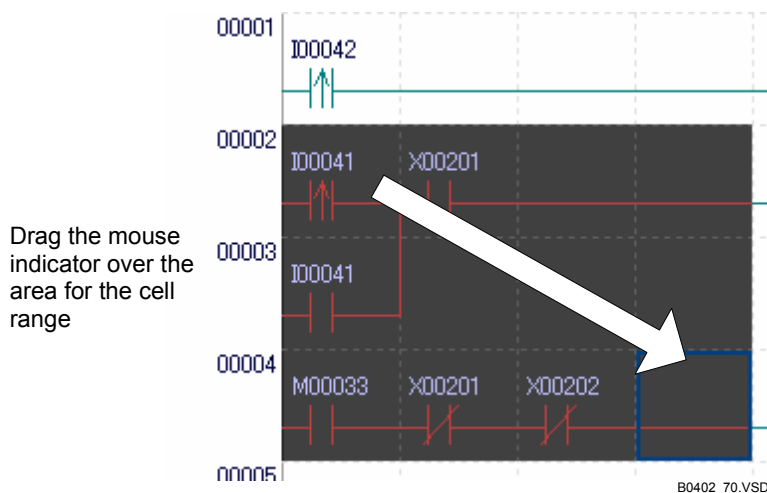
B0402\_52.VSD

**Figure B4.33 Selecting Lines Using Keyboard (Example for Selecting Lines 2 and 3)**

## ■ Selecting Cells

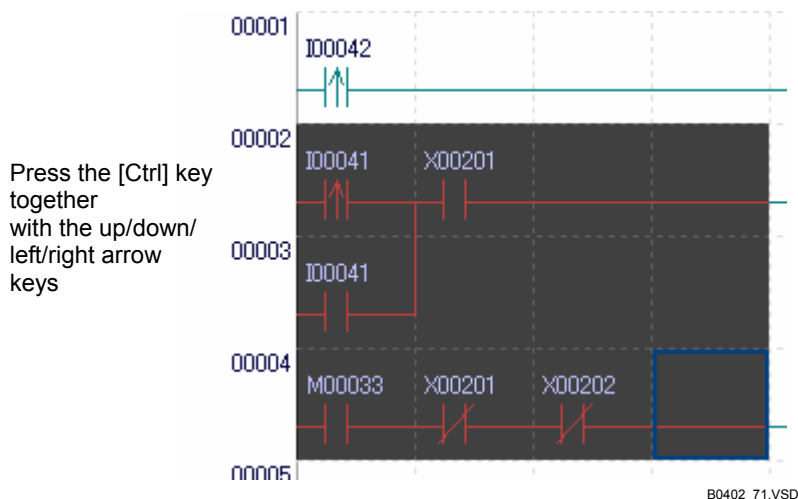
You must select a cell range before performing cell operations (copy, move, delete) in a circuit. Cell ranges can be selected using the mouse or the keyboard.

To select a cell range using the mouse, drag the mouse indicator over the area for the cell range. Up to 500 lines can be selected at a time. It is not possible to select more than 500 lines at a time.



**Figure B4.34 Selecting Cells Using Mouse (Example for Selecting Column 1 on Line 2 through Column 4 on Line 4)**

To select cells using the keyboard, press the [Ctrl] key together with the up/down/left/right arrow keys.



**Figure B4.35 Selecting Cells Using Keyboard (Example for Selecting Column 1 on Line 2 through Column 4 on Line 4)**

### TIP

To select a single cell, move the position cursor to the desired cell.



## B4.2.23 Deleting Circuits

### ■ Deleting Lines

Lines in specified areas can be deleted in line units.  
Circuit comments and subcomments are also deleted.

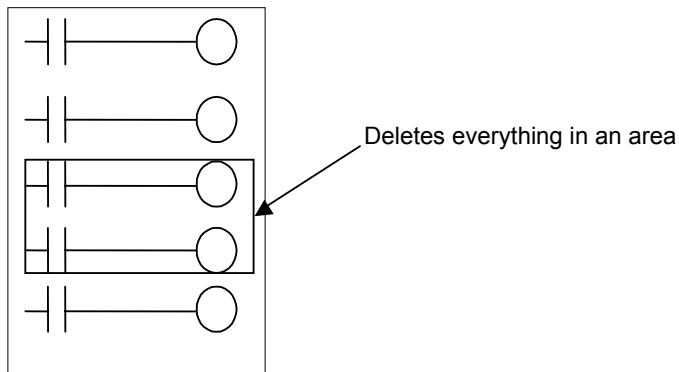


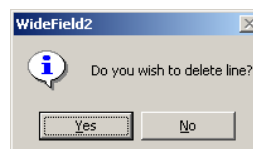
Figure B4.36 Deleting Lines

B0402\_08.VSD

To delete some lines, use the following procedure.

### ◆ Procedure ◆

- (1) Select the line(s) to be deleted.
- (2) Select [Edit]–[Delete Lines] from the menu, or press the [Delete] key.  
⇒ A confirmation dialog box is displayed.
- (3) Click [Yes].  
⇒ The selected line is deleted.



Step (3)

B0402\_53.VSD

### TIP

To recover lines immediately after deletion, select [Edit]–[Undo] from the menu bar.

## ■ Deleting Cells

Cells in specified areas can be deleted in cell units.

Circuit comments and subcomments are also deleted.

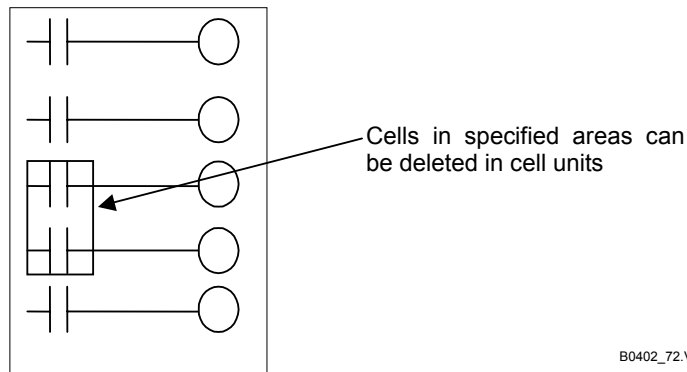


Figure B4.37 Deleting Specified Cells

To delete selected cells, use the following procedure.

## ◆ Procedure ◆

(1) Select the range of cells to be deleted.

(2) Select [Edit]–[Delete] from the menu,  
or press the [Delete] key.

⇒ A confirmation dialog box is displayed.

(3) Click [Yes].

⇒ The selected range of cells is deleted.



Step (3)

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### TIP

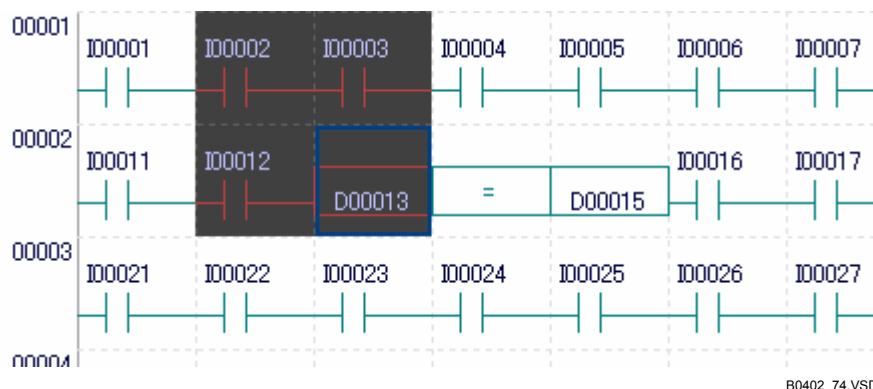
- Deleted cells become empty.
- To recover cells immediately after deletion, select [Edit]–[Undo] from the menu bar.



## CAUTION

Deletion is not allowed with the following selected cell ranges. Performing a deletion operation on an invalid selection range causes an error.

- The selection range contains edit-prohibit line(s) (circuit comment lines, temporarily deleted lines, mnemonic lines, circuit lines containing instructions that disallow online editing.)
- The selection range contains part of an instruction.



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Figure B4.38 Example of an Invalid Cell Selection Range Containing Part of an Instruction

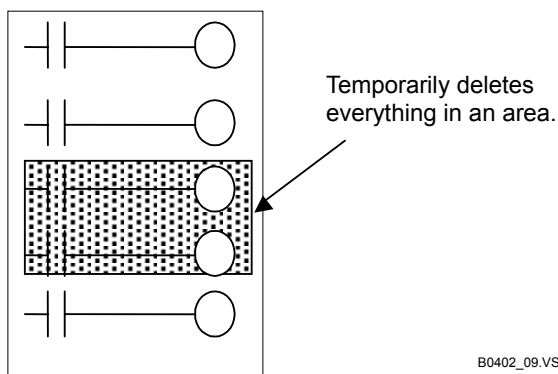
## B4.2.24 Temporarily Deleting Lines and Restoring Temporarily Deleted Lines in Circuits

### ■ Temporarily Deleting Lines

Lines within a selected range can be deleted in line units. Temporarily deleted lines are displayed with a different background color.

This function is handy for temporarily deleting lines of circuits while editing programs, when you are unsure whether to delete the lines permanently.

Circuit comments and subcomments for the lines are also temporarily deleted.



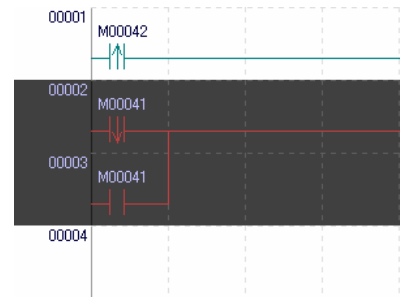
B0402\_09.VSD

Figure B4.39 Temporary Delete

To temporarily deleting some lines, use the following procedure.

## ◆ Procedure ◆

- (1) Select the line(s) to be deleted temporarily.

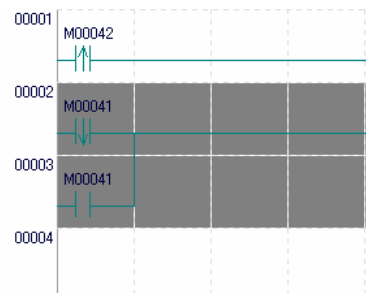


Step (1)

B0402\_54.VSD

- (2) Select [Edit]–[Delete Lines] from the menu.

⇒ The selected lines are temporarily deleted. The lines are displayed with a different background color.



Step (2)

B0402\_55.VSD

### TIP

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

## ■ Undo Temporary Delete

Temporarily deleted lines in a specified area can be recovered so that they can be edited as usual. To recover temporarily deleted lines, select the lines to be recovered and then select [Edit]–[Undo Temporary Delete] from the menu.

### TIP

Circuits cannot be temporarily deleted or restored in cell units.

## B4.2.25 Copying and Moving Circuits

### ■ Copying and Moving 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 for the lines are also copied and pasted.

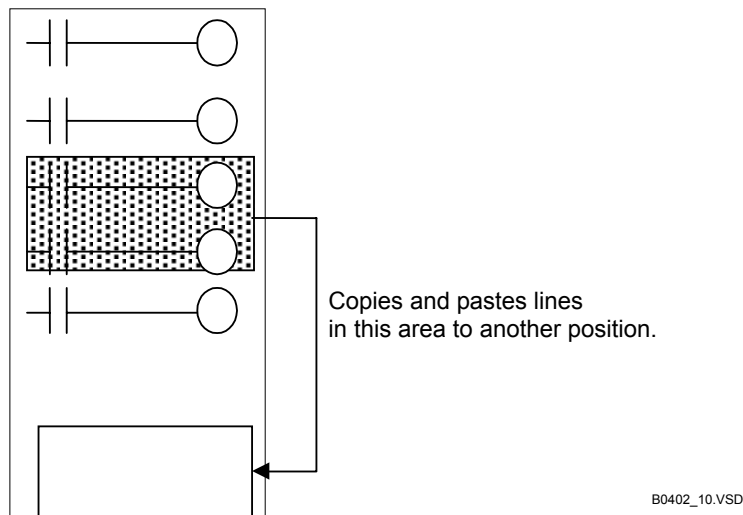


Figure B4.40 Copying and Moving Lines

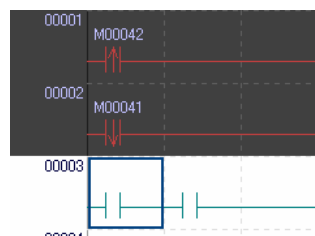
The required procedure is given below.

### ◆ Procedure ◆

- (1) Select the line(s) to be copied or moved.
- (2) Select [Edit]–[Copy] or [Edit]–[Cut] from the menu.

#### TIP

- Selecting [Edit]–[Cut] deletes the selected lines from the window, which then becomes the object to be moved.
- To recover lines immediately after a 'cut' operation, select [Edit]–[Undo] from the menu bar.



Step (2)

B0402\_56.VSD

- (3) Move the position cursor to the destination for the copy or move operation.

#### TIP

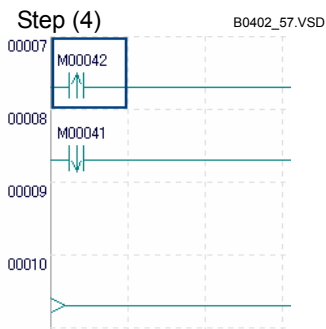
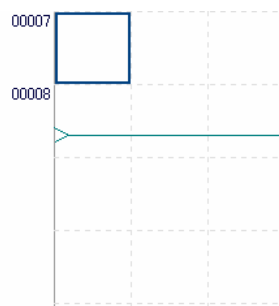
To move or copy to another window, move the position cursor to the destination position in the window.

(4) Select [Edit]–[Paste] from the menu.

⇒ The lines are inserted at the position cursor.

### TIP

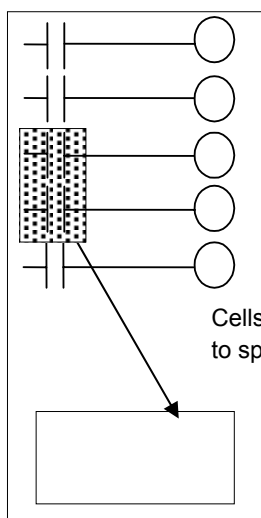
To cancel a paste operation immediately after execution, select [Edit]–[Undo] from the menu bar.



Step (4) B0402\_58.VSD

## ■ Copying and Moving Cells

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



Cells in specified areas can be copied and moved to specified positions in cell units.

B0402\_75.VSD

Figure B4.41 Copying and Moving Specified Cells

The required procedure is given below.

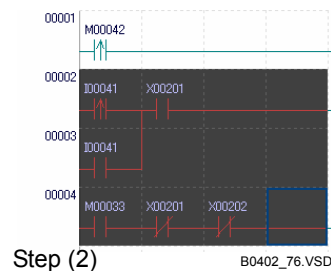
## ◆ Procedure ◆

(1) Select the range of cells to be copied or moved.

**(2) Select [Edit]–[Copy] or [Edit]–[Cut] from the menu.**

**TIP**

- Selecting [Edit]–[Cut] deletes the selected cells from the window, which then becomes the object to be moved.
- To recover the cells immediately after deletion, select [Edit]–[Undo] from the menu bar.



**(3) Move the position cursor to the destination for the copy or move operation.**

**TIP**

To move or copy to another window, move the position cursor to the destination position in the window.

**(4) Select [Edit]–[Paste] from the menu.**

Cells in specified areas can be copied and moved to specified positions in cell units.



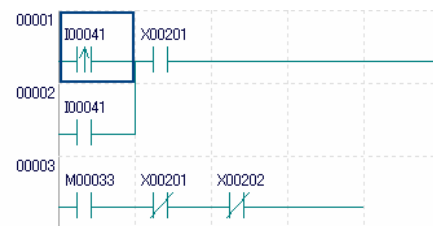
**Step (4)**

B0402\_77.VSD

⇒ The cells are entered at the position cursor.

**TIP**

- Pasting cells overwrites the contents at the destination.
- To cancel a paste operation immediately after execution, select [Edit]–[Undo] from the menu bar.



**Step (4)**

B0402\_78.VSD

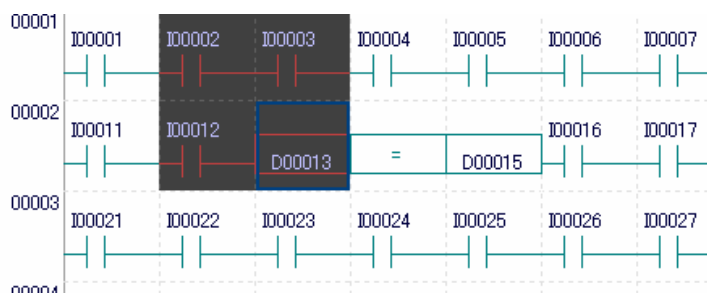


## CAUTION

Copying or Moving cells is not allowed in the following situations. Performing an invalid operation causes an error.

- **When performing a Cut or Paste operation:**

- When the selection range contains edit-prohibit line(s) (circuit comment lines, temporarily deleted lines, mnemonic lines, circuit lines containing instructions that disallow online editing.)
- The selection range contains part of an instruction.



B0402\_74.VSD

**Figure B4.42 Example of an Invalid Cell Selection Range Containing Part of an Instruction**

- **When performing a Paste operation:**

- The paste area is in the middle of an instruction.
- The range does not allow the use of input-type picture elements.
- The range does not allow the use of output-type picture elements.
- Circuit comment lines
- The data, if pasted, exceeds the vertical columns (horizontal rows) display area.
- Prohibit-edit line (hidden lines, temporarily deleted lines, mnemonic display lines, circuit lines instructions that disallow online editing.
- When the number of circuit lines after the paste operation exceeds the maximum number of lines allowed for the block.
- When a receiving side drawing element is pasted not in the first column in a continuation circuit.
- When a vertical continuation line is pasted on the last column.

Copying or moving circuits from a ladder program edit window to an online edit window is not allowed.

## B4.2.26 Copying Circuit Images

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

### TIP

You cannot copy circuit images in cell units.



## B4.2.27 Canceling an Operation

You can undo up to 10 operations that you have just performed. Some possible scenarios are as follows:

- (1) To recover an instruction or comment you have just deleted using the [Delete] key.
- (2) To delete an entered instruction immediately after input, and revert to a prior state.
- (3) To cancel parameter replacement, and revert to a prior state.
- (4) To cancel a delete, cut or paste operation on lines or columns immediately after execution, and revert to a prior state.
- (5) To remove empty blanks immediately after insertion, and revert to a prior state.

The following restrictions apply to the canceling of operations:

- If the total number of lines for the most recent 10 operations exceeds 500 lines, only the latest operations can be canceled.
- If an editing operation is performed after an operation has been canceled, the cancel information is reset.
- Once Hide/Show Circuits or Temporary Delete/Undo Temporary Delete operations are performed, previous operations can no longer be canceled.

In addition, the following operations, once performed, cannot be undone.

- Assignment of tag names to addresses (registration remains in the tag name definition)
- Modification of I/O comments

To undo an operation, select [Edit]–[Undo] from the menu.

### ■ Recovering Deleted Instruction or Comments

Pressing the [Delete] key deletes an instruction or comment at the position cursor. If you change your mind, you can restore a deleted item.

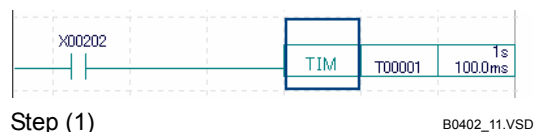
The following procedure illustrates how to recover a deleted TIM instruction.

#### ◆ Procedure ◆

(1) Move the position cursor to the TIM instruction.

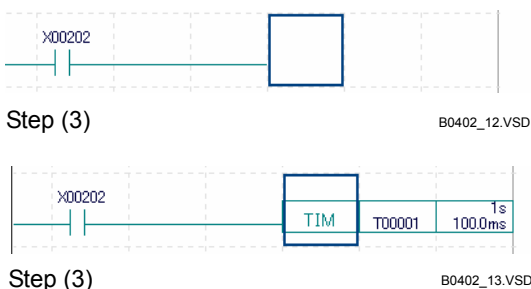
(2) Press the [Delete] key.

⇒ The TIM instruction is deleted.



(3) Select [Edit]–[Undo] from the menu.

⇒ The TIM instruction is restored.



## ■ Reverting to State Prior to Input

If you have entered an incorrect instruction, you can delete the instruction and revert to the previous state.

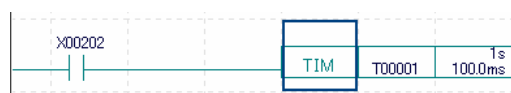
The following procedure illustrates how to restore a TIM instruction overwritten by an invalid instruction.

### ◆ Procedure ◆

(1) Move the position cursor to the TIM instruction.

(2) Press the [F7] (OUT instruction) key in overwrite mode.

⇒ The OUT instruction is saved and the parameter input field is displayed.



Step (2)

B0402\_11.VSD

#### SEE ALSO

For details on overwrite mode, see Section B4.2.28, "Overwrite Mode and Insert Mode."

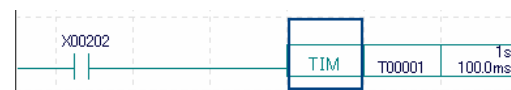
(3) Select [Edit]–[Undo] from the menu.

⇒ The OUT instruction is deleted and the TIM instruction is restored.



Step (3)

B0402\_15.VSD



Step (3)

B0402\_13.VSD

#### TIP

While entering characters in the parameter input field, the undo operation deletes the entered characters but does not restore the TIM instruction.

## B4.2.28 Overwrite Mode and Insert Mode

There are two modes for entering instructions: overwrite mode or insert mode. Pressing the [Insert] key toggles between the two modes.

Overwrite mode is usually used for editing whilst Insert mode is used for inserting instructions.

- Overwrite Mode

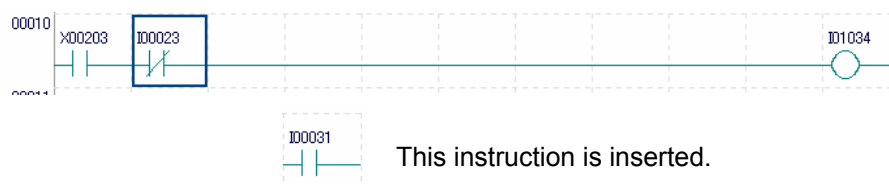
If there is an instruction at the position cursor when a new instruction is entered in overwrite mode, the instruction at the cursor is removed and replaced by the new instruction.

- Insert Mode

If there is an instruction at the position cursor when a new instruction is entered in insert mode, the instruction at the cursor is shifted to the right and the new instruction is entered in its original position.

The following example illustrates the difference between Overwrite mode and Insert mode when an instruction is entered at the position cursor

- Original condition



- In Overwrite Mode



- In Insert Mode



B0402\_17.VSD

**Figure B4.43** Difference between Overwrite Mode and Insert Mode (when an instruction is entered)

The following example illustrates the difference between Overwrite mode and Insert mode when the [Delete] key is used to delete an instruction at the position cursor.

In overwrite mode, the instruction at the position cursor is deleted. In insert mode, the instruction at the position cursor is deleted and the instruction on the right is shifted left to take its place.

- Original condition



- In Overwrite Mode

The instruction located at the position cursor is deleted.



- In Insert Mode

The instruction located at the position cursor is deleted and shifted left to take its place.



B0402\_18.VSD

**Figure B4.44 Differences between Overwrite Mode and Insert Mode (when an instruction is deleted)**

**TIP**

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

**TIP**

Input-type instructions are instructions that input device states such as load instructions (LD instruction) and comparison instructions (CMP instruction). They are usually coded on the left side of a ladder diagram.

## B4.2.29 Entering and Deleting Circuit Comments

Circuit comments can be coded in the same way as circuits. They are always displayed in the block edit window. Circuit comments are entered in line units. Up to 25 lines can be entered for each comment.

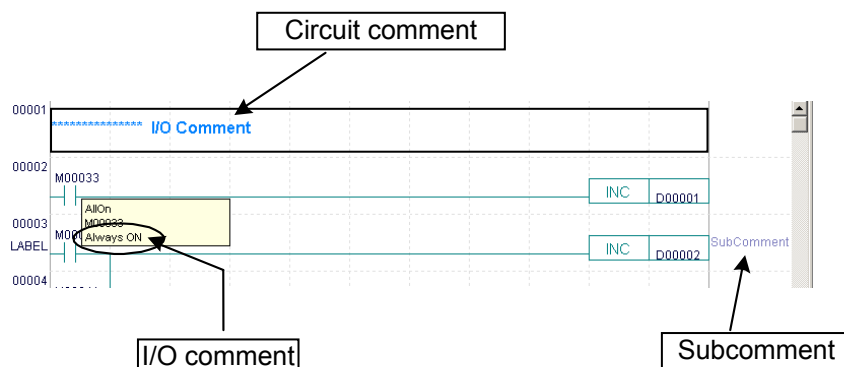


Figure B4.45 Examples of Different Comment Types

B0402\_19.VSD

### ■ Entering Circuit Comments

You can enter a circuit comment using any of the following ways:

- clicking the Circuit Comment button on the instruction palette;
- using function keys ([Ctrl]+[F7]);
- entering '!' from the keyboard.

#### (1) Input Using Mouse

To enter a circuit comment using the mouse, use the following procedure.

#### ◆ Procedure ◆

##### (1) Click the Circuit Comment button

 on the instruction palette.

⇒ The mouse cursor indicator changes into the circuit comment cursor.

##### (2) Click the mouse at the location where the circuit comment is to be entered.

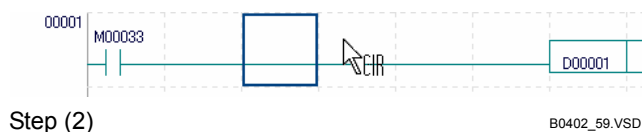
⇒ The circuit comment input field is displayed at the clicked position.

##### TIP

The position cursor in a circuit comment operates on line units.

##### (3) Enter the circuit comment and press the [Enter] key.

⇒ The circuit comment is entered.



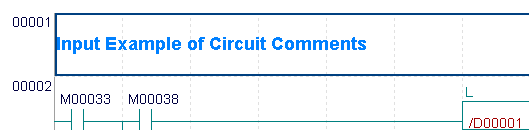
Step (2)

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Step (3)

B0402\_60.VSD




Step (3)

B0402\_61.VSD

**CAUTION**

The Circuit Comment cursor remains unchanged after the circuit comment input. You may continue to enter more circuit comments. To cancel, do one of the following:

- Press the [ESC] key;
- Right click or
- Click the Selector button  on the instruction palette.

**(2) Input Using Function Keys**

To enter a circuit comment using function keys, move the position cursor below the position where the circuit comment is to be entered and press the [Ctrl]+[F7] (circuit comment) keys. Enter the circuit comment in the circuit comment input field and press the [Enter] key.

**(3) Input Using [!] Key**

Move the position cursor to the position where the circuit comment is to be entered and enter '!'. Enter the circuit comment in the circuit comment input field and press the [Enter] key.

**■ Editing Circuit Comments**

To edit an existing circuit comment, display it in the circuit comment input field, amend it and press the [Enter] key.

You can display the circuit comment input field using any of the following ways:

- Move the position cursor to the position of the circuit comment and press the [Enter] key or
- Double-click the circuit comment.

**■ Deleting Circuit Comments**

To delete a circuit comment, move the position cursor to the circuit comment to be deleted and select [Edit]–[Delete] from the menu (or press the [Delete] key).

**CAUTION**

Even if all the text in a circuit comment field is deleted, the circuit comment itself is not deleted but remains as an empty circuit comment.

## B4.2.30 Entering and Deleting Subcomments

Subcomments can be written to output-type instructions. They are displayed in the subcomment display area beyond the right power rail. Subcomments are entered on instruction basis.

### TIP

The right power rail is the vertical line drawn at the right end of a ladder diagram. It represents one of the two electrodes.

## ■ Entering Subcomments

You can enter a subcomment using any of the following ways:

- clicking the Subcomment button on the instruction palette;
- double-clicking the subcomment area of a circuit;
- using function keys ([Ctrl]+[F9]);
- moving the cursor to the subcomment area and pressing the [Enter] key;
- entering ')' from the keyboard.

### (1) Input Using Mouse

To enter a subcomment using the mouse, use the following procedure.

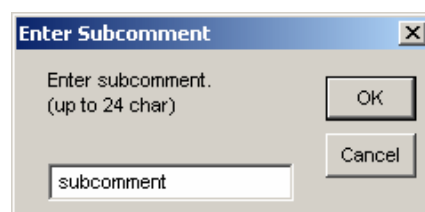
### ◆ Procedure ◆

(1) Click the Subcomment button  on the instruction palette.

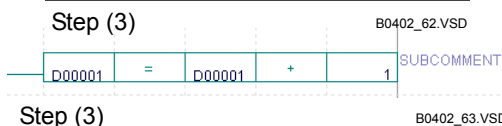
(2) Click the line where the subcomment is to be entered.

⇒ The Enter Subcomment dialog box is displayed.

(3) Enter the subcomment and click [OK].



⇒ The subcomment is entered.



### (2) Input Using Function Keys


To enter a subcomment using the function keys, move the position cursor to where the subcomment is to be entered and press the [Ctrl]+[F9] (subcomment) keys. Enter the subcomment in the displayed Enter Subcomment dialog box and press the [Enter] key.

### (3) Input in Subcomment Area

Move the cursor to the subcomment area and press the [Enter] key. Enter the subcomment in the displayed Enter Subcomment dialog box and press the [Enter] key.

## ■ Editing Subcomments

To edit an existing subcomment, display the Enter Subcomment dialog box, amend the subcomment and click [OK] or press the [Enter] key. You can display the Enter Subcomment dialog box using any of the following ways:

- Move the position cursor to the line for the subcomment and press the [Ctrl]+[F9] keys;
- Click the Subcomment button  on the instruction palette and click the desired subcomment;
- Move the position cursor over the subcomment to be edited, and press the [Enter] key.

## ■ Deleting Subcomments


Move the position cursor over the subcomment to be deleted, and press the [Delete] key.

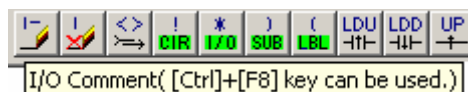
Alternatively, display the Enter Subcomment dialog box, delete all the text for the subcomment and click [OK].



## B4.2.31 Entering and Deleting I/O Comments

I/O comments are written to devices and are displayed in the I/O comment display area. You can enter an I/O comment using the mouse or function keys.

Clicking the I/O Comment button  on the instruction palette switches between the I/O Comment and Parameter input modes.



B040209\_64.VSD

**Figure B4.46** I/O Comment Input Mode

### TIP

To show the I/O comment display area, select [View]–[Display I/O Comment] from the menu.

You can also move the mouse cursor over a device and read its I/O comment using TipHelp.



### CAUTION

- I/O comments can be set only for structure members defined in the structure type definition. You can set I/O comments for an instantiated structure from the individual circuit edit screens.
- I/O comment is not displayed when a parameter is a structure name. The I/O comment specified for a member in the structure type definition is displayed only when a parameter is specified as a member name. However, I/O comment is not displayed when the parameter is a Q structure member.

**Table B4.9** Displaying and Editing Parameter and I/O Comments

Parameter	Display of I/O Comment	Editing of I/O Comment
Structure name e.g. "DATA[V01]"	Not displayed	Not allowed
Structure member name e.g. "DATA[10].Adr"	Displays I/O comment defined in the type definition	Not allowed
Q structure e.g. "Q1"	Not displayed	Not allowed
Q structure.member name e.g. "Q1.Adr"	Not displayed	Not allowed

## ■ Entering I/O Comments

### (1) Input Using Mouse

To enter an I/O comment using the mouse, use the following procedure.

#### ◆ Procedure ◆

(1) Click the I/O Comment button  on the instruction palette.

⇒ The I/O Comment Input mode is activated.

(2) Double-click the position where the I/O comment is to be entered. Or, click the position and press the [Enter] key.

⇒ The I/O comment input field is displayed.

(3) Enter the I/O comment and press the [Enter] key.

⇒ The I/O comment is entered.



Step (3)

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#### TIP

The entered I/O comment is updated in the reference tag name definition.

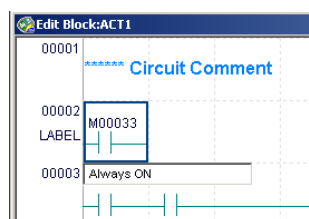
Pressing the [Esc] key exits the I/O comment input field.

### (2) Input Using Function Keys

To input an I/O comment using the function keys, move the position cursor to the element where the I/O comment is to be entered and press the [Ctrl]+[F8] (I/O Comment) keys. Enter the I/O comment into the input field and press the [Enter] key.

## ■ Editing I/O Comments

To edit an existing I/O comment, display the I/O comment input field using the same procedure for entering an I/O comment. Amend the I/O comment displayed in the I/O comment input field and press the [Enter] key.



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Figure B4.47 Editing an I/O Comment

## ■ Deleting I/O Comments

To delete an I/O comment, display the I/O comment input field using the same procedure for entering an I/O comment. Delete all the characters of the I/O comment and press the [Enter] key.

## ■ Enter Tag Name with Address and I/O Comment

The Enter Tag Name with Address and I/O Comment mode allows you to enter an I/O comment when you enter an address. The I/O comment is saved with the reference tag name definition.

### **SEE ALSO**

---

For details on the Enter Tag Name with Address and I/O Comment mode, see Section B4.3, "Entering Tag Names and Addresses."

---

## ■ Saving I/O Comments

When the common tag name definition is referenced, I/O comments are saved as and when they are registered or edited during ladder program editing.

When the block tag name definition is referenced, I/O comments are not saved until the edited circuit is saved. Even if the displayed tag name definition is saved, I/O comments are not saved unless the edited circuit is saved. To save I/O comments, you must always save the edited circuit.

### B4.2.32 Index View

The index view uses circuit comments as indexes, and hides circuits coded up to the next circuit comment. The index view helps you to have an overall flow of a ladder program before editing the details.

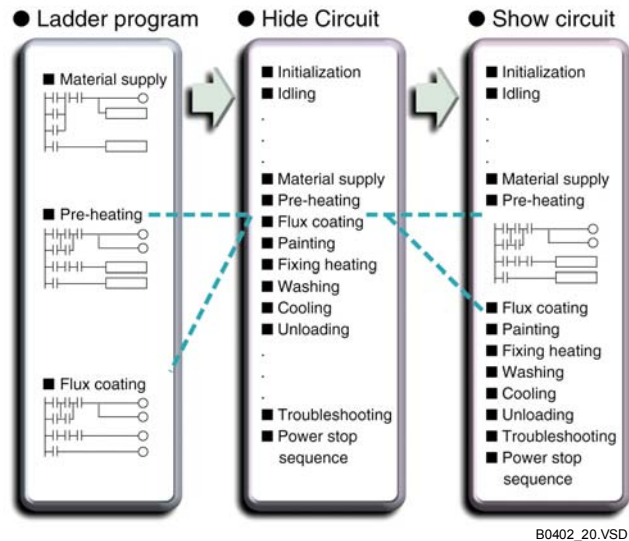
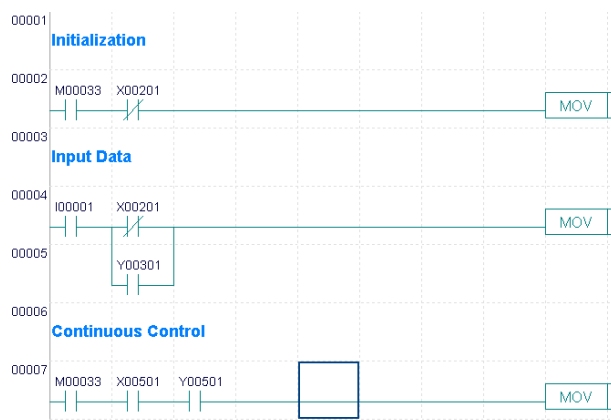


Figure B4.48 Conceptual View of Circuit Hiding

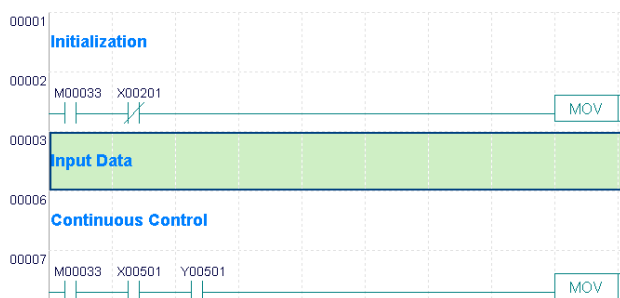
You can choose to hide or show individual circuits, as well as hide or show all circuits within a block.

## ■ Hide Circuits

To hide all circuits up to the next circuit comment, move the position cursor to the circuit comment line and then select [Edit]–[Hide Circuits] from the menu bar. When circuits are hidden, the background color of the circuit comment changes as shown in the figure below.



Display prior to hiding circuits



Display after hiding circuit  
(Example where circuits from lines 3 to 5 are hidden)

B0402\_67.VSD

**Figure B4.49 Example of Hidden Circuits**



### CAUTION

- When you hide the last circuit comment of a program, all circuits until the end of the program are hidden.
- Circuit comments of hidden circuits are displayed with a different background color to indicate that modification is not allowed.
- The index view mode remains even after the file is closed and reopened.

## ■ Show Circuits

To redisplay a hidden circuit, move the position cursor to the comment of the hidden circuit and select [Edit]–[Show Circuits] from the menu.

## ■ Hide All Circuits

To hide all circuits within a block, select [Edit]–[Hide All Circuits] from the menu. This function, however, does not work if the circuit comment is not on the first line of the block.

## ■ Show All Circuits

To show all circuits within a block, select [Edit]–[Show All Circuits] from the menu. When all circuits are shown, the line containing the position cursor is displayed at the top.

## ■ Customize Color of Hidden Circuits

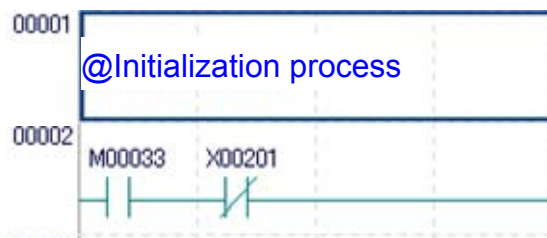
You can customize the display color of circuit comments for hidden circuits on the Circuit Display/Input tab of the Set up Environment dialog box.

### B4.2.33 Inserting Page Breaks

When an “@” character is entered at the beginning of a circuit comment, the circuit comment will be printed at the top of a page on printouts. Enter the “@” character directly by editing the circuit comment.

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

The @ symbol can also be inserted at the beginning of a circuit comment by moving the position cursor to the circuit comment and selecting [Edit]–[Page Break].



B0402\_68.VSD

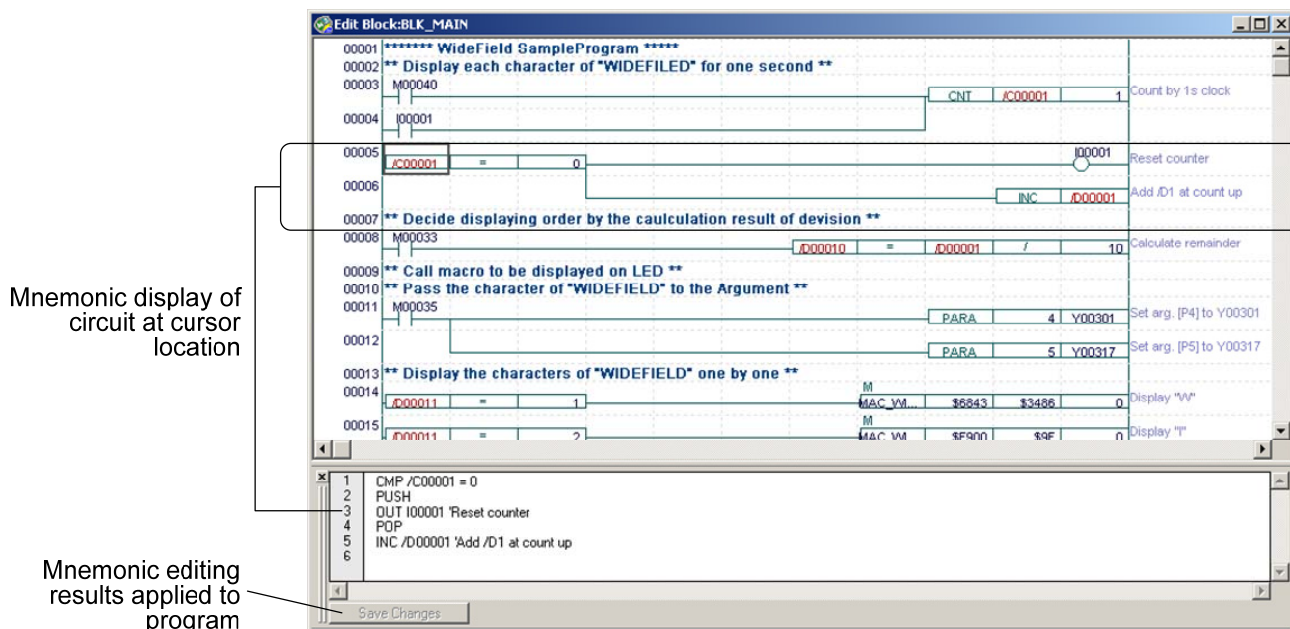
Figure B4.50 Page Break

## B4.2.34 Mnemonic Editing Function

This function is used to edit programs in the mnemonic format in the program edit screen.

Programs that allow mnemonic editing can be used only when the program inside the block/macro is converted normally with the [Convert] operation.

In addition, mnemonic editing can be performed on a 1-circuit unit of programs at a time.



B0402\_108.VSD

To perform mnemonic editing, use the following procedure.

### ◆ Procedure ◆

- (1) Make sure the Edit Block or Edit Macro window is open.
- (2) Move the cursor to the circuit where you will perform mnemonic editing, and press [Ctrl]+[Enter].  
⇒ The Edit Mnemonics pane opens.

- (3) Code the mnemonic program.

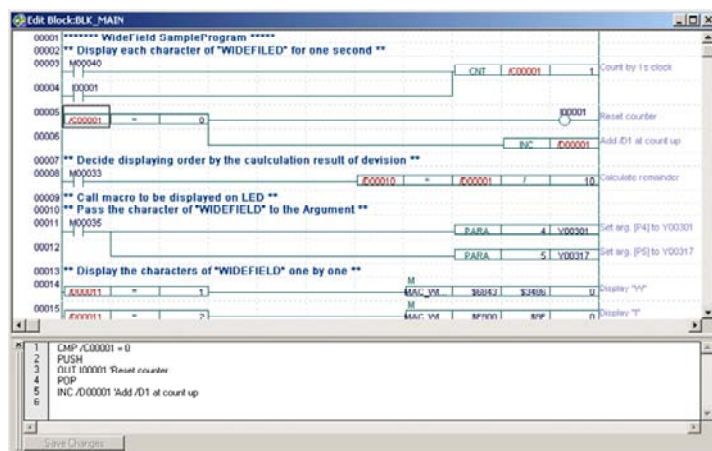
#### TIP

If the program contains a circuit that has not been converted or a circuit that experienced a conversion error, the following message is displayed and mnemonic editing is not possible.

1 The circuit has been modified. Select [Convert].

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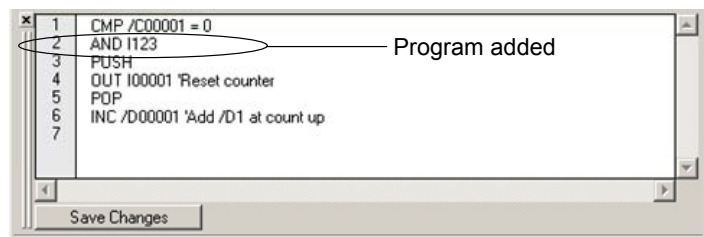
Perform the [Convert] operation.



B0402\_110.VSD

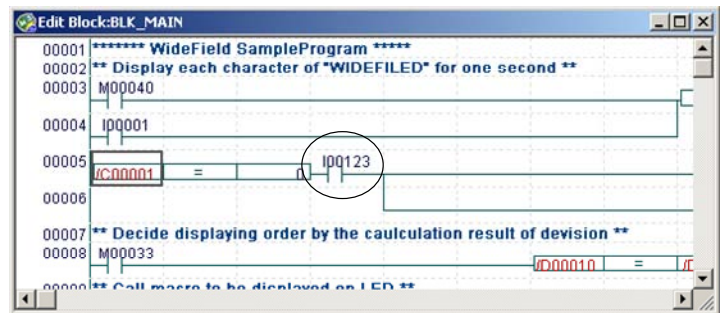
(4) Click the [Save Changes] button to save the edited mnemonic program.

⇒ The converted program is applied to the circuit.



Steps (3) and (4)

B0402\_111.VSD



Step (4)

B0402\_112.VSD

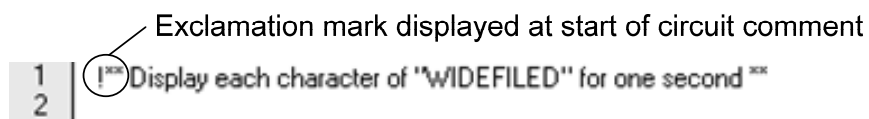
## TIP

You can also use mnemonic editing to edit circuit comments and subcomments.

The relevant procedures are given below.

### ■ Circuit Comment

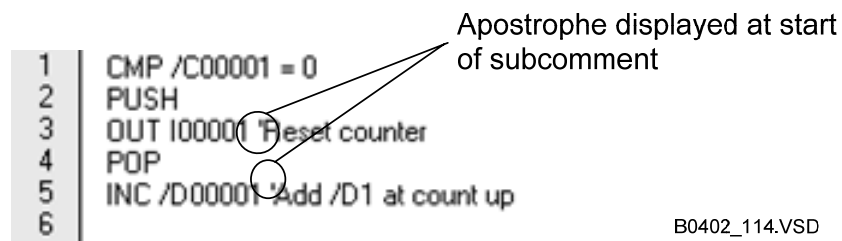
An exclamation mark (!) is displayed as the first character in the mnemonic line.



B0402\_113.VSD

### ■ Subcomment

An apostrophe (') is displayed at the end of the mnemonic line, and followed immediately by the character string for the subcomment.



B0402\_114.VSD



## B4.3 Entering Tag Names and Addresses

There are 2 modes for entering a device when editing a ladder program, namely, **Enter Tag Name Without Address** and **Enter Tag Name With Address**. You do not have to allocate an address to a tag name while editing a ladder program, but can do so after editing by modifying the tag name definition. The **Enter Tag Name With Address** mode, however, provides a convenient means to allocate the address and I/O comment to the tag name during program editing.

Use the [Set up Parameter Input] parameters on the **Circuit Display/Input** tab in the **Set up Environment** dialog box to select the desired mode of input.

### SEE ALSO

For details on the **Circuit Display/Input** tab in the **Set up Environment** dialog box, see Section B1.2.4, "Circuit Display/Input Setup".

### B4.3.1 Enter Tag Name Without Address

In **Enter Tag Name Without Address** mode, a device is entered as a tag name during ladder program editing and an address is allocated to the tag name later. Select [Enter Tag Name Without Address and I/O Comment] in the [Set up Parameter Input] parameters on the **Circuit Display/Input** tab in the **Set up environment** dialog box.

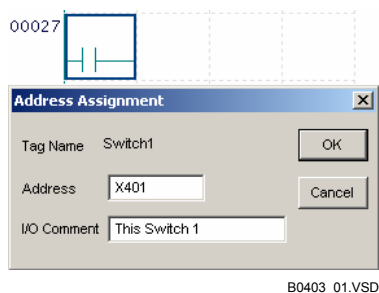
You can also enter an address only without entering a tag name.

### B4.3.2 Enter Tag Name With Address

The **Enter Tag Name With Address** mode provides a means to enter an address and I/O comment at the same time a device is registered with a tag name. Select [Enter Tag Name With Address and I/O Comment] in the [Set up Parameter Input] parameters on the **Circuit Display/Input** tab in the **Set up environment** dialog box.

You can also choose not to enter any address or I/O comment at this point, but to enter it later.

In **Enter Tag Name With Address** mode, the **Address Assignment** dialog box is displayed when a device is entered. Enter the address and/or the I/O comment and click [OK]. The reference tag name definition is saved.



**Figure B4.51 Address Assignment Dialog Box in Enter Tag Name With Address Mode**

### TIP

When using structure tag names, the **Address Assignment** Dialog Box is not displayed because individual address and I/O comment assignment is not allowed.

## B4.4 Circuit and Tag Name Definition Reference

There are 3 types of tag name definitions:

- Common tag name definition
- Block tag name definition
- Macro tag name definition

Common tag name definitions are common to a program. Using common tag name definitions, the same device can be associated with a common tag name over all blocks.

Block tag name definitions are only valid within a block. Using block tag name definitions, the same device can be associated with different tag names in different blocks and used for different purposes in each block. It also avoids duplicate tag name errors when reusing program codes for a block.

### TIP

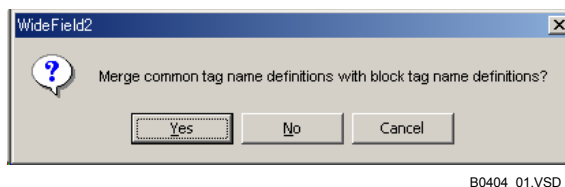
You can set the reference tag name definition to be used in a circuit.

Local devices are registered in the block tag name definition even if the reference is to common tag name definition.

**Macro tag name definitions define tag names to be used in an instruction macro.**

### ■ Changing Reference from Common Tag Name Definition to Block Tag Name Definition

When you change the reference tag name definition, you can choose to read definitions for devices used in the block from the original reference tag name definition. When the reference is changed from common tag name definition to block tag name definition, a confirmation dialog box is displayed as shown in the following figure. Clicking [Yes] starts the merging process. Clicking [No] indicates not to perform merging. Clicking [Cancel] reverts to the original state.

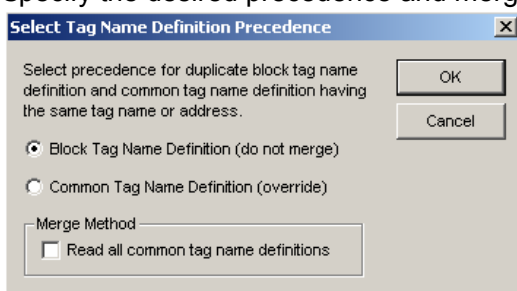


B0404\_01.VSD

Figure B4.52 Confirmation Dialog Box

### ■ Selecting Tag Name Definition Precedence

During merging, a Select Tag Name Definition Precedence dialog box is displayed. Specify the desired precedence and merge method, and start execution.



B0404\_02.VSD

Figure B4.53 Select Tag Name Definition Precedence Dialog Box

## B4.5 Switching Views

On the ladder program edit window, you can switch between showing and hiding various information and use the Zoom function to display information in different sizes.

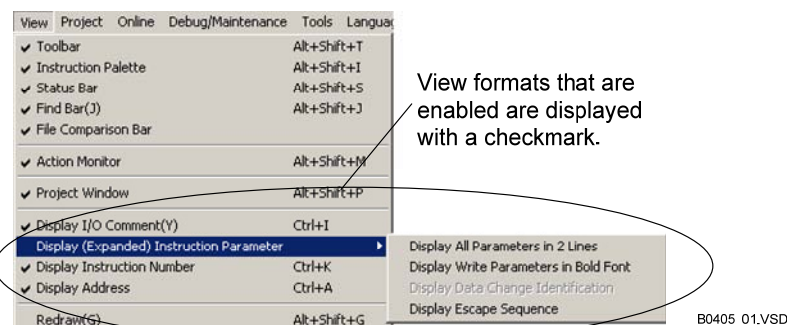
### B4.5.1 Switching Views for I/O Comments, Tag Names and Addresses, and Instruction Numbers

You can switch views for the items listed in the table below.

**Table B4.10 View Function**

Item	Function
Display I/O Comment	Displays I/O comments below ladder program components. The number of I/O comments displayed is set in the environment setup. I/O comments exceeding this limit are not displayed.
Display (Expanded) Instruction Parameter	Allows setting of the function for switching between 1-line display/2-line display for instruction parameters, the function for emphasized display of write parameters, escape sequence display, etc.
Display Instruction Number	Displays the instruction number of the first ladder program component below the line number. The instruction number is the five-digit number displayed below the line number; the instruction number of the first element of the circuit is prefixed with an 'N' character. If a label is defined for a line, the instruction number is not displayed.
Display Address	Toggles between display of tag names and addresses. In address display mode, the replace function is not available. Structure tags are always displayed as tag names regardless of the mode setting.

To switch views, select [View] and the respective item ([Display I/O Comment], [Display Instruction Number] or [Display Address]) from the menu. To cancel, select a menu item that is mark with a tick.



**Figure B4.54 View Menu (Example where Display I/O Comment and Display Instruction Number are selected)**

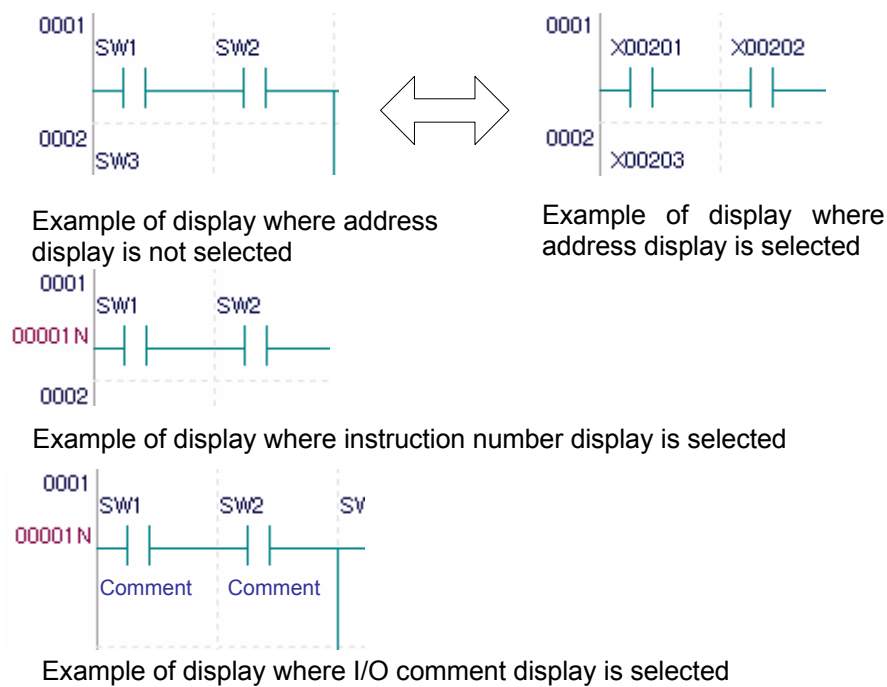


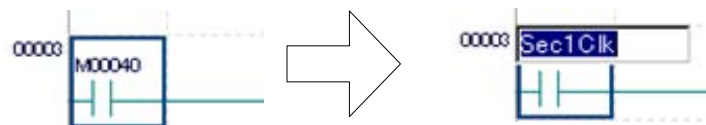
Figure B4.55 Examples of View Formats

B0405\_02.VSD

**CAUTION**

The Replace function cannot be used in address display mode.

Double-clicking to edit a device in address display mode displays the tag name as an initial value in the input field.



B0405\_03.VSD

Figure B4.56 Initial Display of Tag Name

An instruction number is the number assigned to each mnemonic instruction when the ladder program is converted into mnemonics. Instruction numbers are not assigned to circuit comments, subcomments, and I/O comments. Before a circuit is converted, the displayed instruction numbers may be incorrect. Correct values will be displayed after conversion.

If an instruction parameter is a structure name, the I/O comment is not displayed. For structure member names and addresses assigned to a member, the comment defined for the member in the structure type definition is displayed.

Structure tag names are always displayed as tag names (the addresses are not displayed).

Comments for constant names are not displayed in the I/O comment area. To check the value or comment of a constant name, use TipHelp.

**SEE ALSO**

For details about the expanded display for the instruction parameter, see Section B4.5.3, "Expanded Display for Instruction Parameter".

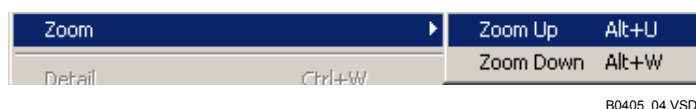
## B4.5.2 Zooming Up and Down

To enlarge the display, select [View]–[Zoom]–[Zoom Up] from the menu.

To reduce the display, select [View]–[Zoom]–[Zoom Down] from the menu.

The Zoom function provides 15 degrees of resizing: seven for enlargement, one for standard size, and seven for reduction.

The last zoom setting for a block is saved and used when the block is next displayed.



B0405\_04.VSD

Figure B4.57 Zoom Up and Zoom Down

## B4.5.3 Expanded Display for Instruction Parameter

These settings are for the display of the instruction parameter in the Edit Block and Edit Macro screens.

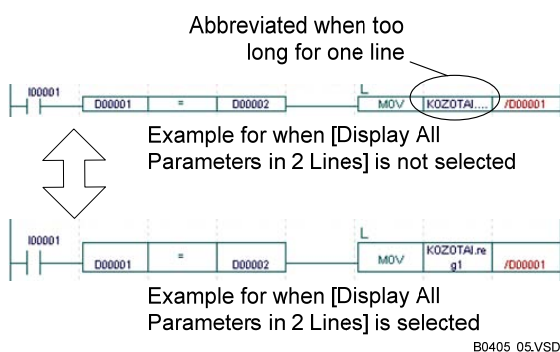
Table B4.11 Expanded Display for Instruction Parameter Settings

Item	Functions
Compressed Display for Instruction Parameter	Allows an increase in the amount of program information displayed in a single screen by setting the instruction parameter display to a single line and compressing the program display vertically.
Emphasized Display for Write Parameter	Allows emphasized display for write parameter.
Escape Sequence Display	Allows setting the character string parameter enclosed in " " to either be displayed in escape sequence code or displayed as a character string.

### ■ Compressed Display for Instruction Parameter

Allows an increase in the amount of program information displayed in a single screen by setting the instruction parameter display to a single line and compressing the program display vertically.

When instruction parameters are displayed in a single line, instruction parameters with long character strings are abbreviated. To check instruction parameters that have been abbreviated, you can switch between the mode that displays instruction parameters in two lines and the mode that displays instruction parameters in a single line.



B0405\_05.VSD

Figure B4.58 Example of Compressed Display for Instruction Parameter

## ■ Emphasized Display for Write Parameter

Instruction parameters with the Write attribute are displayed with emphasis (in bold font).

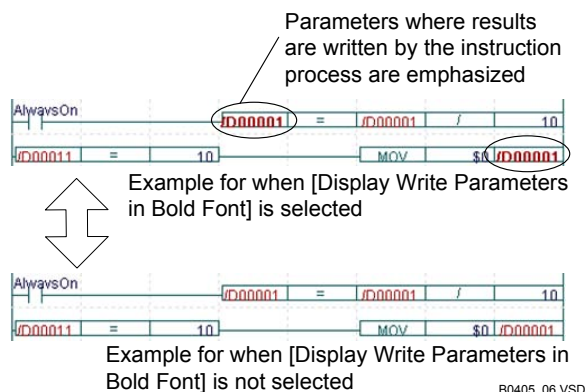


Figure B4.59 Example of Emphasized Display for Write Parameter

## ■ Escape Sequence Display

Sets the display of the character string parameter enclosed in " " to either be displayed in escape sequence code or displayed as a character string.

Codes that cannot be displayed as character strings are displayed as escape sequences with no changes.

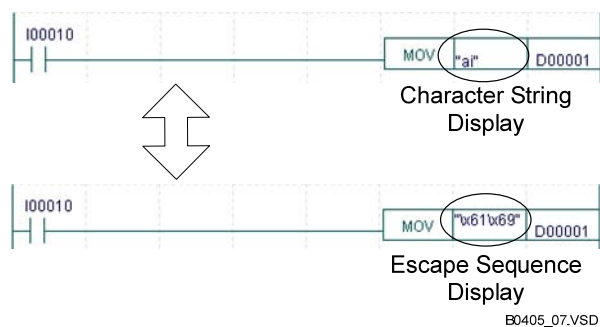


Figure B4.60 Example of Escape Sequence Display

## B4.6 Converting Circuits and Displaying Errors

Selecting [Edit]–[Convert] from the menu converts entered circuits into instruction words.

The following checks are performed at conversion.

- Is the circuit valid?
- Are instruction parameters entered correctly?
- Are labels entered correctly?

When the circuits are converted, temporarily deleted lines are deleted from the window and deleted lines cannot be recovered. At the same time, the circuits are rearranged and displayed.

If conversion ends successfully, a dialog box indicating normal completion appears.

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



### CAUTION

The first error that is found during conversion is displayed in the error dialog box. Correct the error and resume conversion.

If a hidden circuit contains a conversion error, the circuit is expanded and the display jumps to the error location.

### B4.6.1 Emphasized Display of Modified Line

During editing, programs that have not been converted can be identified.

Programs are remain unconverted for the following reasons:

- The [Convert] operation is not performed while editing a program.
- A conversion error occurred during the [Convert] operation.

This function allows you to verify the edited parts of the program that failed the conversion process by emphasizing these in red, as shown in the figure below.

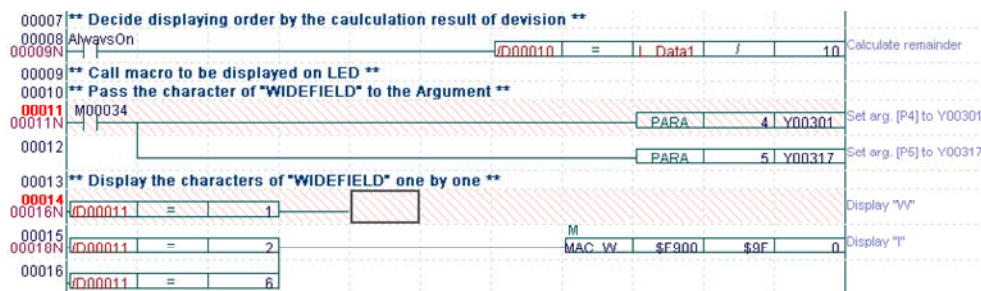


Figure B4.61 Emphasized Display of Program being Modified

### TIP

You can set the emphasis for modified lines to Show/Hide using the Circuit Display/Input in the environment setup.

## B4.7 Find and Replace

Find and replace operations can be performed on a circuit, on a project or on tag name definitions. In this section, we shall describe how to perform find/replace on circuits in a ladder program edit window or monitor window.

Circuit Find/Replace operations perform searches and replacements on displayed circuits. Display the block to be searched as the topmost window before performing a find/replace operation. The replace function is not available in a circuit monitor window.

There are two types of search functions: Find Device and Find Instruction.

---

### TIP

Performing a search using a tag name as a search string also searches for any address allocated to the tag name. Similarly, searching for an address also searches for any tag name assigned to this address. For instance, if "SW1=X00301" is defined, then searching for "SW1" and searching for "X00301" will produce the same result.

Furthermore, if circuit data contains a base modified by a constant index, then the expanded address is also matched against the search string. For instance, the parameter "I001;3" matches both search string "I001" and "I004". When searching using an index register, index modified addresses are also searched. Similarly, when performing replacement using an index register (V001→ V002), an index modifier may be replaced if it matches the search string.

---



### CAUTION

Replace operations are disallowed in address display mode. Always exit from address display mode before initiating a Replace operation. To exit from address display mode, select [View]–[Display Address] from the menu or press the [Ctrl] + [A] keys again (the menu item operates like a toggle).

---

### SEE ALSO

For details on Find/Replace operations on a project, see Chapter B7, "Building and Managing a Project."

For details on searching tag name definitions, see Chapter B5, "Tag Name Definition."

---

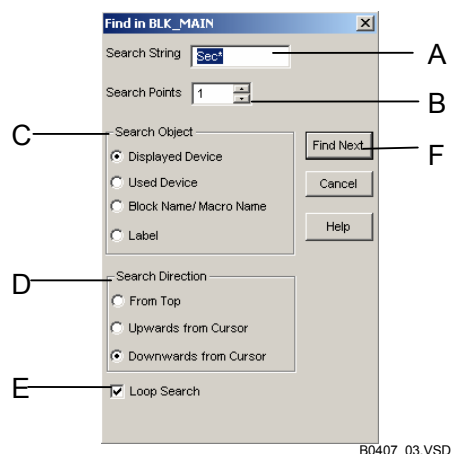


## B4.7.1 Finding Device

The Find Device function searches for any of the following four objects:

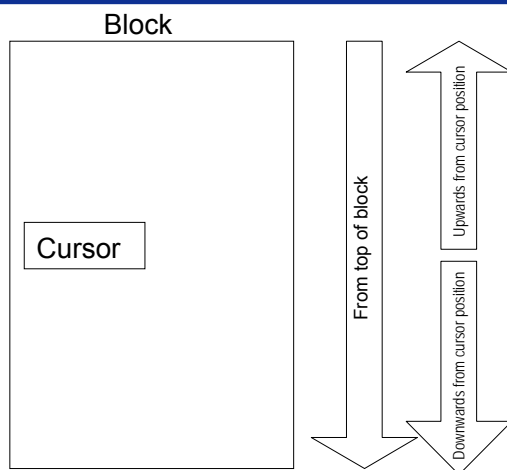
- Displayed device
- Used device
- Block name and macro name (block name used in ACT/INACT instructions and macro name used in macro instructions)
- Label (the label itself, and jump and subroutine instructions having the label as a parameter)

To specify a search condition and perform a search, use the Find dialog box.



**Figure B4.62 Find Dialog Box**

- A Enter the search string.  
You may use the wildcard character ('\*') in the search string. You can also select a string from the past search history.
- B Specify the number of points to search.  
You may specify up to 2,048 points. Usually, 1 point is specified.
- C Select the search object.  
Turning on the [Displayed Device] option button searches only devices displayed on the screen. Turning on the [Used Device] option button searches all devices used in the program, including devices displayed on the screen.  
Turning on the [Block Name/Macro Name] option button searches block names used with ACT/INACT instructions.  
Turning on the [Label] option button searches labels used in lines and instructions.
- D Select the search direction.  
If [From Top] is selected, search proceeds from the first line to the last line of the block.  
If [Upwards from Cursor] is selected, search proceeds from the position cursor location to the beginning of the block.  
If [Downwards from Cursor] is selected, the search proceeds from the position cursor location to the end of the block.



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Figure B4.63 Search Direction

- E Turning on this checkbox performs loop search. The search starts from the beginning when it reaches the end.
- F Clicking this item searches for the next occurrence of the search string. If a match is found, the display switches to the window containing the object found.

To find a device, use the following procedure.

## ◆ Procedure ◆

(1) Select [Find]–[Find] from the menu.

⇒ The Find dialog box is displayed.

(2) Enter the string to search for.

(3) Specify the number of points to search for.

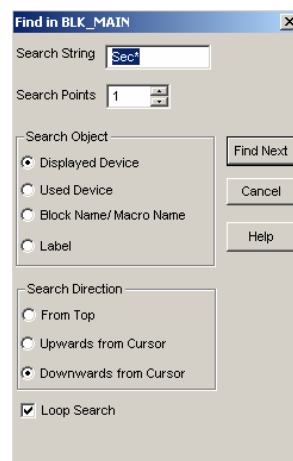
(4) Specify the object to search for.

(5) Select the direction for the search.

(6) Turn on the Loop Search checkbox to perform a loop search.

(7) Click [Find Next].

⇒ The search begins in the selected search direction. If the search object is found, the display switches to the window containing the search object.



Steps (2) to (7) B0407\_04.VSD

## TIP

- You can repeat the previous search in the downward direction, starting from the current cursor position even after closing the Find dialog box by selecting [Find]–[Find Next] from the menu or pressing the [F3] key. Pressing the [Shift]+[F3] keys repeats the previous search in the upward direction.
- If the search reaches the end of the block (or the beginning of the block in the case of a search in the upward direction) without finding the search object, a dialog box is displayed to inform that the search object is not found.
- Even if the specified search string is without index modification, the search may result in a device with index modification so long as it matches the search pattern.

**CAUTION**


---

If the search object is found in a hidden circuit, the circuit is expanded.

---

## ■ Restrictions on the Search String

If you enter an invalid search string, an error message is displayed. A search string that begins with a numerical digit generates a search string error.

The wildcard (“\*”) character can be used in the search string but matches only tag names and addresses assigned to tag names. Searching for an address not assigned to a tag name using the wildcard character (“\*”) is not allowed. The following restrictions apply to the use of the wildcard character.

- No more than one wildcard character may be used (e.g. “SW\*AB\*”).
- The wildcard character cannot be in the middle of a search string (e.g. “SW\*WF”).
- The wildcard character cannot be used together with index modification (e.g. “\*SW;V01”).

When an address name is specified as the search string, both direct addresses and indirect addresses are searched.

If an indirect address (an address prefixed with “@”) is entered as the search string, only indirect addresses are searched.

When searching for a constant name, prefix the search string with a '#' character.

When searching for structure tag names, an array type is not allowed.

### TIP

---

The following are some examples of search strings and their matches.

- [SW*]	SW1, SW2, SW3, SW4 . . .
- [*SW]	WF_SW, YO_SW, KO_SW, GA_SW, WA_SW . . .
- [D0001]	D0001, @D0001 . . .
- [@D0001]	@D0001 . . .
- [MITAKA.STATION]	MITAKA.STATION, MITAKA[10].STATION . . .
- [MITA*]	MITAKA, MITAKA.STATION, MITAKA.STORE, MITAKA[10].STATION, MITATMP, MITATMP.STATION . . .
- [*.STATION]	MITAKA.STATION, MITAKA[10].STATION, MITATMP.STATION . . .
- [#DEF*]	#DEFINE . . .

---

## ■ Specifying Tag Name/Address Range for Searching

If the search string is specified as an address, the range of addresses searched for starts from the search string and extends for the specified number of Search Points.

### TIP

For example, if the specified Search String is X201 and the specified value for Search Points is 32, the software searches for addresses X201 to X232.



### CAUTION

- If a search object is found in a hidden circuit, the circuit is expanded.
- If the [Used Device] option button is turned on for the search object, range search is not allowed.

## ■ Searching for Hidden Devices of Tag Names and Addresses

Turning on the [Used Device] option button searches all devices used in the program, over and beyond devices displayed on the screen.

### TIP

———— [BSET 100 D1 16]

In this instruction, the number of points is 16 so it will match search string D1 to D16.

———— [BSET 100 D1 B1]

In this instruction, the number of points is specified by a device, which means that its range is determined during runtime. Hence, it will only match search string D1.

### SEE ALSO

For details on the number of device points for parameters of individual instructions, see: "Sequence CPU – Instructions" (IM34M6P12-03E).



### CAUTION

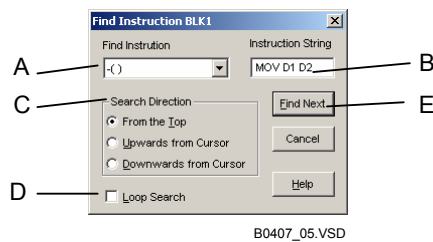
The following additional restrictions apply to the search string for hidden device search.

- The wildcard character cannot be used in the tag name.
- Tag names and structure members with no address assigned cannot be used.
- Index modification cannot be used.
- Indirect specification cannot be used.
- Structure name cannot be used.

## B4.7.2 Finding Instruction

The Find Instruction is used to search for instructions used in blocks.

To specify the search condition and search for an instruction, use the Find Instruction dialog box.



**Figure B4.64 Find Instruction Dialog Box**

- A Select the instruction type to search for.  
Available options are: “- ()”, “-(/)”, “-| |-”, “-|/|” and “Application Instruction.”
- B Enter the search string.  
Enter parameters for basic instructions. Input is optional.  
Enter instruction mnemonics for application instructions. You may also include parameters in the input.

### TIP

To search for instructions with options, delimit the options with spaces as shown below.

MOV L P D1 D2            Searching with long word and pulse options.

MOV L D1 D2            Searching with long word option.

Instructions specified with options are searched even if the search string is specified without options.

- C Select the search direction  
If [From the Top] is selected, the search proceeds from the first line to the last line of the block.  
If [Upwards from Cursor] is selected, the search proceeds from the position cursor location to the beginning of the block.  
If [Downwards from Cursor] is selected, the search proceeds from the position cursor location to the end of the block.
- D Turning on this checkbox performs loop search. The search starts from the beginning when it reaches the end.
- E Clicking this item searches for the next occurrence of the search string. If the search object is found, the display switches to the window containing the search object.

To search for an instruction, use the following procedure.

### ◆ Procedure ◆

**(1) Select [Find]–[Find Instruction] from the menu.**

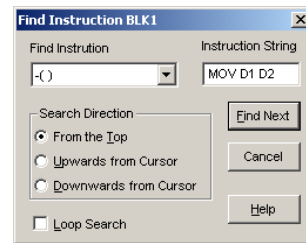
⇒ The Find Instruction dialog box is displayed.

(2) Select the instruction type from the dropped down list.

(3) Enter the string to search for in the Instruction String text box.

#### TIP

To search for an instruction with options, include the options in the Instruction String text box.



Steps (2) to (5) B0407\_06.VSD

(4) Turn on the Loop Search checkbox to perform a loop search.

(5) Click [Find Next]

⇒ The search begins in the selected search direction. If the search object is found, the display switches to the window containing the search object.

#### TIP

- You can perform repeat a previous search in the downward direction, starting from cursor position, even after closing the Find Instruction Dialog Box by selecting [Find]–[Find Next] from the menu or pressing the [F3] key. Pressing the [Shift]+[F3] keys repeats the previous search in the upward direction, starting from the current cursor position.
- If the search reaches the end of the block (or the beginning of the block in the case of a search in the upward direction) without finding the search object, a dialog box is displayed to inform that the search object is not found.
- Even if the specified search string is without index modification, the search may result in a device with index modification so long as it matches the search pattern.



#### CAUTION

If the search object is found in a hidden circuit, the circuit is expanded.

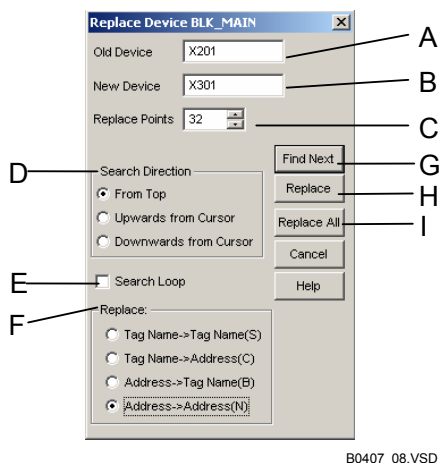
## B4.7.3 Finding the Next Candidate

The last search condition specified for a device search or instruction search is saved even after the dialog box closes. To search downwards for the next candidate starting from the cursor position, select [Find]–[Find Next] from the menu or press the [F3] key. To repeat the search in the upward direction, press the [Shift]+[F3] keys instead.

## B4.7.4 Replace

The replace function replaces a tag name, address or constant name with another specified tag name, address or constant name.

The function can replace one tag name and address, or up to 2,048 consecutive addresses with a single operation.



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**Figure B4.65 Replace Device Dialog Box**

- A Input the tag name, constant name or device address to be replaced.
- B Input the new replacement tag name, constant name or device address.
- C Specify the number of points to replace. Specify the replacement range, starting from the specified tag name or address. This field is disabled when replacing constant names.

For example, to replace 32 points of addresses between X201 and X232 with addresses X301 and X332, specify the replacement points as 32.

- D Select the search direction.
- E Turning on this checkbox performs loop search. The search continues from the beginning when it reaches the end of the block.
- F Replaces tag names or addresses displayed in the ladder program edit window with another tag name or address. After replacement, tag names with no registered addresses become unregistered tag names and changes color. Replacements are not reflected on tag name definitions. Replacements are only done in ladder program edit windows. There are 4 types of replacement:

- |                       |  |
|-----------------------|--|
| - Tag Name → Tag Name | Replaces a tag name/constant name with another tag name/constant name. |
| - Tag Name → Address  | Replaces a tag name with an address.                                   |
| - Address → Tag Name  | Replaces an address with a tag name.                                   |
| - Address → Address   | Replaces an address with another address.                              |

The wildcard ("\*") character can be used when replacing tag names or constant names.

To replace constant names or structure tag names, specify [Tag name].

- G Clicking this item moves the position cursor to the location of the next tag name/address/constant name to be replaced.
- H Clicking this button replaces the tag name/address/constant name at the position cursor.
- I Clicking this button replaces all matches.

**CAUTION**

- The Replace operation is not available in address display mode. Always exit from address display mode before performing a Replace operation.  
To exit from address display mode, select [View]–[Display Address] from the menu again or press the [Ctrl]+[A] keys. (The menu item operates like a toggle)
- Clicking the [Find Next], [Replace] or [Replace All] button in the Replace Device dialog box replaces only objects entered as tag names if the preceding search was performed using a tag name, and replaces only objects entered as addresses if the preceding search was performed using an address.

## ■ Restrictions on the Search and Replacement String

If an invalid search string is entered, an error message is displayed. A search string that begins with a numerical digit causes an invalid replacement string error.

The wildcard (“\*”) character can be used in the replacement strings but only for tag names and constant names. Replacing addresses containing the wildcard character (“\*”) is not allowed. The following restrictions apply to the use of the wildcard character.

- No more than one wildcard character may be used (e.g. “SW\*AB\*”).
- The wildcard character cannot be in the middle of the string (e.g. “SW\*WF”).
- The wildcard character cannot be used together with index modification (e.g. “\*SW;V01”).
- Constant names must be prefixed by the '#' character.

When an address name is specified as the string to be replaced, both addresses used with direct specification and addresses used with indirect specification are replaced.

If an indirect address specification (an address prefixed with “@”) is specified as the string to be replaced, only indirect address specifications are replaced.

The following restrictions apply to replacement of structure tag names.

- No more than 1 period (“.”) character may be used.
- Input is not allowed if the period (“.”) character is coded in an invalid position.
- A structure name must not exceed 7 characters (2 characters for Q structures) and a member name must not exceed 8 characters.
- Replacement of array types is not allowed.
- Structures cannot be entered with indirect designation.
- For Q devices, only Q1 and Q2 can be specified.

**TIP**

The following are some examples of search strings and their coverage.

- [SW*]	SW1, SW2, SW3, SW4 . . .
- [*SW]	WF_SW, YO_SW, KO_SW, GA_SW, WA_SW . . .
- [D0001]	D0001, @D0001 . . .
- [@D0001]	@D0001 . . .
- [MITAKA.STATION]	MITAKA.STATION, MITAKA[10].STATION . . .
- [MITA*]	MITAKA, MITAKA.STATION, MITAKA.STORE, MITAKA[10].STATION, MITATMP, MITATMP.STATION . . .
- [*.STATION]	MITAKA.STATION, MITAKA[10].STATION, MITATMP.STATION . . .
- [#DEF*]	#DEFINE . . .



## ■ Replacing using Wildcard (\*)

The following table illustrates some examples of replacing “SW\*” with “Switch\*”.

**Table B4.12 Replacing “SW\*” with “Switch\*”**

Before Replacement	After Replacement	Remark
SW	Switch	
SW1	Switch1	
SW_AAA	Switch_AAA	
Switch	x	Not replaced.

The following table illustrates some examples of replacing “SW;V0001” with “Switch;V0001” (with index modification).

**Table B4.13 Replacing “SW;V0001” with “Switch;V0001”**

Before Replacement	After Replacement	Remark
SW;V0001	Switch;V0001	
SW1;V0001	x	Not replaced.
SW_AAA;V0001	x	Not replaced.
Switch	x	Not replaced.



### CAUTION

Deleting an index attached to a tag name during replacement is not allowed.

The required procedure is given below.

## ◆ Procedure ◆

- (1) Select [Find]–[Replace] from the menu.

⇒ The Replace Device dialog box is displayed.

- (2) Enter the tag name or address to be replaced.

- (3) Enter the new replacement tag name or address.

- (4) Specify the number of replacement points.

- (5) Select the search direction.

- (6) To perform loop search, turn on the [Loop Search] checkbox.

- (7) Select the replacement method.

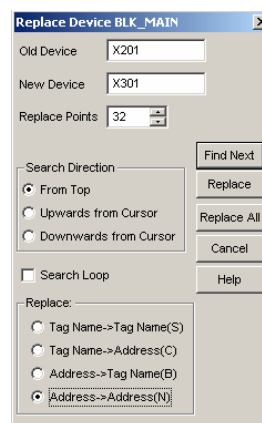
- (8) Click [Find Next].

⇒ The position cursor moves to the location of the next tag name or address to be replaced.

- (9) Click [Replace].

⇒ The tag name/address at the position cursor is replaced.

- (10) To continue with the next replacement, click [Find Next]. To replace all occurrences, click [Replace All].



Steps (2) to (10) B0407\_09.VSD

**CAUTION**

Replacements in circuits are not reflected to tag name definitions. To reflect replacements to tag name definitions, use the Read Circuits function in tag name definition.

In ladder program edit, it is assumed that address assignments to tag names are not confirmed. Accordingly, when replacing tag names, only devices entered as tag names are replaced and when replacing addresses, only devices entered as addresses are replaced.

**SEE ALSO**

For details on the “Read Circuits” function for tag name definition, see Section B5.2.7, “Read Circuits Function”.

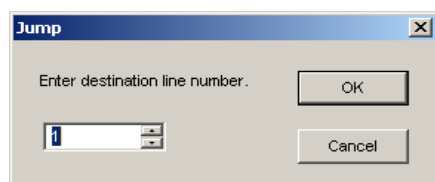
## B4.7.5 Jumps

The jump function switches the display of the window to a specified line in a program.

There are four jump functions. These can be selected from the menu by selecting [Find]–[Jump] followed by the respective jump destination type.

- Jumping to the First/Last Line  
Select [Top]/[Bottom] to jump to the first/last line. The window displays the first/last line of the program, and the position cursor moves to the first ladder program component.
- Jumping to a Specific Line  
Select [Line] to jump to a specific line. The window displays the specified line at the top of the window, and the position cursor moves to the first ladder program component of the specified line.
- Jumping to a Specific Instruction Number  
Select [Instruction Number]. The window displays the circuit containing the specified instruction number at the top of the window, and the position cursor moves to the first ladder diagram element.

Selecting [Line] or [Instruction Number] opens the Jump dialog box. Enter the line number or the instruction number to jump to, and click [OK].



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**Figure B4.66 Jump Dialog Box (for Jumping to Specific Line)**

- Jumping to the Beginning/End of a Line  
Select [Line Start]/[Line End]. The position cursor moves to the leftmost/rightmost position on the line.
- Jumping between Circuit Comments  
Select [Next Circuit Comment Line]/[Previous Circuit Comment Line]. The position cursor moves to the next/previous circuit comment.

## B4.7.6 Jump to Tag Name Definition

The Jump to Tag Name Definition function displays defined tag name definitions for the device where the cursor is placed within the program.

The relevant procedure is given below.

### ◆ Procedure ◆

(1) Move the cursor to the device position to which to jump.

```

00001 ***** WideField SampleProgram *****
00002 ** Display each character of "WIDEFILED" for one second
00003 OneSec...
00004N
00005 CntRst
00006
00007 /C00001 = 0
00008
00009 ** Decide displaying order by the calculation result of de
00010 Always On
00011
00012 ** Call macro to be displayed on LED **

```

Step (1)

B0407\_09.VSD

(2) Select [Search]-[Jump to Tag Name Definition].

⇒ The tag name definition edit screen opens, and the defined tag name is displayed as outlined.

	Tag Name	Address	I/O Comment (32 char)
1	* Always On		
2	* Cnt Rst	/I00001	Count Reset
3	* One Sec Clk		
4	* /C00001		
5	* /D00001		
6	* /D00010		
7	* /D00011		
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Step (2)

B0407\_10.VSD

### TIP

If the target device has no defined tag name definitions, only the target name definition edit screen opens.

## B4.7.7 Displaying Device Usage Status

You can search for devices used in blocks. The device usage status displays the status based on converted circuits. Devices used in circuits containing errors are not displayed. The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Select [Find]–[Device Usage Status] from the menu.

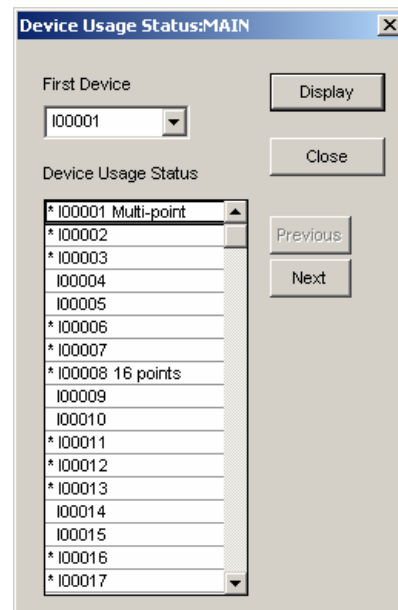
⇒ The Device Usage Status dialog box is displayed.

- (2) Select the device to be displayed from the [First Device] drop down list.

- (3) Click [Display].

⇒ The device usage status is displayed, starting from the specified first device. 256 devices are displayed at a time.

- (4) If there are more than 256 devices, clicking [Next] displays the next 256 devices. Clicking [Previous] displays the previous 256 devices.



Steps (2) to (4)

B0407\_11.VSD

### TIP

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 word device in a long word instruction, while 16 points and 32 points are used for bit device in word or long word instructions. When one point is used, it is not displayed. Devices used in special instructions that affect multiple devices, and devices modified by an index are displayed with a "Multi-point" remark on the right of the device address, instead of the number of used points. For a device displayed as "Multi-point," its following devices may be used.

Devices allocated to structure names and structure member names are all displayed as being used.

Devices modified by a constant index are displayed according to the usage status of the actual addresses after modification.



### CAUTION

Only converted devices in blocks being edited are displayed.

To check the device usage status for the entire project, select [Project]–[Project Device Usage Status].

## B4.8 Importing/Exporting Circuit Comments and Subcomments

Circuit comment and subcomment data in a program can be imported from/exported to CSV data.

Converting comment data to CSV data allows you to reuse comment data in other programs. This improves the efficiency of editing programs.

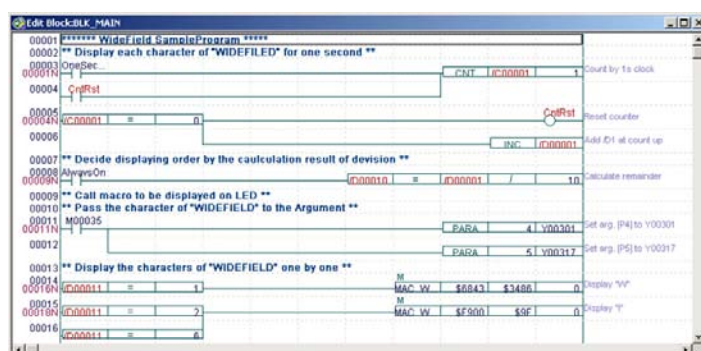
### B4.8.1 Exporting Circuit Comments and Subcomments

Circuit comment and subcomment data in a program can be saved as CSV data.

The relevant procedure is given below.

#### ◆ Procedure ◆

- (1) Make sure the Edit Block or Edit Macro window is open.



Step (1)

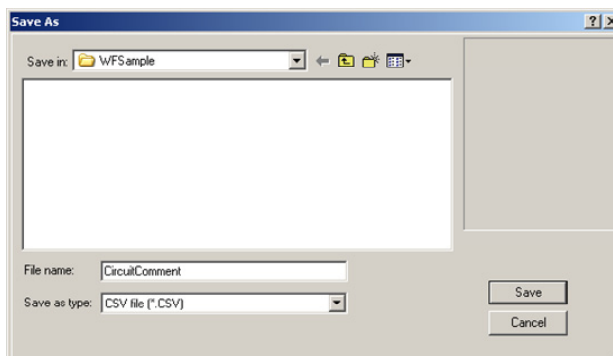
B0408\_01.VSD

- (2) Select [Edit]-[Output CSV Data for Circuit Comment/Subcomment] from the menu bar.

⇒ The Save As dialog box is displayed.

- (3) Enter the file name to be saved, and click the [Save] button.

⇒ The circuit comment/subcomment data is saved in CSV format.



Step (2)

B0408\_02.VSD

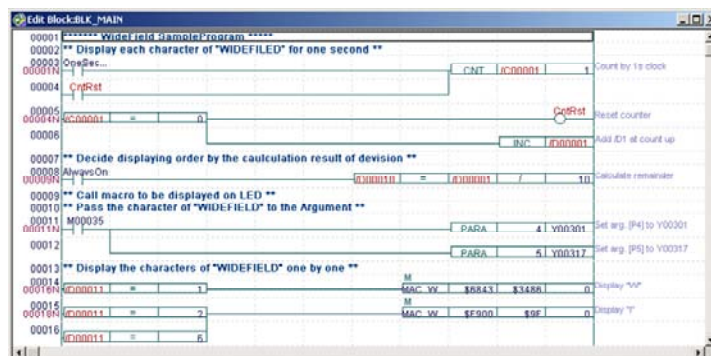
## B4.8.2 Importing Circuits Comments and Subcomments

Circuit comment and subcomment data saved as CSV data can be loaded in the program edit screen.

The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Make sure the Edit Block or Edit Macro window is open.

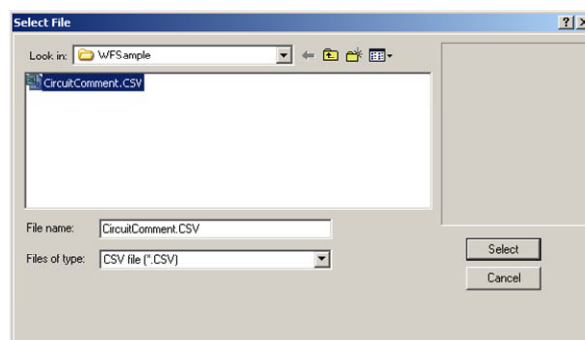


Step (1)

B0408\_03.VSD

- (2) Select [Edit]-[Load CSV Data for Circuit Comment/Subcomment] from the menu bar.

⇒ The Select File dialog box is displayed.



Step (2)

B0408\_04.VSD

- (3) Select the file to be imported, and click the [Select] button.

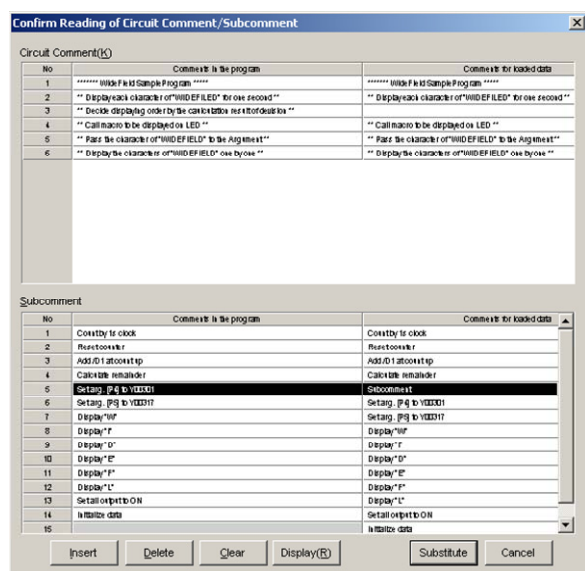
⇒ The Confirm Reading of Circuit Comment/Subcomment dialog box opens. This dialog box shows a list of comments set in the program and data for the comments that have been loaded.

- (4) Adjust the positions of defined comments, and click the [Substitute] button.

⇒ The CSV data is imported into the program.

### TIP

You can perform the following adjustments on the comments for loaded data: insert line, delete line, and clear set information.



Step (4)

B0408\_05.VSD

## B5. Tag Name Definition

The Tag Name Definition function assigns addresses and I/O comments to tag names. You can choose to enter only a tag name in the program of a block and then enter and allocate an address to the tag name later. Group tag names can also be used to group a set of functions.

There are 2 types of tag name definition: common tag name definitions which are shared among programs; and block tag name definitions which are valid only within a block. Macro tag name definitions which define tag names to be used in instruction macros is described together with block tag name definitions in this chapter. Therefore, for details on macro tag name definition, see the descriptions for block tag name definitions.

Tag name definition can only be done when a project is open.

## B5.1 Fundamentals of Tag Name Definition

This section describes the layout of the Tag Name Definition window, common tag name definition, block tag name definition and restrictions on tag name definitions.

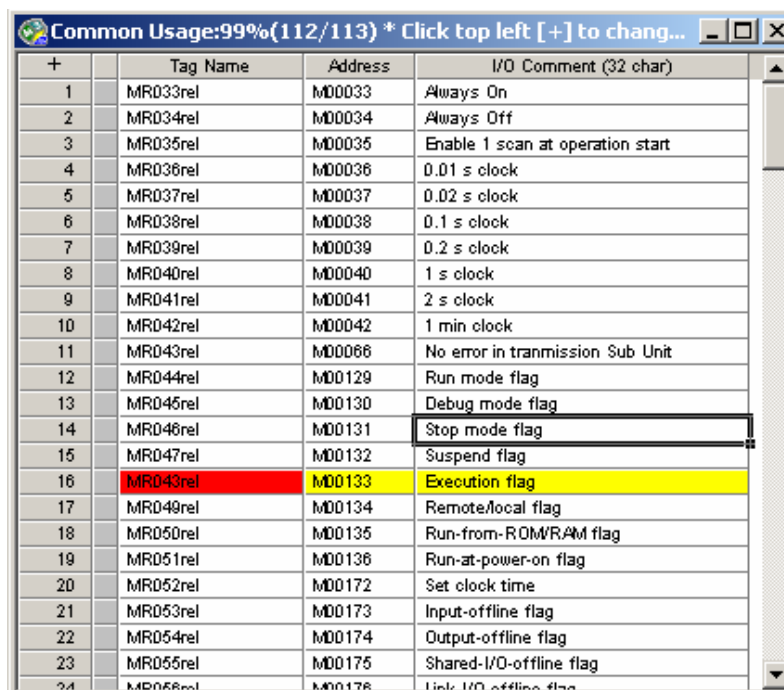
### B5.1.1 Tag Name Definition Window Layout

The layout of the tag name definition window is the same for block tag name definitions and common tag name definition.

Data can be copied and pasted between tag name definition windows and tables with assigned tag names created with MS-Excel or a similar program.

Furthermore, checks for duplicate tag names within a project are constantly performed, with the results displayed in various colors for distinction.

Structure object definition can also be performed on a tag definition window. Structure tag names which have an object already defined are displayed in grey. Only structure object definition is carried out on a tag name definition Window; setup of various I/O comments cannot be done.



	Tag Name	Address	I/O Comment (32 char)
1	MR033rel	M00033	Always On
2	MR034rel	M00034	Always Off
3	MR035rel	M00035	Enable 1 scan at operation start
4	MR036rel	M00036	0.01 s clock
5	MR037rel	M00037	0.02 s clock
6	MR038rel	M00038	0.1 s clock
7	MR039rel	M00039	0.2 s clock
8	MR040rel	M00040	1 s clock
9	MR041rel	M00041	2 s clock
10	MR042rel	M00042	1 min clock
11	MR043rel	M00066	No error in transmission Sub Unit
12	MR044rel	M00129	Run mode flag
13	MR045rel	M00130	Debug mode flag
14	MR046rel	M00131	Stop mode flag
15	MR047rel	M00132	Suspend flag
16	MR043rel	M00133	Execution flag
17	MR049rel	M00134	Remote/local flag
18	MR050rel	M00135	Run-from-ROM/RAM flag
19	MR051rel	M00136	Run-at-power-on flag
20	MR052rel	M00172	Set clock time
21	MR053rel	M00173	Input-offline flag
22	MR054rel	M00174	Output-offline flag
23	MR055rel	M00175	Shared-I/O-offline flag
24	MR056rel	M00176	Link I/O-offline flag

B0501\_01A.VSD

Figure B5.1 Tag Name Definition Window (An Example of a Common Tag Name Definition Window)



## B5.1.2 Common Tag Name Definition and Block Tag Name Definition

Common tag name definitions are usable throughout a project; block tag name definitions are valid only within a block. Within a project, multiple tag name definitions are allowed but a single reference tag name definition must be set for each block. Each block may refer to either the common tag name definition or a block name definition. Local devices always refer to a block tag name definition.

The following text describes how to set the reference tag name definition of a block to either the common tag name definition or a block tag name definition, and then discusses how data is handled for each of the situations.

### ■ Setting Reference for Tag Name Definitions

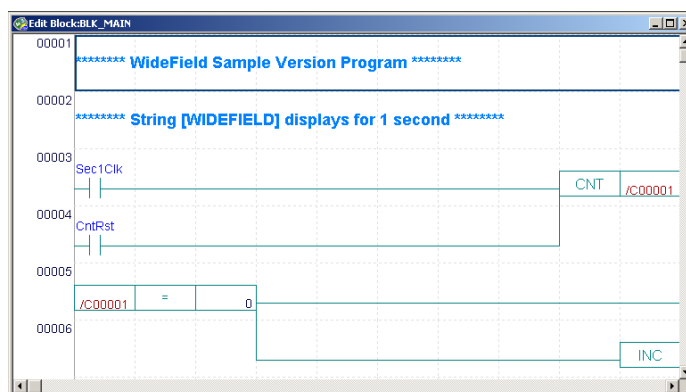
Reference for tag name definitions is set on block basis. The relevant procedure is given below.

#### ◆ Procedure ◆

(1) Check that the Edit Block Window is displayed.

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

⇒ The Local Device/Properties dialog box is displayed.

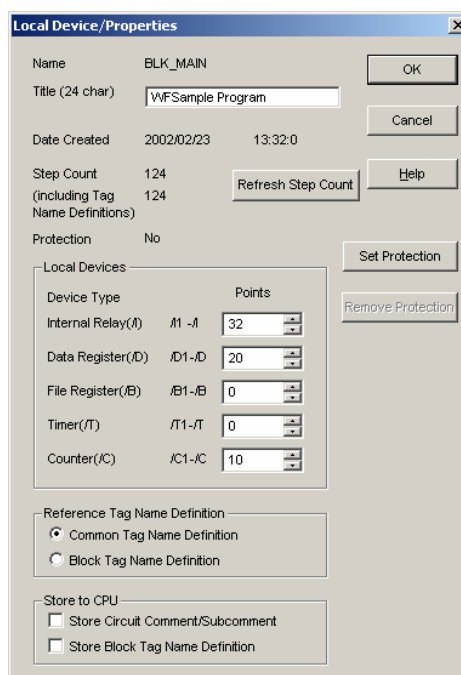


Step (1)

B0304\_02.VSD

(3) Turn on either the [Common Tag Name Definition] option button or the [Block Tag Name Definition] option button in the [Reference Tag Name Definition] group box and click [OK].

⇒ The Local Device/Properties dialog box closes and the reference tag name definition for the block is updated accordingly.



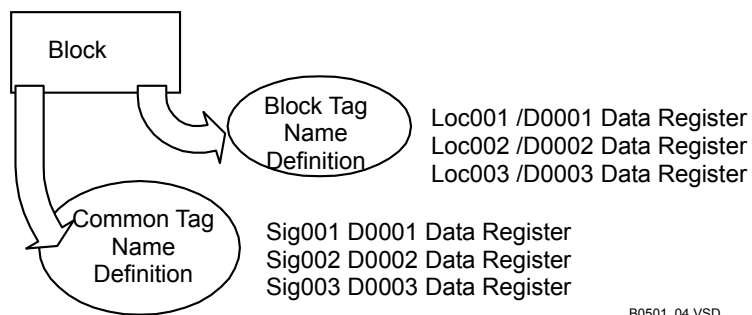
Step (3)

B0501\_03.VSD

## ■ Common Tag Name Definition Reference

When the reference for tag name definition for a block is set to the common tag name definition, the block refers to the common tag name definition.

Nevertheless, if a tag name coded in the program is allocated a local device address in the block tag name definition, or if a local device is coded within the block, the block tag name definition is referred.



**Figure B5.2 Tag Name Definition**

The following table shows the precedence when a tag name is defined in both the common tag name definition and a block tag name definition.

**Table B5.1 Tag Name Definition Precedence**

Device Allocated to Tag Name in Block Tag Name Definition	Global Device	Local Device
Tag Name Definition Which Has Precedence	Common tag name definition	Block tag name definition

## ■ Block Tag Name Definition

If the reference for tag definition is set to block tag name definition, the block refers only to the block tag name definition.

Address allocations in common tag name definitions are completely ignored.

### TIP

When the reference tag name definition is changed from [Common Tag Name Definition] to [Block Tag Name Definition], common tag name definitions used within the block are extracted to the block tag name definition.

Where addresses are duplicated, the block tag name definition has precedence.

Structure object definitions are not merged.

### B5.1.3 Restrictions on Tag Name Definitions

The following restrictions apply to tag name definitions.

- Number of Tag Name Definitions  
Up to 70,000 common tag names can be defined.  
Set the maximum number of common tag name definitions in the project properties.  
The maximum number of block tag name definitions for each block is fixed at 5,120.
- Duplicate allocation of address  
Addresses that are already registered cannot be registered again.
- Duplicate definition of tag name  
Tag names that are already registered cannot be registered again.
- Registration of Index-Modified Devices  
The following definitions are not allowed.

Tag Name    Address

SW 1        X00301;V01    ←Index Modification

SW 2        @D0001       ←Indirect designation

- Identification of Structure Tag Names  
Tag names containing a period (".") represents structure tag names and hence, cannot be registered.

## B5.2 Editing Tag Name Definition

The basic operation of the tag name definition windows is the same for common tag name definitions, block tag name definitions, and macro tag name definitions.

### B5.2.1 Basic Operations for Editing Tag Name Definition

#### ■ Opening and Editing Tag Name Definition Files

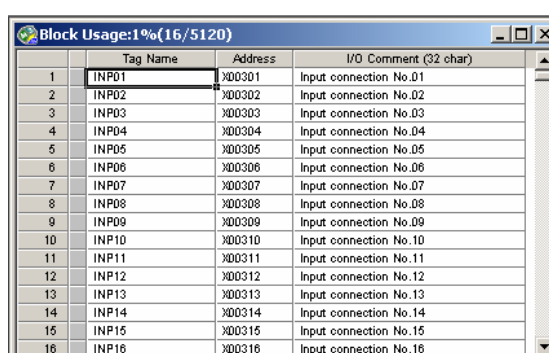
First, you open a tag name definition file to display a Tag Name Definition window. Then, you can edit tag name definitions in the Tag Name Definition window.

The relevant procedure is given below.

#### ◆ Procedure ◆

- (1) In the case of common tag name definitions, double-click [Common Tag name Definition] in the Project window. In the case of block tag name definition, display the Edit Block window and select [Edit]—[Block Tag Name Definition] from the menu.

⇒ The tag name definition window is displayed. The figure on the right shows an example of a block tag name definition window.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	XD0301	Input connection No.01
2	INP02	XD0302	Input connection No.02
3	INP03	XD0303	Input connection No.03
4	INP04	XD0304	Input connection No.04
5	INP05	XD0305	Input connection No.05
6	INP06	XD0306	Input connection No.06
7	INP07	XD0307	Input connection No.07
8	INP08	XD0308	Input connection No.08
9	INP09	XD0309	Input connection No.09
10	INP10	XD0310	Input connection No.10
11	INP11	XD0311	Input connection No.11
12	INP12	XD0312	Input connection No.12
13	INP13	XD0313	Input connection No.13
14	INP14	XD0314	Input connection No.14
15	INP15	XD0315	Input connection No.15
16	INP16	XD0316	Input connection No.16

Step (1)

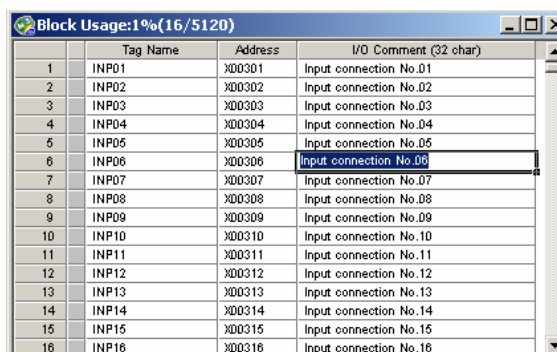
B0502\_01.VSD

- (2) Double-click the cell to be edited, or move the cursor to the cell to be edited and press the [F2] key.

⇒ System enters into Cell Edit mode.

- (3) Edit the cell content and press the [Enter] key.

⇒ Cell edit mode ends and the changes are confirmed.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	XD0301	Input connection No.01
2	INP02	XD0302	Input connection No.02
3	INP03	XD0303	Input connection No.03
4	INP04	XD0304	Input connection No.04
5	INP05	XD0305	Input connection No.05
6	INP06	XD0306	Input connection No.06
7	INP07	XD0307	Input connection No.07
8	INP08	XD0308	Input connection No.08
9	INP09	XD0309	Input connection No.09
10	INP10	XD0310	Input connection No.10
11	INP11	XD0311	Input connection No.11
12	INP12	XD0312	Input connection No.12
13	INP13	XD0313	Input connection No.13
14	INP14	XD0314	Input connection No.14
15	INP15	XD0315	Input connection No.15
16	INP16	XD0316	Input connection No.16

Step (2)

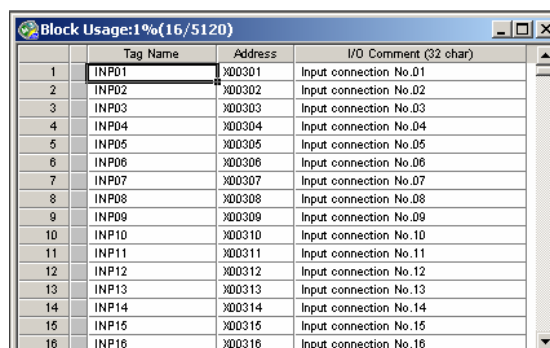
B0502\_02.VSD

## ■ Saving Tag Name Definition File and Closing Tag Definition Window

The procedure for saving a tag definition file that has been edited and closing a tag name definition window is given below.

### ◆ Procedure ◆

- (1) Make the file to be saved the active window.
- (2) Select [File]–[Save] from the menu.  
⇒ The tag name definition file is overwritten and saved.
- (3) Select [File]–[Close] from the menu.  
Or, click [Close] on the Tag Definition window.  
⇒ The Tag Definition window closes.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9	INP09	X00309	Input connection No.09
10	INP10	X00310	Input connection No.10
11	INP11	X00311	Input connection No.11
12	INP12	X00312	Input connection No.12
13	INP13	X00313	Input connection No.13
14	INP14	X00314	Input connection No.14
15	INP15	X00315	Input connection No.15
16	INP16	X00316	Input connection No.16

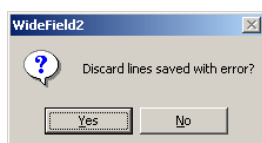
Step (1)

B0502\_01.VSD



### CAUTION

- If an error such as duplicate definition of address or duplicate definition of tag name is detected, the background color of the line containing the error changes. When closing a tag definition file containing lines with errors, the file cannot be saved without first discarding the errors. If a file contains lines with errors, a dialog box is displayed to confirm whether to discard lines with errors.



B0502\_04A.VSD

**Figure B5.3 Confirmation Dialog Box**

- If you attempt to close a file with unsaved tag name definition modifications, a dialog box is displayed to confirm whether to save the changes.

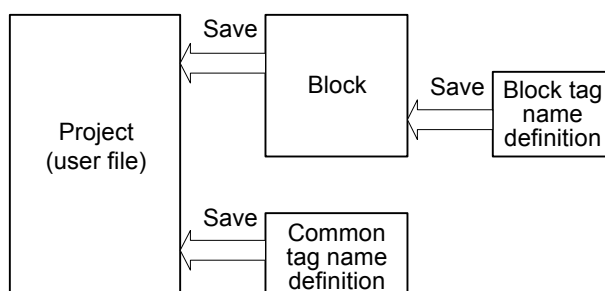
## B5.2.2 Save Function for Tag Name Definitions

Common tag name definition and block tag name definitions are saved to actual projects (user files) at different times.

### ■ Relationship Diagram for Saving of Tag Name Definitions

The Save function on a block tag name definition window refers to saving the definitions to the block. Hence, the block tag name definitions are not saved to the project until and unless the block is saved to the project.

The Save function on a common tag definition window saves the data directly to the project.



B0502\_05.VSD

**Figure B5.4 Relationship Diagram for Saving of Tag Name Definition Files**

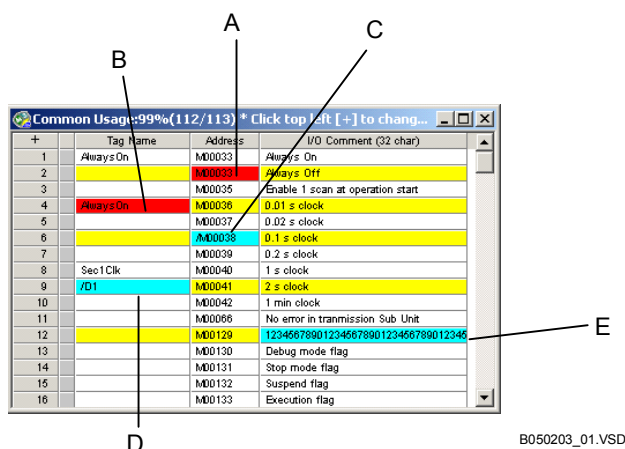
### ■ Overview of Save Processing

The following table compares the handling of common tag name definition and block tag name definition for various file save functions in WideField2.

**Table B5.2 Overview of Save Processing**

File Save Function in WideField2	Saving to Common Tag Name Definition File	Saving to Block Tag Name Definition File
[File]–[Close Project]	The latest information is saved.	The latest version is saved only upon confirmation to save the block tag name definition and also confirmation to save the block.
[File]–[Save Project]	The latest information is saved. If you select to ignore errors and perform saving, the previously saved file is saved.	All tag name definitions in edit mode are saved. If you select to ignore errors and perform saving, the previously saved file is saved.
[File]–[Save Project As]	The latest information is saved. Selecting not to discard error lines on the confirmation dialog aborts save processing.	All tag name definitions in edit mode are saved. Selecting not the discard error lines on the confirmation dialog aborts save processing.
[File]–[Save Project in Other Formats]–[Downgrade and Save]	The latest information is saved in WideField format. Saving is terminated if error is detected during saving.	All tag name definition data in edit status is saved. Saving is terminated if error is detected during saving.
[File]–[Close]	The latest information is saved.	Data is saved to the project as long as the block is saved after save processing for the tag name definitions. If the block is not saved, tag name definition reverts to the tag name definition saved previously
[Close] button in tag name definition window		
[File]–[Save]		
[File]–[Save As]	—	—

### B5.2.3 Error Handling

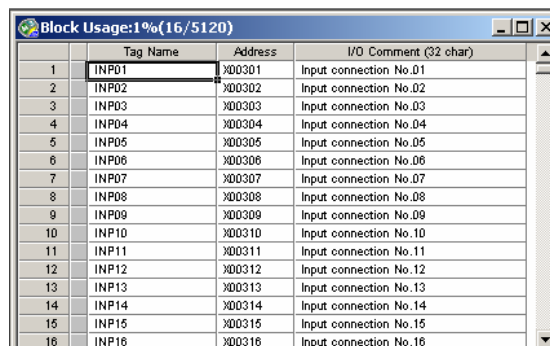


## B5.2.4 Find Function

You can search for tag names and comments in tag name definition windows.  
The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Check that the tag name definition window to be searched is the active window.
- (2) Select [Find]–[Find] from the menu.  
⇒ The Find dialog box is displayed.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9	INP09	X00309	Input connection No.09
10	INP10	X00310	Input connection No.10
11	INP11	X00311	Input connection No.11
12	INP12	X00312	Input connection No.12
13	INP13	X00313	Input connection No.13
14	INP14	X00314	Input connection No.14
15	INP15	X00315	Input connection No.15
16	INP16	X00316	Input connection No.16

Steps (1) and (2)

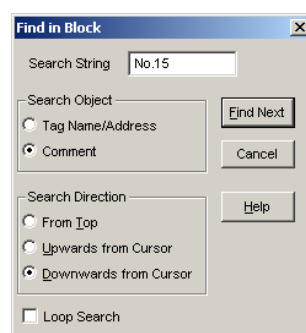
B0502\_07.VSD

- (3) Enter the search string and select the search object and the search direction.
- (4) Click [Find Next].

⇒ Search begins. The cursor moves to the search object, if found. If the search object is not found, an error is displayed.

#### TIP

You can modify a tag name definition, even with the Find dialog box displayed.



Find in Block

Search String: No.15

Search Object:

☐ Tag Name/Address

☒ Comment

Search Direction:

☐ From Top

☐ Upwards from Cursor

☒ Downwards from Cursor

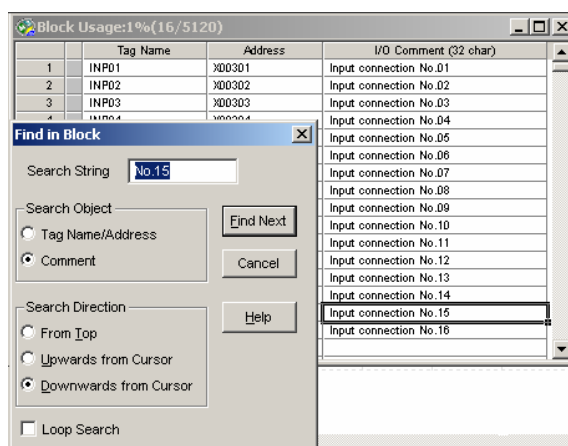
☐ Loop Search

Buttons: Find Next, Cancel, Help

Steps (3) and (4)

B0502\_08.VSD

- (5) Click [Cancel] or [Close] on the Find dialog box.
- ⇒ The Find dialog box closes.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9	INP09	X00309	Input connection No.09
10	INP10	X00310	Input connection No.10
11	INP11	X00311	Input connection No.11
12	INP12	X00312	Input connection No.12
13	INP13	X00313	Input connection No.13
14	INP14	X00314	Input connection No.14
15	INP15	X00315	Input connection No.15
16	INP16	X00316	Input connection No.16

Step (5)

B0502\_10.VSD

#### TIP

Even after closing a Find dialog box, you can search downwards for the next candidate, starting from the position cursor location by selecting [Find]-[Find Next] or by pressing the [F3] key. Pressing the [Shift]+[F3] keys searches upwards for the next candidate, starting from the position cursor location.



## B5.2.5 Copying, Cutting, Pasting and Deleting

You can copy, cut and paste a selected cell range on a tag name definition window.

You can even copy and paste between tag name definition windows.

The following procedure illustrates an example procedure for copying cells.

### ◆ Procedure ◆

(1) Select the cells to be copied on a tag name definition window.

(2) Select [Edit]–[Copy] from the menu.

(3) Make the tag name definition window where data is to be pasted the active window.

	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9	INP09	X00309	Input connection No.09
10	INP10	X00310	Input connection No.10
11	INP11	X00311	Input connection No.11
12	INP12	X00312	Input connection No.12
13	INP13	X00313	Input connection No.13
14	INP14	X00314	Input connection No.14
15	INP15	X00315	Input connection No.15
16	INP16	X00316	Input connection No.16
17			

Step (1)

B0502\_11.VSD

(4) Move the cursor to the position where data is to be pasted.

	Tag Name	Address	I/O Comment (32 char)
1	Sec1Clk	X00201	I/O comment
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

Step (4)

B0502\_12.VSD

(5) Select [Edit]–[Paste] from the menu.

⇒ The copied data is pasted.

### TIP

Similarly, you can select cells and perform cutting and deleting.

	Tag Name	Address	I/O Comment (32 char)
1	Sec1Clk	X00201	I/O comment
2			
3	INP01	X00301	Input connection No.01
4	INP02	X00302	Input connection No.02
5	INP03	X00303	Input connection No.03
6	INP04	X00304	Input connection No.04
7	INP05	X00305	Input connection No.05
8	INP06	X00306	Input connection No.06
9	INP07	X00307	Input connection No.07
10	INP08	X00308	Input connection No.08
11			
12			
13			
14			
15			
16			
17			
18			

Step (5)

B0502\_13.VSD

### TIP

You can specify a cell range in the tag name, address or I/O comment column for usual tag names. For tag names of structure object definitions, specify the selected range in line units.

**CAUTION**

- Input data validation is not performed when data is pasted. If an error occurs after data is pasted, lines containing errors are displayed as error lines. You cannot save data or exit without first removing the errors.
- Paste, cut and delete operations, once performed, cannot be undone using the “Undo” function.

## B5.2.6 Sort

You can sort and rearrange tag name definitions. Sorting improves the efficiency of display, reference, and editing. Sorting can be performed in two modes: tag name order and address order.

### SEE ALSO

For details on display modes, see Section B5.2.8, “Switching Display”.

Sorting is enabled only when the display format is set to display registered devices. The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Check that the tag name definition window to be sorted is displayed.
- (2) Determine the display format.
- (3) Select [Functions]–[Sort] from the menu.

	Tag Name	Address	I/O Comment (32 char)
1	INP02	XD0302	Input connection No.02
2	INP01	XD0301	Input connection No.01
3	INP03	XD0303	Input connection No.03
4	INP04	XD0304	Input connection No.04
5	INP05	XD0305	Input connection No.05
6	INP06	XD0306	Input connection No.06
7	INP10	XD0310	Input connection No.10
8	INP11	XD0311	Input connection No.11
9	INP09	XD0309	Input connection No.09
10	INP07	XD0307	Input connection No.07
11	INP08	XD0308	Input connection No.08
12	INP12	XD0312	Input connection No.12
13	INP13	XD0313	Input connection No.13
14	INP14	XD0314	Input connection No.14
15	INP15	XD0315	Input connection No.15
16	INP16	XD0316	Input connection No.16
17	INP22	XD0322	Input connection No.22

Steps (2) and (3)

B0502\_14.VSD

⇒ Sorting is performed.

### TIP

Definition errors are displayed at the end.

	Tag Name	Address	I/O Comment (32 char)
1	INP01	XD0301	Input connection No.01
2	INP02	XD0302	Input connection No.02
3	INP03	XD0303	Input connection No.03
4	INP04	XD0304	Input connection No.04
5	INP05	XD0305	Input connection No.05
6	INP06	XD0306	Input connection No.06
7	INP07	XD0307	Input connection No.07
8	INP08	XD0308	Input connection No.08
9	INP09	XD0309	Input connection No.09
10	INP10	XD0310	Input connection No.10
11	INP11	XD0311	Input connection No.11
12	INP12	XD0312	Input connection No.12
13	INP13	XD0313	Input connection No.13
14	INP14	XD0314	Input connection No.14
15	INP15	XD0315	Input connection No.15
16	INP16	XD0316	Input connection No.16
17	INP22	XD0322	Input connection No.22

Step (3)

B0502\_15.VSD

## ■ Display Order after Sorting

Sorting arranges and displays data according to the Display Format setting: 'By Tag Name' or 'By Address'.

Undefined tag names or addresses and definition errors are sorted differently.

The display order depends on the display format, as shown in the following table.

**Table B5.4 Display Order after Sorting**

Display Format	By Address	By Tag Name
Fully defined	Data is displayed in address order.	Data is displayed in tag name order.
Address yet unallocated	Such data is displayed at the beginning of the tag name definitions.	Such data is sorted and displayed together with tag name definitions already fully defined.
Tag name yet undefined	Such data is sorted and displayed together with tag name definitions already defined with tag names.	Such data is displayed at the end of the tag name definitions but before any definition errors.
Definition error	Such data is displayed at the end of the tag name definitions.	Such data is displayed at the end of the tag name definitions.

### ● Example of Display: Registered Devices (by Addresses)

The following figure shows an example of a display sorted by address.

	Tag Name	Address	I/O Comment (32 char)
1	* data2	Y00301	
2	* sig001	M00036	
3		M00037	0.02 s clock
4	* ym36	M00038	0.1 s clock
5	ym37	M00039	0.2 s clock
6	ym38	M00040	1 s clock
7		M00041	
8	* ym40	M00042	1 min clock
9		M00066	No error in transmission Sub Unit
10		M00129	Run mode flag
11	ym40	M00041	Stop mode flag
12			
13			
14			
15			
16			
17			

**Figure B5.6 Display Sorted by Address**

Devices with undefined address are displayed at the beginning, sorted by tag name. All definition errors are displayed at the end.

### ● Example of Display: Registered Devices (by Tag Names)

The following figure shows an example of a display sorted by tag name.

	Tag Name	Address	I/O Comment (32 char)
1	* adata	X00201	
2	* sig001	M00036	
3		M00037	0.02 s clock
4	* ym36	M00038	0.1 s clock
5	ym37	M00039	0.2 s clock
6	ym38	M00040	1 s clock
7	ym40		
8	zzzdata2	M00066	No error in transmission Sub Unit
9		M00129	
10		M00135	Run-from-ROM/RAM flag
11		M00136	
12		Y00301	Set clock time
13	ym40	M00040	0.2 s clock
14			
15			
16			
17			

**Figure B5.7 Display Sorted by Tag Name**

Devices with undefined tag names are displayed at the end, sorted by address. Definition errors are displayed at the end.

## B5.2.7 Read Circuits Function

The Read Circuits function reads tag names and addresses used in circuits.

You can use this function when you wish to allocate addresses to tag names or to enter I/O comments for tag name definitions.

### ■ Prerequisites for Reading

Prerequisites for executing the Read Circuits function differ for block tag name definition and common tag name definition, as shown below.

- For block tag name definition, the block must have been converted.
- For common tag name definition, the block to be read must have been saved.

### ■ Results of Reading

When you execute the Read Circuits function, tag names and addresses used within the program are read and an asterisk (\*) is displayed to the left of the cells of tag names or addresses used in the block for which reading is performed.

	Tag Name	Address	I/O Comment (32 char)
1	Always On	MD0033	Always On
2		MD0034	Always Off
3		MD0035	Enable 1 scan at operation start
4		MD0036	0.01 s clock
5		MD0037	0.02 s clock
6		MD0038	0.1 s clock
7		MD0039	0.2 s clock
8	Sec1Clk	MD0040	1 s clock
9		MD0041	2 s clock

Before Reading

	Tag Name	Address	I/O Comment (32 char)
1	* CntRst		
2	* OneSecClk		
3	* Y00301		
4	* Y00317		
5	* Always On	MD0033	Always On
6		MD0034	Always Off
7		MD0035	Enable 1 scan at operation start
8		MD0036	0.01 s clock
9		MD0037	0.02 s clock

After Reading

B0502\_18.VSD

Figure B5.8 Before Reading and After Reading



### CAUTION

- If the number of tag names or addresses that are to be read from the program during a Read Circuits operation exceeds the number of tag name definitions that can be added, an error with the message “Number of registered devices exceeded limit. Some devices were not read.” is displayed and reading is aborted. If this error occurs with the common tag name definition, increase the maximum number of common tag name definitions in the properties setting for the project.
- Structure names, structure member names, Q structures and Q structure member names are not read by the Read Circuits operation.

### SEE ALSO

For details on the number of common tag name definitions, see Section B5.6, “Changing Maximum Number of Common Tag Name Definitions and Storing to CPU.”

## ■ Read Circuits Function for Block Tag Name Definition

The procedure for executing the Read Circuits operation for a block tag name definition is given below.

### ◆ Procedure ◆

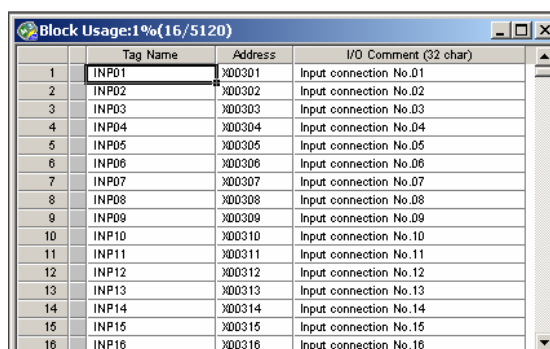
(1) Check that the Block Tag Name Definition window is active.

(2) Select [Functions]–[Read Circuits] from the menu.

⇒ The Read Circuits dialog box is displayed.

#### TIP

If the block tag name definition has been edited but not yet saved, a confirmation dialog box is displayed before the Read Circuits dialog box appears. Click [Yes]. The Read Circuits dialog box is displayed.



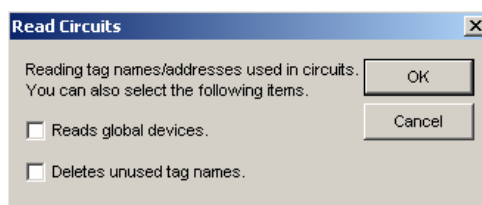
	Tag Name	Address	I/O Comment (32 char)
1	INP01	XD0301	Input connection No.01
2	INP02	XD0302	Input connection No.02
3	INP03	XD0303	Input connection No.03
4	INP04	XD0304	Input connection No.04
5	INP05	XD0305	Input connection No.05
6	INP06	XD0306	Input connection No.06
7	INP07	XD0307	Input connection No.07
8	INP08	XD0308	Input connection No.08
9	INP09	XD0309	Input connection No.09
10	INP10	XD0310	Input connection No.10
11	INP11	XD0311	Input connection No.11
12	INP12	XD0312	Input connection No.12
13	INP13	XD0313	Input connection No.13
14	INP14	XD0314	Input connection No.14
15	INP15	XD0315	Input connection No.15
16	INP16	XD0316	Input connection No.16

Step (1)

B0502\_01.VSD

(3) Turn on the displayed checkboxes as required and click [OK].

⇒ Tag names and addresses used in the block are read.



Read Circuits

Reading tag names/addresses used in circuits.  
You can also select the following items.

☐ Reads global devices.

☐ Deletes unused tag names.

OK Cancel

Step (3)

B0502\_20.VSD

#### TIP

- [Reads global devices] checkbox

When this checkbox is turned on, global devices used in a block are also read into the block tag name definition.

When it is turned off, tag names and local devices are read, but global devices are not read.

- [Deletes unused tag names] checkbox

When this checkbox is turned on, all unused tag name definitions are deleted from the block tag name definition after the circuits are read.

## ■ Read Circuits Function for Common Tag Name Definition

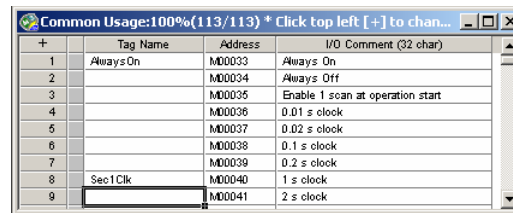
The procedure for executing the Read Circuits function for common tag name definition is given below.

### ◆ Procedure ◆

(1) Check that the Common Tag Name Definition window is active.

(2) Select [Functions]–[Read Circuits] from the menu.

⇒ The Select Block/Macro dialog box is displayed.



	Tag Name	Address	I/O Comment (32 char)
1	Always On	M00033	Always On
2		M00034	Always Off
3		M00035	Enable 1 scan at operation start
4		M00036	0.01 s clock
5		M00037	0.02 s clock
6		M00038	0.1 s clock
7		M00039	0.2 s clock
8	Sec1Clk	M00040	1 s clock
9		M00041	2 s clock

Step (1)

B0502\_21.VSD

(3) Select the object to read.

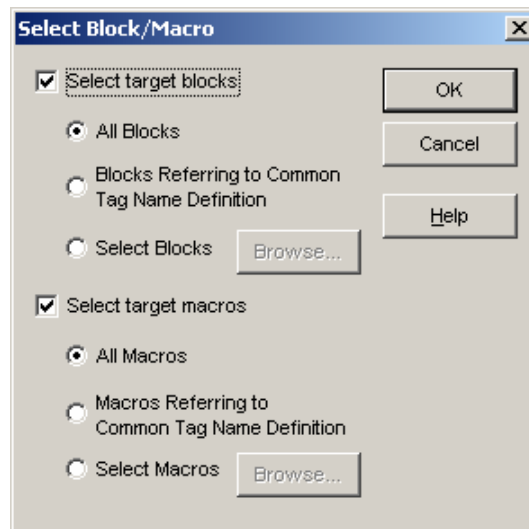
#### TIP

To read from blocks, turn on the [Select target blocks] checkbox. To read from macros, turn on the [Select target macros] checkbox. To read from both blocks and macros, turn on both checkboxes.

(4) Select the detailed read objects by turning on the desired option box under each checkbox.

#### TIP

- Turning on the [All Blocks] option button reads from all blocks registered in the block component definition; turning on the [All Macros] option button reads from all macros registered in the macro component definition.
- Turning on the [Blocks Referring to Common Tag Name Definition] or [Macros Referring to Common Tag Definition] option button reads from all blocks registered in the block component definition, or respectively macro component definition, with its reference tag name definition set to common tag name definition.
- Turning on the [Select Blocks] or [Select Macros] option button allows you to select blocks, or respectively macros as targets for the Read Circuits operation.



Steps (3) to (5)

B0502\_22.VSD

(5) If you had turned on the [Select Blocks] or [Select Macros] option button earlier, click the [Browse] button.

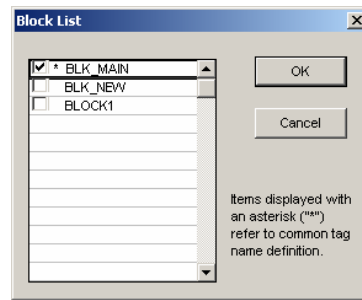
⇒ The Block List or the Macro List dialog box is displayed.

(6) Turn on checkboxes for blocks or macros to be read from the list box.  
Click [OK].

⇒ Display returns to the [Select Block/Macro] dialog box.

(7) Click [OK].

⇒ The Select Block/Macro dialog box closes and the tag names or addresses are read.



Step (6)

B0502\_23.VSD



## CAUTION

- If an error message stating that “Number of registered devices exceeded limit. Some devices were not read.” is displayed at the end of reading, increase the number of common tag number definitions.
- Structure names, structure member names, Q structures, Q structure member names are not read by the Read Circuits operation.

## SEE ALSO

For details on the number of common tag name definitions, see Section B5.6, “Changing Maximum Number of Common Tag Name Definitions and Storing to CPU.”

## B5.2.8 Switching Display

Tag name definition windows can be set to display registered devices only or to display a complete device list.

Registered devices refer to devices with completed tag name definition and can be displayed sorted by address or by tag name.

A device list displays the maximum number of devices for each device categories on a CPU type, regardless of whether the devices are registered.

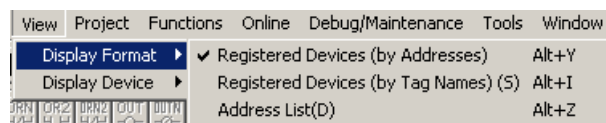
### ■ Display Mode

There are three display modes.

- Registered Devices (by addresses)  
Displays registered tag name definitions only in ascending order of the addresses.
- Registered Devices (by tag names)  
Displays registered tag name definitions only in ascending alphabetic order of the tag names.
- Device List  
Displays all devices

## ■ Switching Display

To switch the display mode, select [View]–[Display Format], followed by either [Registered Devices (by Addresses)], [Registered Devices (by Tag Names)] or [Address List] from the menu.



B0502\_24.VSD

Figure B5.9 Switching Display Modes

### TIP

The inverted triangle in the item columns of the Tag Name Definition edit window can be used to distinguish between the two modes, as shown in the figures below.



B0502\_23.VSD

Figure B5.10 For Tag Name Display Style

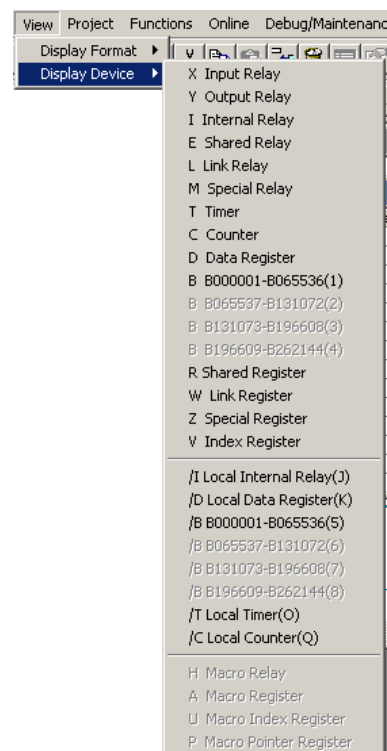


B0502\_24.VSD

Figure B5.11 For Address Display Style

You can also switch the display by clicking the display item column for either [Tag Name] or [Address].

To switch the display of the device list, select [View]–[Display Device] followed by the device category to be displayed.



B0502\_25.VSD

Figure B5.12 Device List



## B5.2.9 Structure Object Definition

By editing tag name definitions, you can instantiate structures in their respective tag name definition locations based on structure type definitions defined in a project.

Structures defined using structure type definition becomes usable in blocks after instantiation in tag name definition.

### ■ Opening Tag Name Definition File and Performing Structure Object Definition

Open a tag name definition file and displays the tag name definition window. From the tag name definition window, display the Structure Object Definition dialog box to perform editing.

The relevant procedure is given below.

#### ◆ Procedure ◆

- (1) In the case of common tag name definition, double-click [Common Tag Name Definition] in the project window. In the case of block tag name definition, display the [Edit Block] window and select [Edit]–[Block Tag Name Definition] from the menu.

⇒ The tag name definition window is displayed.

- (2) Move the position cursor to the cell to be edited and select [Functions]–[Structure Object Definition] from the menu.

#### TIP

The figure shows an example of a Block Tag Name Definition window.

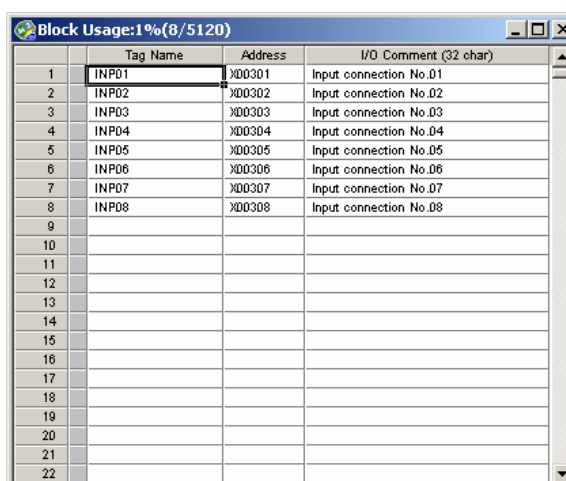
⇒ The Structure Object Definition dialog box is displayed.

- (3) Enter a name to be used for the structure after instantiation in the [Structure Name] text box.

#### TIP

Up to 7 characters can be specified for the structure name.

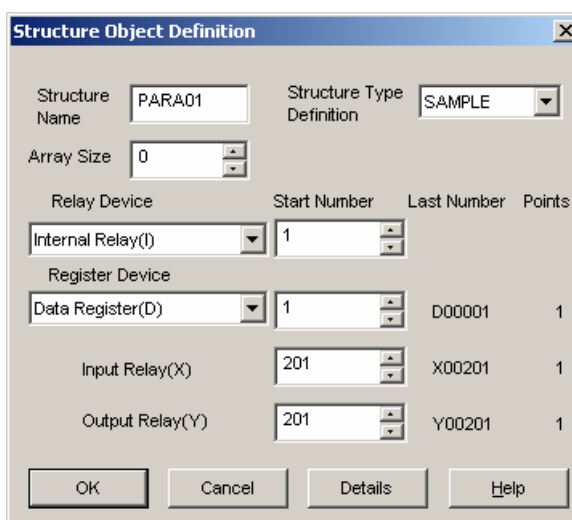
- (4) Select the structure type definition to be instantiated from the [Structure Type Definition] drop-down list.



	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

Step (2)

B0502\_27.VSD



Structure Name: PARA01      Structure Type Definition: SAMPLE

Array Size: 0

Relay Device	Start Number	Last Number	Points
Internal Relay(I)	1		
Register Device			
Data Register(D)	1		D00001 1
Input Relay(X)	201		X00201 1
Output Relay(Y)	201		Y00201 1

Buttons: OK, Cancel, Details, Help

Steps (3) to (7)

B0502\_27.VSD

**TIP**

- You can read information (members, member properties, I/O comments) for the structure type selected in the [Structure Type Definition] drop-down list by clicking the [Details] button.
- Structure type definitions defined and saved in the "Fam3com" folder are read.

**(5) Specify the array size for the structure to be instantiated using the [Array Size] spin box.**

**TIP**

Specifying a value of zero for the array size means that the structure to be instantiated is not an array.

**(6) Specify actual addresses in the CPU to be allocated to the structure.**

**TIP**

The internal addresses are automatically allocated according to the type of the structure members.

Relay Devices	Relay
Register Devices	Integer(DEC)
	Integer(HEX)
	Integer(BCD)
	Long Integer(DEC)
	Long Integer(HEX)
	Long Integer(BCD)
	Float
	Char
Input Relay	Input Relay
Output Relay	Output Relay

**CAUTION**

Mapping structure type object definition to local devices is not allowed in common tag name definition.

**(7) Click [OK].**

⇒ The Structure Body Definition dialog box closes and display returns to the tag name definition window.

**TIP**

Structures which have been instantiated are displayed in grey.

Block Usage: 1%(9/5120)

	Tag Name	Address	I/O Comment (32 char)
1	INP01	X00301	Input connection No.01
2	INP02	X00302	Input connection No.02
3	INP03	X00303	Input connection No.03
4	INP04	X00304	Input connection No.04
5	INP05	X00305	Input connection No.05
6	INP06	X00306	Input connection No.06
7	INP07	X00307	Input connection No.07
8	INP08	X00308	Input connection No.08
9	PARA01		
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			

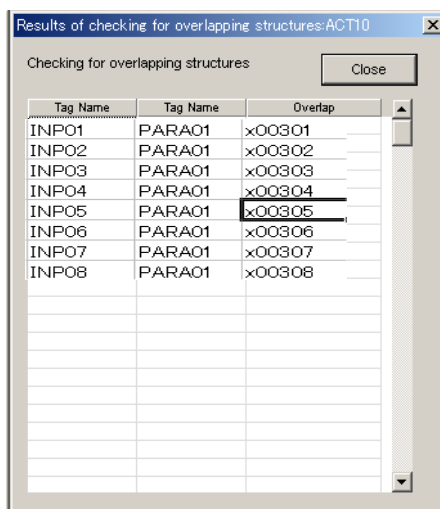
Step (7)

B0502\_28.VSD

**CAUTION**

- Structure tag names are allocated respective addresses from relay devices, register devices, input relays (X) and output relays (Y) in the CPU. These address allocations should not duplicate the local device settings in the configuration.
- An address that is automatically allocated according to the structure tag name setup is not displayed as an error during tag name definition even if it exceeds the usable range for a CPU type. If an error is indicated during program syntax checking, you should reallocate a valid address to the tag name.
- Devices are automatically allocated to a structure in tag name definition. You can also check whether devices automatically allocated to structures overlap devices assigned to tag names.

To do so, select [Functions]--[Check for Overlapping Structures] from the menu with the tag name definition window opened.



B0502\_29.VSD

**Figure B5.13 [Results of checking for overlapping structures:] dialog box**

If overlapping allocations are found, they are displayed in a list, as shown in the above figure. You must correct the settings to remove these violations.

## B5.3 Merging Tag Name Definitions

The Merge Tag Name Definition function extracts and merges selected tag name definition information from a merge source into the tag name definition of a destination block.

This merge source can either be the tag name definition of another block or the common tag name definition, but for ease of reference, will be referred to as tag name definition of the other block in this section.

You can select either to extract only tag name definition information corresponding to tag names or addresses found in the merge destination (that is, tag name definition of the destination block), or to extract all information from the other block's tag name definitions.

### ■ Prerequisites for Merging

The following conditions must be satisfied for merging tag name definitions.

- Tag name definitions of the other block to be merged must be saved data. Only saved data in the other block's tag name definition file can be merged. Tag name definition information of the other block currently being edited cannot be merged.
- The tag name definition display format must be set to Registered Devices. Merging is not allowed if the tag name definition display format of the destination block is set to Address List.

#### TIP

Block tag name definition files and common tag name definition files are saved at different times.

- A block tag name definition file is saved when you select to save the block.
- A common tag definition file is saved when you select to save tag name definition.



#### CAUTION

Structure names are not merged.

### ■ Merge Operation for Tag Name Definitions

There are two options for merge method available for selection: the first option merges only tag name definitions of the other block that are relevant to the destination block; the second option reads all tag name definitions of the other block. In addition to the merge method, you also need to select the precedence for conflict resolution of duplicate tag name definitions. The basic merge operation is described below.

- When merging duplicate tag name definitions:
  - If a tag name definition record of the destination block contains only a tag name, then the merge operation extracts and merges the address and I/O comment corresponding to this same tag name found in the other block's tag name definition.
  - If a tag name definition record of the destination block contains only an address (and an I/O comment), the merge operation extracts and merges the I/O comment corresponding to this same address found in the other block's tag name definition. If this address is allocated to a tag name in the other block's tag name, however, the tag name definition data is not merged.
- When the Read All Tag Name Definitions of the Other Block option is selected:
  - The merge operation adds all tag name definitions of the other block to the tag name definition of the destination block. Any duplicate tag name definitions, however, are merged according to the precedence selection.

The precedence selection affects the merge operation as follows:

- If tag name definitions of the destination (this) block is given precedence:  
If the tag name or address of a tag name definition of the other block duplicates a definition in the destination block, its data is not merged.
- If tag name definitions of the other block is given precedence:  
If the tag name of a tag name definition of the other block duplicates a definition in the destination block, its address and I/O comment data are merged.  
If a tag name definition of the other block has an undefined tag name but its address (+ I/O comment) duplicates a definition in the destination block, its I/O comment data is merged



### **CAUTION**

---

If merging causes duplicate tag names or addresses, a duplicate use error is displayed at the place of duplication.

When the option to read all tag name definitions of the other block is selected, there is a possibility that the number of registered tag name definitions may exceed the maximum limit allowed. If this happens, merging proceeds up to the maximum number of registered tag name definitions allowed and skips subsequent processing.

---

### B5.3.1 Merging Other Block's Tag Name Definitions

The Merge Other Block's Tag Name Definition function merges tag name definition information from another block tag name definition.

It can be executed from the menu of a Block Tag Name Definition window or a Common Tag Name Definition window.

B0503\_04.VSD

Figure B5.14 Merging Other Block's Tag Name Definitions

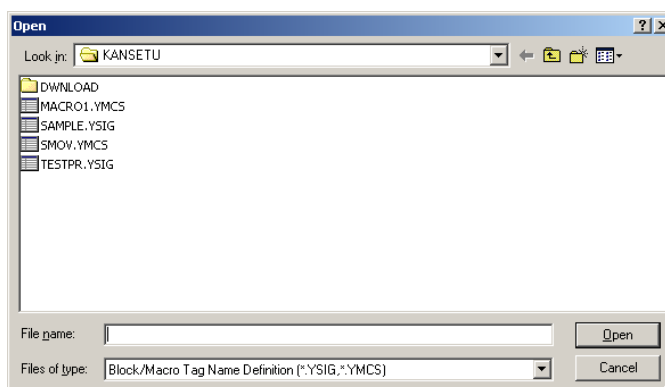
The following procedure lists the steps for merging information from the block tag name definition shown in the above figure.

#### ◆ Procedure ◆

- (1) Check that the Block Tag Name Definition window for the merge destination (this block) is active.
- (2) Select [Functions]--[Merge Other Block's Tag Name Definitions] from the menu.
- ⇒ The Open File dialog box is displayed.
- (3) Select the tag name definition file of another block to be used as the merge source and click [Open].
- ⇒ The Select Tag Name Definition Precedence dialog box is displayed.

Steps (1) and (2)

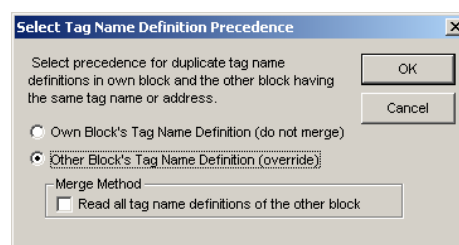
B0503\_04A.VSD



Step (3)

B0503\_05.VSD

- (4) Turn on the appropriate option button for the block to be given precedence. Click [OK].
- ⇒ Merging begins.



Step (4)

B0503\_06.VSD

## ■ Examples for Merging of Tag Name Definitions

The following examples illustrate how tag name definition precedence selection and merge method selection affect the merge operation.

- (1) Other block's tag name definition has precedence and the merge method option to read all tag name definitions of the other block is not selected:

### ● Before merging

Destination Block's Tag Name Definitions		
sw1	I00001	Comment I01
sw2	I00002	Comment I02
sw3	I00003	Comment I03

Other Block's Tag Name Definitions		
sw1	I00004	Comment I04
sw2	I00005	Comment I05
sw4	I00006	Comment I06

### ● After merging

Destination Block's Tag Name Definitions		
sw1	I00004	Comment I04
sw2	I00005	Comment I05
sw3	I00003	Comment I03

← Merged  
← Merged  
← Not merged

- (2) Other block's tag name definition has precedence and the merge method option to read all tag name definitions of the other block is selected:

### ● Before merging

Destination Block's Tag Name Definitions		
sw1	I00001	Comment I01
sw2	I00002	Comment I02
sw3	I00003	Comment I03

Other Block's Tag Name Definitions		
sw1	I00004	Comment I04
sw2	I00005	Comment I05
sw4	I00006	Comment I06

### ● After merging

Destination Block's Tag Name Definitions		
sw1	I00004	Comment I04
sw2	I00005	Comment I05
sw3	I00003	Comment I03
sw4	I00006	Comment I06

← Merged  
← Merged  
← Not merged  
← Added

- (3) Destination block's tag name definition has precedence and the merge method option to read all tag name definitions of the other block is selected:

### TIP

When the destination block's tag name definition has precedence, the Read All Tag Name Definitions of the Other Merge Block merge option is always enabled.

### ● Before merging

Destination Block's Tag Name Definition		
sw1	I00001	Comment I01
sw2	I00002	Comment I02
sw3	I00003	Comment I03

Other Block's Tag Name Definition		
sw1	I00004	Comment I04
sw2	I00005	Comment I05
sw4	I00006	Comment I06

### ● After merging

Destination Block's Tag Name Definition		
sw1	I00001	Comment I01
sw2	I00002	Comment I02
sw3	I00003	Comment I03
sw4	I00006	Comment I06

← Not merged  
 ← Not merged  
 ← Not merged  
 ← Added



### CAUTION

When merging tag name definitions of a block to common tag name definitions, tag name definitions assigned to local devices will not be merged.

## B5.3.2 Merging Common Tag Name Definitions

The Merge Common Tag Name Definition function merges information from the common tag name definition into a block tag name definition.

The procedure is essentially the same as that for merging tag name definitions from another block.

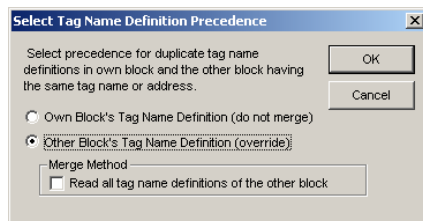
### SEE ALSO

For details on merging tag name definitions from another block, see Section B5.3.1, "Merging Other Block's Tag Name Definitions."

## ■ Differences between Merge Common Tag Name Definitions and Merge Other Block Tag Name Definitions Functions

The Merge Common Tag Name Definitions function differs from the Merge Other Block's Tag Name Definitions function in the following ways:

- The data to be merged (merge source) is always the common tag name definition of the project.
- The following Select Tag Name Definition Preference dialog box is displayed.



B0503\_08.VSD

Figure B5.15 Select Tag Name Definition Precedence Dialog Box

- The Merge Common Tag Name Definitions function cannot be executed from the Common Tag Name Definition window.

To merge common tag name definitions, display the Block Tag Name Definition window and select [Functions]–[Merge Common Tag Name Definitions] from the menu.



## B5.4 Deleting Unused Tag Names

You can delete tag name definitions not used by the program from information registered in a tag name definition file. The procedure is slightly different for common tag name definition and block tag name definition.

### ■ Block Tag Name Definition

The following procedure describes how to delete unused tag name definitions from a block tag name definition.

#### ◆ Procedure ◆

(1) Check that the Block Tag Name

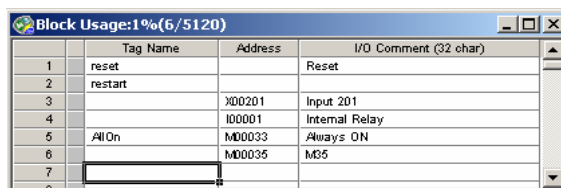
Definition window is active.

(2) Select [Functions]–[Delete Unused Tag Names] from the menu.

⇒ A confirmation dialog box is displayed.

(3) Click [Yes].

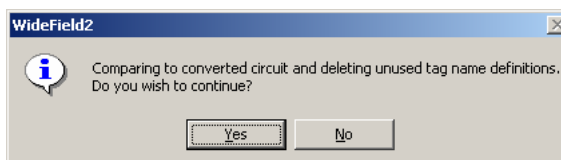
⇒ Unused tag name definitions are deleted.  
The records are sorted and padded after deletion.



	Tag Name	Address	I/O Comment (32 char)
1	reset		Reset
2	restart		
3		X00201	Input 201
4		I00001	Internal Relay
5	All On	M00033	Always ON
6		M00035	M35
7			

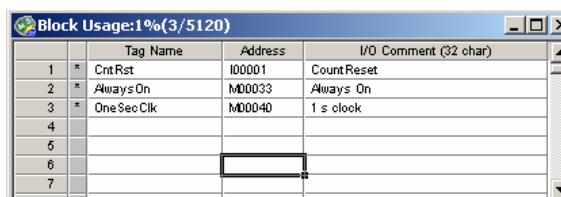
B0504\_01.VSD

Step (1)



B0504\_03.VSD

Step (3)



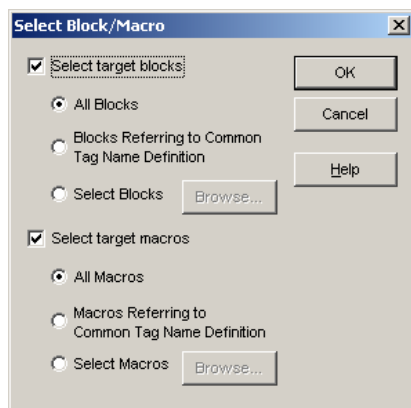
	Tag Name	Address	I/O Comment (32 char)
1	* Cnt Rst	I00001	Count Reset
2	* Always On	M00033	Always On
3	* One Sec Clk	M00040	1 s clock
4			
5			
6			
7			

B0504\_02.VSD

Step (3)

### ■ Common Tag Name Definition

The procedure for deleting unused tag name definitions from the common tag name definition is largely similarly to that for block tag name definition. However, you can specify multiple blocks and macros to be searched, instead of a single block or macro. When you select Delete Unused Tag Names from the menu, a Select Block/Macro dialog box is displayed for you to select the target blocks or macros to be searched.



B0504\_04.VSD

Figure B5.16 Select Block/Macro dialog box

The following items are displayed on the Select Block/Macro dialog box.

- [Select target blocks] checkbox.  
Sets blocks as operation targets.
- [All Blocks] option button  
Selects all blocks registered in the executable program
- [Blocks Referring to Common Tag Name Definition]  
Among the blocks registered in the executable program, selects blocks which have their reference tag name definition set to common tag name definition.
- [Select Blocks] option button  
Selects up to 1024 target blocks from the project folder. Clicking the [Browse] button displays a list for selection.
- [Select target macros] checkbox  
Sets macros as operation targets.
- [All Macros] option button  
Selects up to 256 macros in the project folder.
- [Macros Referring to Common Tag Name Definition] option button  
Selects up to 256 macros in the project folder which have their reference tag name definition set to common tag name definition.
- [Select Macros] option button  
Selects up to 256 target macros from the project folder. Clicking the [Browse] button displays a list for selection.



## CAUTION

- Target macros must be macros stored in the project folder. A macro stored in the macro folder cannot be selected as a target macro. You must first select [Project]–[Extract Macro] from the menu to extract it to the project folder.
- Unused structure body definitions are not deleted.
- Parameters of some instructions in a program may be explicitly coded with a first device but actually occupy multiple devices. When deleting unused tag names, beware that other than the first device, the remaining implicit devices are not considered as being used by the instructions.

## B5.5 Group Templates

The Group Template Definition function defines the members of a group tag name. It defines all information except the group name. Once a group template is created, you can simply attach different group tag names to it when performing tag name definition for groups having the same configuration. A group tag name is of the form [Group Name\_Member Name].

Group templates define only the group members, without the group name.

### B5.5.1 Creating Group Templates

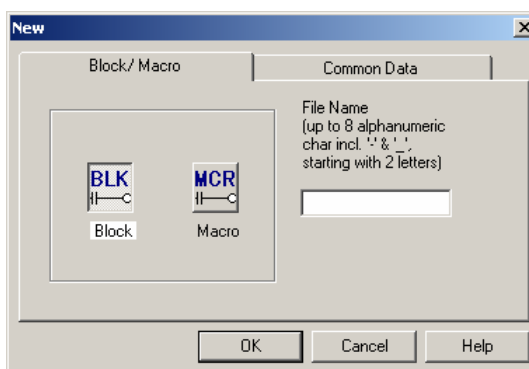
The procedure for creating a group template is given below.

#### ◆ Procedure ◆

(1) Select [File]–[New] from the menu.

⇒ The New dialog box is displayed.

(2) Click the [Common Data] tab.



Step (2)

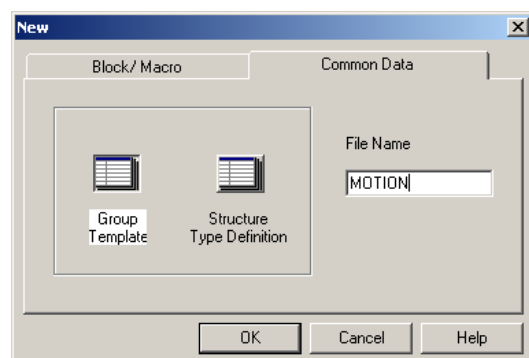
B0505\_05.VSD

(3) Click the [Group Template] button



(4) Enter a file name in the [File Name] text box.

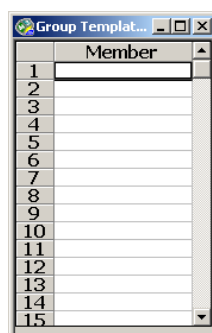
(5) Click [OK].



Steps (2) to (4)

B0505\_04A.VSD

⇒ The Group Template Definition window is displayed.



Step (5)

B0505\_06.VSD

**TIP**

Edit the group template definition on the Group Template Definition window.

Selecting [File]–[Close] after editing a definition displays a dialog box to confirm whether to save the changes. Group templates containing no error are saved in the common folder.

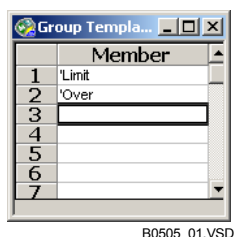


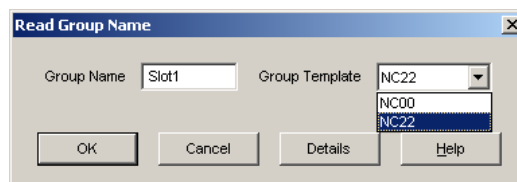
Figure B5.17 Group Template Definition window with Edited Data

## B5.5.2 Using Group Templates

The procedure for using a group template created previously is given below.

### ◆ Procedure ◆

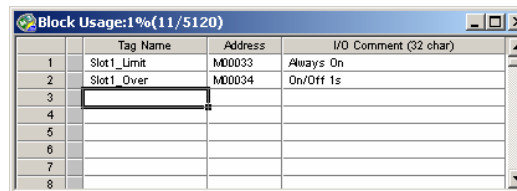
- (1) On a tag definition window, move the cursor to where a group template is to be entered.
- (2) Select [Functions]–[Read Group] from the menu.  
⇒ The Read Group Name dialog box is displayed.
- (3) Enter a group name, select a group template and click [OK].



Step (3)

B0505\_02.VSD

- ⇒ The group template is read, the entered group name is combined with the individual member names and written to the [Tag Name] cells.



Step (3)

B0505\_03A.VSD

## B5.6 Changing Maximum Number of Common Tag Name Definitions and Storing to CPU

You can set or change the maximum number of common tag name definitions allowed.

You can also specify whether to store common tag name definitions to the CPU in the project properties (for F3SP28-3S/SP38-6S/SP53-4S/SP58-6S/SP59-7S/SP66-4S/SP67-6S CPU modules).

The relevant procedure is given below.

### TIP

You can also check the maximum number of common tag name definitions versus the number of common tag name definitions currently defined by looking at the title bar of the Common Tag Name Definition edit window.

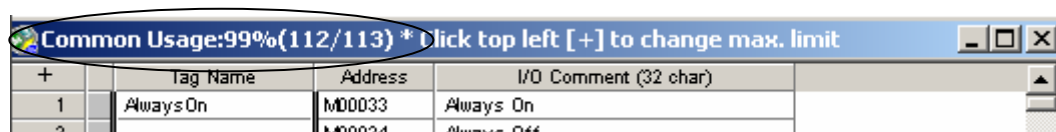


Figure B5.18 Usage Display for Common Tag Name Definitions

B0505\_02A.VSD

## ◆ Procedure ◆

### (1) Select [Project]–[Change CPU

Type/Properties] from the menu.

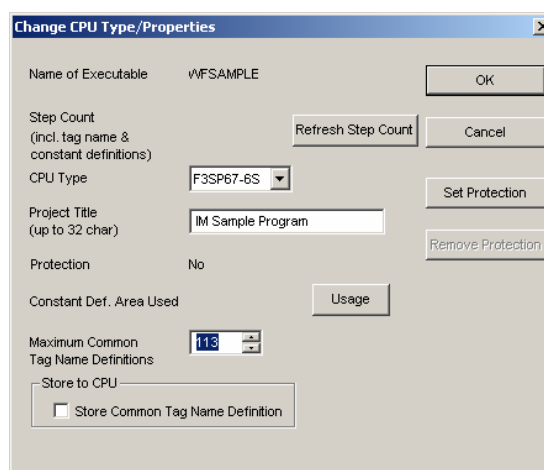
⇒ The Change CPU Type/Properties dialog box is displayed.

### (2) Set the maximum number of common tag name definitions in the [Maximum Common Tag Name Definitions] field and click [OK].

### TIP

To store the common tag name definition in the CPU, turn on the [Store Common Tag Name Definition] checkbox in the [Store to CPU] group box. Click [OK].

⇒ The Change CPU Type/Properties dialog box closes and the maximum number of common tag name definition allowed is updated.



Step (2)

B0506\_01A.VSD



## CAUTION

A large preset value for the Maximum Common Tag Name Definitions will lengthen the processing time for opening and closing projects, as well as other edit operations.

## B5.7 Importing and Exporting Tag Name Definitions

You can import/export common tag name definitions and block tag name definitions to/from CSV data.

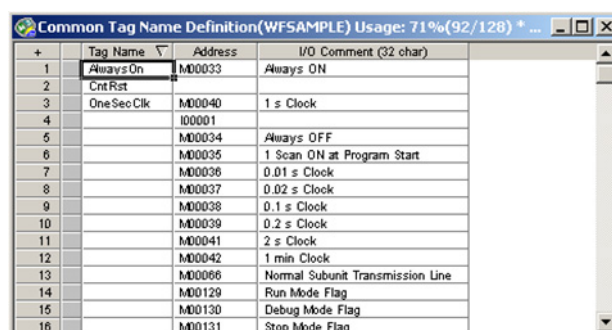
Converting tag name definitions as CSV data allows you to reuse tag name definitions with other applications and project data. This improves the efficiency of editing tag name definitions.

### B5.7.1 Exporting Tag Name Definitions

The procedure for saving defined tag name definitions as CSV data is given below.

#### ◆ Procedure ◆

- (1) Check that the Tag Name Definition edit screen is active.



	Tag Name	Address	I/O Comment (32 char)
1	Always On	MD0033	Always ON
2	Cnt Rst		
3	OneSecClik	MD0040	1 s Clock
4		ID0001	
5		MD0034	Always OFF
6		MD0035	1 Scan ON at Program Start
7		MD0036	0.01 s Clock
8		MD0037	0.02 s Clock
9		MD0038	0.1 s Clock
10		MD0039	0.2 s Clock
11		MD0041	2 s Clock
12		MD0042	1 min Clock
13		MD0066	Normal Subunit Transmission Line
14		MD0129	Run Mode Flag
15		MD0130	Debug Mode Flag
16		MD0131	Stop Mode Flag

Step (1)

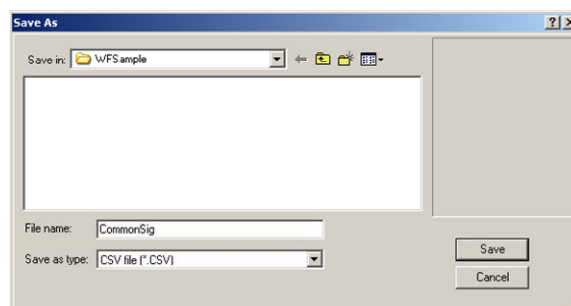
B0507\_01.VSD

- (2) Select [Functions]--[Output CSV Data] from the menu bar.

⇒ The Save As dialog box is displayed.

- (3) Enter the file name to be saved, and click the [Save] button.

⇒ The tag name definition data is saved in CSV format.



Step (3)

B0507\_02.VSD

## B5.7.2 Importing Tag Name Definitions

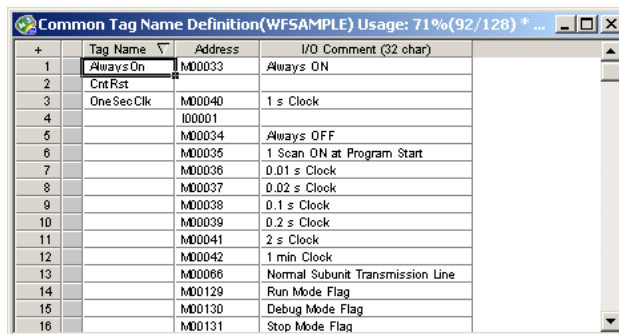
The procedure for loading tag name definition data saved as CSV data as tag name definition data for WideField2 is given below.

### TIP

If tag name definition files being imported have the same tag name or address as defined tag name definitions, matching definitions will be imported. If there is inconsistency in the definitions of tag names or addresses, priority (for import) will be given to tag name definitions that match.

### ◆ Procedure ◆

- (1) Check that the Tag Name Definition edit screen is active.



Step (1)

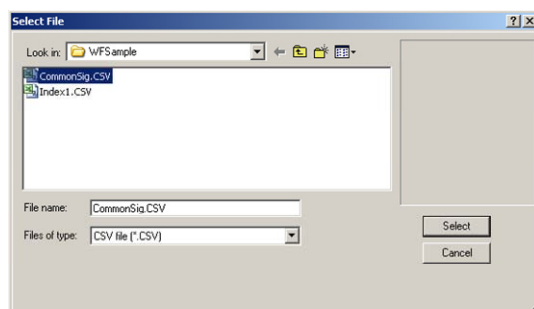
B0507\_03.VSD

- (2) Select [Functions]—[Load CSV Data] from the menu bar.

⇒ The Select File dialog box is displayed.

- (3) Select the file to be imported, and click the [Select] button.

⇒ The CSV data is imported to the tag name definition.



Step (3)

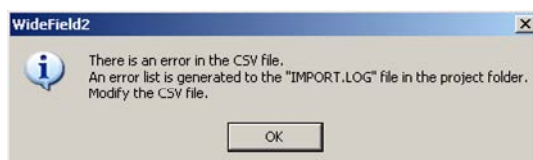
B0507\_04.VSD



### CAUTION

CSV data that can be loaded as tag name definition data includes information for identification in WideField2.

Therefore, the following message will appear for CSV data that does not include this information (or in which this information has been corrupted), and the data will not be loaded.



B0507\_05.VSD

Figure B5.19 Tag Name Definitions Import Error





## B6. Constant Definition

The constant definition function maps constant names to constant values so that constant names can be used as instruction parameters in place of constant names within blocks. Constant names can be entered into program of blocks, and even have their constant values assigned or changed after program creation. Constant names can also be added to comments.

Each project allows the creation of only one constant definition file, which is common to all blocks within the project. Constant names that are used within macros referred by a project must also be defined in the constant definition file of the project so that the sequence CPU can execute the program using the defined constant values.



### CAUTION

- Constant definition is only available on some sequence CPUs.
- Constant names can generally be used in place of constants as instruction parameters but cannot be used in some instructions.

**Table B6.1 Instructions that Disallow the Use of Constant Names as Constants**

Instruction		Parameters that Do Not Allow the Use of Constant Names in Place of Constants
HRD	High-speed Read Instruction	Parameters 1, 2 and 4
HWR	High-speed Write Instruction	Parameters 1, 2 , 3 and 4

### SEE ALSO

For a list of sequence CPUs that support constant definition, see "Sequence CPU – Instructions" (IM34M6P12-03E).

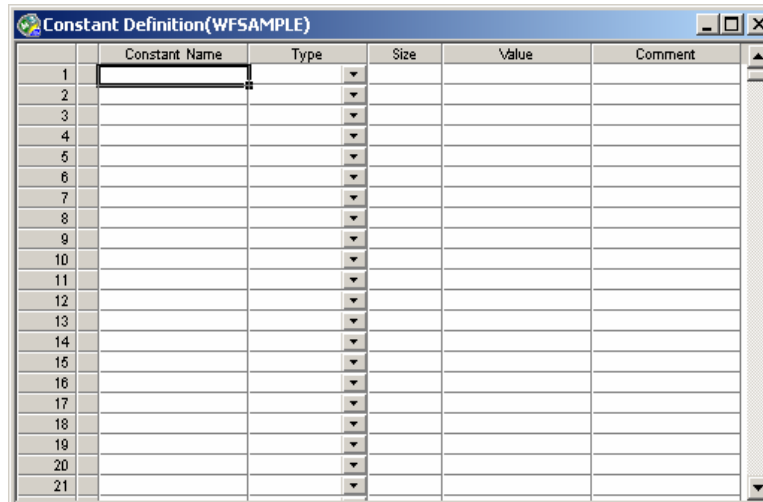
## B6.1 Fundamentals of Constant Definition

This section describes the layout of the Constant Definition Window and restrictions on constant definition.

### B6.1.1 Constant Definition Window Layout

Data can be copied and pasted between constant definition windows, as well as between constant definition windows and tables of constant names with assigned values created using MS-Excel or a similar program.

Checks on constant names and values defined in the constant definition are constantly performed, with the results indicated in various colors in the display.



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Figure B6.1 Constant Definition Window

## B6.1.2 Restrictions on Constant Definition

The following restrictions apply to constant definitions.

- Number of constant definitions  
Up to 2,048 constants can be defined. The maximum number of constants that can be defined depends on the data type, size and string lengths of defined constant names. You can check the number of defined constants in the project properties and perform syntax check of constant definitions at downloading.
- Duplicate definition of constant name  
Constant names that are already defined cannot be defined again.
- Consistent data type and constant value  
You must define the constant value of a constant name within the range of its specified data type.
- Size and constant value  
You must define the constant value of a constant name within the range of its specified size.

## B6.2 Editing Constant Definition

### B6.2.1 Basic Operations for Editing Constant Definition

#### ■ Opening and Editing Constant Definition File

Firstly, you open constant definition data to display a Constant Definition window. You can then edit constant definitions in the Constant Definition window.

The relevant procedure is given below.

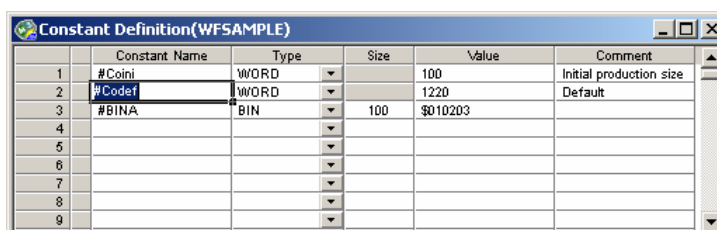
#### ◆ Procedure ◆

(1) Double-click [Constant Definition] in the Project window.

⇒ The Constant Definition Window is displayed.

(2) Double-click the cell to be edited, or move the cursor to the cell to be edited and press the [F2] key.

⇒ System enters into Cell Edit mode.



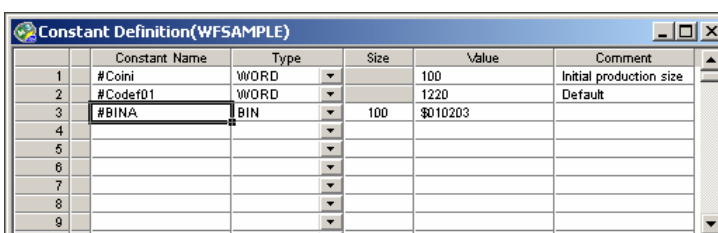
	Constant Name	Type	Size	Value	Comment
1	#Coini	WORD		100	Initial production size
2	#Codef	WORD		1220	Default
3	#BINA	BIN	100	\$010203	
4					
5					
6					
7					
8					
9					

Step (2)

B05T01\_02A.VSD

(3) Edit the cell content and press the [Enter] key.

⇒ Cell edit mode ends and the changes are confirmed.



	Constant Name	Type	Size	Value	Comment
1	#Coini	WORD		100	Initial production size
2	#Codef01	WORD		1220	Default
3	#BINA	BIN	100	\$010203	
4					
5					
6					
7					
8					
9					

Step (3)

B05T01\_03A.VSD

## ■ Saving Constant Definition File and Closing Constant Definition Window

The procedure for saving edited constant definition data and closing a Constant Definition window is given below.

### ◆ Procedure ◆

(1) Make the constant definition file to be saved the active window.

(2) Select [File]–[Save] from the menu.

⇒ The constant definition file is overwritten and saved.

(3) Select [File]–[Close] from the menu.

Or, click [Close] on the Constant Definition window.

⇒ The Constant Definition window closes.

#### TIP

- If an error such as duplicate constant name definition or invalid constant value is detected, the background color of the line containing the error changes.
- If you attempt to close constant definition with unsaved changes, a dialog box is displayed to confirm whether to save the changes.



#### CAUTION

**Invalid constant definitions cannot be saved.**

**When a constant definition file is saved, invalid constant definitions will be discarded.**

## B6.2.2 Specification of Elements of Constant Definition

The table below shows the specification, valid data range and restrictions for each element of a constant definition.

**Table B6.2 Specification and Restrictions on Elements of Constant Definitions**

Element	Description	Specification and Restrictions
Constant name	Specify a constant name	2 to 16 alphanumeric characters beginning with a '#' character. (length limit includes the '#' character)
Type	Specify the data type for the constant name.	One of the following: WORD, LONG, STRING, BIN, FLOAT
Size	Specify an appropriate data size when BIN or STRING data type is specified.	0 to 256 If 0 is specified, the system automatically allocates the required size for the specified constant value. If BIN or STRING data type is specified, the size defaults to 0 if nothing is specified.
Value	Specify a constant value.	The entered value must be consistent with the specified data type.
Comment	Enter a comment for the constant name.	Up to 32 characters.

Entering a value which is out of valid range for any element generates an error.

### ■ Type Specifications

The table below lists the data types that can be specified for a constant name, along with their restrictions.

**Table B6.3 Specification and Restrictions of Constant Data Types**

Type	Description	Specification and Restrictions
WORD	2-byte numeric value or character string	Numeric value from -32768 to 32767. Hexadecimal value prefixed by a '\$' character. Character string enclosed within double-quotes (").
LONG	4-byte numeric value or character string	Numeric value from -2147483648 to 2147483647 Hexadecimal value prefixed by a '\$' character. Character string enclosed within double-quotes (").
STRING	Character string of the specified size	Character string enclosed within double-quotes ("). There is no restriction on the characters used. A NULL is automatically appended at the end of the string. (Example: "String")
BIN	Character string specified in hexadecimal format. The maximum allowable length of the character string is 2*specified size.	Hexadecimal digit pairs (00 to FF), prefixed by a '\$' character. (Example: \$0D0A)
FLOAT	Number in IEEE defined single precision floating-point format	Numeric value from 1E-38 to 1E+38, prefixed by a '%' character. (Example: %1.234560E-012)

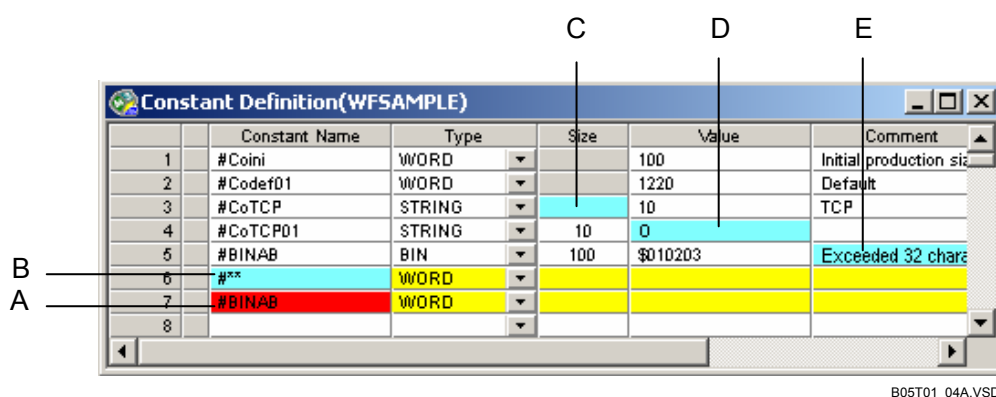
Escape sequence can be specified in a character string in the same way as entering an escape sequence when editing a program.

### SEE ALSO

For more details on how to enter an escape sequence, see "■ Entering Escape Sequences" in Section B4.2.14, "Entering Constants, Constant Names, Character Strings, Floating Points, Escape Sequence, Block Names and Label Names."

## B6.2.3 Error Handling

On constant definition windows, lines and cells containing errors are displayed with a different background color. Lines containing input errors are displayed with yellow background whilst cells with errors are displayed with different background colors depending on the error type.



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Figure B6.2 Error

Table B6.4 List of Errors

	Error	Back-ground Color	Cause	Troubleshooting
A	Duplicate constant name	Red	The same constant name is already defined within the constant definition.	Delete lines for unwanted definitions.
B	Invalid constant name	Blue	An invalid constant name is specified.	Enter a valid constant name.
C	Invalid size	Blue	Specified size is inconsistent with the specified constant data type.	Enter a valid size.
D	Invalid constant value	Blue	Specified constant value is invalid.	Enter a valid constant value consistent with the constant data type and size.
E	Invalid comment	Blue	Length of I/O comment exceeded limit.	Shorten the I/O comment.



### CAUTION

Constant definitions containing errors (error lines displayed with yellow cells or red cells) cannot be saved. You should amend or delete these error lines.

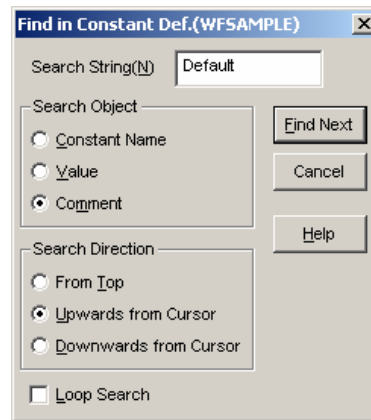
## B6.2.4 Find Function

You can search for constant names, constant values and comments in constant definition windows.

The relevant procedure is given below.

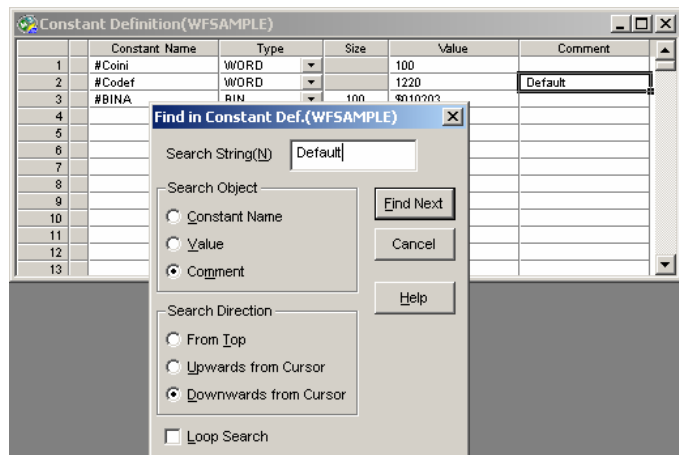
### ◆ Procedure ◆

- (1) Check that the constant definition window to be searched is the active window.
  - (2) Select [Find]–[Find] from the menu.  
⇒ The Find dialog box is displayed.
  - (3) Enter the search string and select the search object and the search direction.
  - (4) Click [Find Next].  
⇒ Search begins. The cursor moves to the search object, if it is found. If the search object is not found, an error is displayed.
- TIP**
- You can modify a constant definition, even with the Find dialog box displayed.
- (5) Click [Cancel] or the button for closing the Find dialog box.  
⇒ The Find dialog box closes.



Steps (3) and (4)

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Steps (3) and (4)

B05T01\_06A.VSD

### TIP

Even after closing a Find dialog box, you can search downwards for the next candidate, starting from the position cursor location by selecting [Find]–[Find Next] from the menu bar or by pressing the [F3] key.

Pressing the [Shift]+[F3] keys searches upwards for the next candidate, starting from the position cursor location.

## B6.2.5 Copying, Cutting, Pasting and Deleting

You can copy, cut and paste a selected cell range within a constant definition window.

You can also copy and paste between constant definition windows of different projects.



## B6.2.6 Sort

You can sort and rearrange constant definitions.

### TIP

Constant definitions are saved according to the order in which they are defined, and are not automatically sorted.

## ■ Sort Order

The table below lists the available sort orders for constant definitions.

**Table B6.5 Constant Definition Sort Orders**

Sort Order	Description
By Constant Name	Rearranges constant definitions in ascending order of constant name.
By Type/Constant Name	Rearranges constant definitions in ascending order of type + constant name.
By Type/Value	Rearranges constant definitions in ascending order of type + value.
By Comment	Rearranges constant definitions in ascending order of comment.

## ◆ Procedure ◆

- (1) Check that the constant definition window to be sorted is displayed.
- (2) Select [Functions]–[Sort] from the menu, and then select one of the displayed sort orders.

⇒ Sorting is performed.

## B6.2.7 Read Circuits Function

The Read Circuits function reads constant names used in circuits.

You can use this function when you wish to define constant values for constant names.

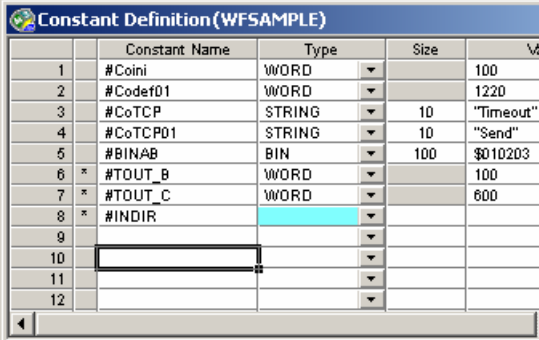
### ■ Prerequisites for Reading

Prerequisites for executing the Read Circuits function differ for constant definition, and are given below:

- The block to be read must have been saved.
- The block to be read must be included in the component definition.

### ■ Results of Reading

When you execute the Read Circuits function, constant names used within the project are read and an asterisk (\*) is displayed to the left of the cells of constant names used within the target block for which reading was performed.



	Constant Name	Type	Size	Value
1	#Coini	WORD	100	
2	#Codef01	WORD	1220	
3	#CoTCP	STRING	10	"Timeout"
4	#CoTCP01	STRING	10	"Send"
5	#BINAB	BIN	100	\$010203
6 *	#TOUT_B	WORD	100	
7 *	#TOUT_C	WORD	800	
8 *	#INDIR			
9				
10				
11				
12				

Figure B6.3 After Reading

B05T01\_07A.VSD

### ■ Read Circuits Function for Constant Definition

The procedure for executing the Read Circuits operation for constant definition data is given below.

#### ◆ Procedure ◆

(1) Check that the Constant Definition window is active.

(2) Select [Functions]–[Read Circuits] from the menu.

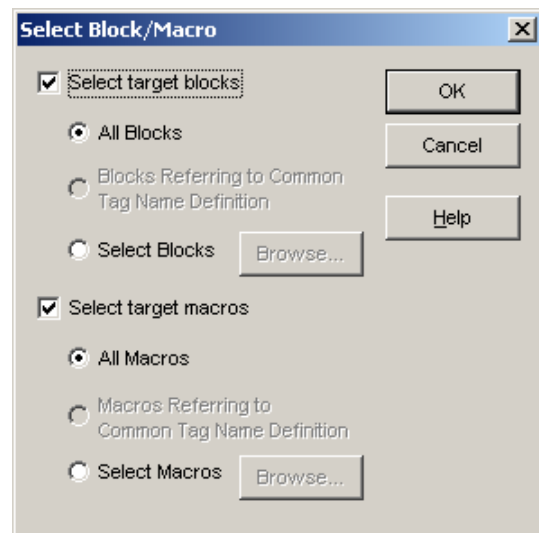
⇒ The Select Block/Macro dialog box is displayed.

**(3) Select the object type to be read.****TIP**

To read from blocks, turn on the [Select target blocks] checkbox. To read from macros, turn on the [Select target macros] checkbox. To read from both blocks and macros, turn on both checkboxes.

**(4) Select the detailed read objects by turning on the desired option button under each checkbox.****TIP**

- Turning on the [All Blocks] option button reads from all blocks registered in the block component definition; turning on the [All Macros] option button reads from all macros registered in the macro component definition.
- The [Blocks Referring to Common Tag Name Definition] and [Macros Referring to Common Tag Definition] option buttons are disabled in the display.
- Turning on the [Select Blocks] or [Select Macros] option button allows you to select blocks, or respectively macros as targets for the Read Circuits operation.



Steps (3) to (5)

B05T01\_08A.VSD

**(5) If you had turned on the [Select Blocks] or [Select Macros] option button earlier, click [Browse].**

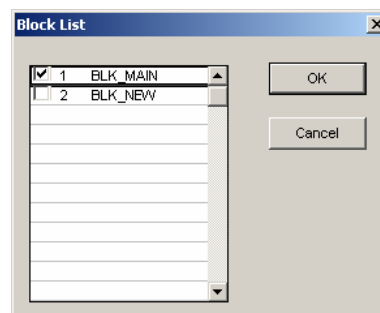
⇒ The Block List or the Macro List dialog box is displayed.

**(6) Turn on checkboxes for blocks or macros to be read from the list box. Click [OK].**

⇒ Display returns to the [Select Block/Macro] dialog box.

**(7) Click [OK].**

⇒ The Select Block/Macro dialog box closes and the constant names are read.



Step (6)

B0502\_23.VSD

**CAUTION**

- Target macros can only be macros stored in the project folder. A macro stored in the macro folder cannot be selected as a target macro. To select a macro stored in the macro folder, you must first select [Project]–[Extract Macro] from the menu to extract the macro to the project folder.

## B6.3 Deleting Unused Constant Names

You can delete constant name definitions not used by the program from constant definition data.

### ◆ Procedure ◆

- (1) Check that the Constant Definition window is active.
- (2) Select [Functions]–[Delete Unused Constant Names] from the menu.  
⇒ The Select Block/Macro dialog box is displayed.
- (3) Select the target object type to be checked in the same way as for the Read Circuits function.
- (4) Select the target objects by turning on the desired option button under each checkbox.
- (5) If you had turned on the [Select Blocks] or [Select Macros] option button earlier, click [Browse].  
⇒ The Block List or the Macro List dialog box is displayed.
- (6) Turn on checkboxes for blocks or macros to be checked from the list box.  
Click [OK].  
⇒ Display returns to the [Select Block/Macro] dialog box.
- (7) Click [OK].  
⇒ The Select Block/Macro dialog box closes and lines for unused constant names are deleted.



### CAUTION

- Target macros must be macros stored in the project folder. A macro stored in the macro folder cannot be selected as a target macro. To select a macro stored in the macro folder, you must first select [Project]–[Extract Macro] from the menu to extract the macro to the project folder.

## B6.4 Displaying Number of Constant Devices Used

Constant definitions make use of constant devices of the CPU.  
You can check the usage of constant devices from the project properties.  
The relevant procedure is given below.

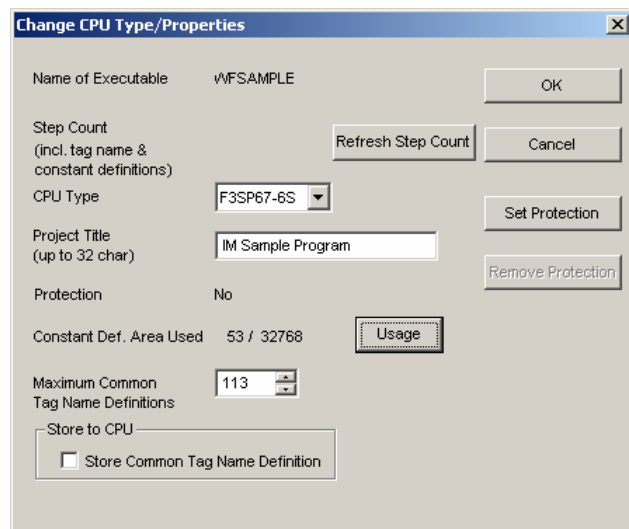
### ◆ Procedure ◆

(1) Select [Project]–[Change CPU Type/Properties] from the menu.

⇒ The Change CPU Type/Properties dialog box is displayed.

(2) Click the [Usage] button located to the right of the [Constant Def. Area Used] field.

⇒ The constant devices used (number of devices used/maximum number of devices available) is displayed to the right of the [Constant Def. Area Used] field.



Step (2)

B050T01\_09A.VSD



## **B7. Building and Managing a Project**

This chapter describes how to build and manage a project.

Building or managing a project requires that you first open a project. All software operations in this chapter should be performed with an open project.

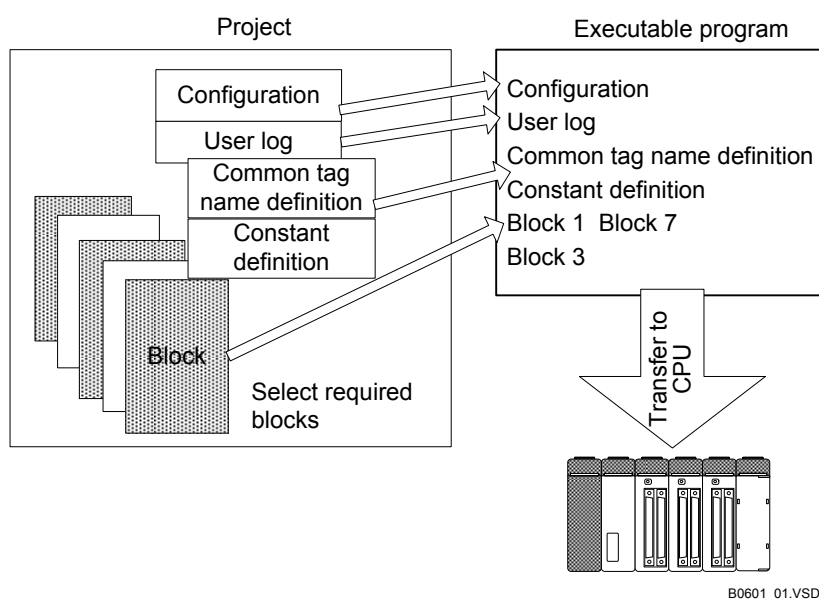
## B7.1 Building a Project

This section describes how to define executable program components, change the CPU type, set executable program properties, perform configuration and create user log messages.

### B7.1.1 Defining Components of an Executable Program

An executable program is a collection of data downloaded to a sequences CPU module. An executable program consists of the following elements.

- Configuration  
Configures the CPU environment. If this is not set up, the CPU runs with the default settings for the given CPU type.
- User Log Message  
Stores user log messages when a user log is used.
- Blocks  
These are ladder programs made up of function units. Block tag definition can also be included as an element to be downloaded.
- Common tag name definition  
Maps tag names to addresses and is common to all blocks.
- Constant definition  
Maps constant names to constant values.



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**Figure B7.1 Executable Program Components**

#### TIP

The components of an executable program vary with CPU module type.

CPU property data is not included as a component of an executable program.

#### SEE ALSO

For details on CPU modules, see "Sequence CPU – Functions".



Use the following procedure to define the components of an executable program.

## ◆ Procedure ◆

### (1) Select [Project]–[Define Program Components] from the menu.

⇒ The Define Program Components dialog box opens.

### (2) Select whether to set the configuration by clicking on [Setup] or [Not Setup].

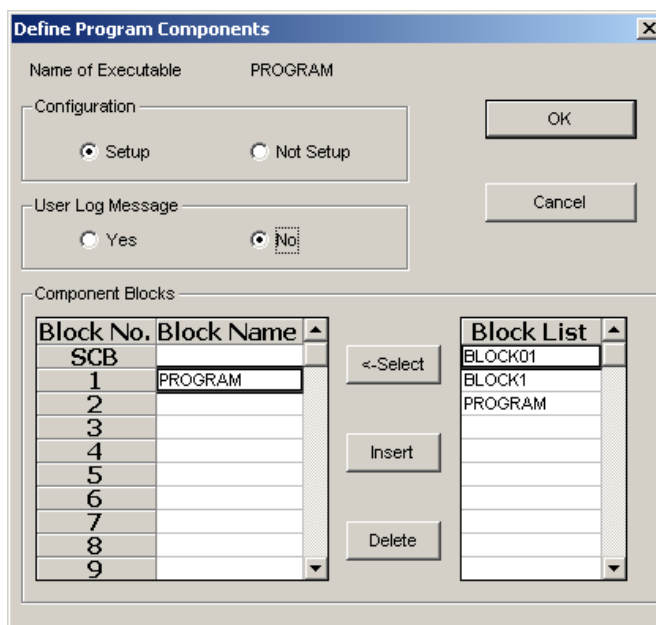
### (3) To use a user log, select [Yes] in the [User Log Message] group box, else select [No].

### (4) On the left list box in the Component Blocks group, click on the position where a block is to be entered.

⇒ The cursor moves to the clicked position.

### (5) On the [Block List] list box on the right of the Component Blocks group, click on the desired block, followed by [←Select].

⇒ The block name is entered in the list box where the cursor is.



Steps (2) to (5)

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#### TIP

The [Block List] list box on the right displays all the blocks in a project.

To use a block of another project, add its block file to the project.

### (6) Repeat steps (4) and (5) to enter sensor control block and normal blocks.

#### TIP

To insert an empty line in the left list box, click on where the line is to be inserted and click [Insert]. An empty line is inserted at the cursor position and the subsequent blocks shift downwards.

To delete a block from the left list box, click on the block to be deleted to move the cursor. Next, click [Delete]. The block at the cursor position is deleted and the subsequent blocks shift upwards. To retain the empty line, press the [Delete] key instead.

**(7) Click [OK].**

⇒ The component definition is updated.

**TIP**

A sensor control block allows independent high-speed periodic scanning, superior in performance to normal scanning. Only one ladder block can be assigned as a sensor control block. Registering only one sensor control block to a component definition with no normal block is not allowed.

Sensor control blocks are known as "Sensor CB" in WideField2.

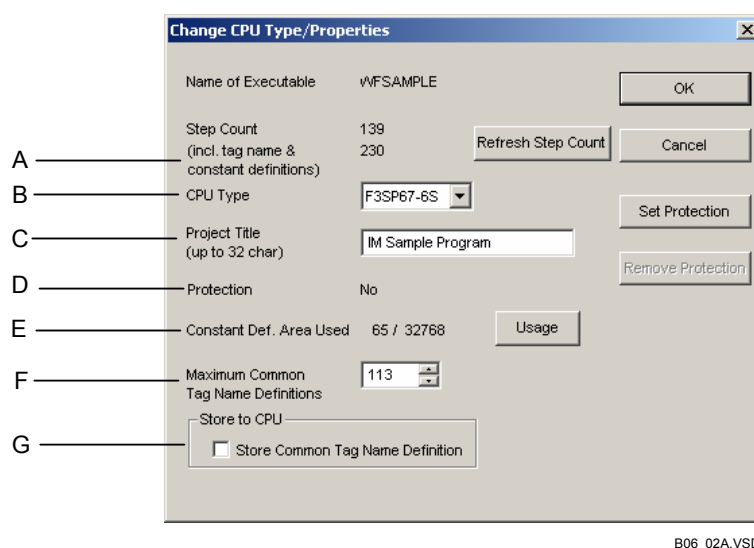
**SEE ALSO**

For details on sensor control blocks, see "Sequence CPU – Functions."

## B7.1.2 Changing CPU Type And Executable Program Properties

To change the CPU type, or set/cancel project settings, use the Change CPU Type/Properties dialog box.

### ■ Change CPU Type/Properties Dialog Box



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**Figure B7.2 Change CPU Type/Properties Dialog Box**

- A Step Count  
Displays the sum of the ladder step count and the step count for circuits /sub-comments stored in the CPU over the entire executable program (including step counts of macros used in blocks of the executable program).
- (Incl. tag name & constant definitions)  
The displayed step count includes the step count of tag name definitions stored in the CPU. This step count is not displayed for CPUs that cannot store tag name definitions. Clicking [Refresh Step Count] refreshes the display of the step count.
- B CPU Type  
Displays the CPU type. Select a CPU type from the drop-down list.

- C Project Title  
Displays the project title. Edit the text box to change the project title.
- D Protection  
Displays the protection status of the executable program. To set protection or change the password, click [Set Protection].  
To remove protection, click [Remove Protection].  
The procedure for setting and removing protection for a project is the same as that for setting and removing protection for a block.
- E Constant Def. Area Used.  
Computes and displays the number of CPU devices used by constant definition from the sizes of defined constants.
- F Maximum Common Tag Name Definitions  
Specifies the maximum number of common tag name definitions allowed.
- G Store to CPU  
Specifies whether to download common tag name definitions to the CPU.

---

**SEE ALSO**

For details on how to set or remove protection, see Section B3.4, "Editing Local Device and Properties of Blocks and Macros."

---

Use the following procedure to change the CPU type and to set or remove protection.

**◆ Procedure ◆**

**(1) Select [Project]–[Change CPU Type/Properties] on the menu bar, or double click on the CPU executable program in the project window.**

⇒ The Change CPU Type/Properties dialog box opens.

**(2) Set each item.**

**(3) Click [OK].**

⇒ The changes are saved and the Change CPU Type/Properties dialog box closes.

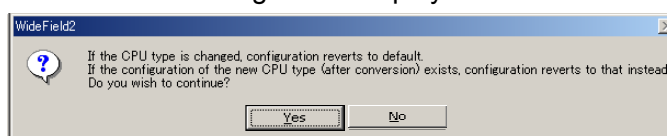
**CAUTION**

- A program configuration contains elements for configuring an executable program. The CPU type is one of these elements. Configuration setup is inherited only if the CPU type is changed to another CPU type within the same model group. If the CPU type is changed to a CPU type belonging to a different model group, the configuration setup either changes to the previous configuration of the new CPU type, or reverts to default so you need to create a new configuration and modify it. The table below lists the CPU types in each model group.

**Table B7.1 Model Groups of CPU Types**

Model Group Name	CPU Type
Group 1	F3SP05, F3SP08, F3SP21
Group 2	F3SP25, F3SP35, F3FP36
Group 3	F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67

When the CPU type is changed to a CPU type belonging to a different model group, a confirmation dialog box is displayed.



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**Figure B7.3 Dialog Box Confirming Setup When the CPU Type Is Changed**

- Even if configuration setup is inherited, the allowable value range for each setup item may differ between CPU types. Hence errors may be detected during program syntax checking.
- The larger the maximum allowable common tag name definitions, the slower the startup and save operations.
- When reading circuits, a read error occurs if the number of devices read exceeds the maximum allowable common tag name definitions. Consider the tag name definitions actually used and set a value, providing appropriate allowances.

---

## B7.1.3 Configuration Setup

Configuration setup values depend on the CPU type. The following are the configuration setup items.

- Device Capacities
- Data Lock-up Range at Power Failure and Local Devices
- Operation Control
- Initial data for data registers
- DIO Setup
- FA Link
- Sampling Trace
- Communications Setup
- ROM Setup (available for all except F3SP66 and F3SP67 CPU types)
- Interrupt Setup (only available for F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66 and F3SP67 CPU types)
- Shared Refreshing (only available for F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66 and F3SP67 CPU types)
- FL-net Refreshing (only available for F3SP28, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66 and F3SP67 CPU types)
- Function Removal (only available for F3SP66 and F3SP67 CPU types)

### TIP

The configuration function allows you to preset features such as device capacities and operation method for a sequence CPU module to match its intended use.

---

### SEE ALSO

For details on setting values for individual CPU types, see “Sequence CPU – Functions.”

---

■ Setting Configuration

To set the configuration, use the Configuration dialog box. The Configuration dialog box groups setup items into different screens selectable by tabs such as [Device Capacities] tab and [Communications Setup] tab.

Use the follow procedure to open the Configuration dialog box and perform setup.

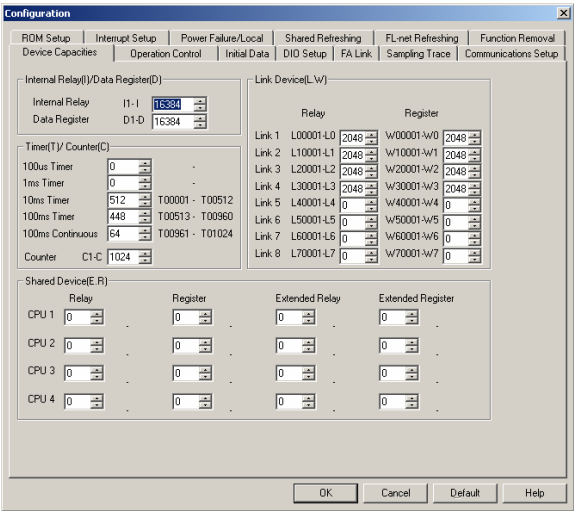
◆ Procedure ◆

- (1) Select [Project]–[Configuration] from the menu.  
⇒ The Configuration dialog box opens.
- (2) Set each item as required.

**TIP**

To revert settings on the screen to their initial values, click [Default] and then click [Yes] in the displayed dialog box.

- (3) When setup is completed, click [OK].  
⇒ The Configuration dialog box closes and the configuration file is updated.



Steps (2) and (3) B06\_06.VSD

SEE ALSO

For details on configuration, see “Sequence CPU – Functions.”

## ■ Tab Screens of Configuration Dialog Box

The Configuration setup dialog box is divided into screens selectable with tabs such as the [Device Capacities] tab and [DIO Setup] tab.

### ● Device Capacities Tab

Use the [Device Capacities] tab to set capacities for each type of device.

**Device Capacities**

**Internal Relay(I)/Data Register(D)**

Internal Relay I1-I: 16384

Data Register D1-D: 16384

**Timer(T)/Counter(C)**

100us Timer: 0

1ms Timer: 0

10ms Timer: 512 (Range: T00001 - T00512)

100ms Timer: 448 (Range: T00513 - T00960)

100ms Continuous: 64 (Range: T00961 - T01024)

Counter C1-C: 1024

**Link Device(L,W)**

Link	Relay	Register
Link 1	L00001-L0	W00001-W0
Link 2	L10001-L1	W10001-W1
Link 3	L20001-L2	W20001-W2
Link 4	L30001-L3	W30001-W3
Link 5	L40001-L4	W40001-W4
Link 6	L50001-L5	W50001-W5
Link 7	L60001-L6	W60001-W6
Link 8	L70001-L7	W70001-W7

**Shared Device(E,R)**

	Relay	Register	Extended Relay	Extended Register
CPU 1	0	0	0	0
CPU 2	0	0	0	0
CPU 3	0	0	0	0
CPU 4	0	0	0	0

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**Figure B7.4 Device Capacities Tab**

The following table lists the setup items, with their setup procedures.

**Table B7.2 Input Items for Device Setup**

Setup Item	Setup Procedure	TIP
Internal Relay (I)/ Data Register (D)	Enter a value for each device type using the keyboard or the spin buttons.	—
Timer (T)/Counter(C)	Enter a value for each device type using the keyboard or the spin buttons.	The starting and ending numbers for each type of timer are displayed.
Link Device (L,W)	Enter a value for each system number using the keyboard or the spin buttons.	—
Shared Device (E,R)	Enter a value for each CPU using the keyboard or the spin buttons.	The starting and ending numbers for each CPU are displayed.

## ● Power Failure/Local Tab

Use the [Power Failure/Local] tab to set the power failure lock-up range and the local device range for each device type.

Power Failure/Local

Data Lock-up Range at Power Failure

	Starting Number	Points	Setup Range	Available Setup Range
Internal Relay(I)	1	1024	I00001 - I01024	I00001 - I16384
100us Timer	0	0	-	-
1ms Timer	0	0	-	-
10ms Timer	0	0	-	T00001 - T00512
100ms Timer	0	0	-	T00513 - T00960
100ms Continuous	961	64	T00961 - T01024	T00961 - T01024
Counter(C)	1	1024	C00001 - C01024	C00001 - C01024
Shared Relay(E)	0	0	-	-
Link Relay(L)	0	0	-	L00001 - L32048
Data Register(D)	1	16384	D00001 - D16384	D00001 - D16384
Shared Register(R)	0	0	-	-
Link Register(W)	0	0	-	W00001 - W32048

Local Devices

	Starting Number	Number of Devices Currently Registered	Setup Range	Available Setup Range
Internal Relay(/I)	16001	32	I16001 - I16032	I00001 - I16384
Data Register(/D)	16001	20	D16001 - D16020	D00001 - D16384
File Register(/B)	0	0	-	B00001 - B262144
Timer(/T)	0	0	-	T00001 - T00512
Counter(C)	1001	10	C01001 - C01010	C00001 - C01024

Figure B7.5 Power Failure/Local Tab

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The following table lists the setup items with their setup procedures.

Table B7.3 Input Items for Power Failure Lock-Up Ranges and Local Devices

Setup Item	Setup Procedure	TIP
Data Lock-up Range at Power Failure	Enter a value for each device using the keyboard or the spin buttons.	Set a value within the range of the device capacities. The starting and ending numbers are displayed.
Local Devices	Enter the starting number for each device using the keyboard or the spin buttons.	The total number of local devices registered in all blocks is displayed. Set a value within the range of the device capacities.



## ● Operation Control Tab

Use the [Operation Control] tab to set the operation of the CPU.

Operation Control

Error-Time Action

I/O module error	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
I/O comparison error	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
Instruction parameter error	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
Scan timeout	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
Subroutine error	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
Interrupt error	<input type="radio"/> Run	<input checked="" type="radio"/> Stop
Subunit communication error	<input checked="" type="radio"/> Run	<input type="radio"/> Stop
Sensor CB scan timeout	<input type="radio"/> Run	<input checked="" type="radio"/> Stop

Program Execution Mode ☒ All Blocks ☐ Specified Blocks

Scan Monitoring Time  ms 10-200ms

Momentary Power Failure Detection Mode ☒ Standard ☐ Immediate

Constant Scan ☒ Do Not Use ☐ Use  ms 1.0-190.0ms

Peripheral Processing Time ☒ Not Setup ☐ Set up  ms 0.1-190.0ms

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**Figure B7.6 Operation Control Tab**

The following table lists the setup items with their setup procedures.

**Table B7.4 Input Items for Operation Control Setup**

Setup Item	Setup Procedure	TIP
Error-Time Action	Turn on the [Run] or [Stop] option button.	—
Program Execution Mode	Turn on the [All Blocks] or [Specified Blocks] option button.	—
Scan Monitoring Time	Enter a value using the keyboard or the spin buttons.	—
Momentary Power Failure Detection Mode	Turn on the [Standard] or [Immediate] option button.	—
Constant Scan	Turn on the [Do Not Use] or [Use] option button. If you have turned on [Use], enter the time using the keyboard.	—
Peripheral Processing Time	Turn on the [Not Setup] or [Setup] option button. If you have turned on [Setup], enter the time using the keyboard.	—

## ● Initial Data Tab

Use the [Initial Data] tab to set the initial values of data registers.

Initial Value Setup Range

Starting Number: 1    Points: 200    Setup Range: D00001 - D00200

Setup Data

Address	Decimal	Hex
D00001	120	78
D00002	2000	7D0
D00003	0	0
D00004	0	0
D00005	0	0
D00006	0	0
D00007	0	0
D00008	0	0
D00009	0	0
D00010	0	0
D00011	0	0
D00012	0	0
D00013	0	0
D00014	0	0
D00015	0	0

Import    Export

**Figure B7.7 Initial Data Tab**

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The following table lists the setup items with their setup procedures.

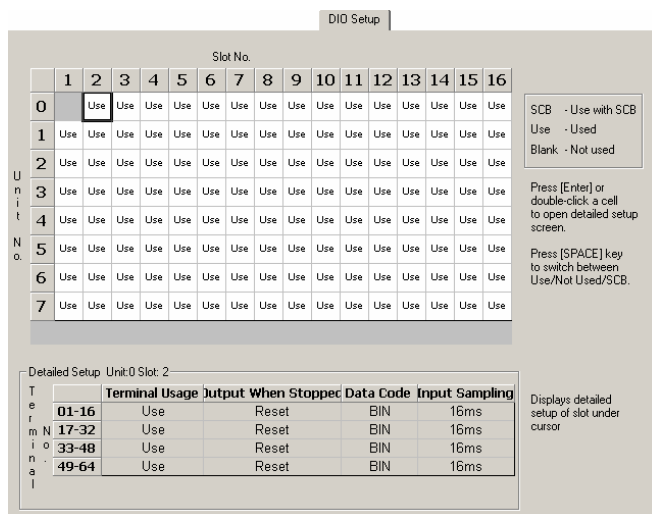
**Table B7.5 Input Items for Setting Initial Values of Data Registers**

Setup Item	Setup Procedure	TIP
Starting Number and Points	Enter a value using the keyboard or the spin buttons.	Set a value within the range of the data register capacity.
Initial Value (Setup Data)	Enter decimal or hexadecimal values. Hexadecimal numbers may be prefixed by an optional '\$' character.	Specified data values should be within the range of word data.
Import	Click this button to import setup data from a CSV formatted file.	Data values are delimited using newline codes.
Export	Click this button to save setup data to a CSV formatted file.	

## ● DIO Setup Tab

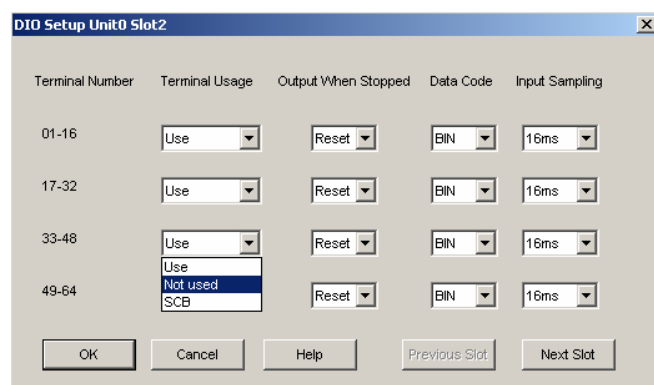
The initial setup screen displays three options, namely, used (Use), not used (blank), and use with SCB (SCB).

Right-click a slot position and select [Detailed Setup] from the pop-up menu, or double-click (or press the [Enter] key) to display the DIO detailed setup dialog box.



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**Figure B7.8 DIO Setup Tab**



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**Figure B7.9 DIO Detailed Setup Dialog Box**

### TIP

A slot is where a module is mounted in a unit.

### TIP

- To switch between values for Used, Not used and SCB, press the [SPACE] key in a cell.
- You can also change a cell value by right-clicking a cell and selecting the required value from the displayed pop-up menu.
- You can also select a range of cells, and change all their values by selecting the required value from the right-click pop-up menu.
- Use the detailed setup dialog to perform detailed setup for individual terminals.

The following table lists the setup items with their setup procedures.

**Table B7.6 Input Items for Setting DIO Details**

Setup Item	Setup Procedure	TIP
Terminal Usage	Select [Use], [Not Used] or [Sensor CB] from the drop-down list.	When a CPU type is set by slot unit, the other terminals are also changed automatically. Sensor CB can only be set for F3SP28/38/53/58/59/66/67 CPU types.
Output When Stopped	Select [Reset] or [Hold] from the drop-down list.	When a CPU type is set by slot unit, the other terminals are also changed automatically.
Data Code	Select [BIN] or [BCD] from the drop-down list.	
Input Sampling	Select [16ms], [1ms], [250μs], [62.5μs], or [Always] from the drop-down list.	The [250μs], [62.5μs], and [Always] options are only available for F3SP28/38/53/58/59/66/67 CPU types.

Note: If only one sequence CPU module is used and no sensor CB is used, I/O module setup is not required for I/O modules that are not used by the CPU module. Terminal Usage can be set to "Not Used."

## ● FA Link Tab

Use the [FA Link] tab to set the mapping between FA link system numbers and slot numbers. If system numbers are in ascending order of slot numbers, this setup is not required.

FA Link

FA Link System Setup

☐ Set up ☒ No Setup

System Number

FA Link System Number	Slot Number	Relay Number	Register Number
1	0	L00001-	W00001-
2	0	L10001-	W10001-
3	0	L20001-	W20001-
4	0	L30001-	W30001-
5	0	L40001-	W40001-
6	0	L50001-	W50001-
7	0	L60001-	W60001-
8	0	L70001-	W70001-

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**Figure B7.10 FA Link Tab**

The following table lists the setup items with their setup procedures.

**Table B7.7 Input Items for FA Link Setup**

Setup Item	Setup Procedure	TIP
System Number (Mapping between system numbers and slot numbers)	Turn on the [Setup] or [No Setup] option button. If you have turned on the [Setup] option button, enter the slot number for each system number using the keyboard or the spin buttons.	Slot numbers cannot be repeated. Slot numbers must be from 1 to 16. Empty setting values are displayed as zeroes.

## ● Sampling Trace tab

Use the [Sampling Trace] tab to set the sampling conditions and devices to be sampled.

**Sampling Trace**

☒ Sampling Trace

**Sampling Method**

☒ TRC Instruction

☐ Scan  Scans

☐ Periodic  ms

Delay  Setup Range: -1023 to 1023

**Trigger Condition**

Device Address

☐ Rising Edge of Specified Relay

☒ Falling Edge of Specified Relay

☐ Data Coincidence

**Sampled Devices**

Relay Devices

Word Devices

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**Figure B7.11 Sampling Trace Tab**

The following table lists the setup items with their setup procedures.

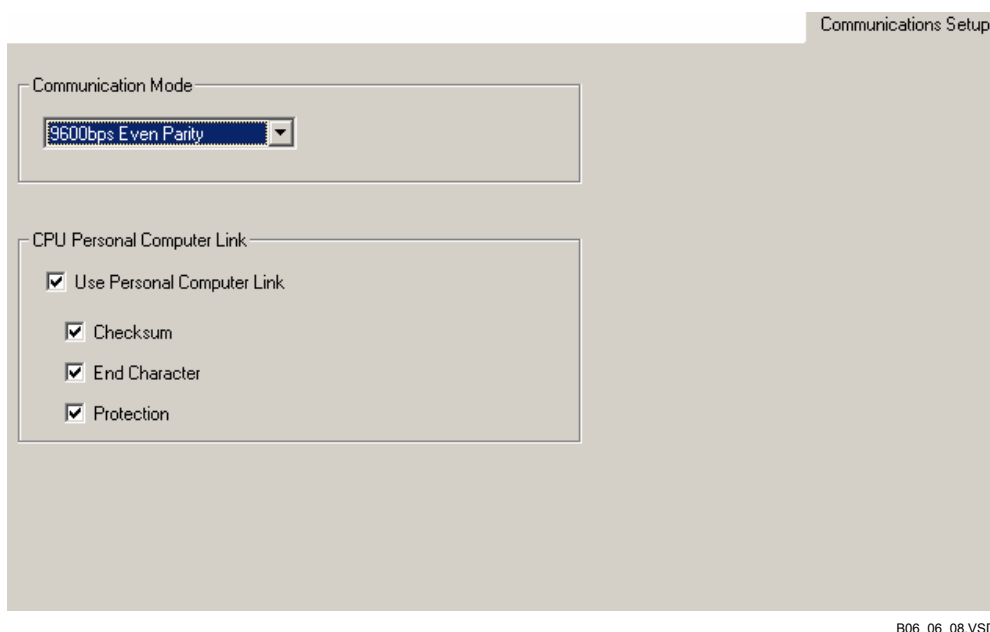
**Table B7.8 Input Items for Sampling Trace Setup**

Setup Item	Setting Method	TIP
Sampling Trace	To perform sampling trace, turn on the [Sampling Trace] checkbox.	—
Sampling Method	Turn on the [TRC Instruction], [Scan] or [Periodic] option button. For the scan or periodic option, enter the number of scans or time interval respectively using the keyboard or the spin button.	—
Delay	Enter a value using the keyboard or the spin button.	The delay must be from -1023 to 1023.
Trigger Condition	Enter the trigger address using the keyboard. Next, turn on one of the following option buttons: [Rising Edge of Specified Relay], [Falling Edge of Specified Relay], or [Data Coincidence]. For the Data Coincidence option, enter the data using the keyboard or the spin button.	Data coincidence for a relay applies to a 16-points value starting from the given address.
Sampled Devices	Enter up to 16 relays and 4 registers using the keyboard.	Entering a relay into the register field traces 16 points of value starting from the given address. Entering a timer or counter into the relay field traces its time-up relay. Entering a timer or counter into the register field traces its current value.

Note: For details, see Chapter B26, "Sampling Trace Tool."

## ● Communications Setup Tab

Use the [Communications Setup] tab to set the transmission speed and parity for the CPU communications port.



**Figure B7.12 Communications Setup Tab**

The following table lists the setup items with their setup procedures.

**Table B7.9 Input Items for Communications Setup**

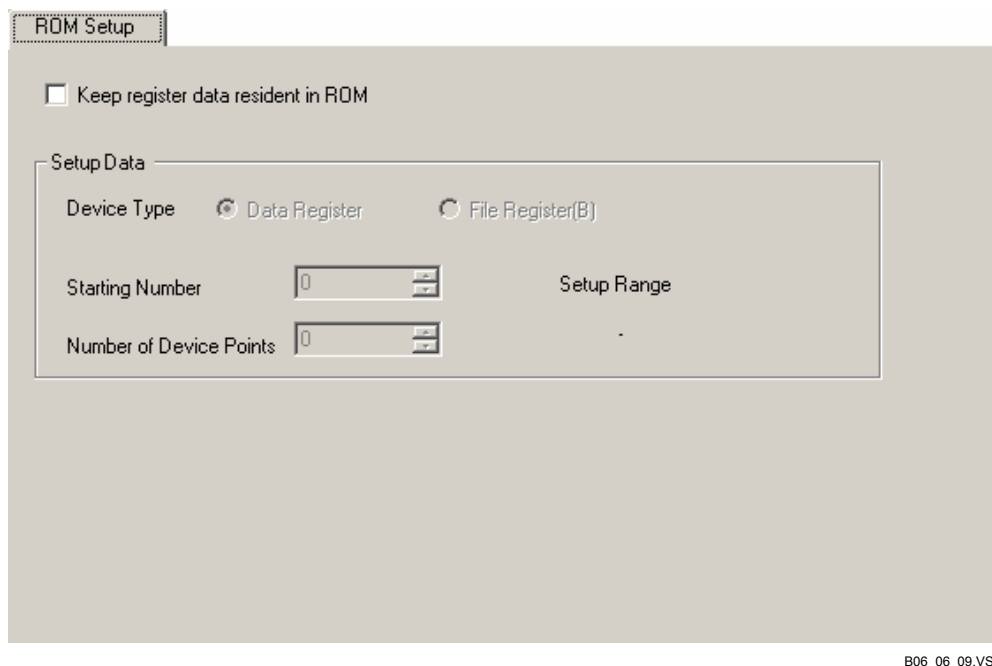
Setup Item	Setup Procedure	TIP
Communication Mode	Select a communication mode from the drop-down list.	The available options depend on the CPU type.
CPU Personal Computer Link	To use the PC link, turn on the [Use Personal Computer Link] checkbox. If this item is checked, then turn on the [Checksum], [End Character], and [Protection] checkboxes as required.	This setup is required to use the CPU programming port for the Personal Computer Link function.

### TIP

The CPU communications port is provided on the front of the CPU module for connecting to a personal computer. It also provides personal computer link connection functions.

## ● ROM Setup Tab

Use the [ROM Setup] tab to set devices and device ranges for writing data to the ROM pack.



**Figure B7.13 ROM Setup Tab**

The following table lists the setup items with their setup procedures.

**Table B7.10 Input Items for ROM Setup**

Setup Item	Setup Procedure	TIP
Keep register data resident in ROM	Turn on the [Keep register data resident in ROM] checkbox to make register data resident.	—
Setup Data	Turn on either [Data Register] or [File Register] for the device type. Enter the starting number and number of devices using the keyboard or the spin buttons.	Set the values within the range of the device capacities. The maximum number of device points allowed is 32,768.

### TIP

The ROM pack retains stored program data even after power is switched off. You can load and execute a program stored in the ROM at power up.

### SEE ALSO

For details on ROM packs, see “Sequence CPU – Functions.”

### TIP

When the CPU type of a project is F3SP66-4S or F3SP67-6S, the ROM setup tab screen is disabled.

## ● Interrupt Setup Tab

Use the [Interrupt Setup] tab to set the operating environment for using the sensor control block.

Interrupt Setup

Priority of Interrupts

☒ Sensor CB interrupt has priority ☐ Input interrupt has priority

Sensor CB

Execution Interval  ms 0.2ms-25.0ms

Timing of Interrupt ☐ After Instruction ☒ Immediate

Input Interrupt

Timing of Interrupt ☒ After Instruction ☐ Immediate

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**Figure B7.14 Interrupt Setup Tab**

The following table lists the setup items with their setup procedures.

**Table B7.11 Input Items for Interrupt Setup**

Setup Item	Setup Procedure	TIP
Priority of Interrupts	Turn on the option button for [Sensor CB interrupt has priority] or [Input interrupt has priority].	—
Sensor CB	Enter the execution interval using the keyboard. To set the timing for the sensor CB interrupt, turn on the [After Instruction] or [Immediate] option button.	—
Input Interrupt	To set the timing for the input interrupt, turn on the [After Instruction] or [Immediate] option button.	—



## ● Shared Refreshing Tab

Use the [Shared Refreshing] tab to set the range for shared refreshing.

Shared Refreshing

Shared Refreshing Range

Shared Relay	<input checked="" type="checkbox"/> CPU1	<input checked="" type="checkbox"/> CPU2	<input checked="" type="checkbox"/> CPU3	<input checked="" type="checkbox"/> CPU4
Shared Register	<input checked="" type="checkbox"/> CPU1	<input checked="" type="checkbox"/> CPU2	<input checked="" type="checkbox"/> CPU3	<input checked="" type="checkbox"/> CPU4
Extended Shared Relay	<input checked="" type="checkbox"/> CPU1	<input checked="" type="checkbox"/> CPU2	<input checked="" type="checkbox"/> CPU3	<input checked="" type="checkbox"/> CPU4
Extended Shared Register	<input checked="" type="checkbox"/> CPU1	<input checked="" type="checkbox"/> CPU2	<input checked="" type="checkbox"/> CPU3	<input checked="" type="checkbox"/> CPU4

Shared Refreshing Mode

☒ Peripheral Process    ☐ Control Process

Shared Refreshed Data

☒ Simultaneous    ☐ Non-simultaneous

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**Figure B7.15 Shared Refreshing Tab**

The following table lists the setup items with their setup procedures.

**Table B7.12 Input Items for Shared Refreshing Setup**

Setup Item	Setup Procedure	TIP
Shared Refreshing Range	Turn on the checkboxes to indicate the read range in terms of CPU numbers for each device.	Setup is available only for F3SP28/38/53/58/59/66/67 CPU modules.
Shared Refreshing Mode	Turn on the [Peripheral Process] or [Control Process] option buttons.	Setup is available only for F3SP28/38/53/58/59/66/67 CPU modules.
Shared Refreshed Data	Turn on the [Simultaneous] or [Non-simultaneous] option buttons.	Setup is available only for F3SP28/38/53/58/59/66/67 CPU modules.

### TIP

The shared refreshing function updates data of shared devices (shared relays, shared registers, etc.) for inter-CPU communications in a multi-CPU system.

### SEE ALSO

For details on shared refreshing, see “Sequence CPU – Functions.”

## ● FL-net Refreshing Tab

Use the [Set up FL-net] tab to set up FL-net refreshing.

The screenshot shows the 'FL-net Refreshing' tab. It has a title bar with the text 'FL-net Refreshing'. Below the title bar, there are two main sections. The first section is 'Common Data Refreshing Mode' and contains two radio buttons: 'Peripheral Process' (which is selected) and 'Control Process'. The second section is 'Common Data Refreshing Range' and contains two sub-sections, 'FL-net1' and 'FL-net2'. Each sub-section has two radio buttons: 'All Nodes' (which is selected) and 'Some Nodes', followed by a 'Set up' button.

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**Figure B7.16 FL-net Refreshing Tab**

The following table lists the setup items with their setup procedures.

**Table B7.13 Input Items for FL-net Refreshing Setup**

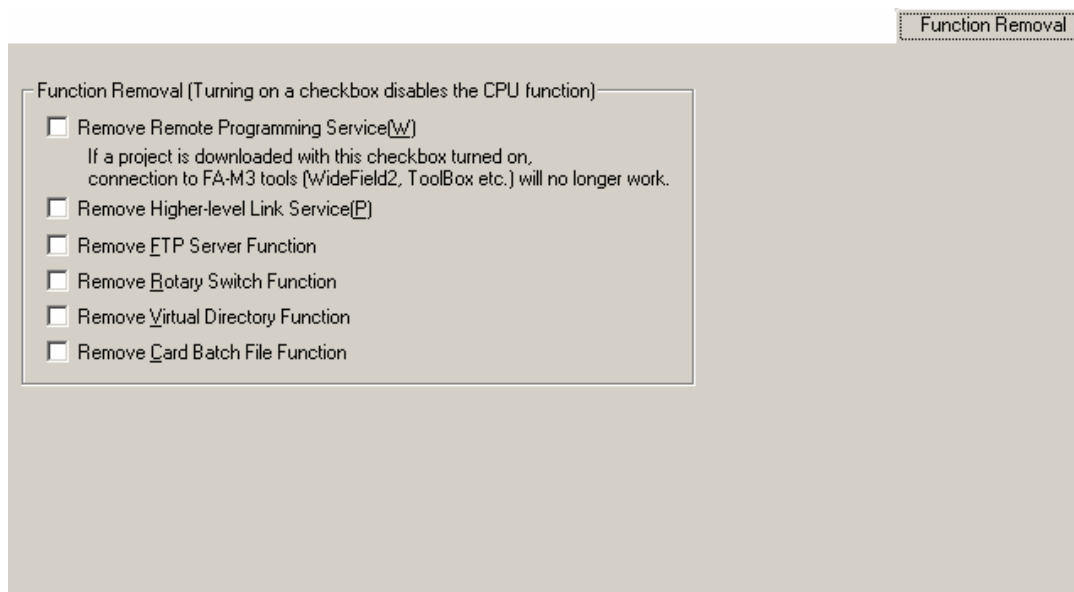
Setup Item	Setup Procedure	TIP
Common Data Refreshing Mode	Turn on the [Peripheral Process] or [Control Process] option button.	Setup is available only for F3SP28/38/53/58/59/66/67 CPU modules.
Common Data Refreshing Range	Turn on the [All Nodes] or [Some Nodes] option button to set the refreshing range. If you have turned on the [Some Nodes] option button, click [Set up] to specify the node numbers to be refreshed.	Setup is available only for F3SP28/38/53/58/59/66/67 CPU modules.

## SEE ALSO

For more details, see “Sequence CPU – Functions.”

## ● Function Removal Tab

Use the [Function Removal] Tab to disable selected functions of the sequence CPU module.



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**Figure B7.17 Function Removal Tab**

The following table lists the setup items with their setup procedures.

**Table B7.14 Input Items for Function Removal Setup**

Setup Item	Setup Procedure	TIP
Remove Remote Programming Service	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.
Remove Higher-level Link Service	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.
Remove FTP Server Function	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.
Remove Rotary Switch Function	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.
Remove Virtual Directory Function	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.
Remove Card Batch File Function	Turn on the checkbox to disable the function	Setup is available only for F3SP66 and F3SP67.

## SEE ALSO

For more details, see “Sequence CPU – Functions.”



## CAUTION

Remote programming service is a tool command interface provided by CPU modules, which is also used by WideField2. Beware that disabling it would disallow subsequent connection by WideField2.

## B7.1.4 Creating User Log Messages

This section describes how to define user log messages.

The relevant procedure is given below.

### ◆ Procedure ◆

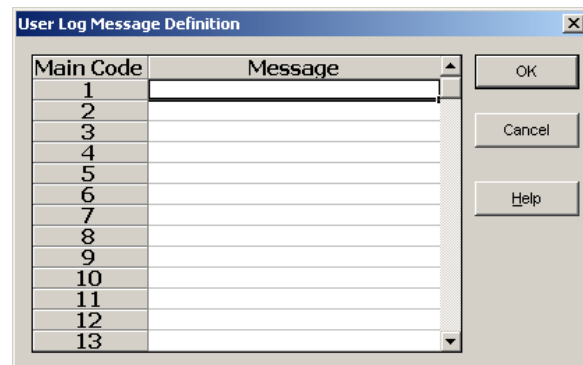
(1) Select [Project]–[User Log Message] from the menu.

⇒ The User Log Message Definition dialog box opens.

(2) Enter the message for individual main codes as required.

#### TIP

Up to 64 messages can be registered. Each message can contain up to 32 characters. Main codes may be assigned empty messages as required.



Steps (2) and (3)

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(3) Click [OK].

⇒ The messages are updated.

#### TIP

You can perform copying and pasting by double-clicking on the message field to switch to input mode.

#### SEE ALSO

To enable created user log messages, you need to download them to the CPU module. For details on how to include user log messages when a project is downloaded, see Subsection B7.1.1, "Defining Components of an Executable Program"

## **B7.2 Managing a Project**

This section explains project management.

The following project management functions are provided.

- Checking Programs
- Finding in Project
- Finding Instruction in Project
- Replacing Tag name in Project
- Replacing Address in Project
- Displaying Device Usage Status
- Changing I/O Installation position
- Converting Data

## B7.2.1 Checking Programs

The Check Program function checks the following items and displays locations for detected errors.

- Connections between circuits
- Mapping between circuits and configurations

You can also check detailed information for a project during program checking.

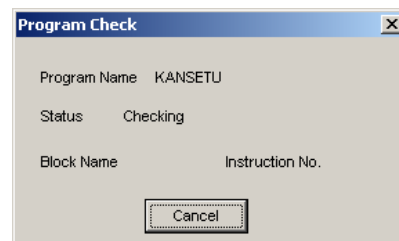
To perform syntax check, use the following procedure.

### ◆ Procedure ◆

#### (1) Select [Project]–[Check Program] from the menu bar.

⇒ Program checking begins. The Program Check dialog box is displayed during syntax checking.

After syntax check is completed, the Results of Program Syntax Checking window is displayed.



Step (1)

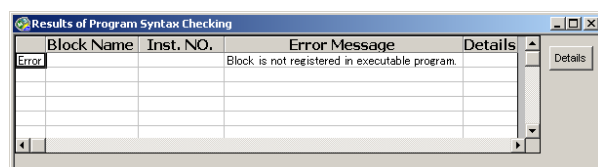
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#### TIP

Syntax checking is performed on saved programs and blocks. If you invoke the syntax checking function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed. If no errors are detected, a confirmation dialog box is displayed in place of the Results of Program Syntax Checking window. If errors are detected, up to 256 errors and warnings (in that order) are displayed in the Results of Program Syntax Checking window.

#### (2) If an error is displayed, double-click the error or warning to display more details. Alternatively, use the arrow key to move the cursor to the error or warning and press [Enter].

⇒ The block containing the error or warning opens and the display jumps to the location of the error and the window focus moves to the circuit.



Step (2)

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#### TIP

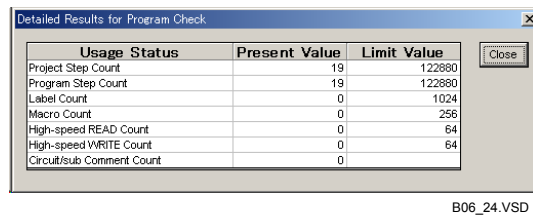
To display the location of the error or warning without changing the window focus, press any of the following keys.

- [SPACE] key: Displays the location of the error or warning at the current cursor position.
- [F3] key: Displays the location of the next error or warning after the current cursor position.
- [Shift]+[F3] keys: Displays the location of the previous error or warning before the current cursor position

The Results of Program Checking window remains as the topmost window if you use the above

operations to display the error or warning location without changing the focus.

Clicking [Details] on the Results of Program Syntax Checking window opens the Detailed Results for Program Check dialog box for you to check detailed information of the project.



**Figure B7.18 Detailed Results for Program Check Dialog Box**

If no errors and warnings are detected, clicking [Details] on the confirmation dialog box opens the Detailed Results for Program Check dialog box. If an error is detected during program syntax checking, correct detailed information is not displayed.

## ■ Circuits Returning Errors at Program Check

Errors returned from program checking are classified into the following 2 types according to severity.

- Error  
Critical errors. The download function is prohibited.
- Warning  
Non-critical errors. Operation may not work as expected.

These error categories can be modified using the environment settings

### SEE ALSO

For details on changing the classifications, see Section B1.2.6, "Program Syntax Check Setup."

The table below summarizes the error types.

**Table B7.15 Programs Returning Errors at Syntax Check (1/3)**

Error Message	Description	Additional Information	Category
Block not found.	Block is registered in the executable program component definition but its file is not found.	Block name	Error (not modifiable)
Macro not found.	An instruction macro called by a block does not exist.	Block name, instruction number, macro name	Error (not modifiable)
Block conversion error.	Block was saved with error. Syntax checking is not done for blocks saved with errors.	Block name	Error (not modifiable)
Macro conversion error.	Macro was saved with error. Syntax checking is not done for macros saved with errors.	Macro name	Error (not modifiable)
Macro is not in CPU.	A macro used in a project is not found in the CPU.	Macro name	Error (not modifiable)
Mismatch in device capacity and lock-up range at power failure.	The device capacity and the power failure lock-up range do not match.		
Invalid local device setting.	<ul style="list-style-type: none"> <li>- The first address number of the local device is invalid. It exceeds the device range.</li> <li>- The first address of the local device is not defined.</li> </ul>		
Local device setup invalid for CPU model.	The local device setting is out of the usable range for the CPU selected for the project (during partial downloading).	None	Error (not modifiable)
Program step count exceeded limit.	The program step count exceeds the maximum allowed for the selected CPU type. (SP28-3S/SP38-3S/SP53-4S/SP58-6S/SP59-7S/SP66-4S/SP67-6S CPU modules, the step count includes step counts for circuits and subcomments.)		Error (not modifiable)

Error Message	Description	Additional Information	Category
Project step count exceeded limit.	The program step count with tag name definition exceeds the maximum allowed for the selected CPU type.	None	Error (not modifiable)
Number of blocks exceeds the maximum limit for the model.	The number of blocks exceeds the maximum allowed for the selected CPU type.		Error (not modifiable)
Number of labels exceeds the maximum limit for the model.	The number of labels exceeds the maximum allowed for the selected CPU type.		Error (not modifiable)
Device is invalid or out of range	The address is out of range. The following are possible causes. - A global address exceeds the device capacities range in the configuration. - The number of local addresses used exceeds the number set in the configuration. - The number of device points used in the structure exceeds 2048. This error is generated when too many long-word members are used in a structure.	Block name, instruction number, invalid address	Error (not modifiable)
This instruction cannot be used on the selected CPU type.	The entered instruction is not supported by the selected CPU type.	Block name, instruction number, invalid instruction	Error (not modifiable)
This instruction parameter cannot be used on the selected CPU type.	To fix this problem, select a CPU that supports structures.	Block name, instruction number, instruction parameter	Error (not modifiable)
Sensor CB cannot be used on the selected CPU type.	To fix this problem, select a block that allows sensor control block or remove the block from the sensor control block list.		Error (not modifiable)
Indirect designation cannot be used on the selected CPU type.	Indirect designation representation is not supported for the selected CPU type.	Block name, instruction number, invalid instruction	Error (not modifiable)
No address assigned to tag name.	Address is not allocated in the tag name definition. The reference tag name definition may be incorrect. The structure object is yet undefined. A structure member does not exist.	Block name, instruction number, tag name	Error (not modifiable)
Preset value of timer/counter is out of range.	The timer or counter setting is out of range. Value is out of the timer precision range.	Block name, instruction number, invalid address	Error (not modifiable)
Invalid device for instruction.	An invalid device is used in an instruction.	Block name, instruction number, invalid address	Error (not modifiable)
Block for ACT/INACT does not exist.	A block for an ACT/INACT instruction is not registered in the executable program components definition.	Block name, instruction number, unregistered block name	Error (not modifiable)
Number of macros exceeds the maximum limit for the model.	The number of macros exceeds the maximum allowed for the selected CPU type.	None	Error (not modifiable)
MRET instruction is not at the end.	The last line of a macro block is not an MRET instruction.	Macro name	Error (not modifiable)
Duplicate use of coil	The same address is used in OUT, OUTN, DIFU and DIFD instructions. The second and subsequent instances are shown as error locations.	Block name, instruction number, duplicated address	Warning (Can be set)
Duplicate use of SET/RST	The same address is used in SET and RST instructions and the OUT, OUTN, DIFU and DIFD instructions. The second and subsequent instances are displayed as error locations.	Block name, instruction number, duplicated address	Warning (Can be set)
Duplicate use of timer/counter	The same timer or counter is used at more than one location. The second and subsequent instances are displayed as error locations.	Block name, instruction number, duplicated address	Warning (Can be set)
Duplicate use of label	The same label is used at more than one location. The second and subsequent instances are displayed as error locations.	Block name, instruction number, duplicated label	Warning (Can be set)
Duplicate use of interrupt I/O address	The same address is used more than once in INTP instructions. The second and subsequent instances are displayed as error locations.	Block name, instruction number, duplicated address	Warning (Can be set)



Error Message	Description	Additional Information	Category
IL-ILC mismatch	IL -ILCs do not correspond one-to-one. IL-ILCs within a block must correspond one-to-one. Although nesting is allowed for F3SP28-3S/38-6S/53-4S/58-6S/59-7S/SP66-4S/SP67-6S CPU models, the number of IL and ILCs must be identical. Furthermore, IL must precede ILC.	Block name, instruction number	Warning (Can be set)
SUB-RET mismatch	SUB-RETs do not correspond one-to-one. SUB-RETs within a block must correspond 1:1.	Block name, instruction number	Warning (Can be set)
INTP-IRET mismatch	INTP-IRETs do not correspond one-to-one. INTP-IRETs within a block must correspond 1:1.	Block name, instruction number	Warning (Can be set)
FOR-NEXT mismatch	FOR-NEXTs do not correspond one-to-one. FOR-NEXTs within a block must correspond 1:1.	Block name, instruction number	Warning (Can be set)
CALL-SUB mismatch	CALL destination label (subroutine) was not found.	Block name, instruction number, Label name	Warning (Can be set)
Jump destination not found.	A jump destination was not found.	Block name, instruction number, label name	Warning (Can be set)
HRD/HWR instructions exceed maximum limit of the model.	The number of high-speed READ/WRITE instructions exceeds the maximum allowed for the selected CPU type.		Warning (Can be set)
Block for ACT/INACT is registered more than once.	The same block name is found in 2 or more ACT/INACT instructions.	Block name, instruction number, error block name	Warning (Can be set)
Global device overlaps local device area.	A global device overlaps the local device range.	Block name, instruction number, device	Warning (Can be set)
Tag name converted to local/macro device.	Even if the reference tag name definition for a block is set to common tag name definition, if a tag name is assigned a local device in the block tag name definition, it will be converted to a local device. This message is displayed to indicate such a situation.	Block name, instruction number, tag Name	Warning (Can be set)
Inconsistent structure type.	The structure type definition names of the S and D parameters of an STMOV instruction are not the same.	Block name, instruction number	Error (not modifiable)
STRCT instruction error.	An invalid STRCT instruction has been found.	Block name, instruction number	Error (not modifiable)
Structure type definition file not found.	The structure type definition file specified in a structure object definition is not found in the common folder.	Block name, structure type definition name	Error (not modifiable)
Undefined constant	A constant name coded as an instruction parameter is not defined in the constant definition.	Block name, Instruction number, tag name	Error (not modifiable)
Constant name definition area is exceeded.	When evaluated, constant definition exceeds the maximum number of constant definition devices allowed.		Error (not modifiable)
Constant definition is not available for selected CPU.	Constant definition is used for a sequence CPU that does not support constant definition.		Error (not modifiable)



## CAUTION

Program checking is performed on items registered in the executable program components definition and saved in a file.

## B7.2.2 Finding in Project

Use the Find in Project function to search and list all blocks where a specific device is used. This function does not search macros for the specified device.

You can open an offline edit window or monitor window directly from the project search results display window.

The procedure for searching a project is given below.

### ◆ Procedure ◆

**(1) Select [Project]–[Find in Project] from the menu bar.**

⇒ The Project Find dialog box opens.

#### TIP

The Find in Project function works on saved blocks. If you invoke the function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog window will be displayed.

#### TIP

If the Find in Project function is started in the program edit screen or the tag name definition edit screen, the parameter where the cursor is positioned is set as the search string.

**(2) Specify a search string.**

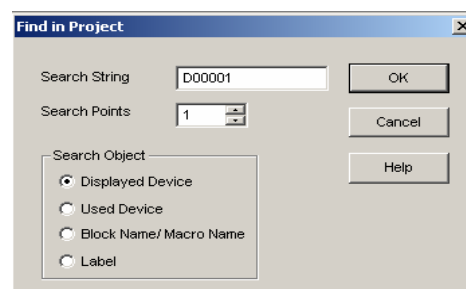
#### TIP

You can select a search string from a list of strings that have been searched for in the past.

**(3) To specify a range to be searched, enter a value in [Search Points].**

#### TIP

If the search string is a tag name, search points cannot be specified.



Steps (2) to (4)

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**(4) Specify the search object and click [OK].**

⇒ The project search is performed, and a results window is displayed.

**TIP**

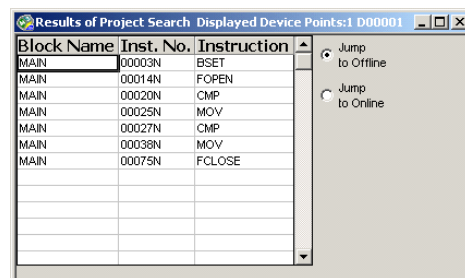
The search results display up to 1024 rows of block name, instruction number and instruction.

**(5) Double-click on the location of the instruction to be displayed or move the cursor to the instruction to be displayed using arrow keys and press [Enter].**

⇒ The block containing the found object opens, the cursor jumps to the corresponding position and the window focus moves to the circuit.

**(6) Select [File]–[Close] from the menu bar of the Results of Project Search window.**

⇒ Results of project search window closes.



Steps (5) and (6)

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**TIP**

The results of project search window is always displayed on top of other windows. By moving the cursor within the search window and pressing the [Enter] key, you can continually display the search position.

Performing a search using a tag name as a search string also searches for any address allocated to the tag name. Similarly, searching for an address also searches for any tag name assigned to this address. For instance, if "SW1=X00301" is defined, then searching for "SW1" and searching for "X00301" will produce the same result.

Furthermore, if circuit data contains a base modified by a constant index, then the expanded address is also matched against the search string. For instance, the parameter "I001;3" matches both search strings "I001" and "I004". When searching using an index register, index modified addresses are also searched.

You can directly jump to a relevant circuit from the results of project search window. Select one of the following option buttons as the jump destination.

- [Jump to Offline] option button  
Jumps to a ladder program edit window.
- [Jump to Online] option button  
Jumps to a Block Monitor window



## CAUTION

- 
- You can also search for an tag name or address with index modification.
  - When searching for a constant name, the search string must be prefixed by a '#' character.
  - The Find in Project function searches blocks that are registered in the executable program components definition and saved in a file. However, circuits with conversion errors in blocks that have been saved with errors are not included in the search.
  - When searching for labels, the parameter area of the label instruction and the location of the label definition are displayed. For the location of the label definition, the first instruction number of the circuit of the label definition is displayed in the instruction number column and nothing is displayed in the instruction column
  - The Find in Project function searches the offline project file currently open. Online-edited changes or additions which are not yet reflected to the offline file are not searched.
  - If the [Jump to Online] option button is turned on but the search object does not exist in the monitored block, the block cannot be correctly displayed.
  - If [Displayed Device] search is selected, only devices displayed on the screen are searched.
  - If [Used Device] search is selected, all devices used in the program, over and above devices displayed on the screen are searched. Furthermore, the following restrictions on the search string apply.
    - The wildcard character cannot be used in the tag name.
    - Tag names and structure members with no address assigned cannot be used.
    - Index modification cannot be used.
    - Indirect specification cannot be used.
    - Structure name cannot be used.
- 

## ■ Wildcard Search

You can use the wildcard character ('\*') in a tag name search string when performing displayed device search. The wildcard character cannot be specified in a search string in a used device search.

The following two wildcard search patterns are supported.

- "\*data" : searches for tag name strings that end with "data".
- "data\*" : searches for tag name strings that start with "data".
- "#ini\*" : searches for constant name strings that start with "#ini".

## B7.2.3 Finding An Instruction in A Project

Use the Find Instruction in Project function to search and list all blocks where a specified instruction is used. This function does not search macros for the specified instruction.

The procedure for finding an instruction in a project is given below.

### ◆ Procedure ◆

#### (1) Select [Project]–[Find Instruction in Project] from the menu bar.

⇒ The Find Instruction in Project dialog box opens.

##### TIP

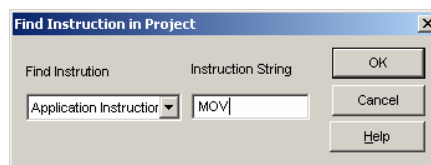
The Find Instruction in Project function works on saved blocks. If you invoke the function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog window will be displayed.

#### (2) Specify the instruction and click [OK].

⇒ Results of find instruction in project window is displayed

##### TIP

The search results display up to 1024 rows of block name, instruction number and instruction.



Step (2)

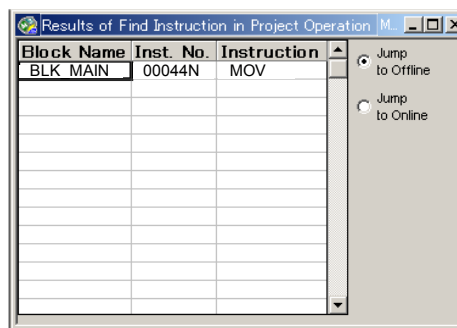
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#### (3) Double-click on the instruction to be displayed or move the cursor to the instruction to be displayed using arrow keys and press [Enter].

⇒ The block containing the found object opens, the cursor jumps to the corresponding position and the window focus moves to the circuit.

#### (4) Select [File]–[Close] from the menu bar of the results of find instruction in project window.

⇒ The results of find instruction in project window closes.



Step (3)

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---

**TIP**

The results of find instruction in project window is always displayed on top of other windows. By moving the cursor within the search window and pressing the [Enter] key, you can continually display the search position.

Performing a search using a tag name as a search string also searches for any address allocated to the tag name. Similarly, searching for an address also searches for any tag name assigned to this address. For instance, if "SW1=X00301" is defined, then searching for "SW1" and searching for "X00301" will produce the same result.

Furthermore, if circuit data contains a base modified by a constant index, then the expanded address is also matched against the search string. For instance, the parameter "I001;3" matches both search strings "I001" and "I004".

You can directly jump to a relevant circuit from the results of find instruction in project window. Select one of the following option buttons as the jump destination.

- [Jump to Offline] option button  
Jumps to a ladder program edit window.
  - [Jump to Online] option button  
Jumps to a Block Monitor window.
- 

**CAUTION**

- 
- You may also search for an instruction string with index modification.
  - The Find Instruction in Project function searches blocks that are registered in the executable program components definition and saved in a file. However, circuits with conversion errors in blocks that have been saved with errors are not included in the search.
  - The Find Instruction in Project function searches the offline project file currently open. Online-edited changes or additions which are not yet reflected to the offline file are not searched.
  - If the [Jump to Online] option button is turned on but the search object does not exist in the monitored block, the block cannot be correctly displayed.
-

## B7.2.4 Replacing in Project

Use the Replace in Project function to replace tag names and addresses in blocks registered in the executable program for a project.

The procedure for replacing tag names or addresses in a project is given below.

### ◆ Procedure ◆

(1) Close all blocks being edited.

(2) Select [Project]–[Replace in Project] from the menu bar.

⇒ The Project Replace dialog box opens.

(3) Set the conditions for the replacement.

(4) Click [OK].

⇒ Replacement begins and a progress replacement progress dialog box is displayed.

#### TIP

To abort replacement at any time, click [Cancel].

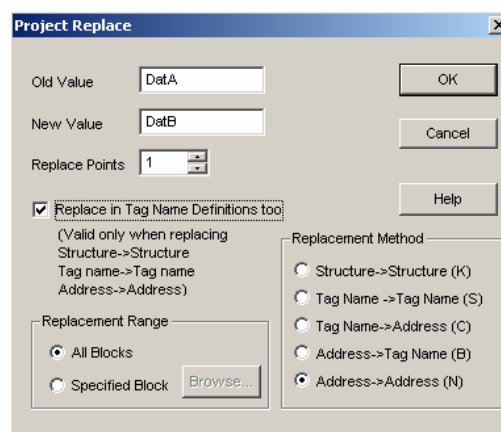
After the replacement is completed, a completion dialog box is displayed.

(5) Click [OK].

⇒ The completion dialog box closes.

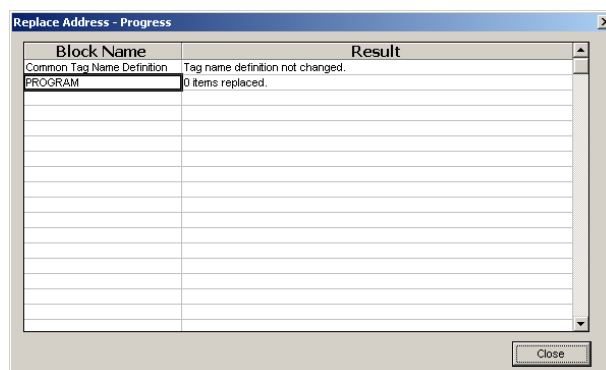
(6) Click [Close] on the project replacement progress dialog box.

⇒ The progress dialog box closes.



Steps (3) and (4)

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Step (6)

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#### TIP

- The results of the replacement operation is stored in a log file called "Replace.log". You can check the results by opening the text file using "Notepad" or any other text editor.
- You cannot specify replacement for local devices or devices with index modification.
- When performing replacement using an index register (V001→ V002) as a search string, an index modifier may also be replaced if it matches the search string.

**CAUTION**

- 
- You cannot use the wildcard character ("\*") in the string to be replaced.
  - If an error is encountered during replacement, replacement is not performed for the block.
- 

## ■ Project Replace Dialog Box

Use the Project Replace dialog box to set the conditions for replacement. Specify the following replacement conditions.

- [Old Value] text box, [New Value] text box  
Enter the value (tag name, address or constant name) to be replaced and the new value.
- [Replace Points] spin box  
Specify the number of replacement points. The [Replace Points] setting is enabled only if the [Address→Address] option button is turned on for the [Replacement Method].
- [Replace in Tag Name Definition too] checkbox  
Turn on this checkbox to also perform replacement in the tag name definition file. The replacement is performed on the common tag name definition and the tag name definition of the selected blocks in the replacement range. This checkbox is enabled only if any of the following option buttons of the [Replacement Method] is turned on: [Structure→Structure], [Address→Address] or [Tag Name→Tag Name].
- [Replacement Range]  
Specifies the target blocks for the replacement.  
Turning on the [All Blocks] option button performs replacement over all blocks registered in the executable program components definition.  
Turning on the [Specified Block] option button performs replacement over selected blocks.
- [Replacement Method]  
Specifies whether the old value and new value are tag names, addresses or structures.  
When replacing a constant name, select [Tag Name→Tag Name].

### SEE ALSO

For details on replacement in structures, see Chapter B32, "Structures."

---



## ■ Replace in Project – Progress Dialog Box

Displays the progress of a replacement operation. The following messages may be displayed in the Replace in Project – Progress dialog box.

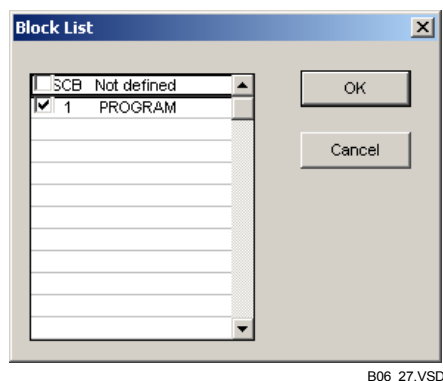
**Table B7.16 Replacement Messages**

Message	Description
N items replaced.	N instances of the specified device has been replaced successfully.
Error encountered in circuit change. Skipped.	An error was encountered during replacement and the replacement operation was aborted. Replacement was not performed on the specified blocks.
Error encountered in changing tag name definition. Skipped.	An error was encountered during replacement and the replacement operation was aborted. Replacement was not performed on the specified blocks.
Only tag name is changed because there is no change in circuit.	The specified device is not used in circuits so no replacement was performed. However, replacement was performed on tag name definitions.
Tag name definition changed.	Tag name definition has been replaced successfully.
Tag name definition not changed.	The tag name was not defined for the specified device and hence no changes were made.
Replacement is terminated.	Replacement processing was aborted because a user selected the [Cancel] button.
File not found.	There is no block file defined in the components definition.
Cannot change block saved with error.	The Project Replace function cannot be used for blocks saved with errors.

## ■ Block List Dialog Box

Use the Block List dialog box to specify the blocks for replacement.

To display the Block List dialog box, turn on the [Specified Block] option button on the Project Replace dialog box and click [Browse].



**Figure B7.19 Block List Dialog Box**

## B7.2.5 Changing an Address Allocated to a Tag Name over an Entire Project

You can change an address allocated in a tag name definition over an entire project.

To do so, use the project replace function.

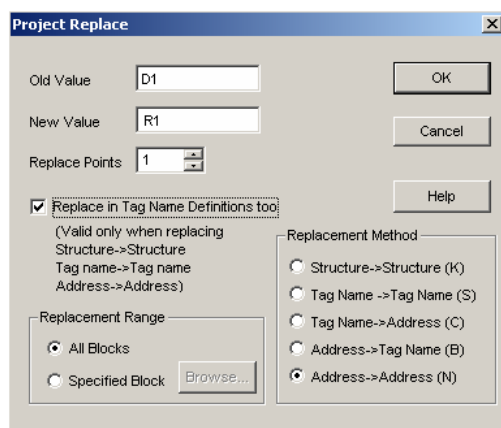
Although you can also change the tag name definition, in general, it is effective only if each block refers to the tag name definition or if blocks are created using addresses.

### ■ Using Project Replace

Set the following conditions in the Project Replace dialog.

- Turn on the [Replace in Tag Name Definitions too] checkbox.
- Turn on the [Address->Address] option button for [Replacement Method].
- Turn on the [All Blocks] option button for [Replacement Range].

When you set these conditions, you can replace parameter addresses created in blocks and change address allocations in the block tag name definitions of all blocks and the common tag name definition. Through these operations, you can replace all occurrences of an address in a project.



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Figure B7.20 Changing an Address Allocation Over an Entire Project



### CAUTION

- During conversion of tag name definitions, conversion cannot be performed if the registered address exists. If a tag name definition cannot be converted, it will be skipped but conversion will still proceed with all other tag name definitions. Please check the results display.
- The wildcard character ("\*") cannot be used.

## B7.2.6 Changing a Tag Name Assigned to an Address over an Entire Project

You can change the tag name assigned to an address over an entire project.

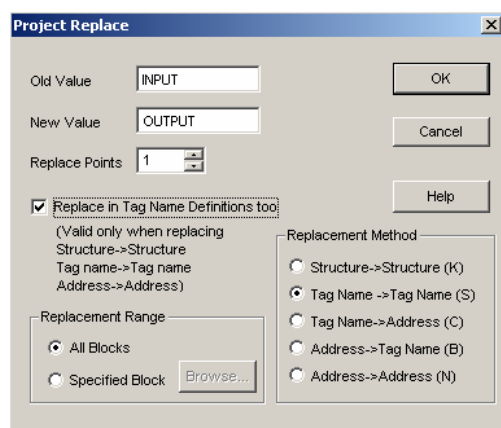
Although you can also change tag name definition, if programs are developed using tag names, changing tag name definition alone does not change the tag names in blocks. Since you also need to change each tag name definition, the project replace function is convenient as it makes all required changes at the same time.

### ■ Using Project Replace

Set the following conditions in the Project Replace dialog.

- Turn on the [Replace in Tag Name Definitions too] checkbox.
- Turn on the [Tag Name->Tag Name] option button for [Replacement Method].
- Turn on the [All Blocks] option button for [Replacement Range].

When you set these conditions, you can replace the tag name in all blocks and change the tag names in the block tag name definition of each block and the common tag name definition.



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Figure B7.21 Changing a Tag Name Over an Entire Project



### CAUTION

- When performing replacement in tag name definitions, replacement cannot be done if the tag name is already registered. If a tag name definition cannot be converted, it will be skipped but conversion will still proceed with all other tag name definitions. Please check the results display.
- The wildcard character ("\*") cannot be used.
- Replacement is not allowed for constant definition.

## B7.2.7 Changing I/O Installation Position

Use the Change I/O Installation Position function when the slot where the module is mounted changes. This function changes the slot number parameter in all I/O devices, READ, WRITE, HRD and HWR instructions, etc. used within a project in a single operation. It also changes assignments in common tag name definitions and block tag name definitions at the same time.

To change the I/O installation position, use the following procedure.

### ◆ Procedure ◆

(1) Close all blocks being edited.

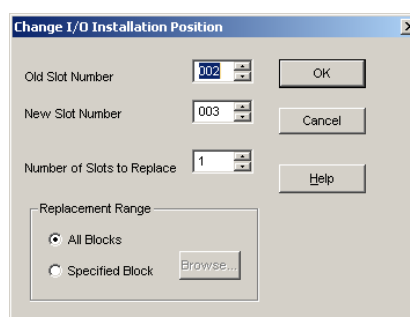
(2) Select [Project]–[Change I/O Installation Position] from the menu.

⇒ The Change I/O Installation Position dialog box opens.

(3) Specify the old slot number, new slot number, and number of slots to replace.

#### TIP

Specify the old slot number and new slot number from 002 to 716.  
1 to 16 slots can be specified for replacement.  
In the example on the right, the installation positions of the I/O modules are to be changed from slot numbers 002 to slot numbers 003.



Steps (3) to (5)

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(4) Specify the replacement range.

#### TIP

To perform the change for some blocks only, turn on the [Specified Block] option button and click [Browse]. Select the desired blocks from the displayed Block List dialog box and click [OK]. Control returns to the Change I/O Installation Position dialog box.

(5) Click [OK].

⇒ Processing begins for changing the installation position of I/O slots. A Change I/O Installation Position – Progress dialog box is displayed with progress information.

#### TIP

To abort processing at any time, click [Cancel].

When processing is completed, a completion dialog box is displayed.

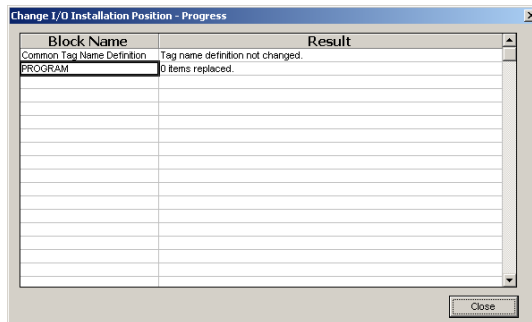
**(6) Click [OK].**

⇒ The completion dialog box closes.

If processing ends successfully, the slot numbers of target I/O relays as well as READ, WRITE, HRD and HWR instructions are replaced. If an error occurs in a block during execution, changes are not performed for that block.

**(7) Click [Close].**

⇒ The Change I/O Installation Position dialog box closes.



### Step (7)

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## SEE ALSO

For details on slot, see “Sequence CPU – Functions.”

## ■ Change I/O Installation Position – Progress Dialog Box

The following table shows the messages that may be displayed in the Change I/O Installation Position – Progress dialog box.

**Table B7.17 Messages for Change I/O Installation Position Operation**

Message	Meaning
N items replaced.	N occurrences of the specified devices have been replaced successfully.
Skipped because error occurred when modifying tag name definition.	An error was encountered during replacement and processing was aborted. Replacement was not performed for the blocks.
No modification in tag name definition.	No tag name is defined with the specified slot and thus no replacement was done.
Only tag name definition is changed because there is no change in circuit	Address allocations in tag name definitions has been changed.
Replacement cancelled.	Replacement was aborted because a user has clicked [Cancel].
File not found.	There is no block file defined in the components definition.
Cannot change block saved with error.	Project replacement cannot be performed for blocks saved with errors.



### CAUTION

- When the [Number of Slots to Replace] specified is such that the range of the new slot numbers is beyond the existing slots, the following message will be displayed: "Invalid input value."

For instance, the following input generates an error

Old slot number                      002

New slot number                      016

Number of slots to replace              4

In this example, the 4 slots, 002 to 005, are to be changed to 016 to 019, but slots 017, 018, and 019 do not physically exist, leading to an error.

- If the slot range specified when changing I/O installation position is such that an address with a new slot is already allocated to a tag name in a tag name definition, an error is generated.

## B7.2.8 Displaying Device Usage Status

The Device Usage Status function displays a list of all devices in the blocks. (This function does not display device instances used in macros.) The procedure is given below.

### ◆ Procedure ◆

**(1) Select [Project]–[Project Device Usage Status] from the menu bar.**

⇒ The Device Usage Status dialog box opens.

#### TIP

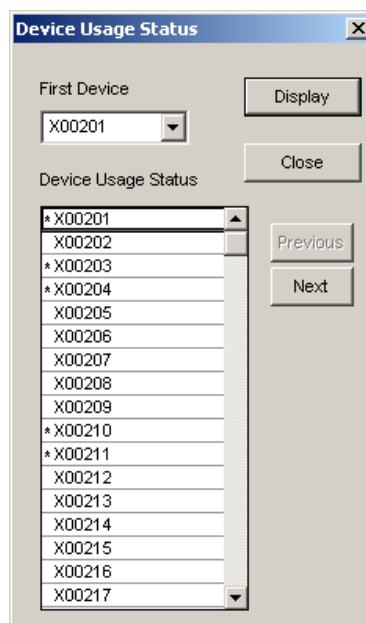
The project device usage status is displayed for saved blocks. If you invoke the function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog window will be displayed.

**(2) Select an address from the [First Device] drop-down list and click [Display].**

⇒ The display of the devices changes.

**(3) Click [Close].**

⇒ The Device Usage Status dialog box closes.



Steps (2) and (3)

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### CAUTION

- This function displays devices used in blocks registered in the executable program components definition and saved to files. It does not include devices in circuits containing conversion error for blocks saved with errors.
- Devices within the range set for local devices are displayed in gray. Devices displayed with a mark within the gray display area indicate global devices used within the local device range. An error or warning will be generated in this case depending on the program checking criteria set on the Program Syntax Check tab of the Set up Environment dialog box displayed by selecting [Tools]–[Set up Environment] from the menu.

## B7.3 Managing Files

You can add, rename or delete project files. The following table summarizes each function, with its description and target file types.

Table B7.18 File Management

Function	Description	Target Files
Insert File	Copies files of other projects and folders to the opened project.	- Block file (circuit and tag name definition files) - Common tag name definition file - Constant definition file
Rename File	Changes the names of files in the opened project.	- Block file (circuit and tag name definition files) - Instruction macro file (circuit and tag name definition files)
Delete File	Deletes files in the opened project.	- Block file (circuit and tag name definition files) - Instruction macro file (circuit and tag name definition files)

### B7.3.1 Adding Files

Use the Insert File function to add blocks, common tag name definition files, constant definition files from other projects to the open project.

The procedure for adding files is given below.

#### ◆ Procedure ◆

(1) Select [Project]–[Insert File] from the menu bar.

⇒ The Select File dialog box opens.

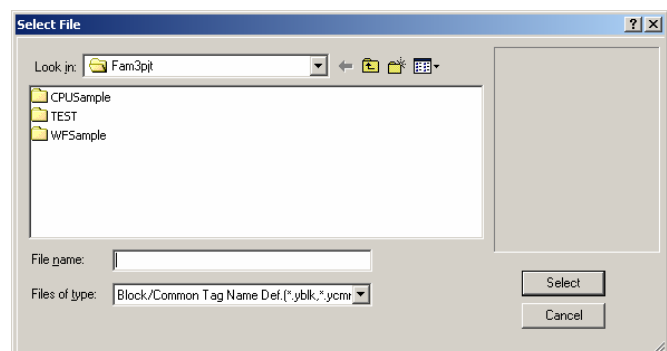
##### TIP

This dialog box can also be opened from the [Block List] pop-up menu in the Project Window.

(2) Move the cursor to the source project folder and select the file you want to add.

##### TIP

You can switch the display between block tag name definition, common tag name definition and constant definition by selecting the appropriate file type from the file type drop-down list.



Steps (2) and (3)

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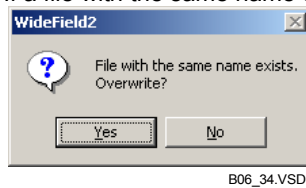
(3) Click [Select].

⇒ The Select File dialog box closes and the file is added.



**TIP**

If a file with the same name exists in the open project, a confirmation dialog box is displayed.



**Figure B7.22 Confirmation Dialog Box**

Click [Yes] to overwrite the existing file.

## B7.3.2 Renaming Files

Use the Rename File function to change the names of block and macro files in a project. The procedure for renaming files is given below.

### ◆ Procedure ◆

- (1) Select [Project]–[Rename File] from the menu bar.

**TIP**

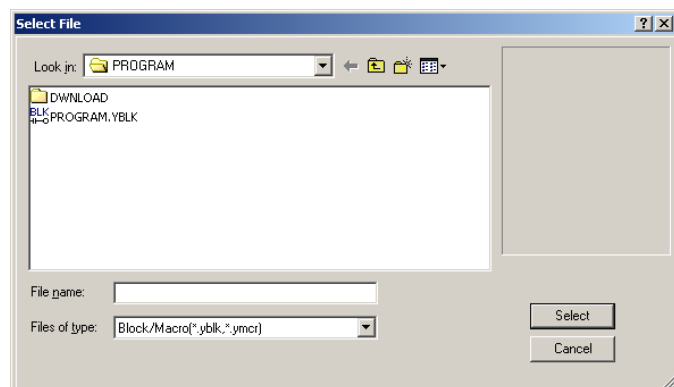
This dialog box can also be opened from the [Block List] pop-up menu in the Project Window.

In addition, the [Rename File] dialog box is directly opened when selected from the Block/Macro Name pop-up menu.

⇒ The Select File dialog box opens.

- (2) Select the file to be renamed, and click [Select].

⇒ The Rename File dialog box opens.

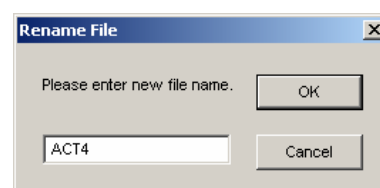


Step (2)

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- (3) Enter the new name and click [OK].

⇒ The file is renamed.

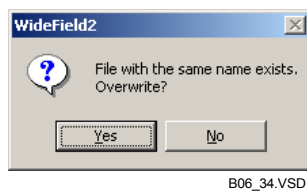


Step (3)

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**TIP**

If a file with the same name exists in the open project, a confirmation dialog box is displayed.



**Figure B7.23 Confirmation Dialog Box**

Click [Yes] to overwrite the existing file.

## B7.3.3 Deleting Files

Use the Delete File function to delete blocks and macro files in a project.

The procedure for deleting files is given below.

### ◆ Procedure ◆

- (1) Select [Project]–[Delete File] from the menu bar.**

⇒ The Select File dialog box opens.

**TIP**

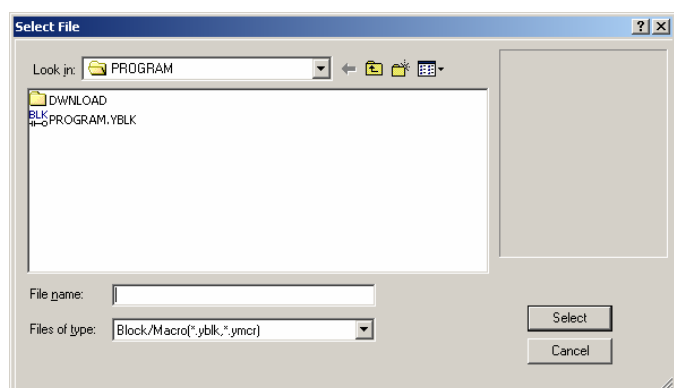
This dialog box can also be opened from the [Block List] pop-up menu in the Project Window.

In addition, the [Delete File] dialog box is directly opened when selected from the Block/Macro Name pop-up menu.

- (2) Select the file to be deleted.**

- (3) Click [Select].**

⇒ A dialog box opens to confirm the delete operation.



Steps (2) and (3)

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- (4) Click [Yes].**

⇒ The selected file is deleted.



Step (4)

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## B7.4 Tag Names and Addresses

To promote program development using tag names, operations for editing programs and specifications relating to tag name definition have been changed in WideField2. The main changes are in the addition of two new functions.

- Entering only tag names in the program edit window
- Setting reference tag name definition for each block.

The user interface and internal file storage are also changed accordingly.

This section describes tag name definition related settings outside of the tag name definition window, as well as data processing and cautions due to the difference in how internal data is stored within tag name definitions.

### SEE ALSO

For details on the user interface for editing tag name definitions, see Chapter B5, "Tag Name Definition."

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### B7.4.1 About Reference Tag Name Definition

In WideField2, you can have two types of definitions within a single project: common tag name definition and block (macro) tag name definition.

By setting the reference tag name definition for each block, it gives you flexibility in having blocks that processes common data within a project or blocks that manages data on a block basis.

#### ■ Setting Reference Tag Name Definition

By setting for each block the tag name definition to refer, you can achieve independent or shared data representation for blocks.

#### ● Changing Reference Tag Name Definition

To change the tag name definition that a block refers to, select [Edit]–[Local Device/Properties] from the menu bar. Change the setting for the [Reference Tag Name Definition] item on the Local Device/Properties dialog box.

**Local Device/Properties**

Name: BLK\_MAIN [OK]

Title (24 char): WFSample Program [Cancel]

Date Created: 2007/01/31 11:59:5 [Help]

Step Count: 124 [Refresh Step Count]

(including Tag Name Definitions): 124

Protection: No [Set Protection]

Local Devices

Device Type	Points
Internal Relay(I)	/I1 -/I 32
Data Register(D)	/D1 -/D 20
File Register(B)	/B1 -/B 0
Timer(T)	/T1 -/T 0
Counter(C)	/C1 -/C 10

Reference Tag Name Definition

☒ Common Tag Name Definition

☐ Block Tag Name Definition

Store to CPU

☐ Store Circuit Comment/Subcomment

☐ Store Block Tag Name Definition

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Figure B7.24 Reference Tag Name Definition

### ● Common Tag Name Definition

Select this option to have a block refer to the common tag name definition. The block will refer to the common tag name definition to perform mapping between tag names, addresses and I/O comments within the block in all operations including program editing, downloading and uploading. However, when a tag name defined in the common tag name definition is also defined in the tag name definition as a local device, the block tag name definition has precedence.

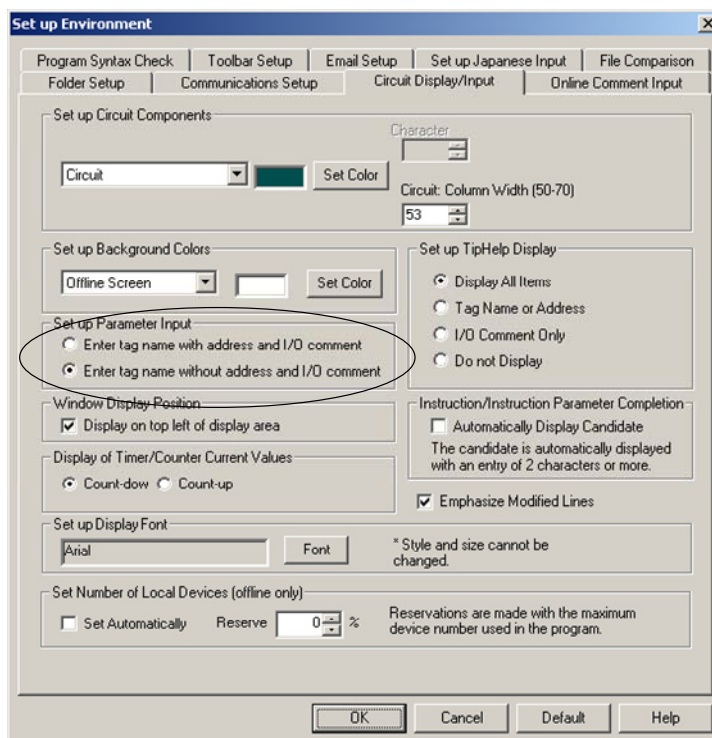
### ● Block Tag Name Definition

Select this option to have a block refer to the block tag name definition. The block will refer to the block tag name definition to perform mapping between tag names, addresses and I/O comments within the block in all operations including program editing, downloading and uploading.

## B7.4.2 About Tag Name Design

In WideField2, you can write programs by entering only tag names in the ladder program edit window or you can allocate addresses and I/O comments for new tag names at the same time.

You can select to enter tag name with or without entering address and I/O comment at the same time by changing the setting for the [Set up Parameter Input] item in the Set up Environment dialog box.



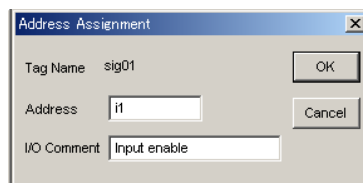
82.62

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Figure B7.25 Set up Environment Dialog Box (Circuit Display/Input Tab)

### ■ Enter Tag Name with Address and I/O Comment

Turning on this setting opens the Address Assignment dialog box when you enter a tag name or address not registered in the tag name definition in a ladder program edit window.



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Figure B7.26 Address Assignment Dialog Box

Enter an address or I/O comment for the tag name. The data entered here will be stored to the reference tag name definition. Clicking [OK] without entering anything stores only the tag name to the tag name definition. Clicking [Cancel] stores nothing to the tag name definition.

**TIP**

Entering tag name with address and I/O comment is not available when entering structure members.

---

**■ Enter Tag Name without Address and I/O Comment**

Turning on this setting reflects entered data on the program immediately after you enter a tag name or address in a ladder program edit window.

An entered tag name is not stored to the tag name definition.

If you have entered a new tag name, you must allocate an address to the tag name using tag name definition before performing program syntax checking.

**B7.4.3 Formats for Storing Parameters of Block Files**

This section explains the different types of parameters stored in block files and how these data are changed by different operations.

**■ What Is a Block File?**

A file that stores ladder program data for a block is called a block file.

A block file contains ladder program data and the list of parameters for each instruction. The data for each instruction parameter may be stored as an address, a tag name, a constant name or a constant value.

**■ Data Saved Through Editing a Block**

Parameter data saved to a block is the same as the data entered during program editing.

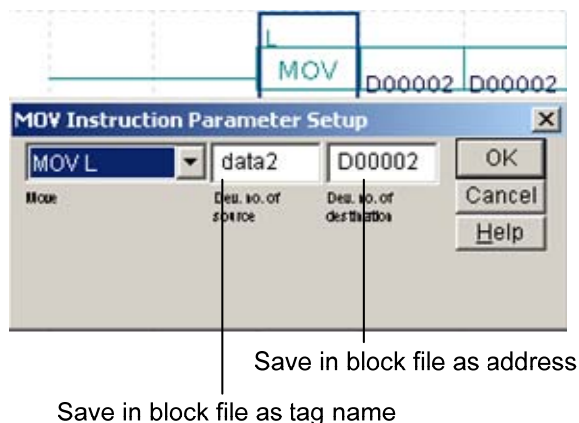
When a tag name is entered in an Edit Block window, the tag name is saved in the file. If an address is entered instead, the address is saved in the file.

**■ Data Saved Through Uploading or Online Edit Update**

When you upload a program or reflect online edited changes to a file, WideField2 refers to the reference tag name definition and perform address-to-tag-name conversion regardless of the format of the entered data. An address is saved as a tag name if it is allocated to a tag name and saved as an address, if otherwise.

## ■ Effect on Edit Display

In program editing, data stored in files are displayed in instruction parameter setup dialog boxes. As shown in the following figure, even if the same parameter is entered, it may sometimes appear differently in an instruction parameter setup dialog box.



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**Figure B7.27 Instruction Parameter Setup Dialog Box**

## ■ Effect on Find and Replace Operations

You can perform searches using either tag name or address regardless of how data is stored in a file.

You can search using an address allocated to a tag name even if the block file is saved with tag names. Similarly, you can search using a tag name assigned to an address even if the block file is saved with addresses.

## ■ Online Operations

Although a compiled program is downloaded with all data in address format, instruction parameter changes made during online editing are displayed in tag names.

Search operations in a program monitor ignores differences in data formats (address or tag name formats).

When performing update processing for online edited changes, WideField2 performs address-to-tag-name conversion and stores the offline block file in tag name format.

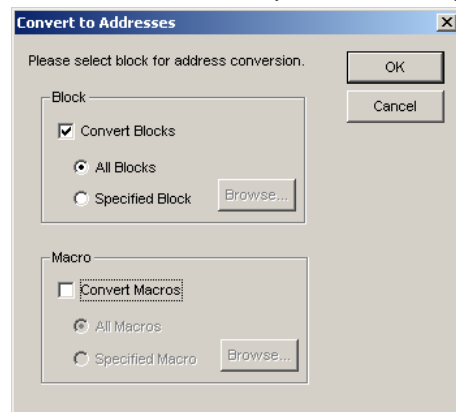
## ■ Converting to Address Format

The Convert Data to Address Format function converts a block file to address format.

Converting a block file to address format facilitates replacements by address. This function can also be used to migrate to address-based program development.

To convert data to address format, select [Project]–[Convert Data]–[Address Format] from the menu bar and perform conversion on the Convert to Addresses dialog box displayed.

You can also select specific blocks (macros) to be converted.



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**Figure B7.28 Convert to Addresses Dialog Box**

### TIP

If you invoke the convert data to address format function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.



### CAUTION

- You cannot abort a conversion before its completion.
- If an error is encountered during conversion of a block, the conversion process skips over the block and proceeds to convert subsequent blocks.



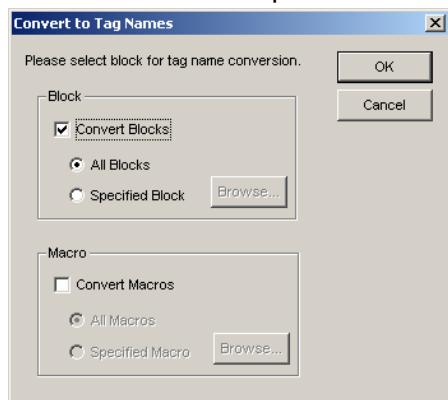
## ■ Converting to Tag Names

The convert data to tag name format function converts a block file to tag name format.

Converting a block file to tag name format facilitates replacements by tag name.

To convert data to tag name format, select [Project]–[Convert Data]–[Tag Name Format] from the menu bar and perform conversion on the Convert to Tag Names dialog box displayed.

You can also select specific blocks (macros) to be converted.



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**Figure B7.29 Convert to Tag Names Dialog Box**

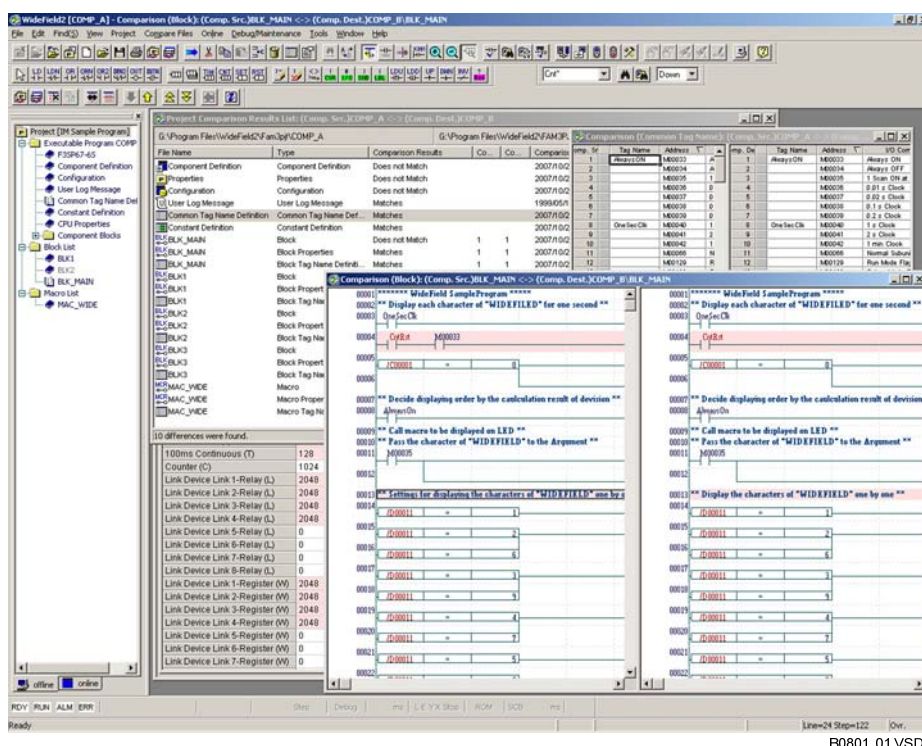
### TIP

If you invoke the convert data to tag name format function with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.



## B8. Comparing Files

The File Comparison function compares the content of files associated with projects created in WideField2, and extracts and displays parts of difference.



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The File Comparison function has the following two types of comparison methods:

- Compare Project
- Compare Window

With Compare Project, two sets of project data are specified and all files within both projects are compared.

With Compare Window, two sets of the same type of file data are specified and the files are compared. The user specifies a file in the currently open project as the comparison source file, and a file in another project as the comparison target file.

## B8.1 Basic File Comparison Operations

This section describes the basic File Comparison operations as well as settings for the File Comparison function.

### B8.1.1 File Comparison Bar and Shortcut Keys

The operations that can be used only with the File Comparison function are found in a tool bar.



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Operations are assigned for each button as shown in the table below.

**Table B8.1 Operations for the File Comparison Function**

Icon	Shortcut	Operation	Details
	Ctrl+5	Compare Project	Starts comparison between the project currently open, as the comparison source, and the other project.
	Ctrl+6	Compare Window	Starts comparison between the window currently open, as the comparison source, and the other file of the same type.
	Ctrl+8	Close Comparison Destination	Closes the comparison destination pane in the comparison results display, displaying only the comparison source pane.
	Ctrl+0	Copy Comparison Results	Copies the project comparison results to the clipboard as text data.
	Ctrl+Tab	Switch Pane	Switches the focus of the comparison source/comparison destination pane in the comparison results display.
	Ctrl+9	Switch Split Display	Switches the pane structure in the comparison results display between up/down and left/right.
	Alt+↑	Next Difference	Moves the cursor from its current position (in a results display screen with differences) to the next difference at a lower position.
	Alt+↓	Previous Difference	Moves the cursor from its current position (in a results display screen with differences) to the previous difference at a higher position.
	Alt+Home	Initial Difference	Moves the cursor to the difference at the highest position in the window (in a results display screen with differences).
	Alt+End	Final Difference	Moves the cursor to the difference at the lowest position in the window (in a results display screen with differences).
	Alt+←	Copy to Comparison Source	Copies the content of the difference at the cursor position in the comparison destination pane to the comparison source.
	Ctrl+7	Update with Latest Information	Recompares the same screen and file currently in the comparison results display, and refreshes the results screen.

## B8.1.2 Optional File Comparison Settings

You can specify optional settings, such as comparison method and display method, for the File Comparison function.

This subsection describes the procedure regarding environmental setup for the File Comparison function. The relevant procedure is given below.

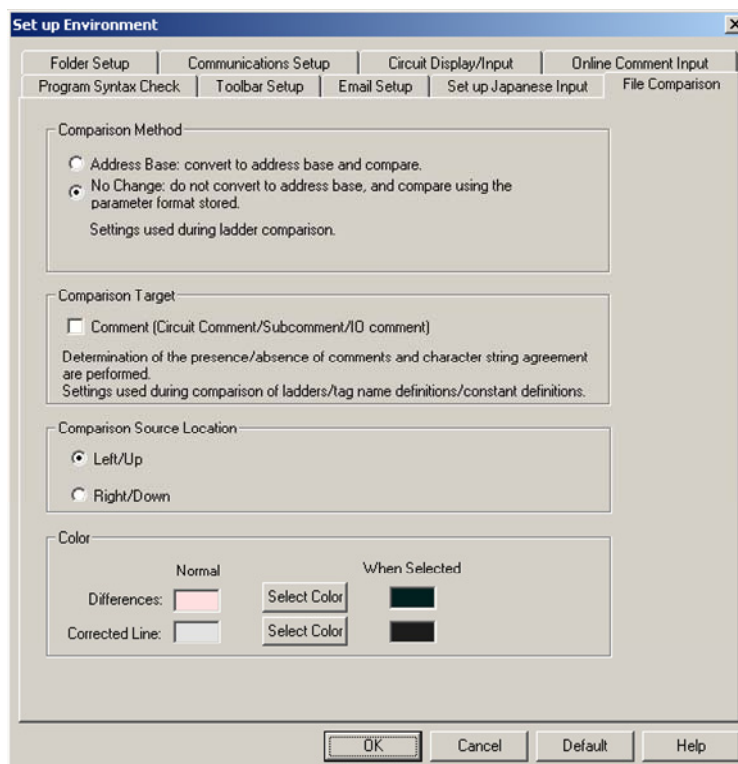
### ◆ Procedure ◆

(1) Select [Tools]-[Set up Environment] from the menu bar.

⇒ The Set up Environment dialog box opens.

(2) Click the [File Comparison] tab.

(3) Enter the optional settings for the File Comparison function, and click the [OK] button.



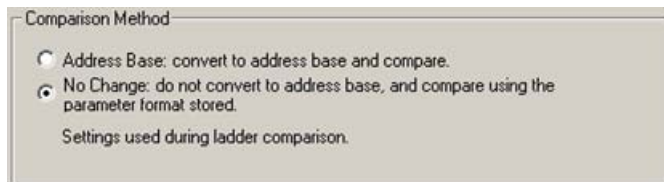
Steps (2) and (3)

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The optional File Comparison settings are shown below.

### ● Comparison Method

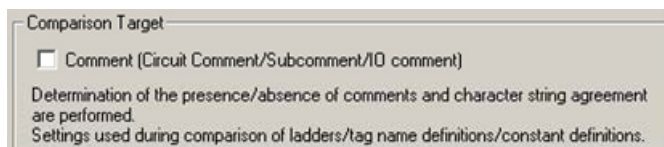
You can specify whether to perform a comparison of devices using the conditions of the character string for the entered parameter with no change, or convert to the actual address indicated by the parameter before comparing, when comparing programs (blocks/macros).



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### ● Comparison Target

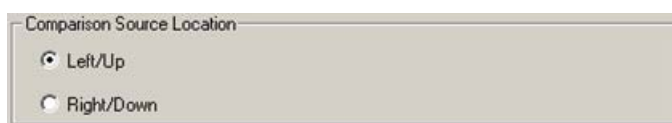
You can specify whether to set the comment type as a comparison target when comparing programs (blocks/macros).



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### ● Comparison Source Location

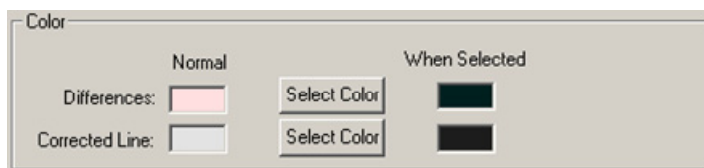
You can specify the display location for the panes in the comparison results window.



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### ● Color

You can specify the display color for comparison results in the comparison results window.



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## B8.2 Compare Project

With the Compare Project function, two projects are specified and the content of all files included in both projects are compared.

### B8.2.1 Compare Project

The target files and comparison details for the Compare Project function are shown in the table below.

**Table B8.2 Targets for the Compare Project Function**

File Type	Comparison Details
<b>Component Definition</b>	Compares block components defined in the component definition, and determines if they are the same or different.
<b>Properties</b>	Compares the content of project properties, such as CPU type and project titles, and determines if they are the same or different.
<b>Configuration</b>	Compares configuration settings, and determines if they are the same or different.
<b>User Log Message</b>	Compares user log messages settings, and determines if they are the same or different. If there is only one user log messages file, No Comparison Destination/No Comparison Source is displayed.
<b>Common Tag Name Definition</b>	Compares the content of common tag name definitions, and determines if they are the same or different.
<b>Constant Definition</b>	Compares the content of constant definitions, and determines if they are the same or different. If there is only one constant definition file, No Comparison Destination/No Comparison Source is displayed.
<b>Block</b>	Compares programs of blocks with the same file name in projects, and determines if they are the same or different. If there is only one block with the same name, No Comparison Destination/No Comparison Source is displayed.
<b>Block Properties</b>	Compares properties of blocks with the same file name in projects, and determines if they are the same or different. If there is only one block with the same name, No Comparison Destination/No Comparison Source is displayed.
<b>Block Tag Name Definition</b>	Compares tag name definitions of blocks with the same file name in projects, and determines if they are the same or different. If there is only one block with the same name, No Comparison Destination/No Comparison Source is displayed.
<b>Macro</b>	Compares programs of macros with the same file name in projects, and determines if they are the same or different. If there is only one macro with the same name, No Comparison Destination/No Comparison Source is displayed.
<b>Macro Properties</b>	Compares properties of macros with the same file name in projects, and determines if they are the same or different. If there is only one macro with the same name, No Comparison Destination/No Comparison Source is displayed.
<b>Macro Tag Name Definition</b>	Compares tag name definitions of macros with the same file name in projects, and determines if they are the same or different. If there is only one macro with the same name, No Comparison Destination/No Comparison Source is displayed.

## ■ Compare Project Procedure

This subsection describes the Compare Project procedure. The relevant procedure is given below.

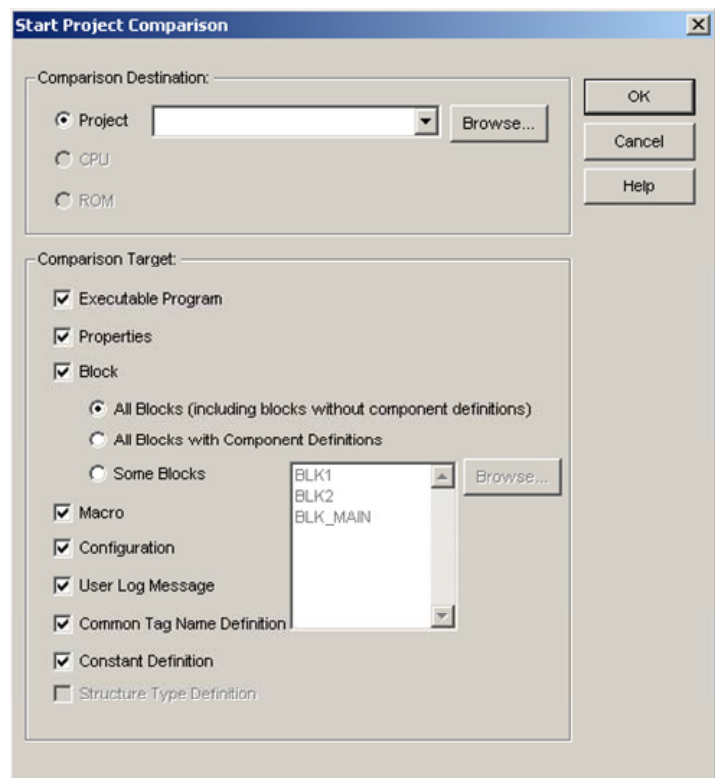
### ◆ Procedure ◆

- (1) Make sure the project to be used as the comparison source is open.
- (2) Select [File]-[Compare Project] from the menu bar.

#### TIP

You can also perform startup from File Comparison Bar and the Project Window.

⇒ The Start Project Comparison dialog box opens.



Step (2)

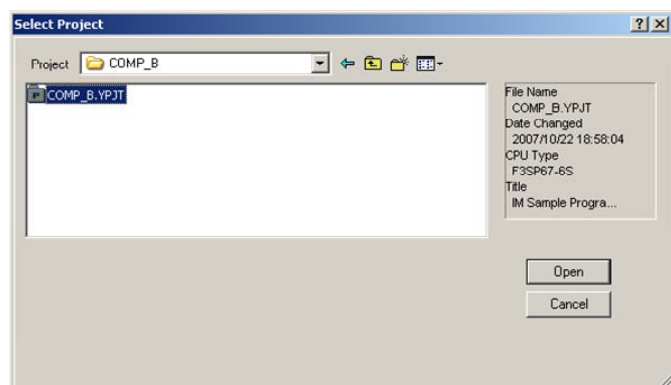
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- (3) Specify the project to be used as the comparison destination for Project in the Comparison Destination group box. Click the [Browse] button.

#### TIP

You can select the projects that have been compared in the past from the Project list.

⇒ The Select Project dialog box opens.



Steps (3) and (4)

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- (4) Specify the project file to be used as the comparison destination, and click the [Open] button.



(5) Specify the target for project comparison in Comparison Target, and click the [OK] button.

⇒ Project comparison is performed, and the Project Comparison Results List opens.

File Name	Type	Comparison Results	Comparison	Comparison Source	Comparison Destination
Component Definition	Component Definition	Does not Match		2007/10/22 21:18:59	2007/10/22 21:46:16
Properties	Properties	Does not Match		2007/10/22 21:18:59	2007/10/22 21:46:16
Configuration	Configuration	Does not Match		2007/10/22 21:20:23	2007/10/22 21:18:53
User Log Message	User Log Message	Matches		1999/05/13 20:00:46	1999/05/13 20:00:46
Common Tag Name Definition	Common Tag Name Def...	Matches		2007/10/22 21:18:28	2007/10/21 17:56:16
Constant Definition	Constant Definition	Matches		2007/10/21 17:56:16	2007/10/21 17:56:16
BLK_MAIN	Block	Does not Match	1	2007/10/22 02:45:59	2007/10/22 02:45:59
BLK_MAIN	Block Properties	Matches	1	2007/10/22 02:45:59	2007/10/22 02:45:59
BLK_MAIN	Block Tag Name Defini...	Matches	1	2007/10/22 18:46:45	2007/10/22 02:45:59
BLK1	Block	Matches	2	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Properties	Matches	2	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Tag Name Defini...	Matches	2	2007/10/22 18:42:36	2007/10/22 18:54:14
ALRMD1	Block	No Comparison Destination		2007/10/22 18:42:52	
BLK2	Block Properties	No Comparison Destination		2007/10/22 18:42:52	
BLK2	Block Tag Name Defini...	No Comparison Destination		2007/10/22 18:42:52	
BLK3	Block	No Comparison Source	2		2007/10/22 18:47:27
BLK3	Block Properties	No Comparison Source	2		2007/10/22 18:47:27
BLK3	Block Tag Name Defini...	No Comparison Source	2		2007/10/22 18:47:27
INITIAL	Block	Matches		2007/10/22 21:48:28	2007/10/22 18:42:36
INRPP2	Block Tag Name Defini...	Matches		2007/10/22 21:48:28	2007/10/22 18:42:36
MAC_WIDE	Macro	Matches		2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_WIDE	Macro Properties	Matches		2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_WIDE	Macro Tag Name Defini...	Matches		2007/09/17 19:31:02	2007/09/17 19:31:02

Step (5)

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## B8.2.2 Project Comparison Results List

After comparing each file in a project, the results of the Compare Project function are displayed in a list as shown below.

File Name	Type	Comparison Results	Comparison S...	Comparison D...	Comparison Sourc...	Comparison Destina...
Component Definition	Component Definition	Does not Match			2007/10/22 18:49:52	2007/10/22 19:38:14
Properties	Properties	Does not Match			2007/10/22 18:49:52	2007/10/22 19:38:14
Configuration	Configuration	Does not Match			2007/10/22 18:51:35	2007/10/21 18:36:51
User Log Message	User Log Message	Matches			1999/05/13 20:00:46	1999/05/13 20:00:46
Common Tag Name Definition	Common Tag Name Def...	Matches			2007/10/22 19:47:24	2007/10/22 18:57:59
Constant Definition	Constant Definition	Matches			2007/10/21 17:56:16	2007/10/21 17:56:16
BLK_MAIN	Block	Does not Match	1	1	2007/10/22 18:46:45	2007/10/22 02:45:59
BLK_MAIN	Block Properties	Matches	1	1	2007/10/22 18:46:45	2007/10/22 02:45:59
BLK_MAIN	Block Tag Name Defini...	Matches	1	1	2007/10/22 18:46:45	2007/10/22 02:45:59
BLK1	Block	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Properties	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Tag Name Defini...	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK2	Block	No Comparison Destination			2007/10/22 18:42:52	
BLK2	Block Properties	No Comparison Destination			2007/10/22 18:42:52	
BLK2	Block Tag Name Defini...	No Comparison Destination			2007/10/22 18:42:52	
BLK3	Block	No Comparison Source	2			2007/10/22 18:47:27
BLK3	Block Properties	No Comparison Source	2			2007/10/22 18:47:27
BLK3	Block Tag Name Defini...	No Comparison Source	2			2007/10/22 18:47:27
MAC_WIDE	Macro	Matches			2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_WIDE	Macro Properties	Matches			2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_WIDE	Macro Tag Name Defini...	Matches			2007/09/17 19:31:02	2007/09/17 19:31:02

Figure B8.1 Project Comparison Results List Screen

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- A Title Bar  
Displays the window title and the comparison source/comparison destination project names.
- B Project Folder Name  
Displays the path for the project folder for the comparison source/comparison destination.
- C Comparison Results List  
Displays a list of comparison results for each file in the project.
- D Number of Differences  
Displays the number of files in the comparison results with differences (Do not Match, No Comparison Destination, No Comparison Source) as a number of differences.
- E [Help] Button  
Displays help information for the Comparison function.
- F Comparison Time  
Displays the time when the Compare Project function was executed.

## ■ Content Displayed in the Project Comparison Results List

The content displayed in the Project Comparison Results List is shown in the table below.

**Table B8.3 Project Comparison Results List Details**

Item	Display Content and Tips
<b>File Name</b>	<p>Displays the file type or file name of the file compared.</p> <ul style="list-style-type: none"> <li>■ File Type Since the following files are normally the only files included in a project, they are shown as the names of file types. <ul style="list-style-type: none"> <li>• Component Definition</li> <li>• Properties</li> <li>• Configuration</li> <li>• User Log Message</li> <li>• Common Tag Name Definition</li> <li>• Constant Definition</li> </ul> </li> <li>■ File Name Since files related to blocks/macros might or might not be included in a project, they are shown as individual block and macro names. <ul style="list-style-type: none"> <li>•Block</li> <li>•Block Properties</li> <li>•Block Tag Name Definition</li> <li>•Macro</li> <li>•Macro Properties</li> <li>•Macro Tag Name Definition</li> </ul> </li> </ul>
<b>Type</b>	Displays the file type.
<b>Comparison Results</b>	Displays the comparison results as Match/Do not Match/No Comparison Source/No Comparison Destination.
<b>Comparison Source Component</b>	<p>Displays the number defined in a project's component definition for block files in the comparison source project.</p> <p>Differences in component definition numbers cannot be comparison targets.</p>
<b>Comparison Destination Component</b>	<p>Displays the number defined in a project's component definition for block files in the comparison destination project.</p> <p>Differences in component definition numbers cannot be comparison targets.</p>
<b>Comparison Source Date</b>	<p>Displays the date and time each file in a comparison source project was created (or last modified).</p> <p>Differences in creation date/time cannot be comparison targets.</p>
<b>Comparison Destination Date</b>	<p>Displays the date and time each file in a comparison destination project was created (or last modified).</p> <p>Differences in creation date/time cannot be comparison targets.</p>

---

## B8.2.3 Operations on the Project Comparison Results List

You can perform the following operations on the project comparison results list.

- **Copy Comparison Results**
- **Display Comparison Results for Component Definitions**
- **Display Comparison Results for Project Properties**
- **Display Comparison Results for Configurations**
- **Display Comparison Results for User Log Messages**
- **Display Comparison Results for Common Tag Name Definitions**
- **Display Comparison Results for Constant Definitions**
- **Display Comparison Results for Blocks**
- **Display Comparison Results for Block Properties**
- **Display Comparison Results for Block Tag Name Definitions**
- **Display Comparison Results for Macros**
- **Display Comparison Results for Macro Properties**
- **Display Comparison Results for Macro Tag Name Definitions**

### SEE ALSO

For details about program comparison results for blocks/macros and comparison results displays for block/macro tag name definitions, see Section B8.3, “Compare Window”.

---

## ■ Copy Comparison Results

You can copy a project comparison results list to the clipboard as text data.

Since results lists are saved to the clipboard in CSV format, they can be used in text editors.

## ■ Display Comparison Results

Comparison source/comparison destination for each file type from the project comparison results list can be lined up in the same window to check the comparison results.

This subsection describes the display procedure for comparison results for configurations as an example.

Use the following procedure to display comparison results.

### ◆ Procedure ◆

- (1) Make sure that project comparison is performed, and that the Project Comparison Results List is displayed.

File Name	Type	Comparison Results	Comparison S...	Comparison D...	Comparison Sourc...	Comparison Destina...
Component Definition	Component Definition	Does not Match			2007/10/22 18:49:52	2007/10/22 19:38:14
Properties	Properties	Does not Match			2007/10/22 18:49:52	2007/10/22 19:38:14
Constant Definition	Constant Definition	Matches			2007/10/22 18:49:52	2007/10/22 19:38:14
User Log Message	User Log Message	Matches			1988/05/13 20:00:46	1988/05/13 20:00:46
Common Tag Name Definition	Common Tag Name Def...	Matches			2007/10/22 19:47:24	2007/10/22 18:57:59
Constant Definition	Constant Definition	Matches			2007/10/21 17:56:16	2007/10/21 17:56:16
BLK_MAIN	Block	Does not Match	1	1	2007/10/22 18:49:45	2007/10/22 02:45:59
BLK_MAIN	Block Properties	Matches	1	1	2007/10/22 18:49:45	2007/10/22 02:45:59
BLK_MAIN	Block Tag Name Defini...	Matches	1	1	2007/10/22 18:49:45	2007/10/22 02:45:59
BLK1	Block	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Properties	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK1	Block Tag Name Defini...	Matches	2	3	2007/10/22 18:42:36	2007/10/22 18:54:14
BLK2	Block	No Comparison Destination			2007/10/22 18:42:52	
BLK2	Block Properties	No Comparison Destination			2007/10/22 18:42:52	
BLK2	Block Tag Name Defini...	No Comparison Destination			2007/10/22 18:42:52	
BLK3	Block	No Comparison Source	2			2007/10/22 18:47:27
BLK3	Block Properties	No Comparison Source	2			2007/10/22 18:47:27
BLK3	Block Tag Name Defini...	No Comparison Source	2			2007/10/22 18:47:27
MAC_VIDE	Macro	Matches			2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_VIDE	Macro Properties	Matches			2007/09/15 01:53:04	2007/09/15 01:53:04
MAC_VIDE	Macro Tag Name Defini...	Matches			2007/09/17 19:31:02	2007/09/17 19:31:02

10 differences were found. Comparison Time: 19:47:31

Step (2)

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- (2) Double-click the item whose comparison results you want to check.

⇒ The content of the comparison results is displayed.

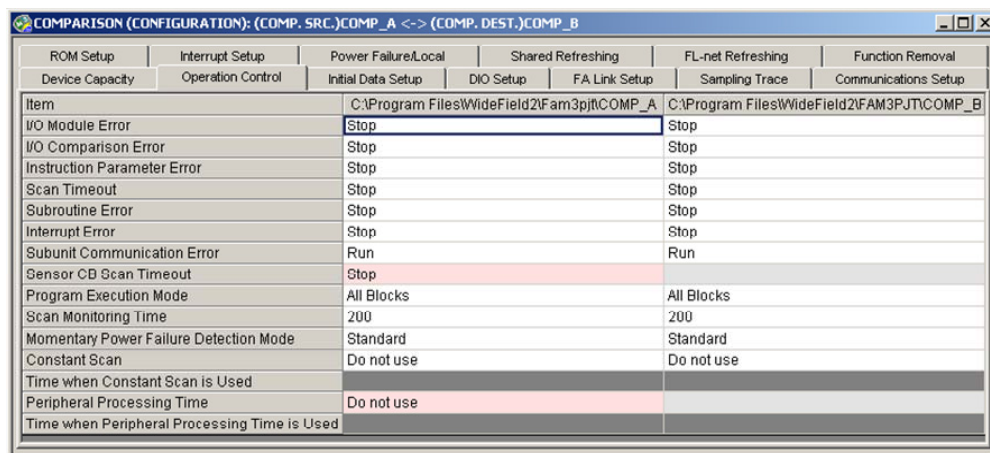
Item	C:\Program Files\WideField2\Fam3p\COMP_A	C:\Program Files\WideField2\FAM3P\COMP_B
Internal Relay (I)	16384	16384
Data Register (D)	16384	16384
100us Timer (T)	0	0
1ms Timer (T)	0	0
10ms Timer (T)	512	512
100ms Timer (T)	448	448
100ms Continuous (T)	64	64
Counter (C)	1024	1024
Link Device Link 1-Relay (L)	2048	8192
Link Device Link 2-Relay (L)	2048	0
Link Device Link 3-Relay (L)	2048	0
Link Device Link 4-Relay (L)	2048	0
Link Device Link 5-Relay (L)	0	0
Link Device Link 6-Relay (L)	0	0
Link Device Link 7-Relay (L)	0	0
Link Device Link 8-Relay (L)	0	0
Link Device Link 1-Register (M)	2048	8192
Link Device Link 2-Register (M)	2048	0
Link Device Link 3-Register (M)	2048	0
Link Device Link 4-Register (M)	2048	0
Link Device Link 5-Register (M)	0	0
Link Device Link 6-Register (M)	0	0
Link Device Link 7-Register (M)	0	0
Link Device Link 8-Register (M)	0	0
CPU 1-Relay (E)	0	0

Step (2)

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## ■ Details of the Comparison Results Window for Project Setup

The comparison results for project setup are displayed in a table format that compares comparison source and comparison destination, as shown in the figure below.



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**Figure B8.2 Comparison Results Screen (Example of Operation Control for Configuration)**

Displayed items that have parts of difference are identified by color.

**Table B8.4 Display Colors in the Comparison Screen (Default)**

Display Color	Display Content
White	Indicates identical content in the comparison source and comparison destination.
Pink	Indicates a difference between two setting values.
Light gray	Indicates the absence of an applicable item on one side.
Dark gray	Indicates the absence of an applicable item in both the comparison source and comparison destination.

### TIP

You can modify the display color settings in the environment setup.

You cannot modify the setting items from the comparison results screen. If the settings have been updated in a location other than the comparison screen, either perform the comparison again or select [Update with Latest Information].

### SEE ALSO

For details about program comparison results for blocks/macros and comparison results displays for block/macro tag name definitions, see Section B8.3, "Compare Window".

## ■ Details of the Comparison Results Window for Common Tag Name Definitions/Constant Definitions

The comparison results for common tag name definitions and constant definitions are displayed in a table format that compares comparison source and comparison destination, as shown in the figure below.

Comp. Sr	Tag Name	Address	I/O Comment (32 char)	Comp. De	Tag Name	Address	I/O Comment (32 char)
1	AlwaysON	M00033	Always ON	1	AlwaysON	M00033	Always ON
2	AlwaysOFF	M00034	Always OFF	2	AlwaysOFF	M00034	Always OFF
3		M00035	1 Scan ON at Program Start	3		M00035	1 Scan ON at Program Start
4		M00036	0.01 s Clock	4		M00036	0.01 s Clock
5		M00037	0.02 s Clock	5		M00037	0.02 s Clock
6		M00038	0.1 s Clock	6		M00038	0.1 s Clock
7		M00039	0.2 s Clock	7		M00039	0.2 s Clock
8	OneSecCik	M00040	1 s Clock	8	OneSecCik	M00040	1 s Clock
9		M00041	2 s Clock	9		M00041	2 s Clock
10		M00042	1 min Clock	10		M00042	1 min Clock
11		M00066	Normal Subunit Transmission Line	11			
12		M00129	Run Mode Flag	12			
13		M00130	Debug Mode Flag	13			
14		M00131	Stop Mode Flag	14			
15		M00132	Pause flag	15			
16		M00133	Execution Flag	16			
17		M00134	Remote/Local Flag	17			
18		M00135	RAM/ROM-based Operation Flag	18			
19		M00136	Power-on Operation Flag	19			
20		M00172	Set Clock Time	20		M00172	Set Clock Time
21		M00173	Input-offline Flag	21		M00173	Input-offline Flag
22		M00174	Output-offline Flag	22		M00174	Output-offline Flag
23		M00175	Shared-I/O-offline Flag	23		M00175	Shared-I/O-offline Flag
24		M00176	Link-I/O-offline Flag	24		M00176	Link-I/O-offline Flag
25		M00188	Carry Flag	25		M00188	Carry Flag
26		M00193	Self-diagnosis Error	26		M00193	Self-diagnosis Error

Figure B8.3 Comparison Results Screen (Example for Common Tag Name Definition)

Since you can specify items as you choose for common tag name definitions and constant definitions, identical items are displayed on the same line. If an item exists for only one side, the display is corrected so that line is left blank.

Displayed items that have parts of difference are identified by color.

Table B8.5 Display Colors in the Comparison Screen (Default)

Display Color	Display Content
White	Indicates identical content in the comparison source and comparison destination.
Pink	Indicates a difference between two setting values.
Light gray	Indicates the absence of an applicable item on one side.

### TIP

You can modify the display color settings in the environment setup.

You can edit the setting values for only the comparison source pane in the common tag name definition/constant definition comparison results screen. In addition, you can select the settings for the comparison destination and copy them to the comparison source.

To display the comparison results again after editing, perform [Update with Latest Information].

### SEE ALSO

For details about program comparison results for blocks/macros and comparison results displays for block/macro tag name definitions, see Section B8.3, "Compare Window".

In addition, the operations used on the common tag name definition/constant definition comparison results screen are the same for both block/macro tag name definitions. For details, see Section B8.3.3, "Operations in the Comparison Results Screen".



## B8.3 Compare Window

With the Compare Window function, two sets of the same type of file data are specified and the files are compared.

### B8.3.1 Compare Window

The files used as comparison targets are shown in the table below.

**Table B8.6 Targets for the Compare Window Function**

File Type	Comparison Details
<b>Common Tag Name Definition</b>	Compares the content of common tag name definitions, and determines if they are the same or different. The comparison results are shown in a list comparing comparison source/comparison destination.
<b>Constant Definition</b>	Compares the content of constant definitions, and determines if they are the same or different. The comparison results are shown in a list comparing comparison source/comparison destination.
<b>Block</b>	Compares the programs of two block files, and determines if they are the same or different. Displays the comparison source/comparison destination of the comparison results as ladder programs. When starting the comparison, you can select whether to simultaneously compare the block properties. The comparison results of the block properties are shown in a list comparing comparison source/comparison destination.
<b>Block Tag Name Definition</b>	Compares two block tag name definitions, and determines if they are the same or different. The comparison results are shown in a list comparing comparison source/comparison destination.
<b>Macro</b>	Compares the programs of two macro files, and determines if they are the same or different. Displays the comparison source/comparison destination of the comparison results as ladder programs. When starting the comparison, you can select whether to simultaneously compare the block properties. The comparison results of the macro properties are shown in a list comparing comparison source/comparison destination.
<b>Macro Tag Name Definition</b>	Compares two macro tag name definitions, and determines if they are the same or different. The comparison results are shown in a list comparing comparison source/comparison destination.

### ■ Compare Window Procedure

This subsection describes the Compare Window procedure.

The Compare Window function performs a comparison of two files, with the window open on WideField2 as the comparison source and the other specified as the comparison destination.

This subsection describes the procedure for block files. The relevant procedure is given below.

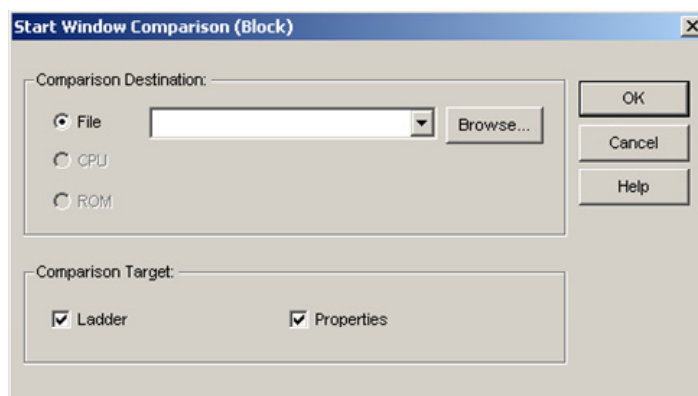
#### ◆ Procedure ◆

- (1) Make sure the file to be used as the comparison source is open.
- (2) Select [File]-[Compare Window] from the menu bar.

#### TIP

You can also perform startup from the File Comparison Bar, the Project Window, and the pop-up menu.

⇒ The Start Window Comparison dialog box opens.



Step (2)

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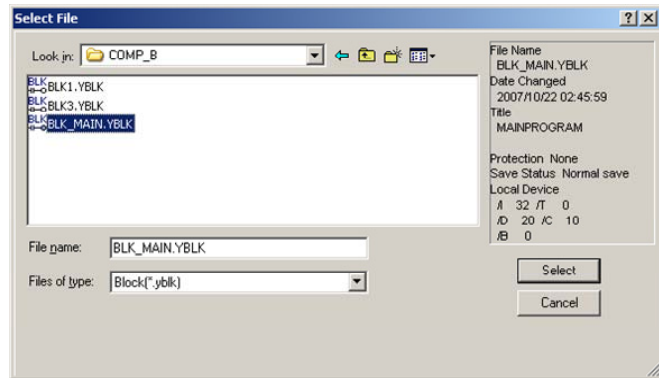
- (3) Specify the file to be used as the comparison destination for File in the Comparison Destination group box. Click the [Browse] button.

#### TIP

You can select the files that have been compared in the past from the File list.

⇒ The Select File dialog box is displayed.

- (4) Specify the file to be used as the comparison destination, and click the [Select] button.

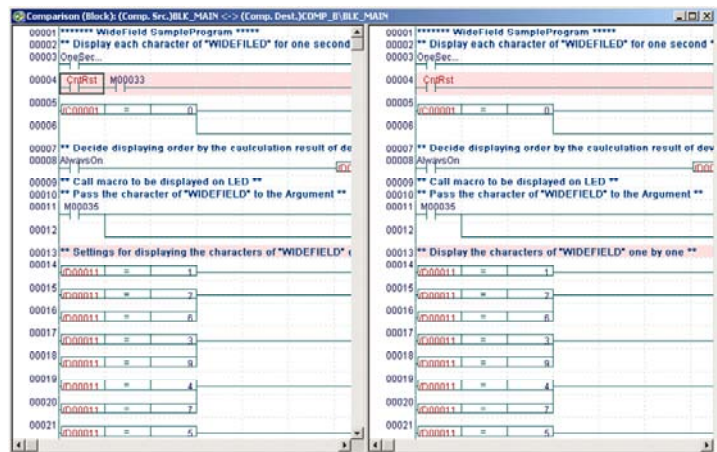


Steps (3) and (4)

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- (5) Specify the target for window comparison in Comparison Target, and click the [OK] button.

⇒ Window comparison is performed, and the results window opens.



Step (5)

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You can perform editing in the same way as with the normal program edit function for only the comparison source pane in the ladder program comparison results screen. In addition, you can select the settings for the comparison destination and copy them to the comparison source.

To display the comparison results again after editing, perform [Update with Latest Information].

## ■ Details of Comparison Results for Block/Macro Properties

The comparison results for block/macro properties are displayed in a table format that compares comparison source and comparison destination, as shown in the figure below.

Item	m FilesWideField2\Fam3pjt\COMP_A\BLK_M...	n FilesWideField2\FAM3PJT\COMP_B\BLK_M...
Title	MAINPROGRAM	MAINPROGRAM
Protect	No	No
Local Device, Internal Relay (/I)	32	64
Local Device, Data Register (/D)	20	20
Local Device, File Register (/B)	0	0
Local Device, Timer (/T)	0	0
Local Device, Counter (/C)	10	10
Reference Tag Name Definition	Block Tag Name Definition	Block Tag Name Definition
Store to CPU - Circuit Comment/Subcomment	Yes	
Store to CPU - Block Tag Name Definition	Yes	

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**Figure B8.5 Comparison Results Screen (Example for Block Properties)**

Displayed items that have parts of difference are identified by color.

**Table B8.8 Display Colors in the Comparison Screen (Default)**

Display Color	Display Content
<b>White</b>	Indicates identical content in the comparison source and comparison destination.
<b>Pink</b>	Indicates a difference between two setting values.
<b>Light gray</b>	Indicates the absence of an applicable item on one side.
<b>Dark gray</b>	Indicates the absence of an applicable item in both the comparison source and comparison destination.

### TIP

You can modify the display color settings in the environment setup.

You cannot modify the setting items from the comparison results screen. If the settings have been updated in a location other than the comparison screen, either perform the comparison again or select [Update with Latest Information].

## ■ Details of Comparison Results for Block/Macro Tag Name Definitions

The comparison results for block/macro tag name definitions are displayed in a table format that compares comparison source and comparison destination, as shown in the figure below.

Comp. Sr	Tag Name	Address	I/O Comment (32 char)	Comp. De	Tag Name	Address	I/O Comment (32 char)
1		I00001	Step 1	1			
2		I00002	Step 2	2			
3		I00003	Step 3	3			
4	AlwaysOn	M00033	Always On	4	AlwaysOn	M00033	Always On
5	AlwaysOff	M00034	Always Off	5		M00034	Always Off
6	OneSecClk	M00040	1 s clock	6	OneSecClk	M00040	1 s clock
7	CntRst	/I00001		7	CntRst	/I00001	
8				8			
9				9			
10				10			
11				11			
12				12			
13				13			
14				14			
15				15			
16				16			
17				17			
18				18			
19				19			
20				20			
21				21			
22				22			
23				23			
24				24			
25				25			
26				26			

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**Figure B8.6 Comparison Results Screen (Example for Block Tag Name Definitions)**

Since you can specify items as you choose for block/macro tag name definitions, identical items are displayed on the same line. If an item exists for only one side, the display is corrected so that line is left blank.

Displayed items that have parts of difference are identified by color.

**Table B8.9 Display Colors in the Comparison Screen (Default)**

Display Color	Display Content
<b>White</b>	Indicates identical content in the comparison source and comparison destination.
<b>Pink</b>	Indicates a difference between two setting values.
<b>Light gray</b>	Indicates the absence of an applicable item on one side.

### TIP

You can modify the display color settings in the environment setup.

You can edit the setting values for only the comparison source pane in the block/macro tag name definition comparison results window. In addition, you can select the settings for the comparison destination and copy them to the comparison source.

To display the comparison results again after editing, perform [Update with Latest Information].

### B8.3.3 Operations in the Comparison Results Screen

The comparison results screen includes functions for viewing differences detected during a comparison.

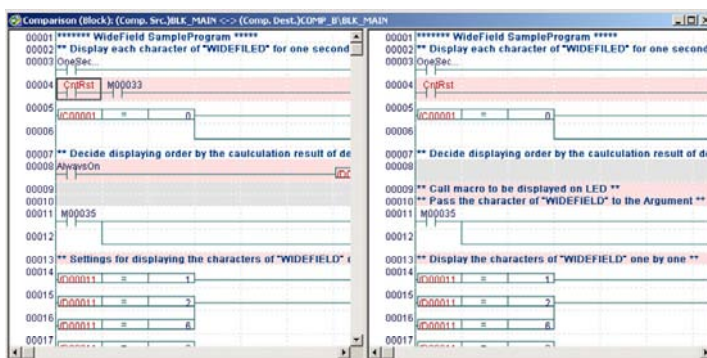
This subsection uses the comparison results display screen of ladder programs to describe the operations in the comparison results screen.

#### ■ Switch Pane

This operation allows you to switch the active pane in the 2-pane structure of the comparison results screen. The relevant procedure is given below.

#### ◆ Procedure ◆

- (1) Make sure the comparison results screen is displayed.

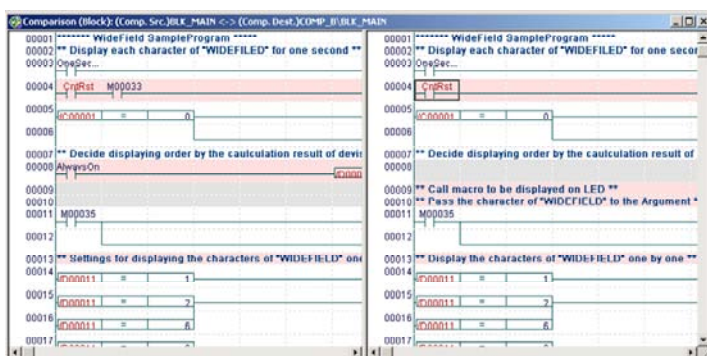


Step (1)

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- (2) Select [Compare Files]-[Switch Pane] from the menu bar.

⇒ The active pane is switched.



Step (2)

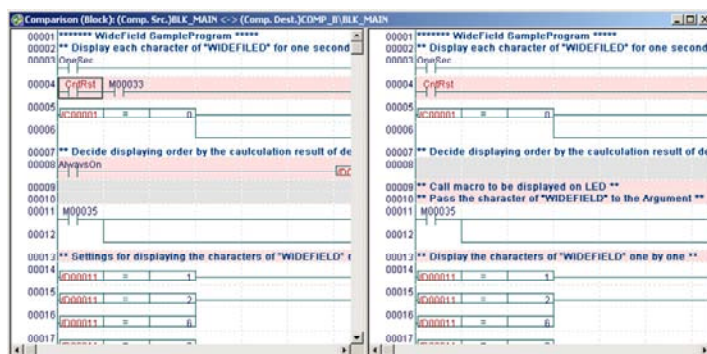
B0803\_08.VSD

## ■ Modify Split Display

You can select either left/right or up/down as the pane layout in the comparison results display screen. The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Make sure the comparison results screen is displayed.



Step (1)

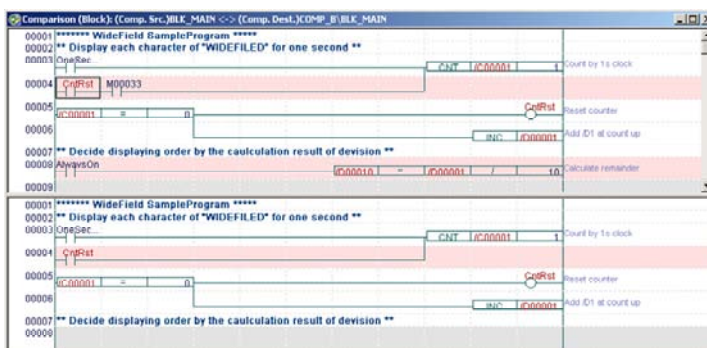
B0803\_09.VSD

- (2) Select [Compare Files]-[Split Display Horizontally] from the menu bar.

⇒ The pane structure switches to an up/down layout.

#### TIP

Remove the checkmark from [Split Display Horizontally] to switch to a left/right split display pane structure.



Step (2)

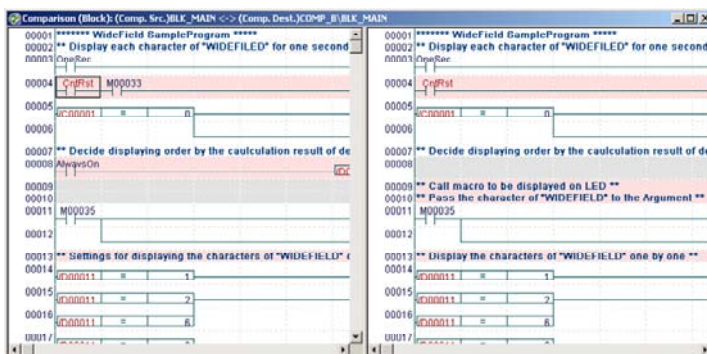
B0803\_10.VSD

## ■ Move to Difference

When there are multiple differences, use this operation to move the cursor to the next difference. The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Make sure the comparison results screen is displayed.



Step (1)

B0803\_11.VSD

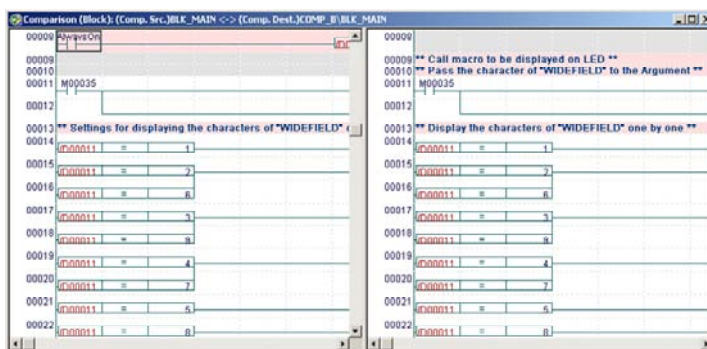


**(2) Select [Compare Files]-[Next Difference] from the menu bar.**

⇒ The cursor moves to the next difference.

**TIP**

You can perform similar operations with [Previous Difference], [Initial Difference], and [Final Difference].



Step (2)

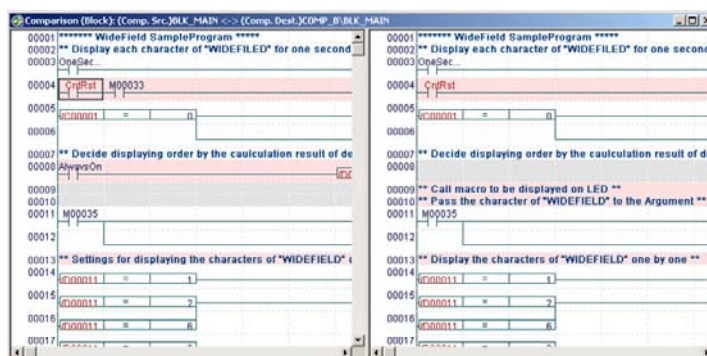
B0803\_12.VSD

## ■ Update with Latest Information

If there have been modifications to the content while displaying the comparison results, use the this function to perform a comparison again and update the screen display. The relevant procedure is given below.

### ◆ Procedure ◆

**(1) Make sure the comparison results screen is displayed.**



Step (1)

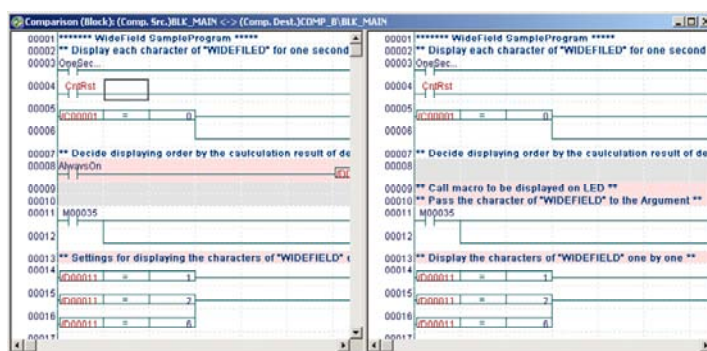
B0803\_13.VSD

**(2) Select [Compare Files]-[Update with Latest Information] from the menu bar.**

⇒ The comparison is performed again, and the screen is updated.

**TIP**

In the operation example, the comparison is performed again applying conditions to the comparison source program that are consistent with the comparison destination program.



Step (2)

B0803\_14.VSD

## B9. Simple Find

You can perform searches easily using the Find Bar from a project edit window, tag name definition window, monitor window or an online edit window. Two types of Find functions are available:

- Find Device
- Find in Project

The layout of the Find bar is shown below.

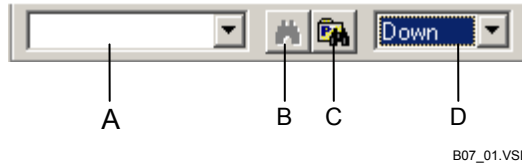


Figure B9.1 Find Bar

- Enter the search string. You may include the wildcard character ("\*") in the search string.
- B Find Device  
Clicking this icon button searches for a device in the active window, and scrolls the screen to display the search string if it is found.
- C Find in Project  
Clicking this icon button performs a search within a project and displays the search result in a Results of Project Search window.
- D Select the search direction. This applies only when performing a Find Device operation.  
If [Top] is selected, the search proceeds downwards from the top.  
If [Down] is selected, the search proceeds downwards from the cursor position to the last line.  
If [Up] is selected, the search proceeds upwards from the cursor position to the first line.

---

### TIP

To toggle between showing and hiding the find bar, use [View]–[Toolbar].

---

## B9.1 Find Device

Clicking the Find Device icon on the Find Bar searches for a device in the active window, and scrolls the screen to display the search string if it is found. To find a device, use the following procedure.


### ◆ Procedure ◆

- (1) Enter the search string in the text field on the Find Bar.

#### TIP

Pressing the Tab key in a ladder program edit window or a tag name definition window automatically copies the name of the device at the position cursor to the Find Bar.

- (2) Select the search direction.

- (3) Click the [Find] button  or press the [Enter] key.

⇒ Search begins. The screen scrolls to display the search object if it is found.

#### TIP

You can perform steps 1 to 3 above using the [Ctrl]+[F3] keys. Pressing [Ctrl]+[F3] in a ladder program edit window or a tag name definition window displays the next candidate using the device at the position cursor as the search string. Search proceeds in the search direction displayed in the Find Bar.



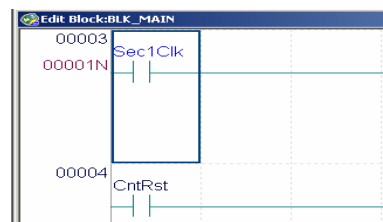
Steps (2) and (3)

B0701\_01.VSD

- (4) To continue, press the [Enter] key.

⇒ The position cursor moves to the next candidate found.

- (5) To move the window focus to the ladder program edit window or tag name definition window at the end of a search, press the [Esc] key.



Steps (4) and (5)

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#### TIP

- After finding a search candidate using Find Device, you can continue to search downwards for the next candidate, starting from the position cursor location by selecting [Find]–[Find Next] or by pressing the [F3] key. Pressing the [Shift]+[F3] keys searches upwards for the next candidate, starting from the position cursor location.
- Up to 16 search strings from previous searches are stored for each project. These are available for selection from the leftmost drop-down list box in the Find Bar for subsequent searches.



### CAUTION

If the search object is found in a hidden circuit, the circuit will be displayed.

### SEE ALSO

For details of finding devices, see Section B4.7.1, “Finding Device” and Section B5.2.4, “Find Function”.



## ◆ Procedure ◆

- TIP**

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**TIP**

## SEE ALSO

For details on searching within a project, see Section B7.2.2, “Finding in Project”.

## B9.3 Changing Search Conditions

Some search conditions cannot be specified when initiating a search from the Find Bar.

Searches initiated from the Find Bar proceed with the following default conditions:

- Loop Search='On'
- Search Object='Displayed Device'

You can, however, change these default conditions, such as changing Loop Search from 'On' to 'Off', or switching the search from 'Displayed Device' to 'Used Device'.

To do so, modify file "FindCondition.ini" in the "Fam3sys" folder where WideField2 is installed using a text editor, save the file and restart WideField2.

### ■ To Disable Loop Search

Change the value of the Loop variable in file "FindCondition.ini" from "On" to "Off".

Before change:

```
Device=Tag
Num=1
Start=Down
Loop=On
```

After change:

```
Device=Tag
Num=1
Start=Down
Loop=Off
```

### ■ To Change Search Condition from 'Displayed Device' to 'Used Device':

Change the value of the Device variable in file "FindCondition.ini" from "Tag" to "Use".

Before change:

```
Device=Tag
Num=1
Start=Down
Loop=On
```

After change:

```
Device=Use
Num=1
Start=Down
Loop=On
```



### CAUTION

Changing the value of a variable other than the Loop variable or Device variable or changing the Loop variable or Device variable to an invalid value will affect normal operation of WideField2.

# B10. Printing

This chapter describes how to print programs created with WideField2 and information displayed in windows.

## ■ Types of Printing

The Print function supports printing of active windows (Print Screen) and data components of a project (Print Project).

### ● Printing a Screen

The Print Screen function prints the active window. The following windows can be printed.

- Ladder program edit window
- System log and user log display windows
- Group template definition window
- Circuit monitor screen
- Alarm display window

#### TIP

When printing instruction parameters of circuits, addresses allocated to tag names are also printed, but addresses of structure members are not printed.

### ● Printing a Project

The Print Project function batch-prints all types of data components (program configuration, blocks, user log, common tag name definition, etc.) of a project.

#### TIP

When printing instruction parameters of circuits, addresses allocated to tag names are also printed, but addresses of structure members are not printed.



## CAUTION

Constant definitions are not printed.

## ■ Print Setup

Prior to printing from WideField2, you can perform setup for printer settings, print layout settings and detailed settings as required.

- Printer Setup  
Sets the printer model, paper size, and paper orientation.
- Page Setup  
Sets print layout items such as margins.
- Detailed Print Setup  
Sets additional information (such as cross references and tag name definitions) for printing circuits, cover text, header and footer print items.

## B10.1 Printer Setup

This section describes how to perform printer settings (printer name, paper size and document orientation).

### ◆ Procedure ◆

(1) Select [File]–[Print Setup] from the menu.

⇒ The Print Setup dialog box opens.

(2) Select a printer model from the list box.

#### TIP

The printer list displays all printers connected to the computer.

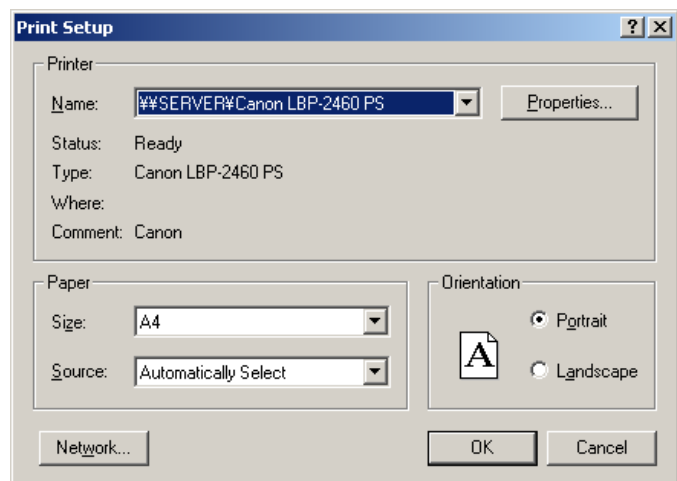
(3) Select the paper size and paper source.

(4) Select the page document by turning on the [Portrait] or [Landscape] option button.

(5) Click [Properties] to perform printer detailed settings as required.

(6) Click [OK].

⇒ The printer settings are enabled.



Steps (2) to (6)

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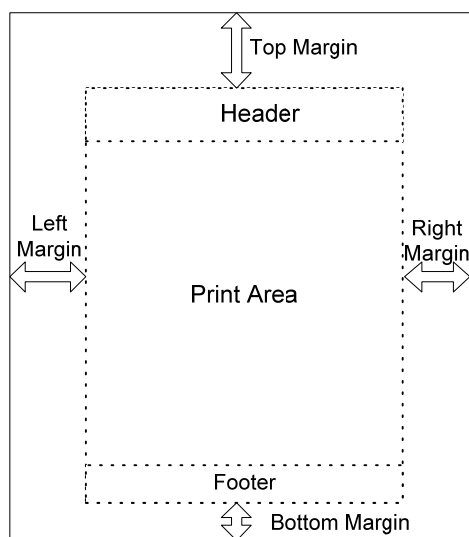
### CAUTION

Printer setup of a printer cannot be done unless the printer is connected.

## B10.2 Page Setup

The section describes how to define the page layout (e.g. margins and page numbers).

Pages are printed according to the page setup.



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**Figure B10.1 Print Layout**

To define the print layout, click [Page Setup] in the [Print] dialog box and set values in the Page Setup dialog box displayed.

The procedure for page setup is given below.

### ◆ Procedure ◆

(1) Select [File]–[Print] from the menu.

⇒ The Print dialog box opens.

(2) Click [Page Setup].

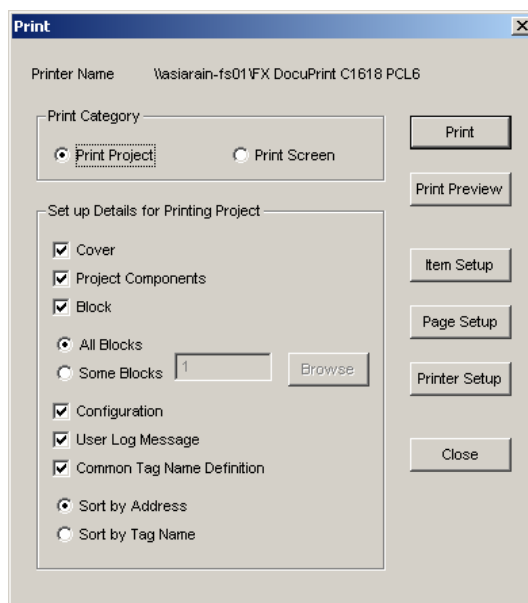
⇒ The Page Setup dialog box opens. The settings for paper size and paper orientation are displayed.

#### TIP

The paper size and paper orientation displayed cannot be changed in this dialog box. Use the printer setup function to change their values, if required.

#### SEE ALSO

For details on how to perform printer setup, see Section B10.1, "Printer Setup."



Step (2)

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**(3) Specify margins with the spin buttons.****(4) Specify the format for page numbers.****TIP**

Three page number format options are available. [None] prints no page numbers.

[Sequential Number] prints sequential numbers on each page. [Item-Page Number] prints page numbers with the “XX-YY” format where “XX” is an item number and “YY” is the page number within the item. [Item-Page Number] is enabled only for project printing. The default setting is [None].

**(5) Set the location for printing the page number.****TIP**

Select [Left], [Center], or [Right] for the print position of the page number. The default is [Right].

**(6) Set the initial value of the page number.****TIP**

The initial value of the page number is the page number to be printed on the first page. For sequential numbering format, enter the initial value for the page number. For Item-page number format, enter the initial value for the item number. The default setting is 1.

**(7) Select whether to print a header or footer.****(8) Click [OK].**

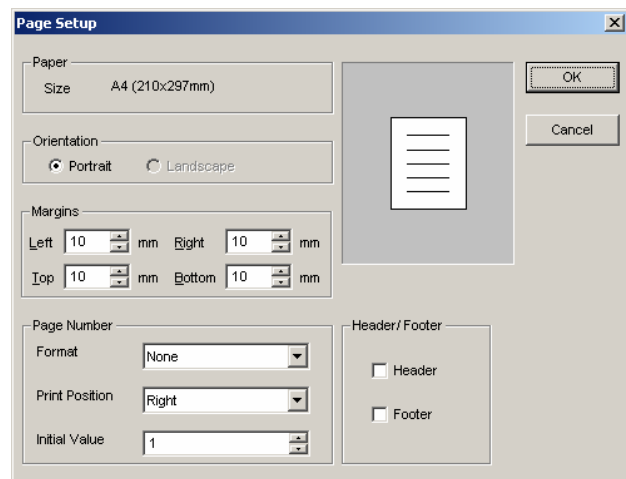
⇒ The Page setup dialog box closes. The settings are enabled.

**(9) Click [Close].**

⇒ The Print dialog box closes.

**TIP**

Clicking [Print] on the Print dialog box allows you to perform printing.



Steps (3) to (8)

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**TIP**

The item number printed for each print item by the Print Project function is shown in the table below. If an item is not to be printed, item numbers of subsequent items will be adjusted to fill the gap. Page numbers within items always start from 1.

**Table B10.1 Printed Item Numbers**

Print Item	Printed Item Number
Project configuration	Initial value
Block	Initial value + 1 ...
Blocks (where the number of blocks is N)	Initial value + 1 + (N - 1)
Configuration	Initial value + 2 + (N - 1)
User log messages	Initial value + 3 + (N - 1)
Common tag name definition	Initial value + 4 + (N - 1)

## B10.3 Detailed Print Setup

This section describes how to perform detailed settings for the following print items.

- Block and Instruction Macros
- Configuration
- Headers and Footers
- Cover

Use the [Block and Instruction Macro] tab to set whether to print circuits and tag name definitions, as well as to set print range for circuits.

Use the [Configuration] tab to set device capacities and set whether to print information such as the DIO settings.

Use the [Header/Footer] tab to edit the contents of the headers and footers on each page.

Use the [Cover] tab to edit the contents of the cover when printing a project.

Print items that are disabled for a print category are disabled in the display.

The procedure for setting the print items is given below.

### ◆ Procedure ◆

(1) Select [File]–[Print] from the menu bar.

⇒ The Print dialog box opens.

(2) Click [Item Setup].

⇒ The Item Setup dialog box opens.

(3) Select individual tabs in turn to perform print setup as required.

#### SEE ALSO

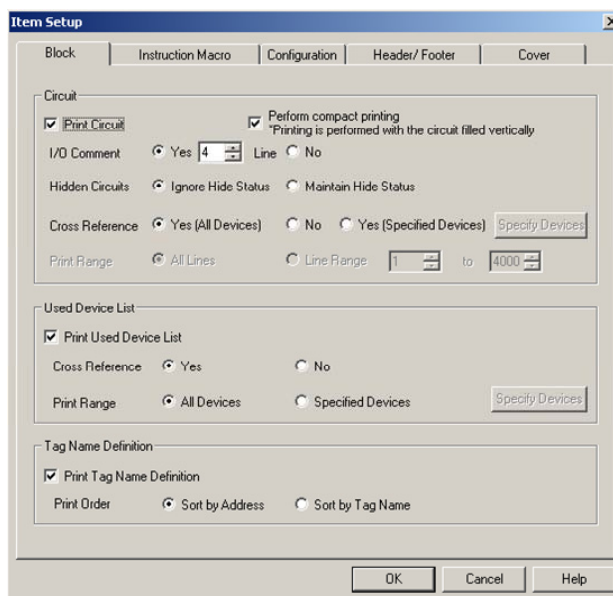
For details on each tab, see Section B10.3.1 “Settings Print Details for Blocks and Instruction Macros.”

(4) Click [OK].

⇒ The Item Setup dialog box closes and the settings are saved. Control returns to the Print dialog box.

(5) Click [Close].

⇒ The Print dialog box closes.



Steps (3) and (4)

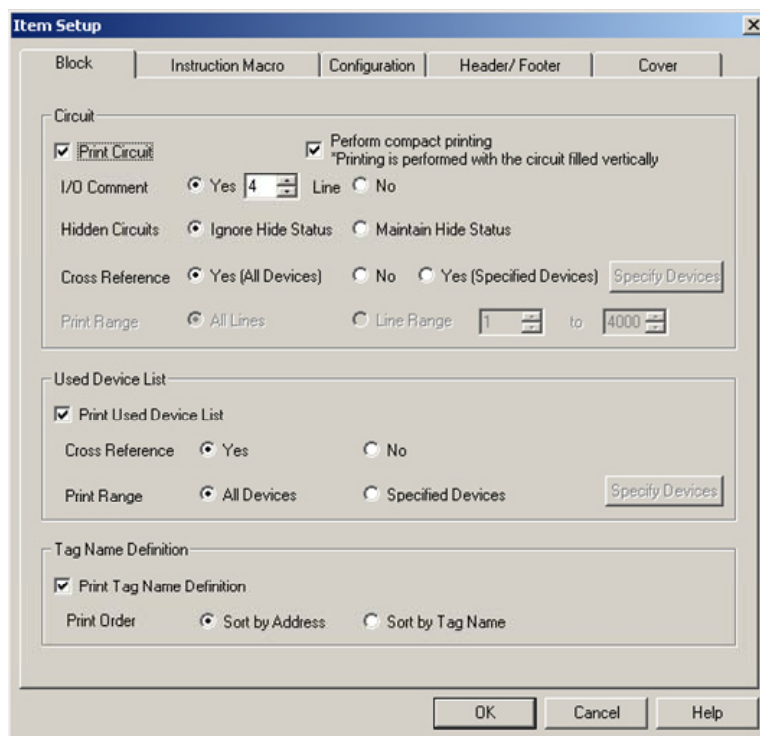
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## B10.3.1 Setting Print Details for Blocks and Instruction Macros

You can perform detailed setup for blocks and instruction macros.

These settings consist of circuit print settings, settings for printing the list of devices used in circuits and settings for printing tag name definitions.

### ■ Block Tab and Instruction Macro Tab



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Figure B10.2 Block Tab

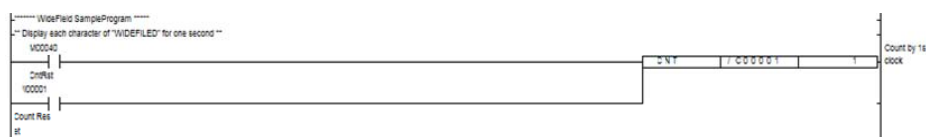
The displayed items in the [block] tab and the [instruction] tab are identical. These items are given below.

#### ● Print Circuit Checkbox

To print a circuit, turn on the [Print Circuit] checkbox. The detailed settings for circuits are as follows:

- Perform compact printing

You can select whether to remove the blank lines in the printed circuit, filling all lines in the vertical direction. When compact printing is used, there is an increase in the amount of circuit information printed on a single page, and the total number of printed pages is reduced.



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Figure B10.3 Output when Using Compact Printing



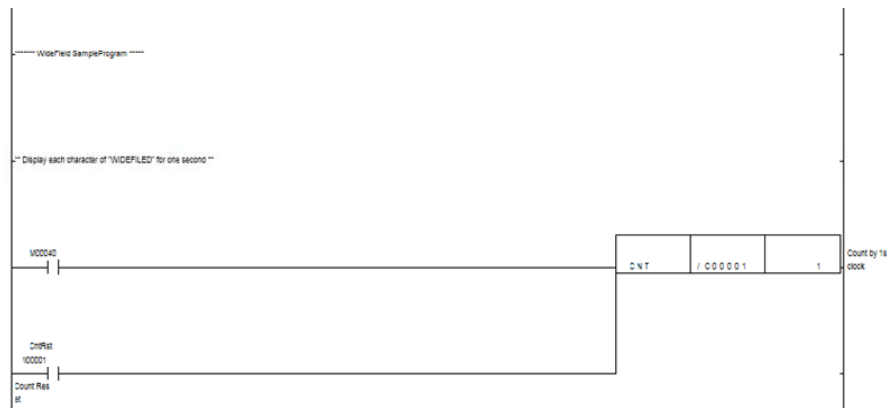


Figure B10.4 Output when Not Using Compact Printing

B1003\_04.VSD

**CAUTION**

If you perform compact printing for a program saved with errors, the program may not be printed correctly.

- I/O Comment

You can select whether to print the I/O comment under a device. Turn on either [Yes] or [No]. If [Yes] is on, set the number of lines to be printed from 1 to 4. The default setting is [Yes] with the number of lines to be printed set to 4.

- Hidden Circuits

You can specify whether to print hidden circuits in expanded format. Turning on the [Ignore Hide Status] option button expands hidden circuits before printing. Turning on the [Maintain Hide Status] prints hidden circuits as is. The default setting is [Ignore Hide Status].

Circuit: BLK003

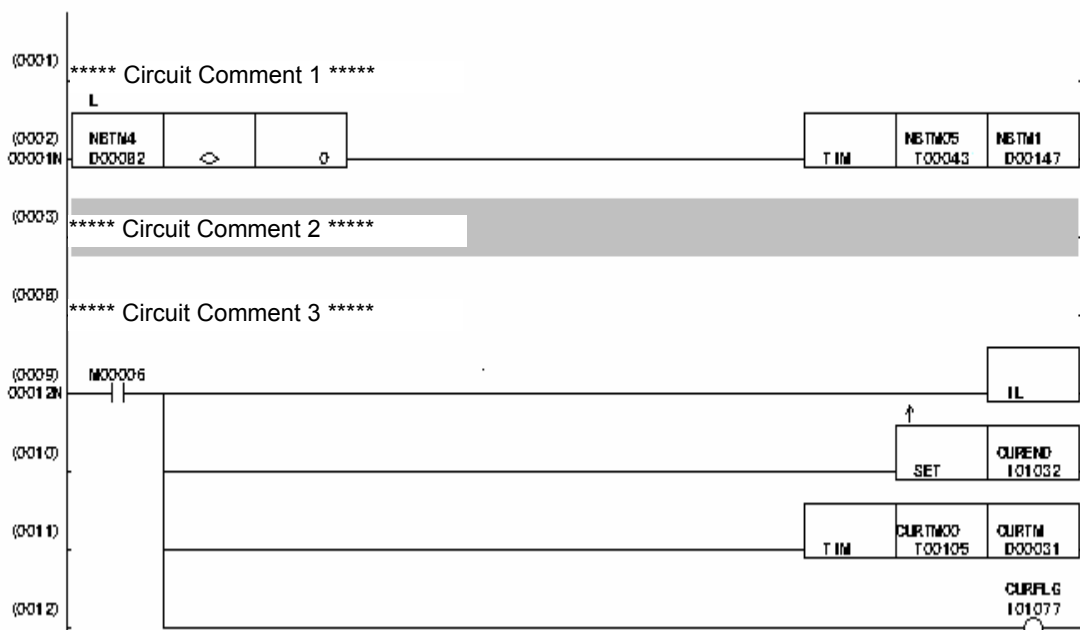


Figure B10.5 Printing with Hidden Circuits  
(The "\*\*\*\*\* Circuit Comment 2 \*\*\*\*\*" Line Indicates a Hidden Circuit.)

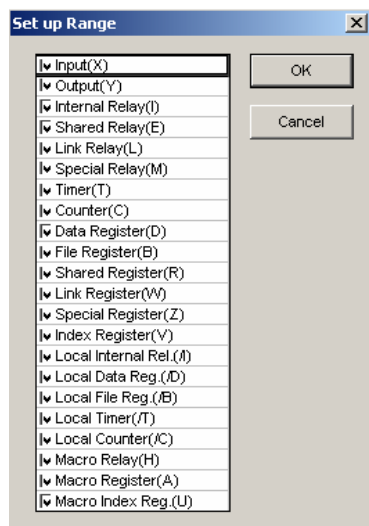
- Cross Reference

The cross reference item displays program locations where devices are used in circuits.

The locations (block name, instruction number and instruction) are printed in a list. Turn on the option button for either [Yes (All Devices)], [No], or [Yes (Specified Devices)] for printing cross reference under the circuit.

The default setting for the cross reference is [Yes (All Devices)].

When [Yes (Specified Devices)] option button is turned on, click [Specify Devices] and select the device type for which cross references are to be printed from the Set up Range dialog box.



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**Figure B10.6 Set up Range Dialog Box**

### TIP

The Set up Range dialog box displays a list of devices. Turn on the checkboxes of the devices to be printed, and click [OK] to save the settings. The Set up Range dialog box closes and control returns to the Item Setup dialog box.

- Print Range

Use the Print Range to specify the print range. Turn on the option button for either [All Lines] or [Line Range].

If [Line Range] is turned on, specify the start line number and end line number.

The default setting is [All Lines].

### ● **Print Used Device List Checkbox**

To print the list of devices used in a circuit, turn on the [Print Used Device List] checkbox. Detailed settings for the device list are given below.

- **Cross Reference**

Select whether to print cross references beside a device. Turn on the option button for either [Yes] or [No].

- **Print Range**

Sets the print range. Turn on the option button for either [All Devices] or [Specified Devices].

When [Specified Devices] button is turned on, click [Specify Devices] and select the device type to be printed from the Set up Range dialog box.

### ● **Print Tag Name Definition Checkbox**

To print tag name definitions, turn on the [Tag Name Definition] checkbox and select a print order ([Print Mode]). Turn on the option button for either [Sort by Address] or [Sort by Tag Name] to set the print order. The default setting is [Sort by Address].

## ■ Procedure for Setting Details for Blocks and Instruction Macros

To perform detailed settings for blocks and instruction macros from the Item Setup dialog box, use the following procedure.

### ◆ Procedure ◆

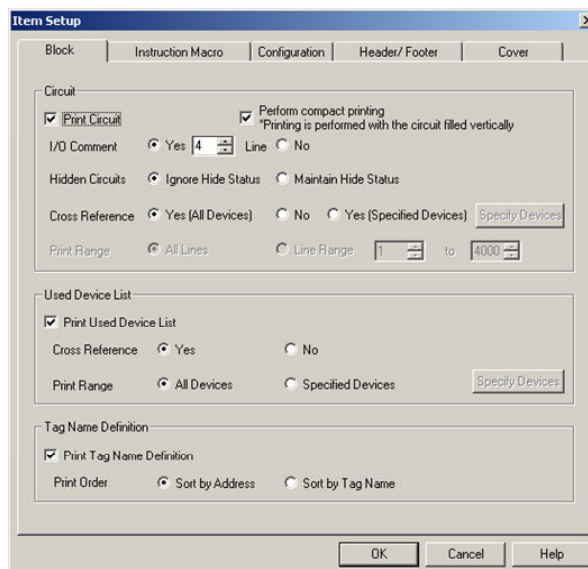
- (1) To set up blocks, click on the [Block] tab. To set up instruction macros, click on the [Instruction Macro] tab.

⇒ The selected tab is displayed.

- (2) To print a circuit, turn on the [Print Circuit] checkbox to set the I/O comment, cross reference and print range settings.

- (3) To print the list of devices used by a circuit, turn on the [Print Used Device List] checkbox and set the cross reference and print range settings.

- (4) To print tag name definitions, turn on the [Print Tag Name Definition] checkbox and set the print order.



Steps (1) to (4)

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### TIP

Clicking [OK] sets the print details and closes the Item Setup dialog box.



### CAUTION

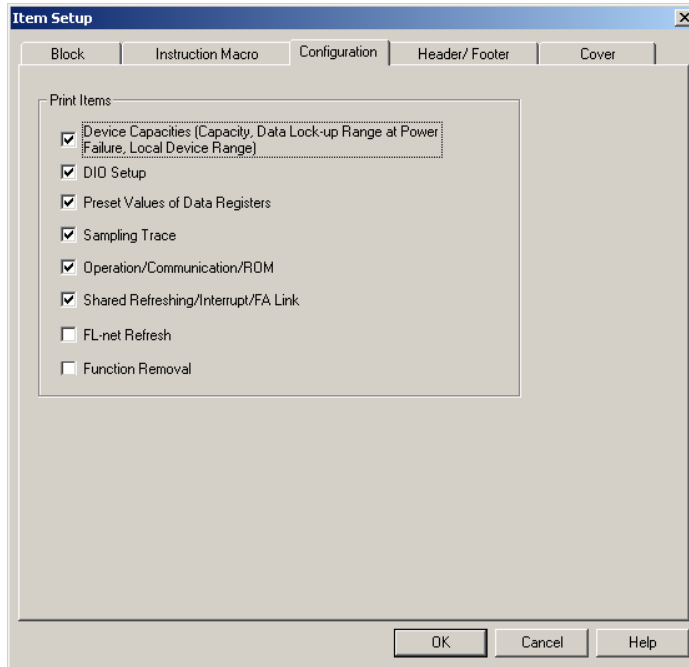
For project printing, all lines are printed even if a line range for printing circuits is specified.

## B10.3.2 Setting Print Details for Configuration

Use the configuration tab to define the configuration printout.

### ■ Configuration Tab

The following configuration items can be printed.



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Figure B10.7 Configuration Tab

### ■ Procedure for Setting Print Details for Configuration

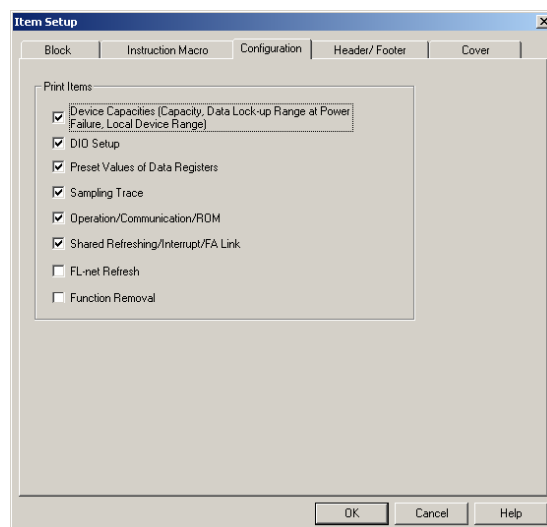
To set print details for configuration on the Item Setup dialog box, use the following procedure.

#### ◆ Procedure ◆

(1) Click the [Configuration] tab.

⇒ The [Configuration] tab appears.

(2) Turn on checkboxes for items to be printed.



Steps (1) and (2)

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**TIP**

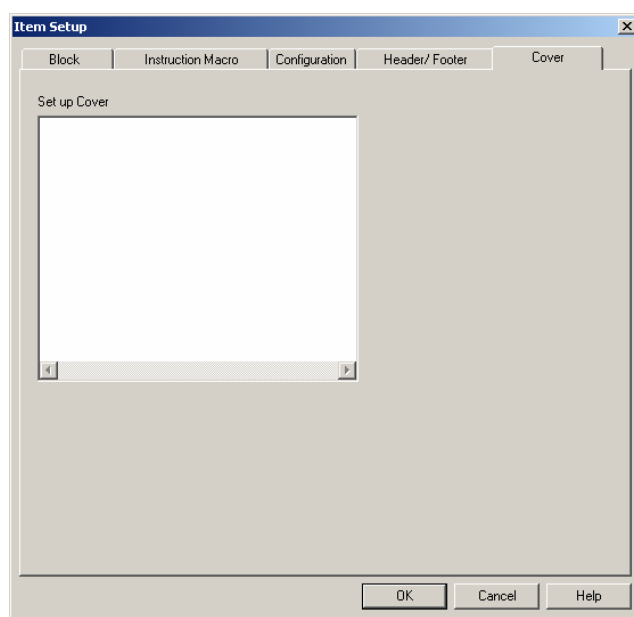
Clicking [OK] sets the print details settings and closes the Item Setup dialog box.

### B10.3.3 Setting Cover and Header/Footer

The Set up Cover, Header/Footer function allows you to set up printing of the cover, the header and the footer.

#### ■ Cover Tab

The cover can be set for up to 64 characters horizontally and 16 lines vertically. To start a new line, press the [Enter] key. Line and character format attributes cannot be used on the cover.

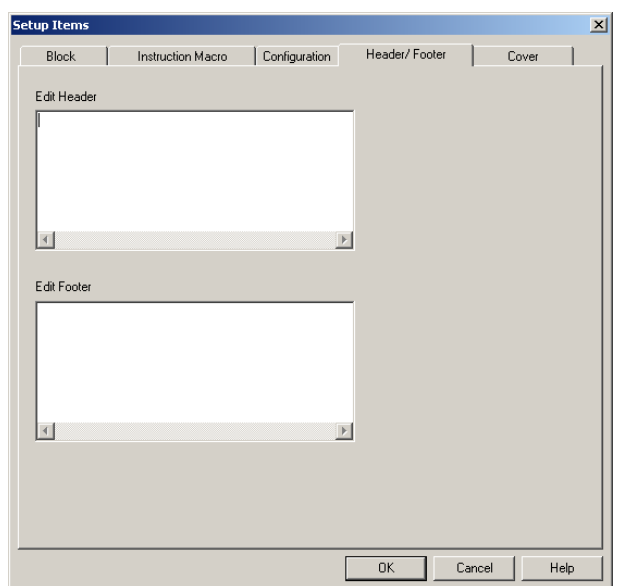


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Figure B10.8 Cover Tab

## ■ Header/Footer Tab

The header and footer can be set for up to 108 characters horizontally and 8 lines vertically. To start a new line, press the [Enter] key. Line and character format attributes cannot be used in headers and footers.



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**Figure B10.9 Header/Footer Tab**

### TIP

The following text strings can be entered in a header or footer to insert various data items (the text strings are not case-sensitive).

- &DATE       Prints the current date. Example: 07/21/1998.
- &TIME       Prints the current time. Example: 15:30
- &CPU       Prints the name of the selected CPU. Example: F3SP21-0N.  
This item is valid for the Print Project function only. It is ignored by the Print Screen function.

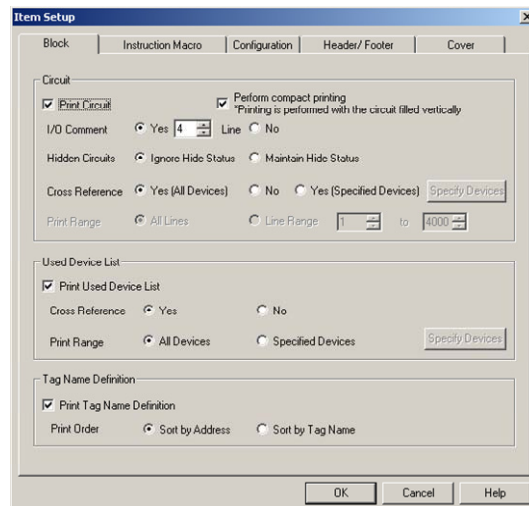
## ■ Procedure for Setting Details for Cover, Header/Footer

Use the following procedure to perform detailed setting for printing the cover, the header/footer in the Item Setup dialog box.

## ◆ Procedure ◆

(1) To set the cover, click the [Cover] tab.

⇒ The Cover tab screen is displayed.

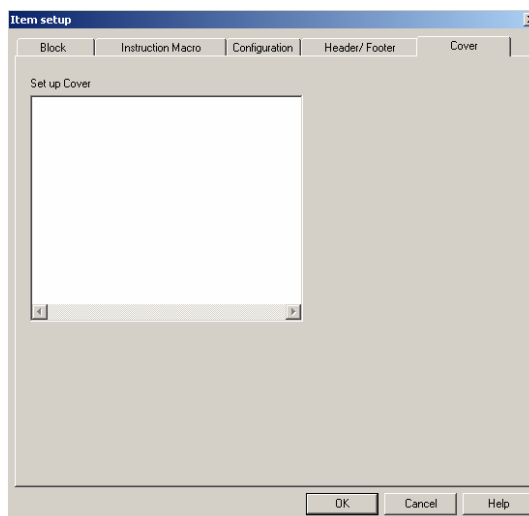


Step (1)

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(2) Edit the cover.

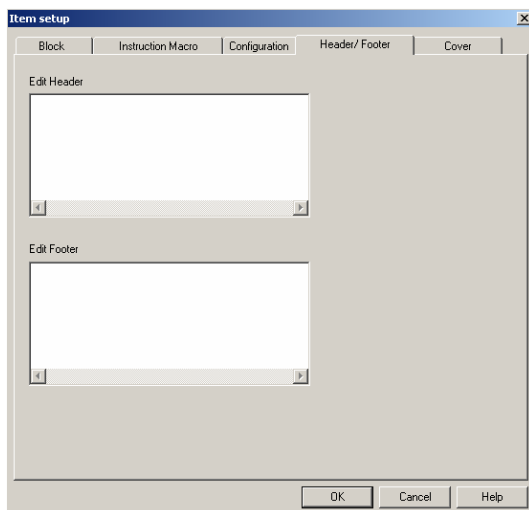
(3) To set the header or footer, click the [Header/Footer] tab.



Steps (2) and (3)

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(4) Edit the header and footer



Step (4)

B07\_09\_01.VSD

### TIP

Clicking [OK] enables the detailed print settings, and closes the Item Setup dialog box.



## B10.4 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.

### B10.4.1 Printing a Screen

The following table lists the windows that can be printed using the Print Screen function.

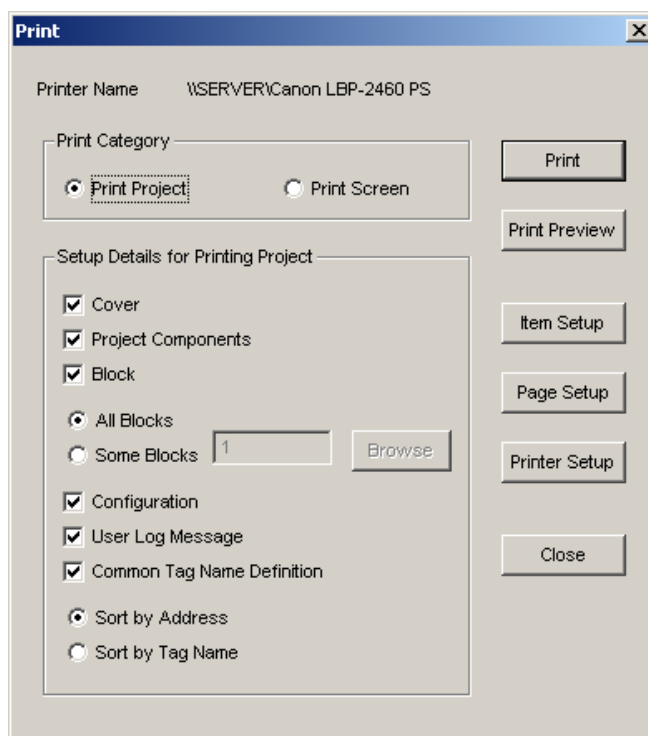
**Table B10.2 Printing Screens**

Window	Description
Block edit	Prints the circuits and tag name definitions of the block being edited. Converted items are printed.
Macro edit	Prints the circuits and tag name definitions of the instruction macro being edited. Converted items are printed.
System log display	Prints the system log being displayed. The log can be read from the file or from the CPU.
User log display	Prints the user log being displayed. The log can be read from the file or from the CPU.
Group template definition	Prints the group template being edited.
Alarm display	Prints the alarm monitor currently being displayed.
Program monitor	Prints the circuits and tag name definitions in the monitor window. Blocks and instruction macros can be printed. Printed content is either the same content displayed when the program monitor is started, or content changed in online editing.

To print a screen, use the following procedure.

#### ◆ Procedure ◆

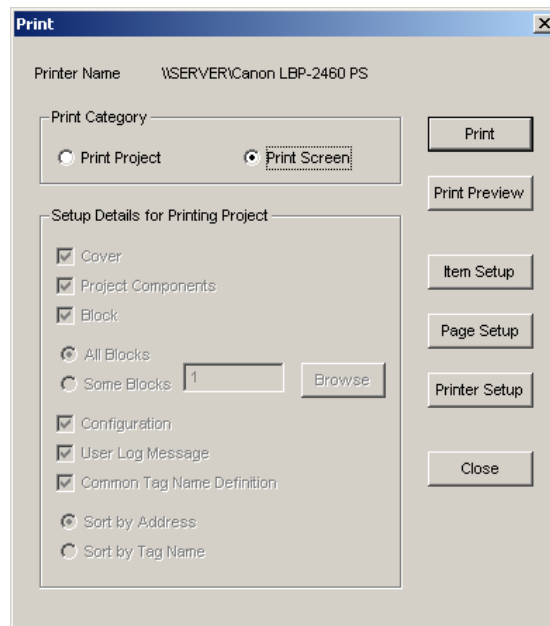
- (1) Make the screen to be printed the active window.
- (2) Select [File]–[Print] from the menu bar.  
⇒ The Print dialog box appears.
- (3) In the [Print Category] group box, turn on the [Print Screen] option button.



Step (3)

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- (4) Click [Print].  
⇒ Printing begins.

**TIP**

Step (4)

B07\_10.VSD

You can check the print image prior to printing by clicking [Print Preview].

If you click the [Print] button or [Print Preview] with a ladder program edit window (tag name definition window) open after having made changes on the window, a confirmation dialog box will be displayed.

## B10.4.2 Printing a Project

With the Print Project function, you can select data components of a project and perform batch printing. The following table lists items that can be printed.

**Table B10.3 Printing a Project**

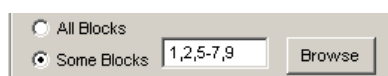
Target Item	Description
Cover	Prints the cover with a border.
Project Components	Prints the component blocks of the executable program in the form of a tree structure.
Block	Prints circuits and tag name definitions. It prints content saved in files.
Configuration	Prints the configuration. It prints content saved in file.
User Log Message	Prints the user log messages. It prints content saved in file.
Common Tag Name Definition	Prints common tag name definitions. It prints content saved in file.

### ■ Setting items in Print Project

Turn on the checkboxes of items to be printed. If you have turned on the checkboxes for block and tag name definition, you must perform detailed settings for these items.

#### ● Block Checkbox

For the [Block] checkbox, you need to also select a block range. You may turn on either the [All Blocks] or the [Some Blocks] option button. If you have selected [Some Blocks], enter the desired block numbers in the block selection textbox besides [Some Blocks], using commas to separate the block numbers. To print consecutive blocks, use a hyphen ('-') between a start number and an end number. Enter 0 for the sensor control block.



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**Figure B10.10 Example for Block Number Setting (for Printing Blocks 1, 2, 5, 6, 7 and 9)**

You can also select blocks to be printed by clicking [Browse]. Turn on checkboxes of blocks to be printed on the Block List dialog box, and click [OK]. The Block List dialog box closes and the selected blocks are entered into the block selection textbox.

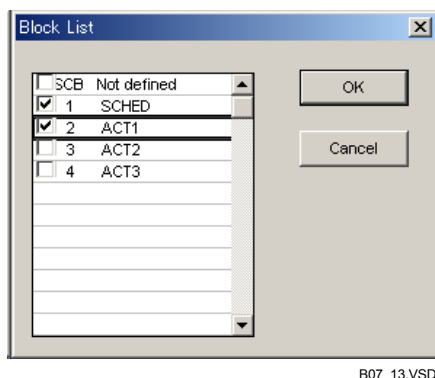


Figure B10.11 Block List Dialog Box

### ● Common Tag Name Definition Checkbox

Turn on the [Common Tag Name Definition] checkbox to print the common tag name definition. Select [Sort by Address] or [Sort by Tag Name] for the print order.

### SEE ALSO

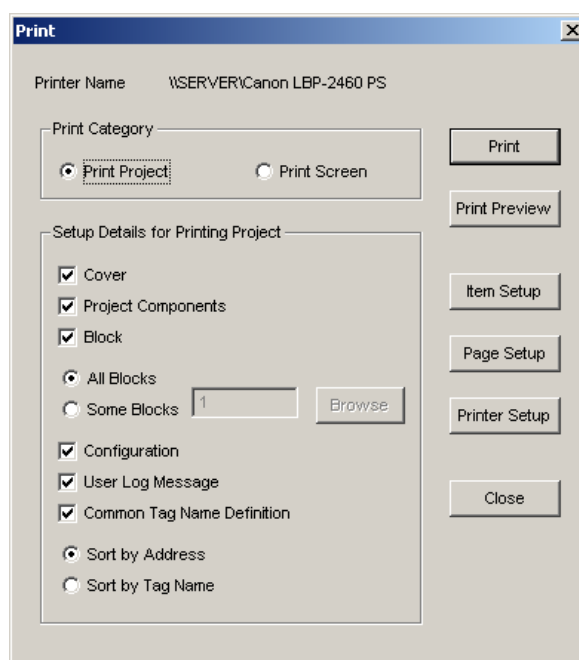
For details on setting individual print items. See Section B10.3, "Detailed Print Setup".

## ■ Procedure for Using Print Project Function

The procedure for printing a project is given below.

### ◆ Procedure ◆

- (1) Confirm that a project is opened.
- (2) Select [File]–[Print] from the menu bar.  
⇒ The Print dialog box appears.
- (3) Select [Print Project] for [Print Category].
- (4) Turn on checkboxes for items to be printed.
- (5) Set the print details for each item, as required.
- (6) Click [Print].  
⇒ Printing begins.



Steps (3) to (6)

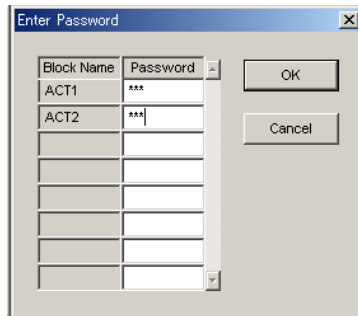
B07\_11.VSD

**TIP**

You can check the print image prior to printing by clicking on [Print Preview].

**CAUTION**

If some of the blocks to be printed are protected, the Enter Password dialog box appears with a list of protected blocks. Enter all the passwords and click [OK] to begin printing.



**Figure B10.12 Password Confirmation Dialog Box**

### B10.4.3 Procedure for Previewing Print Image

You can click [Print Preview] in the Print dialog box to switch to the Print Review window that displays an image of the printout.

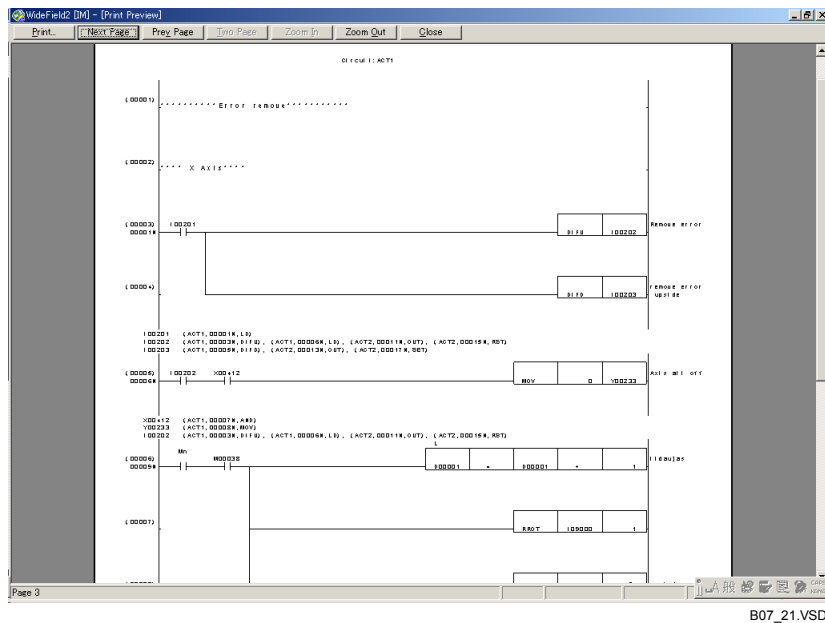


Figure B10.13 Print Preview

The following table summarizes the functions of the Print Preview buttons.

Table B10.4 Functions of Buttons in the Print Preview Window

Button	Function
Print	Starts printing.
Next Page	Displays the print image for the next page.
Previous Page	Displays the print image for the previous page.
Two Page	Displays the print image for two pages at a time.
Zoom In	Enlarges the image on the display.
Zoom Out	Reduces the image on the display.
Close	Closes the print preview window.

\*1: Clicking the [Two Page] button toggles between one-page and two-page layout.

You may click on [Print] in the Print Preview window to start printing, or click on [Close] to close the Print Preview window and return to the Print dialog box.



#### CAUTION

- For the Print Screen function, the Print Preview window displays the first or the second page of the screen.
- For the Print Project function, the Print Preview window displays the first or the second page of each print item.

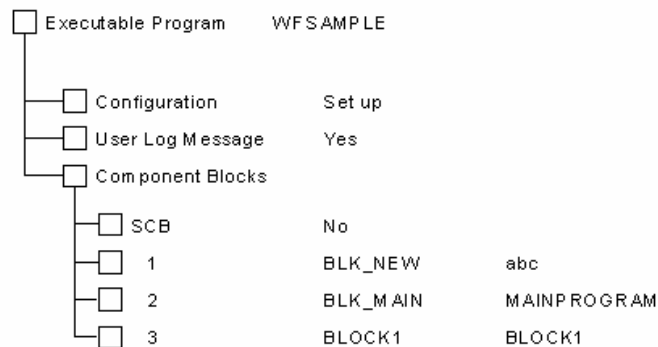
## B10.5 Print Layout

This section describes the print layout for the major print items.

### B10.5.1 Print Layout for Project Components

The project name, CPU type, project title and project components are printed as shown below.

Project Name	WFSAMPLE
CPU Type	F3SP67-6S
Project Title	WideField Sample Program



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**Figure B10.14** Print Layout for Project Components

## B10.5.2 Print Layout for Circuits

Circuits and cross references are printed as shown below.

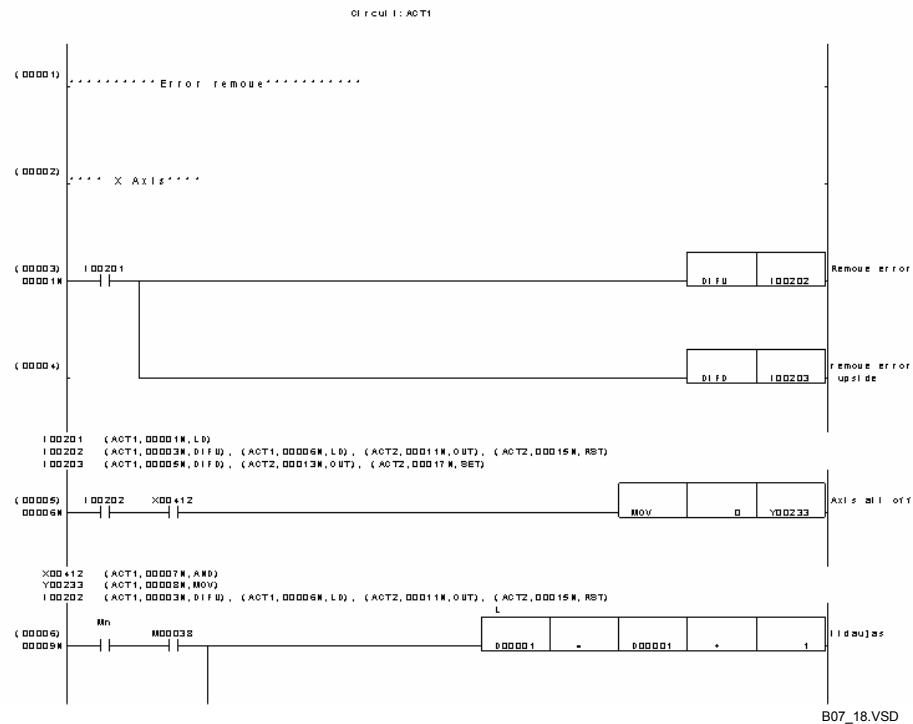


Figure B10.15 Print Layout for Circuits



### CAUTION

- Up to 200 lines of cross references can be printed for each circuit.
- Up to 10 lines of cross references can be printed for each device. Excess lines are not printed.
- Constant values mapped to constant names are printed up to a maximum of 8 characters.

## B10.5.3 Print Layout for Tag Name Definitions

Tag name definitions, tag names, addresses and I/O comments are printed as shown below.

Address	Tag Name	I/O Comment
X00412		
Y00233		
I00201		
I00202		
I00203		
M0033	Mn	
O0011	O0	comment
O0102	O02	comment

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Figure B10.16 Print Layout for Tag Name Definitions

## B10.5.4 Print Layout for Configuration

The configuration is printed as shown below using the printout for device capacities settings as an example.

Device Capacities

Device	Symbol	Device Points	Global	Local Range	Lock-up Range at Power Failure
Internal Relay	I	[ 1030 ± ]	[ 1 ]-[ 1030 ± ]	[ 10001 ]-[ 10032 ]	[ 1 ]-[ 102 ± ]
Shared Relay	E	[ 0 ]			
Extended Shared Relay	E	[ 0 ]			
Link Relay	L	[ 8102 ]			
100ms Timer	T	[ 0 ]	[ 1 ]-[ 1 ]		[ 1 ]-[ 1 ]
1ms Timer	T	[ 0 ]	[ 1 ]-[ 1 ]		[ 1 ]-[ 1 ]
10ms Timer	T	[ 512 ]	[ 1 ]-[ 512 ]	[ 1 ]-[ 1 ]	[ 1 ]-[ 1 ]
100ms Timer	T	[ 1 ± ]	[ 513 ]-[ 000 ]		[ 1 ]-[ 1 ]
100ms Continuous Timer	T	[ 0 ± ]	[ 001 ]-[ 102 ± ]		[ 001 ]-[ 102 ± ]
Counter	C	[ 102 ± ]	[ 1 ]-[ 102 ± ]	[ 1001 ]-[ 1010 ]	[ 1 ]-[ 102 ± ]
Data Register	D	[ 1030 ± ]	[ 1 ]-[ 1030 ± ]	[ 10001 ]-[ 10020 ]	[ 1 ]-[ 1030 ± ]
Shared Register	R	[ 0 ]			
Extended Shared Register	R	[ 0 ]			
Link Register	W	[ 8102 ]			
File Register	B	[ 2021 ± ]	[ 1 ]-[ 2021 ± ]	[ 1 ]-[ 1 ]	Lockup All

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Figure B10.17 Print Layout for Configuration

## B10.5.5 Print Layout for System Log

The system log is printed as shown below.

System Log

Date	Time	Message	Code	Block Name	Position
2007/02/02	12:33:43	Startup completed	01-0c		SL0 T=001
2007/01/31	16:24:09	Power Off	03-00		
2007/01/31	12:36:24	Startup completed	01-0c		SL0 T=001
2007/01/31	10:39:34	Power Off	03-00		
2007/01/30	21:12:02	Startup completed	01-0c		SL0 T=001
2007/01/30	19:51:52	Power Off	03-00		
2007/01/29	10:44:26	Startup completed	01-0c		SL0 T=001
2007/01/26	15:30:44	Power Off	03-00		
2007/01/16	18:46:55	Startup completed	01-0c		SL0 T=001
2007/01/16	11:21:36	Power Off	03-00		
2007/01/16	10:58:12	Startup completed	01-0c		SL0 T=001
2007/01/16	10:56:59	Power Off	03-00		

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Figure B10.18 Print Layout for System Log



# B11. Overview of Online Functions

This chapter describes how to connect to an FA-M3 from a computer and gives an overview of the online functions. The online functions allow you to check the status of the sequence CPU by monitoring programs and devices, as well as displaying the system log and user log. Connection to the FA-M3 must be made from WideField2 before online functions can be used. This chapter describes procedures for connecting and disconnecting to an FA-M3, as well as limitations of online functions.

Table B11.1 lists the communication media with their availability for connection to different CPU types.

**Table B11.1 CPU Types and Available Communication Media**

Communication Media	F3SP66-4S F3SP67-6S	F3SP28-3S F3SP53-4S F3SP38-6S F3SP58-6S F3SP59-7S	Other CPU Types	Remarks
USB	✓	×	×	In a multi-CPU configuration, online connection can be made to all CPU modules via the port of any CPU that allows USB connection.
RS-232C	×	✓	✓	This includes connection via KM13 or a modem.
Ethernet	✓	✓	✓	This includes connection via an Ethernet Internet Module or via the Ethernet port of a CPU module.
FL-net	✓	✓	✓	This refers to connection via an FL-net (OPCN-2) Interface Module.

Table B11.2 lists the communication media with their availability for connection to different CPU types.

**Table B11.2 CPU Types and Available Online Functions**

Function	Item	F3SP66-4S F3SP67-6S	F3SP28-3S F3SP53-4S F3SP38-6S F3SP58-6S F3SP59-7S	Other CPU Types
Download	Project	✓	✓	✓
	Blocks/Macros	✓	✓	×
	Tag name definitions	✓	✓	×
	Comment	✓	✓	×
Upload	Project	✓	✓	✓
	Blocks/Macros	✓	✓	×
	Tag name definitions	✓	✓	×
	Comment	✓	✓	×
Compare	Project	✓	✓	✓
	Blocks/Macros	✓	✓	×
CPU properties related functions		✓	×	×
ROM-related functions		×	✓	✓
Other online functions		✓	✓	✓

**CAUTION**

- The program items that can be downloaded, the units for downloading or uploading, the ROM transfer mode, the program monitor format, and the availability of each online function depend on the type of the CPU to be connected.

Online functions that are not available for a specific CPU type are disabled in the toolbar and menu bar and an error message will be displayed if you attempt to use any of the functions.

- If WideField2 is connected online to a CPU and a program is downloaded to the same CPU from another computer, WideField2 may fail to operate correctly. If a program is downloaded from another computer, select [Online]–[Disconnect] to disconnect from the CPU and then select [Online]–[Connect] from the menu bar to perform reconnection before using the online functions.
- If both WideField2 and ToolBox applications are connected online concurrently from the same PC, communication errors may occur when the following operations are performed from WideField2: download, clear program, clear CPU properties, reset start, temporarily change communication speed, ROM transfer (from PC to ROM), ROM copy (from RAM to ROM) and erase ROM. Before performing any of these operations from WideField2, disconnect the online connection from within the ToolBox application.
- The display of tag names and various comments during online connection can be configured using the Online Comment Input tab of the Set up Environment dialog box.

## B11.1 Connecting and Disconnecting

Online functions can only be used when the FA-M3 is connected. Use the Communications Setup tab on the Set up Environment dialog box to set the connection destination.

### SEE ALSO

For details on communication setup, see Section B1.2.3, "Communication Setup."

### B11.1.1 Direct Connection

Direct connection establishes an online connection between WideField2 and FA-M3.

#### ■ USB Connection

The table below shows the system requirements for establishing an online connection using USB.

Compatible CPU Type	F3SP66-4S/F3SP67-6S
Connection Cable	USB1.1/2.0 compliant generic USB cable

### TIP

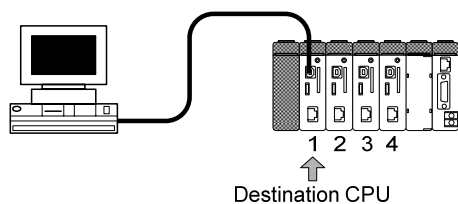
Depending on the chip set used by the PC running the WideField2 software, reliable USB connection is not always guaranteed.

The figures below show two possible configurations for USB connection.

- ◆ Connecting to a CPU using a USB cable attached to its USB port  
Connect a USB cable between the PC and the CPU module to be connected and initiate online connection, specifying the installation no. of the CPU module to be connected as the target CPU module.

For the example configuration shown below, the CPU number can be specified as either 0 or 1. (Specifying "0" initiates connection to the CPU module attached with the USB cable.)

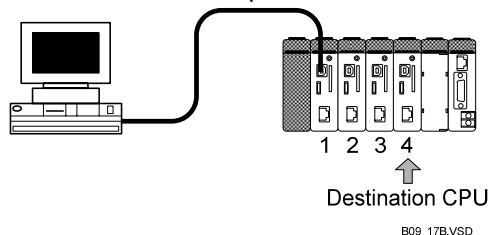
To connect to an add-on CPU, specify CPU 2, 3 or 4.



- ◆ Connecting to a CPU via the USB Port of another CPU

Connection can be made to a CPU not directly attached to a USB cable by going through another CPU attached with a USB cable.

As shown in the example configuration below, the USB cable is attached to CPU 1 but CPU 4 can be specified as the destination when initiating an online connection.



The procedure for online connection using USB is described below.

The table below lists the setup required for USB connection.

◆ Items to be specified in environment setup		
Item	Description	Value
Media	Select [USB].	
◆ Items to be specified when initiating a connection		
Item	Description	Value
Target Unit CPU No.	Specify the installed slot number of the actual CPU module to be connected. Note: Specifying 0 initiates connection attached with the USB cable.	0-4

## ◆ Procedure ◆

(1) Select [Online]–[Connect] from the menu bar.

⇒ A connection dialog box appears.

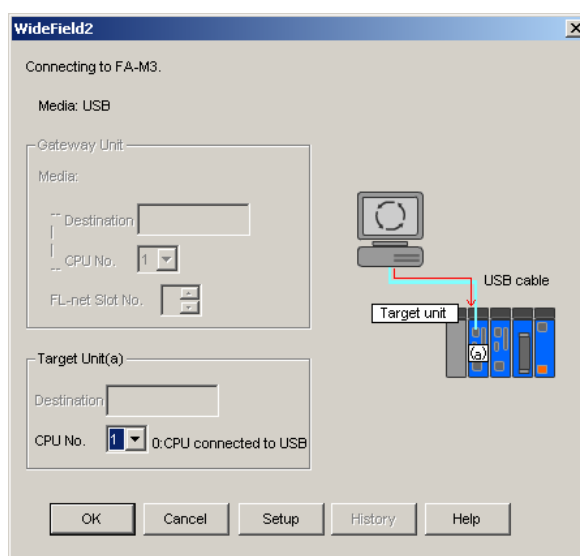
(2) For [CPU No.], enter the slot number of the CPU to be connected.

(3) Click [OK].

### TIP

If the executable program downloaded in the CPU is protected, a dialog box is displayed to confirm the password. Enter the password and click [OK].

⇒ FA-M3 is connected. If the FA-M3 connects successfully, the Action Monitor displays the LEDs and a 'RUN' status. Information about the connection destination is also displayed in the status bar.



Steps (1) and (2)

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## SEE ALSO

Before initiating online connection using USB, USB driver software for FA-M3 must be installed on the personal computer. For more details on the installation, see Section A4.5, "Installing USB Driver."



## CAUTION

If a USB connection is disconnected due to communication error, the USB driver may be in an unknown state. To rectify the problem, remove and re-attach the USB cable, or power off and then power on the FA-M3.

A USB connection may become unreliable or even disconnected due to noise. If this happens, remove and re-attach the USB cable to the PC.

## ■ RS-232C Connection

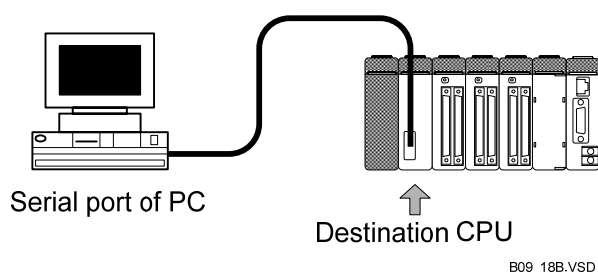
The table below shows the system requirements for establishing an online connection using RS-232C.

Compatible CPU Type	F3SP28-3S/F3SP53-4S/F3SP38-6S/F3SP58-6S/F3SP59-7S F3SP28-3N/F3SP53-4N/F3SP38-6N/F3SP58-6N F3SP21-0N/F3SP25-2N/F3SP35-5N/F3FP36-3N F3SP05-0P/F3SP08-0P/F3SP08-SP/F3SPV3-4H/F3SPV8-6H
Connection Cable	Special (KM11-*T/KM13-1*) cable

The figures below show the possible configurations for RS-232C connection.

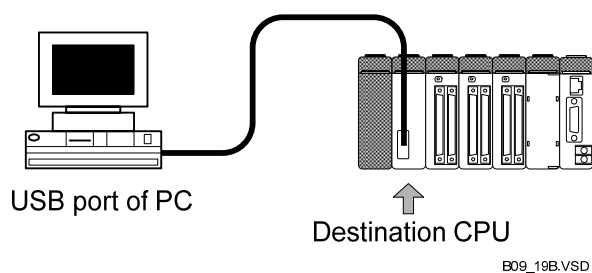
### ◆ Connecting Using Proprietary Cable / KM11-\*T

Connect a proprietary cable between the serial port of the PC and the PROGRAMMER port of the CPU module to be connected, and then initiate online connection.



### ◆ Connecting Using Proprietary Cable / KM13-1\*

Connect a proprietary cable between the USB port of the PC and the PROGRAMMER port of the CPU module to be connected, and then initiate online connection.



## TIP

Before initiating online connection using KM13-1\*, proprietary driver software must be installed on the personal computer.

The installation instructions and the driver software itself are provided with the cable.

The procedure for establishing an online connection using RS-232C is described below.

The table below lists the setup required for RS-232C connection.

◆ Items to be specified in environment setup		
Item	Description	Value
Media	Select [RS-232C].	
Connection Method	Specify the transmission speed and parity defined for the PROGRAMMER port. If "Automatic Recognition" is selected, connection is established automatically using the defined values.	[Transmission speed] 9,600/19,200 38,400/57,600 115,200 bps [Parity] Even/None
Automatically Set Communication Speed to the Highest Speed	When the connection starts, specify whether to modify the highest communication speed for the PROGRAMMER port.	ON/OFF
Communication Timeout	Specify the interval for timeout during communications. Note: For normal use, the default values can be used and no setup is required.	1-100 [s]
Number of Retries	Specify the number of retries in the event of communication failure. Note: For normal use, the default values can be used and no setup is required.	1-100 [attempts]
COM Port Number	Specify the serial port number on the PC.	COM1-COM100

## ◆ Procedure ◆

(1) Select [Online]–[Connect] from the menu bar.

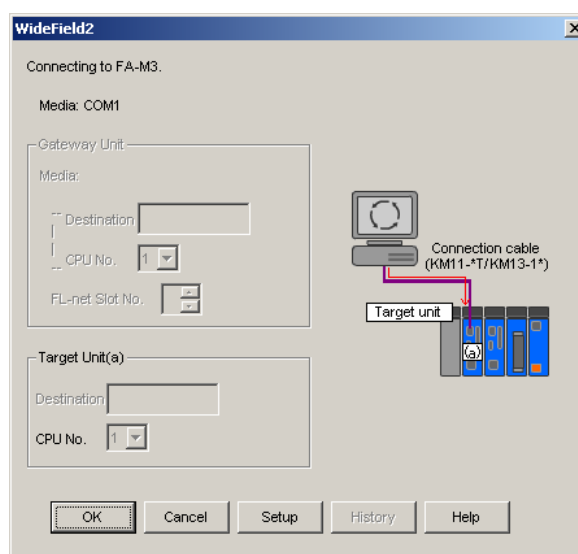
⇒ A confirmation dialog box is displayed.

(2) Click [Yes].

### TIP

If the executable program downloaded in the CPU is protected, a dialog box is displayed to confirm the password. Enter the password and click [OK].

⇒ FA-M3 is connected. If the FA-M3 connects successfully, the Action Monitor displays the LEDs and a 'RUN' status. Information about the connection destination is displayed in the status bar.



Step (2)

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Step (2)

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Status bar



Step (2)

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**CAUTION**

It may take a longer time to establish an RS-232C online communication in the following situations:

- When the [Connection Method] is set to [Automatic Recognition] on the Communications Setup tab of the Set up Environment dialog box. It takes time to search for a viable transmission rate among approximately 10 options. WideField2 remembers the transmission rate for a previous connection, so subsequent connections will be faster.
- When local devices are used with a CPU type other than F3SP28/38/53/58/59/66/67. The more blocks, the longer the time required to establish connection due to the time taken to read local devices.

**SEE ALSO**

For details on how to open and use the Set up Environment dialog box, see Section B1.2.1, "Basic Operations with the Set up Environment Dialog Box."

## ■ Ethernet Connection

The table below shows the system requirements for establishing an online connection using Ethernet.

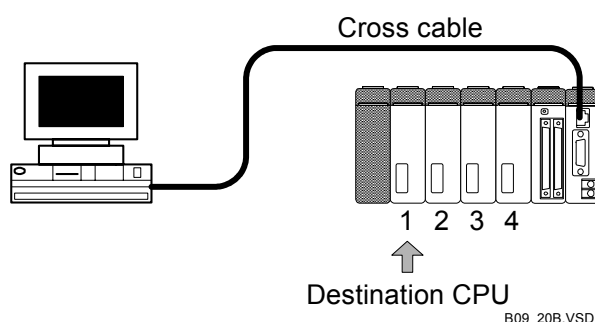
Compatible CPU Types	F3SP66-4S/F3SP67-6S <sup>*1</sup> F3SP28-3S/F3SP53-4S/F3SP38-6S/F3SP58-6S/F3SP59-7S F3SP28-3N/F3SP53-4N/F3SP38-6N/F3SP58-6N F3SP21-0N/F3SP25-2N/F3SP35-5N/F3FP36-3N F3SP05-0P/F3SP08-0P/F3SP08-SP/F3SPV3-4H/F3SPV8-6H
Connection Cable	Generic LAN cable Note: Select either a cross cable or a straight cable, depending on the configuration.

<sup>\*1</sup>: For F3SP66-4S/F3SP67-6S CPU modules, connection can be made using the Ethernet port on the CPU module or via an Ethernet Interface Module. In both cases, the procedure for connection from WideField2 is identical. The description in this chapter assumes connection via an Ethernet Interface Module for purpose of explanation.

The figures below show two possible configurations for Ethernet connection.

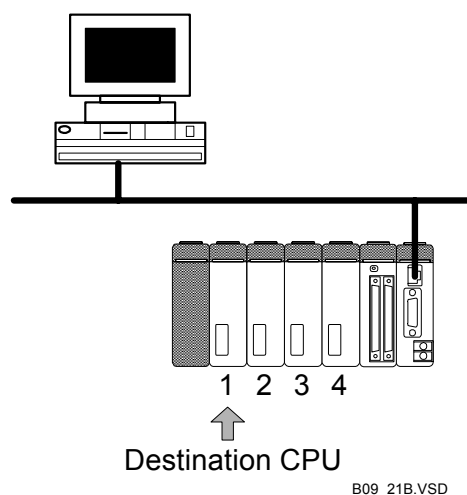
### ◆ Direct Connection

Connect a cross cable between the LAN port of the PC and the Ethernet Interface Module of the FA-M3 unit (or the Ethernet port of the CPU module if present). Even in the case of direct connection, network setup is required to identify the destination CPU.



### ◆ Connecting to FA-M3 over a Network

When connecting to FA-M3 on a network configured using Ethernet, the network setup of the PC must match the FA-M3 network.





The procedure for online connection using Ethernet is described below.

The table below lists the setup required for Ethernet connection.

◆ Items to be Specified in Environment Setup		
Item	Description	Value
Media	Select [Ethernet].	
Destination IP Address	Specify the network IP address or hostname defined in the Ethernet interface.	—
Connection Timeout	Specify a timeout interval for bad connection during communications.	1-120 s
◆ Items to be Specified When Initiating a Connection		
Item	Description	Value
Target Unit Destination	Specify the IP address or hostname defined in the network Ethernet interface. By default, the window displays the value defined in the environment setup or specified for the most recent connection.	—
Target Unit CPU No.	Specify the installed slot number of the actual CPU module to be connected.	1-4

## ◆ Procedure ◆

(1) Select [Online]—[Connect] from the menu bar.

⇒ A connection dialog box appears.

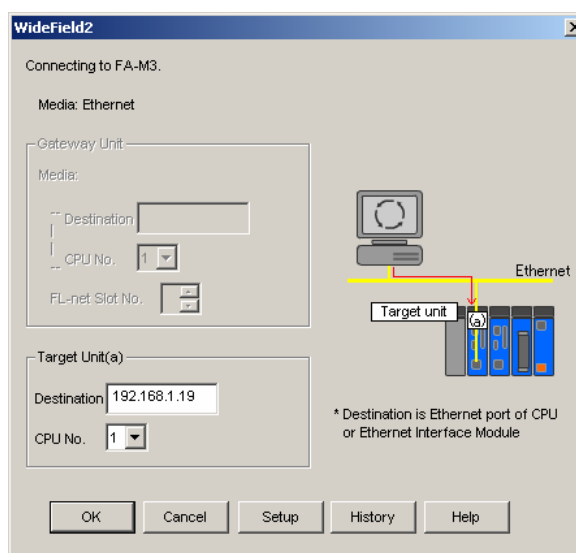
(2) Enter the IP address and slot number of the CPU and click [OK].

### SEE ALSO

For details on how to set up items in the Set up Environment dialog box, see Section B1.2.1, “Basic Operations with the Set up Environment dialog box.”

### TIP

If the executable program downloaded in the CPU is protected, a dialog box is displayed to confirm the password. Enter the password and click [OK].



Steps (1) and (2)

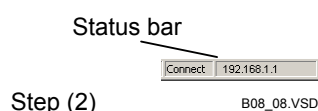
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⇒ FA-M3 is connected. If the FA-M3 connects successfully, the Action Monitor displays the LEDs and a 'RUN' status. Information about the connection destination is also displayed in the status bar.



Step (2)

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Step (2)

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## ■ FL-net Connection

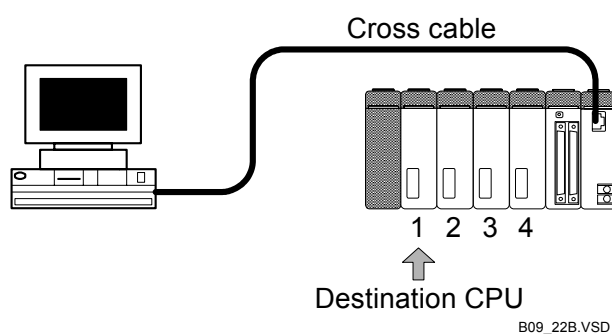
The table below shows the system requirements for establishing an online connection using FL-net.

Compatible CPU Types	F3SP66-4S/F3SP67-6S
	F3SP28-3S/F3SP53-4S/F3SP38-6S/F3SP58-6S/F3SP59-7S F3SP28-3N/F3SP53-4N/F3SP38-6N/F3SP58-6N F3SP21-0N/F3SP25-2N/F3SP35-5N/F3FP36-3N F3SP05-0P/F3SP08-0P/F3SP08-SP/F3SPV3-4H/F3SPV8-6H
Connection Cable	Generic LAN cable Note: Select either a cross cable or a straight cable, depending on the configuration.

The figures below show two possible configurations for FL-net connection.

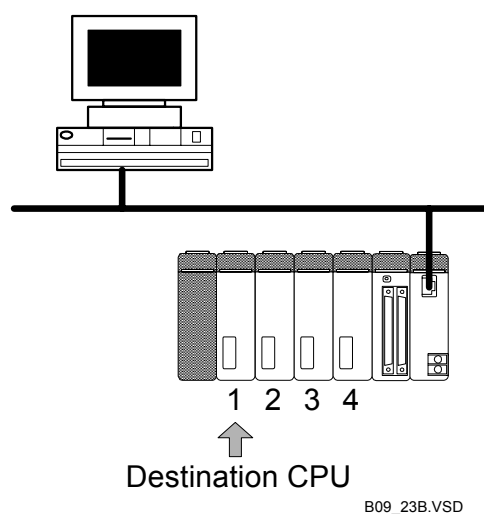
### ◆ Direct Connection

Connect a cross cable between the LAN port of the PC and the FL-net Interface Module of the FA-M3 unit. Even in the case of direction connection, network setup is required to identify the connection destination.



### ◆ Connecting to FA-M3 over a Network

When connecting to an FA-M3 network configured using FL-net, the network setup on the PC must match the FA-M3 network.



The FL-net connection function makes use of the vendor-specific message request and vendor-specific message response features of the message transmission and receiving functions of FL-net, and does not require any special setup if WideField2 is used.

Observe the following precautions and restrictions of the FL-net connection function.

(1) Compatible sequence CPU modules

FL-net connection is not available with the following CPU modules: F3SP05/08/21/25/35. Connection to sequencers from other suppliers is also not allowed.

(2) Accessing the same sequence CPU concurrently from multiple PCs

Using FL-net (OPCN-2) Interface Module enables concurrent access to the same sequence CPU module from up to 2 PCs.

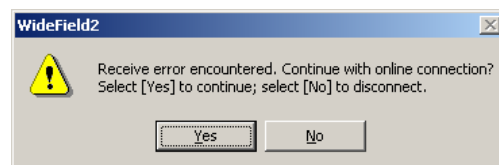
(3) Performance of remote maintenance

Due to the use of FL-net message transmission and receiving functions, the response speed for remote maintenance may deteriorate under the following conditions:

- Large common memory size
- Large number of nodes
- Frequent message communication among nodes

(4) Detaching the communication cable during online connection

Do not detach the communication cable between the PC and FA-M3 when the PC is connected to the FL-net. If you remove the communication cable, the following error message may be displayed on the PC. Click [No] to disconnect and reconnect.



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**Figure B11.1 Error Message**

## (5) List of FL-net connection error messages

The following table lists the error messages that may be displayed when the PC is connected to the FL-net.

**Table B11.3 List of FL-net Connection Error Messages**

Message	Cause	Troubleshooting
Communication error.(FFFF-0007)	Invalid network card specified in the local node setup of the environment setup.	Check the network card specified in the local node setup.
	Communication cable is detached.	Check the communication cable.
Error in sending /Error in receiving	The specified destination node is not an FA-M3 node.	Check the value specified for destination node.
	The specified destination node is not participating in the network, or the communication cable is detached.	- Check the node number of the IP address of the specified destination. - Check the communication cable.
	Invalid network card specified in the local node setup in the environment setup.	Check the network card specified in the local node setup.
	Invalid node number specified in the local node setup in the environment setup.	Check the node number specified in the local node setup.

Note: For an IP address used in FL-net, the three high bytes denote the network address, while the least significant byte denotes the host address (node number).

**CAUTION**

Use FL-net (OPCN-2) Interface Module revision 01:00 or later to connect to FL-net.

## (6) Exclusive access

Exclusive access control is not available to PCs connected via FL-net.

The procedure for online connection using FL-net is described below.

The table below lists the setup required for FL-net connection.

◆ Items to be specified in environment setup		
Item	Description	Value
Media	Select [FL-net].	
Node Number	Specify the node name defined in the FL-net interface of the network.	1-254
Set up Local Node	This setup identifies the local node (PC) as a node on the FL-net.	—
◆ Items to be Specified When Initiating a Connection		
Item	Description	Value
Target Unit FL-net Node No.	Specify the node number defined in the FL-net interface of the network. The window displays the value specified in the environment setup or specified for the most recent connection as default value.	1-254
Target Unit CPU No.	Specify the installed slot number of the actual CPU module to be connected.	1-4

## ◆ Procedure ◆

(1) Select [Online]–[Connect] from the menu bar.

⇒ A connection dialog box appears.

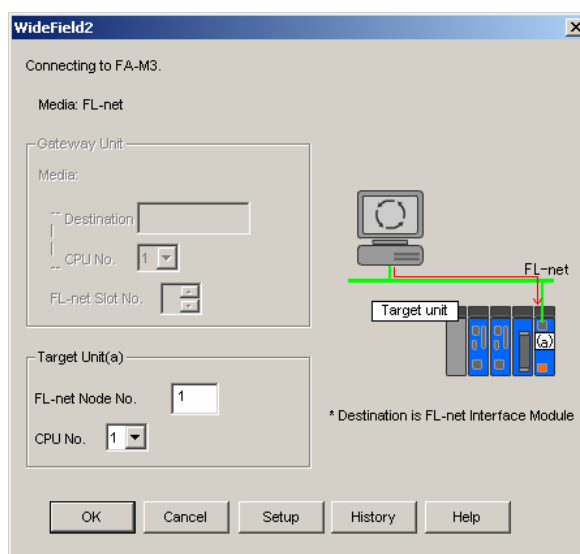
(2) Enter the FL-net node number of the unit installed with the destination CPU and the slot no. of the destination CPU and click [OK].

### SEE ALSO

For details on how to set up items in the Set up Environment dialog box, see Section B1.2.1 “Basic Operations with the Set up Environment dialog box.”

### TIP

If the executable program downloaded in the CPU is protected, a dialog box is displayed to confirm the password. Enter the password and click [OK].



Steps (1) and (2)

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⇒ FA-M3 is connected. If the FA-M3 connects successfully, the Action Monitor displays the LEDs and a 'RUN' status. Information about the connection destination is also displayed in the status bar.

## ■ RS-232C Connection Via Modem

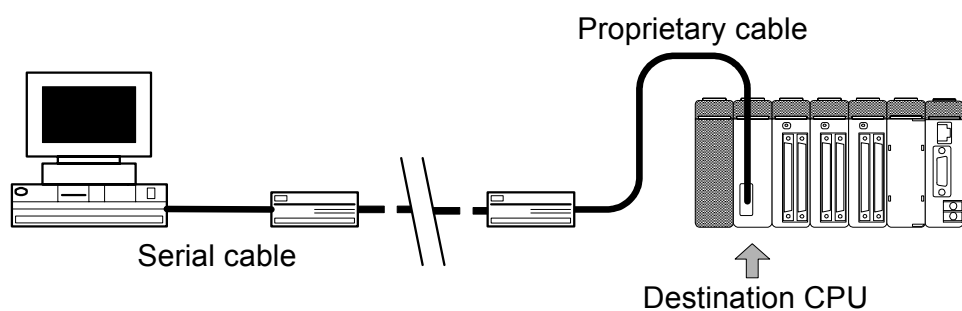
The table below shows the system requirements for establishing an online connection using RS-232C via a modem.

Compatible CPU Types	F3SP28-3S/F3SP53-4S/F3SP38-6S/F3SP58-6S/F3SP59-7S F3SP28-3N/F3SP53-4N/F3SP38-6N/F3SP58-6N F3SP21-0N/F3SP25-2N/F3SP35-5N/F3FP36-3N F3SP05-0P/F3SP08-0P/F3SP08-SP/F3SPV3-4H/F3SPV8-6H
Connection Equipment	Generic modem
Connection Cable	Proprietary (KM11-*T) cable, serial cable (straight cable)

The figure below shows the configuration for RS-232C connection via a modem.

### Basic Configuration for Connection Using a Modem and KM11-\*T Cable

Connect a serial cable (straight cable) between the serial port of the PC and a modem, and connect a proprietary cable between the PROGRAMMER port of the CPU module and a modem.



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The procedure for establishing an online connection using RS-232C via a modem is described below.

The table below lists the setup required for RS-232C connection via a modem.

◆ Items to be specified in environment setup		
Item	Description	Value
Media	Select [RS-232C via Modem].	
Connection Method	Specify the transmission speed and parity defined for the PROGRAMMER port. If "Automatic Recognition" is selected, connection is established automatically using the defined values.	[Transmission Speed] 9,600/19,200 38,400/57,600 115,200 bps [Parity] Even/None
Communication Timeout	Specify the interval for timeout during communications.	1-100 [s]
Number of Retries	Specify the number of retries in the event of communication failure.	1-100 (attempts)
COM Port Number	Specify the serial port number on the PC.	COM1-COM100
Phone Number	Specify the telephone number for modem dialing.	

## ◆ Procedure ◆

(1) Select [Online]–[Connect] from the menu bar.

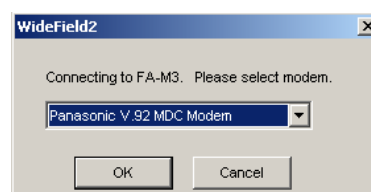
⇒ A confirmation dialog box is displayed.

(2) Select a modem from the modem drivers installed in the personal computer. Click [OK].



### CAUTION

Set up the modem by selecting [Control Panel]–[Modem] in Windows. Specify the phone number for connection in the Set up Modem dialog box.



Step (2)

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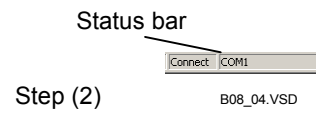
### SEE ALSO

For details on setting items in the Set up Modem dialog box, see Section B1.2.3, "Communication Setup."

### TIP

If the executable program downloaded in the CPU is protected, a dialog box is displayed to confirm the password. Enter the password and click [OK].

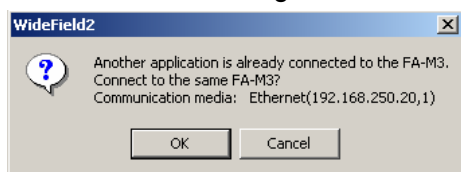
⇒ Use a public line to connect to FA-M3. If the FA-M3 connects successfully, the Action Monitor displays the LEDs and a 'RUN' status. Information about the connection destination is also displayed in the status bar.





## ■ Connecting When A ToolBox Application is Already Connected

Initiating a connection to the CPU from WideField2 when a ToolBox application is already connected to the CPU displays the following confirmation dialog box instead of the confirmation dialogs for the various connections: USB, RS232C, Ethernet or FL-net.



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**Figure B11.2 Confirmation Dialog Box**

Clicking [OK] proceeds with the connection.

Clicking [Cancel] aborts the connection.

The above confirmation dialog displays the currently connected communication medium, which may assume one of the following values listed in the table below.

**Table B11.4 Communication Medium**

Item	Description
USB	CPU number
Ethernet, FL-net	Destination IP address, CPU number
RS-232C	COMn
RS-232C via Modem	—



### CAUTION

You can connect to the FA-M3 concurrently from WideField2 and ToolBox applications, but it must be to the same CPU. The connection destination displayed in the confirmation dialog box is not the destination specified in the environment setup of WideField2, but the destination of the ToolBox application connection. In this case, the connection method and destination specified in the environment setup are ignored.

When initiating a connection to FA-M3, the destination can be specified by selecting from a connection history of past destinations maintained by the software to facilitate data entry. A separate connection history is maintained for each communications medium.

## ◆ Procedure ◆

- (1) Select [Online]–[Connect] from the menu bar.**

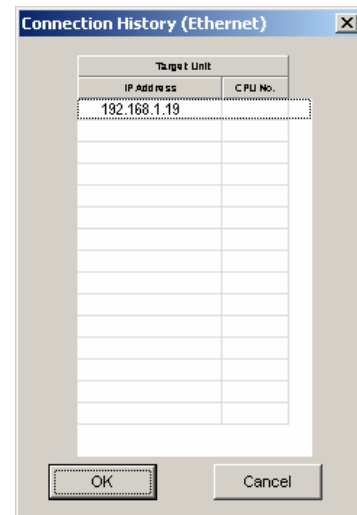
⇒ A connection dialog box appears.

- (2) Click [History].**

⇒ The Connection History dialog box is displayed.

- (3) Double-click one of the displayed destinations or move the cursor to the required destination and click [OK].**

⇒ The selected destination information is copied to and displayed in the connection dialog box.



Steps (2) and (3)

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## B11.1.3 Disconnecting

To disconnect WideField2 from FA-M3, use the following procedure.

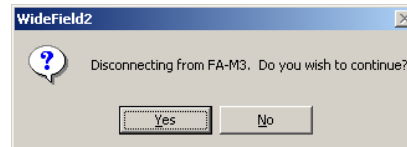
### ◆ Procedure ◆

(1) Select [Online]–[Disconnect] from the menu bar.

⇒ A confirmation dialog box appears.

(2) Click [Yes].

⇒ All online operation windows close.



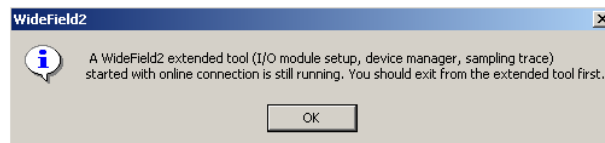
Step (2)

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### CAUTION

- When a line is disconnected, all online operation windows that are opened will be closed. Disconnecting is not allowed while online editing is being carried out on a window. Exit online editing before disconnecting.
- If an extended tool with online functions has been started from WideField2 (I/O module setup, device manager or sampling trace) and is still running, any attempt to disconnect from FA-M3 will display the following dialog box and abort the disconnection process.



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Figure B11.3 Confirmation Dialog Box

You must exit from all extended tools before you can disconnect from FA-M3.

### SEE ALSO

For details on online editing, see Section B22, “Online Edit.”

## B11.2 Limitations of Online Operations

When the FA-M3 is connected, you can use monitoring and debugging functions but the following limitations apply.

### B11.2.1 Limitations in Run Mode

The CPU has 4 operating modes, namely, Run mode, Debug mode, Stop mode and ROM Writer mode.

Debugging functions such as Forced Set/Reset and Online Edit are not available in Run mode.

The Debug mode allows you to use debugging functions.

The ROM Writer mode must be used to read or remove data from the ROM.

The Change Operating Mode and Debug functions are not available in the ROM writer mode. Monitoring is also suspended.

#### SEE ALSO

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For details on Debug mode, see "Sequence CPU – Functions."

---

#### SEE ALSO

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For details on ROM Writer mode, see Section B24, "Using the ROM."

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### B11.2.2 Limitations with Multi-Window Operation

Monitors can be used on multiple windows, but all monitoring is suspended during uploading, comparing and online editing.

When uploading, comparing or online editing ends, the monitor reopens automatically.

For RS-232C communication, the refresh period of a monitor becomes longer as the number of open windows increases. We recommend that you display no more than 3 windows concurrently.

### B11.2.3 Project Limitations

The Online functions can be used regardless of whether a project is open.

However, downloading (including transferring from files to ROM), comparing files with the CPU (including comparing files with ROM), and monitoring common tag name definitions can only be performed if a project is open. Furthermore, the CPU type for the connection destination must match that of the open project.

If a project downloaded in the sequence CPU is not open, tag names and the I/O comments are not displayed. Only addresses are displayed.

## B11.2.4 Limitations with Individual CPU Types

The program items that can be downloaded, the units for downloading and uploading, the ROM transfer mode, the program monitor format, and the availability of each online function depend on the CPU type to be connected.

Online functions that are not available for a particular CPU type are disabled in the toolbar and menu bar and an error message will be displayed if you attempt to use any of the functions.

### SEE ALSO

For details on limitations due to CPU types, see Table B11.2, "CPU Types and Available Online Functions."

## B11.2.5 Limitations with Other Applications

Do not run an MS-DOS program while using WideField2 online functions. Otherwise, communications with WideField2 may fail.

## B11.2.6 Limitations with the Personal Computer

When WideField2 is used with RS-232C communication, a communications error may occur because of a setup problem on the personal computer. To troubleshoot such errors, do the following. First, go to the Control Panel and click [Power Management]. Select the [Power Management] tab on the Power Properties dialog box and Click [Details] in the [Battery Status] group box. The Detailed Properties dialog box is displayed. Next, turn on the checkbox for [Do not poll power status] on the [Troubleshooting] tab. Exit setup and restart Windows.

## B11.2.7 Concurrent Access from Multiple PCs

The following restrictions for individual communications media apply when accessing the same sequence CPU module from multiple PCs via a network.

Communications Medium and Access Method	Maximum Connections	TIP
Ethernet Interface Module	1	Connection using other communications medium is allowed.
Ethernet port of CPU Module	2	Connection using other communications medium is allowed.
FL-net Interface Module	2	Connection using other communications medium is allowed.

### TIP

When writing from multiple PCs, it is recommended that exclusive access be obtained before writing for security reasons.



### CAUTION

Concurrent access beyond the above limits has been found to work temporarily but continued use may result in incorrect operation.

## B11.3 Displaying Program Information

This section describes how to display detailed information of a project downloaded in the CPU.

### ■ Displayed Contents of Program Information.

The following table lists the items displayed in the CPU Program Information dialog box.

**Table B11.5 Project Information**

Items		Contents Displayed	Remark
Project Name		Displays the project title.	
Step Count (incl. tag name & constant definitions)		Displays all the number of steps in the executable program.	
No. of Empty Steps		Displays the number of empty step count.	
Location of Tag Name Definition		Displays where the tag name definition is downloaded. CPU: Downloaded to the CPU-RAM ROM: Downloaded to the ROM. Blank: Not downloaded.	*1
Common Tag Name Definition		Displays common tag name definition step count.	*1
Configuration		Displays whether configuration data is downloaded in the CPU.	
User Log		Displays whether the user log is downloaded in the CPU.	
Blocks and Macros	Block Name /Macro Name	Displays names of all blocks and macros. Names are displayed in the order that the components are downloaded to the CPU (program components order).	
	Steps	Displays steps for each block or macro.	*1
	Steps in Tag Name Definitions	Displays steps in tag name definitions for each block or macro.	*1
	Comments	Displays the download setup for circuits and subcomments. Displays an "*" mark if comments are downloaded to the CPU.	

\*1: This item is only displayed for F3SP28-3S/SP38-6S/SP53-4S/SP58-6S/SP59-7S/SP66-4S/SP67-6S CPUs.

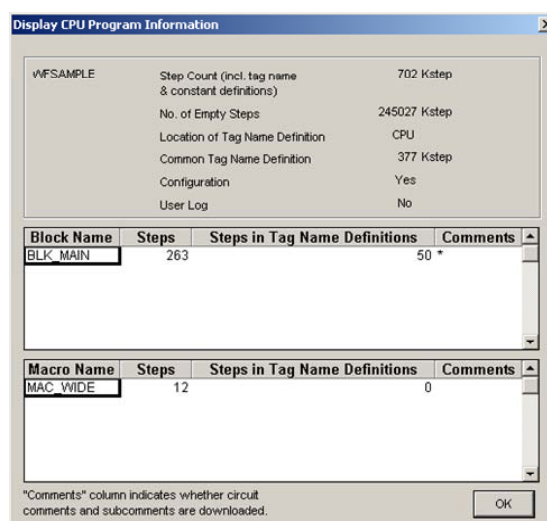
To display program information, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

(2) Select [Online]–[CPU Program Information] from the menu bar.

⇒ The CPU Program Information dialog box opens.



Step (2)

B08\_15A.VSD

# B12. Downloading

Downloading transfers an executable program from the personal computer to the FA-M3. WideField2 provides two download functions: project download which downloads a project and block/macro download which downloads blocks and macros. You can also download tag name definitions together with a project, a block or a macro.

**Table B12.1 Comparing Project Download and Block/Macro Download**

Download Menu		Project	Blocks and Macros
Item Compared			
Downloading in project unit		✓	×
Downloading in block and macro unit		×	✓ Multiple blocks and macros can be selected. The downloaded constant definition is used.
Downloading configuration		✓	×
Syntax check during downloading		✓ Executed using configuration of project opened in WideField2.	✓ <sup>*1</sup> Executed using configuration and constant definition saved in the CPU.
Downloading to other CPU types		×	✓
Downloading tag name definition	Common tag name definition	✓ <sup>*2</sup>	×
	Block tag name definition	✓ <sup>*2</sup>	✓ <sup>*2</sup>
Downloading structure type definition		✓ <sup>*3</sup>	×
Circuit comment/sub-comment		✓ <sup>*2</sup>	✓ <sup>*2</sup>
Constant definition		✓ <sup>*4</sup>	×

\*1: You can even download programs containing errors by performing download without syntax checking.

\*2: These items can be downloaded only if their respective store-to-CPU options are selected in the Change CPU Type/Properties dialog box or the Local Device dialog box.

\*3: Structure type definitions are downloaded only when tag name definitions are downloaded. Only structure type definitions declared in the tag name definition are downloaded.

\*4: Constant definition is always downloaded for CPU type that supports constant definition.

## SEE ALSO

- For details on how to perform setup to download tag name definitions and comments using project download, see Section B12.1.2, "Setup for Various Tag Name Definitions and Comment Types."
- For details on how to perform syntax check, download tag name definitions and comments using block/macro download, see Section B12.2.2, "Setup for Tag Name Definition and Various Comment Types."



## CAUTION

- The availability of the various download functions depends on CPU type connected. Functions that are not available for a particular CPU are disabled in the toolbar and menu bar and an error message will be displayed if you attempt to use any of the functions.
- You cannot perform downloading from WideField2 while both WideField2 and ToolBox applications are connected online concurrently to FA-M3 from the same PC. Disconnect the ToolBox application before initiating downloading from WideField2.

## SEE ALSO

For details on restrictions with specific CPUs, see Section B11, "Overview of Online Functions."

## SEE ALSO

For details on downloading of CPU properties, see Chapter B16, "CPU Properties."

## B12.1 Downloading a Project

The Download Project function downloads data components defined in the Define Program Components dialog box, including configuration data, user log messages, blocks and macros. The function also performs program syntax checking at the same time.

### SEE ALSO

For details on the Define Program Components dialog box, see Section B7.1.1, "Defining Components of an Executable Program."

### B12.1.1 Restrictions when Downloading a Project

Downloading cannot be done in the following cases:

- No project is open. Or, the CPU type defined in an open project differs from the type of the CPU actually connected.
- The program contains errors. (Errors are detected during syntax checking.)
- A ROM pack is installed on the CPU. Or, the CPU operating mode is set to ROM Writer mode.
- Another personal computer has exclusive access right.



### CAUTION

- If you select [Cancel] to cancel downloading, the program being downloaded is removed from the CPU.
- If you select [Cancel] during syntax checking or cancel downloading after a warning is detected, the program transferred to the CPU remains.
- CPU optimization may take some time, depending on the size of the executable program.
- At downloading, all online windows are automatically closed.
- When downloading via an RS-232C connection, the communications mode may be changed at the end of downloading. (When the settings on the [Communications Setup] tab in the Configuration dialog box before and after downloading are different).
- If the communications mode changes after downloading, the downloading operation may take a longer time to end.
- For F3SP66-4S and F3SP67-6S CPU modules, data is written to the built-in flash ROM immediately after downloading. Do not turn off the power while the "[Writing]" status display is blinking on the Action Monitor bar.



## B12.1.2 Setup for Various Tag Name Definitions and Comment Types

This section describes how to perform setup to store the common tag name definition, block and macro tag name definitions, as well as circuit comments and sub-comments for project download.

Downloading of a structure type definition depends on whether the tag name definition where the structure type is defined is downloaded.

### TIP

Constant definition is always downloaded during project download.

## ■ Setup for Common Tag Name Definition

To perform setup to store the common tag name definition for project download, use the following procedure.

### ◆ Procedure ◆

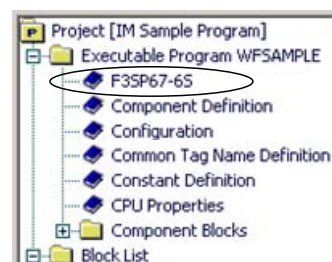
(1) Open the project.

#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) You can either double-click the CPU name in the executable program folder from the project window, or select [Project]–[Change CPU Type/Properties] from the menu bar.

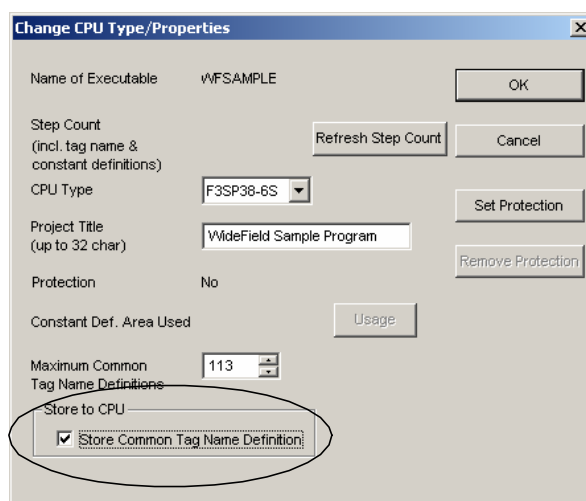
⇒ The Change CPU Type/Properties dialog box opens.



Step (2)

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(3) Turn on the [Store Common Tag Name Definition] checkbox in the [Store to CPU] group box, and click [OK].



Step (3)

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## ■ Setup for Various Comment Types and Block/Macro Tag Name Definitions

To perform setup to store various comment types and block/macro tag name definitions for project download, use the following procedure.

### ◆ Procedure ◆

(1) Open a project.

#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

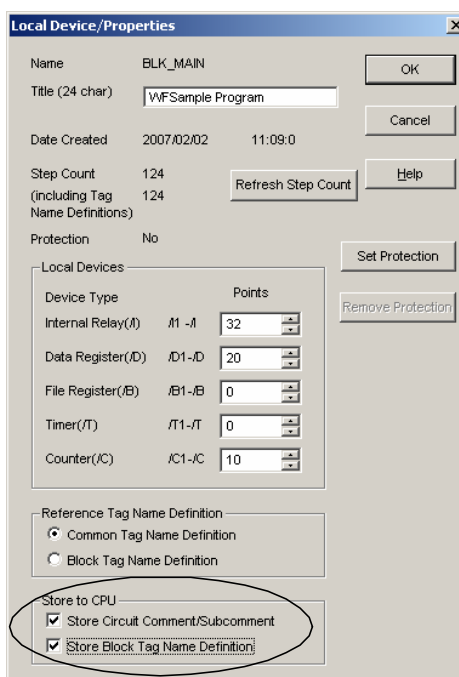
(2) You can double-click a block name or a macro name in the project window. Alternatively, you can select [File]–[Open]–[Block/Macro] from the menu bar, select a block name or macro name, and click [Open].

⇒ The selected block or macro selected is opened.

(3) Select [Edit]–[Local Device/Properties] from the menu bar.

⇒ The Local Device/Properties dialog box opens.

(4) Turn on the [Store Circuit Comment/Subcomment] checkbox and the [Store Block Tag Name Definition] checkbox in the [Store to CPU] group box, and click [OK].



### CAUTION

Step (4)

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Besides performing the setup as described above to store an item, you must also select the item as an item to be transferred when you execute the download function.

## B12.1.3 Procedure for Downloading a Project

This section describes how to download a project.

The actual download settings and displayed message are dependent on the CPU type and CPU status. We describe the basic operations with the following procedure.

### ◆ Procedure ◆

- (1) Check that WideField2 is connected online, a project is open and the CPU types of the project and the connected CPU are the same.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Download]–[Project] from the menu bar.

⇒ If the CPU type allows you to select items to be transferred, a Download dialog box will open.

- (3) Turn on the checkbox for items to be downloaded in the [Items to be Transferred] group box, and click [OK].



#### CAUTION

Simply selecting comment types or tag name definition as items to be transferred as described above is insufficient to ensure downloading. You must have also performed setup to store the item earlier.

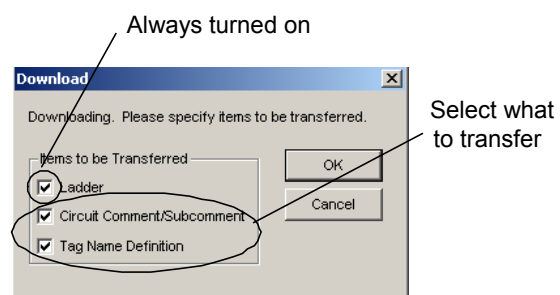
#### SEE ALSO

For details on how to perform setup to store various comment types and tag name definitions, see Section B12.1.2, "Setup for Various Tag Name Definitions and Comment Types."

#### TIP

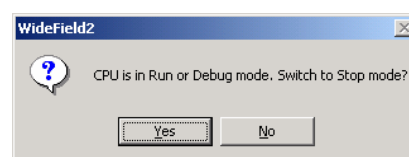
If you initiate downloading with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.

If the CPU is in Run mode, a dialog box is displayed to confirm whether to switch to Stop mode. To proceed with downloading, click [Yes].



Step (3)

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Step (3)

B09\_24.VSD

⇒ Program syntax checking begins.

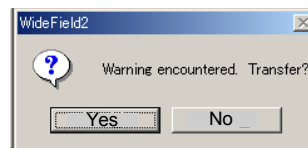
---

**TIP**

If a warning is detected, a dialog box is displayed to confirm whether to continue with downloading. To continue downloading, click [Yes].

If an error is detected, downloading is aborted.

---



Step (3)

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⇒ Downloading is executed.

When downloading to the CPU completes, a dialog box is displayed to confirm whether to switch to Run mode.

**(4) Clicking [Yes] switches to Run mode.**

**Clicking [No] remains in Stop mode**



Step (4)

B09\_11.VSD

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**SEE ALSO**

- For details on the Results of Program Syntax Checking dialog box, see Section B7.2.1, "Checking Programs."
  - For details on how to set up syntax checking items, see Section B1.2.6 "Program Syntax Check Setup."
- 

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**TIP**

If a continuous-type application instruction is being executed when download ends, the CPU may remain in STOP mode without switching to RUN mode. If this happens, wait for the continuous-type application instruction to complete execution, and re-execute.

---

## B12.2 Downloading Blocks and Macros

For a project that has been opened in WideField2, downloading can be performed in units of blocks and macros.

- Downloading can be done even when the CPU type specified in the project is different from the type of the CPU connected.
- Multiple blocks and macros can be downloaded at once.
- You can perform setup to store circuit comments/sub-comments and block tag name definitions using the Local Device/Properties dialog box.
- Blocks and macros can be downloaded to a different project (provided the block and macro names are identical.)
- You can specify to perform program syntax checking at the time of downloading. In this case, the downloading takes a longer time because it requires uploading from the CPU.

### SEE ALSO

For details on how to perform setup to store various comment types and block tag name definitions, and to execute syntax checking, see Section B12.2.2 'Setup for Tag Name Definition and Various Comment Types.'

### B12.2.1 Restrictions When Downloading Blocks and Macros

Downloading cannot be done in the following cases:

- No project is open.
- The program contains an error. (Errors are detected during syntax checking.)
- A ROM pack is mounted on the CPU. Or, the CPU operating mode is set to ROM Writer mode.
- Another personal computer has obtained exclusive access right.
- The name of a block or macro to be downloaded is not found in the CPU.
- The local device settings are different.



### CAUTION

- If you select [Cancel] during download processing, the block being downloaded is removed from the CPU.
- If an error is detected during partial downloading, the block with the error is removed from the CPU.
- If you select [Cancel] during syntax checking or if cancel downloading after a warning is detected, the program transferred to the CPU remains.
- CPU optimization may take some time, depending on the size of the executable program.
- When downloading a block or macro, constant names coded in the block or macro will assume constant values defined by the constant definition stored in the CPU. Program syntax check is also based on the constant definition stored in the CPU.
- For F3SP66-4S and F3SP67-6S CPU modules, data is written to the built-in flash ROM immediately after downloading. Do not turn off the power while the "[Writing]" status display is blinking on the Action Monitor bar.

## B12.2.2 Setup for Tag Name Definition and Various Comment Types

This section describes how to perform setup to store tag name definitions and various comment types for block or macro download.

### ■ Setup for Tag Name Definitions and Various Comment Types

To perform setup to store tag name definition and various comment types for block/macro download, use the following procedure.

#### ◆ Procedure ◆

(1) Check that the project is opened.

##### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

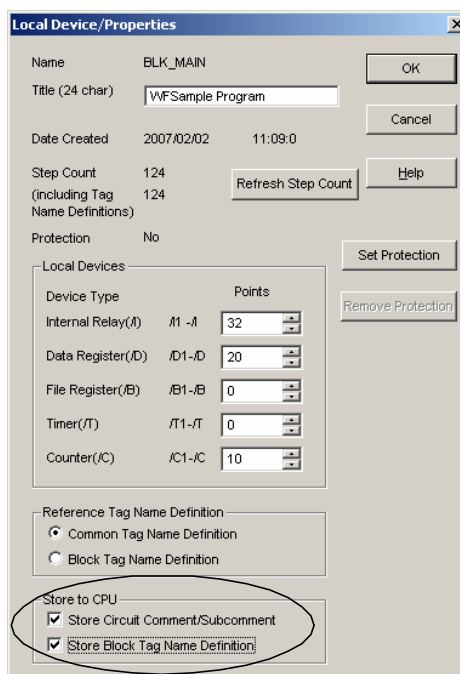
(2) Double-click a block or macro name in the project window. Alternatively, select [File]–[Open]–[Block/Macro] from the menu bar, select a block or macro name, and click [Open].

⇒ The selected block or macro is displayed.

(3) Select [Edit]–[Local Device/Properties] from the menu bar.

⇒ The Local Device/Properties dialog box opens.

(4) Turn on the [Store Circuit Comment/Subcomment] checkbox and the [Store Block Tag Name Definition] checkbox in the [Store to CPU] group box, and click [OK].



Step (4)

B09\_04A.VSD



#### CAUTION

Besides performing the setup as described above to store an item, you must also select the item as an item to be transferred when you execute the download function.

##### SEE ALSO

For details on how to perform downloading, see Section B12.2.3, "Procedures for Downloading Blocks and Macros."

## ■ Setup for Syntax Checking

You can perform setup to execute syntax checking of the entire project after downloaded blocks and macros are merged with the program stored in the CPU.

---

### **TIP**

To perform syntax checking, you must turn on the [Run program check for partial download] on the [Set up Program Check] tab in the Set up Environment dialog box.

---

### **SEE ALSO**

For details on the [Set up Program Check] tab in the Set up Environment dialog box, see Section B1.2.6, "Program Syntax Check Setup."

---

## B12.2.3 Procedure for Downloading Block and Macros

To download blocks and macros, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online, a project is open and the CPU types of the project and the connected CPU are the same.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Download]–[Block/Macro] from the menu bar.

⇒ The Download dialog box opens.

- (3) In the [Items to be Transferred] group box, turn on the checkboxes for items to be transferred, and click [OK].



#### CAUTION

Simply selecting comment types or tag name definitions as items to be transferred as described above is insufficient to ensure downloading. You must have also performed setup to store the item earlier.

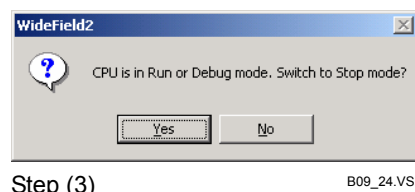
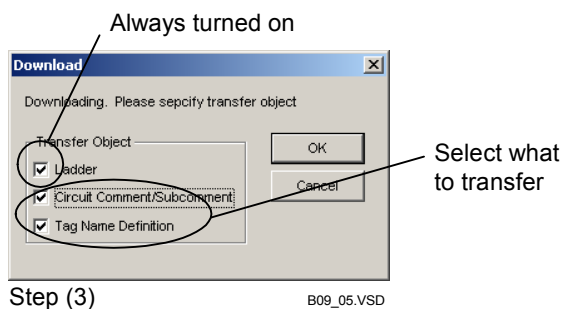
#### SEE ALSO

For details on how to perform setup to store various comment types and tag name definitions, see Section B12.2.2, "Setup for Tag Name Definitions and Various Comment Types."

#### TIP

If the CPU is in Run mode, a dialog box is displayed to confirm whether to switch to Stop mode. To proceed with downloading, click [Yes].

⇒ The Select Block/Macro dialog box opens.





- (4) Specify the blocks and macros to be downloaded by turning on relevant checkboxes on the left, and click [OK].



### CAUTION

The Select Block/Macros dialog box displays a list of blocks and macros stored in the CPU. Blocks and macros that are not found in the open project are displayed as disabled and cannot be selected. Only blocks and macros that are found in the CPU can be downloaded.

### TIP

If you initiate downloading with an opened ladder program edit window (tag name definition window) for a block to be transferred after having made changes in the window, a confirmation dialog box will be displayed.

⇒ Program syntax checking begins.

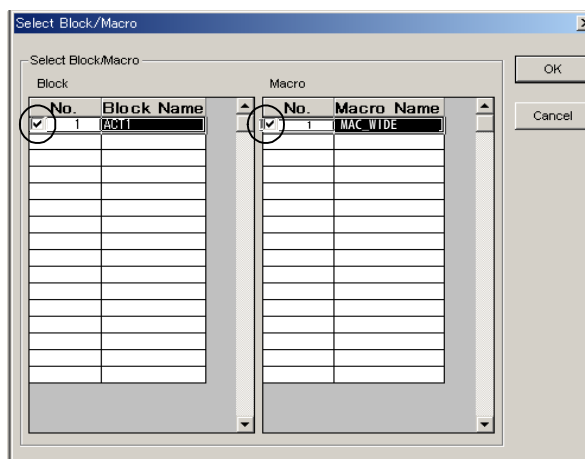
### TIP

If a warning is detected, a dialog box is displayed to confirm whether to continue with downloading. To continue downloading, click [Yes].  
If an error is detected, downloading is aborted.

⇒ Downloading begins.

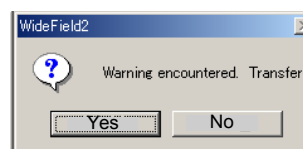
When downloading to CPU completes, a dialog box is displayed to confirm whether to switch to Run mode.

- (5) Clicking [Yes] switches to Run mode.  
Clicking [No] remains in Stop mode



Step (4)

B09\_13.VSD



Step (4)

B09\_14.VSD



Step (5)

B09\_15.VSD

### SEE ALSO

- For details on the Results of Program Syntax Checking dialog box, see Section B7.2.1, "Checking Programs".
- For details on how to set up syntax check items, see Section B1.2.6, "Program Syntax Check Setup".



---

## B13. Uploading

Uploading transfers a project or blocks, macros, tag name definitions and constant definitions from the FA-M3 to a personal computer.

WideField2 provides three upload functions: the upload project function which uploads a project, the upload block/macro function which uploads blocks and macros and the upload tag name definition function which uploads tag name definitions.



### CAUTION

- The availability of the various upload functions depends on the CPU type connected. Functions that are not available for a particular CPU are disabled in the toolbar and menu bar and an error message will be displayed if you attempt to use any of the functions.
- If multiple PCs initiate uploading concurrently from the same CPU when connected via FL-net, the following error message may be displayed: "Invalid communication number in command. Retry." If this happens, try to upload again from each PC in turn.

---

### SEE ALSO

- For details on restrictions for specific CPUs, see Chapter B11, "Overview of Online Functions."
- For details on FL-net connection, see Section B11.1, "Connecting and Disconnecting."

---

### SEE ALSO

For details on uploading of CPU properties, see Section B16, "CPU Properties."

---

## B13.1 Uploading a Project

The upload project function uploads configuration data, user log messages, blocks and macros defined in the Define Program Components dialog. Instruction macros, various types of comments, and various tag name definitions that are stored to the CPU are also uploaded.

In addition, you can upload structure type definition files for structure types declared in tag name definitions that have been downloaded.

You can even upload a project which is not open.

An uploaded project can be saved as a new project or overwrite an existing project.



### CAUTION

- At the time of uploading, block files are generated with tag names but the tag name definition file at the time of downloading is given precedence during the generation of the tag names.
- Macros can only be uploaded to the project folder.  
The download function downloads macros in the project folder first.
- Structure type definitions can only be uploaded to the common folder.  
Existing structure type definition with the same name in the common folder, if any, will be overwritten. Thus, beware when performing uploading.

### B13.1.1 Restrictions When Uploading a Project

Uploading cannot be done in the following cases.

- The CPU operating mode is set to ROM Writer mode.

## B13.1.2 Procedure for Uploading a Project

To upload a project, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Online]–[Upload]–[Project] from the menu bar.

⇒ The Select Project dialog box opens.

- (3) To overwrite an existing project, select the project, and click [Select].  
To save as a new project, enter a new project name, and click [Select].



#### CAUTION

The Project Name text box displays the project name for the CPU (the project name if a project is open).  
The Project Location drop-down list displays the project location specified in the Set up Environment dialog box.

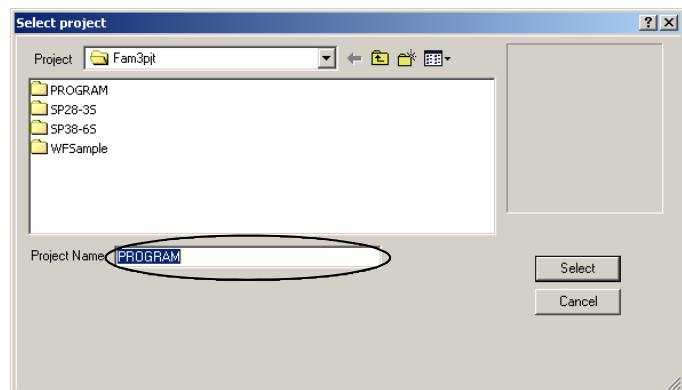
#### SEE ALSO

For details on how to set up the project location, see Section B1.2.2 "Folder Setup."

- ⇒ Different confirmation dialog boxes are displayed for overwriting an existing project and for saving to a new project.

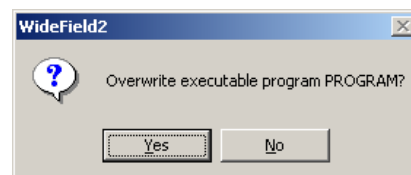
- (4) Click [Yes].

⇒ The uploaded project is saved, and a confirmation dialog box is displayed.



Step (3)

B10\_01.VSD

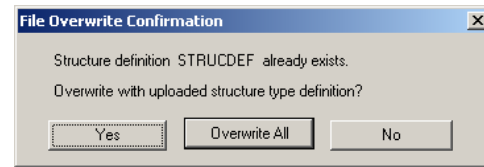


Step (4)

B10\_11.VSD

⇒ If a structure type definition was uploaded, a dialog box opens to confirm whether to save the structure type definition to the common folder and overwrite existing content.

**(5) To save only the corresponding structure type definition, click [Yes]. To save all structure type definitions, click [Overwrite All]. To cancel saving, click [No].**



Step (5)

B10\_10.VSD



## CAUTION

If tag name definitions and comments are stored in the CPU, they are saved together in the destination project. If tag name definitions and comments are not stored in the CPU, the uploaded project will first refer to the tag name definitions and comments at the time of download. If any downloaded file is lost, the uploaded project will refer to tag name definitions and comments stored in the destination project.

## B13.2 Uploading Blocks and Macros

The upload block/macro function transfers blocks and macros stored in the CPU to a personal computer.

Circuit comments, sub-comments and tag name definitions stored in the CPU are uploaded.

Uploaded blocks and macros can be saved.



### CAUTION

- If constant definition is stored in the CPU when blocks and macros are uploaded, the stored constant definition is uploaded and its data overwrites the constant definition of the active (currently open) project.

### B13.2.1 Restrictions When Uploading Blocks and Macros

Uploading cannot be done in the following cases.

- The CPU operating mode is set to ROM Writer mode.

### B13.2.2 Procedure for Uploading Blocks and Macros

To upload blocks and macros, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

#### SEE ALSO

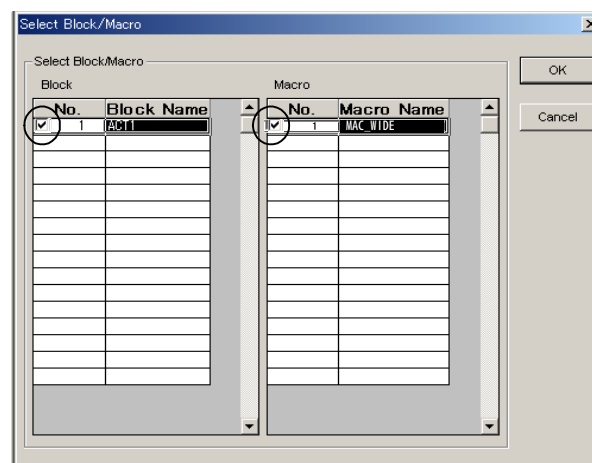
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Online]–[Upload]–[Block/Macro] from the menu bar.

⇒ The Select Block/Macro dialog box opens.

- (3) Specify blocks and macros to be uploaded by turning on relevant checkboxes on the left, and click [OK].

⇒ The Select Project dialog box opens.



Step (3)

B10\_05.VSD

(4) Select the destination project, and click [OK].



### CAUTION

The Project Name text box displays the project name on the CPU (or the name of the open project if a project is open).  
The Project Location drop-down list displays the project location specified in the Set up Environment dialog box.

### SEE ALSO

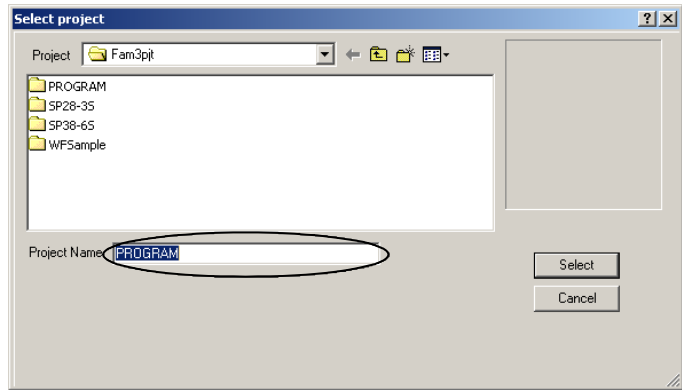
For details on how to set up the project location, see Section B1.2.2, "Folder Setup."

⇒ Uploaded blocks and macros are saved in the destination project, and a confirmation dialog box opens.



### CAUTION

Uploaded blocks and macros will overwrite existing blocks and macros in the destination project with the same names, if any.



Step (4)

B10\_04.VSD



## B13.3 Uploading Tag Name Definitions

The upload tag name definition function transfers common tag name definitions, as well as block and macro tag name definitions stored in the CPU to a personal computer.

Uploaded tag name definitions will overwrite existing tag name definitions in the destination, if any.

To display Edit Block windows, Edit Macro windows and other windows using tag name definitions stored in the CPU, save the blocks and macros in the project folder and re-display the window.

### B13.3.1 Procedure for Uploading Tag Name Definitions

To upload tag name definition, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

#### SEE ALSO

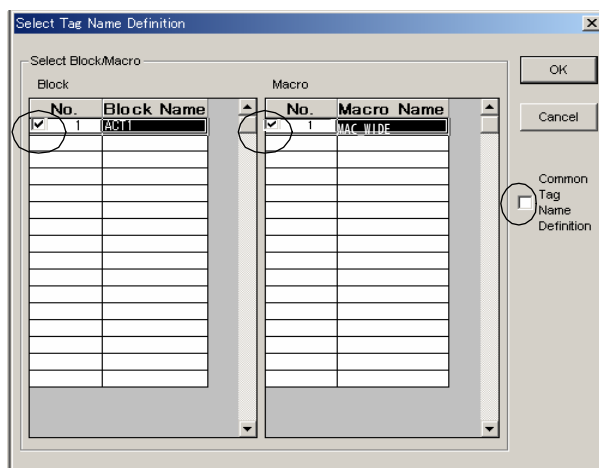
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Online]–[Upload]–[Tag Name Definition] from the menu bar.

⇒ The Select Tag Name Definition dialog box opens.

- (3) To upload a block or macro tag name definition, turn on the checkbox to the left of the block or macro, and click [OK]. To upload the common tag name definition, turn on the checkbox for common tag name definition, and click [OK].

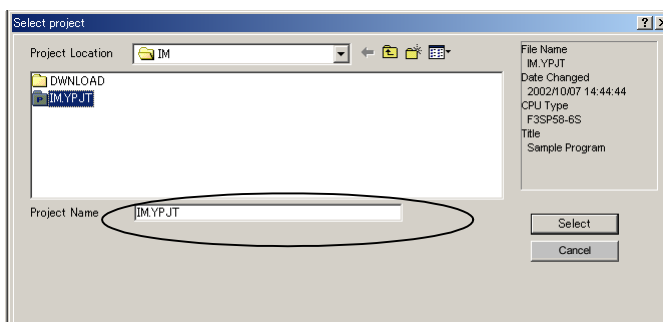
⇒ The Select Project dialog box opens.



Step (3)

B10\_09.VSD

- (4) Select the destination project and click [Select].



Step (4)

B10\_08.VSD

**CAUTION**

---

The Project Name text box displays the project name on the CPU (It displays the name of the open project if a project is open.).  
The Project Location drop-down displays the project location specified on the Set up Environment dialog box.

---

**SEE ALSO**

---

For details on how to set up the project location, see Section B1.2.2, "Folder Setup."

---

⇒ Uploaded tag name definitions are saved to the project destination.

**TIP**

---

To display blocks and macros in the program monitor using the tag name definitions stored in the CPU, save the blocks or macros in the download folder in the project folder and redisplay them.

---

---

## B14. Comparing File and CPU

You can compare a program (on project or block/macro basis) stored in the CPU with a program stored on a file in a personal computer. If tag name definitions are downloaded to the CPU, you can also compare tag name definitions and structure type definitions. If constant definitions are downloaded to the CPU, they are also compared.

Comparisons are available as project comparisons or block/macro comparisons. Block/macro comparison allows comparison of multiple blocks or macros at a time.

Comparison is not available if:

- No project is open.
- The type of the CPU as defined in an open project is different from the type of the CPU actually connected.
- The CPU is not connected online.
- A ROM pack is installed on the CPU.
- The CPU operating mode is set to ROM Writer mode.
- The CPU is executing a process of another computer.



### CAUTION

---

What online functions can be used depends on the type of the connected CPU.

Online functions that are not available for a specific CPU are disabled in the toolbar and menu bar and an error message will be displayed if you attempt to use any of the functions.

---

### SEE ALSO

---

For details on restrictions for specific CPUs, see Chapter B11., "Overview of Online Functions."

---

## B14.1 Comparing a Project

Project comparison compares not only execution program files managed by a project currently open in WideField2 but also configuration contents, user log messages, and downloaded tag name definitions and structure type definitions.

### B14.1.1 Items Compared in Project Comparison

The following items are compared in project comparison:

- **Execution program**  
Number of blocks and block names
- **Configuration information**  
Contents specified in Configuration
- **Program contents of each block/macro**  
Instructions, devices, and labels of each circuit
- **User log messages**  
Number of registered user log messages and their contents
- **Circuit comments and subcomments**  
Comparing if each comment is stored in the same position.
- **Tag name definitions**  
Tag name definitions and structure type definitions if tag name definitions are stored in the CPU
- **Constant definitions**  
Comparing if all constant definitions stored in the CPU are consistent.

### B14.1.2 Procedure for Comparing Projects

To perform project comparison, use the following procedure.

#### ◆ Procedure ◆

- (1) **Confirm that WideField2 is connected online and the CPU type of the open project tallies with the connected CPU type.**

#### **SEE ALSO**

For details on how to perform online connection, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) **Select [Online]–[Compare File and CPU]–[Project] from the menu bar.**

⇒ Comparison starts. If no discrepancy is found, a confirmation dialog box will appear. If discrepancies are found, a different confirmation dialog box will appear.

**TIP**

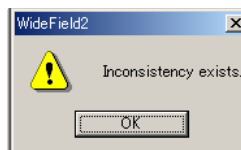
Comparison is performed on saved blocks. If you initiate comparison with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.

**(3) Click [OK].**

⇒ If discrepancies are found, the Results of Comparison window is displayed.



Step (3) B11\_02.VSD



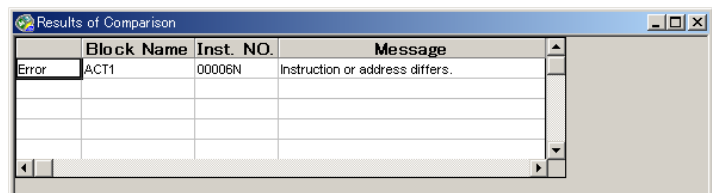
Step (3) B11\_12.VSD

**(4) If discrepancies are found, double-click an error or warning that you wish to display. Alternatively, move the cursor to the error or warning using the arrow keys, and press the [Enter] key.**

⇒ The block containing the error or warning opens and the focus jumps to the beginning of the corresponding circuit.

**(5) Select [File]–[Close] from the menu bar in the Results of Comparison window.**

⇒ The Results of Comparison window closes.



Step (4)

B11\_03.VSD

**TIP**

To display the location of the error or warning without changing the window focus, press any of the following keys.

- [SPACE] key: Displays the location of the error or warning at the current cursor position.
- [F3] key: Displays the location of the next error or warning after the current cursor position.
- [Shift]+[F3] keys: Displays the location of the previous error or warning before the current cursor position

The Results of Comparison window remains as the topmost window if you use the above operations to display the error or warning location without changing the window focus.

## B14.2 Comparing Blocks and Macros

Block/macro comparison compares the program on a personal computer with that stored in the CPU for selected blocks and macros.

### B14.2.1 Items Compared in Block and Macro Comparison

The following items are compared in block and macro comparison:

- **Program contents of each block and macro**  
Instructions, devices, and labels of each circuit
- **Local devices of each block and macro**  
Number of local devices that are set
- **Circuit comments and subcomments**  
Comparing if each comment is stored in the same position.

### B14.2.2 Procedure for Comparing Blocks and Macros

To perform block and macro comparison, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online, and a project is open.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Compare File and CPU]–[Block/Macro] from the menu bar.

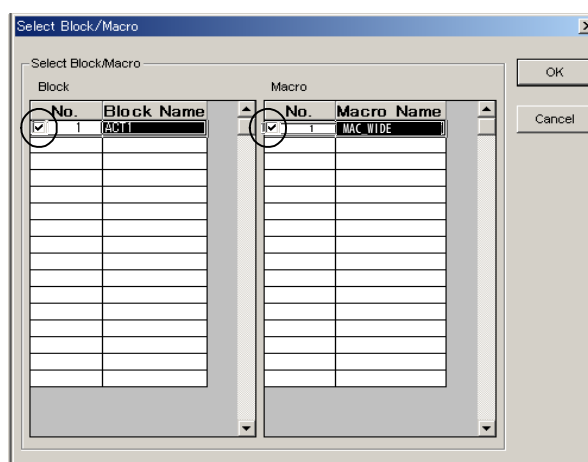
⇒ The Select Block/Macro dialog box will be displayed.

- (3) Specify the blocks and macros to be compared by turning on relevant checkboxes on the left, and click [OK].

#### TIP

You can select multiple blocks and macros.

Comparison is performed on saved blocks or macros. If you initiate comparison with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.



Step (3)

B11\_14.VSD

⇒ Comparison begins. If no discrepancy is found, a confirmation dialog box will appear. If discrepancies are found, a different confirmation dialog box will appear.

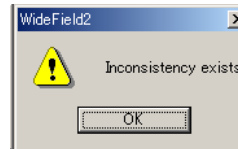
**(4) Click [OK].**

⇒ If discrepancies are found, the Results of Comparison window is displayed.



Step (4)

B11\_06.VSD



Step (4)

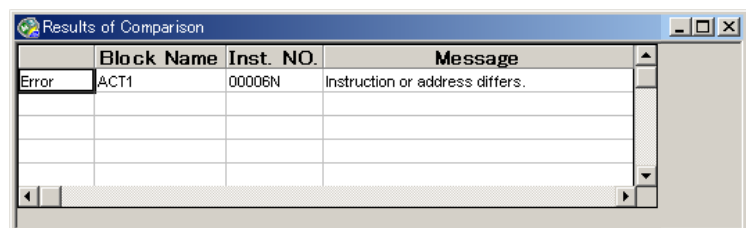
B11\_13.VSD

**(5) If discrepancies are found, double-click an error or warning that you wish to display. Alternatively, move the cursor to the error or warning using the arrow keys, and press the [Enter] key.**

⇒ The block containing the error or warning opens and the focus jumps to the beginning of the corresponding circuit.

**(6) Select [File]–[Close] from the menu bar in the Results of Comparison window.**

⇒ The Results of Comparison window Closes.



Step (5)

B11\_14.VSD

### TIP

To display the location of the error or warning without changing the window focus, press any of the following keys.

- [SPACE] key: Displays the location of the error or warning at the current cursor position.
- [F3] key: Displays the location of the next error or warning after the current cursor position.
- [Shift]+[F3] keys: Displays the location of the previous error or warning before the current cursor position

The Results of Comparison window remains as the topmost window if you use the above operations to display the error or warning location without changing the window focus.

## B14.3 Results of Comparison

The following messages may be displayed in the Results of Comparison window.

**Table B14.1 List of Comparison Results**

Comparison Results	Category	Description
Components of executable program differ.	Error	Block configuration of the executable programs differ.
Invalid device capacity setup in configuration.	Error	Device Capacity tab settings on the Configuration dialog box differ.
Invalid operation control setup in configuration.	Error	Operation control tab settings on the Configuration dialog box differ.
Invalid initial data setup in configuration.	Error	Initial Data tab settings on the Configuration dialog box differ.
Invalid DIO setup in configuration.	Error	DIO Setup tab settings on the Configuration dialog box differ.
Invalid FA link setup in configuration.	Error	FA Link tab settings on the Configuration dialog box differ.
Invalid sampling trace setup in configuration.	Error	Sampling Trace tab settings on the Configuration dialog box differ.
Invalid communications setup in configuration.	Error	Communications Setup tab settings on the Configuration dialog box differ.
Invalid ROM setup in configuration.	Error	ROM Setup tab settings on the Configuration dialog box differ.
Invalid interrupt setup in configuration.	Error	Interrupt Setup tab settings on the Configuration dialog box differ.
Invalid local device/power failure lock-up setup in configuration.	Error	Power Failure/Local tab settings on the Configuration dialog box differ.
Invalid shared refreshing setup in configuration.	Error	Shared Refreshing tab settings on the Configuration dialog box differ.
Invalid FL-net refreshing setup in configuration.	Error	FL-net Refreshing tab settings on the Configuration dialog box differ.
Invalid function removal in configuration.	Error	Function Removal tab settings on the Configuration dialog box differ.
Instruction or address differs.	Error	An instruction or an address used as a parameter of an instruction in a circuit differs.
Block not found.	Error	The block is not found on the personal computer.
Macro not found.	Error	The macro is not found on the personal computer.
Structure type definition file not on the personal computer.	Warning	The common folder contains no structure type definition file.
Structure type definitions differ.	Warning	A member name, data type, or I/O comment of a structure type definition differs.
Common tag name definition not in CPU.	Warning	The project is configured to store common tag name definition to CPU but common tag name definition is not found in the CPU.
Tag name definitions differ.	Error	Common tag name definitions or tag name definitions for a block differ.
Macro language differs.	Error	Macro languages differ.
Tag name definition file not on the personal computer.	Error	Tag name definition is not found for a block.
Cannot create or access file.	Error	Unable to create or access a file on the personal computer.
'Subcomment/No subcomment' differs.	Warning	Missing or extra subcomments
'Circuit comment/No circuit comment' differs.	Warning	Missing or extra circuit comments
Step counts differ.	Warning	Numbers of steps differ.
Number of registered user log messages differs.	Warning	Numbers of user log messages differ.
String in user log message differs.	Warning	Message strings of user log messages differ.
Number of local devices differs.	Warning	Numbers of local devices as set in block properties differ.
Constant definitions differ.	Error	Constant definition of project and tag name definition stored in the CPU differ.



**CAUTION**

- 
- If a discrepancy is found within a circuit, the first instruction number of that circuit is displayed. Only one comparison result is displayed for each circuit.
  - Program comparison is done on a circuit basis. If a circuit is added or deleted, all subsequent circuits are considered different.
  - Subcomment/circuit comment comparison does not compare comment strings.
  - Up to 256 discrepancies can be displayed. Any discrepancies beyond that number are not displayed.
  - Block comparison is not performed if the components of the execution programs are found to be different.
  - Constant definition comparison is terminated as and when any inconsistency is detected.
-



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## B15. Setting Operating Mode and Monitoring Operation Status

The FA-M3 CPU operating modes are listed and described below. This chapter describes how to monitor and set the CPU's operation status.

- **Run Mode (RUN LED lights)**

The Run mode is active when the CPU is executing a program. In Run mode, you can check the operating status of the program on the Action Monitor, Program Monitor, and Device Monitor of the CPU, but the Debug function cannot be used and online editing cannot be done.

When the operating mode is switched from Stop mode to Run mode, program execution starts from the beginning, just as in booting. Except for lock-up devices, all devices become 0. If the Debug function is being used, it is cancelled.

- **Stop Mode (RUN LED off)**

This is the mode when the CPU is not executing a program. The Debug function can be used and online editing can be done.

- **Debug Mode**

The Debug mode is used for debugging, and tuning. Program is executed in the same way as in Run mode but, unlike Run Mode, the Debug function can be used and online editing can be done.

- **ROM Writer Mode**

The ROM Writer Mode is used when erasing data in the ROM pack or writing programs to the ROM.

### TIP

The RUN LED is one of the LED indicators located on the front of the sequence CPU module. It turns green when the program is running (in the Run or Debug mode).

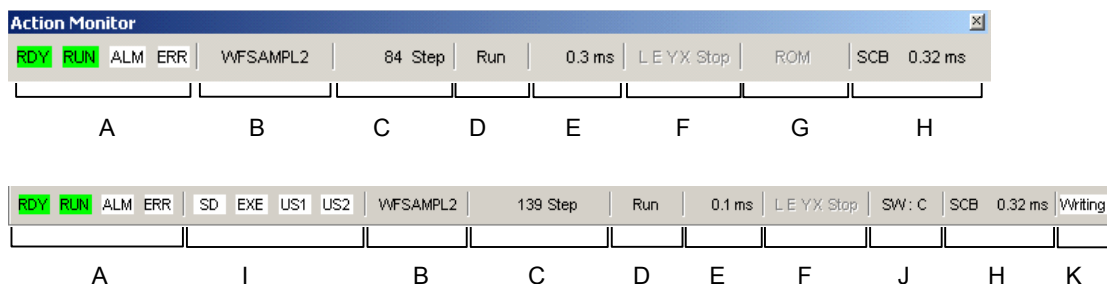
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### SEE ALSO

- For details on the RUN LED, see "Sequence CPU – Functions."
  - For details on how to set the ROM writer mode, see Section B24.1, "ROM Writer Mode."
-

## B15.1 Displaying the Action Monitor

You can check the operation status of the CPU on the Action Monitor. As shown in Figure B14.1, the Action Monitor appears in the form of a horizontal bar. It appears automatically when the FA-M3 is connected. Selecting [View]–[Action Monitor] from the menu toggles between hiding and showing the Action Monitor bar. The displayed items in the Action Monitor bar vary with CPU type.



B12\_01.VSD

**Figure B15.1 Action Monitor Bar**

- A LED display status  
Shows the LED display statuses of the sequence CPU module.
- B Name of executable program  
Shows the name of the downloaded executable program.
- C Executable program step count  
Shows the number of steps in the executable program.
- D Operating mode  
Shows the CPU's operating mode (Run/Stop/Debug/ROM).
- E Scan time  
Shows the CPU scan time accurate to 0.1 ms (0.3 ms in the display example shown above).
- F Stop status for refreshing  
Shows the stop status for refreshing  
X: Input refreshing stopped, Y: Output refreshing stopped  
E: Shared refreshing stopped, L: Link refreshing stopped
- G ROM pack installation status  
This item is played when a ROM pack is installed.
- H Sensor control block (SCB) scan time  
This item appears for F3SP28/38/53/58/59/66/67 modules.  
The scan time appears accurate to 0.01 ms (10  $\mu$ s) (SCB 0.32 ms in the display example shown above).
- I LED display status  
Shows the LED display statuses of the sequence CPU module.
- J MODE switch number display  
Shows the current MODE switch number of the sequence CPU.
- K ROM write status  
Shows the status of write operations to the built-in ROM of the sequence CPU module. Blinks during data conversion in online edit.

**TIP**

- The scan time is the time required for common processing, instruction execution, input refresh, output refresh, and synchronization processing. Normally it represents the smallest unit for the control time of the system.
  - The SCB scan time displayed is not an execution interval but the actual time taken for input/output refresh and program execution.
  - Link refreshing is a process for refreshing the statuses of link devices (L/W).
- 

**SEE ALSO**

- For details on scan time, see "Sequence CPU – Functions."
  - For details on SCB scan time, see "Sequence CPU – Functions."
  - For details on link refreshing, see "Sequence CPU – Functions."
-

## B15.2 Displaying Configuration of a Running Program

This section describes how to read and display the CPU configuration. The configuration can be read but cannot be changed. To display the CPU configuration, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting"

(2) Select [Online]–[Configuration] from the menu bar.

⇒ The Configuration dialog box appears.

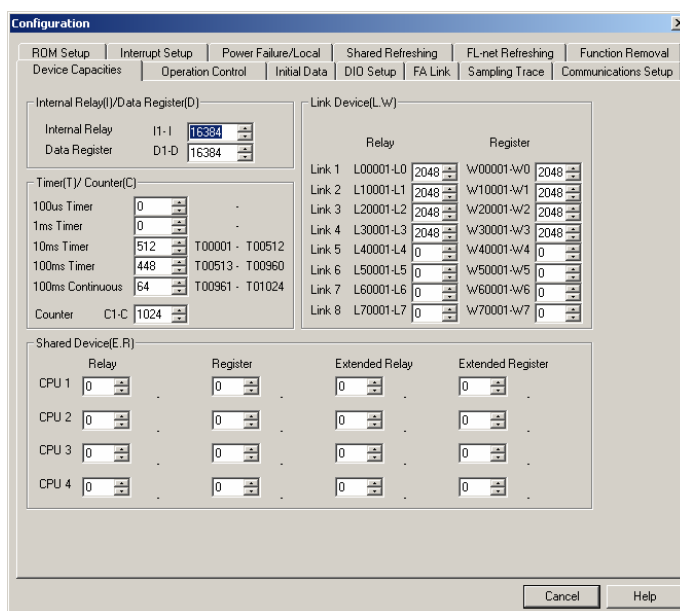
(3) Click [Cancel].

⇒ The Configuration dialog box closes.



#### CAUTION

You cannot change the configuration on the dialog box.



Step (2)

B12\_03.VSD

## B15.3 Switching CPU Operating Modes

This section describes how to switch the CPU operating mode. To switch CPU operating modes, use the following procedure.

### ◆ Procedure ◆

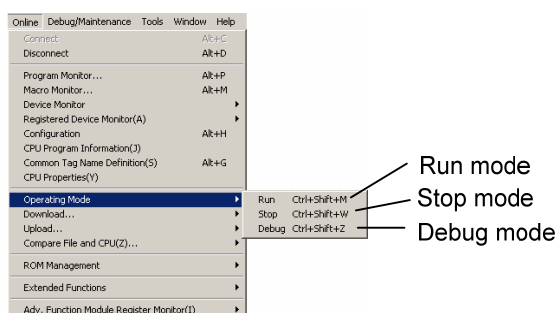
(1) Confirm that WideField2 is online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Operating Mode], followed by one of the three CPU operating modes from the menu bar

⇒ A dialog box appears to confirm whether to change the CPU operating mode.

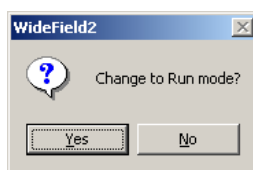


Step (2)

B12\_04.VSD

(3) Click [Yes].

⇒ The CPU operating mode is switched.



Step (3)

B12\_31.VSD

#### SEE ALSO

For details on the CPU operating modes, see "Sequence CPU - Functions."

#### TIP

The CPU module may sometimes fail to switch from Stop mode to Run or Debug mode because a continuous-type application instruction is being executed. If this happens, wait for the continuous-type application instruction to complete execution and re-execute the required operation.

## B15.4 Temporarily Changing Communication Speed

This section describes how to change the RS-232C communication speed of the CPU temporarily.

The communication speeds provided are:

- 9600 bps, even parity
- 9600 bps, no parity
- 19200 bps, even parity
- 19200 bps, no parity
- 38400 bps, even parity
- 38400 bps, no parity
- 57600 bps, even parity
- 57600 bps, no parity
- 115200 bps, even parity
- 115200 bps, no parity

The actual communication speeds that can be selected depend on the CPU type.

All the above communication speeds assume a character length of 8 bits with a stop bit.

The communication speed automatically reverts from the temporarily communication speed to the original communication speed at the next CPU power-up.



### CAUTION

- To permanently change the communication speed, use the [Communications Setup] tab in the Configuration dialog box.
- If both WideField2 and ToolBox applications are connected online concurrently from the same PC, you must first disconnect the ToolBox application before you can temporarily change communication speed.

### SEE ALSO

For details on how to change the communication speed using the Configuration dialog box, see Section B7.1.3, "Configuration Setup."

To temporarily change communication speed, use the following procedure.

## ◆ Procedure ◆

(1) Confirm that WideField2 is online.

### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

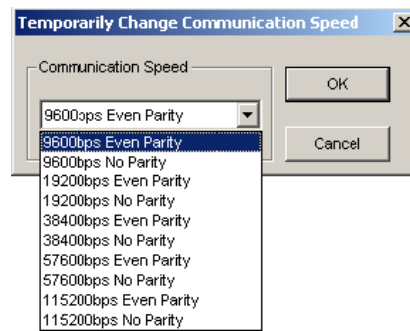
(2) Select [Online]–[Extended Functions]–[Temporarily Change Communication Speed] from the menu bar.

⇒ The Temporarily Change Communication Speed dialog box appears.



(3) Select a communication speed from the communication speed drop-down list, and click [OK].

⇒ A confirmation dialog box appears.

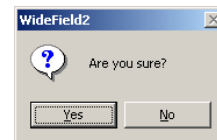


Step (3)

B12\_06.VSD

(4) Click [Yes].

⇒ The communication speed is changed to the new speed and a confirmation dialog box appears.



Step (4)

B12\_07.VSD

(5) Click [OK].



Step (5)

B12\_08.VSD

#### TIP

The temporary communication speed remains effective even after the FA-M3 is disconnected.



#### CAUTION

- If the communication speed is set to high speed, communication will fail with personal computers that do not support high-speed transfer rates. Before changing the CPU RS-232C communication speed, you should check the communication speed of your personal computer. To do so, select [System] on the [Control Panel] of Windows to display the System Properties dialog box.
- The CPU RS-232C communication speed can be changed temporarily only if [RS-232C] is selected in the Communications Setup tab of the Set up Environment dialog box.

#### SEE ALSO

For details on communication set up, see Section B1.2.3, "Communications Setup."

## B15.5 Setting Time

This section describes how to change the CPU date and time setting. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Set Time] from the menu bar.

⇒ The Set up Time dialog box appears.

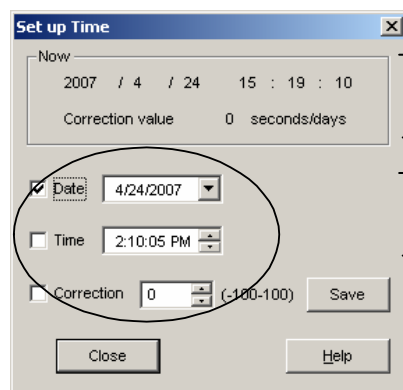
(3) Select the item to be changed by turning on the corresponding checkbox on the left, and enter a new value on the right.

#### TIP

To change the date, click the relevant field and directly enter a new year, month, or day value or click the down-arrow on the drop-down list to display a calendar and click a date.

To change the time, click the field and directly enter a new hour, minute, or second value, or use the spin buttons.

To change the correction value, directly enter a new value; or use the spin buttons. A correction value must be between -100 and +100 (seconds), where a negative value indicates advancing a clock.



Steps (3) to (5)

B12\_09.VSD

(4) After entering a new value, click [Save].

⇒ The new values are written to the CPU and displayed in the [Now] group box.

(5) Click [Close].

⇒ The Set Time dialog box closes.

#### TIP

The CPU's date and time setting can be changed even if no project is open.



#### CAUTION

An entered correction value takes effect at the next restart or power-up.

## B15.6 Clearing Program

This section describes how to initialize the program in the CPU and clear (initialize) all devices except for file registers in the CPU. This function is available only when the program is not executing.

To clear the program in the CPU, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

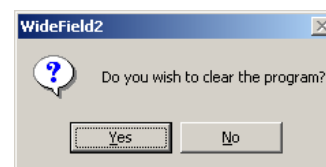
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Clear Program] from the menu bar.

⇒ A confirmation dialog box appears.

(3) Click [Yes].

⇒ If a program is running, a confirmation dialog box appears.

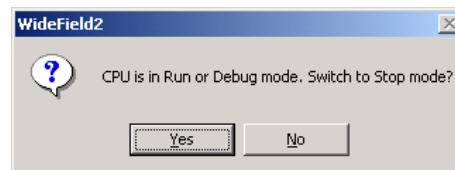


Step (3)

B12\_10.VSD

(4) Click [Yes].

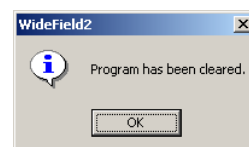
⇒ The program in the CPU is initialized, and a confirmation dialog box appears.



Step (4)

B12\_11.VSD

(5) Click [OK].



Step (5)

B12\_12.VSD



### CAUTION

If both WideField2 and ToolBox applications are connected online concurrently from the same PC, You must first disconnect the ToolBox application before you can clear the program in the CPU from WideField2.

### TIP

The program in the CPU can be cleared even if no project is open.

Clearing the program in the CPU automatically disconnects the FA-M3.

## B15.7 Clearing Devices

This function initializes all devices in the CPU. Lock-up devices are initialized as well, but some devices such as file registers are not initialized. This function is available only when no program is being executed.

### TIP

Lock-up devices retain their state even when the power supply is shut off. To define the types and ranges of lock-up devices, use the configuration function.

To clear devices, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

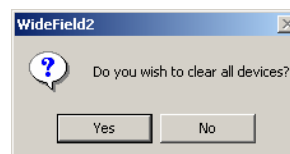
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Clear Devices] from the menu bar.

⇒ A confirmation dialog box appears.

(3) Click [Yes].

⇒ If a program is running, a confirmation dialog box appears.

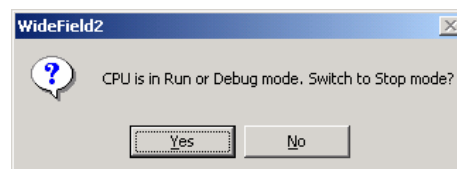


Step (3)

B12\_13.VSD

(4) Click [Yes].

⇒ All devices are cleared, and a confirmation dialog box appears.



Step (4)

B12\_14.VSD

(5) Click [OK].



Step (5)

B12\_15.VSD

### TIP

Devices can be cleared even if no project is open.

## B15.8 Reset Start

This section describes how to reset-start the FA-M3. You can reset either the entire system or only the connected CPU.

To perform a reset, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

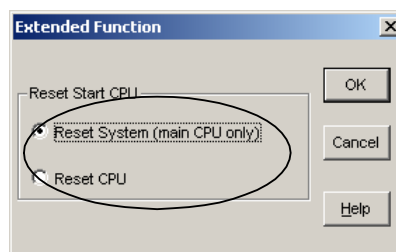
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Reset Start] from the menu bar.

⇒ The Extended Function dialog box appears.

(3) Turn on the [Reset System] or [Reset CPU] option button in the [Reset Start CPU] group box, and click [OK].

⇒ A dialog box appears to confirm whether to reset start.

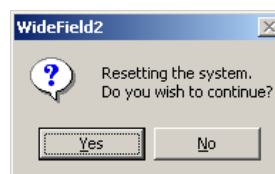


Step (3)

B12\_16.VSD

(4) Click [Yes].

⇒ The reset start is performed, and a confirmation dialog box appears.



Step (4)

B12\_17.VSD

(5) Click [OK].



Step (5)

B12\_19.VSD

#### TIP

Reset start can be executed even if no project is open.

When reset start is initiated for a sequence CPU module with a MODE switch, the system displays a confirmation message, which varies with the current selection of the MODE switch number.

**CAUTION**

- 
- Reset start causes the FA-M3 to be disconnected from your personal computer.
  - The Reset System option applies only to the main CPU (the CPU installed in slot 1). If system reset is attempted on an add-on CPU, an error occurs and system reset is not performed.
  - Reset start initializes all devices other than lock-up devices.
  - Reset start is not available during online editing.
  - If a system is configured of multiple CPUs, do not perform Reset CPU on an individual CPU. Otherwise, an error will occur when CPUs are communicating or when multiple CPUs access the same module. If a system consists of multiple CPUs, perform System reset for the main CPU (CPU mounted in slot 1).
  - If both WideField2 and ToolBox applications are connected online concurrently from the same PC, You must first disconnect the ToolBox application before you can execute reset start from WideField2.
-

## B15.9 Getting and Releasing Exclusive Access Control

This section describes how to get and release exclusive access control of the FA-M3.

Once a machine gets exclusive access control, the following functions are no longer available from other machines.

### Restricted Functions

- Changing the operating mode (run/debug/stop)
- Changing forced set/reset or device values
- Stopping or canceling refreshing
- Downloading
- Online editing

You can perform three types of operations on exclusive access control:

- **Getting Exclusive Access Control**  
Gets exclusive access control. Other machines can no longer use the restricted functions mentioned above. You cannot get exclusive access control if it is already held by another machine. Force the release of exclusive access control and then get it.
- **Releasing exclusive access control**  
Releases the exclusive access control that you hold. Other machines can now use the restricted functions mentioned above.
- **Forcing Release of Exclusive Access Control**  
Forces another machine that holds exclusive access control to release it. Once released, all terminals can now use the restricted functions mentioned above.

### ■ Getting Exclusive Access Control

Gets exclusive access control. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

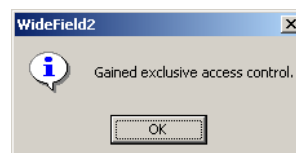
#### SEE ALSO

For online connection procedures, see B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Exclusive Access Control]–[Get] from the menu bar.

⇒ Your machine gets exclusive access control and a confirmation dialog box appears.

(3) Click [OK].



Step (3)

B12\_20.VSD

## ■ Releasing Exclusive Access Control

Releases exclusive access control held by you. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

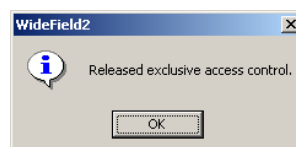
#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions] [Exclusive Access Control]–[Release] from the menu bar.

⇒ Exclusive access control is released and a confirmation dialog box appears.

(3) Click [OK].



Step (3)

B12\_21.VSD

## ■ Forcing Release of Exclusive Access Control

Forces releases of exclusive access control held by another machine. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

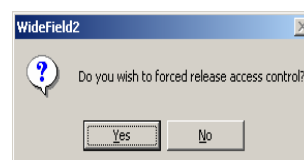
For details on online connection procedures, see Section B10.1, "Connecting and Disconnecting."

(2) Select [Online]–[Extended Functions]–[Exclusive Access Control]–[Forced Release] from the menu bar.

⇒ A confirmation dialog box appears.

(3) Click [Yes].

⇒ Exclusive access control is released by force, and a confirmation dialog box appears.

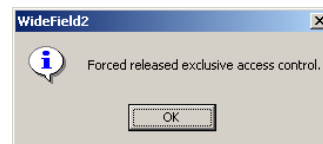


Step (3)

B12\_22.VSD



(4) Click [OK].



Step (4)

B12\_23.VSD

---

**TIP**

Getting and releasing of exclusive access control can be executed even when no project is open.

---



# B16. CPU Properties

The CPU Properties function enables detailed configuration of FA-M3 sequence CPU modules.

This chapter describes how to edit and set up CPU properties using WideField2.

## SEE ALSO

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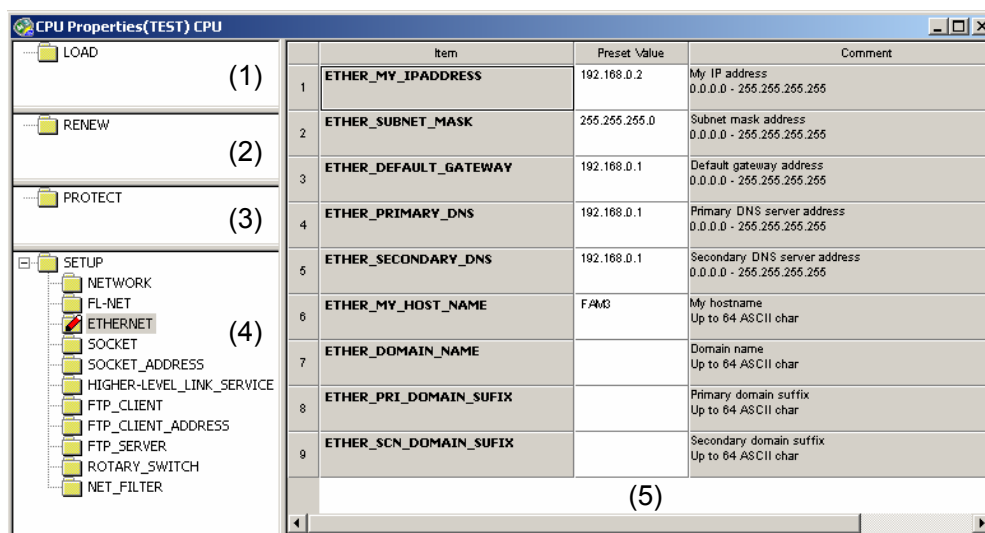
- For more details on sequence CPUs modules that support CPU properties, as well as a functional overview and data of CPU properties, see: "Sequence CPU – Functions".
-

## B16.1 Fundamentals of CPU Properties

This section describes the basic structure and limitations of CPU properties.

### B16.1.1 Window Layout

The figure below shows the layout of the CPU properties edit window. The table below describes the window elements.



B13C01\_01A.VSD

Figure B16.1 CPU Properties Edit Window

Table B16.1 CPU Properties Edit Window

	Window Pane	Description
(1)	LOAD pane	Displays LOAD section settings in the Settings window.
(2)	RENEW pane	Displays RENEW section settings in the Settings window.
(3)	PROTECT pane	Displays PROTECT section settings in the Settings window. * This pane is hidden by default, and can be displayed by dragging the pane boundary.
(4)	SETUP pane	Selecting a section in this pane displays the properties of the section in the Settings window.
(5)	Settings window	Displays settings belonging to the section selected in one of the left window panes. Of the displayed columns, only data in the Preset Value column is editable.

## B16.1.2 Menu Layout

This subsection describes the CPU properties menu layout and functions, which are enabled in the CPU Properties edit window.

**Table B16.2 CPU Properties Related Menu Items**

Menu Command			Function Description
File	Open	CPU Properties	Opens a specified CPU properties file.
	Close		Closes the active window. If there are unsaved changes, displays a dialog to confirm whether to save changes.
	Save		Saves CPU property values in the active window to file.
	Save As		Saves CPU property values in the active window with a different file name. The edit window retains the original file name.
Edit	Cut		Cuts the data at the cursor or the selected data and pastes it on the clipboard.
	Copy		Copies the data at the cursor or the selected data and pastes it on the clipboard.
	Paste		Pastes the contents of the clipboard at the cursor position.
	Delete		Deletes the data at the cursor or the selected data.
Online	Download	Project+CPU Properties	Downloads both the open project and specified CPU properties to the CPU.
		CPU Properties	Downloads only the specified CPU properties to the CPU.
	Upload	Project+CPU Properties	Uploads both the open project and specified CPU properties to the CPU.
		CPU Properties	Uploads only the specified CPU properties to the CPU.
	Extended Functions	Clear CPU Properties	Reverts CPU properties to their factory setting.
		Protection of CPU Properties	Enables protection for the CPU properties defined in the CPU.

**Table B16.3 CPU Properties Pop-up Menu**

Pop-up Menu	Description
Cut	Cuts the data at the cursor or the selected data and pastes it on the clipboard.
Copy	Copies the data at the cursor or the selected data and pastes it on the clipboard.
Paste	Pastes the contents of the clipboard at the cursor position.
Delete	Deletes the data at the cursor or the selected data.
Save	Saves CPU property values.
Download	Transfers current CPU property values to the CPU.

### B16.1.3 Creating CPU Property File

There are two ways to create a CPU property file, which is editable on a PC.

- **Upload from CPU**

Select [Online]–[Upload]–[CPU Properties] from the menu, and specify a folder and filename for saving the CPU property file.

- **Default File**

Select [File]–[Open]–[CPU Properties] from the menu, and select an appropriate file from the displayed files located in the folder named "CPUPROPERTY" to open it. (The CPUPROPERTY folder is located in the WideField2 installed folder.) Then, select [File]–[Save As] from the menu, and specify a folder and filename for saving the CPU property file.

### B16.1.4 Limitations

The following limitations apply to the CPU Properties function.

- **No validity checks are performed for specified CPU property values.**

Validity checks are performed only when CPU properties are downloaded to the CPU.

- **Addition and deletion of CPU property items are not allowed.**

- **Do not use the CPU properties of a different CPU type.**

## B16.2 CPU Properties Function

This subsection describes CPU Properties related functions.

### B16.2.1 Open

The Open command opens a user specified CPU property file in a CPU Properties edit window.

#### ◆ Procedure ◆

- (1) Select [File]–[Open]–[CPU Properties] from the menu bar, and from the displayed dialog, select a CPU property file to be edited.
- ⇒ The CPU Properties edit window is displayed.

### B16.2.2 Close

The Close command closes an open CPU Properties edit window.

#### ◆ Procedure ◆

- (1) Select [File]–[Close] from the menu bar.
- ⇒ The CPU Properties edit window closes.
- ⇒ If there are unsaved edited changes, a dialog is displayed to confirm whether to save the changes.

## B16.2.3 Save

CPU Properties can be saved either by selecting [Save], [Save As] or [Close] from the menu. The procedures for [Save] and [Save As] are described here.

### ■ Save

The Save command saves CPU Properties currently being edited to a file.

#### ◆ Procedure ◆

- (1) Ensure that the edit window for the CPU properties to be saved is active.
  - (2) Select [File]–[Save] from the menu bar, or select [Save] from the right-click pop-up window of the CPU properties edit window.
- ⇒ CPU property values are saved.

### ■ Save As

The Save As command saves CPU Properties currently being edited to a file with a new name.

#### ◆ Procedure ◆

- (1) Ensure that the edit window for the CPU properties to be saved is active.
  - (2) Select [File]–[Save As] from the menu bar.
  - (3) In the displayed Save As dialog box, specify a destination folder and filename, and click [Save].
- ⇒ CPU property values are saved.



#### CAUTION

The CPU Properties edit window retains the same filename that was to open the file even after execution of the Save As function.



## B16.2.4 Edit

CPU Property values can be modified or deleted in a CPU Properties edit window. However, addition or deletion of CPU Property section and CPU property items are not allowed.

### ■ Basic Operations for Editing CPU Properties

This subsection describes the procedure for editing CPU Property values.

#### ◆ Procedure ◆

- (1) Ensure that the edit window for the CPU properties to be edited is active.
- (2) Click one of the sections displayed in the SETUP pane.  
⇒ The property items and values of the selected section are displayed in the right window.
- (3) Click on or move the cursor to a property value to be edited.
- (4) Enter the new value. To modify a value partially, double-click or press the [F2] key to switch to edit mode.



#### CAUTION

No validity checks are performed for specified property values so exercise care when editing property values.

## B16.2.5 Download

CPU properties may be downloaded alone or together with the project. Furthermore, CPU properties may be downloaded directly from the CPU Properties edit window.

This subsection describes the procedure for downloading CPU properties only, as well as the procedure for downloading directly from a CPU Properties edit window.



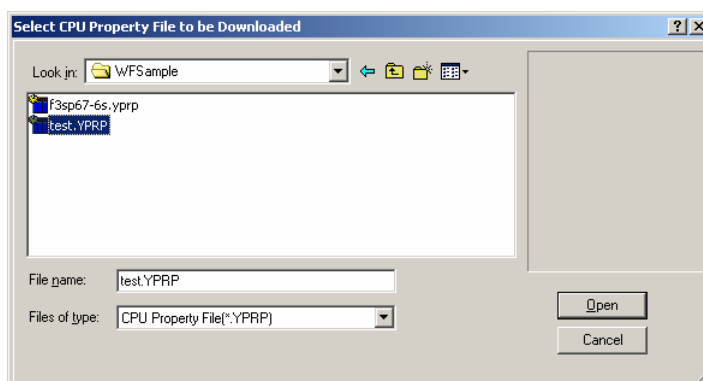
### CAUTION

- If download fails because of a coding error in a CPU property file, the error line and property are displayed. (Information is not displayed for some errors). Some errors such as invalid section name or invalid string cannot be corrected using WideField2, and must be corrected by opening the CPU property file using a generic text editor.
- For F3SP66-4S/67-6S CPU modules, CPU Property values are written to the flash ROM immediately after download. For this reason, do not power off the FA-M3 while a "Writing" status is blinking on the Action Monitor bar.

## ■ Downloading CPU Properties Only

### ◆ Procedure ◆

- (1) Select [Online]–[Download]–[CPU Properties] from the menu bar.
- (2) Select the CPU Property file to be downloaded in the file selection dialog, and click [Open].
- (3) If a CPU Properties security keyword is defined, a keyword input dialog is displayed.
- (4) Enter a valid keyword, and click [OK].  
⇒ Download begins.
- (5) After download is successfully completed, a message is displayed.

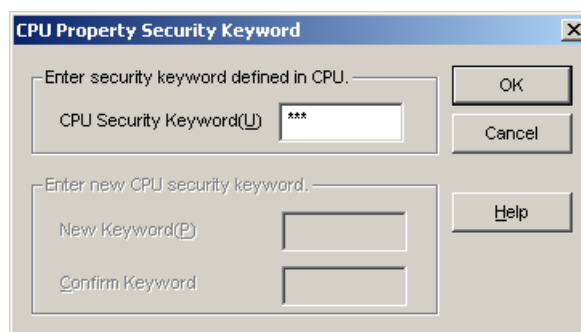


Step (2)

B13C01\_02A.VSD

### TIP

Entering an invalid security keyword generates a download error.



Step (3)

B13C01\_03A.VSD

## ■ Downloading from CPU Properties Edit Window

Initiating download from a CPU Properties edit window downloads the latest CPU property values displayed in the window.

### ◆ Procedure ◆

- (1) Ensure that the window of the CPU Properties to be downloaded is active.
- (2) Click the right mouse button, and select [Download] from the pop-up menu.
- (3) If a CPU Properties security keyword is defined, a keyword input dialog is displayed.
- (4) Enter a valid keyword, and click [OK].  
⇒ Download begins.

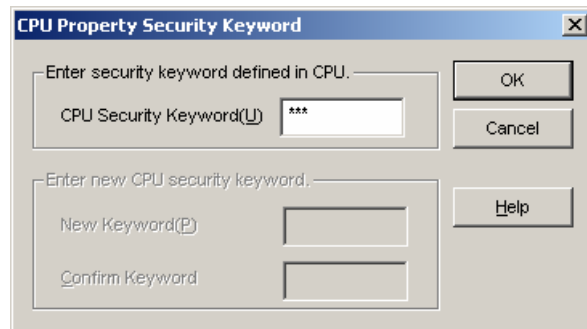
## B16.2.6 Upload

CPU properties may be uploaded alone or together with the project.  
This subsection describes the procedure for uploading CPU properties only.

### ■ Uploading CPU Properties Only

#### ◆ Procedure ◆

- (1) Select [Online]–[Upload]–[CPU Properties] from the menu bar.
- (2) If a CPU Properties security keyword is defined, a keyword input dialog is displayed.
- (3) Enter a valid keyword, and click [OK].  
⇒ Upload begins.
- (4) After upload is successfully completed, a dialog is displayed to prompt for a destination filename. Specify a destination folder and filename and click [Save].



Steps (2) and (3)

B13C01\_04A.VSD

## B16.2.7 Protection of CPU Properties

CPU properties can be protected by defining a security keyword up to 8 characters long.

With protection enabled, downloading, uploading or initializing of CPU properties requires the entry of a valid security keyword.

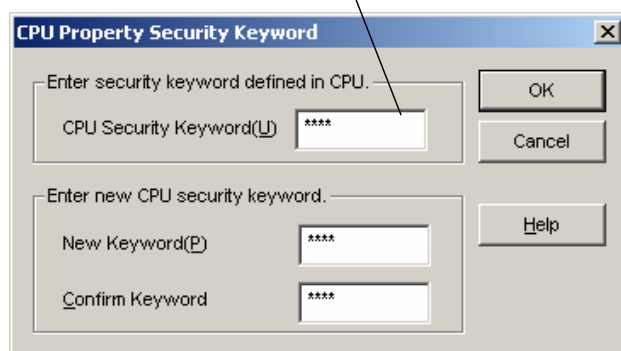
This subsection described how to set and remove protection of CPU properties.

### ■ Set Protection

#### ◆ Procedure ◆

- (1) Select [Online]–[Extended Functions]–[Protection of CPU Properties]–[Set] from the menu bar.  
⇒ A keyword input dialog is displayed.
- (2) Enter a valid keyword, and click [OK].
- (3) If the keyword is not correctly specified, an error message is displayed.

Keyword input is required only if protection is enabled for property values stored in the CPU.



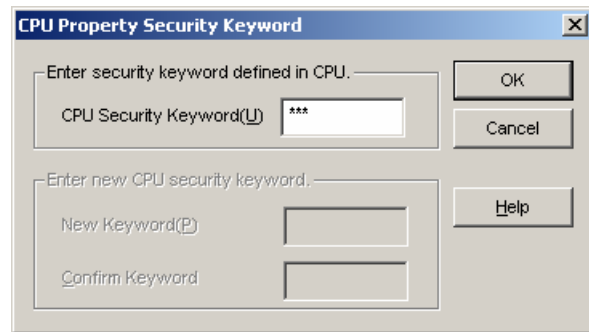
Steps (2) and (3)

B13C01\_05A.VSD

## ■ Remove Protection

### ◆ Procedure ◆

- (1) Select [Online]–[Extended Functions]–  
[Protection of CPU Properties]–  
[Remove] from the menu bar  
⇒ A keyword input dialog is displayed.
- (2) Enter a keyword, and click [OK].
- (3) If the keyword is not correctly  
specified, an error message is  
displayed.



Steps (2) and (3)

B13C01\_04A.VSD

## B16.2.8 Clear CPU Properties

Clearing (initializing) CPU Properties reverts their values to their factory setting.

### ◆ Procedure ◆

- (1) Select [Online]–[Extended Functions]–  
[Clear CPU Properties] from the menu  
bar
- (2) Click [Yes] on the displayed  
confirmation dialog.
- (3) If protection is enabled, a keyword  
input dialog is displayed.
- (4) Enter a valid keyword, and click [OK].  
⇒ After CPU properties are successfully  
cleared, a completion message is  
displayed.

## B16.2.9 Online Display of CPU Properties

Displaying CPU properties when an online connection is active displays property values currently defined in the CPU.

### ◆ Procedure ◆

- (1) Select [Online]–[CPU Properties] from the menu bar.
- (2) If protection is enabled, a keyword input dialog is displayed.
- (3) Enter a valid keyword, and click [OK].  
⇒ CPU property values defined in the CPU are displayed.

#### **TIP**

---

CPU properties displayed by selecting [Online]–[CPU Properties] from the menu are saved in a work folder. If the data is subsequently edited and downloaded, it is necessary to save the changes to file.

---

## B17. Program Monitor

The Program Monitor displays the contents of blocks in the form of a ladder program. It can be used to check the ON/OFF status of relays and the current values of data in a program.

### B17.1 Program Monitor Window

Figure B17.1 shows an example of a Program Monitor window.

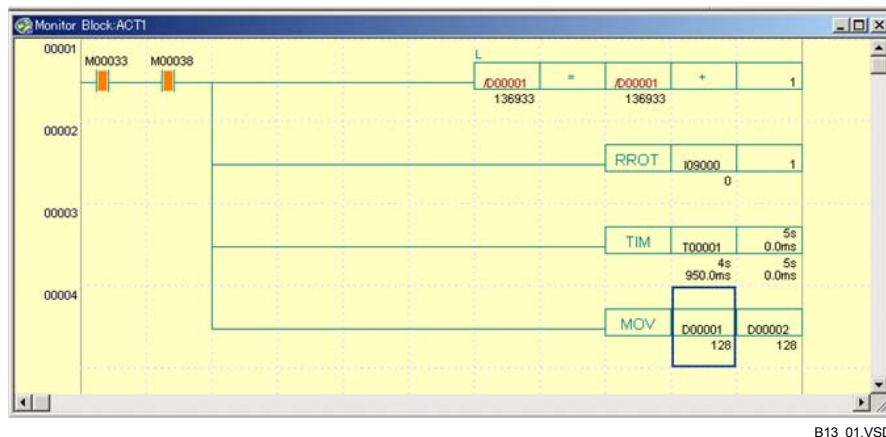


Figure B17.1 Program Monitor Window

#### B17.1.1 Display of Relay ON/OFF Status

The Program Monitor window shows the relay ON/OFF statuses as follows:

- A Conduction states of contact **A** and contact **B**



Figure B17.2 Conduction States of Contact A and Contact B

- B Energizing states of coils

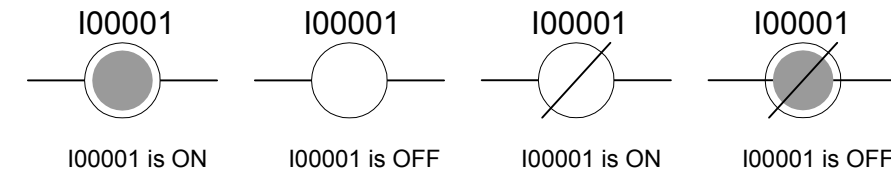
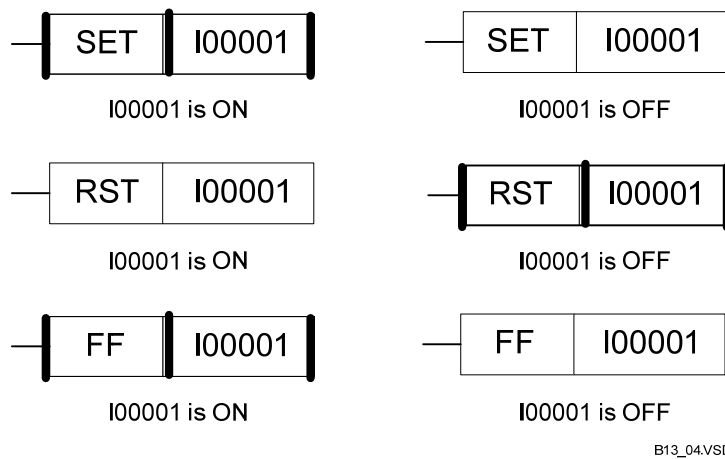


Figure B17.3 Energizing States of Coils

#### TIP

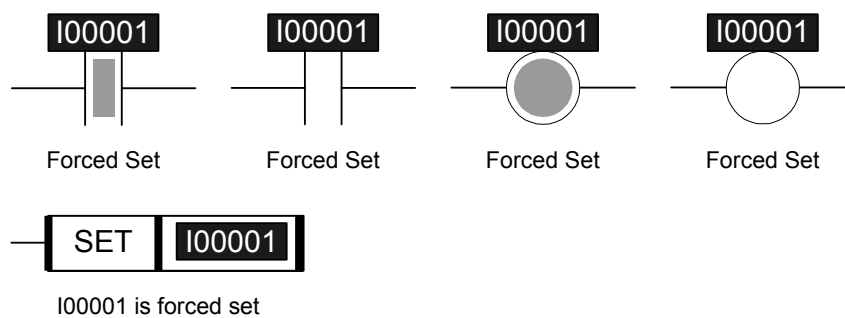
The energizing state refers to the ON/OFF state of a relay coil specified in an instruction parameter. In the Program Monitor, the display of some instructions such as the Load (LD) and Out (OUT) instructions changes according to the ON/OFF state of the relay.

- C SET, RST, and FF instructions



**Figure B17.4 SET, RST, and FF Instructions**

- D Display of Forced Set/Reset



**Figure B17.5 Display of Forced Set/Reset**

Devices that are forced set or forced reset are highlighted in black.

**TIP**

The operation result of a contact A is ON when the instruction parameter relay is ON.

The operation result of a contact B is ON when the instruction parameter relay is OFF.

A contact may represent the result of the execution of a LOAD (LD), AND, or OR instruction.



## B17.1.2 Display of Application Instructions

You can display contents of devices and current values of timers (T) and counters (C) within application instructions by turning on the detailed display mode. The normal Program Monitor display is the same as that in offline mode.

### TIP

Application instructions refer to advanced instructions performing arithmetic operations, character string processing, etc. Most instructions operate on 16-bit or 32-bit data.

The conduction display indicates when application instructions such as timer/counter, comparison instructions, and bit operation instructions are executed.

### SEE ALSO

- For details on application instructions, see "Sequence CPU – Instructions" (IM34M6P12-03E).
- For details on how to display detailed information, see Section B17.3, "Displaying Details of Application Instructions."

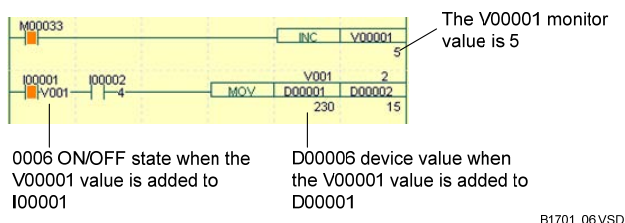
## B17.1.3 Display of Index Modified Devices

A device with index register modification can be displayed in 4 types of display formats, depending upon display modes specified.

This subsection describes each of these display formats.

### ■ Device Monitor Value Display/Automatic Index Display

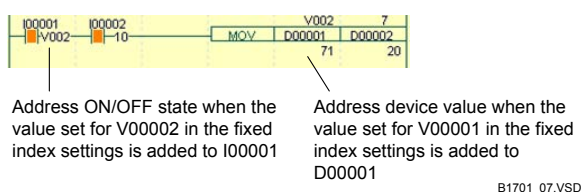
The content of the index register is loaded from the CPU module, and then a monitor value for the address of the parameter that reflects that value is displayed.



**Figure B17.6 Display of Index Modified Devices  
(Device Monitor Value Display/Automatic Index Display)**

### ■ Device Monitor Value Display/Fixed Index Display

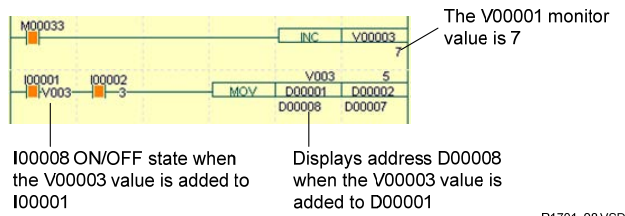
The index value set in fixed index settings is read and then a monitor value for the address of the parameter that reflects that value and the content of the index register is displayed.



**Figure B17.7 Display of Index Modified Devices  
(Device Monitor Value Display/Fixed Index Display)**

## ■ Device Address Display/Automatic Index Display

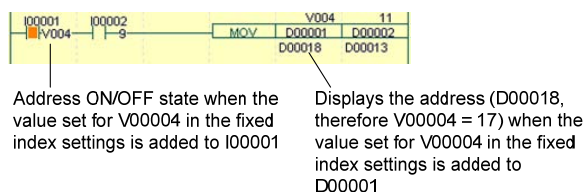
The content of the index register is loaded from the CPU module, and then the actual address number of the parameter that reflects that value is displayed. Only a detailed display of the application instructions is displayed in the address. The basic instructions are displayed in the monitor value.



**Figure B17.8 Display of Index Modified Devices (Device Address Display/Automatic Index Display)**

## ■ Device Address Display/Fixed Index Display

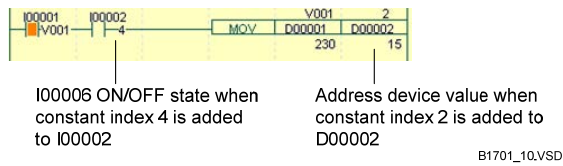
The index value set in fixed index settings is read and then the actual address number for the parameter that reflects that value and the content of the index register is displayed. Only a detailed display of the application instructions is displayed in the address. The basic instructions are displayed in the monitor value.



**Figure B17.9 Display of Index Modified Devices (Device Address Display/Fixed Index Display)**

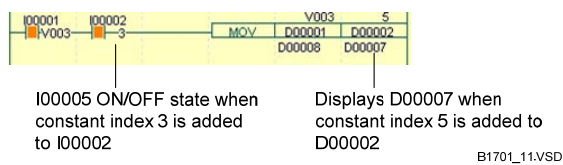
In addition, a device with constant index modifications is displayed with the device after index modification.

## ■ Device Monitor Value Display



**Figure B17.10 Display of Index Modified Devices (Constant Index Monitor Value Display)**

## ■ Device Address Display



**Figure B17.11 Display of Index Modified Devices (Constant Index Address Display)**

### SEE ALSO

- For details about display formats, see Section B17.3, "Displaying Details of Application Instructions".

## B17.2 Starting and Closing the Program Monitor

This section describes how to start and exit from the Program Monitor, as well as how to save monitored programs.

### B17.2.1 Starting the Program Monitor

This subsection describes how to start the Program Monitor. Use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and open the project to be monitored.

##### SEE ALSO

For details on the online connection procedure, see Section B11.1, "Connecting and Disconnecting."

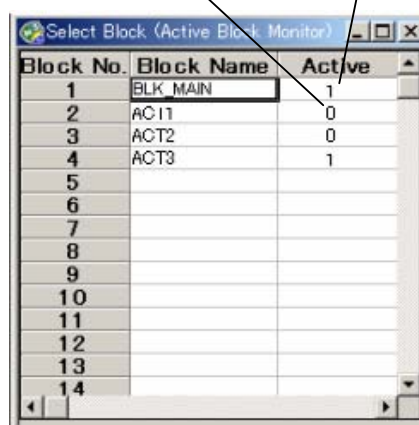
For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Program Monitor] from the menu bar.

⇒ The Select Block (Active Block Monitor) window opens.

- (3) Double-click the line containing the name of the block to be monitored, or move the cursor to the line and press the [Enter] key.

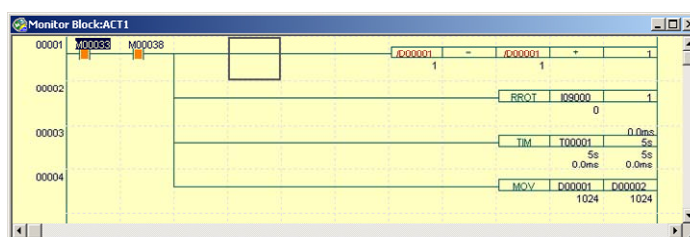
0 means stopped      1 means activated



Step (3)

B13\_07.VSD

⇒ The selected block is displayed as a ladder program in the Block Monitor window.



Step (3)

B13\_08.VSD

#### TIP

You can open multiple Block Monitor windows for different blocks concurrently.

**CAUTION**

You can open a Block Monitor window even if no project is open and no tag name definition/comment is downloaded, or if the open project is different from the downloaded program, with the following limitations:

- If no project is open and no tag name definition/comment is downloaded, tag names, structure tag names, or comments are not displayed. Online edited contents cannot be saved to the file.

Program coded with tag names and structure tag names display actual addresses that are allocated when the project is downloaded.

- If the open project is different from the downloaded program, tag names, structure tag names, or comments are not displayed correctly.
- If multiple PCs initiate uploading concurrently from the same CPU when connected via FL-net, the following error message may be displayed: "Invalid communication number in command. Retry." If this happens, try to upload again from each PC in turn.

**SEE ALSO**

For details on FL-net connection, see Section B11.1, "Connecting and Disconnecting."

## B17.2.2 Saving a Monitored Program

You can save a block displayed in a Block Monitor window to a file.

### ■ Saving by Overwriting File with the Same Name as the Block

You can save the block you are monitoring to a file having the same name as the block. To do so, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is displayed.

(2) Select [File]–[Reflect on File] from the menu bar.

⇒ The block displayed in the Block Monitor window is saved, overwriting a file in the project with the same name as the block name.

## ■ Saving as a New File

You can save the block you are monitoring to a new file. To do so, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Block Monitor window is displayed.
- (2) Select [File]–[Reflect on Another File] from the menu bar.  
⇒ The Save As dialog box opens.
- (3) Enter a new file name in the [File name] text box, and click [Save].  
⇒ The block displayed in the Block Monitor window is saved in the project as a new file.

## B17.2.3 Closing the Program Monitor

To end the Program Monitor, use the following procedure.

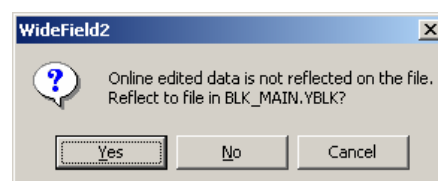
### ◆ Procedure ◆

- (1) Confirm that the Block Monitor window is displayed.
- (2) Select [File]–[Close] from the menu bar.  
⇒ The Block Monitor window closes.



### CAUTION

If the program in the program has been modified in online editing, a confirmation dialog box is displayed. Clicking [Yes] saves the changes to a file in the project with the same block name. Clicking [No] discards all changes and closes the Block Monitor window.



Step (2)

B13\_10A.VSD

### TIP

The Select Block (Active Block Monitor) window remains open even when the Block Monitor window closes. To close the Select Block window, select [File]–[Close] from the menu bar.

## B17.3 Displaying Details of Application Instructions

The detailed display function displays the content of devices and the current value of timers (T) and counters (C) in application instructions.

### SEE ALSO

For details on displaying structure devices, see Section B32, "Structures."

### B17.3.1 Displaying Detailed Information

To display detailed information for application instructions, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is open.

(2) Select [View]–[Detail] from the menu bar.

⇒ Details of devices are displayed. In detailed display mode, the [Detail] menu item is displayed with a checkmark.

MOV	D00001	D00002
	512	512
TIM	T00001	5s0.0ms
	4s	5s
	590.0ms	0.0ms

Step (2)

L		
MOV	-12345678 90	D00102
		-12345 67890
CNT	C00001	1000
	719	1000

B13\_11.VSD



### CAUTION

Current and preset values for timers (T) and counters (C) are displayed below instructions. If the preset value has been online-edited, the edited value is displayed.

Timers (T) and counters (C) are normally displayed with count-down current values. To display count-up values, select [Count-up] on the Circuit Display/Input tab of the Set up Environment dialog box.

If a parameter is a structure name, selecting [Detail] on the menu does not display the detailed content of the devices. If a parameter is a structure member name, the value at the allocated address is displayed.

### SEE ALSO

For details on the Circuit Display/Input tab of the Set up Environment dialog box, see Section B1.2.4, "Circuit Display/Input Setup."

## B17.3.2 Changing Display Format

You can choose to display word data and long word data of devices in application instructions in decimal, hexadecimal, as a character string, or as a floating point (default is decimal display).

### ■ Hexadecimal Display

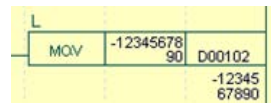
You can display the value of devices in hexadecimal notation. To do so, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the **Block Monitor** window is open and the contents of devices are displayed.

(2) Select **[View]–[Display Format]–[Hexadecimal]** from the menu bar.

⇒ The contents of devices are displayed in hexadecimal notation. In hexadecimal display mode, the **[Hexadecimal]** menu item is displayed with a checkmark.



L		
MOV	-12345678 90	D00102
		-12345 67890

Step (2)

B13\_12.VSD

### ■ Character String Display

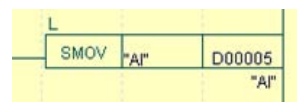
You can display the contents of devices as character strings. To do so, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the **Block Monitor** window is open and the contents of devices are displayed.

(2) Select **[View]–[Display Format]–[Character String]** from the menu bar.

⇒ The contents of devices are displayed as character strings. In character string display mode, the **[Character String]** menu item is displayed with a checkmark.



L		
SMOV	"A"	D00005
		"A"

Step (2)

B13\_13.VSD



## ■ Floating Point Display (for long word data only)

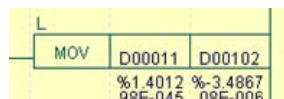
You can display long word data in floating point notation. To do so, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is open and the contents of devices are displayed.

(2) Select [View]–[Display Format]–[Floating Point] from the menu bar.

⇒ The contents of devices are displayed in floating point notation. In floating point display mode, the [Floating Point] menu item is displayed with a checkmark.



L	MOV	D00011	D00102
		%1.4012	%3.4867
		98E-045	08E-006

Step (2)

B13\_14.VSD

## ■ Decimal Display

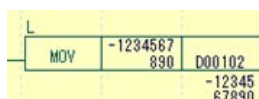
You can display the contents of devices in decimal notation. To do so, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is open and the contents of devices are displayed.

(2) Select [View]–[Display Format]–[Decimal] from the menu bar.

⇒ The contents of devices are displayed in decimal notation. In decimal display mode, the [Decimal] menu item is displayed with a checkmark.



L	MOV	-1234567	D00102
		890	-12345
			67890

Step (2)

B13\_15.VSD



### CAUTION

Current value of timers (T) and the instruction parameter constants are always displayed in the format of the input data, regardless of any change in display format.

Current values of structure member names are displayed according to the selected display format regardless of its data format defined in the structure type definition.

### B17.3.3 Display of Indirect Designation Devices

Indirect designation devices are displayed in the Block Monitor window with either the address number of the indirect designated address or the value stored in the indirect designated address.

The menu bar display changes with the current display status.

#### TIP

You can use indirect designation devices as pointers to data registers (D) or internal relays (I). You can use these devices in special-purpose instructions to manipulate addresses, or use them in normal instructions to access indirect designated devices.

#### ■ Switching from Displaying Indirect Designated Address to Displaying Value Stored in Indirect Designated Address

Indirect designation devices can be displayed with the value stored in the indirect designated address. To do so, use the following procedure.

##### ◆ Procedure ◆

- (1) Confirm that the Block Monitor window is open with indirect designation devices displayed.
- (2) Select [View]–[Display Format]–[Real Indexed Addr./Indirect Register] from the menu bar.

⇒ Indirect designation devices are displayed with the value stored in the indirect designated address. The [Real Indexed Addr./Indirect Register] menu item is displayed with a checkmark.



Value stored in indirect designated address is displayed  
Step (2)

B13\_17.VSD

#### ■ Switching from Displaying Value Stored in Indirect Designated Address to Displaying Indirect Designated Address

Indirect designation devices can be displayed with the address number of the indirect designated address. The relevant procedure is given below.

##### ◆ Procedure ◆

- (1) Confirm that the Block Monitor window is open with indirect specification devices displayed.
- (2) Select [View]–[Display Format]–[Real Indexed Addr./Indirect Register] from the menu bar.

⇒ Indirect designated devices are displayed with the indirect designated address. The [Real Indexed Addr./Indirect Register] menu item is displayed without a checkmark.



Indirect designated address is displayed  
Step (2)

B13\_16.VSD

## B17.3.4 Fixed Index Modification Monitor Display

You can reflect a parameter modified by an index register onto the program monitor screen by specifying the fixed value for the index register and having the parameter reflect that value.

You can specify the fixed index value for each index register number. In addition, you can save fixed index settings to a file.

### ■ Display Fixed Index

You can change a detailed display to a mode with a monitor display that reflects the fixed index value.

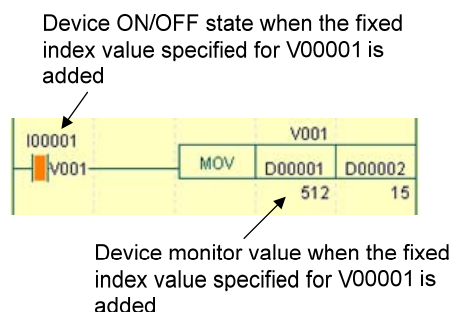
The relevant procedure is given below.

### ◆ Procedure ◆

(1) Make sure the Monitor Block window is open and the device details are displayed.

(2) Select [View]-[Display Format]-[Display Fixed Index] from the menu bar.

⇒ View a detailed display in fixed index display mode.



Step (2)

B1703\_08.VSD

### TIP

By checking [View]-[Display Format]-[Real Indexed Addr./Indirect Register], you can display the address for the monitor device reflected by the fixed index value.

## ■ Set Fixed Index

You can set a fixed index. The relevant procedure is given below.

### ◆ Procedure ◆

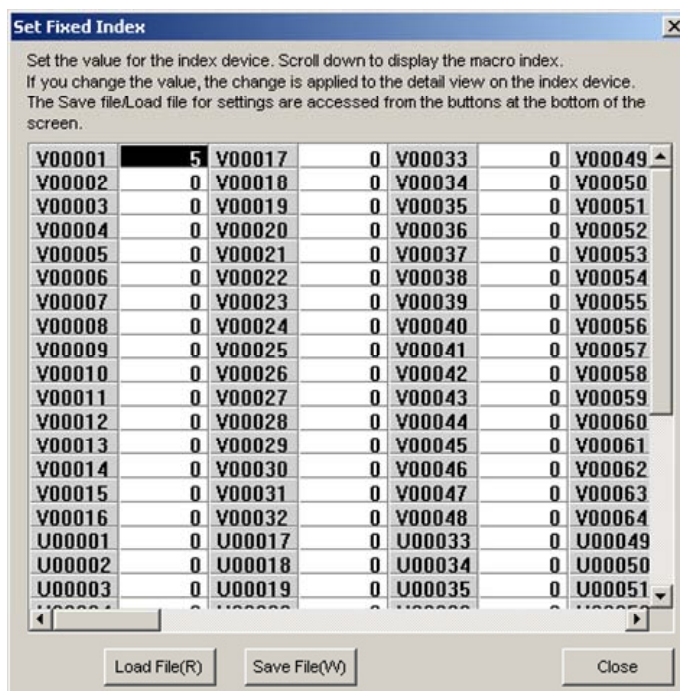
(1) Make sure the Monitor Block window is open and the device details are displayed.

(2) Select [View]-[Display Format]-[Set Fixed Index] from the menu bar.

⇒ The Set Fixed Index dialog box opens.

(3) Specify the values for the index registers.

⇒ The index settings are reflected and displayed in the detailed display results for the program monitor.



Step (2)

B1703\_09.VSD

## ■ Save Fixed Index Settings

You can save fixed index settings. The relevant procedure is given below.

### ◆ Procedure ◆

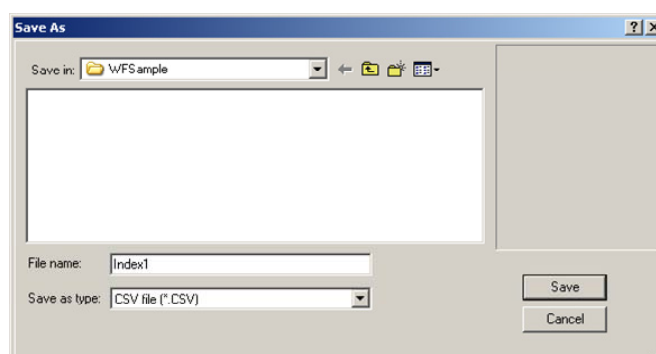
(1) Open the Set Fixed Index dialog box.

(2) Click the [Save File] button.

⇒ The Save As dialog box is displayed.

(3) Enter a file name, and click the [Save] button.

⇒ The Fixed Index Settings are saved as a CSV file.



Step (2)

B1703\_10.VSD

## ■ Load Fixed Index Settings

You can load fixed index settings that have been saved. The relevant procedure is given below.

### ◆ Procedure ◆

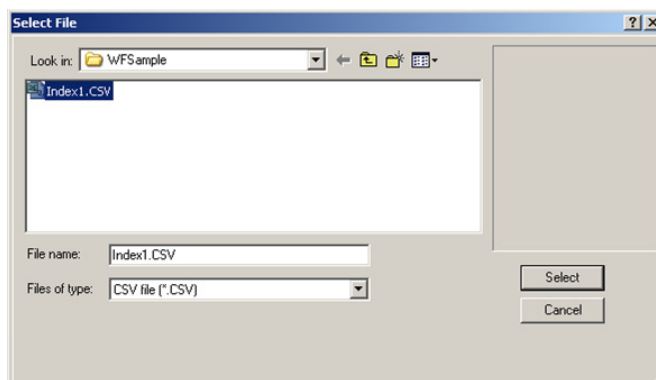
(1) Open the Set Fixed Index dialog box.

(2) Click the [Load File] button.

⇒ The Select File dialog box is displayed.

(3) Specify a fixed index setting file that has been saved, and click the [Select] button.

⇒ The fixed index settings are loaded.

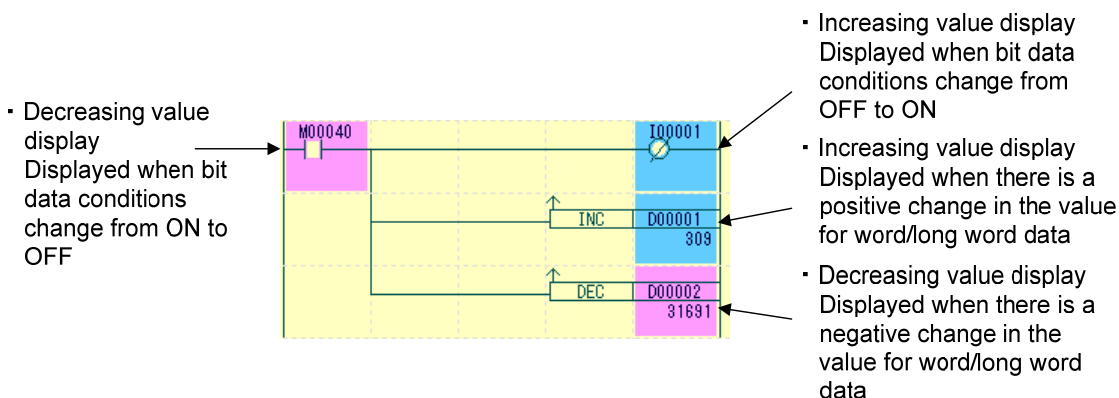


Step (2)

B1703\_11.VSD

## B17.3.5 Display Data Change Identification

The Display Data Change Identification mode is for using colors to identify parameters that have changed when the value for the instruction parameter displayed on the program monitor has changed due to the execution of the instruction.



B1703\_12.VSD

The procedure for displaying data change identification is given below.

### ◆ Procedure ◆

(1) Make sure the Monitor Block window is open.

(2) Select [View]–[Display (Expanded) Instruction Parameter]–[Display Data Change Identification].

⇒ The screen switches to Display Data Change Identification mode. In Display Data Change Identification mode, a checkmark is added to the menu.

## B17.4 Switching Display

This section describes how to switch between Program Monitor display modes. It discusses the following items:

- Switching between displaying tag names and displaying addresses
- Displaying I/O comments
- Displaying instruction numbers

### SEE ALSO

For details on displaying structure devices, see Section B32, "Structures."

### B17.4.1 Switching between Displaying Tag Names and Displaying Addresses

You can display devices in the Block Monitor window with either their tag names or addresses. To toggle the display modes, use the following procedure.

#### ◆ Procedure ◆

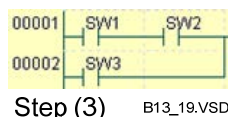
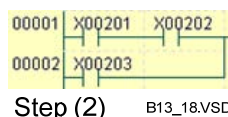
(1) Confirm that the Block Monitor window is open.

(2) Select [View]–[Display Address] from the menu bar.

⇒ Devices are displayed with their addresses. When addresses are displayed, the [Display Address] menu item is displayed with a checkmark.

(3) Select [View]–[Display Address] from the menu bar again.

⇒ Devices are now displayed with their tag names. The [Display Address] menu item is displayed without a checkmark.



### CAUTION

If no project is open, no tag name or structure tag name but only addresses are displayed.

In the circuit monitor, tag names are displayed by referring to the tag definition file specified on the [Online Comment Input] tab of the Set up Environment dialog box. To display using tag name definitions in the CPU, you must first upload them from the CPU.

Parameters that are structures or structure member names are always displayed as such; addresses are not displayed even in address display mode.

### SEE ALSO

For details on the Set up Environment dialog box, see Section B1.2, "Environment Setup."

## B17.4.2 Displaying I/O Comments

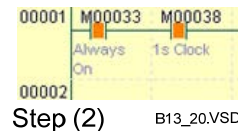
You can display I/O comments in the Block Monitor window. To do so, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is open.

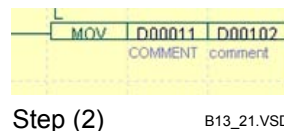
(2) Select [View]–[Display I/O Comment] from the menu bar.

⇒ I/O comments are displayed. When I/O comments are displayed, the [Display I/O Comment] menu item is displayed with a checkmark.



### CAUTION

If detailed display option is active, detailed information is displayed as shown in the figure on the right.



(3) Select [View]–[Display I/O Comment] from the menu bar again.

⇒ I/O comments disappear. The [Display I/O Comment] menu item is displayed without a checkmark.



### CAUTION

If no project is open, I/O comments are not displayed.

If a parameter is a structure name, no I/O comment is displayed. If a parameter is a structure member name, the I/O comment specified for the member in the structure type definition will be displayed. However, if the structure is a Q structure or an actual address allocated to a member, the I/O comment specified for the member in the structure type definition will not be displayed.

Comments for constant name are not displayed but can be read using TipHelp.

## B17.4.3 Displaying Instruction Numbers

You can display instruction numbers in the Block Monitor window.

### ■ How to Display Instruction Numbers

To display instruction numbers, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the Block Monitor window is open.

(2) Select [View]–[Display Instruction Number] from the menu bar.

⇒ Instruction numbers are displayed. When instruction numbers are displayed, the [Display Instruction Number] menu option is displayed with a checkmark.



(3) Select [View]–[Display Instruction Number] from the menu bar again.

⇒ The instruction numbers disappear. The [Display Instruction Number] menu item is displayed without a checkmark.

### ■ Hide Circuits in the Display

Hiding circuits displays ladder programs with circuit comments as titles but without circuit details. The procedure is the same as that used to fold circuits when editing a ladder program.

#### SEE ALSO

For details on hidden circuits, see Section B4.2.32, "Index View."



## B17.5 Finding in Program Monitor

You can search for devices and instructions from a Block Monitor window.

### B17.5.1 Finding Devices and Instructions

You can search a block displayed in the Block Monitor window for devices and instructions. The procedure is the same as that used to perform a search when editing a ladder program.

#### SEE ALSO

For details on how to find devices and instructions, see Sections B4.7.1, "Finding Device," and B4.7.2, "Finding Instruction."



#### CAUTION

In the Program Monitor, it is assumed that all addresses allocated to tag names are confirmed allocations. Therefore, when searching for a tag name, it also searches for the address allocated to the tag name. Likewise, when searching for an address, it also searches for the tag name assigned to the address. For example, if "SW1=X00301" is defined in the tag name definitions, then searching for SW1 and searching for X00301 produce the same result.

### B17.5.2 Jump Function

You can use the jump function when a block is displayed in the Block Monitor window. The procedure is the same as that used to perform jumps when editing a ladder program.

#### SEE ALSO

For details on the jump function, see Section B4.7.5, "Jumps."

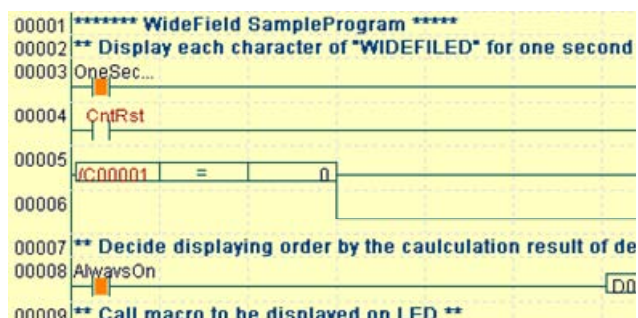
### B17.5.3 Jump to Tag Name Definition

The Jump to Tag Name Definition function displays defined tag name definitions for the device where the cursor is placed in the program monitor screen.

The relevant procedure is given below.

#### ◆ Procedure ◆

- (1) Move the cursor to the device position to which to jump.



Step (1)

B1705\_01.VSD

(2) Select [Find]-[Jump to Tag Name Definition].

⇒ The tag name definition monitor screen opens, and the positions of defined tag names are displayed.

	Tag Name	Address	Data	Format	I/O Comment (32 char)
1	CntRst	/00001	<input type="checkbox"/> Relay		Count Reset
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

Step (2)

B1705\_02.VSD

### TIP

If the target device has no defined tag name definitions, only the tag name definition monitor screen opens.

## B17.5.4 Jump to Device Monitor

The Jump to Device Monitor function displays applicable positions in the device monitor screen for the device where the cursor is placed in the program monitor screen.

The relevant procedure is given below.

### ◆ Procedure ◆

(1) Move the cursor to the device position to which to jump.

00001	***** WideField SampleProgram *****
00002	** Display each character of "WIDEFIELD" for one second
00003	OneSec...
00004	CntRst
00005	W000001 = 0
00006	
00007	** Decide displaying order by the calculation result of de
00008	AlwaysOn
00009	** Call macro to be displayed on LED **

Step (1)

B1705\_03.VSD

(2) Select [Find]-[Jump to Device Monitor].

⇒ The device monitor screen opens, and the positions of applicable addresses are displayed.

Address	Word Data	Long Word Data
A00001	0	0
A00002	0	0
A00003	0	0
A00004	0	0
A00005	0	0
A00006	0	0
A00007	0	0
A00008	0	0
A00009	0	0
A00010	0	0
A00011	0	0
A00012	0	0
A00013	0	0
A00014	0	0
A00015	0	0
A00016	0	0

Step (2)

B1705\_04.VSD

## **B17.5.5 Displaying Device Usage Status**

You can display device usage status for a block displayed in a Block Monitor window. The procedure is the same as that used to display device usage status when editing a ladder program.

### **SEE ALSO**

For details on how to display device usage status, see Section B4.7.6, "Displaying Device Usage Status."

---

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## B17.6 Suspending and Resuming Program Monitor

This section describes how to suspend and resume the Program Monitor. When the Program Monitor is suspended, statuses of devices are no longer updated in the Block Monitor window.

### B17.6.1 Suspending a Program Monitor

To suspend the Program Monitor, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that a Block Monitor window is open.
  - (2) Select [View]–[Suspend Monitoring] from the menu bar.
- ⇒ The Program Monitor is suspended.

### B17.6.2 Resuming a Program Monitor

To resume the Program Monitor, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that the Block Monitor window is open.
  - (2) Select [View]–[Resume Monitoring] from the menu bar.
- ⇒ The Program Monitor resumes operation.

#### TIP

---

Suspension of monitoring applies to all Block Monitor windows and device monitor windows.

---

## B17.7 Copying Images of Circuits

You can copy images of circuits in a block monitor window.

Similar to making an image copy in ladder program edit window, you can also make an image copy in a monitor window.

Besides circuits, you can also copy images of other monitored data in a monitor window so long as the window does not scroll while you are selecting the range to be copied.



## B18. Device Monitor

The Device Monitor displays windows for different device types as "xxxx Monitor" windows, where xxxx indicates a device type you have specified. Using the Device Monitor, you can check the ON/OFF status of relays, the current values of data, and the current and preset values of timers (T) and counters (C).

You can also use debugging functions in the Device Monitor. The debugging functions available include:

- Force set or reset a relay
- Change the data of a register or relay on a word or long-word basis.
- Change the current value of a timer (T) or counter (C).
- Change the preset value of a timer (T) or counter (C).

### TIP

For details on debugging functions, see Chapter B21, "Using the Debugging Function."



### CAUTION

The following modules do not support the advanced function module register monitor.

- High Speed Counter Modules (F3XP01-0H and F3XP02-0H)

Some advanced function modules are such that modules within the same family have different register maps. The advanced function module register monitor may not display the register maps of these modules correctly.

To fix the problem and correctly display the register map of the module to be used, you need to perform the following file operations:

- (1) Using windows Explorer or other means, open the folder named "c:\Program Files\Common Files\yokogawa\FAM3\FAM3IODEF". This folder contains advanced function module register monitor system files. The filename of each of these systems files (excluding the filename extension) is a four-character string, which represents a module type family. Filename extensions ".ini", ".sav", ".sav1", ".sav2" are used to distinguish individual modules within the same family.
- (2) Using Notepad or any other generic text editor, open the file for the module to be monitored and confirm the model name.

System File Map Information (Example: LC11.ini)		
;	Model:	F3LC11-1N/F3LC11-2N
;	Name:	PC Link Module
;	Specification:	F3LC11-1N : RS-232C,1 port
;		

- (3) Rename the system file for the module to be monitored by changing its filename extension to ".ini".  
For instance, to monitor a F3LC11-1F module, rename the standard system file named "LC11.sav" to "LC11.ini," which is the system filename actually used by WideField2.  
Remember to back up the original "LC11.sav" file, which is intended for F3LC11-1N and F3LC11-2N modules.
- (4) Run WideField2.

---

## B18.1 Device Monitor Windows

Device Monitor windows can be classified into five types: relay monitor, register monitor, timer monitor, counter monitor, and advanced function module register monitor.

### Relay Monitor

- I/O Relay Monitor
- Internal Relay Monitor
- Shared Relay Monitor
- Extended Shared Relay Monitor
- Link Relay Monitor
- Special Relay Monitor
- Local Internal Relay Monitor
- Macro Relay Monitor

### Register Monitor

- Data Register Monitor
- File Register Monitor
- Shared Register Monitor
- Extended Shared Register Monitor
- Link Register Monitor
- Special Register Monitor
- Index Register Monitor
- Local Data Register Monitor
- Local File Register Monitor
- Macro Register Monitor
- Macro Index Register Monitor

### Timer Monitor

- Timer Monitor
- Local Timer Monitor

### Counter Monitor

- Counter Monitor
- Local Counter Monitor

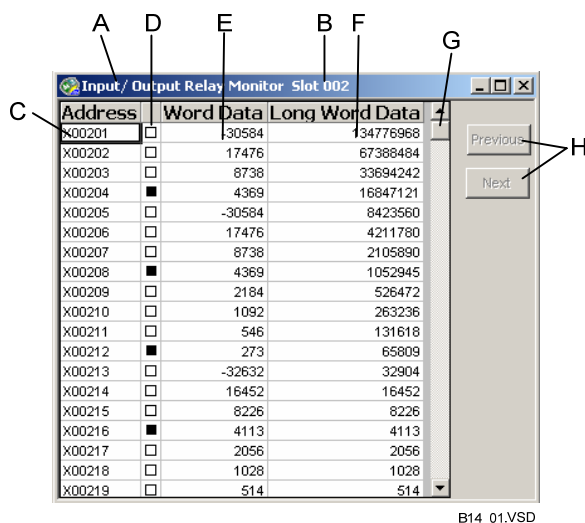
### Advanced Function Module Register Monitor

- I/O Register Monitor



## B18.1.1 Relay Monitor Window

The following figure shows the layout of a Relay Monitor window.

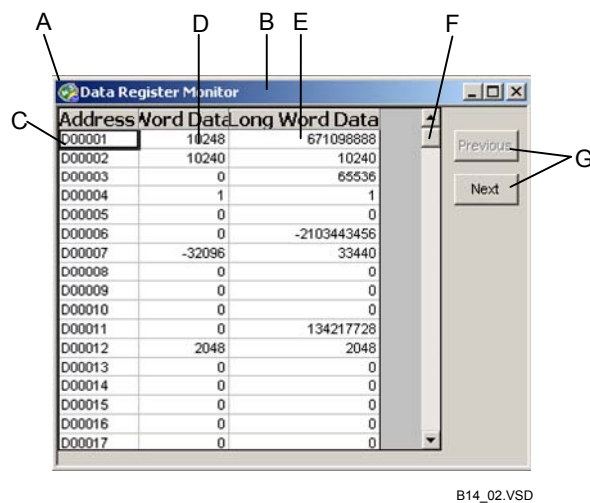


**Figure B18.1 Relay Monitor Window**

- A Monitor title  
Displays the window name in the form "<device type> + Monitor."
- B Additional Information  
Displays a slot number (for I/O relays) or a block name (for local devices).
- C Device address  
Displays the addresses of devices to be monitored, sorted in ascending order.
- D ON/OFF display  
Displays the ON/OFF status of a relay (■: ON, □: OFF).  
If a relay is forced set or reset, its ON/OFF status is displayed with a different background color.
- E Word data display  
Displays 16-bit data, starting from a device.
- F Long word data display  
Displays 32-bit data, starting from a device.
- G Scroll bar  
Moves the device display vertically. You can scroll through a maximum of 256 data items.
- H [Previous] and [Next] buttons  
If there are more than 256 data items, these buttons allow you to display the previous or next set of 256 data items respectively.

## B18.1.2 Register Monitor Window

The following figure shows the layout of a Register Monitor window.

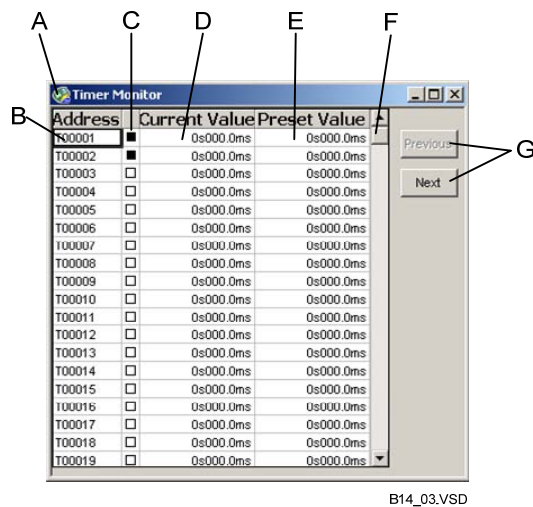


**Figure B18.2 Register Monitor Window**

- A Monitor title  
Displays the window name in the format "<device type> + Monitor."
- B Additional Information  
Displays a block name (for local devices).
- C Device address  
Displays the addresses of devices to be monitored, sorted in ascending order.
- D Word data display  
Displays the current value of a device.
- E Long word data display  
Displays two words of data, starting from a device.
- F Scroll bar  
Moves device display vertically. You can scroll through a maximum of 256 data items.
- G [Previous] and [Next] buttons  
If there are more than 256 data items, these buttons allow you to display the previous and next set of 256 data items respectively.

### B18.1.3 Timer Monitor Window

The following figure shows the layout of a Timer Monitor window.



**Figure B18.3 Timer Monitor Window**

- A Monitor title  
Displays the window name in the format "<device type> + Monitor."
- B Device address  
Displays the addresses of devices to be monitored, sorted in ascending order.
- C ON/OFF display  
Displays the ON/OFF status of a time-up relay (■: ON, □: OFF).
- D Current value display  
Displays the current value of a timer (T).
- E Preset value display  
Displays the preset value of a timer (T).
- F Scroll bar  
Moves device display vertically. You can scroll through a maximum of 256 data items.
- G [Previous] and [Next] buttons  
If there are more than 256 data items, these buttons allow you to display the previous and next set of 256 data items respectively.

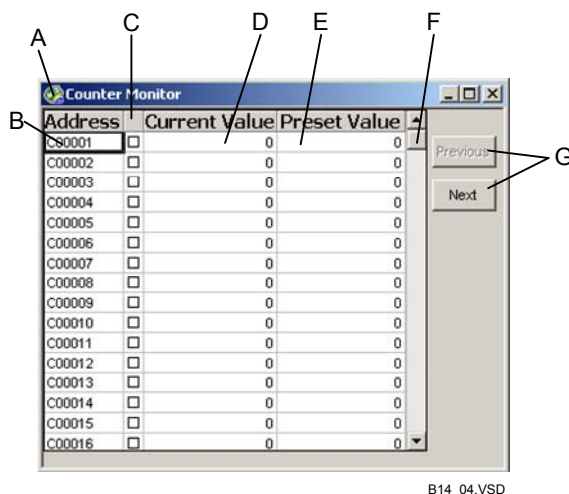


#### CAUTION

Timers are normally displayed with count-down current values. To display count-up values, select [Count-up] on the Circuit Display/Input tab of the Set up Environment dialog box. Changing the preset value of a timer in count-up display mode also changes the display of its current value by the difference between the new and old preset values.

## B18.1.4 Counter Monitor Window

The following figure shows the layout of a Counter Monitor window.



**Figure B18.4 Counter Monitor Window**

- A Monitor title  
Displays the window name in the format "<device type> + Monitor."
- B Device address  
Displays the addresses of devices to be monitored, sorted in ascending order.
- C ON/OFF display  
Displays the ON/OFF status of a count-up relay (■: ON, □: OFF).
- D Current value display  
Displays the current value of a counter (C).
- E Preset value display  
Displays the preset value of a counter (C).
- F Scroll bar  
Moves device display vertically. You can scroll through a maximum of 256 data items.
- G [Previous] and [Next] buttons  
If there are more than 256 data items, these buttons allow you to display the previous and next set of 256 data items respectively.



### CAUTION

Counters are normally displayed with count-down current values. To display count-up values, select [Count-up] on the Circuit Display/Input tab of the Set up Environment dialog box. Changing the preset value of a counter in count-up display mode also changes the display of its current value by the difference between the new and old preset values.

## B18.2 Starting and Terminating a Device Monitor

This section describes how to start and end the Device Monitor.

### B18.2.1 Starting a Device Monitor

#### ■ When Monitoring I/O Relays

To monitor I/O relays, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is online, and select [Online]–[Device Monitor]–[Input/Output Relay] from the menu bar.

##### SEE ALSO

For details on online connection procedure, see Section B11.1, "Connecting and Disconnecting."

⇒ The I/O Configuration window will be displayed.



#### CAUTION

A module name displayed in orange indicates that the module is currently being used by the program.

- (2) Turn on the [Relay Monitor] or the [Register Monitor] option button to select the desired monitor type. Next, double-click the slot to be monitored or move the cursor to the desired slot and press the [Enter] key.



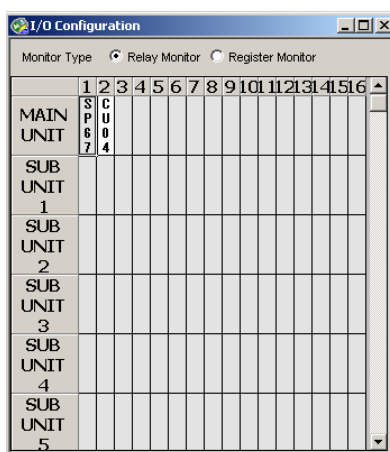
#### CAUTION

Advanced function modules with no internal register to be monitored are displayed as inactive and cannot be selected.

⇒ The selected slot is displayed in the Input/Output Relay Monitor window.

#### TIP

If the Input/Output Relay Monitor is opened for a slot that is not available, you can perform monitoring by appropriately selecting one of the 64 input/output devices.



Step (2)

B14\_05A.VSD

## ■ When Monitoring Local Devices

To monitor local devices, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

Select

[Online]--[Device Monitor] from the menu bar, and then select the local device type to be monitored: [Local Internal Relay], [Local Data Register], [Local File Register], [Local Timer], or [Local Counter].

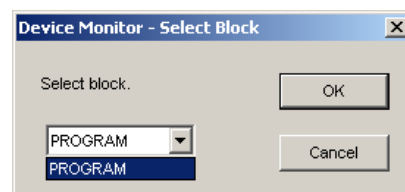
#### SEE ALSO

For details on the online connection procedure, see Section B11.1, "Connecting and Disconnecting."

⇒ The "Device Monitor - Select Block" dialog box opens.

(2) From the drop-down list box, select a block or macro for the local device to be displayed and click [OK].

⇒ The selected block or macro is displayed in a window entitled "Local xxxx Monitor", where xxxx is the selected device type.



Step (2)

B14\_06.VSD

## ■ When Monitoring Other Devices

To monitor devices other than I/O relays and local devices, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

Next, select [Online]–[Device Monitor] from the menu bar, and select a device type other than I/O relay and local device.

#### SEE ALSO

For online connection procedure, see Section B11.1, "Connecting and Disconnecting."

⇒ The selected device is displayed in a window entitled "xxxx Monitor", where xxxx is the selected device type.

#### TIP

You can open multiple xxxx Monitor windows (where xxxx is device type) concurrently for one device and I/O.

## B18.2.2 Terminating a Device Monitor

To terminate the Device Monitor, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that a "xxxx Monitor window" (xxxx is device type) is active.

(2) Click [Close] on the "xxxx Monitor window" (xxxx is device type), or select [File]–[Close] from the menu bar.

⇒ The xxxx Monitor window (xxxx is device type) closes.

#### TIP

Even if the Device Monitor for I/O relays is closed, the [I/O Configuration] window remains open. To close the [I/O Configuration] window, click [Close] in the window, or select [File]–[Close] from the menu bar.

## B18.3 Changing Display Format

Word or long-word data in a “xxxx Monitor window” (where xxxx is device type) can be displayed either in decimal, hexadecimal, character string, floating point, or binary notation (decimal display is the default). Binary display, however, is available only in the Register Monitor.



### CAUTION

Binary display is not available in Timer Monitor, Counter Monitor, or Relay Monitor windows.

### ■ Hexadecimal Display

To display data in a device monitor in hexadecimal notation, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the xxxx Monitor window (where xxxx is device type) is open.

(2) Select [View]–[Display Format]–[Hexadecimal] from the menu bar.

⇒ Data is displayed in hexadecimal notation. In hexadecimal display mode, the [Hexadecimal] menu item is displayed with a checkmark.

The screenshot shows a window titled "Data Register Monitor". It contains a table with three columns: "Address", "Word Data", and "Long Word Data". The "Address" column lists addresses from D00001 to D00018. The "Word Data" column shows values like \$0031, \$0000, etc. The "Long Word Data" column shows values like \$00000031, \$00000000, etc. To the right of the table are "Previous" and "Next" buttons.

Address	Word Data	Long Word Data
D00001	\$0031	\$00000031
D00002	\$0000	\$00000000
D00003	\$0000	\$00000000
D00004	\$0000	\$00000000
D00005	\$0000	\$00000000
D00006	\$0000	\$00000000
D00007	\$0000	\$00000000
D00008	\$0000	\$00000000
D00009	\$0000	\$00000000
D00010	\$0000	\$00000000
D00011	\$0000	\$00000000
D00012	\$0000	\$00000000
D00013	\$0000	\$00000000
D00014	\$0000	\$00000000
D00015	\$0000	\$00000000
D00016	\$0000	\$00000000
D00017	\$0000	\$00000000
D00018	\$0000	\$00000000

Step (2)

B14\_07.VSD



## ■ Character String Display

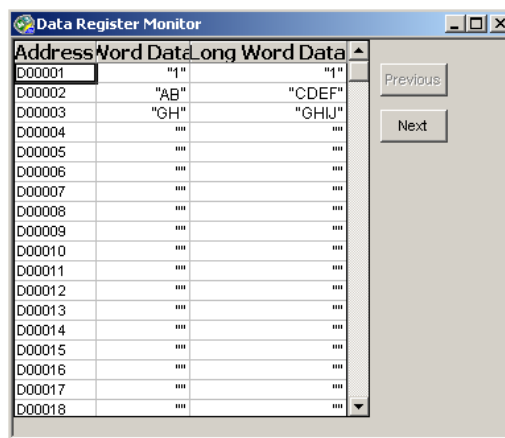
To display data in a device monitor as character strings, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the xxxx Monitor window (xxxx is device type) is open.

(2) Select [View]–[Display Format]–[Character String] from the menu bar.

⇒ Data is displayed in character string notation. In character string display mode, the [Character String] menu item is displayed with a checkmark.



Step (2)

B14\_08.VSD

## ■ Floating Point Display (for long-word data only)

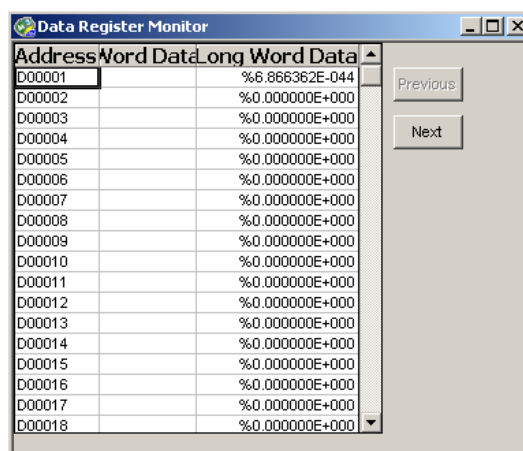
To display data in floating point notation in a device monitor, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the xxxx Monitor window (xxxx is device type) is open.

(2) Select [View]–[Display Format]–[Floating Point] from the menu bar.

⇒ Data is displayed in floating point notation. In floating point display mode, the [Floating Point] menu item is displayed with a checkmark.



Step (2)

B14\_09.VSD

## ■ Binary Display (for word data only)

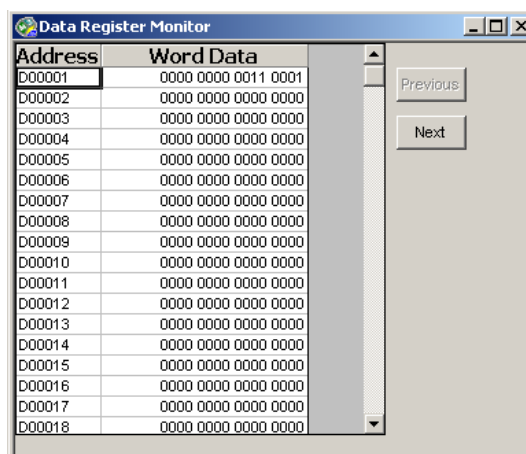
To display data in binary notation in a device monitor, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the xxxx Register Monitor window (xxxx is register device type) is open.

(2) Select [View]–[Display Format]–[Binary] from the menu bar.

⇒ Data is displayed in binary notation. In binary display mode, the [Binary] menu item is displayed with a checkmark.



Step (2)

B14\_10.VSD

## ■ Decimal Display

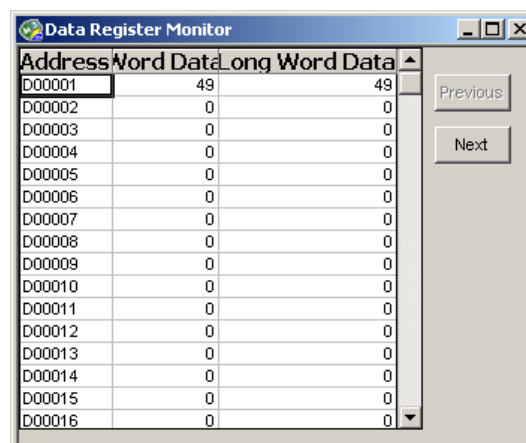
To display data in decimal notation in a device monitor, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the xxxx Monitor window (xxxx is device type) is open.

(2) Select [View]–[Display Format]–[Decimal] from the menu bar.

⇒ Data is displayed in decimal notation. In decimal display mode, the [Decimal] menu item is displayed with a checkmark.



Step (2)

B14\_11.VSD

## B18.4 Finding in Device Monitor

You can search for a device by address from a xxxx Monitor window (xxxx is device type). Only devices whose type is currently selected can be searched for.

### B18.4.1 Finding from the Keyboard

To open the Find dialog box from the keyboard, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that the xxxx Monitor window (xxxx is device type) is open.

(2) Enter from the keyboard the address of a device you want to find.

⇒ When you type the first character of an address, the Find dialog box opens.

(3) After entering the address, press the [Enter] key, or click [OK] in the Find dialog box.

#### TIP

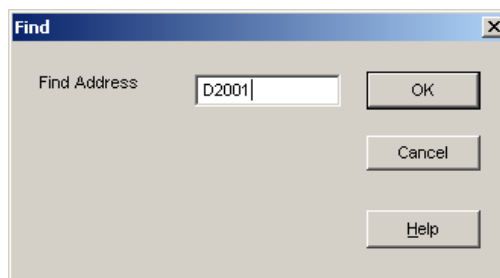
When entering an address, you can omit the device type character. For example, entering "1001" in place of "D1001" is allowed.

⇒ The cursor moves to the specified address.



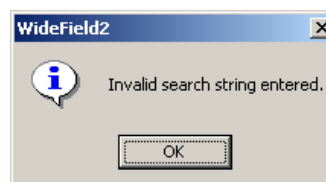
#### CAUTION

If you enter an invalid search address, a confirmation dialog box is displayed. Click [OK] and re-enter a valid address.



Step (3)

B14\_12.VSD



Step (3)

B14\_21.VSD

## B18.4.2 Finding from the Menu Bar

To open the Find dialog box from the menu bar, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the [xxxx Monitor] window (xxxx is device type) is open.
  - (2) Select [Find]–[Find] from the menu bar.
- ⇒ The Find dialog box opens.
- (3) Enter an address. Next, press the [Enter] key, or click [OK] in the Find dialog box.

#### TIP

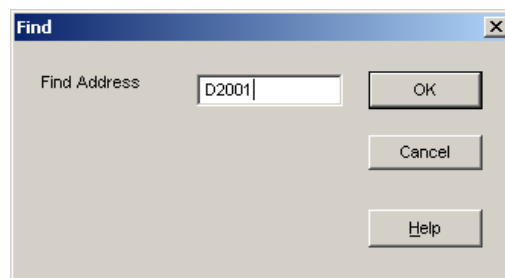
When entering an address, you can omit the device type character. For example, entering "1001" in place of "D1001" is allowed.

- ⇒ The cursor moves to the specified address.



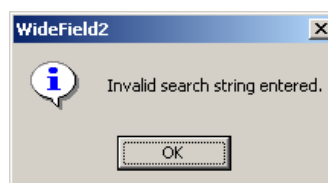
#### CAUTION

If you enter an invalid search address, a confirmation dialog box is displayed. Click [OK] and re-enter a valid address.



Step (3)

B14\_12.VSD



Step (3)

B14\_21.VSD

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## B18.5 Suspending and Resuming the Device Monitor

This section describes how to suspend and resume the Device Monitor. When the Device Monitor is suspended, statuses of devices are no longer updated to the xxxx Monitor window (xxxx is device type).

### B18.5.1 Suspending a Device Monitor

To suspend the Device Monitor, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that the xxxx Monitor window  
(xxxx is device type) is open.
  - (2) Select [View]–[Suspend Monitoring]  
from the menu bar.
- ⇒ The Device Monitor is suspended.

### B18.5.2 Resuming a Device Monitor

To resume the Device Monitor, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that the xxxx Monitor window  
(xxxx is device type) is open.
  - (2) Select [View]–[Resume Monitoring]  
from the menu bar.
- ⇒ The Device Monitor resumes operation.

#### **TIP**

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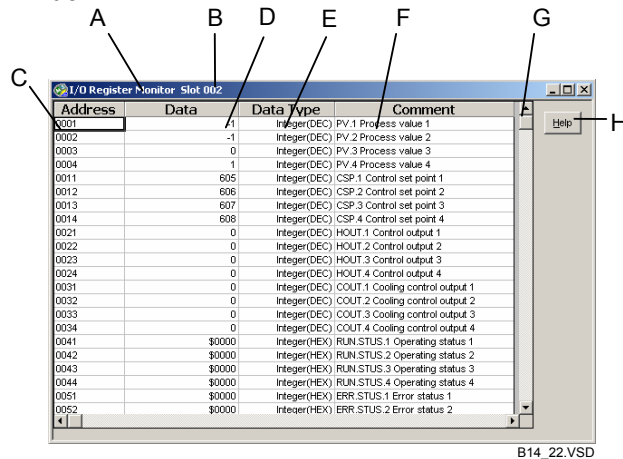
Suspension of monitoring applies to all Block Monitor and Device Monitor windows.

---

## B18.6 Advanced Function Module Register Monitor

### B18.6.1 Advanced Function Module Register Monitor Window

The following figure shows the layout of an Advanced Function Module Register Monitor window.



**Figure B18.5 Advanced Function Module Register Monitor Window**

- A Monitor title  
Displays the string "I/O Register Monitor."
- B Additional Information  
The module slot number is displayed after the monitor title.
- C Address  
Displays the addresses of monitored data of an advanced function module, sorted in ascending order.
- D Data  
Displays the current value of a data address.  
Data is shown in decimal, hexadecimal (prefixed by the "\$" symbol), floating point, character string or binary notation as specified in the Data Type column. Data is displayed as word or long word data with corresponding number of digits.  
The data display format cannot be changed.

- E Data type  
Displays the data type of an address. Six data types are available as shown in the table below.

**Table B18.1 Data Types of Addresses**

Data Type	Description
Integer (DEC)	Single word in decimal
Integer (HEX)	Single word in hexadecimal
Long Integer (DEC)	Long word in decimal
Long Integer (HEX)	Long word in hexadecimal
Float	Floating point
Char	Character string
BIN	Binary number

- F Comment  
Displays a comment for a data address.
- G Scroll bar  
Moves displayed data vertically.
- H [Help] button  
Provides information on the displayed advanced function module.  
Explains the meaning of the data of each address and how to use the module.

## B18.6.2 Displaying User Comments

The advanced function module register monitor allows you to specify a data type and comment for each register of a module to be monitored.

### TIP

If no user comment is defined for a register, the monitor displays its value using the system default data type and comment.

## ■ Creating User Comments

Create or edit a user comment definition file using Notepad or any other text editor. The relevant procedure is given below.

### ◆ Procedure ◆

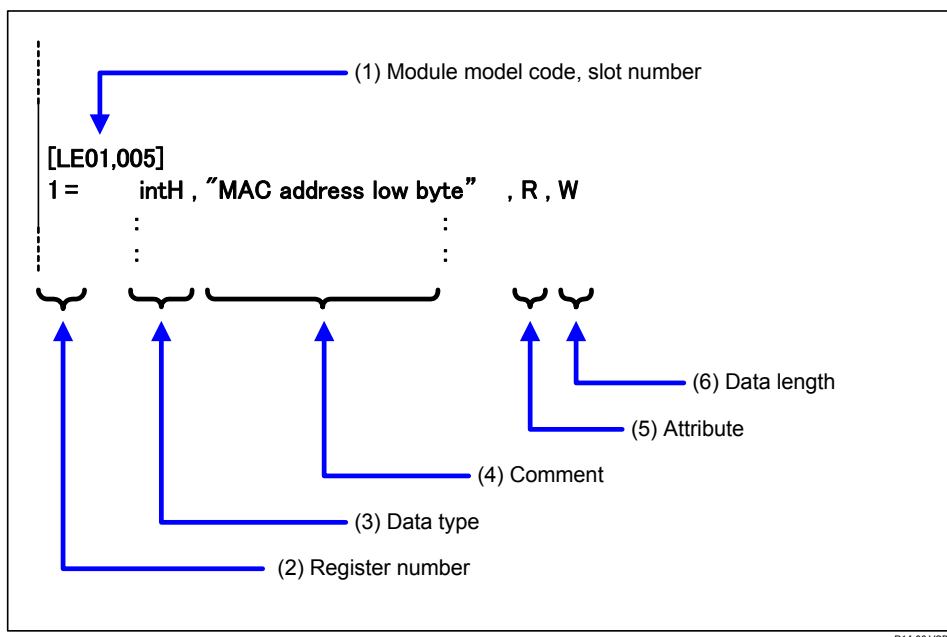
- (1) Run a text editor.

#### TIP

If a user comment definition file has already been created, open it using a text editor.

- (2) Code user comment definitions in the file.
- (3) Save the file.
- (4) Using windows Explorer or any other file management software, change the filename extension of the saved file to ".ycmt".

A user comment definition file should be coded with the following format.



The elements of a user comment definition file are described below.

(1) Module model code and slot number

Code the module model code and slot number in the form "[xxxx,yyy]" where "xxxx" denotes the four characters preceding the hyphen ('-') character in the model name of the target module (e.g. "LE01" for F3LE01-5T module), and "yyy" denotes the slot number where the module is installed. The above figure shows an example for a F3LE01-5T module installed in slot 5.

(2) Register number

Specify a register number of the module to be monitored. When the advanced function module register monitor is executed using a specified user comment definition file, only registers defined in the file are monitored.

(3) Data type

Specify the display format of the data to be monitored.

**Table B18.2 Data Types of Addresses**

Data Type	Description	Examples
intD	Single word in decimal	1234
intH	Single word in hexadecimal	\$4D9F
BIN	Binary number	0101 0001 1001 1111
longD	Long word in decimal	12345678
longH	Long word in hexadecimal	\$A15FED87
Float	Floating point	%1.894320E+022
Char	Character string	"yes"

(4) Comment

Code a comment string of up to 32 characters to be displayed in the monitor window.



## (5) Attribute

Specify whether displayed data in the advanced function module register monitor window can be modified.

**Table B18.3 Types of Attribute**

Attribute	Short Description	Description
R	Read only	Defines read-only data intended for monitoring only. "Change Word Data" and "Change Long Word Data" are disabled for read-only data in the advanced function module register monitor window.
RW	Read write	Defines read/write data intended for monitoring and modification. "Change Word Data" and "Change Long Word Data" are enabled for read/write data in the advanced function module register monitor window.

## (6) Data Length

Specify whether data modification described in (5) should be based on word or long word.

**Table B18.4 Types of Data Length**

Data Length	Short Description	Description
W	Word	Allows modification of word data. The specified data length must match the specified data type. For word data length, the data type specified in (3) must be intD, intH, BIN or char.
L	Long Word	Allows modification of long word data. The specified data length must match the specified data type. For long word data length, the data type specified in (3) must be longD, longH or float.

**CAUTION**

If coding errors are detected in a user comment definition file, an error message is displayed and user comments are not displayed.



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If coding errors are reported, amend the definition using a text editor, taking into consideration the following possible source of errors.

- Data type and data length mismatch
- Superfluous or missing definition elements. The valid elements of a definition are register number, data type, comment, attribute and data length.
- More than 4096 definitions are coded for one slot.

**TIP**

- You can code definitions for multiple slots within one user comment definition file. The definition section for each slot begins with a "[<module model>, <slot number>]" line and ends immediately before the next "[<module model>, <slot number>]" line.
- If a coded comment string is longer than the maximum limit of 32 characters, excessive characters are truncated and not displayed.

## ■ Switching between User Comment Display and System Comment Display

You can switch between using user-defined data types and comments and using system default data types and comments for displaying data in the advanced function module register monitor window. The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Select [Online]–[Adv. Function Module Register Monitor]–[Specify User Comment File] from the menu.

⇒ The Open File dialog opens.

#### TIP

By default, the system displays the contents of the "Fam3com" folder.

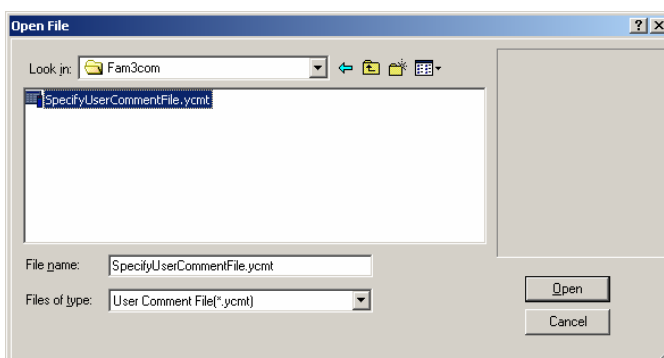
- (2) Select a user comment definition file to be used, and click [Open].

⇒ The Advanced Function Module Register Monitor window opens.

- (3) Select [Online]–[Adv. Function Module Register Monitor]–[Display User Comment] from the menu.

#### TIP

If [Display User Comment] is not selected in the menu, system default definitions are used for display in the monitor window.



Step (1)

B14\_25.VSD

#### TIP

- If user comment display is selected but no definition for the slot of the module being monitored is found in the specified user comment definition file, system default definitions are displayed in the monitor window.
- If a user comment definition file contains coding errors, system default definitions are displayed in the monitor window.
- User comment definition files can be stored in any folder. The system default folder for comment definition files is the subfolder named "Fam3com" in the folder where WideField2 is installed.

---

## B19. Tag Name Definition Monitor

You can use the Tag Name Definition Monitor to monitor registered devices on lists of common tag name definitions and block tag name definitions defined in a project.

From the Tag Name Definition Monitor screen, you can display tag names, addresses, display formats, and monitor values for specified display formats, as well as I/O comments.

In the Tag Name Definition Monitor screen, you can sort displays by tag name/address, divide the window into 1 – 4 partitions, and specify monitoring conditions as needed.

In addition, you can use the debugging functions while monitoring tag name definitions. The following debugging functions are available.

- Forced Set/Reset of relays
- Changing data of registers or relays in word or long word units
- Changing the current value of timers (T) and counters (C)
- Changing the preset value of timers (T) and counters (C)

### TIP

---

For details about tag name definition functions, see Section B5, "Tag Name Definition".

For details about debugging functions, see Section B21, "Using the Debugging Functions".

---



### CAUTION

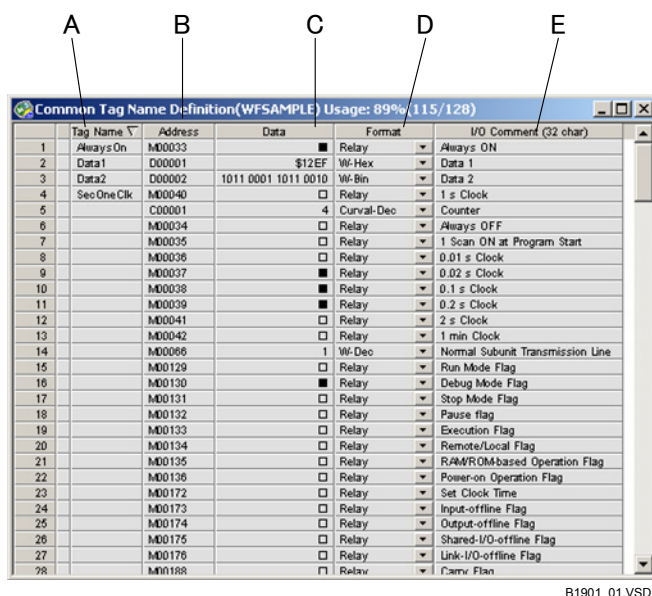
---

You can use the Tag Name Definition Monitor function only when an offline project is open.

---

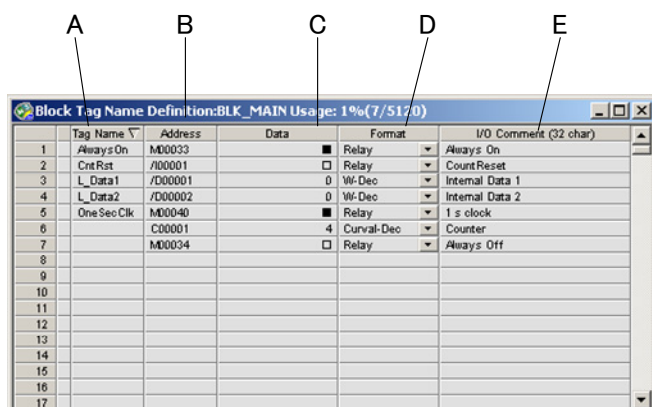
## B19.1 Tag Name Definition Monitor Window

There are two types of Tag Name Definition Monitor, the Common Tag Name Definition Monitor and the Block Tag Name Definition Monitor, which are displayed in the following windows.



B1901\_01.VSD

Figure B19.1 Common Tag Name Definition Monitor Window



B1901\_02.VSD

Figure B19.2 Block Tag Name Definition Monitor Window

- A Tag Name  
Displays the tag name registered for the tag name definition.
- B Address  
Displays the address registered for the tag name definition.
- C Data  
Displays the monitor value for the device in the format specified in Format.  
Data fields for addresses with a forced set/reset are shown with a background color of orange.
- D Format  
You can select a display format for the monitor values shown in Data.
- E I/O Comment  
Displays the I/O comments registered for the tag name definition.

The devices that can be used with a data display format are predetermined, as shown in the table below. Monitor values are displayed as shown in the following table, according to the display format selected.

**Table B19.1 Data Display Format**

Format	Data Display Format	Example Display	Usable Devices
W-Dec	Word data/decimal	1529	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
W-Hex	Word data/hexadecimal	\$12EF	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
W-Char	Word data/character string	"PG"	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
W-BIN	Word data/binary	1011 0001 1011 0010	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
L-Dec	Long word data/decimal	67109243	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
L-Hex	Long word data/hexadecimal	\$04D392CA	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
L-Char	Long word data/character string	"K7JR"	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
Cu-Dec	Timer/Counter current value/decimal	272,4s500.0ms	T,C
Cu-Hex	Counter current value/hexadecimal	\$4E2C	C
Float	Floating point	%1.504680E-032	X,Y,I,E,L,M,D,B,R,W,Z,V,H,A,U
Bit	Bit data	□,■	X,Y,I,E,L,M,T,C,H

## B19.2 Starting Tag Name Definition Monitor

This section describes the startup and shutdown procedures for Tag Name Definition Monitors.

### B19.2.1 Common Tag Name Definition Monitor Startup Procedure

The procedure for Common Tag Name Definition Monitor startup is given below.

#### ◆ Procedure ◆

- (1) Make sure WideField2 is connected online, and then select [Online]-[Common Tag Name Definition] from the menu bar.

#### SEE ALSO

For details about the online connection procedure, see Section B11.1, "Connecting and Disconnecting".

#### TIP

You can also perform startup from Common Tag Name Definition in the Online Project Window.

- ⇒ The Common Tag Name Definition monitor window opens.

	Tag Name	Address	Data	Format	I/O Comment (32 char)
1	Always On	MD0033		Relay	Always ON
2	Data1	D00001	\$12EF	W-Hex	Data 1
3	Data2	D00002	1011 0001 1011 0010	W-Bin	Data 2
4	Sec One Click	MD0040		Relay	1 s Clock
5		C00001		4 Curval-Dec	Counter
6		MD0034		Relay	Always OFF
7		MD0035		Relay	1 Scan ON at Program Start
8		MD0036		Relay	0.01 s Clock
9		MD0037		Relay	0.02 s Clock
10		MD0038		Relay	0.1 s Clock
11		MD0039		Relay	0.2 s Clock
12		MD0041		Relay	2 s Clock
13		MD0042		Relay	1 min Clock
14		MD0066		1 W-Dec	Normal Subunit Transmission Line
15		MD0129		Relay	Run Mode Flag
16		MD0130		Relay	Debug Mode Flag
17		MD0131		Relay	Stop Mode Flag
18		MD0132		Relay	Pause flag
19		MD0133		Relay	Execution Flag
20		MD0134		Relay	Remote/Local Flag
21		MD0135		Relay	RAM/ROM-based Operation Flag
22		MD0136		Relay	Power-on Operation Flag
23		MD0172		Relay	Set Clock Time
24		MD0173		Relay	Input-offline Flag
25		MD0174		Relay	Output-offline Flag
26		MD0175		Relay	Shared-I/O-offline Flag
27		MD0176		Relay	Link-I/O-offline Flag
28		MD0188		Relay	Canv Flag

Step (1)

B1902\_01.VSD

## B19.2.2 Block Tag Name Definition Monitor Startup Procedure

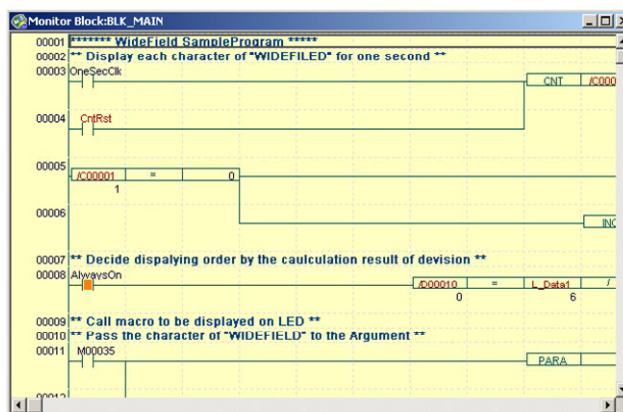
The procedure for Block Tag Name Definition Monitor startup is given below.

### ◆ Procedure ◆

- (1) Make sure WideField2 is connected online, and then open the program monitor window for the block or macro to be monitored.

#### SEE ALSO

For details about the online connection procedure, see Section B11.1, "Connecting and Disconnecting". For details about program monitor operations, see Section B17, "Program Monitor".



Step (1)

B1902\_02.VSD

- (2) Select [Edit]-[Block Tag Name Definition] from the menu bar.

#### TIP

You can also perform startup by right-clicking on the program monitor window and selecting [Block Tag Name Definition] from the pop-up menu, or right-clicking the name of a block in the Project Window and selecting [Block Tag Name Definition Monitor] from the pop-up menu.

- ⇒ The Block Tag Name Definition monitor window opens.

	Tag Name	Address	Data	Format	I/O Comment (32 char)
1	Always On	M00033	<input checked="" type="checkbox"/> Relay	Always On	
2	Cnt Rst	/I00001	<input type="checkbox"/> Relay	Count Reset	
3	L_Data1	/D00001	0 W-Dec	Internal Data 1	
4	L_Data2	/D00002	0 W-Dec	Internal Data 2	
5	One Sec Clk	M00040	<input checked="" type="checkbox"/> Relay	1 s clock	
6		C00001	4 Curval-Dec	Counter	
7		M00034	<input type="checkbox"/> Relay	Always Off	
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					

Step (2)

B1902\_03.VSD

## B19.3 Changing Display Format

From the Tag Name Definition Monitor screen, you can change the display format of the data being monitored and change the display method of the list of devices registered in tag name definitions.

### B19.3.1 Changing the Display Format of Monitor Data

The procedure for changing the display format of data for each tag name definition is given below.

#### ◆ Procedure ◆

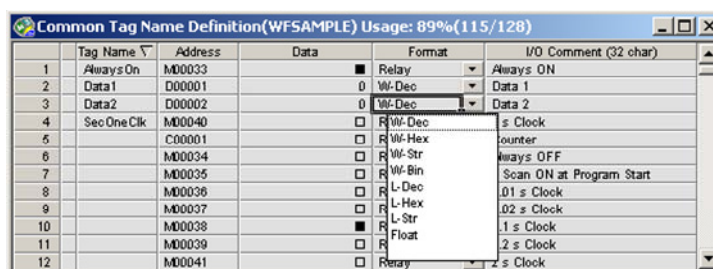
(1) Open the Tag Name Definition Monitor screen.

##### SEE ALSO

For details about how to open the Tag Name Definition screen, see Section B19.2, "Starting Tag Name Definition Monitor".

(2) Select the display format you wish to use for the data from Format.

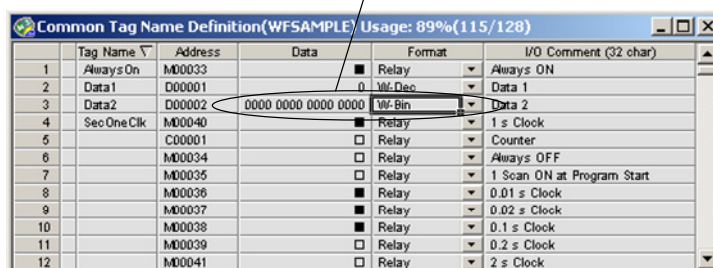
⇒ Monitor values are displayed in the Data field in the selected display format.



Step (2)

B1903\_01.VSD

When selected Binary display format



Step (2)

B1903\_02.VSD



---

## B19.3.2 Changing Display Style

You can select from three methods for displaying lists on the Tag Name Definition Monitor: by Addresses, by Tag Names, and Address List.

### ■ Registered Devices (by Addresses)

The procedure for sorting and displaying devices by addresses registered in the tag name definition is given below.

#### ◆ Procedure ◆

- (1) Open the Tag Name Definition Monitor screen.

##### SEE ALSO

---

For details about how to open the Tag Name Definition screen, see Section B19.2, "Starting Tag Name Definition Monitor".

---

- (2) Select [View]-[Display Format]-[Registered Devices (by Addresses)] from the menu bar.

⇒ Devices are sorted in the order of registered addresses, and displayed in the Tag Name Definition Monitor.

### ■ Registered Devices (by Tag Names)

The procedure for sorting and displaying devices by tag names registered in the tag name definition is given below.

#### ◆ Procedure ◆

- (1) Open the Tag Name Definition Monitor screen.

##### SEE ALSO

---

For details about how to open the Tag Name Definition screen, see Section B19.2, "Starting Tag Name Definition Monitor".

---

- (2) Select [View]-[Display Format]-[Registered Devices (by Tag Names)] from the menu bar.

⇒ Devices are sorted in the order of registered tag names, and displayed in the Tag Name Definition Monitor.

## ■ Address List

The procedure for displaying a list of all addresses for each type of device is given below.

### ◆ Procedure ◆

- (1) Open the Tag Name Definition Monitor screen.

#### SEE ALSO

For details about how to open the Tag Name Definition screen, see Section B19.2, "Starting Tag Name Definition Monitor".

- (2) Select [View]-[Display Format]-[Address List] from the menu bar.

⇒ Devices are displayed in a list of all addresses in the Tag Name Definition Monitor. (The initial state is X Relay.)

	Address	Tag Name	Data	Format	I/O Comment (32 char)
1	X00201			Relay	
2	X00202			Relay	
3	X00203			Relay	
4	X00204			Relay	
5	X00205			Relay	
6	X00206			Relay	
7	X00207			Relay	
8	X00208			Relay	
9	X00209			Relay	
10	X00210			Relay	
11	X00211			Relay	
12	X00212			Relay	
13	X00213			Relay	
14	X00214			Relay	
15	X00215			Relay	
16	X00216			Relay	
17	X00217			Relay	
18	X00218			Relay	
19	X00219			Relay	
20	X00220			Relay	
21	X00221			Relay	
22	X00222			Relay	
23	X00223			Relay	
24	X00224			Relay	
25	X00225			Relay	
26	X00226			Relay	
27	X00227			Relay	

Step (2)

B1903\_03.VSD

- (3) Select the type of devices that you wish to show in the list from [View]-[Display Device] from the menu bar.

⇒ Devices are displayed in a list of addresses for the selected type of devices. (The figure shows an example for I Relay.)

	Address	Tag Name	Data	Format	I/O Comment (32 char)
1	I00001			Relay	
2	I00002			Relay	
3	I00003			Relay	
4	I00004			Relay	
5	I00005			Relay	
6	I00006			Relay	
7	I00007			Relay	
8	I00008			Relay	
9	I00009			Relay	
10	I00010			Relay	
11	I00011			Relay	
12	I00012			Relay	
13	I00013			Relay	
14	I00014			Relay	
15	I00015			Relay	
16	I00016			Relay	
17	I00017			Relay	
18	I00018			Relay	
19	I00019			Relay	
20	I00020			Relay	
21	I00021			Relay	
22	I00022			Relay	
23	I00023			Relay	
24	I00024			Relay	
25	I00025			Relay	
26	I00026			Relay	
27	I00027			Relay	

Step (3)

B1903\_04.VSD

### B19.3.3 Split Display

You can use this function to split the Tag Name Definition Monitor window in from 1 to 4 partitions.

Since you can freely scroll each partitioned pane, it is easy to simultaneously view data for tag name definitions that are defined in locations far apart from each other.

The procedure for splitting the Tag Name Definition Monitor window is given below.

#### ◆ Procedure ◆

- (1) Open the Tag Name Definition Monitor screen.

#### SEE ALSO

For details about how to open the Tag Name Definition screen, see Section B19.2, "Starting Tag Name Definition Monitor".

- (2) Select the partition display conditions from [View]-[Split Display] from the menu bar.

⇒ The Tag Name Definition Monitor window is split according to the number of partitions specified. (The figure shows an example of a windows split into 4 partitions.)

	Tag Name	Address	Data	Format	I/O Comment (32 char)
1	Always On	MD0033	■	Relay	Always ON
2	Data1	D00001	\$0000	W-Hex	Data 1
3	Data2	D00002	0000 0000 0000 0000	W-Bin	Data 2
4	Sec One Clk	MD0040		Relay	1 s Clock
5		C00001		Relay	Counter
6		MD0034		Relay	Always OFF

Step (2)

B1903\_05.VSD



## B20. Registered Device Monitor

You can use the Registered Device Monitor to monitor selected (relay and word) devices.

Up to 256 devices can be selected for monitoring in the Registered Device Monitor.

Indirect designation devices may also be registered for monitoring. When an indirect designation device is registered, the data of the device designated by the indirect register will be monitored.

Besides monitoring devices, the Registered Device Monitor may also be used for debugging. The following debugging functions are available.

- Forced Set/Reset of relays
- Changing data of registers or relays in word or long word unit
- Changing the current value of timers and counters
- Changing the preset value of timers and counters

Setup information in the Registered Device Monitor is saved to the project currently opened in WideField2.

Setup information in the Registered Device Monitor is not saved if a project is not displayed. To save setup information, open a project before exiting from the Registered Device Monitor.

### SEE ALSO

- 
- For details on the debugging function, see Chapter B21, "Using the Debugging Functions."
  - For details on the Registered Device Monitor for structures, see Chapter B32, "Structures."
- 



### CAUTION

- 
- Devices with index modification cannot be registered as Registered Device Monitor devices.
  - The debugging functions listed above cannot be used for indirect designation registers.
  - Timers (T) and counters (C) are normally displayed with count-down current values. To display count-up values, select [Count-up] on the Circuit Display/Input tab of the Set up Environment dialog box.
- 

### SEE ALSO

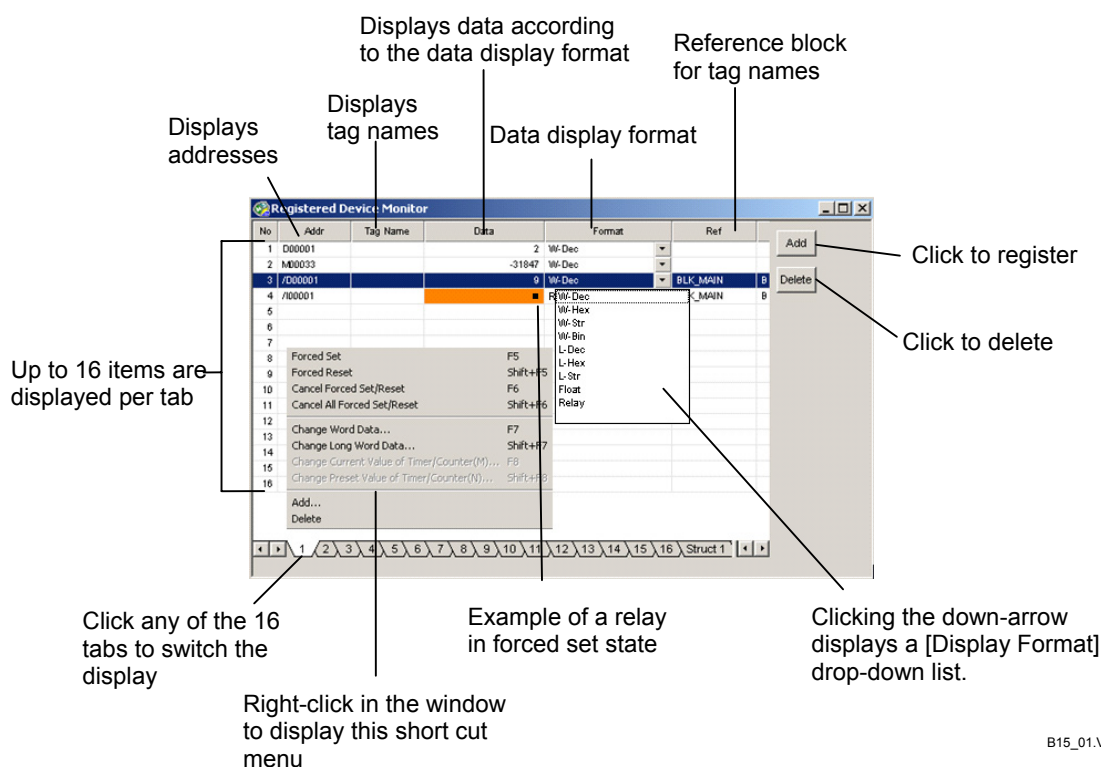
---

For details on the Circuit Display/Input tab of the Set up Environment dialog box, see Section B1.2.4, "Circuit Display/Input Setup."

---

## B20.1 Registered Device Monitor Window

This section describes the layout of the Registered Device Monitor window. The Registered Device Monitor displays the following Registered Device Monitor window.



B15\_01.VSD

Figure B20.1 Registered Device Monitor Window



### CAUTION

If an invalid local device is registered, it is disabled in the display and cannot be monitored.

## B20.2 Registering Devices

This section describes how to register global and local devices for monitoring. It also describes how to register devices for monitoring using tag names.

### ■ Global Devices

To monitor global devices, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online procedures, see Section B11.1, "Connecting and Disconnecting."

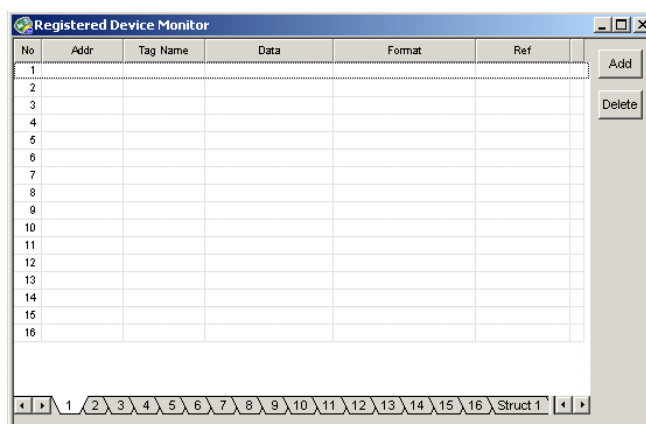
For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor] from the menu bar.

⇒ The Registered Device Monitor window opens.

- (3) Move the cursor to a blank line and click [Add], or select [Online]–[Registered Device Monitor]–[Add] from the menu bar.

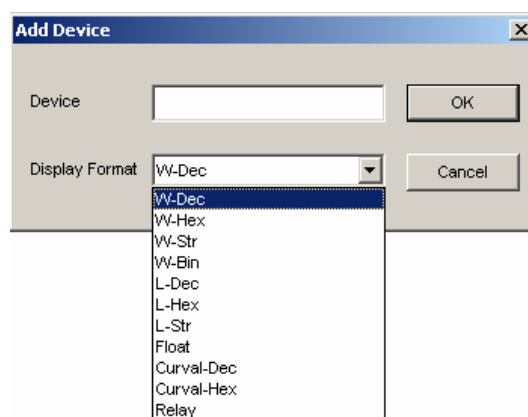
⇒ The Add Device dialog box opens.



Step (3)

B15\_02.VSD

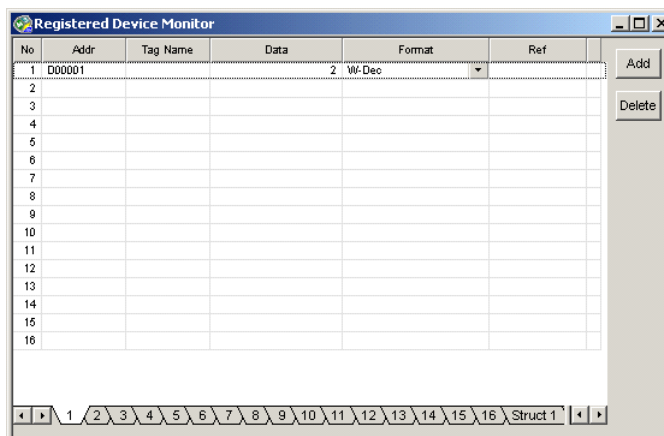
- (4) Enter a global device address in the [Device] text box, select a display format from the [Display Format] drop down list, and click [OK].



Step (4)

B15\_03.VSD

⇒ Information of the specified device is displayed in the Registered Device Monitor window in the specified format.



Step (4)

B15\_21.VSD

## ■ Local Devices

To monitor local devices, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online procedures, see Section B11.1, "Connecting and Disconnecting."

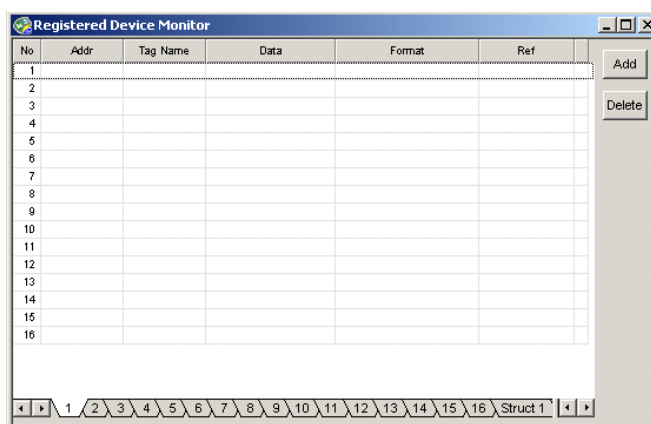
For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor] from the menu bar.

⇒ The Registered Device Monitor window opens.

(3) Move the cursor to a blank line and click [Add], or select [Online]–[Registered Device Monitor]–[Add] from the menu bar.

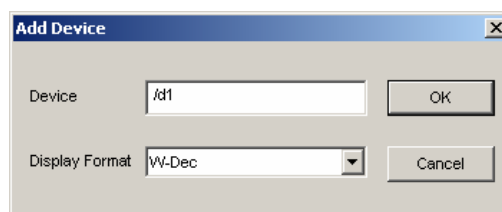
⇒ The Add Device dialog box opens.



Step (3)

B15\_04.VSD

(4) Enter a local device address in the [Device] text box, select a display format from the [Display Format] drop-down list, and click [OK].



Step (4)

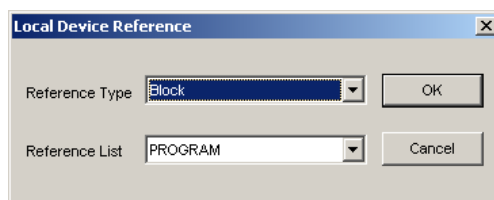
B15\_05.VSD



⇒ The Local Device Reference dialog box opens.

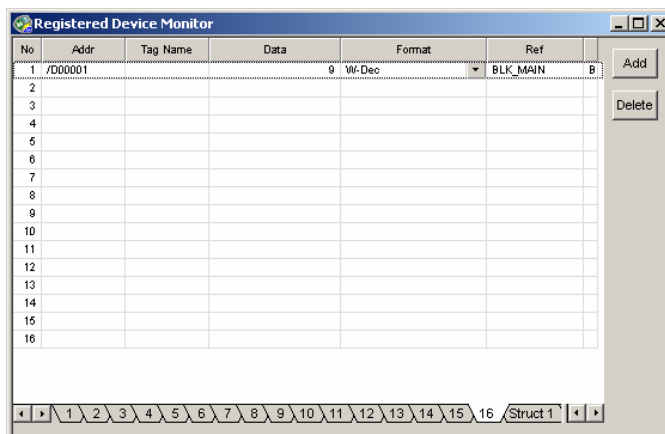
- (5) Select [Block] or [Macro] from the [Reference Type] dropdown list, select a block or macro name from the [Reference List] drop down list, and click [OK].

⇒ Information of the specified device is displayed in the Registered Device Monitor window in the specified format.



Step (5)

B15\_06.VSD



Step (5)

B15\_22.VSD

## ■ Tag Names

To monitor devices by specifying their tag name, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online procedures, see Section B11.1, "Connecting and Disconnecting."

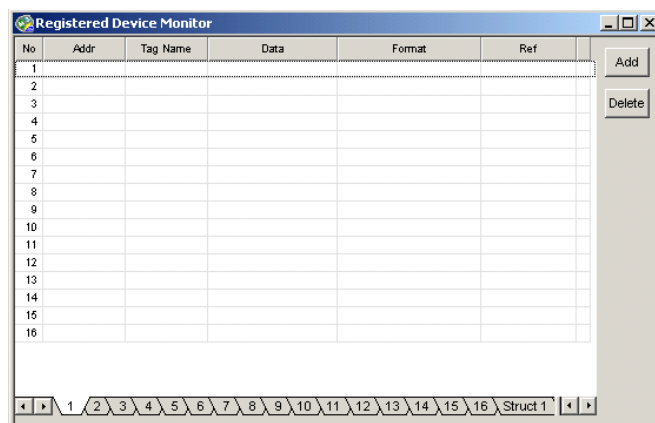
For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor] from the menu bar.

⇒ The Registered Device Monitor window opens.

- (3) Move the cursor to a blank line and click [Add], or select [Online]–[Registered Device Monitor]–[Add] from the menu bar.

⇒ The Add Device dialog box opens.



Step (3)

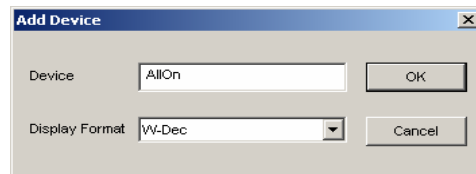
B15\_07.VSD

(4) Enter a tag name in the [Device] text box, select a display format from the [Display Format] drop-down list, and click [OK].

⇒ The Tag Name Reference dialog box opens.

(5) Select [Common Tag Name Definition], [Block Tag Name Definition] or [Macro Tag Name Definition] from the [Reference Type] drop down list, select a block or macro name from the [List of References] drop down list, and click [OK].

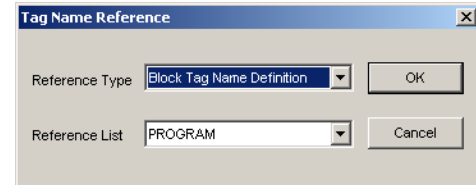
⇒ Information of the specified device is displayed in the Registered Device Monitor window in the specified format.



The 'Add Device' dialog box contains two input fields: 'Device' with the text 'AllOn' and 'Display Format' with a dropdown menu showing 'W-Dec'. There are 'OK' and 'Cancel' buttons on the right.

Step (4)

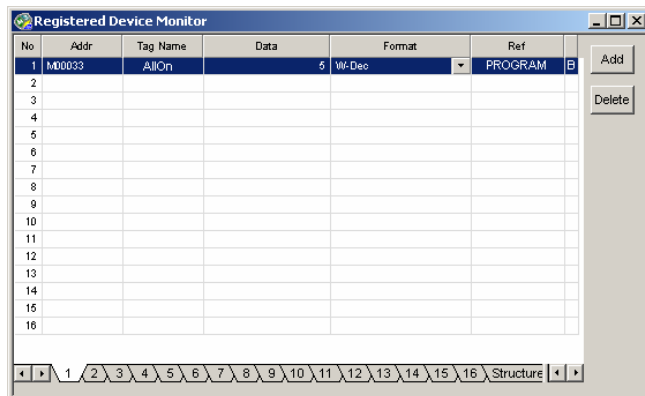
B15\_08.VSD



The 'Tag Name Reference' dialog box contains two input fields: 'Reference Type' with a dropdown menu showing 'Block Tag Name Definition' and 'Reference List' with a dropdown menu showing 'PROGRAM'. There are 'OK' and 'Cancel' buttons on the right.

Step (5)

B15\_09.VSD



The 'Registered Device Monitor' window displays a table with columns: No, Addr, Tag Name, Data, Format, and Ref. The first row is highlighted with a blue background.

No	Addr	Tag Name	Data	Format	Ref
1	M00033	AllOn	5	W-Dec	PROGRAM
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

At the bottom of the window, there is a navigation bar with buttons for 'Add' and 'Delete' on the right, and a series of numbered tabs (1-16) and a 'Structure' button on the left.

Step (5)

B15\_23.VSD

## B20.3 Registering from Program Monitor or Device Monitor

You can register devices from the Program Monitor or Device Monitor when the Registered Device Monitor is displayed.

To register devices from the Block Monitor window, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

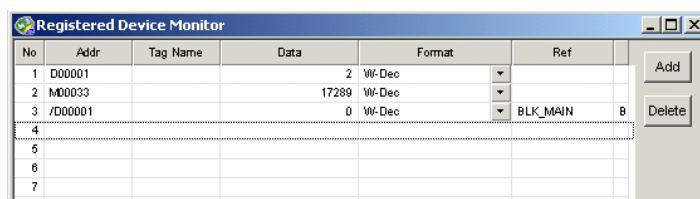
#### SEE ALSO

For details on online procedures, see Section B11.1, "Connecting and Disconnecting."  
For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor] from the menu bar.

⇒ The Registered Device Monitor window opens.

- (3) Move the cursor to a blank line.

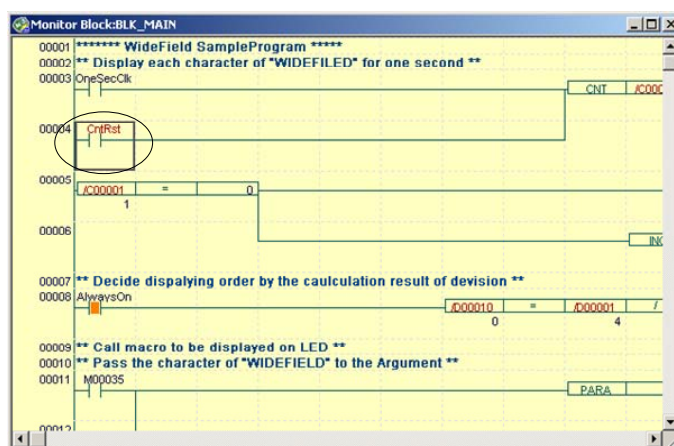


Step (3)

B15\_10.VSD

- (4) Open the Block Monitor window.

- (5) Click a device you want to register.



Steps (4) and (5)

B15\_11A.VSD

(6) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor]–[Post to Registered Device Monitor] from the menu bar.

⇒ Information on the specified device is displayed in the Registered Device Monitor window.

No	Addr	Tag Name	Data	Format	Ref
1	D00001		2	W-Dec	
2	MD0033	AllOn	2015	W-Dec	BLK_MAIN B
3	/D00001		9	W-Dec	BLK_MAIN B
4	/D00001	CntRst	0	W-Dec	BLK_MAIN B
5					
6					
7					
8					
9					
10					
11					
12					

Step (6)

B15\_28.VSD

## B20.4 Registering Timer (T) or Counter (C) Devices

Valid display formats for timer (T) and counter (C) devices are 'current value' and 'relay'. Specifying 'word' as display format for timers or counters generates an error.

To register timers and counters, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Registered Device Monitor]–[Registered Device Monitor] from the menu bar.

⇒ The Registered Device Monitor window opens.

- (3) Move the cursor to a blank line and click [Add], or select [Online]–[Registered Device Monitor]–[Add] from the menu bar.

⇒ The Add Device dialog box opens.

No	Addr	Tag Name	Data	Format	Ref
1	D00001			2 W-Dec	
2	M00033	AllOn	2015	W-Dec	BLK_MAIN B
3	/D00001		9	W-Dec	BLK_MAIN B
4					
5					
6					
7					
8					
9					
10					
11					
12					

Step (3)

B15\_12.VSD

- (4) Enter in the [Device] text box a device address, complete with the device type character 'T' for timer or 'C' for counter.



#### CAUTION

Enter a timer (T) device with the format "Txxxxx" (where xxxxx is the address number).  
Enter a counter (C) device with the format "Cxxxxx" (where xxxxx is address number).

Steps (4) and (5)

B15\_13.VSD

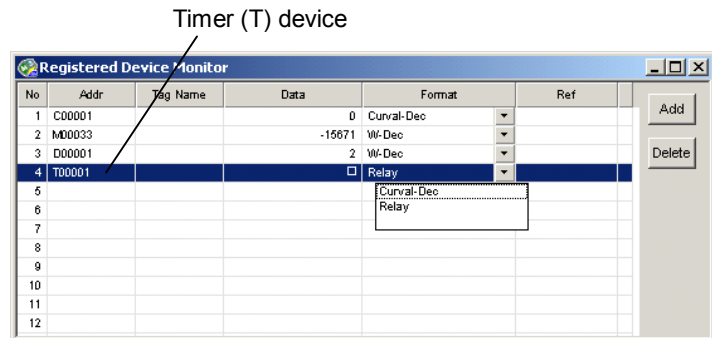
- (5) Select a display format from the [Display Format] drop-down list, and click [OK].

**CAUTION**

For the display format for timer (T) devices, select either "Cu-Dec" (Current value - Decimal) or "Bit" (ON/OFF).

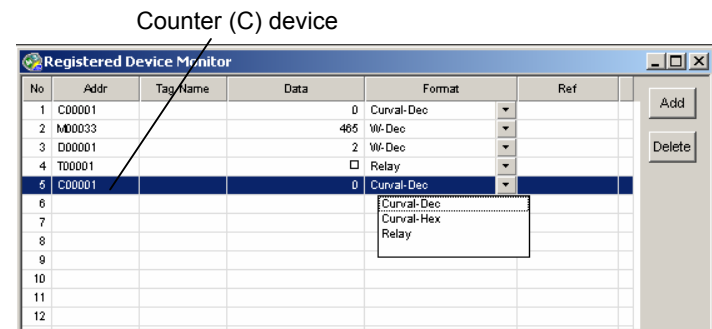
For the display format for counter (C) devices, select either "Cu-Dec" (Current value - decimal), "Cu-Hex" (Current value - Hexadecimal), or "Bit" (ON/OFF).

⇒ Information of the specified device is displayed in the Registered Device Monitor window with the specified display format.



Step (5)

B15\_24.VSD



Step (5)

B15\_25.VSD

**CAUTION**

If you enter an invalid display format, a confirmation dialog box opens. Click [OK] and re-enter a valid display format.



Step (5)

B15\_14.VSD

## B20.5 Deleting Registered Devices

You can delete registered devices. You can delete multiple registered devices at a time.

To do this, use the following procedure.

### ◆ Procedure ◆

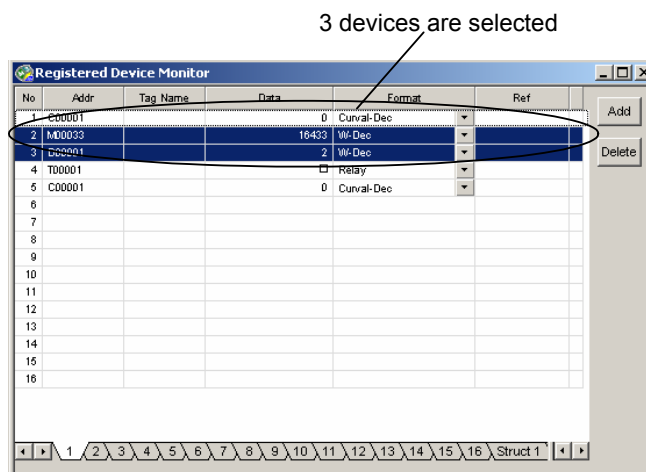
- (1) In the Registered Device Monitor window, move the cursor to a device you want to delete, and click [Delete].



#### CAUTION

You can select multiple devices at a time.

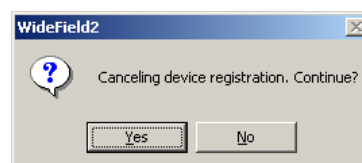
⇒ A confirmation dialog box opens.



Step (1)

B15\_26.VSD

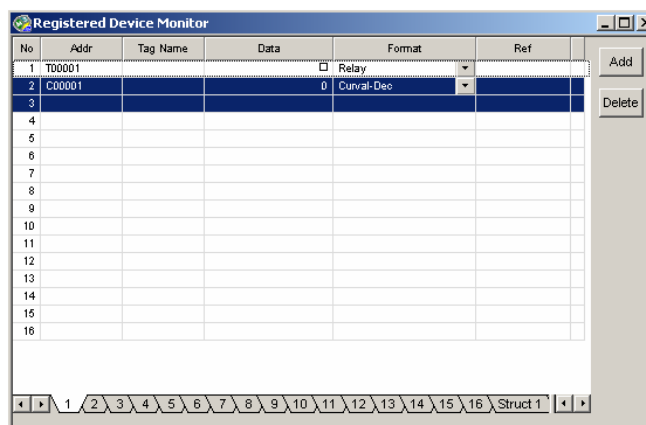
- (2) Click [Yes].



Step (2)

B15\_15.VSD

⇒ The selected device(s) are deleted.



Step (2)

B15\_27.VSD





## B21. Using the Debugging Functions

The debugging function features the following operations:

- Forced set or reset of a relay
- Change register and relay data on a word or long-word basis.
- Change the current value of timers (T) and counters (C)
- Change the set value of timers (T) and counters (C)
- Stop refresh
- Start or stop a block

The debugging function can be used only when the CPU module is in Debug or Stop mode.

### SEE ALSO

For details on how to use the debugging function with structure members, see Chapter B32, "Structures."

---

## B21.1 Forced Set or Reset of a Relay

The forced set or reset function forces a specified relay device on or off. Up to 32 relay devices can be forced set or reset. The forced set/reset function is available in the Program Monitor or the Device Monitor.

### B21.1.1 Devices That Can Be Forced Set or Reset

The following relay devices can be forced to set or reset:

- Input relay (X)
- Output relay (Y)
- Internal relay (I) and local internal relay (/I)
- Shared relay (E) and extended shared relay (G)
- Link relay (L)
- Special relay (Write-able relays) (M)
- Timer (T) and local timer (/T) (time-up relay)
- Counter (C) and local counter (/C) (count-up relay)



#### CAUTION

- Do not attempt to forcibly set or reset special relays (M) that are not write-able. Otherwise, the CPU may stop.
- Up to 32 relay devices can be forced set or reset. All forced set or reset instructions beyond this number are ignored.
- Devices with index modification cannot be forced to set or reset.

#### TIP

Special relays (M) contain internal status, error and other system information of a sequence CPU module.

#### SEE ALSO

For details on special relays, see "Sequence CPU – Functions."

#### SEE ALSO

For details on the operation of the CPU, see "Sequence CPU – Functions."

## B21.1.2 Activating and Canceling Forced Set or Reset

- Forced set and reset operations have precedence over program execution. A relay that turned off by a program can be forced to turn on with this function.
- Forced set and reset operations have precedence over the input refreshing, shared refreshing, and link refreshing of inputs. An input that is turned off by an external circuit can be forced to turn on with this function.
- A device that is forced set or reset holds its state until one of the following conditions is met:
  - The forced set or reset is released.
  - The CPU operating mode is changed to Run mode.
  - The CPU is switched off.

## B21.1.3 Procedure for Activating Forced Set/Reset

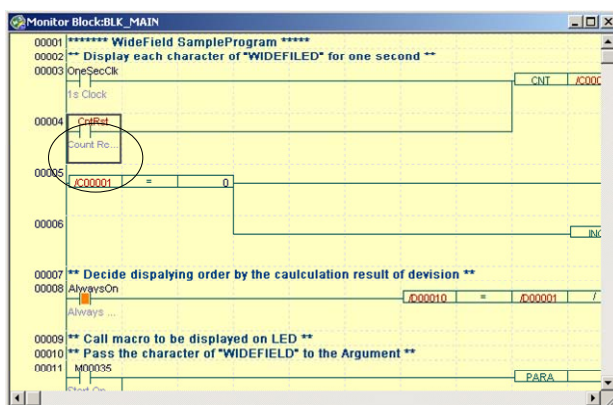
To forcibly set or reset a relay device, use the following procedure.

### ◆ Procedure ◆

- (1) In the Block Monitor window or "xxxx Monitor" window (where xxxx is a device type), move the cursor to the relay device to be forced set or reset.

#### SEE ALSO

For details on how to use the Program Monitor or Device Monitor, see Section B B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.

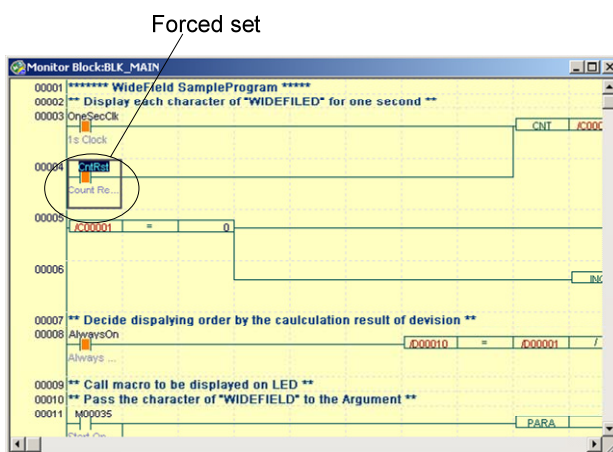


Step (1)

B16\_11VSD

- (2) Select [Debug/Maintenance]–[Forced Set] or [Debug/Maintenance]–[Forced Reset] from the menu bar.

⇒ The specified relay device is forced to set or reset accordingly.



Step (2)

B16\_12VSD

## B21.1.4 Procedure for Canceling a Forced Set or Reset

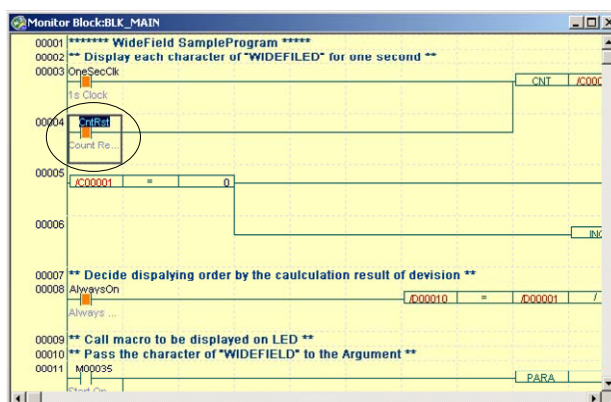
To cancel a forced set or reset on a relay device, use the following procedure.

### ◆ Procedure ◆

- (1) In the Block Monitor window or "xxxx Monitor" window (where xxxx is a device type), move the cursor to the relay device for whose forced set or reset status you want to cancel.

#### SEE ALSO

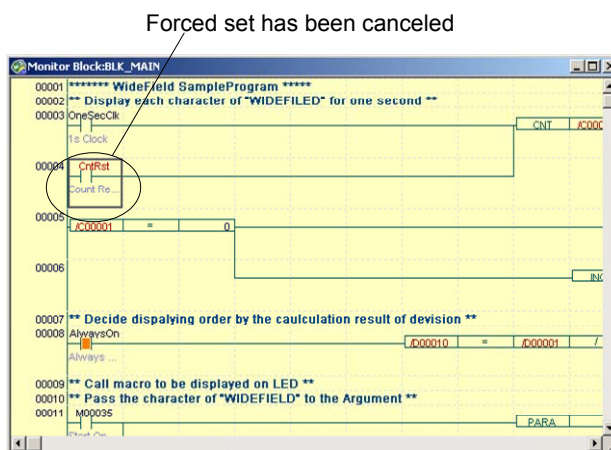
For details on how to use the Program Monitor or Device Monitor, see Section B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.



Step (1)

B16\_21.VSD

- (2) Select [Debug/Maintenance]–[Cancel Forced Set/Reset] from the menu bar.  
 ⇒ The forced set or reset state of the specified relay device is canceled.



Step (2)

B16\_22.VSD

## B21.1.5 Procedure for Canceling All Forced Set or Reset

To cancel forced set and reset states for all relay devices, use the following procedure.

### ◆ Procedure ◆

- (1) Select [Debug/Maintenance]–[Cancel All Forced Set/Reset] from the menu bar.  
 ⇒ The forced set and reset states of all relay devices are canceled.

---

## B21.2 Changing Word or Long Word Data

You can change register and relay data on a word or long-word basis. There is no restriction on the number of devices that can be changed. You can change device data either in the Program Monitor or the Device Monitor.

### B21.2.1 Device Data Which Can be Modified

Current values of all devices, except the following devices, can be changed:

- Timers (T) and counters (C)
- Special relays (M) and special registers that are not write-able



#### CAUTION

- 
- Do not attempt to change the current value of a special relay (M) or special register that is not write-able. Otherwise, the CPU may stop.
  - Current values of devices with index modification cannot be changed.
- 

#### SEE ALSO

---

For details on the operation of the CPU, see "Sequence CPU – Functions."

---

### B21.2.2 Operations of Modified Devices

- Program execution has precedence over manual modification of device data. Device data that has been manually modified may be overwritten by program execution.
- Input refreshing, shared refreshing and link refreshing have precedence over manual update of device data. Thus, any input from an external circuit can overwrite device data that has been manually modified.

## B21.2.3 Procedure for Changing Data

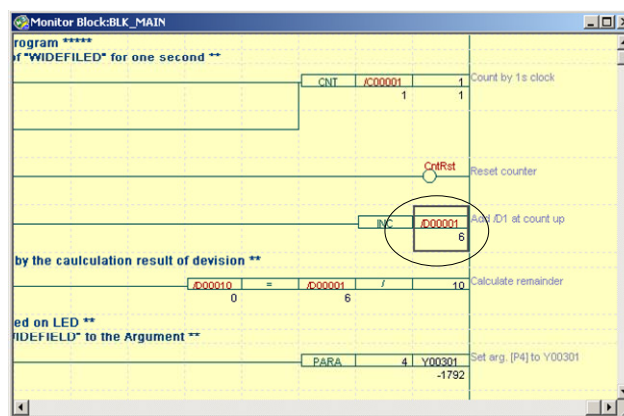
To manually change the data of a relay device, use the following procedure.

### ◆ Procedure ◆

- (1) In the Block Monitor window or "xxxx Monitor" window (where xxxx is the device type), move the cursor to the device whose data is to be changed.

#### SEE ALSO

For details on how to use the Program Monitor or Device Monitor, see Section B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.



Step (1)

B16\_13.VSD

- (2) Select [Debug/Maintenance]–[Change Word Data] or [Debug/Maintenance]–[Change Long Word Data] from the menu bar.

⇒ The Change Word Data or Change Long Word Data dialog box opens. The current data value is displayed in the [Enter Data] text box.

- (3) Enter new data in the [Enter Data] text box, and click [OK].

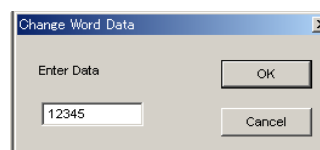


#### CAUTION

You may enter data in any of the following formats:

- Decimal (±) decimal value
- Hexadecimal hexadecimal value  
prefixed with "\$."
- Character string  
Word: 4 digits  
Long word: 8 digits  
Character string  
enclosed in quotation  
marks  
Word: 2 bytes max.  
Long word: 4 bytes  
max.
- Floating point ±?.?????? E±???  
For long word only

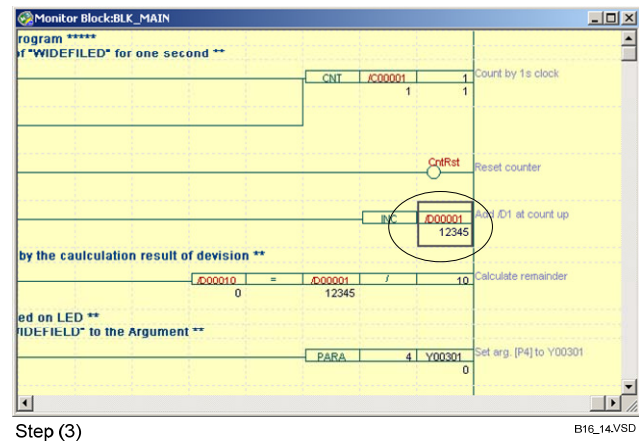
Note that you cannot enter binary data.



Step (3)

B16\_01.VSD

⇒ The device data is updated.



### TIP

- The Change Word Data and Change Long Word Data dialog boxes display data with the display format of the Block Monitor window or "xxxx Monitor" window (where xxxx is a device type).
- If detailed display is not active in the [Block Monitor] window, data is displayed with the display format specified in the previous detailed display operation.
- Character strings should be entered starting from the high byte. If an entered character string is shorter than the data size, the low bytes are automatically filled with null characters (0).

## B21.3 Changing Current Values of Timers and Counters

You can change the current value of timers (T) and counters (C). There is no restriction on the number of devices that can be changed. You can change current values either in the Block Monitor window or "xxxx Monitor" window (where xxxx is a device type).

### B21.3.1 Devices whose Current Values Can be Modified

Only current values of timers (T) and counters (C) can be changed.

### B21.3.2 Operation of Modified Devices

- If the current value of a timer (T) or counter (C) is changed, the device continues operation with the new current value.
- Program execution has precedence over manual modification of current values. A current value that has been manually modified may be overwritten by program execution.

### B21.3.3 Procedure for Changing Current Values

To manually change the current value of a timer (T) or counter (C), use the following procedure.

#### ◆ Procedure ◆

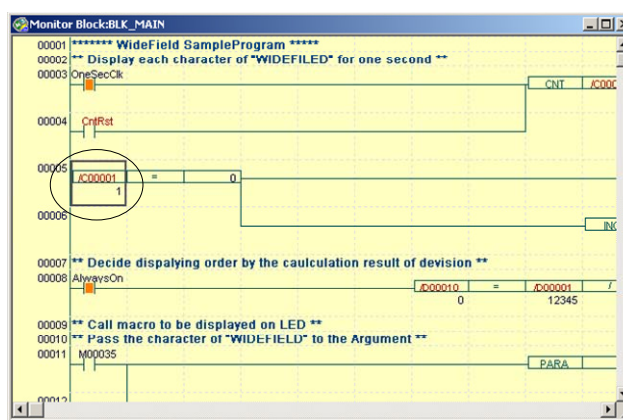
- (1) In the Block Monitor, Timer/Local Timer or Counter/Local Counter window, move the cursor to a timer or counter whose current value you want to change.

#### SEE ALSO

For details on how to use the Program Monitor or Device Monitor, see Section B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.

- (2) Select [Debug/Maintenance]–[Change Current Value of Timer/Counter] from the menu bar.

⇒ The Change Current Value dialog box opens. The current value is displayed in the [Enter current value] spin box or text box.



Step (1)

B16\_15.VSD



- (3) Enter a new current value in the [Enter current value] spin box or text box, and click [OK].



## CAUTION

You can use the spin buttons to increment and decrement the counter (C) value or the timer (T) value in steps of one second.

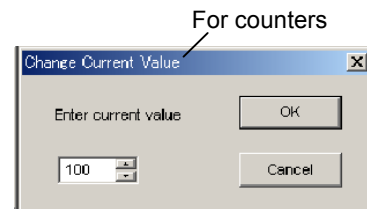
To change the timer (T) value in unit of milliseconds (1/1000 second), enter a value directly in the text box.

Timers (T) and counters (C) are normally displayed with count-down current values. To display count-up values, select [Count-up] on the Circuit Display/Input tab of the Set up Environment dialog box. Changing the preset value of a counter or timer in count-up display mode also changes the display of its current value by the difference between the new and old preset values.

## SEE ALSO

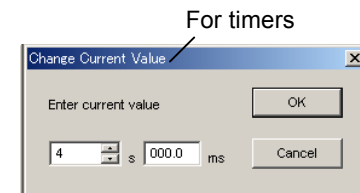
For details on the Circuit Display/Input tab of the Set up Environment dialog box, see Section B1.2.4, "Circuit Display/Input Setup."

- ⇒ The current value of the timer (T) or counter (C) is changed.



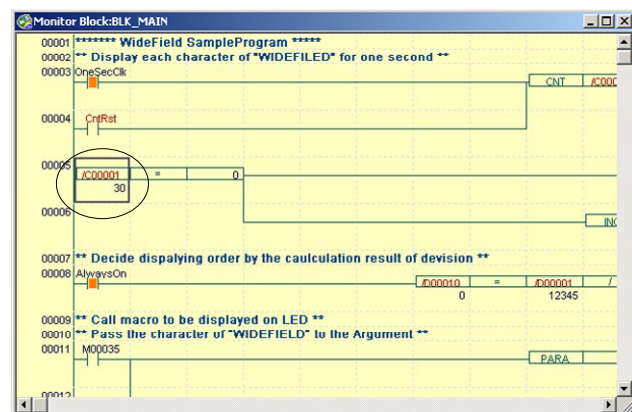
Step (3)

B16\_03.VSD



Step (3)

B16\_02.VSD



Step (4)

B16\_16.VSD

## B21.4 Changing Timer or Counter Preset Value

You can change the preset value of timers (T) and counters (C). There is no restriction on the number of devices that can be changed. You can change set values either in the Block Monitor window or the "xxxx Monitor" window (xxxx is a device type).

### B21.4.1 Devices whose Preset Value Can Be Changed

Only preset values of timers (T) and counters (C) can be changed.

### B21.4.2 Operation of Modified Devices

A changed preset value takes effect when the timer (T) or counter (C) is next started. Even when you change the preset value of a running timer (T) or counter (C), the new preset value does not take effect until the timer or counter is next started. The timer or counter continues to operate with the previous preset value.

### B21.4.3 Procedure for Changing Preset Values

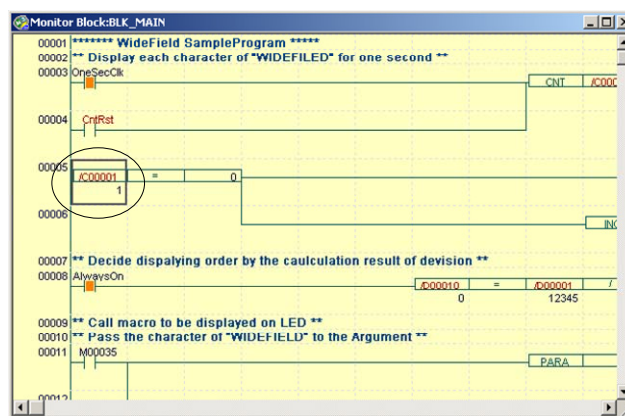
To manually change the preset value of a timer (T) or counter (C), use the following procedure.

#### ◆ Procedure ◆

- (1) In the Block Monitor, Timer/Local Timer, or Counter/Local Counter window, move the cursor to the timer or counter whose preset value is to be changed.

#### SEE ALSO

For details on how to use the Program Monitor or Device Monitor, see Section B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.



Step (1)

B16\_15.VSD

- (2) Select [Debug/Maintenance]–[Change Preset Value of Timer/Counter] from the menu bar.

⇒ The Change Preset Value dialog opens.  
The current value is displayed in the [Enter preset value] spin box or text box.

(3) Enter a new set value in the [Enter preset value] spin box or text box, and click [OK].



### CAUTION

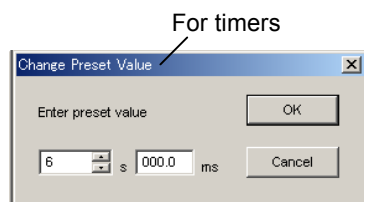
You can use the spin buttons to increment or decrement the counter (C) value and the timer (T) value in unit of a second.

To change the timer (T) value in units of milliseconds (1/1000 second), enter a value directly in the text box.



Step (3)

B16\_05.VSD



Step (3)

B16\_04.VSD



### CAUTION

Changes made to a preset value will not be reflected to the file even if you perform file reflection. To reflect a new preset value to the file, change the preset value of a timer (T) or counter (C) using online editing, or upload a modified program.

## B21.5 Stopping Refresh

You can stop (and resume) various types of refreshing.

The types of refreshing you can stop (and resume) include:

- Input refreshing  
Stops refreshing of input relays (X).
- Output refreshing  
Stops refreshing of output relays (Y).
- Shared refreshing  
Stops refreshing of shared relays (E), extended shared relays (E), shared registers (R), and extended shared registers (R).
- Link refreshing  
Stops refreshing of link relays (L) and link registers (W).

### TIP

The refresh process updates the status of I/O relays (X/Y) and other devices.

### B21.5.1 Procedure for Stopping Refresh

To stop refreshing, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

Select

[Debug/Maintenance]–[Stop Refreshing] from the menu bar, and then choose one of the following menu items: [Stop Input], [Stop Output], [Stop Shared], and [Stop Link].

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

⇒ Refreshing for the specified device type stops.

### TIP

The action monitor, if open, indicates which device (L, E, Y, and X) refreshing is not running.



B16\_18.VSD

Figure B21.1 Example Where Link Refreshing is Not Running

## B21.5.2 Procedure for Resuming Refresh

To resume refreshing, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online, and select [Debug/Maintenance]–[Restart Refreshing] from the menu bar

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

⇒ All suspended device refresh processes resume operation.

#### TIP

All devices (L, E, Y, and X) are dimmed in an open action monitor.



Figure B21.2 Resume Refreshing

## B21.6 Starting and Stopping Blocks

You can start and stop the execution of a block.



### CAUTION

You can start and stop a block only if the [Program Execution Mode] on the [Operation Control] tab screen in the Configuration dialog box is set to [Specified Blocks]. If it is set to [All Blocks], you cannot start or stop an individual block.

### B21.6.1 Procedure for Starting a Block

To start a block, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and running in Debug Mode. Further confirm that a project is open and that the CPU type of the project agrees with the connected CPU.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to change operating modes, see Section B15.3, "Switching CPU Operating Modes."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Program Monitor] from the menu bar.

⇒ The Select Block (Active Block Monitor) window opens. In the [Active] column, a value of 1 indicates a running block while a value of 0 indicates an idle block.

- (3) Move the cursor to the block you want to start.

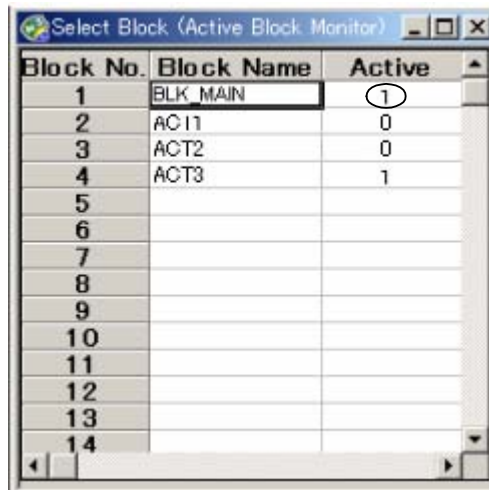
Block No.	Block Name	Active
1	BLK_MAIN	0
2	AC11	0
3	ACT2	0
4	ACT3	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Step (3)

B16\_20.VSD

**(4) Select [Debug/Maintenance]–[Start Block] from the menu bar.**

⇒ The selected block starts. The Active status of the block in the Select Block (Active Block Monitor) window changes to 1.



Block No.	Block Name	Active
1	BLK_MAIN	1
2	AC11	0
3	ACT2	0
4	ACT3	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Step (4)

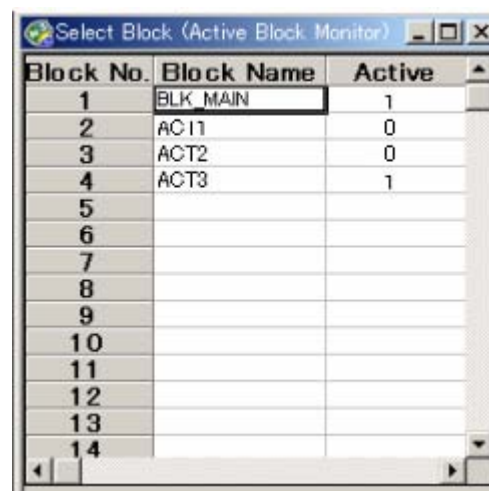
B16\_06.VSD

## B21.6.2 Procedure for Stopping a Block

To stop a running block, use the following procedure.

### ◆ Procedure ◆

**(1) Move the cursor to the block you want to stop in the Select Block (Active Block Monitor) window.**



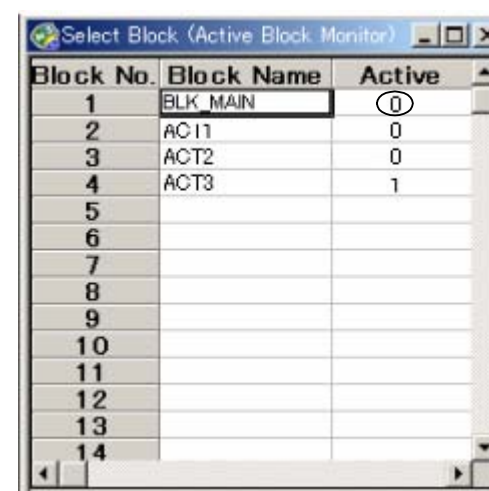
Block No.	Block Name	Active
1	BLK_MAIN	1
2	AC11	0
3	ACT2	0
4	ACT3	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Step (1)

B16\_23.VSD

**(2) Select [Debug/Maintenance]–[Stop Block] from the menu bar.**

⇒ The selected block stops execution. The Active status of the block in the Select Block (Active Block Monitor) window changes to 0.



Block No.	Block Name	Active
1	BLK_MAIN	0
2	AC11	0
3	ACT2	0
4	ACT3	1
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		

Step (2)

B16\_24.VSD





## B22. Online Edit

The online edit function allows you to directly edit a program transferred to the CPU. Online editing can be used only when the sequence CPU module is in Debug or Stop operating mode.

Online editing is available for blocks and macros.

Multiple users can online edit different blocks or macros concurrently but only one user can modify the program for a block at any one time.



### WARNING

Do not online-edit a program that is currently controlling a machine.

The scan time at the end of online editing is usually longer because of the time taken to reflect the online-edited program on the sequence CPU module. During this period, I/O devices cannot be refreshed and external devices cannot communicate with the CPU, which may cause unexpected machine operation.



### CAUTION

- If another terminal has online-edited a block which you are online-editing, you cannot overwrite the changes and continue online editing. A warning message will be displayed. If so, terminate your online editing session without reflecting the edited program on the CPU.
- If another terminal has online-edited a block which you are monitoring so that the actual content of the block and the content displayed in the monitor is no longer the same, online editing cannot be started. In this case, close and re-open the monitor window before starting online editing.
- Online-editing a program in a window does not reflect the changes to the CPU. The edited program is reflected on the CPU only when you select [Convert] from the menu.
- Conversion is automatically performed after the following operations: [Delete] in line units, [Cut] in line units or [Delete Lines]. Thus, changes made in line units are reflected on the CPU immediately.

If you want to confirm line deletion operations only upon conversion, use [Temporary Delete]. Temporarily deleted lines are displayed with a different background color. Temporarily deleted circuits are permanently deleted when conversion is executed.

- If there is a conversion error, then only contents of areas without errors will be reflected on the CPU. To update all changes and exit, correct the conversion error. You may choose to exit without reflecting the invalid areas to the CPU but this may result in a displaced circuit comment in subsequent uploading if there was a conversion error in a circuit before or after the circuit comment.
- Copy, Paste and other editing functions that are available offline are also available online except that data copied offline cannot be pasted online.

## B22.1 Online Edit Procedure

This section describes online edit operations from starting an online-edit session through terminating online editing.

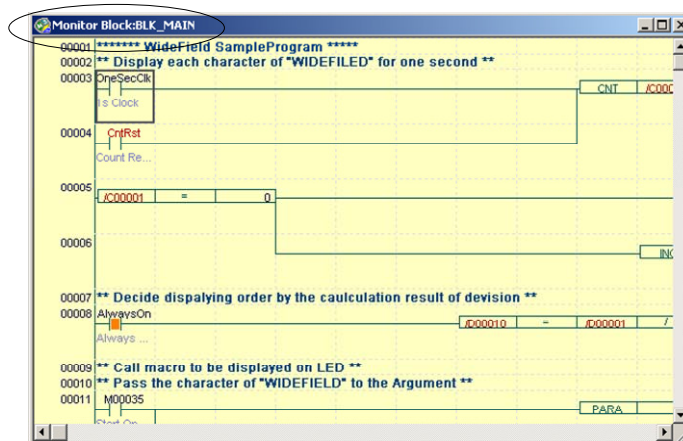
### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and the Block Monitor or Macro Monitor window is open.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to use the Program Monitor or Device Monitor, see Section B17.2, "Starting and Closing the Program Monitor" or Section B18.2, "Starting and Terminating a Device Monitor" respectively.



Step (1)

B17\_11.VSD

- (2) Select [Debug/Maintenance]–[Start Online Editing] from the menu bar.



#### CAUTION

Online editing can be used only when the CPU operating mode is set to Debug or Stop mode. If you attempt to perform online editing when the CPU is in Run mode, a confirmation dialog box appears.

- ⇒ Online edit begins. The title of the window changes to "Monitor Block xxxx Online editing" (xxxx is block name) or "Monitor Macro xxxx Online editing" (xxxx is macro name).

- (3) Edit the program.

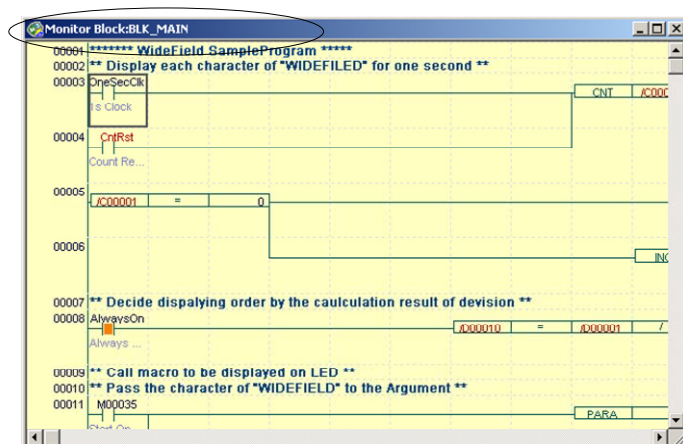


#### CAUTION

An edited program will be reflected on the CPU when you perform any of the following operations: [Convert], [Delete Line], [Delete] in line unit or [Cut] in line unit.

- (4) After you have finished editing the program, select [Edit]–[Convert] from the menu bar.

- ⇒ The edited program is reflected on the CPU, and a confirmation dialog box opens.



Step (3)

B17\_13.VSD

(5) Click [OK].

(6) Select [Debug/Maintenance]–[End Online Editing] from the menu bar.



## CAUTION

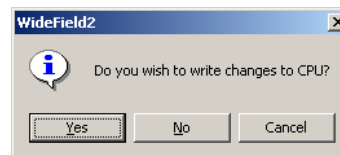
If you attempt to exit online editing in step 6 without performing conversion of step 4, a dialog box opens to confirm whether to update the edited changes to the CPU. Clicking [Yes] in the dialog box updates the edited program to the CPU and ends online editing.

⇒ Online editing is terminated and you return to the Block Monitor or Macro Monitor window.



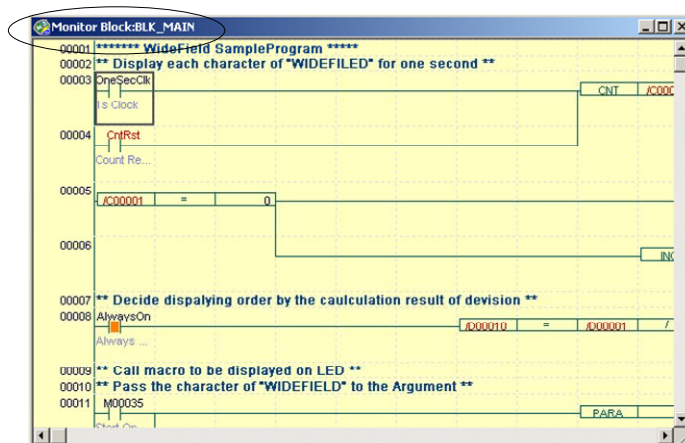
Step (5)

B17\_02.VSD



Step (6)

B17\_03.VSD



Step (6)

B17\_14.VSD



## CAUTION

- In F3SP66-4S and F3SP67-6S, edited changes are written to the built-in ROM immediately after they are updated to the CPU. Do not switch off the FA-M3 while the "Writing" status message is blinking on the Action monitor.

## B22.2 Reflecting Changes on File

Online editing changes the program in the CPU directly. Online edited changes are not automatically reflected on the project in your personal computer. To reflect the changes on a project, use the following procedure.

### B22.2.1 Exiting from Program Monitor

When you attempt to close a Block Monitor or Macro Monitor window for a block which has been on-line edited but not saved, a dialog box opens to confirm whether to save the edited program to the project.

#### ◆ Procedure ◆

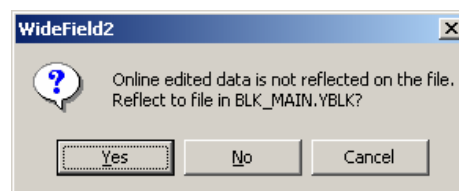
**(1) When you have finished online**

**editing, click [Close] in the Block Monitor or Macro Monitor window, or select [File]–[Close] from the menu bar.**

⇒ A dialog box opens to confirm whether to save the edited program to the project on your personal computer.

**(2) Click [Yes].**

⇒ The edited program is overwritten in your personal computer's project block with the same name, and the Block Monitor or Macro Monitor window closes.



Step (2)

B17\_04.VSD

---

## B22.2.2 Reflecting Changes from the Menu

You can reflect an edited program on the project stored on your computer by selecting the appropriate command from the menu bar.

### ■ How to Save a Block or Macro with the Same Name

To save an edited program in a block or macro with the same name, use the following procedure.

#### ◆ Procedure ◆

- (1) At the completion of online editing,  
select **[File]–[Reflect on File]** from the  
menu bar in the **Block Monitor** or  
**Macro Monitor** window.

⇒ The edited program is saved in your  
personal computer's project block or  
macro with the same name.

### ■ How to Save in a Separate File

To save an edited program in a separate file, use the following procedure.

#### ◆ Procedure ◆

- (1) At the completion of online editing,  
select **[File]–[Reflect on Another File]**  
from the menu bar in the **Block**  
**Monitor** or **Macro Monitor** window.

⇒ The Save As dialog box opens.

- (2) Enter a new file name in the **[File**  
**name]** text box, and click **[Save]**.

⇒ The edited program is saved as a new  
file.

## B22.3 Restrictions in Online Editing

You can edit a program in online editing the same way you edit a block using a ladder program.

However, some edit functions are not available and some types of circuits cannot be edited in online editing.

### B22.3.1 Functions Not Available in Online Editing

The following edit functions cannot be used during online editing:

- Pasting circuits from another window
- Inserting page breaks
- Editing local device settings and properties
- Editing tag name definitions in a tag name definition window
- Replacement
- Monitoring a block being online-edited
- Adding macro call instructions to call macros that are not transferred to the CPU
- Entering an undefined constant name
- Modifying the value or data type of a defined constant name

### B22.3.2 Circuits That Cannot Be Online-edited

#### ■ Edit-prohibit Circuits

The following circuits cannot be online-edited. They are called edit-prohibit circuits. You cannot modify, add or delete these circuits in online editing. To edit edit-prohibit circuits, you must first go offline.

- SUB/RET instructions and circuits containing SUB/RET instructions
- INTP/IRET instructions and circuits containing INTP/IRET instructions
- Circuits that cannot be represented in a ladder diagram
- Adding or modifying labels
- Circuits containing structure-related instructions (SCALL, STMOV, STRCT instructions)
- Copying circuits containing sub-comments in line units

#### ■ Edit-prohibit Comments

For the following types of comments, you cannot add a new comment but you can delete or modify an existing comment using online editing:

- circuit comments
- sub-comments

#### TIP

- You can modify or delete circuit comments and sub-comments for all CPU types.
- To delete a labels or sub-comment, delete all characters in the Edit Label dialog box or Enter Subcomment dialog box.
- There are two ways to delete circuit comments. The first method is using the Delete Line function. To do this, select a circuit comment line, and then select [Edit]–[Delete Lines] from the menu bar. The second method is to temporarily delete a line and then perform conversion. To do this, select a circuit comment, and then select [Edit]–[Temporary Delete] from the menu bar. Temporarily deleted lines are displayed with a different background color. Next, select [Edit]–[Convert] from the menu bar to perform conversion. The highlighted line will be permanently deleted.

**SEE ALSO**

- For details on how to open the Edit Label dialog box, see Section B4.2.20, "Entering Labels."
- For details on how to open the Edit Sub-comment dialog box, see Section B4.2.30, "Entering and Deleting Subcomments."

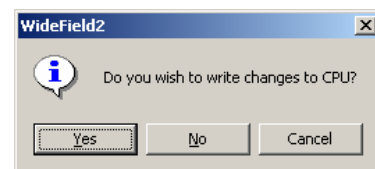
## B22.3.3 Precautions for Online Editing

### ■ Handling Line Failures during Online Editing

Never disconnect cables during online editing. If communication fails during on-line editing due to line fault, perform the following recovery procedure.

#### ◆ Procedure ◆

- (1) Confirm that the "Monitor Block xxxx Online editing" (xxxx is block name) or "Monitor Macro xxxx Online editing" (xxxx is macro name) window is open.
- (2) Select [Debug/Maintenance]–[End Online Editing] from the menu bar.  
⇒ If the program has been changed, a dialog box opens to confirm whether to reflect the changes to the CPU.
- (3) Click [No].  
⇒ Online editing will be terminated without reflecting the changes to the CPU.
- (4) Disconnect from the FA-M3 by selecting [Online]–[Disconnect] from the menu bar.
- (5) Switch off the FA-M3 and then switch it back on again.
- (6) Select [Online]–[Connect] from the menu bar to reconnect to the FA-M3.
- (7) Select [Online]–[Download]–[Block/Macro] from the menu bar to download the program.



Step (3)

B17\_06.VSD

- (8) Select [Online]–[Program Monitor] or [Online]–[Macro Monitor] from the menu bar to open a Block Monitor or Macro Monitor window respectively.
- (9) Select [Debug/Maintenance]–[Start Online Editing] from the menu bar, and edit the program again.

## ■ Deleting Elements around Circuit Comments

If deletion of circuits between two circuit comments causes the number of contiguous circuit comment lines to exceed the maximum limit, a conversion error occurs but the edited program is still written to the CPU.

In this case, uploading and other operations still proceed normally until you edit elements around the illegal circuit comment with offline editing. At this time, an error will be generated, indicating an excessive number of contiguous circuit comment lines.

### TIP

---

Even if the number of contiguous circuit comment lines exceeds limit, the CPU operates normally.

---

## ■ Tag Name Display

If you enter an address not in Address Display mode during online editing, and the address is allocated to a tag name in the reference tag name definition, it will be displayed as a tag name.

## ■ Copying and Pasting in Online Editing

Program data that is copied in online editing mode cannot be pasted to another block in online editing mode.

## ■ Pasting to Offline Editing

Program data that is copied in online editing mode can be pasted in offline editing mode. However, all instruction parameters of the pasted program data are converted to addresses. Tag name data cannot be pasted. Circuits that cannot be modified in online editing mode also cannot be copied.



## ■ Adding New Tag Name Definition Data

You can add new tag name definitions or edit I/O comments from an online edit window.



### CAUTION

Adding new tag name definitions and editing I/O comments during online editing is allowed only if you perform the following setup on the [Online Comment Input] tab in the Set up Environment dialog box.

- Turn on the [Disallow concurrent ladder program editing and program monitoring for the same block] checkbox under [Set up Ladder Program Editing and Monitoring].
- Turn on the [Latest Tag Name Definitions] option button under [Reference for Tag Name Definitions When Online].

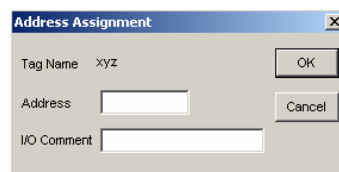
## ◆ Operation ◆

- (1) Enter a tag name or address, which is not already registered in the tag name definition as an instruction parameter.

⇒ The Address Assignment dialog box is displayed.

- (2) Enter the address and I/O comment and click [OK].

⇒ The entered information is reflected on the circuit.



Step (2)

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### TIP

If you have entered an address that is not already registered in the tag name definition, you can then enter an I/O comment.



### CAUTION

When you enter a tag name that is not already registered in the tag name definition, the Address Assignment dialog box will be displayed regardless of the content of [Set up Parameter Input] on the Circuit Display/Input tab of the Set up Environment dialog box.

When you enter an address that is not already registered in the tag name definition, Address Assignment dialog box is displayed if [Enter tag name with address and I/O comment] option button under [Set up Parameter Input] is selected on the Circuit Display/Input tab on the Set up Environment dialog box. The Address Assignment dialog box is not displayed if [Enter tag name without address and I/O comment] is selected instead.

The entered instruction parameter will be cancelled by any of the following operations on the Address Assignment dialog box.

- Clicking [Cancel] on the Address Assignment dialog box.
- Entering a tag name or address that duplicates any tag name.
- Entering an invalid comment.

---

**SEE ALSO**

For details on how to modify I/O comments, see Section B4.2.31, "Inserting and Deleting I/O Comments".

---

**CAUTION**

- Changes made to tag name definitions within a project are updated regardless of whether you reflect changes to the block or macro file.
  - Tag name definitions in the CPU are not modified even if you download the tag name definition to the CPU.
- 

## ■ Editing Circuit Comments or Subcomments

You can edit circuit comments or subcomments from an online edit window.

**TIP**

- You can edit comments or subcomments regardless of the CPU type and whether comments and subcomments have been downloaded to the CPU.
  - If circuit comments or subcomments have been downloaded to the CPU, then the comments in the CPU will also be changed when changes are reflected to the CPU.
- 

**SEE ALSO**

For details on how to edit circuit comments and subcomments, see Section B4.2.29, "Entering and Deleting Circuit Comments" and Section B4.2.30, "Entering and Deleting Subcomments".

---

**CAUTION**

- Adding new circuit comments or subcomments is not allowed.
  - Changes made to circuit comments and subcomments are reflected to the block or macro in a project when you reflect the changes to the block/macro file.
-

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## B23. Logs and Alarms

Logs and alarms are used to monitor the operation status and error events of the FA-M3. The following maintenance functions are available:

- Alarm display  
Displays all active error and alarm statuses.
- System log display  
The FA-M3 logs error events, power-on events and other events along with time information in the CPU. You can use the system log function to display such information, save it to a file and print it.  
System log files have filename extension ".yslg" and are stored in the "\Fam3com" folder by default.
- User log display  
By executing User Log instructions, you can store to the CPU a history of errors that has occurred in the user system. You can use the user log function to display such information, save it to a file and print it.  
User log files have filename extension ".yulg" and are stored in the "\Fam3com" folder by default.

### SEE ALSO

---

To print logs and alarms, see Section B10.4, "Print and Print Preview."

---

## B23.1 CPU Alarms

This function displays the status of active alarms and errors in the connected FA-M3.

### ■ Displaying and Canceling Alarms

To display alarms and cancel minor failures, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

##### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Debug/Maintenance]–[Display Alarm] from the menu bar.

⇒ The alarm display window opens.

##### SEE ALSO

For details on alarm messages and codes, see Table B23.1 "Alarm Messages."

(3) If one or more alarms are active, double-click an alarm to be displayed, or move the cursor to the alarm using the arrow keys.

⇒ The block that generated the alarm opens and the display jumps to the corresponding location.

(4) Select [Debug/Maintenance]–[Cancel Alarm] from the menu bar of the Alarm Display window.

⇒ This cancels the alarm (cancels minor failures).

Alarm Message	Code	Block Name	Location
I/O comparison error	05-0000	ALARM	00002N

Step (3)

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### CAUTION

Clicking an alarm does not jump to a Macro Monitor window. If a macro generated an error, the display jumps to the block location of the instruction invoking the macro.

Jumps can only be made from alarms displayed with a block name and location (instruction number).

**SEE ALSO**

For details on how to cancel alarms (cancel minor failures), see "Sequence CPU – Functions."

**TIP**

If you select [Debug/Maintenance]–[Redisplay Alarm] with the Alarm Display window open, the alarm display will be updated with the latest alarm status.

## ■ Error Messages Displayed in the Alarm Display Window

The table below lists the error status output by the sequence CPU module.

**SEE ALSO**

For details on the error statuses listed in Table B23.1, see "Sequence CPU – Functions."

**Table B23.1 Alarm Messages**

Message	Code	Description	Troubleshooting
Self-diagnosis error	01-1002	Number of modules exceeded CPU capacity.	Check the modules in use.
	01-1003	Module mapping failure	Check for noise in the installation environment. If problem recurs, replace the hardware.
	01-1004	Module access failure	
	01-1005	Other failures during CPU initialization	
	01-11XX	SPU error	
	01-1201	Program memory failure	Noise and other external factors may cause transient memory failures. Check the installation environment. Clear memory (see CAUTION below) and download program again. If problem recurs, replace the module.
	01-1202	Device memory failure	
	01-1203	System memory failure	
	01-1701	An invalid instruction word was detected.	
	01-1702	No END instruction	Amend the program.
	01-2001	Label mismatch	
	01-2002	I/O points exceeded maximum limit.	
	01-8203	ROM pack error (type mismatch)	- This does not indicate an error if you have just executed an Erase ROM operation. You can continue using the ROM pack. - You may have written to the ROM with an incorrect CPU type. Try to write again. If the same error recurs, it may indicate a hardware fault. Replace the ROM pack or the sequence CPU module.
	01-8204	ROM pack error (cannot read or write)	Try to write to the ROM again. If the same error recurs, it may indicate a hardware fault. Replace the ROM pack or the sequence CPU module.
Momentary power failure	02-0000	Momentary power failure	—

Message	Code	Description	Troubleshooting
Inter-CPU communication error	03-0000	Inter-CPU communication failure in a multi-CPU system	When using multiple CPUs, this may indicate an error from other CPUs. Do not reset CPU modules individually. Instead, reset all CPUs from the main CPU. If the problem recurs, replace the CPU module.
Instruction error	04-2101	Invalid instruction parameter range	Amend the program.
	04-2102	Incorrect operation calculation	
	04-2103	BIN/BCD conversion error.	
	04-2104	FIFO table pointer failure	
	04-2105	Device boundary value exceeded.	
	04-2106	FOR-NEXT mismatch.	
	04-2107	Instruction processing error (IL - ILC mismatch)	
	04-2201	Non-existent subroutine return location	
	04-2202	Subroutine nesting exceeded 8 levels	
	04-2301	Non-existent interrupt instruction return location	
	04-2302	More than 8 interrupt wait events	
	04-2501	No macro instruction return location	
I/O comparison error	05-0000	I/O module installation and program mismatch.	
I/O error	06-0000	Cannot read from or write to I/O module.	<ul style="list-style-type: none"> <li>- Ensure that the subunit is not switched off.</li> <li>- Ensure that the cable of the Fiber-optic FA Bus Module is intact.</li> <li>- Do not reset CPU modules individually. Instead, reset all CPU modules from the main CPU.</li> <li>- An I/O module may be faulty. Replace the module.</li> </ul>
Scan timeout	07-0000	Scan monitoring time exceeded.	Amend the program.
FA link (1-8) error	09-0000 0A-0000 0B-0000 0C-0000 0D-0000 0E-0000 0F-0000 10-0000	Invalid FA link settings	Correct the FA link setup.
Battery error /Memory check error	11-0000	Memory backup circuit failure or error in the pattern data used for backup check. Program or data is initialized.	Noise and other external factors may cause transient memory errors. Check the installation environment. Clear memory (see CAUTION below) and download program again. If problem recurs, replace the module.
Subunit communication error	12-0000	Cannot read to or write from the module attached to the sub-unit.	<ul style="list-style-type: none"> <li>- Switch on the sub-unit.</li> <li>- Check the optical FA bus or optical FA bus 2 cable.</li> </ul>
Subunit transmitter switching has occurred	13-0000	Line discontinuity detected in the remote I/O system connected in a loop.	Replace the optical FA bus or optical FA bus 2 cable.
Sensor CB scan timeout	14-0000	Sensor control block scan monitoring time exceeded.	Amend the program.
*****	XX-XXXX	An undefined alarm was detected.	Noise and other external factors may cause transient errors. Check the installation environment. Clear memory (see CAUTION below) and download program again. If problem recurs, replace the module.

**CAUTION**

You can clear the internal memory of the sequence CPU module and revert to factory default settings:

- For F3SP66-4S/67-6S: by operating the rotary switch on the front panel.
- For other CPU modules: by installing the sequence CPU module in slot 5 or a higher slot number of the main unit and turn on the power.

In the event of transient memory failure caused by noise and other external factors, try downloading the application program at a later time.

If the error recurs, this may indicate a hardware failure so you should consider replacing the module.

**TIP**

- A remote I/O system is an extended I/O system consisting of  $\mu$ -bus, optical FA bus, and optical FA bus 2.
- The optical FA bus module or optical FA bus 2 module is used to build a data link network between multiple FA-M3 systems.

**SEE ALSO**

- For details on precautions about clearing memory of F3SP66-4S or F3SP67-6S CPU modules, see "Sequence CPU – Functions (for F3SP66-4S, F3SP67-6S)" (IM34M6P14-01E).

**SEE ALSO**

- For details on the remote I/O system, see "Sequence CPU – Functions."
- For details on the optical FA bus/bus 2, see "Sequence CPU – Functions."

## B23.2 System Log

This system log function displays, saves to file, and prints log information of error events, power-on events and other events stored in the CPU. It stores a maximum of 70 to 150 history data entries, the actual limit depending on the kind of information stored. When it reaches the memory capacity, it erases the oldest data to store new data.

### ■ Displaying the System Log

To display the system log, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

##### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Debug/Maintenance]–[Display System Log] from the menu bar.

⇒ The system log display window opens.

Log messages displayed with the newest first

Name of block where error was generated

Error code

Date & Time	Message	Code	Block Name	Location
2004/08/24 15:53:50	Startup completed	01-00		
2004/08/24 15:53:44	Power Off	03-00		
2004/08/24 15:53:43	I/O Comparison Error	24-01	ALARM	00002N
2004/08/24 15:53:43	Startup completed	01-00		
2004/08/24 15:53:39	Power Off	03-00		

Instruction No.: in "XXXXN" format  
Slot No.: in "SLOT=XXXX" format

Log date and time: In yyyy/mm/dd/hh:mm:ss format

Step (2)

B18\_02.VSD

#### TIP

Selecting [Debug/Maintenance]–[Redisplay System Log] with the System Log Display window open updates the system log display with the latest information.



## ■ Clearing the System Log

To clear the system log, use the following procedure.

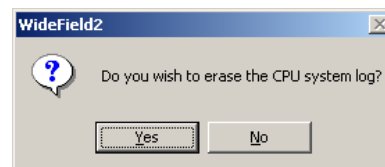
### ◆ Procedure ◆

(1) Confirm that the system log display window is open.

(2) Select [Debug/Maintenance]–[Clear Log] from the menu bar.

⇒ A confirmation dialog box opens.

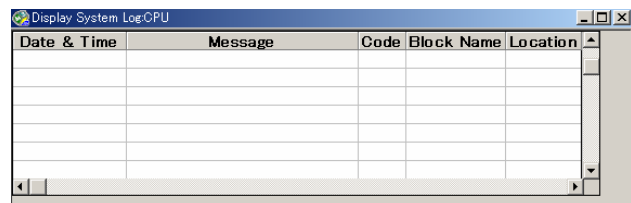
(3) Click [Yes].



Step (3)

B18\_03.VSD

⇒ The content of the system log display window is cleared.



Step (3)

B18\_21.VSD

## ■ Saving a System Log File

To save the system log to a file, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the system log display window is open.

(2) Select [File]–[Save As] from the menu bar.

⇒ The Save As dialog box opens.

(3) Enter a file name in the [File name] text box, and click [Save].

⇒ The system log file is saved.

#### **TIP**

System log files have filename extension ".yslg". They are stored in the "\\WideField2\\Fam3com" folder by default.

## ■ Opening a System Log File

To open a system log file, use the following procedure.

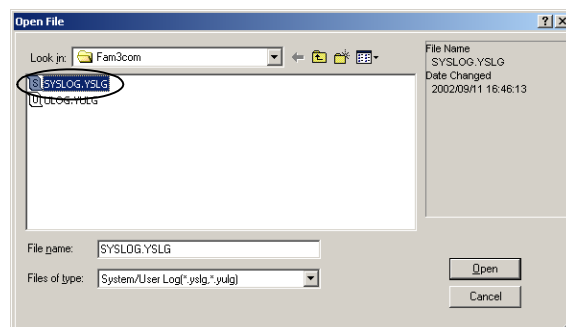
### ◆ Procedure ◆

(1) Select [File]–[Open]–[Log File] from the menu bar.

⇒ The Open File dialog box opens and a list of system log files and user log files stored in the “\WideField2\Fam3com” folder is displayed.

(2) Double click a file name, or move the cursor to a file name and click [Open].

⇒ The log file opens.



Step (2)

B18\_05.VSD

## ■ Log Messages Displayed in the System Log Display Window

The table below lists error statuses output by the sequence CPU module.

### SEE ALSO

For details on the error statuses listed in Table B23.2, see "Sequence CPU – Functions."

**Table B23.2 System Log Messages**

Message	Description	Troubleshooting
Startup completed	Initialization after power on has completed successfully. Detailed error code: 01:0n where n is the MODE switch value	—
Momentary power failure	Momentary power failure	—
Power Off	Power is turned off.	—
Startup error	Error detected during initialization after power on.	Replace the hardware.
SPU error	Failure of the internal processor of the sequence CPU module	Check for noise in the installation environment. If problem recurs, replace the hardware.
Memory error	Memory data error	Noise and other external factors may cause transient memory errors. Check the installation environment. Clear memory (see CAUTION below) and download program again. If problem recurs, replace the module.
Battery error /Memory check error	Memory backup circuit failure or error in the pattern data used for backup check. Program or data is initialized.	
Scan timeout	Scan monitoring time exceeded.	Amend the program.
Invalid instruction found	An invalid instruction word was detected.	Noise and other external factors may cause transient memory errors. Check the installation environment. Clear memory (see CAUTION below) and download program again. If problem recurs, replace the module.
FA link (1-8) error	Invalid FA link settings	Correct the FA link setup.
Program error	Invalid program	Amend the program.
Instruction error	Error was detected during execution of instruction.	Amend the program.
Subroutine error	Subroutine mismatch	Amend the program.
Interrupt error	- Non-existent interrupt instruction return location - More than 8 interrupt wait events	Amend the program.
I/O comparison error	- I/O module installation and program mismatch. - A READ/WRITE instruction is used for DIO. - A HRD/HWR instruction is used for DIO.	Amend the program.
Macro instruction error	No macro instruction return location	Amend the program.
Inter-CPU communication error	Inter-CPU communication failure in a multi-CPU system	When using multiple CPUs, this may indicate an error from another CPU. Do not reset CPU modules individually. Instead, reset all CPUs from the main CPU. If the problem recurs, replace the CPU module.

Message	Description	Troubleshooting
ROM cassette error	ROM pack error	<ul style="list-style-type: none"> <li>- This does not indicate an error if you have just executed an Erase ROM operation. You can continue using the ROM pack.</li> <li>- You may have written to the ROM with an incorrect CPU type. Try to write again. If the same error recurs, it may indicate a hardware fault. Replace the ROM pack or the sequence CPU module.</li> </ul>
I/O error	Cannot read from or write to I/O module.	<ul style="list-style-type: none"> <li>- Ensure that the subunit is not switched off.</li> <li>- Ensure that the cable of the Fiber-optic FA Bus Module is intact.</li> <li>- Do not reset CPU modules individually. Instead, reset all CPU modules from the main CPU.</li> <li>- An I/O module may be faulty. Replace the module.</li> </ul>
Subunit communication error	Cannot read from or write to the module attached to the sub-unit.	<ul style="list-style-type: none"> <li>- Switch on the sub-unit.</li> <li>- Check the optical FA bus or optical FA bus 2 cable.</li> </ul>
Subunit transmitter switching has occurred	Line discontinuity detected in the remote I/O system connected in a loop.	Replace the optical FA bus or optical FA bus 2 cable.
Boot mode error	Error related to boot mode. Detailed code: 10-1n n: MODE switch value	Remove the cause of error and then switch off and on or reset the CPU module.
Smart access press function error	An error was detected by a press rotary switch function. Detailed code: 31-0n n: MODE switch value	Check rotary switch press function and re-execute.
Smart access press and hold function error	An error was detected by a press & hold rotary switch function. Detailed code: 32-0n n: MODE switch value	Check rotary switch press and hold function and re-execute.
Card batch file error	An error was detected by the card batch file function. Detailed code: 33-0n n=1: startup event trigger n=2: error event trigger n=3: run program trigger n=4: stop program trigger n=5: mount memory card event trigger n=6: run batch file trigger n=7: alarm event trigger	Check the standard output file, remove the cause of error and re-execute.
Virtual command error	An error was detected by virtual directory function. Detailed code: 34-00 This is a typical error message of the virtual directory function.	Check the response file, remove the cause of error and re-execute.

**CAUTION**

You can clear the internal memory of the sequence CPU module and revert to factory default settings:

- For F3SP66-4S/67-6S: by operating the rotary switch on the front panel.
- For other CPU modules: by installing the sequence CPU module in slot 5 or a higher slot of the main unit and turn on the power.

In the event of transient memory errors caused by noise and other external factors, try downloading the application program at a later time.

If the error recurs, this may indicate a hardware failure so you should consider replacing the module.

**SEE ALSO**

For details on precautions about clearing memory of F3SP66-4S or F3SP67-6S CPU modules, see "Sequence CPU – Functions (for F3SP66-4S, F3SP67-6S)."

**CAUTION**

Power off time may be incorrectly recorded in any of the following situations:

- (a) A major failure (RDY turned off) is detected.
- (b) The CPU module is removed from the base unit with power turned on.
- (c) Power off is not correctly detected due to power supply module failure.

If power off time is not correctly recorded, check for causes (a) and (b). If both causes are ruled out but the problem recurs frequently with no apparent cause, replace the power supply module.

**CAUTION**

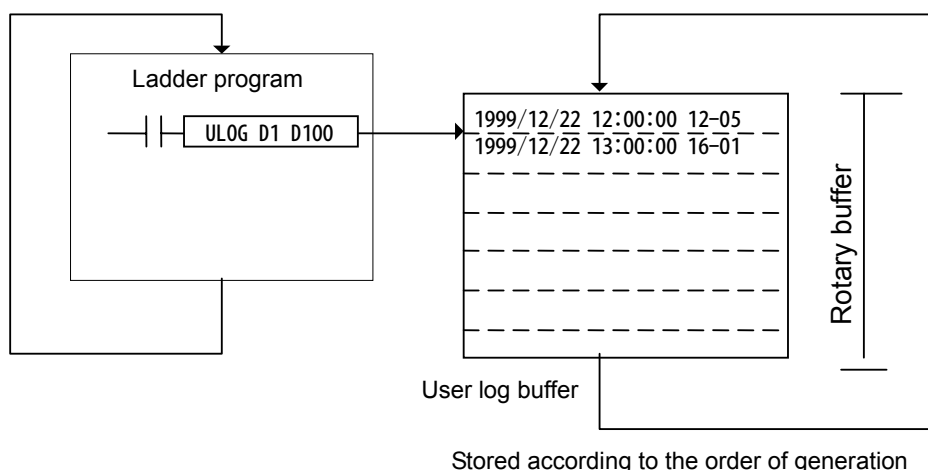
The CPU module may sometimes record a power off time that is later than the startup completion time of the next startup. This may happen, in particular, when the CPU module is switched off after running for an extended period of time. This apparent discrepancy is not an error but happens because the power off time is obtained by adding the elapsed time maintained by the system timer to the most recent power on time but the power on time is recorded based on the backup real time clock reading.

## B23.3 User Log

### ■ User Log

The user log function, like the system log function, records generated messages such as user system errors or operation statuses. The user log function records data generated by user programs. The recorded data, or user log, can be read using an instruction or programming tools.

- User log data is recorded by executing a user log instruction in a program. Up to 64 user log data entries can be recorded per CPU.
- User log data contains the date and time of generation, the main code (1 word), and the sub-code (1 word).
- You can store up to 64 messages of 32 characters in the CPU for the main codes. You can then attach these messages to the main codes and sub-codes when you read user log data.
- When the number of recorded user log data reaches 64, the oldest data will be erased and new data appended.
- User log data can be read using the programming tools or by executing a Read User Log instruction.
- The number of user log data entries is stored in the Z105 special register.



**Figure B23.1 User Log Function**

#### SEE ALSO

For details on the procedure for using user logs and instruction specifications, see "Sequence CPU – Instructions" (IM34M6P12-03E).

## ■ Creating User Log Messages

To create user log messages, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that a project is open.

#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) Select [Project]–[User Log Message] from the menu bar.

⇒ The User Log Message Definition dialog box opens.

(3) Enter messages that correspond to individual main code values.

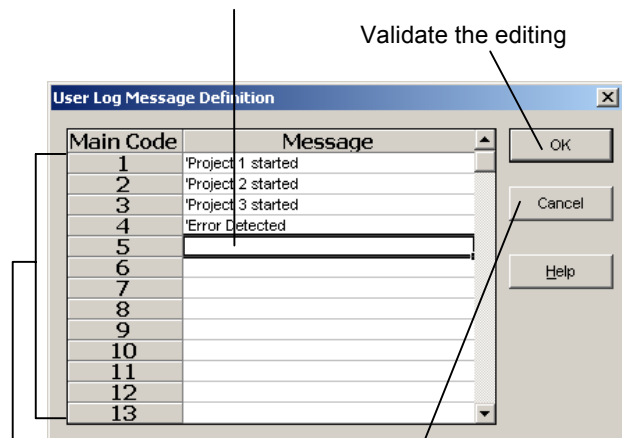
#### SEE ALSO

For details on the main code and sub-code, see "Sequence CPU – Instructions" (IM34M6P12-03E).

(4) Click [OK].

⇒ The User Log Message Definition dialog box closes.

- Each message can be up to 32 characters long.
- An empty message can also be registered.
- You can cut, copy, and paste text after entering the Input mode by double clicking in this area or pressing the [F2] key.



Up to 64 messages can be registered.

Steps (3) and (4)

Discards changes made and reverts to the state before editing.

B18\_07.VSD

## ■ Displaying the User Log

To display the user log, use the following procedure.

### ◆ Procedure ◆

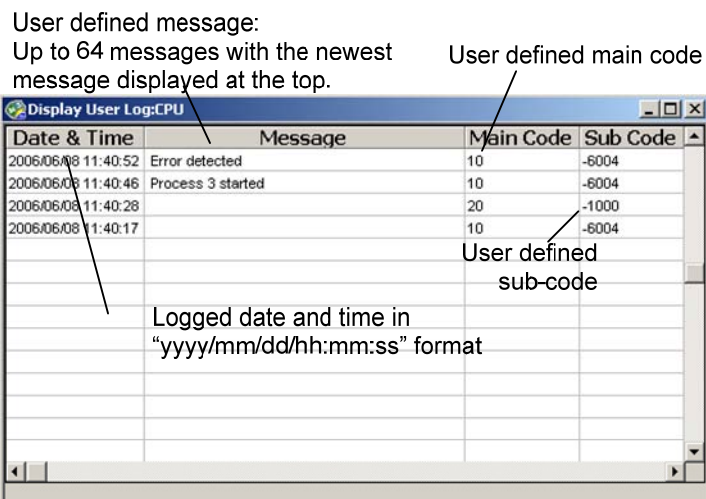
(1) Confirm that WideField2 is online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

**(2) Select [Debug/Maintenance]–[Display User Log] from the menu bar.**

⇒ The user log display window opens.



Step (2)

B18\_08.VSD

**TIP**

Selecting [Debug/Maintenance]–[Redisplay User Log] with the user log display window open updates the user log display with the latest user log information.

## ■ Clearing the User Log

To clear the user log stored in the CPU, use the following procedure.

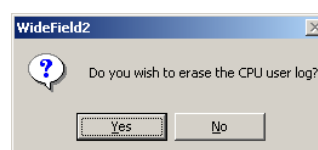
### ◆ Procedure ◆

**(1) Confirm that the user log display window is open.**

**(2) Select [Debug/Maintenance]–[Clear Log] from the menu bar.**

⇒ A confirmation dialog box opens.

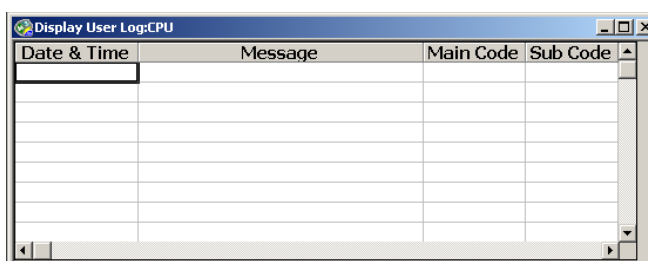
**(3) Click [Yes].**



Step (3)

B18\_09.VSD

⇒ The user log display window is cleared.



Step (3)

B18\_22.VSD



## ■ Saving the User Log to a File

To save the user log to a file, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the user log display window is open.
- (2) Select [File]–[Save As] from the menu bar.  
⇒ The Save As dialog box opens.
- (3) Enter a file name in the [File name] text box, and click [Save].  
⇒ The user log file is saved.

#### TIP

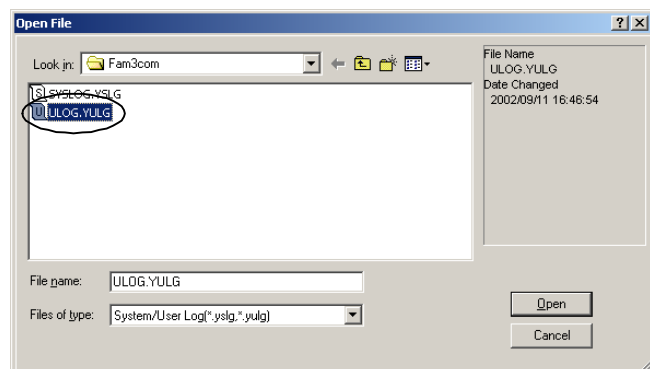
User log files have filename extension ".yulg" and are stored in the "\\WideField2\Fam3com" folder by default.

## ■ Opening a User Log File

To open a user log file, use the following procedure.

### ◆ Procedure ◆

- (1) Select [File]–[Open]–[Log File] from the menu bar.  
⇒ The Open File dialog box opens and a list of system log files and user log files stored in the "\\WideField2\Fam3com" folder is displayed.
- (2) Double click a file name, or move the cursor to a file and click [Open].  
⇒ The log file opens.



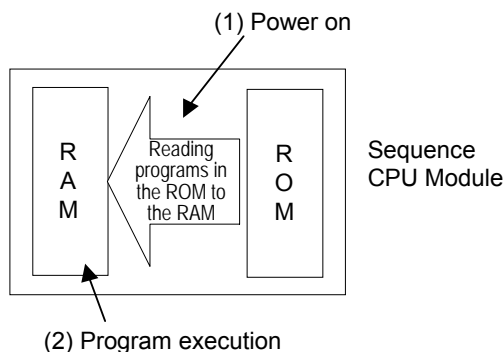
Step (2)

B18\_11.VSD



## B24. Using the ROM

You can attach a ROM pack to the CPU to store the program, tag name definitions, and partial device data. When power is switched on with the program or partial device data resident in the ROM, the CPU reads the program and device data from the ROM and begins program execution.



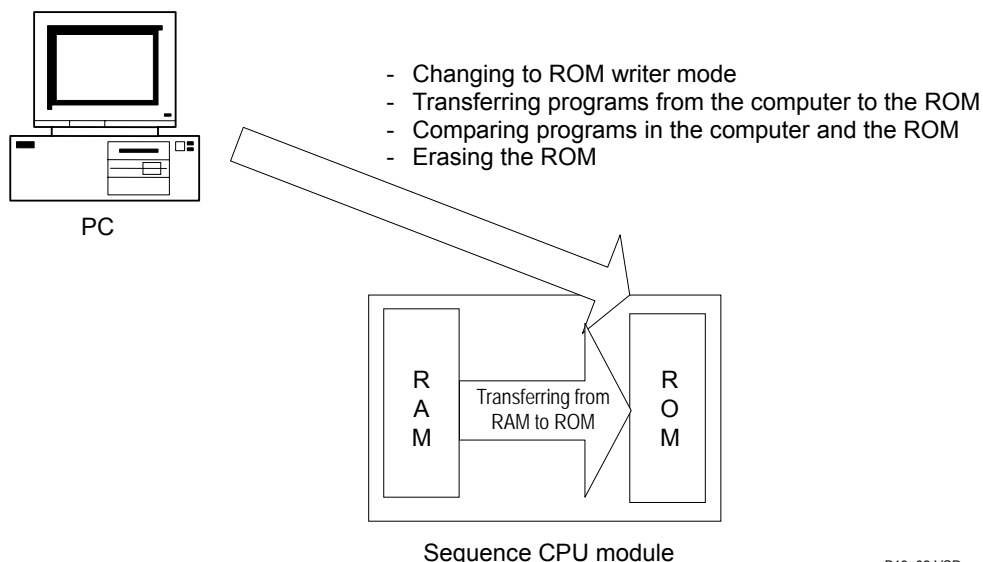
B19\_01.VSD

Figure B24.1 Regular ROM operation (when not in ROM Writer mode)

The CPU provides a ROM Writer mode for writing to and deleting from the ROM. Unlike regular CPU operating modes, in ROM writer mode, all sequence functions are disabled and the ROM Writer mode remains even when power is turned off and on again.

The following ROM management functions are available.

- Switching from ROM writer mode to CPU mode.
- Transferring programs from the computer to the ROM.
- Comparing programs in the computer and in the ROM.
- Transferring programs from the CPU RAM to the ROM.
- Erasing the ROM.



B19\_02.VSD

Figure B24.2 ROM Management Functions

**ROM management functions are unavailable in the following situations:**

- **When a sequence CPU module does not support ROM**  
ROM management functions cannot be executed on a sequence CPU module that does not allow ROM packs to be installed.  
When connected to a sequence CPU module that does not support ROMs, ROM management functions are either disabled in the menu or generate an error when executed.
- **When not in ROM writer mode**  
The CPU is not in ROM writer mode. Before managing a ROM, always switch to ROM Writer mode.
- **When another terminal has exclusive access control**  
Another terminal has exclusive access control. To manage the ROM, force a release of the exclusive access control.

## B24.1 ROM Writer Mode

Use the ROM writer mode function to switch to and exit from ROM Writer mode. ROM management functions (ROM transfer, ROM copy, ROM erase, and ROM compare) can only be used in ROM Writer mode. Program execution, downloading, and comparison cannot be carried out in ROM Writer mode. After executing ROM management functions, cancel ROM writer mode.

### B24.1.1 Changing ROM Writer Mode

You must put the CPU in ROM Writer mode before using ROM management functions.

#### ■ Switching to and Exiting from ROM Writer Mode

To switch to ROM writer mode, select [Online]–[ROM Management]–[ROM Writer Mode ON] from the menu bar. A confirmation dialog box is displayed. Click appropriate buttons.

To cancel ROM writer mode, select [Online]–[ROM Management]–[ROM Writer Mode OFF] from the menu bar. A confirmation dialog box is displayed. Click appropriate buttons.

## B24.2 ROM Transfer (from Computer to ROM)

Transfers executable programs in an open project to the ROM.

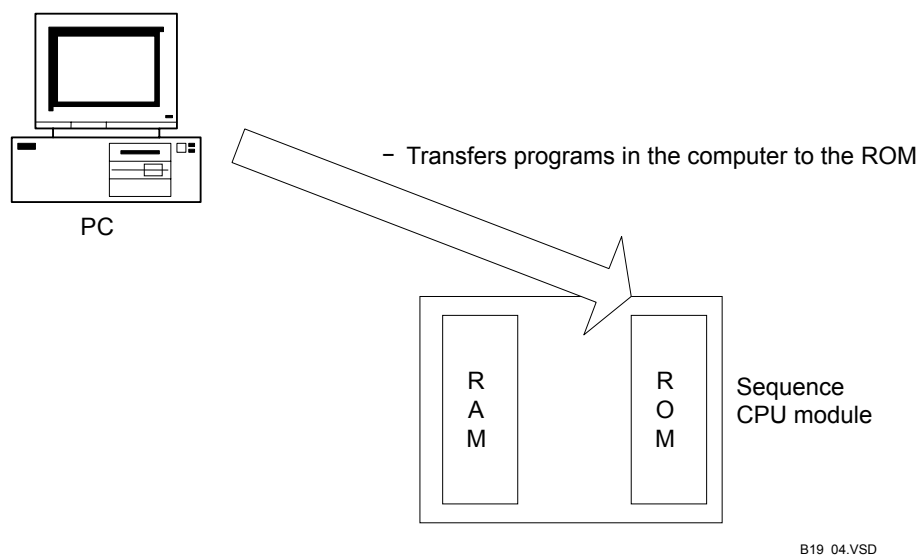


Figure B24.3 File to ROM Transfer

Use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Switch the CPU to the ROM writer mode.

#### SEE ALSO

For details on how to switch to ROM Writer mode, see Section B24.1, "ROM Writer Mode."

- (3) Select [Online]–[ROM Management]–[File→ROM Transfer] from the menu bar.

⇒ The File→ROM Transfer dialog box opens.

(4) Select the items to be transferred, and click [OK].

#### TIP

If you initiate ROM transfer with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.

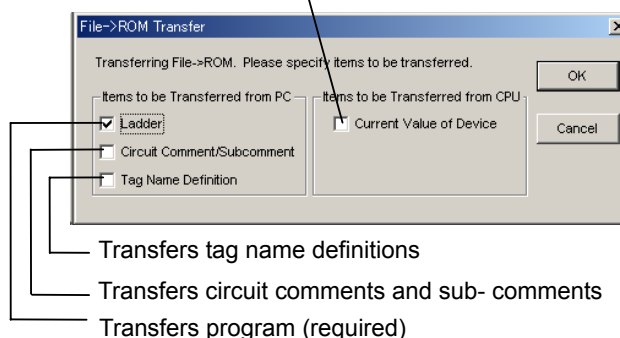
⇒ Program syntax checking is performed.

#### TIP

If warnings are detected, a dialog box is displayed to prompt whether to proceed with File to ROM transfer. To proceed, click [Yes]. If errors are detected, ROM transfer is aborted.

⇒ Transfer begins. When the transfer completes, a dialog box opens to inform that transfer has completed, and you are returned to WideField2.

Transfers current values of devices defined in [ROM Setup] in the configuration.



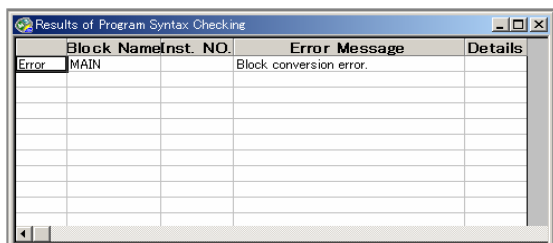
Step (4)

B19\_03.VSD



#### CAUTION

If program syntax errors are detected during transfer, the transfer is terminated and the Results of Program Syntax Checking window opens.



B19\_05.VSD

Figure B24.4 Results of Program Syntax Checking window

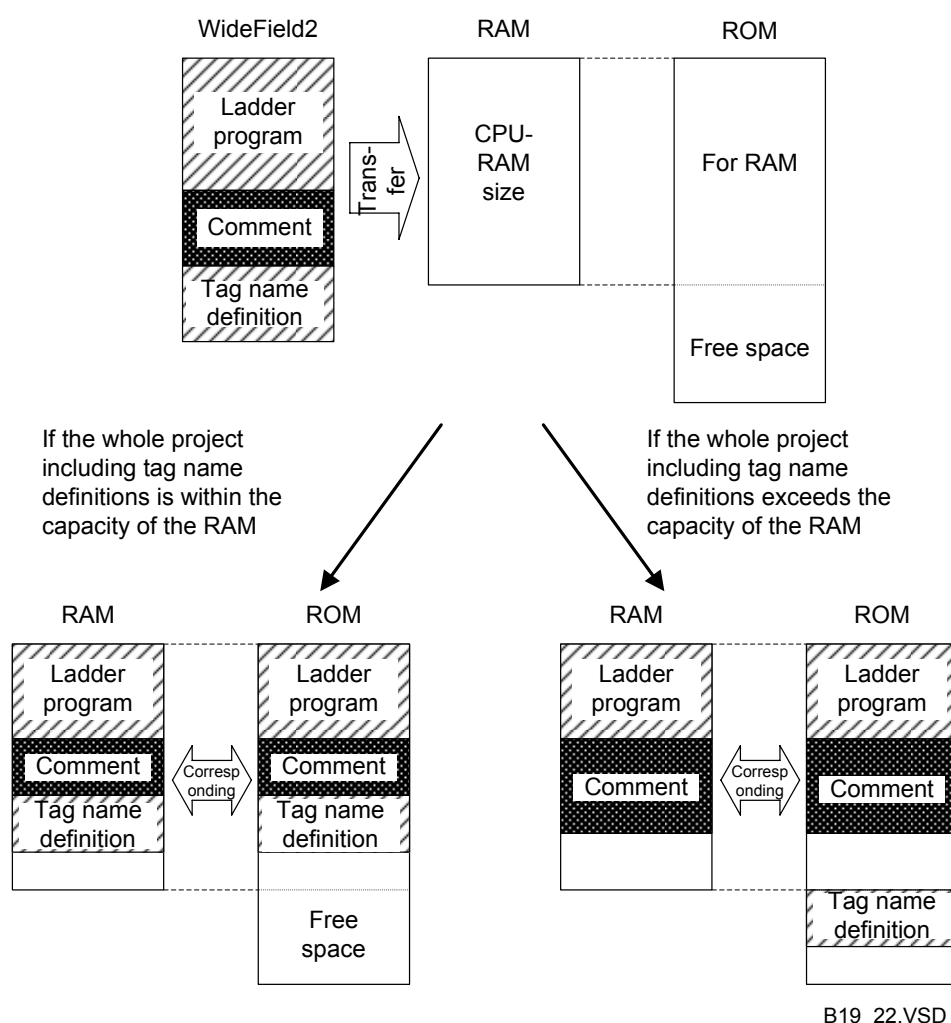
**CAUTION**

- You cannot abort a write operation to the ROM before its completion.
- With some CPU types (F3SP□□-□S), you can install a ROM pack whose capacity is larger than that of the CPU RAM. For ROM transfer with these CPU types, if the size of the transferred project exceeds the capacity of the RAM, tag name definitions are not stored in the RAM but automatically stored in the free area on the ROM.

When seen from WideField2 in this case, tag name definitions appears to be but is actually not stored in the RAM. The RAM stores the entire project excluding tag name definitions. If ROM copy is now executed, the tag name definitions will be lost.

For this reason, we recommend that you use ROM transfer instead of ROM copy in such situations.

If the RAM capacity is large enough to store the entire project (including tag name definitions), the entire project will be stored in the RAM without potential ROM copy problems.



**Figure B24.5 Storing Tag Name Definitions According to RAM Capacity**

- If both WideField2 and ToolBox applications are connected online concurrently from the same PC, You must first disconnect the ToolBox application before you can perform ROM transfer.



## B24.3 ROM Compare (between Computer and ROM)

The ROM Compare function compares the executable program in the currently open project to the contents in the ROM. Upload the program to the CPU before performing the comparison procedure. The ROM comparison is executed with the CPU in ROM writer mode.

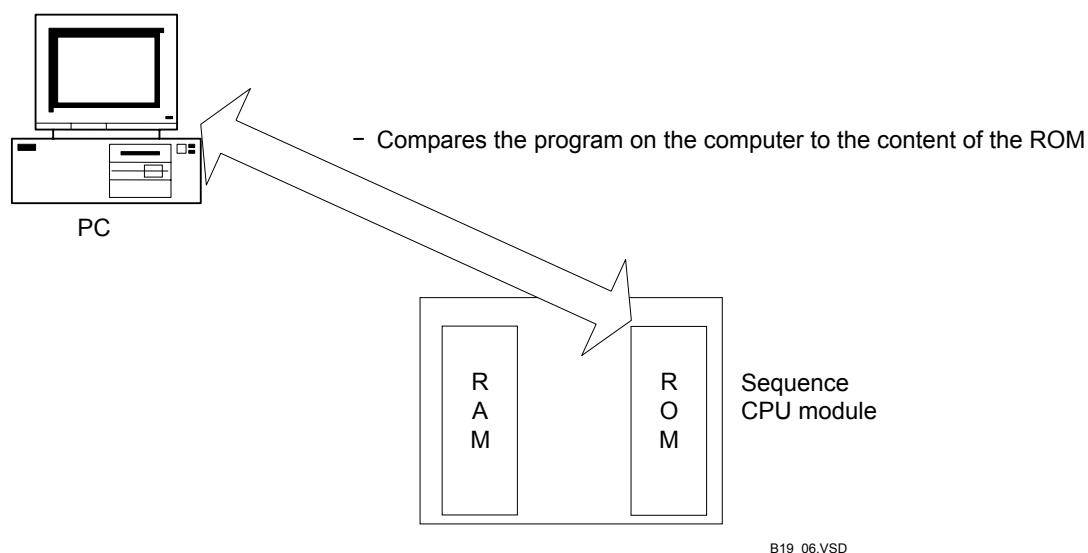


Figure B24.6 Comparison between File and ROM

Use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is online and a project is open.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Switch the CPU to ROM writer mode.

#### SEE ALSO

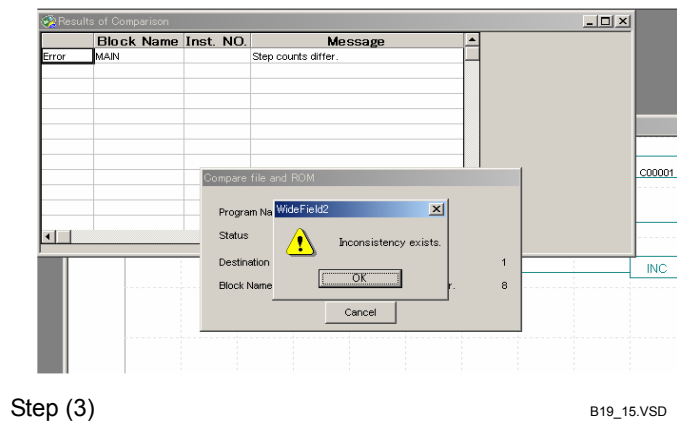
For details on how to switch to ROM writer mode, see Section B24.1, "ROM Writer Mode."

- (3) Select [Online]–[ROM Management]–[Compare File and ROM] from the menu bar.

⇒ Comparison begins. When the comparison completes, a dialog box opens to confirm completion of the comparison. If an error is detected during comparison, the Results of Comparison window appears to inform about the error.

### TIP

ROM comparison is performed on saved blocks. If you initiate ROM comparison with a ladder program edit window (tag name definition window) open after having made changes in the window, a confirmation dialog box will be displayed.



Step (3)

B19\_15.VSD

**(4) If no discrepancies are found, close the dialog box notifying that comparison has completed. If discrepancies are detected, double-click an error or warning to be displayed or move the cursor to the error or warning using the arrow keys and press [Enter].**

⇒ The block containing the error or warning opens and the display jumps to the beginning of the corresponding circuit.

### TIP

To display the location of the error or warning without changing the window focus, press any of the following keys.

- [SPACE] key: Displays the location of the error or warning at the current cursor position.
- [F3] key: Displays the location of the next error or warning after the current cursor position.
- [Shift]+[F3] keys: Displays the location of the previous error or warning before the current cursor position

The Results of Comparison window remains as the topmost window if you use the above operations to display the error or warning location without changing the window focus.

## ■ Errors and Warnings

The following errors and warnings may be displayed in the Results of Comparison window.

### ● Errors

- **Components of executable program differs.**  
The executable program configurations are different.
- **Invalid xxx in configuration.** (where xxx is a tab name on the Configuration dialog box).  
The configurations are different.
- **Instruction or address differs.**  
Block contents (instructions, devices, labels) are different.
- **Tag name definition differs.**  
The tag name definitions are different.  
The structure type definitions are different.

### ● Warnings

- **String in user log message differs.**  
The contents of the user log messages are different.
- **String in user log message differs.**  
The number of registered user log messages is different.
- **'Subcomment/No subcomment' differs**  
There are more or fewer sub-comments.
- **'Circuit comment/No circuit comment' differs**  
There are more or fewer circuit comments.



### CAUTION

- The comparison result displays the first instruction number in each circuit containing a mismatch.
- Inserting a circuit (except for inserting circuit comments) causes a mismatch in all subsequent circuits.
- When comparing sub-comments and circuit comments, only the presence or absence of a comment is compared. Actual contents of the comments are not compared.
- Up to 256 mismatches can be displayed.

## B24.4 ROM Copy (from RAM to ROM)

The ROM Copy function copies the contents of the RAM (program memory) in the CPU to the ROM. This function is used for creating multiple ROMs from the same executable program.

You do not need to transfer executable programs between the computer and the CPU. You can write the executable program to the ROM by simply replacing the ROM pack. ROM copy can be carried out once a ROM transfer has been executed. ROM copy is only available in ROM writer mode.

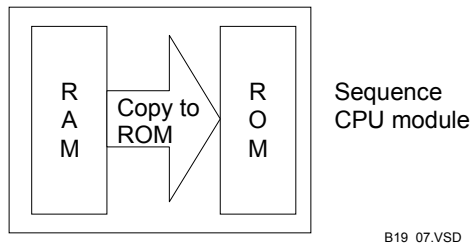


Figure B24.7 Transferring from the CPU to ROM

Use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### TIP

Download a project beforehand.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to download a project, see Section B12.1.3, "Procedure for Downloading a Project."

(2) Switch the CPU to ROM Writer mode.

#### SEE ALSO

For details on how to switch to ROM writer mode, see Section B24.1, "ROM Writer Mode."

(3) Select [Online]—[ROM Management]  
—[CPU→ROM Transfer] from the menu bar.

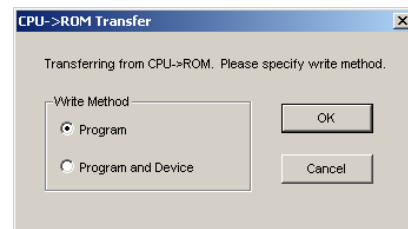
⇒ The CPU→ROM Transfer dialog box opens.

(4) Select the items to be copied, and click [OK].

⇒ Copying begins. When the copy is completed, a dialog box opens to inform of the completion of the copy operation.

(5) Click [OK].

⇒ You are returned to WideField2.



Step (5)

B19\_08.VSD

## ■ Copying to Multiple ROM Packs

To copy data to another ROM pack at the end of the above procedure, stay in ROM writer mode, switch off the FA-M3, replace the ROM pack, and switch on the FA-M3.

Next, select [Online]–[ROM Management]–[CPU→ROM Transfer] from the menu bar, and repeat the same procedure for normal ROM copy.

You must remain in ROM Writer mode until copying is completed for all ROM packs.



### CAUTION

- If tag name definitions are stored in the ROM, the content of the CPU RAM and that of the ROM may be different depending on the project size (If the size of the project including tag name definitions exceeds the CPU RAM capacity, tag name definitions are not stored in the CPU RAM, but are stored only in the ROM instead).  
Executing a CPU-to-ROM transfer in this condition transfers only the content of the CPU RAM the ROM. No tag name definition will be transferred to the ROM.  
Therefore, if the content of the CPU RAM and that of the ROM are different, you must upload a project from the ROM before executing CPU-to-ROM transfer.
- If both WideField2 and ToolBox applications are connected online concurrently from the same PC, you must first disconnect the ToolBox application before you can perform ROM copy.

## B24.5 ROM Erase

The ROM Erase function erases programs from the ROM.

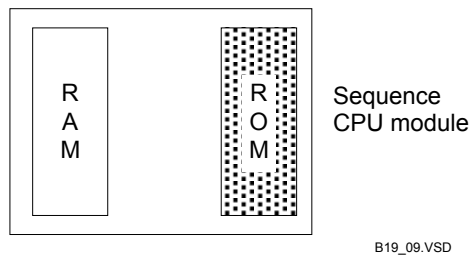


Figure B24.8 ROM Deletion

Use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Switch the CPU to ROM writer mode.

#### SEE ALSO

For details on how to switch to ROM writer mode, see Section B24.1, "ROM Writer Mode."

(3) Select [Online]–[ROM Management]–[Erase ROM] from the menu bar.

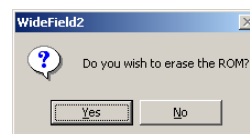
⇒ A dialog box opens to confirm whether to erase the content of the ROM.

(4) Click [Yes].

⇒ Erasure begins. Upon completion, a dialog box opens to inform the completion of the erasure.

(5) Click [OK].

⇒ You are returned to WideField2.



Step (4)

B19\_21.VSD



### CAUTION

- You cannot abort an erase operation before its completion.
- If both WideField2 and ToolBox applications are connected online concurrently from the same PC, You must first disconnect the ToolBox application before you can erase the ROM.

## B25. I/O Module Setup

This chapter describes how to perform setup for advanced I/O modules.

### B25.1 Station Assignment and Monitoring of FA Links

This section describes how to set up the FA link function, which makes use of FA link modules, FA link H modules and optical FA link H modules, as well as how to monitor the statuses of FA link modules.



#### 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 modules collectively unless otherwise specified.

#### TIP

FA link modules are used to establish a data link network between FA-M3 systems.

#### SEE ALSO

For details on the functions of 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" (IM34M6H43-01E).

Also see "Sequence CPU – Functions."

**The FA link functions include assigning stations to the FA link and reading statuses of FA link modules.**

- **Assigning stations to FA link**  
Assigns link relays.  
Assigns link registers.
- **Reading FA link module status**  
Checks the status of the local station.  
Checks the status of other stations.

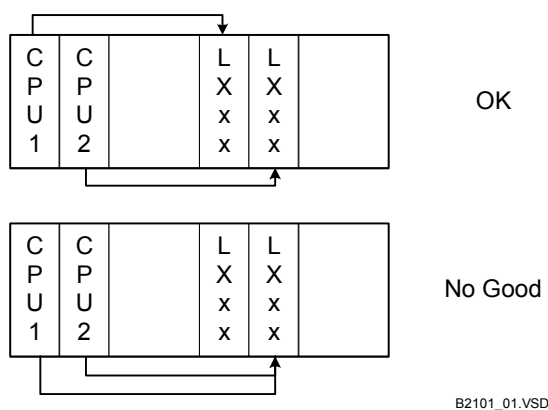
**All the above functions are performed with the "FA Link Tool."**

**CAUTION**

You can only read or register link information for an FA link module from the CPU using the FA link module.

Reading link information from or registering link information to an FA link module from multiple CPUs may cause subsequent reading or registration to fail.

If so, switch off the FA-M3 and turn it back on.



**Figure B25.1 Reading and Registering Link Information**



## B25.1.1 Starting the FA Link Tool

The FA Link Tool is used for station assignment and monitoring.

Select [Tools]–[Set up I/O Module]–[FA Link] from the menu bar of WideField2 to start the FA Link Tool.

Before you can write to, read from, or check the status of an FA link module, you must first establish online connection to the FA-M3 using WideField2. If you are not connected online, you can only edit the FA link module setup file.

### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

### TIP

The FA link module setup file contains configuration information to be set in an FA link module.

If you are not connected online, a dialog box will be displayed indicating that online functions are not available. Clicking [Yes] launches the FA Link Tool.

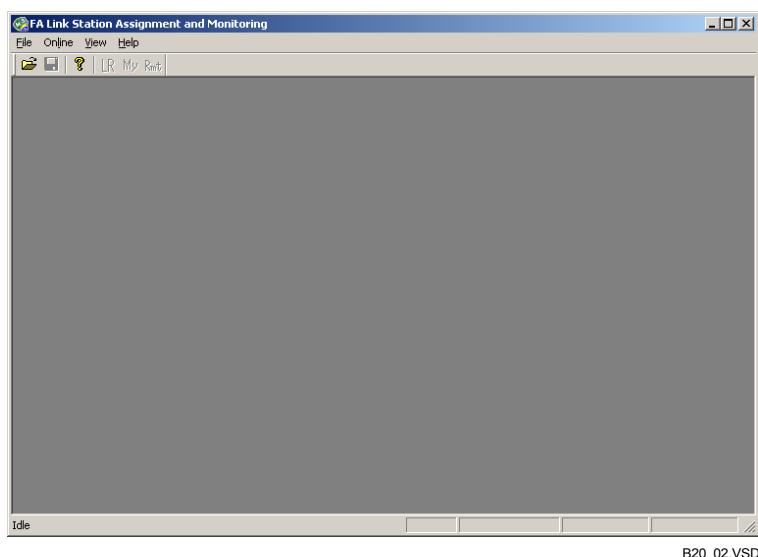


Figure B25.2 FA Link Tool



### CAUTION

- If you initiate online connection from WideField2 after starting the FA Link Tool, reading of link data will fail. In this case, exit from the FA Link Tool, reinitiate online connection from WideField2, and restart the FA Link Tool.
- You cannot run multiple copies of the FA Link Tool concurrently.

## B25.1.2 FA Link Station Assignment Setup for FA Link Stations (global)

To perform FA link station assignment, use the FA Link Station Assignment window. Link information may be read either from an FA link module or a file. You can create a link information file from setup data read from an FA link module.

### ■ Reading Link Information from a Module

Connect to the CPU using WideField2, and start the FA Link Tool. Use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is online.

#### SEE ALSO

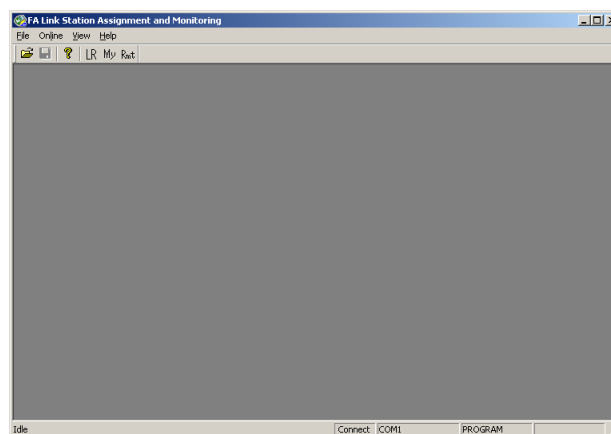
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

(2) Select [Tools]–[Set up I/O Module]–[FA Link] from the menu bar.

⇒ The FA Link Tool opens.

(3) Select [Online]–[Read Link Information] from the menu bar.

⇒ The Read FA Link Module/Link Information dialog box opens.



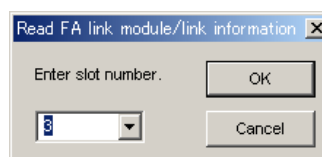
Step (2)

B20\_31.VSD

(4) Select a slot number from the drop down list.

#### TIP

A list of slot numbers with FA link modules mounted is displayed in the drop down list. You can also enter a slot number directly.

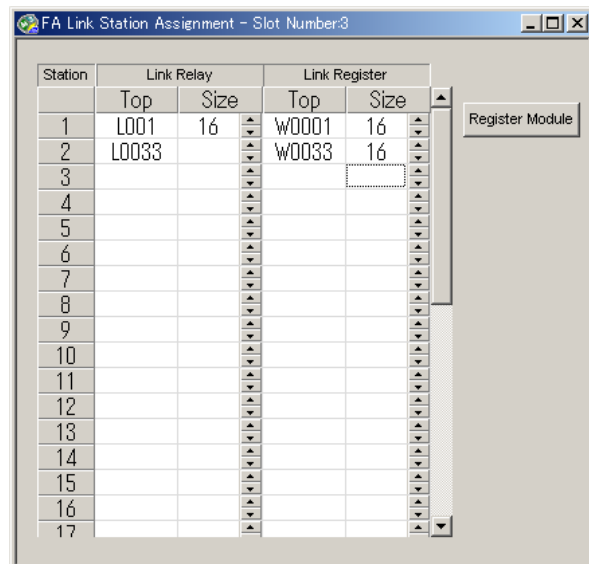


Steps (4) and (5)

B20\_03.VSD

**(5) Click [OK].**

⇒ Setup data is read from the FA link module, and the FA Link Station Assignment window opens.



Step (5)

B20\_04.VSD

## ■ Reading from a Link Information File

Using the FA Link Tool, you can also read FA link station assignment data from a file containing data saved previously. Use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the FA Link Tool is displayed.

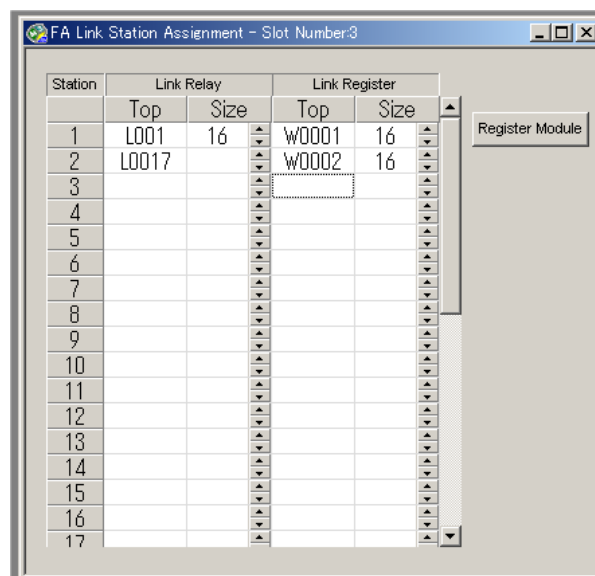
(2) Select [File]–[Open] from the menu bar.

⇒ The Open File dialog box opens.

(3) Select the desired FA link data file, and click [Open].

⇒ The FA Link Station Assignment window opens.

(4) Close the FA Link Station Assignment window.



Step (3)

B20\_06.VSD

## ■ Editing Station Assignments

Enter information in the form of a table. Set the first address and size. The setting must be done in units of 16 for link relays and in units of 1 relay for link registers.

## ■ Saving a Link Information File

To save edited content to a file, select either [File]–[Save As] or [File]–[Save] from the menu bar.

- Selecting [File]–[Save As] displays the Save As dialog box. Enter a file name and click [Save] to save the file.
- Selecting [File]–[Save] overwrites the existing file.



### CAUTION

If you select [Save] after reading data from the FA link module, the Save As dialog box is displayed.

## B25.1.3 Registering to the FA Link Module

There are two ways to register data to the FA link module: by batch or by station. Batch registration registers station assignment information to all FA link modules in the FA link network. Module registration registers station assignment information to a specified station.

### TIP

The FA link network is a data link network connecting FA-M3 systems, using FA link, the FA link H, and the fiber-optic FA link H modules.

Use the following procedure.

## ◆ Procedure ◆

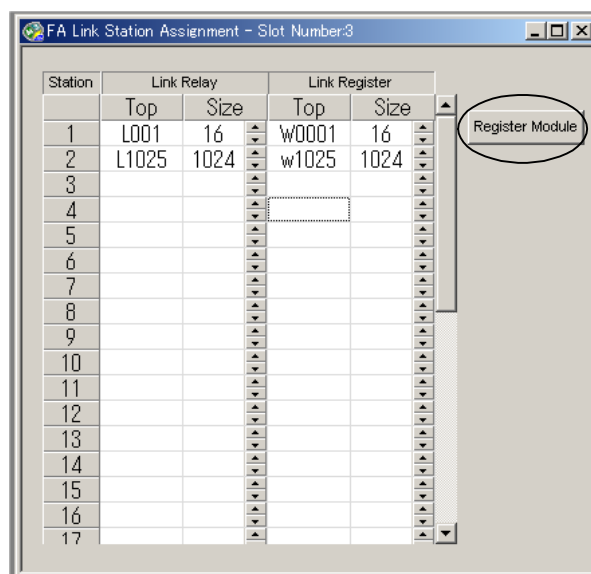
### (1) Edit the FA link station assignments.

#### SEE ALSO

For details on how to edit FA link station assignments, see Section B25.1.2, "FA Link Station Assignment Setup for FA Link Stations (global)."

### (2) In the FA Link Station Assignment window, click [Register Module].

⇒ The Register Link Information dialog box opens.



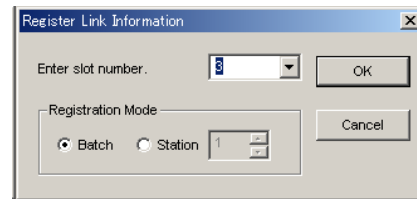
Step (2)

B20\_32.VSD

- (3) Select a slot number from the drop down list.**

**TIP**

A list of all slot numbers with FA link modules mounted is displayed in the drop down list. You can also enter a slot number directly.



Steps (3) to (5)

B20\_08.VSD

- (4) Turn on the [Batch] or [Station] option button in the [Registration Mode] group box. If you have turned on the [Station] option button, select a station to be registered using the drop down list on the right.**

- (5) Click [OK].**

⇒ A dialog box opens to confirm that registration has completed.

- (6) Click [OK].**

⇒ The FA Link Station Assignment window opens.

## B25.1.4 Checking Statuses of FA Link Modules

This section describes how to check the statuses of FA link modules. You can check the status of the local station (the status of the local link module) or the statuses of other remote stations connected to the FA link.



### CAUTION

Before checking FA link module statuses, always connect WideField2 online first. If WideField2 is not connected online, FA link module status cannot be checked.

## ■ Displaying Status of Local Station

The table below lists the items displayed for the local station status, with the item descriptions. Except for the module operation status and refresh period items, a "●" will be displayed for the items listed in Table B25.1 if the corresponding error is detected.

**Table B25.1 Local Station Status Items and Descriptions**

Item		Description
Module operation status	ON LINE	Communication is normal.
	OFF LINE	No communication
Refresh period (ms)		Refresh period of the FA link
Station number error		Station number is incorrect (duplicate setting, etc.)
Station assignment information undefined		Station assignment information has not been defined
Duplicate device assignment		Link relay or link register assignment is duplicated in a remote station.
Communication I/F error		A communication I/F error has been detected.
ROM error		A ROM check sum error has been detected.
RAM error		A RAM check sum error has been detected.

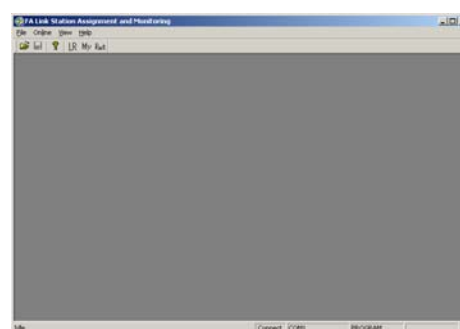
### TIP

The refresh period refers to the cyclic transmission period of the FA link.

To display local station status, use the following procedure.

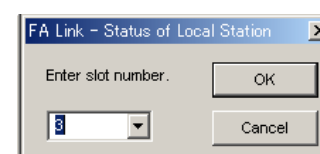
## ◆ Procedure ◆

- (1) Confirm that the FA Link Tool is displayed.
- (2) Select [Online]–[Status Monitor]–[Status of Local Station] from the menu bar.  
⇒ The "FA Link - Status of Local Station" dialog box opens.
- (3) Select a slot number using the combo box.



Step (1)

B20\_33.VSD



Steps (3) and (4)

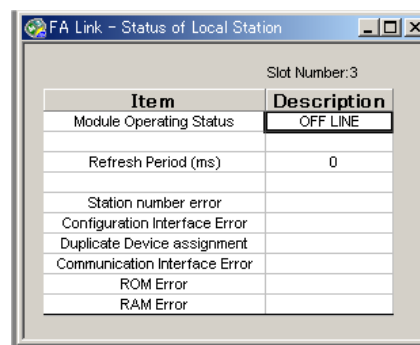
B20\_09.VSD

**TIP**

A list of the slot numbers with FA link modules mounted is displayed in the drop down list.  
You can also enter a slot number directly.

**(4) Click [OK].**

⇒ The "FA Link - Status of Local Station" window opens.

**(5) Check the local station status, and close the "FA Link - Status of Local Station" window.**

Step (5)

B20\_10.VSD

## ■ Displays Statuses of Other Stations

This function displays the FA link module status of other stations (32 stations) on the same network as the specified FA link module.

The table below lists the items displayed for the statuses of other stations with the item descriptions.

**Table B25.2 Other Station Status Items and Description**

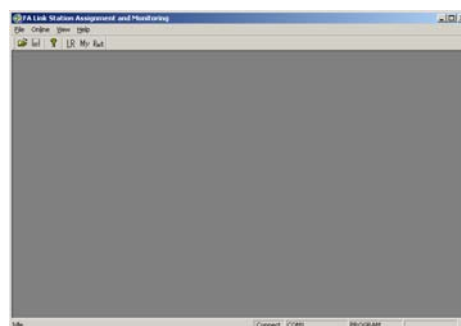
Status	Description
ON LINE	Communication is normal.
SEQ STOP	Sequence program has stopped with error or is not executing.
CPU NOT READY	CPU is not operating normally.
—	Not communicating normally because station is not connected or setting error exists.

To display the statuses of other stations, use the following procedure.

## ◆ Procedure ◆

**(1) Confirm that the FA Link Tool is displayed.****(2) Select [Online]—[Status Monitor]—[Status of Remote Stations] from the menu bar.**

⇒ The "FA Link - Status of Remote Stations" dialog box opens.



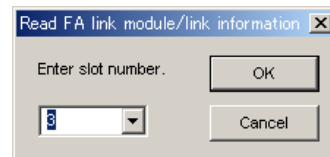
Step (1)

B20\_34.VSD

**(3) Select a slot number using the combo box.**

**TIP**

A list of all slot numbers with FA link modules mounted is displayed in the drop down list.  
You can also enter a slot number directly.



Steps (3) and (4)

B20\_12.VSD

**(4) Click [OK].**

⇒ The "FA Link - Status of Remote Stations" window opens.

**(5) Check the status of the other stations and close the "FA Link - Status of Remote Stations" window.**

Station No.	Status	Station No.	Status
1	ON LINE	17	-
2	SEQ STOP	18	-
3	-	19	-
4	-	20	-
5	-	21	-
6	-	22	-
7	-	23	-
8	-	24	-
9	-	25	-
10	-	26	-
11	-	27	-
12	-	28	-
13	-	29	-
14	-	30	-
15	-	31	-
16	-	32	-

Step (5)

B20\_11.VSD



## B25.1.5 List of Error Messages for the FA Link Tool

The following table lists error messages for the FA Link Tool, along with possible causes and remedies.

### ■ List of Error Messages

**Table B25.3 List of Error Messages**

Error Messages	Cause	Troubleshooting
Link data read error	An error has occurred during communications with the CPU.	Replace the computer cable. Replace the computer. Replace the sequence CPU module.
Device is not ready.	No floppy disk is inserted. A wrong device was specified.	Specify the correct device. Insert a floppy disk.
File cannot be created.	There is not an enough free space left in the disk.	Increase the free space on the disk. Replace the equipment (write error).
No FA link module in connected unit.	No FA link module is mounted.	Attach the FA link module, and repeat the operation.
Invalid range specified	The specified value exceeds the range of the link relays and link registers.	Specify a value within range.
Data size exceeded upper limit.	The total data size is out range.	Specify a value within range.
Duplicate data.	A duplicate link relay or link register has been specified.	Set up the link relays and link registers without duplication.
Error in module specification.	The slot number specified for a FA link module is incorrect.	Specify a proper slot number.
Access error Error code = XXXX-XX	An error has occurred while accessing the FA link module.	For details, see Table B23.4, "Error Codes for Access Errors."

### ■ Error Codes for Access Errors

**Table B25.4 Error Codes for Access Errors**

Error Code	Cause	Troubleshooting
26	Offline error: Assignment was made to an offline station, or the local station is offline.	Assign to an online station. Correct the wiring.
83	Parameter error: Assignment address or size is invalid.	Assign the correct address and size.
E2 D5 C1 BF	Communications error: Noise, hardware failure, etc.	Remove noise. Replace the module.

## B25.2 FL-net Setup and Monitoring

This section describes how to perform FL-net set up and monitor the status of nodes on an FL-net for a module with FL-net (OPCN-2) interface.

The FL-net setup functions allocate devices (link relays and link registers), set up token watchdog time and assign names to each FL-net node.

The FL-net monitoring functions display statuses of each node on the FL-net and network information. You can use the FL-net Tool to perform these setup and monitoring functions.

The FL-net Tool can be used with the following module with FL-net (OPCN-2) interface:

- FL-net (OPCN-2) Interface Module (F3LX02-0N)

### TIP

An FL-net is a data link network providing connection between FA-M3 systems, as well as connection between FA-M3 systems and FL-net compatible controllers from other suppliers. FL-net (OPCN-2) Interface Modules are used to configure an FL-net.

### SEE ALSO

- For details on the FL-net (OPCN-2) Interface Module, see "FL-net (OPCN-2) Interface Module" (IM34M6H32-02E).
- For details on FL-net, see "Sequence CPU – Functions."



### CAUTION

You can only read link information from or register link information to an FL-net (OPCN-2) Interface Module from the CPU using the FL-net (OPCN-2) Interface Module.

Reading link information from or registering link information to an FL-net (OPCN-2) Interface Module from multiple CPUs may cause subsequent reading or registration to fail.

If so, switch off the FA-M3 and turn it back on.

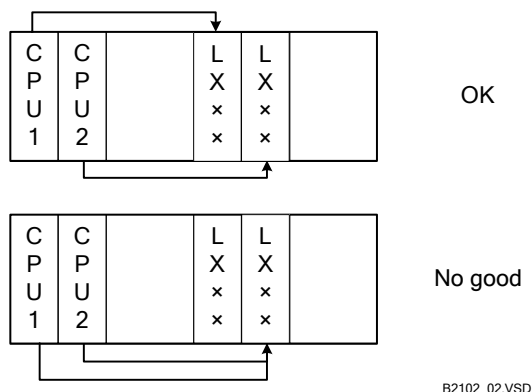


Figure B25.3 Reading and Registering Link Information

## B25.2.1 Starting the FL-net Tool

The FL-net Tool can be used to perform FL-net setup and monitoring.

Select [Tools]–[Set up I/O Module]–[FL-net] from the menu bar of WideField2 to start the FL-net Tool.

Before you can write to, or read from an FL-net (OPCN-2) interface module using the FL-net Tool, you must first establish online connection to the FA-M3 using WideField2. If you are not connected online, you can only edit an FL-net setup file.

---

### TIP

An FL-net setup file contains configuration information to be set up in the FL-net (OPCN-2) interface module.

---

### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

---

If you are not connected online, a dialog box will be displayed indicating that online functions are not available. Clicking [Yes] launches the FL-net Tool.



### CAUTION

- The FL-net (OPCN-2) interface module cannot be accessed if you connect WideField2 online after starting the FL-net Tool. To fix the problem, restart the FL-net Tool.
  - You cannot run multiple copies of the FL-net Tool concurrently.
-

## B25.2.2 Menu Layout and Description

This section lists and describes the menu items of the FL-net Tool.

**Table B25.5 Menu Layout of the FL-net Tool**

File	Setup	Network	View	Help
New	FL-net All Nodes Status Display	Display Network Information	Toolbar	FL-net Help
Open	Slot of FL-net Module		Status Bar	Contents and Index
Close			Decimal Display	About FL-net
Save			Hexadecimal Display	
Save As				
Exit				

**Table B25.6 Menu Description for the FL-net Tool**

	Menu Name	Icon	Short-cut	Description
■	File			
	New	✓	Ctrl+N	Creates a new file. The default file name is "Flnetini.csv."
	Open	✓	Ctrl+F	Opens an existing FL-net setup file.
	Close			Closes the screen.
	Save	✓	Ctrl+S	Saves the file being edited, overwriting existing content.
	Save As			Saves the file being edited with a different file name.
	Exit			Exits from the FL-net Tool.
■	Setup			
	FL-net All Nodes Status Display <sup>*1</sup>	✓	Ctrl+R	Shows which nodes are participating in the network and displays information on device allocation, etc.
	Slot of FL-net Module <sup>*1</sup>			Designates a target FL-net (OPCN-2) interface module when multiple FL-net (OPCN-2) interface modules are installed.
■	Network			
	Display Network Information <sup>*1</sup>	✓	Ctrl+W	Displays network information.
■	View			
	Toolbar			Hides or shows the toolbar.
	Status Bar			Hides or shows the status bar.
	Decimal Display	✓		Displays device allocation in decimal notation.
	Hexadecimal Display	✓		Displays device allocation in hexadecimal notation.
■	Help			
	FL-net Help	✓		Displays help information.
	Contents and Index			Displays contents and index for topic search.
	About FL-net			Displays version information.

<sup>\*1</sup> Functions available only when connected to FA-M3.

### B25.2.3 All Nodes Status Display Window Layout

To set up FL-net nodes, use the All Nodes Status Display window shown below. You can allocate common data (link relays and link registers), as well as specify token watchdog time and node names in this window.

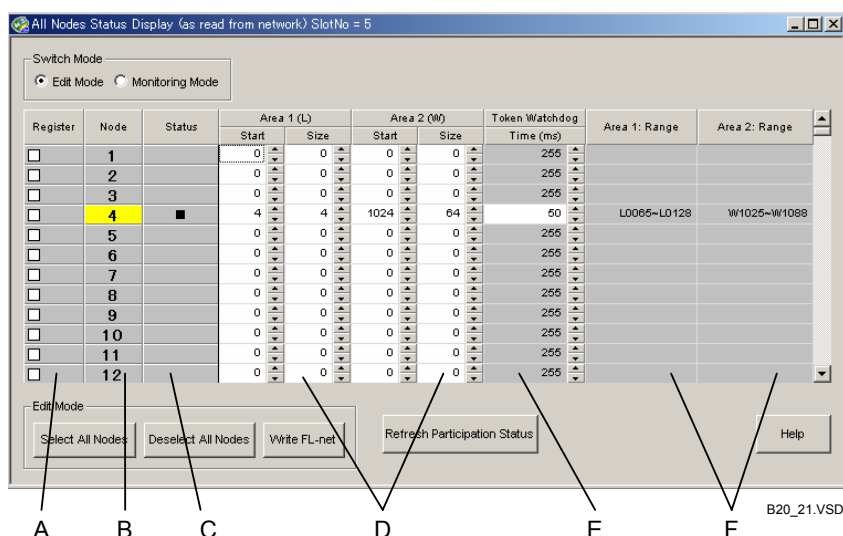


Figure B25.4 All Nodes Status Display Window

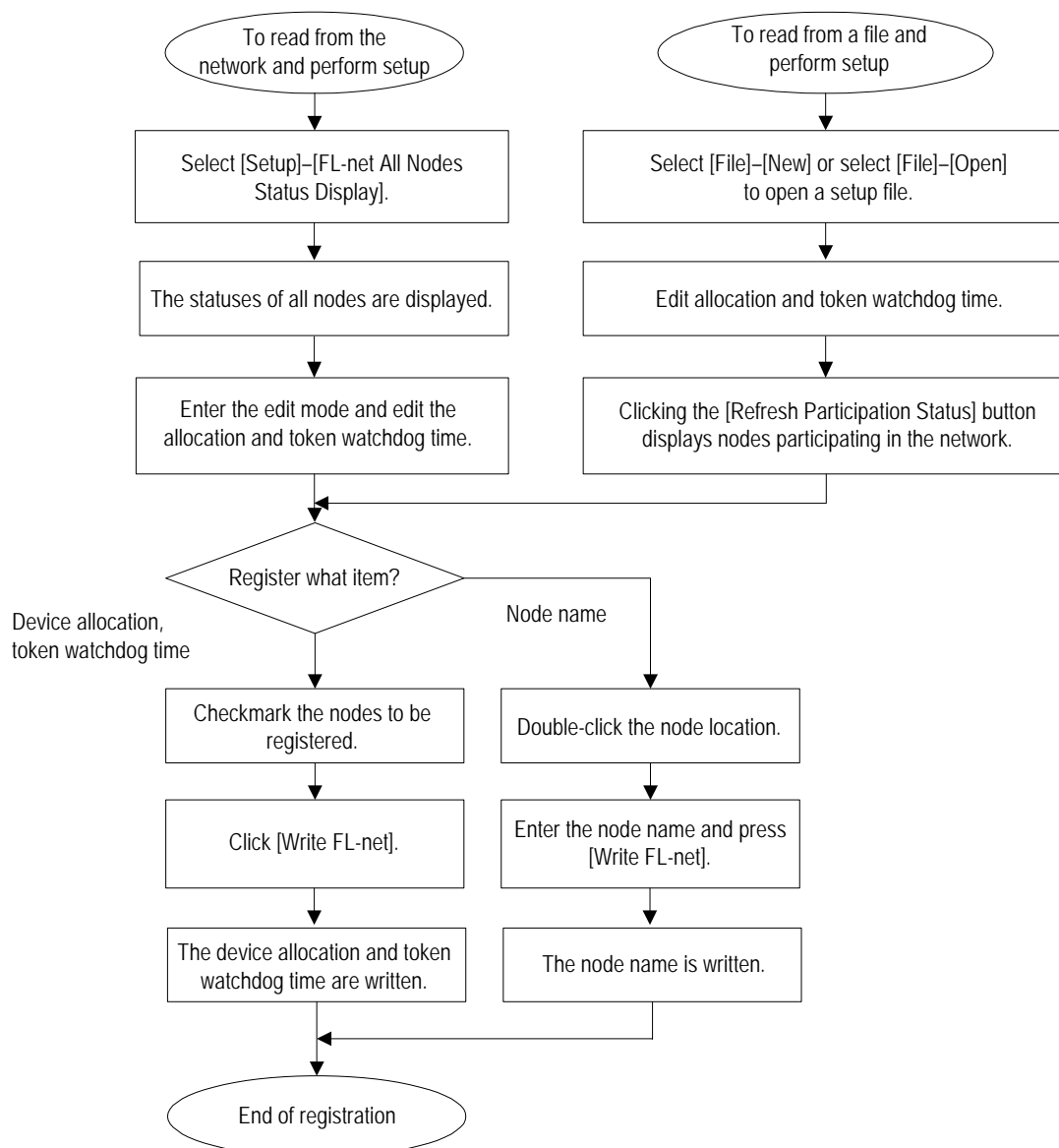
- A Register checkbox area  
Specifies whether information for individual nodes is to be written to the FL-net (OPCN-2) interface module.
- B Node number area  
Displays node numbers. The local node is displayed with a yellow background.
- C Participation Status area  
Displays the ■ symbol for nodes participating in the network.
- D Device allocation setup area  
Used for editing the allocation of link relays (in area 1) and link registers (in area 2) to individual nodes.
- E Token watchdog time setup area  
Specifies the token watchdog time.
- F Device range display area  
Displays the range of link devices allocated according to the common data allocation setup information.

### B25.2.4 Nodes Setup

To set up FL-net nodes, use the All Nodes Status Display window. The All Nodes Status Display window may be displayed by reading data either from a module with an FL-net (OPCN-2) interface or a file.

You can create a data file by creating a new file or by reading information from a module with an FL-net (OPCN-2) interface and saving it to a file.

## ■ FL-net Nodes Setup Procedure



B20\_14.VSD

Figure B25.5 FL-net Node Setup Flowchart

## ■ Opening the All Nodes Status Display Window

### (1) Reading the status of all nodes from the network

To read the status of all nodes from the network, use the following procedure.

#### ◆ Procedure ◆

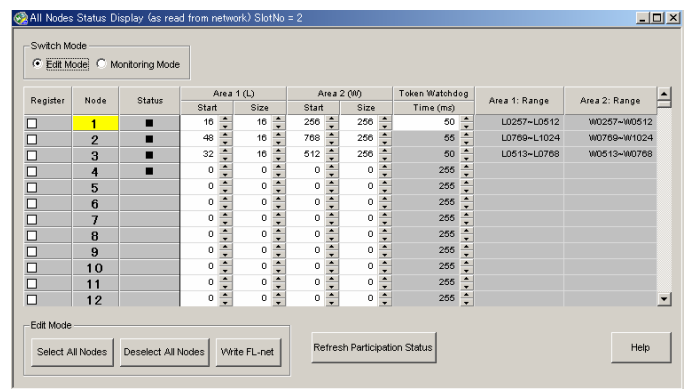
- (1) Confirm that the FL-net Tool is displayed.
- (2) Select [Setup]–[FL-net All Nodes Status Display] from the menu bar.

⇒ The All Nodes Status Display window opens. The node number of the local node is displayed with a yellow background. Nodes participating in the network are displayed with a “■” symbol.

(3) Close the All Nodes Status Display window.



## CAUTION



Step (2)

B20\_22.VSD

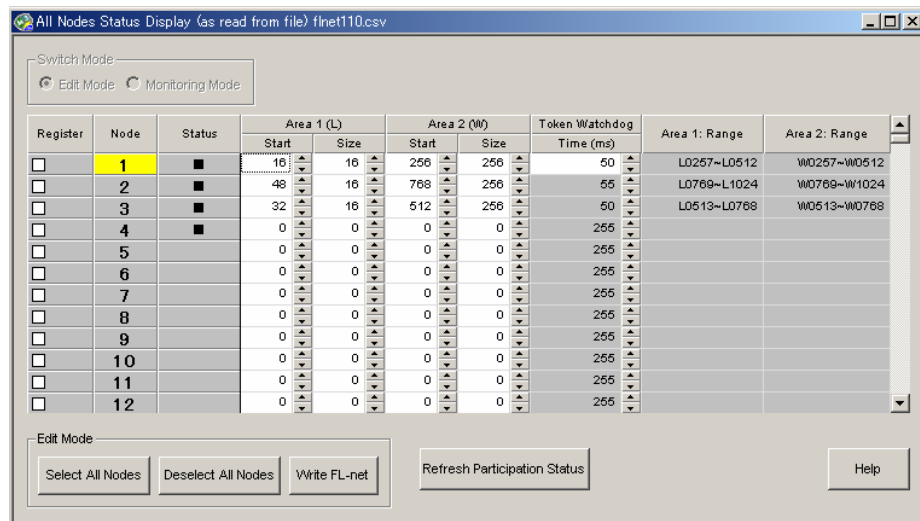
- The All Nodes Status Display window does not show detailed node information. To display detailed node information, use the Node Status Display window.
- If multiple modules with FL-net (OPCN-2) interface are installed within the same unit, the node that has read the link information will be displayed with a yellow background.

## SEE ALSO

For details on the Node Status Display window, see Section B25.2.5, "Displaying Node Status and Network Information"

## (2) Reading the status of all nodes from a file

Open the [FL-net All Nodes Status Display] window by selecting [File]–[New] from the menu bar to create a new file or by selecting [File]–[Open] from the menu bar to open an existing file.



B20\_23.VSD

Figure B25.6 All Nodes Status Display Window after Reading from a File

## ■ Editing and Registering Common Data Allocation Information and Token Watchdog Time

We describe here how to edit common data allocation information and token watchdog time and finally register the entered data.

The following table lists the data range for the setup parameters.

**Table B25.7 Data Range for Setup Parameters**

Item	Range
Area 1 start address	0 to \$1FF
Area 1 size	0 to \$200
Area 2 start address	0 to \$1FFF
Area 2 size	0 to \$2000
Token watchdog time	1-255 (ms)

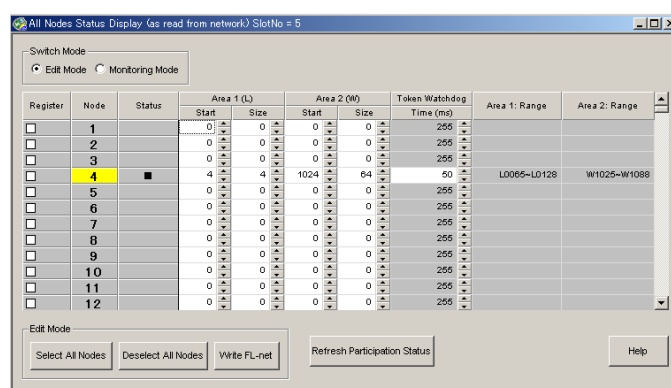
The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Confirm that the All Nodes Status Display window is open.
- (2) If the status for all nodes was read from the network earlier, turn on the [Edit Mode] option button.

#### TIP

If the status for all nodes was read from a file earlier, the [Edit Mode] option button is automatically turned on.



Steps (1) to (4)

B20\_35.VSD

- (3) Enter a start address and a size for areas 1 and 2, and enter a token watchdog time.

#### TIP

Start addresses and sizes must be entered on word basis. The start address begins with 0. Token watchdog times are entered in units of 1 ms.

#### TIP

Start addresses and sizes may be displayed in decimal or hexadecimal. Select [View]–[Decimal Display] or [View]–[Hexadecimal Display] from the menu bar accordingly. A hexadecimal number is prefixed by a dollar sign (\$). To enter a hexadecimal number, enter a dollar sign (\$) followed by the number in hexadecimal notation.

- (4) Specify the nodes to be written by turning on the corresponding checkboxes in the [Register] checkbox area.



**TIP**

Clicking [Select All Nodes] turns on the checkboxes for all nodes available for writing. Clicking [Deselect All Nodes] clears the checkboxes for all nodes.

**(5) Click [Write FL-net]**

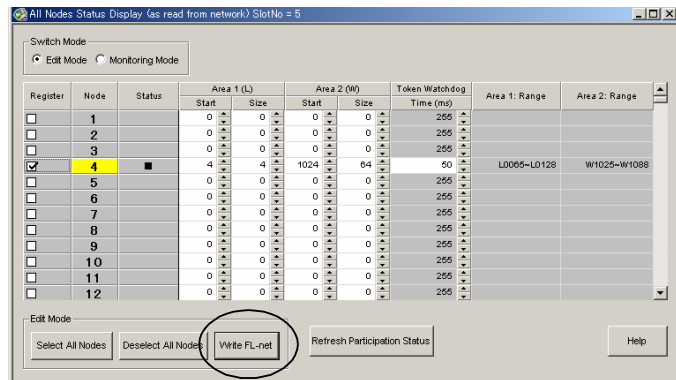
⇒ A dialog box opens to confirm writing.

**(6) Click [Yes].**

⇒ Writing begins. When writing is completed, a dialog box opens to confirm the completion of writing.

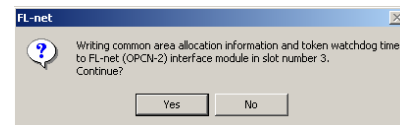
**TIP**

The status bar shows execution progress during writing.



Step (5)

B20\_36.VSD

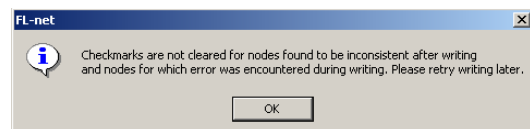


Step (6)

B20\_24.VSD

**CAUTION**

- Before writing to the FL-net, you should disconnect all existing online connections to the FA-M3 from ToolBox on the local PC, as well as, from WideField2 and ToolBox from other PCs.
- Do not perform setup for PCs or sequencers that do not support writing of network parameters.
- An error may be generated during writing because a node has withdrawn temporarily from the network. If this happens, a dialog box appears to prompt whether to continue with the write operation. Clicking [Retry] attempts writing to the error node again; clicking [Next Node] skips to the next node; clicking [Abort] aborts the write operation.
- Writing proceeds in ascending order of the node numbers. During the write operation, overlapping common memory allocation may be detected for some nodes. If this happens, the common memory allocation information will be cleared before network participation. At the end of the write operation, a dialog box will be displayed. You can select to retry writing, or you may choose to update the setup information by turning off and again turning on the power supply to the FA-M3.



Step (6)

B20\_24B.VSD

**(7) Click [OK].**

⇒ Control returns to the All Nodes Status Display window. In the [Register] column, checkboxes are automatically turned off for nodes whose information has been written successfully, but left on for error nodes.

## ■ Registering Node Names

You can edit node names, and write the edited names to the FL-net (OPCN-2) interface module. Use the following procedure.

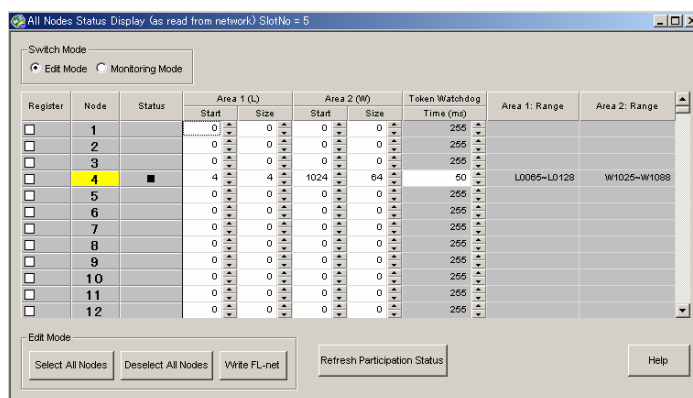
### ◆ Procedure ◆

**(1) Confirm that the All Nodes Status Display window is open.**

**(2) If the status for all nodes was read from the network earlier, turn on the [Edit Mode] option button.**

#### TIP

If the status for all nodes was read from a file earlier, the [Edit Mode] option button is automatically turned on.



Steps (1) to (3)

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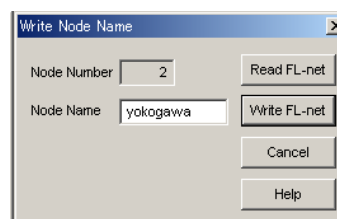
**(3) Double click in the Node column the number for the node whose name is to be edited.**

⇒ The Write Node Name dialog box opens for you to edit the node name.

**(4) Edit the node name in the [Node Name] text box.**

#### TIP

A node name can contain up to 10 ASCII characters.  
Clicking [Read FL-net] reads the node name from a module with FL-net (OPCN-2) interface.



Steps (4) and (5)

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**(5) Click [Write FL-net].**

⇒ A dialog box opens to confirm the write operation.



### CAUTION

Before writing to the FL-net, you should disconnect all existing online connections to the FA-M3 from ToolBox running on the local PC, as well as, from WideField2 and ToolBox running on other PCs.

**(6) Click [Yes].**

⇒ Writing begins. When writing completes, a dialog box opens to notify completion of the write operation.

**(7) Click [OK].**

⇒ Control returns to the Write Node Name dialog box.

**(8) Click [Cancel].**

⇒ Control returns to the All Nodes Status Display window.

## ■ Saving Node Setup Information to a File

You can save device allocation and token watchdog time data to a file. Data is saved in CSV format.

To save edited data to a file, select [File]–[Save As] from the menu bar.

If the status for all nodes was read from a file earlier, you can save edited data back to the same file by selecting [File]–[Save].

- Selecting [Save As] displays the Save As dialog box. Enter a file name and click [Save] to save the data to the file.
- Selecting [Save] saves data to the original file, overwriting existing content.



### CAUTION

- If the status for all nodes was read from the network earlier, selecting [Save] opens the Save As dialog box, instead of the Save dialog box.
- Node names cannot be saved to a file.

## B25.2.5 Displaying Node Status and Network Information

The FL-net monitoring function displays detailed status and network information of individual nodes.

### ■ Displaying Detailed Status of Individual Nodes

This function displays detailed status of individual nodes.

#### SEE ALSO

For details on the monitored items, see “FL-net Interface Module” (IM34M6H32-02E).

To display detailed status information for a node, use the following procedure.

### ◆ Procedure ◆

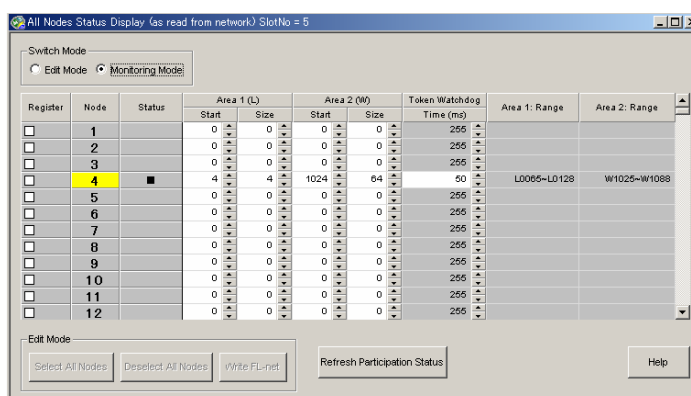
**(1) Confirm that the FL-net Tool is open.****(2) Select [Setup]–[FL-net All Nodes**

**Status Display] from the menu bar.**

⇒ Statuses of all nodes are read from the network and displayed in the All Nodes Status Display window.

(3) Turn on the [Monitoring Mode] option button.

(4) Double click in the Node column the number of the node whose detailed status is to be displayed.



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⇒ The Node Status Display window opens.

### TIP

Clicking [Refresh] reads and redisplay the latest status information.

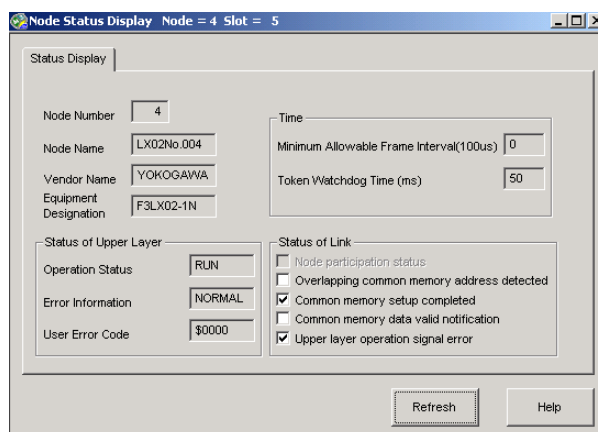
(5) Close the Node Status Display window.

⇒ Control returns to the All Nodes Status Display window.

(6) Close the All Nodes Status Display window.

⇒ Control returns to the FL-net Tool.

Steps (3) and (4)



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Step (4)

### TIP

The table below lists the items displayed in the Node Status Display window along with their descriptions.

**Table B25.8 Node Status Display Window Items and Description**

Category	Item	Description
Time	Minimum allowable frame interval	Displays the preset value for the minimum allowable frame interval on the FL-net.
	Token watchdog time	Displays the token watchdog time.
Status of Upper Layer	Operation Status	Displays operation information for the upper layer of the FL-net.
	Error Information	Displays error status (error codes) for the upper layer of the FL-net.
	User error code	Displays user error code returned from the upper layer.
Status of link	Node participation status	One bit is stored for each node indicating whether the node is participating in the network.
	Overlapping common memory address detected	Displays whether any overlapping common memory address setup has been detected.
	Common memory setup completed	One bit is stored for each node indicating whether common memory address setup is completed.
	Common memory data valid notification	One bit is stored for each node indicating whether common memory data is valid.
	Upper layer operation signal error	One bit is stored for each participating node indicating the operation signal error status of the upper layer.

## ■ Displaying Network Information

This function displays network information.

### SEE ALSO

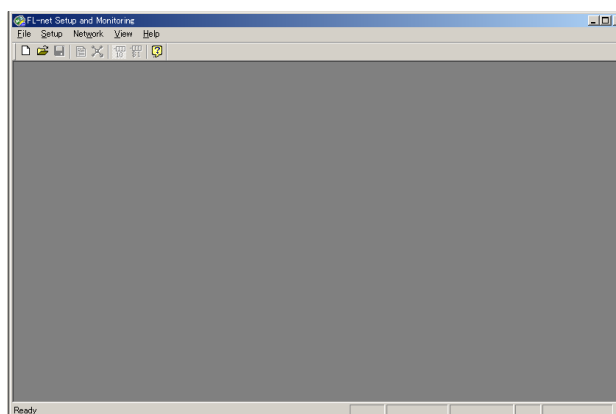
For details on the monitored items, see “FL-net Interface Module” (IM34M6H32-02E).

To display network information, use the following procedure.

## ◆ Procedure ◆

(1) Confirm that the FL-net Tool is open.

(2) Select [Network]–[Display Network Information] from the menu bar.



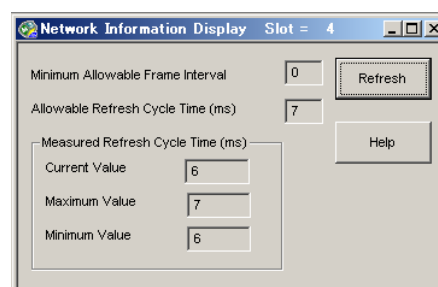
Step (1)

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⇒ The Network Information Display window opens.

### TIP

Clicking [Refresh] reads and redisplay the latest status information.



Step (2)

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(3) Close the Network Information Display window.

⇒ Control returns to the FL-net Tool.

### TIP

The Network Information Display window displays the following information.

**Table B25.9 Network Information Display Items and Description**

Items	Description
Minimum allowable frame interval	Displays the preset value of the minimum allowable frame interval on the FL-net.
Allowable refresh cycle time	Displays the preset value of the refresh cycle allowable time.
Measured refresh cycle time	Displays the current, maximum, and minimum measured values for the refresh cycle time.

## B25.2.6 Designating FL-net Slot Numbers

Up to two modules with FL-net (OPCN-2) interface can be mounted on one FA-M3 unit.

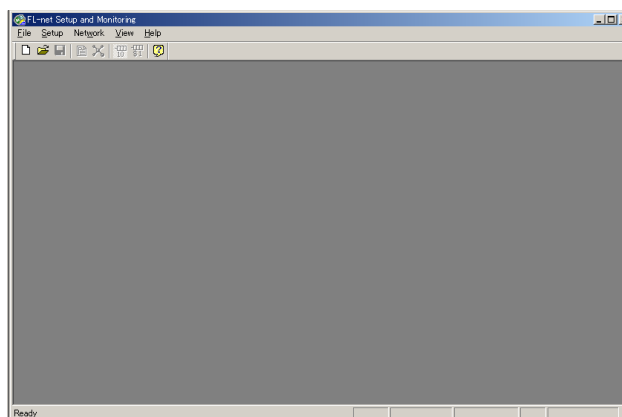
When two modules with FL-net (OPCN-2) interface are mounted, you must designate one of them as the target module. If no target module is specified, system defaults to the module with the smaller slot number. To specify the slot number for the target module, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the FL-net Tool is open.

(2) Select [Setup]–[Slot of FL-net Module] from the menu bar.

⇒ A dialog box opens for you to specify a slot number.

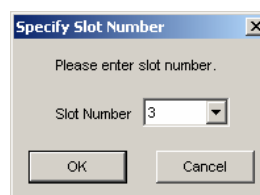


Step (1)

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(3) Select from the [Slot Number] drop down list the slot number where the target module is installed, and click [OK].

⇒ Control returns to the FL-net Tool.



Step (3)

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### CAUTION

The slot number setup becomes invalid when you exit from the FL-net Tool.

## B25.2.7 Error Messages

The table below lists error messages that may appear in the FL-net Tool window, along with their probable causes and troubleshooting suggestions.

**Table B25.10 List of Error Messages**

Messages	Cause	Troubleshooting
Up to 10 screens may be opened concurrently.	You have attempted to open more than 10 screens concurrently.	Close screens that are no longer required.
FL-net (OPCN-2) interface module not found on connected unit.	No FL-net (OPCN-2) interface module is installed.	Install a module with FL-net (OPCN-2) interface.
No node selected for writing.	You have not selected a node for writing common data and token watchdog time.	Select a node and reinitiate the write operation.
Invalid file name	The file name given to save a file is too long or contains invalid characters.	Correct the file name.
File not found.	The specified file does not exist.	Select an existing file.
Could not save.	The file could not be saved because of insufficient disk capacity or other reasons.	Increase the disk capacity.
Invalid data entered.	The entered common data, token watchdog time, or node name value is out of range.	Enter a valid value.
Error encountered while reading data for all nodes.	System has encountered a communications error while reading information for all nodes from the network.	Check and if necessary, replace the cable and hardware.
Error encountered while reading data for participating nodes.	System has encountered a communications error while reading information for participating nodes from the network.	Check and if necessary, replace the cable and hardware.
Failed to get status data for specified node.	System has encountered a communication error while reading information for a specified node from the network.	Check and if necessary, replace the cable and hardware.
Failed to get network information data.	System has encountered a communications error while reading network information	Check and if necessary, replace the cable or hardware.
Failed to read node name.	System has encountered a communications error while reading a node name from the network.	Check and if necessary, replace the cable or hardware.
Failed to write node name.	System has encountered a communications error while writing a node name to the network.	Check and if necessary, replace the cable or hardware.
Error/alarm in CPU (error code)	Error code=0000-E6 indicates that timeout has occurred while writing to a node. Error code=0000-82 indicates that an attempt has been made to set up a PC or sequencer that does not support writing of network parameters.	If error code=0000-E6, retry after verifying that the node exists. If error code=0000-82, do not try to set up a PC or sequencer that does not support writing of network parameters.





## B26. Sampling Trace Tool

The sampling trace tool stores the status and contents of devices designated for sampling in the sampling trace buffer memory. It is one of the WideField2 extended tools, and cannot be used with F3SP05, F3SP08 and F3SP21.

The results of a sampling trace (trace result) can be displayed using the sampling trace in time chart or scan chart formats.

You can run a sampling trace on up to 16 relay registers and 4 register devices.

Before using the sampling trace tool to perform online setup, you must have WideField2 running in online connected mode.



### CAUTION

- You can use the sampling trace tool online only when WideField2 is online and open.
- To use the sampling trace functions, always connect to the FA-M3 using WideField2 before starting the sampling trace tool. If you start the sampling tool before performing online connection using WideField2, you will not be able to use the sampling trace functions.

## B26.1 Sampling Trace Tool Window

The following figure illustrates the layout of the sampling trace tool window.

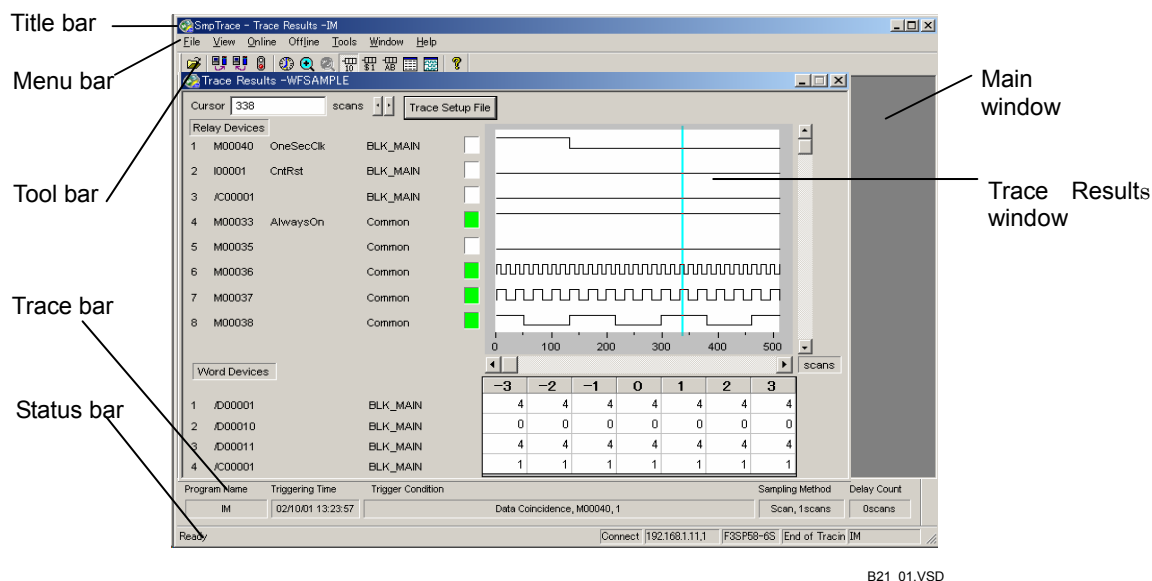


Figure B26.1 Sampling Trace Tool Window

### ■ Title Bar

The title bar displays the name of the project open in WideField2 or the name of a file containing sampling trace results.

### ■ Menu Bar

The menu bar displays the names of menus you can select within the tool.

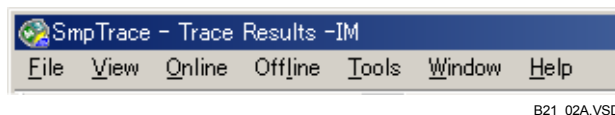


Figure B26.2 Title Bar and Menu Bar

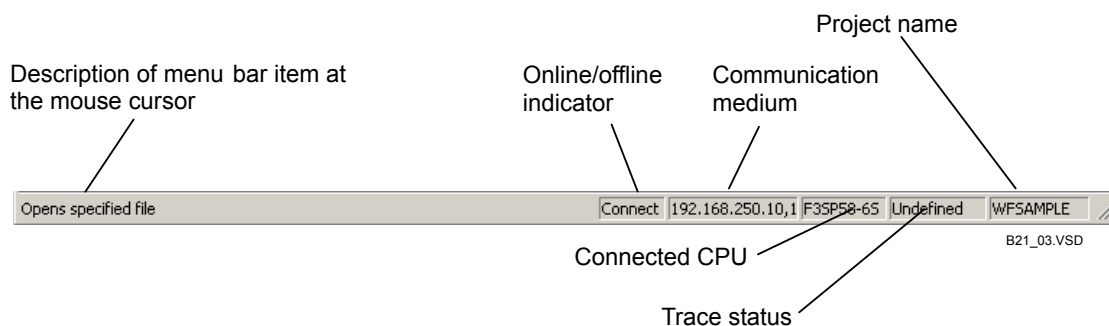
### ■ Toolbar

The toolbar displays often used menu items of the menu bar as icons. Selecting [View]–[Toolbar] from the menu bar switches between showing and hiding the toolbar. Moving the mouse cursor over an icon displays its explanation in TipHelp. The status bar displays the operation status.

## ■ Status Bar

The status bar displays status information of the sampling trace tool.

Selecting [View]–[Status Bar] from the menu bar switches between showing and hiding the status bar.



**Figure B26.3 Status Bar**

### TIP

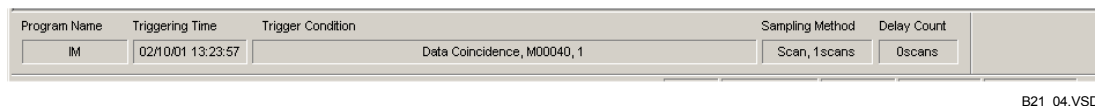
The trace status shows the status of the sampling trace on the CPU side and changes values as follows:

Undefined→Wait for Trigger→Tracing→End of Tracing

## ■ Trace Bar

The trace bar displays trace setup information for the Trace Results window currently open.

Selecting [View]–[Trace Bar] from the menu bar switches between showing and hiding the trace bar.



**Figure B26.4 Trace Bar**

## ■ Main Window

The Trace Results window, the Trace Setup Dialog, and other screens are displayed in the main window.

## B26.2 Sampling Trace Tool Menus and Starting the Tool

### B26.2.1 List of Sampling Trace Menu Items

The table below lists the menus of the sampling trace tool.

**Table B26.1 List of Menus**

Menu bar	Menu command		Description
File	Open		Opens a sampling trace results file.
	Close		Closes a sampling trace results file.
	Save As		Saves the sampling trace result currently open to a file with a different name.
	Recent Files		Displays up to 8 most recently-used sampling trace result files.
	Exit		Exits this application.
View	Toolbar		Shows or hides the toolbar.
	Status Bar		Shows or hides the status bar.
	Trace Bar		Shows or hides the trace bar.
	Time Chart Scan Chart		Switches between using a time axis or a number-of-scans axis in the trace results chart. Displays as "Scan Chart" when time axis is used. Displays as "Time Chart" when number-of-scans axis is used
	Zoom		Enlarges or reduces the scale of the display axis.
	Display Format		Selects one of the device data display formats: decimal, hexadecimal, and character string.
Online	Setup Sampling Trace		Displays the Trace Setup Dialog.
	Sampling Trace Results		Reads the sampling trace result from the CPU and displays the Trace Results window.
	Cancel Trace		Stops the sampling trace process.
Offline	Setup Sampling Trace		Displays the Trace Setup Dialog.
Tool	Export to MS-Excel	Trace Data List	Exports the trace results to an MS-Excel file (in report format).
		Trace Data Chart	Exports the trace results to an MS-Excel file either in time chart or scan chart format as is currently displayed.
Window	Cascade		Overlaps the windows in the display.
	Tile		Displays the windows alongside in tiles.
	Arrange Icons		Arranges the icons
Help	Sampling Trace Help		Displays help information.
	Contents and Index		Searches by keyword and displays help information.
	About Sampling Trace		Displays the version number of the sampling trace tool.

### B26.2.2 Starting Sampling Trace

To start sampling trace from WideField2, use the following procedure.

#### ◆ Procedure ◆

- (1) Select [Tools]–[Sampling Trace] from the menu bar.

⇒ The sampling trace tool starts.



#### CAUTION

You cannot run multiple copies of the Sampling Trace Tool concurrently.

## B26.3 Sampling Trace Setup

You can set up sampling trace either online using the Sampling Trace Tool or offline using the Configuration dialog box.

Sampling trace setup using the Configuration dialog box is stored and will not be affected when power is turned off. By setting up sampling trace to sample devices when a user system generates an error, you can save device status before and after an error.



### CAUTION

- Sampling trace setup online using the sampling trace tool is normally used during debugging or when you want to sample data temporarily. In this case, the setup data is deleted when the power is turned off.
- Sampling trace setup using the Configuration dialog box is saved together with the program and is not affected when power is turned off. When power is turned off and turned on again, the sampling trace setup earlier using the Configuration dialog box is automatically retrieved and becomes effective.

### B26.3.1 Setup Procedure

This section describes how to setup a sampling trace.

#### ■ Online Setup Directly to the CPU

To set up sampling trace online, use the following procedure.

#### ◆ Procedure ◆

- (1) Before you can perform setup directly to the CPU, you must ensure that WideField2 is connected online.

#### SEE ALSO

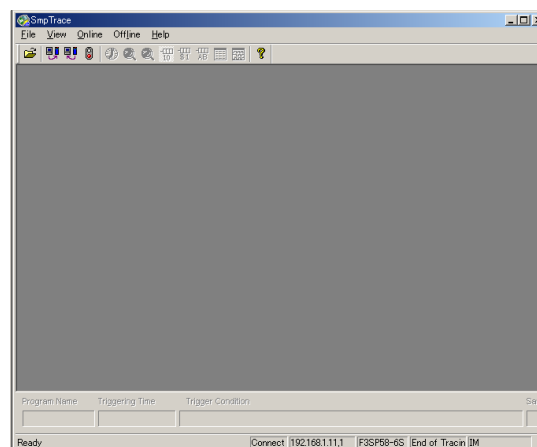
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Tools]–[Sampling Trace] from the menu bar.

⇒ The sampling trace tool starts.

- (3) Select [Online]–[Setup Sampling Trace] from the menu bar.

⇒ The Sampling Trace Setup dialog box is displayed.



Step (2)

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**(4) Enter required data in the Sampling Trace Setup dialog box.**

**SEE ALSO**

For details on how to setup individual items, see the relevant descriptions given later in this chapter.

**(5) Click [Start].**

⇒ Tracing starts and the status bar of the sampling trace tool displays the "Wait for Trigger" status text. When tracing is completed, the trace bar displays the "End of Tracing" status text.

**(6) Select [Online]–[Sampling Trace Results] from the menu bar.**

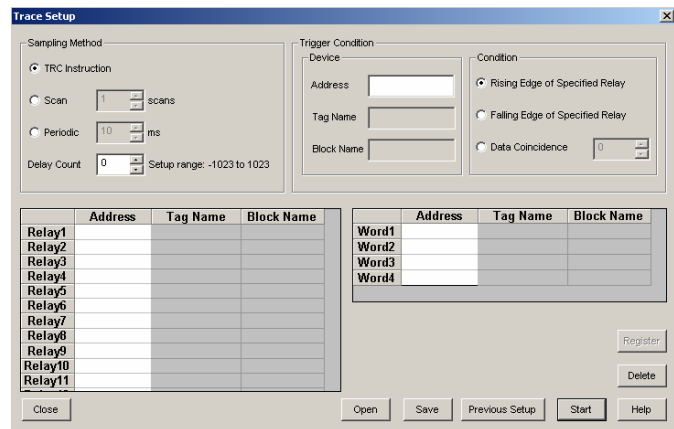
⇒ The Trace Results window is displayed.

**TIP**

Trace result may be printed or presented in graphs using MS-Excel.

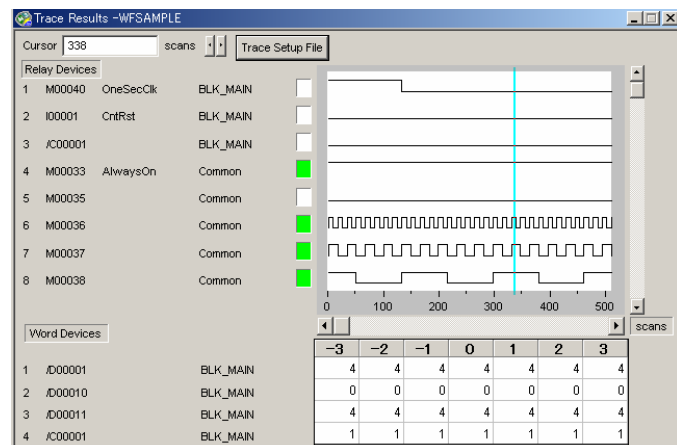
**(7) Check the trace results, and close the Trace Results window.**

⇒ You are returned to the sampling trace tool window.



Steps (4) and (5)

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Step (6)

B21\_06.VSD

**TIP**

Alternatively, you may also select [Project]–[Configuration] from WideField2's menu bar, enter required data in the Sampling Trace tab of the Configuration dialog box, and perform downloading.

**SEE ALSO**

For details on how to use the Configuration dialog box, see Section B26.3.10, "Sampling Trace Setup Using the Configuration Dialog Box."

## ■ Offline Setup

You can create a sampling trace setup file offline.  
To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that WideField2 is offline.

(2) Select [Tools]–[Sampling Trace] from the menu bar.

⇒ A dialog box opens to remind that WideField2 is offline.

(3) Click [Yes].

⇒ The sampling trace tool starts.

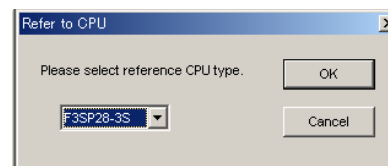
(4) Select [Offline]–[Setup Sampling Trace] from the menu bar.

⇒ The Refer to CPU dialog box is displayed.

(5) Select the CPU type you want to trace, and click [OK].

⇒ The Sampling Trace Setup dialog box is displayed.

(6) Enter required data in the Sampling Trace Setup dialog box.



Step (5)

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### SEE ALSO

For details on how to set up individual items, see the relevant descriptions given later in this chapter.

(7) Click [Save].

⇒ The data is saved to a file.



### CAUTION

You cannot set up tag name definitions or local devices in offline mode.

## B26.3.2 Sampling Trace Setup Dialog

Select [Online]–[Set up Sampling Trace] from the menu bar of the sampling trace tool to open the Sampling Trace Setup dialog box.

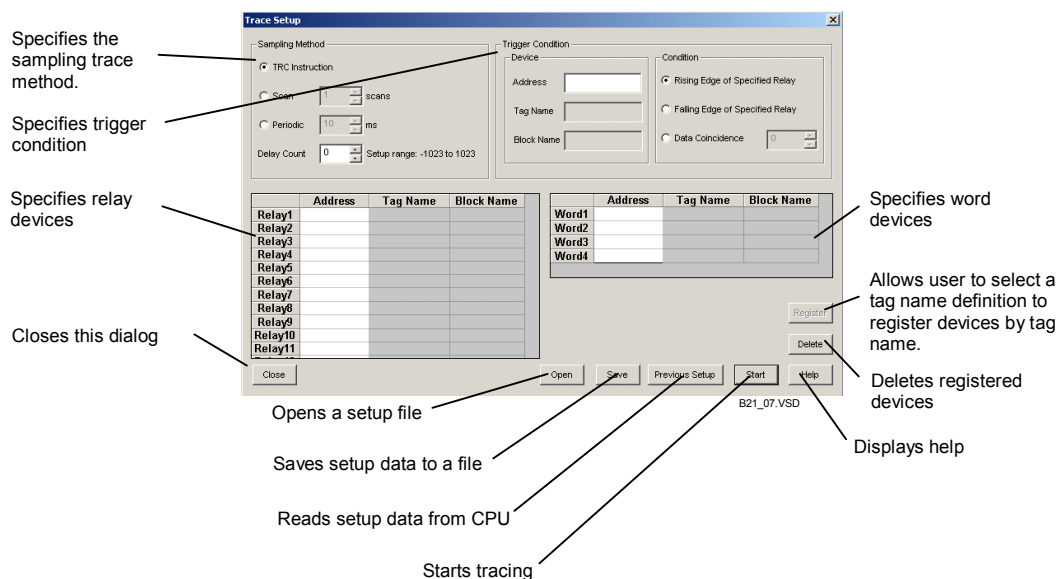


Figure B26.5 Sampling Trace Setup Dialog



### CAUTION

To trace by tag name, you must open a project using WideField2 before starting the sampling trace tool. If no project is open, sampling trace setup by tag name is not allowed.

Structure member names cannot be specified for tag names in sampling trace.



### B26.3.3 Sampling Method

This section describes the three sampling methods available: TRC instruction, End instruction and Periodic. Up to 1024 sets of data can be collected. Further, by specifying a delay, you can start collecting data before or after a trigger condition becomes true.

#### ● Using the TRC Instruction

By using the TRC instruction in a program, designated contacts or data can be sampled at any point in a scan cycle.

You can use the TRC instruction up to four times in a scan cycle to collect and store data. Data is stored in the order the TRC instructions are executed. If the TRC instruction is executed more than four times in a scan cycle, data collected for the fifth and subsequent executions are discarded.

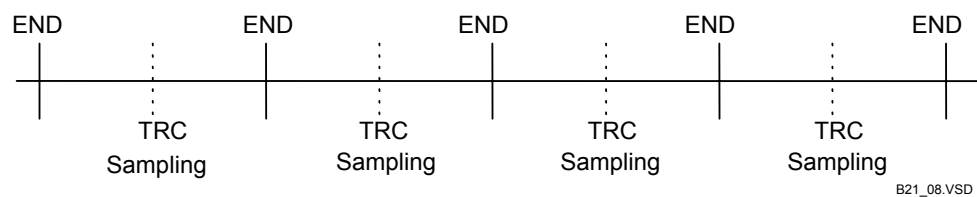


Figure B26.6 Using the TRC Instruction

#### ● Using the END Instruction

Designated contacts and data can be sampled when an END instruction is executed. An END instruction is always executed at the end of a scan cycle.

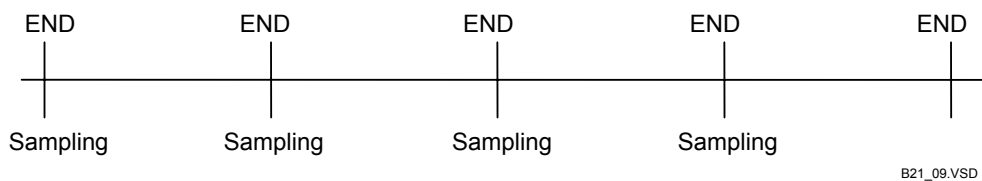


Figure B26.7 Using the END Instruction

#### ● Periodic Sampling

Designated contacts and data can be sampled at fixed intervals.

Data is collected and stored at the end of a scan cycle after a specified period of time.

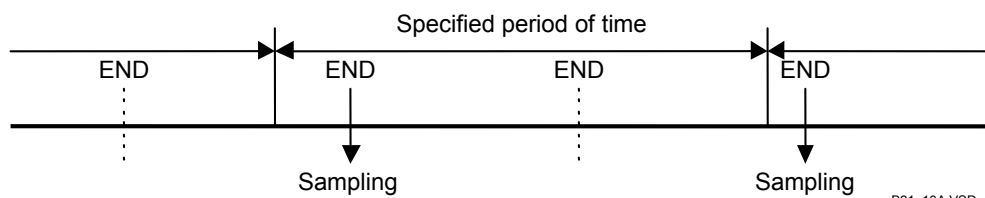
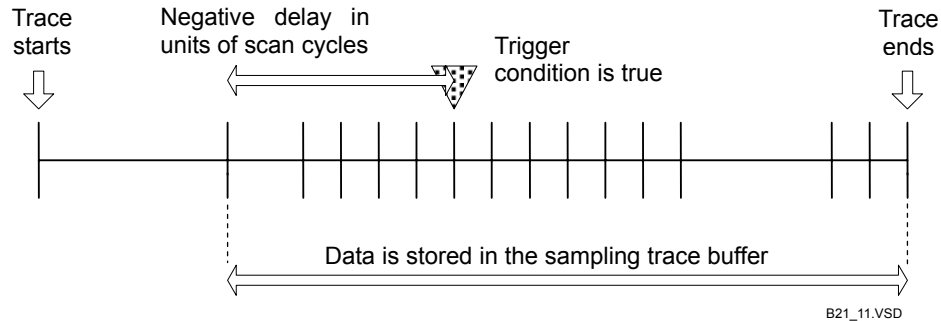


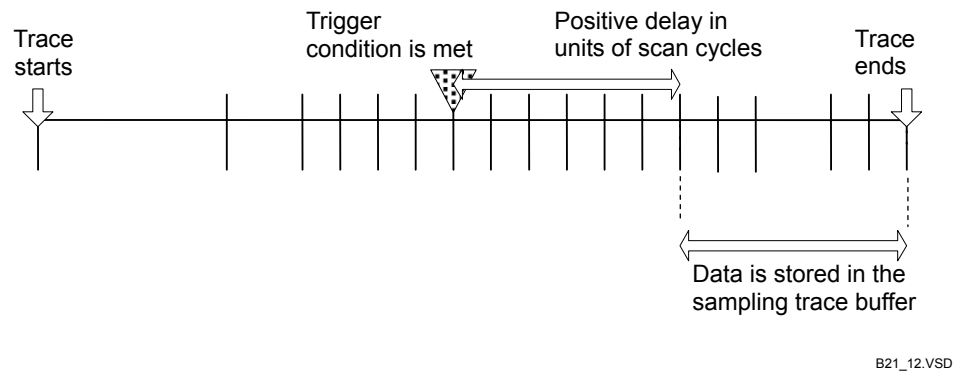
Figure B26.8 Sampling at Fixed Intervals

## ● Sampling With Delay

If no delay is specified (delay = 0), sampling data is first stored in the sampling trace buffer when the trigger condition becomes true. Specifying a negative delay (in units of scan cycles) starts buffering earlier; specifying a positive delay (in units of scan cycles) starts buffering later.



**Figure B26.9 Sampling Operation When a Negative Delay Is Specified**



**Figure B26.10 Sampling Operation When a Positive Delay Is Specified**

### B26.3.4 Trigger Condition

The Trigger Condition group box allows you to enter a trigger condition and a trigger condition device. To register devices using tag names, click [Register] in the Sampling Trace Setup dialog box, enter a device address and select the tag name definition where the device is registered.

For global devices, select the tag name definition where the device is registered (common, block or macro tag name definitions).

A tag name is not displayed if the device is not registered in the reference tag name definition. If a tag name is not displayed, check that it is properly registered in the tag name definition.

#### ■ Trigger Condition Group Box in the Sampling Trace Setup Dialog

Enter a trigger condition address. You can also use the [Register] button to enter an address

These item values are displayed when you click the [Register] button then enter an address and select the tag name definition where the device is registered.

Select a trigger condition.

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Figure B26.11 Trigger Conditions

#### ■ Register Device Dialog: Trigger Condition Dialog Box

Enter a trigger condition device.

Select the tag name definition where the device is registered. For a global device, select the tag name definition where it is registered.

When entering a local device, always select block tag name definition or macro tag name definition as reference.

Select the block or macro where the device is registered.

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Figure B26.12 Register Device Dialog: Trigger Condition Dialog Box

## B26.3.5 Specifying Devices to be Sampled and Registering using Tag Names

This section describes how to specify devices to be sampled. Before you can specify devices using their tag names in the sampling trace tool, you must first open a project from WideField2. Setup data can be saved to a sampling trace setup file.



### CAUTION

Structure member names cannot be used as tag names in sampling trace.

### ● Sampling Trace Setup File

Up to 254 characters can be used to name a sampling trace setup file. The file extension is ".ytst" and is automatically appended when the file is saved.

## ■ Procedure for Specifying Devices to be Sampled

To specify devices to be sampled, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Sampling Trace Setup dialog box is open.
- (2) Click a text box to enter a device to be sampled.

Step (1)

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- (3) Enter a device.
- ⇒ The registered contents are displayed.

Global device      Local device

	Address	Tag Name	Block Name
Relay1	100001		
Relay2	/100001	CntST	MAIN
Relay3			
Relay4			
Relay5			
Relay6			
Relay7			
Relay8			
Relay9			
Relay10			

Tag name of device

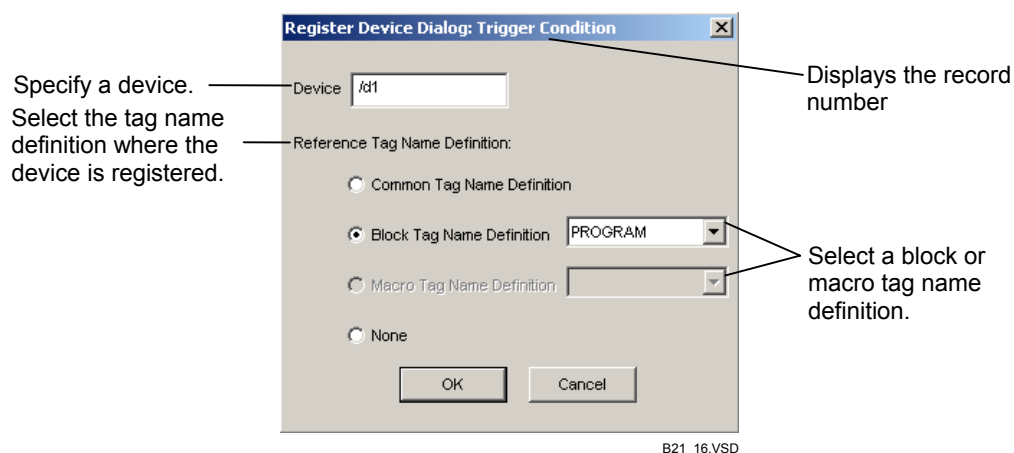
Name of the block where the device is registered

Step (3)

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**TIP**

You can also click a device input text box on the Sampling Trace Setup Dialog followed by the [Register] button to open the Register Device dialog box and then enter a device. To specify a device by tag name, select the tag name definition where the device is registered.



**Figure B26.13 Register Device Dialog**

## B26.3.6 Sampling Trace Setup File

You can save setup data to a file which can be used to perform sampling trace later.

If there is a setup error, the data cannot be saved to a file. Correct all errors before saving setup data to a file.

### ● Naming a Sampling Trace Setup File

Up to 254 characters can be used to name a sampling trace setup file. The file extension is ".ytst" and is automatically appended when the file is saved.

### ■ Saving a Sampling Trace Setup File

Click [Save] in the Sampling Trace Setup dialog box.

If a project is open in WideField2, a dialog box opens with the open project displayed. If no project is open, the default folder set in WideField2 environment setup will be displayed.

### ■ Opening a Sampling Trace Setup File

You can perform sampling trace from a sampling trace setup file.

To do so, click [Read] in the Sampling Trace Setup dialog box and select an existing sampling trace setup file to display its contents. Clicking [Start] in the Sampling Trace Setup dialog box starts tracing.

### B26.3.7 Preparation

Read setup data from the CPU.

If there is no setup data, nothing is displayed. Check the setup data.

### B26.3.8 Starting Sampling Trace

With setup completed, clicking [Start] in the Sampling Trace Setup dialog box starts a sampling trace.

The status bar of the tool displays the trace status.

### B26.3.9 Canceling Sampling Trace

You can cancel a sampling trace.

If the trace status is displayed as 'Wait for Trigger' or 'Tracing', you can cancel the tracing by selecting [Online]–[Cancel Trace] from the menu bar.

Trace results will contain data that is current just before tracing is canceled.

### B26.3.10 Sampling Trace Setup Using the Configuration Dialog Box

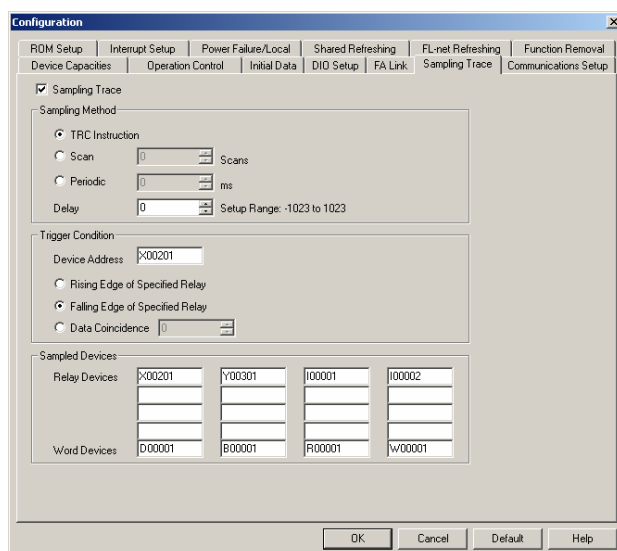
You can perform sampling trace setup using the Configuration dialog box of WideField2.

Sampling trace setup using the Configuration dialog box is stored and will not be affected when power is turned off. By setting up sampling trace to sample devices when a user system generates an error, you can save device status before and after an error.

Start WideField2, and select [Project]–[Configuration] from the menu bar to open the Configuration dialog box. Any sampling trace setup performed on this dialog box becomes effective when you download a program.

Tag names cannot be used in the Configuration dialog box. To use tag names, use the sampling trace tool to perform setup instead.

You can also read sampling trace results with the sampling trace tool.



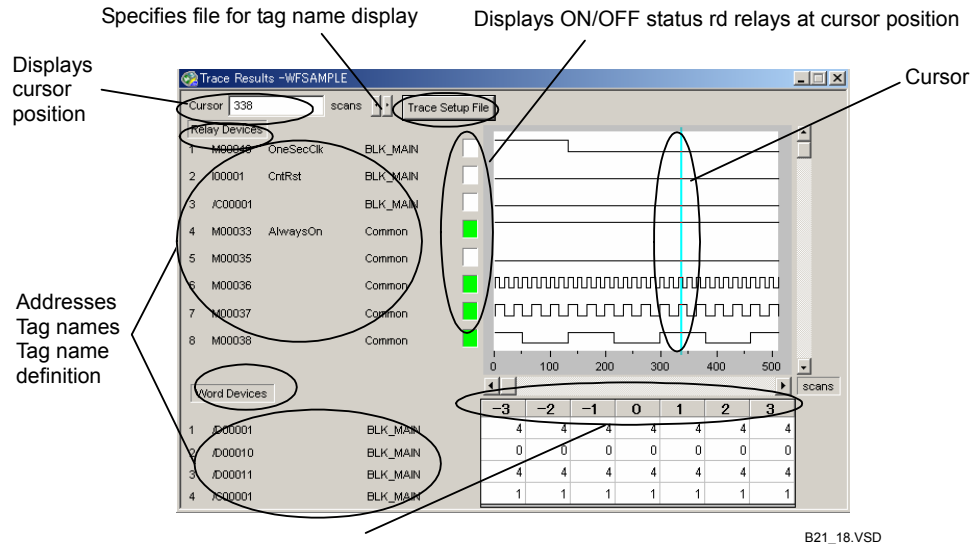
B21\_17.VSD

Figure B26.14 Configuration dialog box

## B26.4 Reading Sampling Trace Results

You can read sampling trace results from the CPU.

When the sampling trace tool is in the End of Tracing status, you can check trace results by selecting [Online]–[Sampling Trace Results] from the menu bar to display the Trace Results window.



Column 0 corresponds to the cursor position.  
Other columns display word device data for three scans preceding and following the cursor position.

B21\_18.VSD

Figure B26.15 Trace Results window

### ● Sampling Trace Result File

Up to 254 characters can be used to name a sampling trace result file. The file is ".ytrc" and is automatically appended when the file is saved.

## B26.4.1 Procedure for Displaying Sampling Trace Results

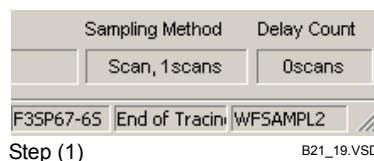
To display trace results, use the following procedure.

### ◆ Procedure ◆

#### (1) Confirm that tracing has ended.

##### TIP

When tracing ends, the status bar of the sampling trace tool displays the status as "End of Tracing."

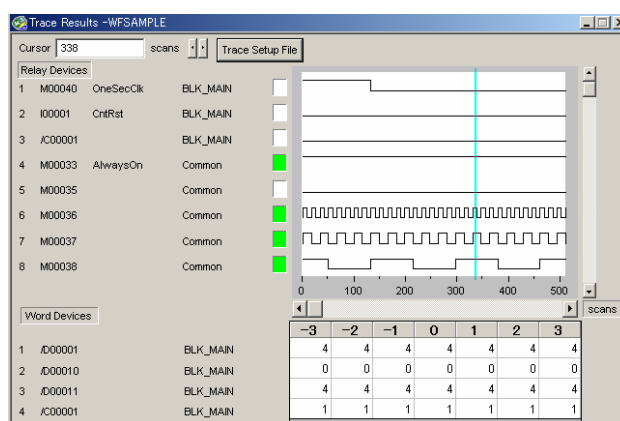


#### (2) Select [Online]–[Sampling Trace Results] from the menu bar.

⇒ Trace data is collected and the Trace Results window is displayed.

##### TIP

During tracing, a dialog box is displayed indicating that data is being collected.



#### (3) Select [File]–[Save As] from the menu bar.

⇒ The Save As dialog box is displayed.

#### (4) Enter a file name in the File Name text box, and click [Save].

⇒ Trace results are saved and control returns to the Trace Results window.

## B26.4.2 Displaying Sampling Trace Results by Tag Name

To display sampling trace results by tag name, you must perform trace setup by tag name. To display sampling trace results by tag name, open a file that contains sampling trace setup by tag name.

Next, click [Trace Setup File] located in the top center of Trace Results window and select a sampling trace setup file. The trace results are displayed by tag name.



### CAUTION

Structure member names cannot be displayed in a sampling trace.



### **B26.4.3 Changing Display Format for Word Devices**

You can change the display format for word devices.

The default display format is decimal but you can change it to hexadecimal or character string formats.

For [Export to MS-Excel], only decimal output is allowed; data cannot be output in hexadecimal or character string formats.

To change the display format, select [View]–[Display Format] from the menu bar of WideField2.

### **B26.4.4 Opening a Sampling Trace Result File**

You can open a file containing trace results both in online and offline mode. You can also use the file history function to open a trace result file if the file is included in the list of eight files opened most recently.

To open a trace result file, select [File]–[Open] from the menu bar. Or, select a file from the list of recently opened files displayed in the [File] menu of the menu bar.

## B26.5 Printing and Creating Graphs Using MS-Excel

You can use MS-Excel to print and plot trace results in graphs.

To print, select [Tools]–[Export to MS-Excel]–[Trace Data List] from the menu bar.

To plot graphs, select [Tools]–[Export to MS-Excel]–[Trace Data Chart] from the menu bar.

### B26.5.1 Procedure for Printing

You can print sampling trace results using MS-Excel's print function.



#### CAUTION

Printing trace results requires that MS-Excel be installed on the personal computer.

To print, use the following procedure.

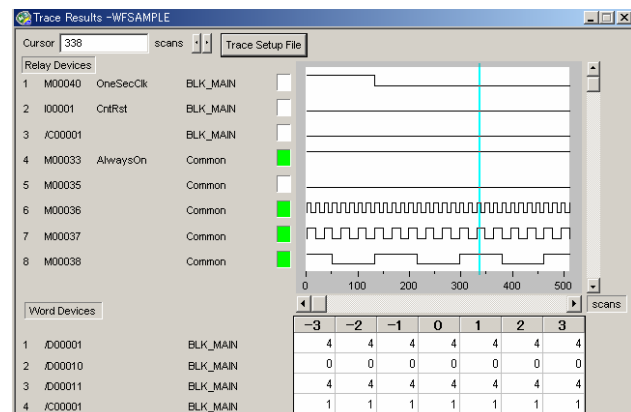
#### ◆ Procedure ◆

(1) Open the Trace Results window.



#### CAUTION

Data for word devices are always printed in decimal notation.



Step (1)

B21\_21.VSD

(2) Select [Tools]–[Export to MS-Excel]–[Trace Data List] from the menu bar.

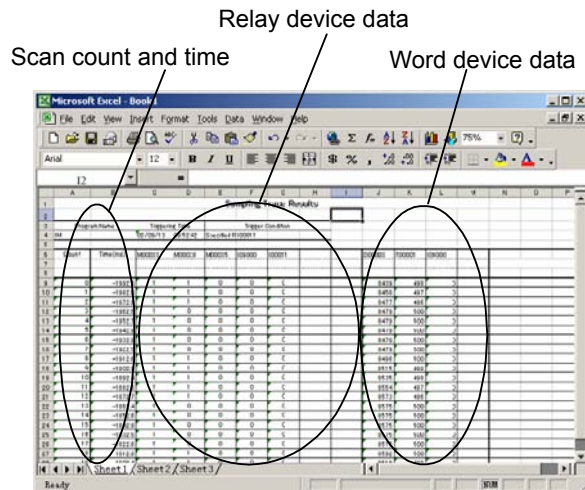
⇒ The Save As dialog box is displayed.

(3) Check that the Save as type drop down list box reads as "Exported file (List format)(\*.xls)," enter a file name, and save the file.

- (4) Run MS-Excel and open the saved file.  
 (5) Print the file using the MS-Excel print function.

### SEE ALSO

For details on how to use MS-Excel, see the manuals or online help for MS-Excel.



Step (4)

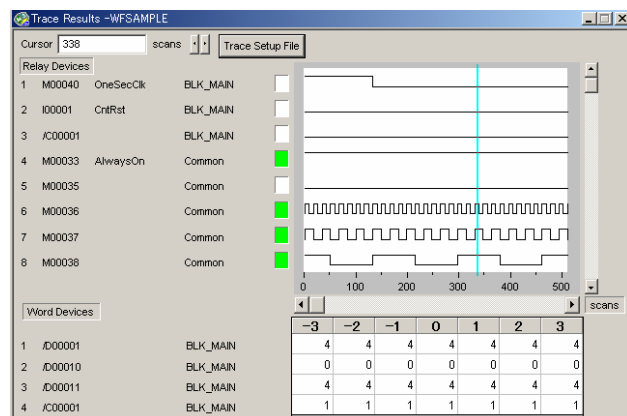
B21\_22.VSD

## B26.5.2 Procedure for Creating Graphs with MS-Excel

You can plot sampling trace results as graphs using MS-Excel's graph function. To do this, use the following procedure.

### ◆ Procedure ◆

- (1) Open the Trace Results window.



Step (1)

B21\_23.VSD



### CAUTION

Graphs can be displayed either in time chart or scan chart format. Selecting [View]-[Time Chart] or [View]-[Scan Chart] from the menu bar toggles the display format. Select the desired display format.



Time chart is selected



Scan chart is selected

Step (1)

B21\_34.VSD

- (2) Select [Tools]–[Export to MS-Excel] –  
[Trace Data Chart] from the menu bar.

⇒ The Save As dialog box is displayed.

- (3) Check that the Save as type drop  
down list box reads "Exported file  
(Chart format)(\*.xls)," enter a file  
name, and save the file.

- (4) Run MS-Excel and open the saved file.

⇒ Relay and word device data are  
displayed (in that order) in Sheet1 of  
MS-Excel.

### SEE ALSO

For details on how to use MS-Excel, see the  
manuals or online help for MS-Excel.

Scan count or  
time values in chart format

Name of saved file

The screenshot shows a Microsoft Excel window titled 'Book1'. The data is organized into two main sections. The first section (rows 1-11) contains relay data with columns for scan count/time values and relay counts. The second section (rows 19-26) contains word device data. Annotations include:

- A line pointing to the file name 'B21\_24.VSD' in the title bar.
- A line pointing to the header 'Scan count or time values in chart format' above the first section.
- A line pointing to the header 'Relay count and values' above the second section.
- A line pointing to the word device values in the second section.

	A	B	C	D	E	F	G
1		M00033	M00038	M00035	I09000	I00011	
2	0	1	3	4	6	8	
3	0	1	3	4	6	8	
4	1	1	3	4	6	8	
5	1	1	3	4	6	8	
6	2	1	3	4	6	8	
7	2	1	3	4	6	8	
8	3	1	3	4	6	8	
9	3	1	2	4	6	8	
10	4	1	2	4	6	8	
11	4	1	2	4	6	8	
12							
13							
14							
15							
16							
17							
18							
19	1022	1	3	4	6	8	
20	1023	1	3	4	6	8	
21	1023	1	2	4	6	8	
22							
23		D00003	T00001	I09000			
24	0	8439	498	0			
25	1	8458	497	0			
26	2	8477	496	0			

Step (4)

Word device values are  
displayed after relay value

## ■ Procedure for Creating an MS-Excel Graph

To create a relay graph from sampling trace data using MS-Excel's graph function, use the following procedure.

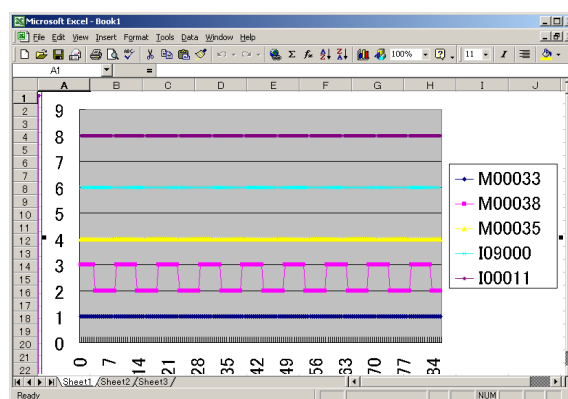
### ◆ Procedure ◆

- (1) Run MS-Excel and open the file saved in chart format.
- (2) Select the data to be plotted, and create a graph using MS-Excel's graph function.



### CAUTION

Lines 1 to 2049 are used for relays; lines 2052 to 3075 are used for registers.



Step (2)

B21\_25.VSD

### TIP

- The above graph is an example of a relay chart created from sampling trace tool data. A register chart can also be created.
- Relay data and register data is output to MS-Excel in chart format in that order.

### SEE ALSO

For details on how to use MS-Excel's graph function, see the manuals or online help of MS-Excel.



## B27. Device Manager

The device manager tool allows you to upload CPU device data to a personal computer and save the data to a file. Using the file, you can then edit, download, and compare device data.

You can also specify a range of devices to be uploaded or downloaded.

Devices that can be saved to a file include:

- Internal relay (I)
- Shared relay or extended shared relay (E)
- Link relay (L)
- Timer relay (current value) (T)
- Counter relay (current value) (C)
- Data register (D)
- Shared register or extended shared register (R)
- Link register (W)
- Index register (V)
- File register (B)

Devices that cannot be saved to a file are:

- Input/output relay (X, Y)
- Timer and counter preset value



### CAUTION

- The device manager is a WideField2 extended tool and cannot run as a standalone application.
- Online functions of the device manager are available only when WideField2 is connected online.
- Before using the online functions of the device manager, you must connect online using WideField2. If you start the device manager and then connect online using WideField2, you will not be able to use the online functions. To fix the problem, restart the device manager.

## B27.1 Device Manager Window Layout and Startup

This section describes the layout of the device manager window and explains how to start the device manager.

### B27.1.1 Device Manager Window

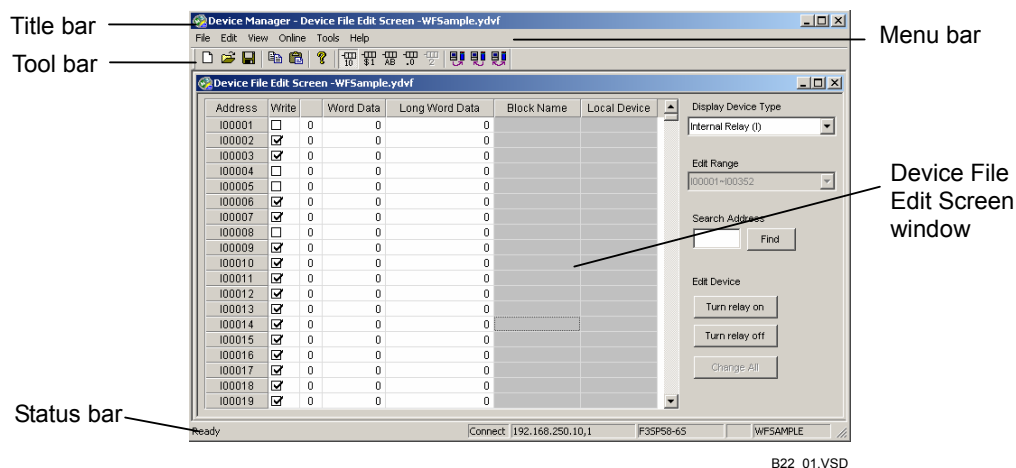


Figure B27.1 Device Manager Window

### B27.1.2 Device Manager Window Layout

#### ■ Title Bar

The title bar is displayed at the top of the device manager screen. It shows the application name and the name of the device file currently opened. The title bar displays only the application name, "Device Manager", immediately after startup.



Figure B27.2 Title Bar

#### ■ Menu Bar and Toolbar

##### ● Menu Bar

The menu bar is displayed at the top of the device manager work area. Device manager functions are accessible as commands from the menu bar. The table below lists the menus on the menu bar. To select a menu command, point the mouse at the menu you want to select, and click the mouse button, just as with other Windows application programs.



Table B27.1 List of Menu Commands

Menu	Menu Commands		Descriptions
File	New		Creates a new device file.
	Open		Opens an existing device file.
	Close		Closes a currently open device file.
	Save		Saves an open device file, overwriting existing content on disk.
	Save As		Saves an open device file with a new name.
	Open WideField/CADM3 Device File		Open a device file created using device manager of WideField/CADM3.
	Recent Files		Lists up to 8 most recently used device files.
	Exit		Exits the application.
Edit	Copy		Copies a specified range.
	Paste		Pastes the copied content to a specified location.
View	Toolbar		Shows or hides the toolbar.
	Status Bar		Shows or hides the status bar.
	Display Format	Decimal	Changes display format to decimal.
		Hexadecimal	Changes display format to hexadecimal.
		Character String	Changes display format to character string.
		Floating Point	Changes display format to floating point.
	Local Devices		Displays local devices.
Online	Download		Transfers device data from the personal computer to the CPU.
	Upload		Transfers device data from the CPU to the personal computer.
	Compare File and CPU		Compares device data in device file and CPU.
Tool	Export		Exports displayed comparison results and device edit data in CSV format.
Help	Device Manager Help		Displays device manager help.
	Contents and Index		Searches by keyword and displays help contents.
	About Device Manager		Displays the version number of the device manager software.

## ● Toolbar

The toolbar of the device manager displays icons for frequently used menu commands of the menu bar. Selecting [View]–[Toolbar] from the menu bar toggles between showing and hiding the toolbar.

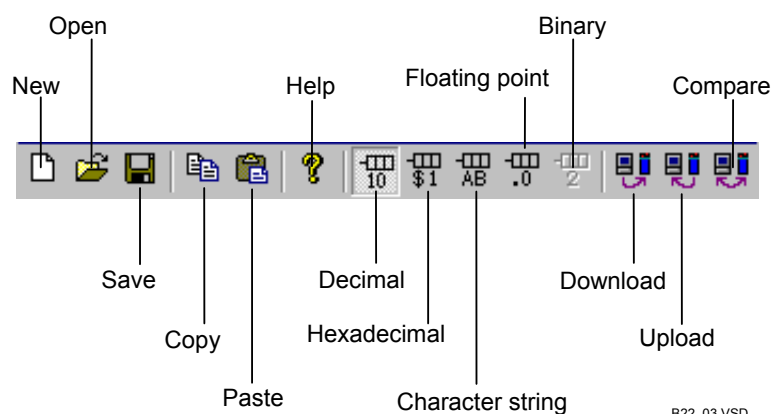


Figure B27.3 Layout of Toolbar

## ■ Status Bar

The status bar displays the status and related information of the device manager.

Selecting [View]–[Status Bar] from the menu bar toggles between showing and hiding the status bar.

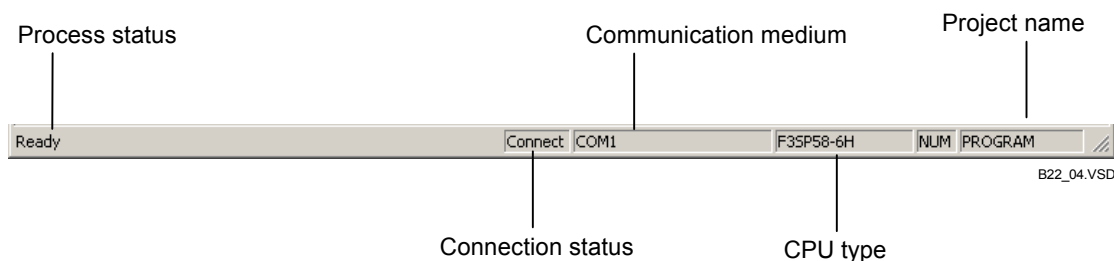


Figure B27.4 Layout of Status Bar

## ■ Device File Edit Screen Window

The Device File Edit Screen window allows you to edit relay and word device values.

You can also use it to view uploaded device values.

The Device File Edit Screen window automatically opens when you open an existing device file.

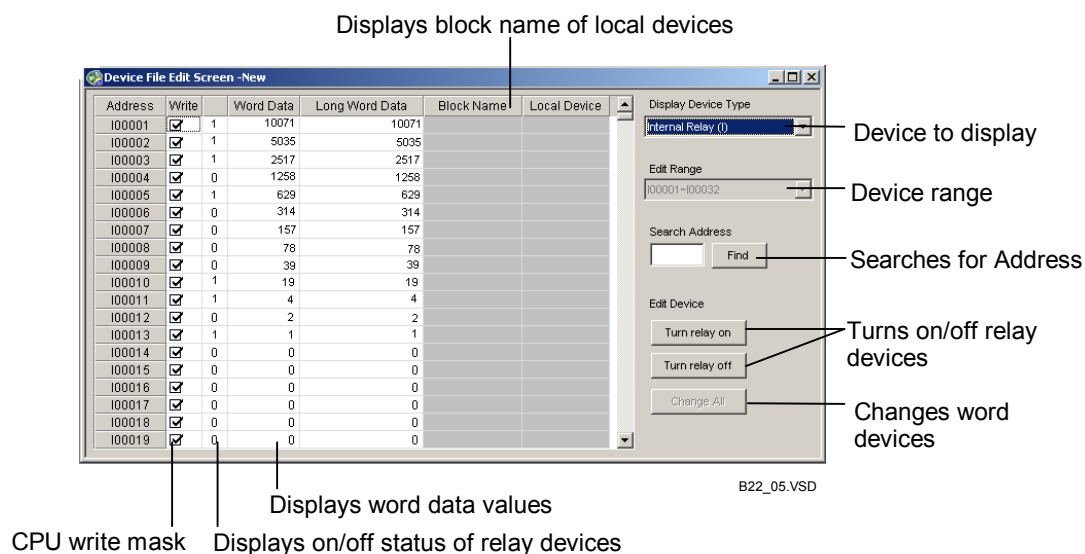


Figure B27.5 Device File Edit Screen Window Layout

## ■ [Specify Device Range] Dialog Box

The Specify Device Range dialog box is displayed when you use any of the following functions: download, upload, compare and new. The dialog box display varies with the function used.

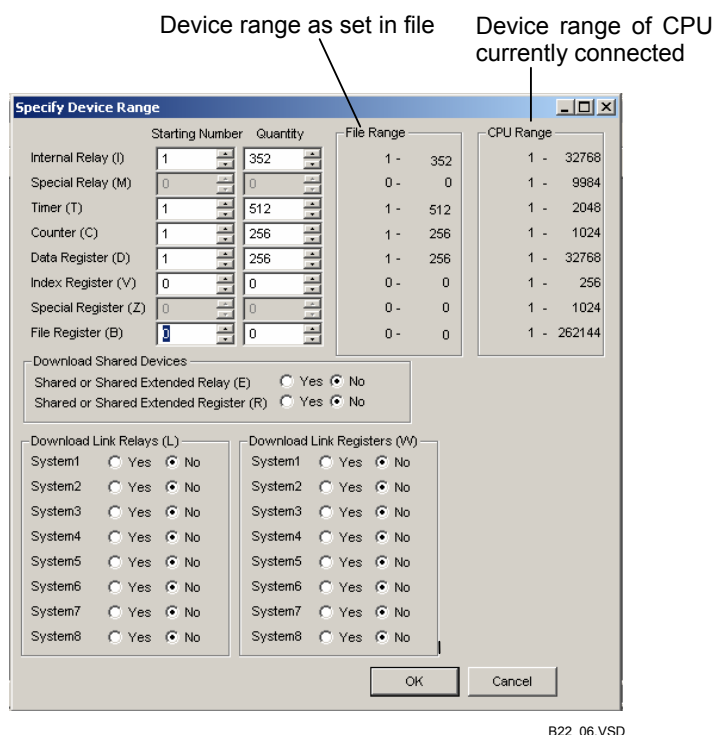


Figure B27.6 Specify Device Range Dialog Box (for downloading)

## B27.1.3 Starting Device Manager

To start the device manager, use the following procedure.

### ◆ Procedure ◆

(1) Select [Tools]–[Device Manager] from the menu bar.

⇒ The device manager starts.



### CAUTION

You cannot run multiple copies of the Device Manager concurrently.

## B27.2 Creating a New Device File

To create a new device file, use the following procedure.

### ◆ Procedure ◆

(1) Select [Tools]–[Device Manager] from the WideField2 menu bar.

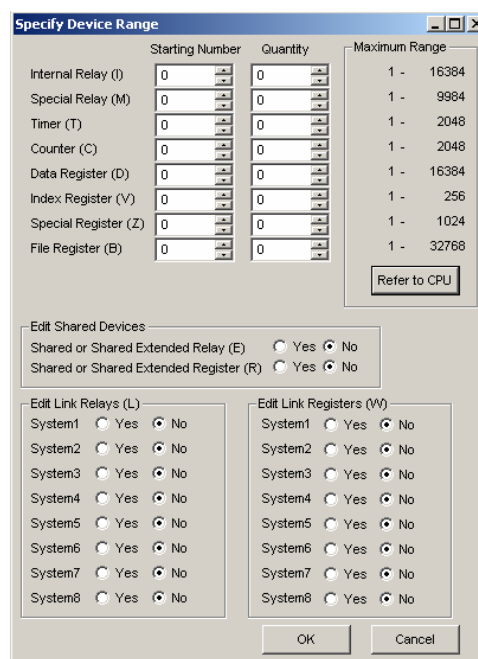
⇒ The device manager starts.

(2) Select [File]–[New] from the menu bar.

⇒ The Specify Device Range dialog box is displayed.

(3) Specify the range of devices to be created, and click [OK].

⇒ The Device File Edit Screen window is displayed.



The 'Specify Device Range' dialog box is shown. It contains a table for specifying device ranges and several sections for configuration options.

	Starting Number	Quantity	Maximum Range
Internal Relay (I)	0	0	1 - 16384
Special Relay (M)	0	0	1 - 9984
Timer (T)	0	0	1 - 2048
Counter (C)	0	0	1 - 2048
Data Register (D)	0	0	1 - 16384
Index Register (V)	0	0	1 - 256
Special Register (Z)	0	0	1 - 1024
File Register (B)	0	0	1 - 32768

Buttons: Refer to CPU, OK, Cancel

Edit Shared Devices

Shared or Shared Extended Relay (E) ☐ Yes ☒ No

Shared or Shared Extended Register (R) ☐ Yes ☒ No

Edit Link Relays (L)

System	Yes	No
System1	<input type="radio"/>	<input checked="" type="radio"/>
System2	<input type="radio"/>	<input checked="" type="radio"/>
System3	<input type="radio"/>	<input checked="" type="radio"/>
System4	<input type="radio"/>	<input checked="" type="radio"/>
System5	<input type="radio"/>	<input checked="" type="radio"/>
System6	<input type="radio"/>	<input checked="" type="radio"/>
System7	<input type="radio"/>	<input checked="" type="radio"/>
System8	<input type="radio"/>	<input checked="" type="radio"/>

Edit Link Registers (W)

System	Yes	No
System1	<input type="radio"/>	<input checked="" type="radio"/>
System2	<input type="radio"/>	<input checked="" type="radio"/>
System3	<input type="radio"/>	<input checked="" type="radio"/>
System4	<input type="radio"/>	<input checked="" type="radio"/>
System5	<input type="radio"/>	<input checked="" type="radio"/>
System6	<input type="radio"/>	<input checked="" type="radio"/>
System7	<input type="radio"/>	<input checked="" type="radio"/>
System8	<input type="radio"/>	<input checked="" type="radio"/>

Step (3)

B22\_07.VSD

(4) Edit devices.

(5) Select [File]–[Save As] from the menu bar.

⇒ The Save As dialog box is displayed.

(6) Enter a new file name in the [File name] text box, and click [Save].

#### TIP

You can use a device file saved earlier for downloading, comparison, or exporting to MS-Excel.

⇒ Control returns to the Device File Edit Screen window.

## B27.3 Uploading Device Data

This section describes how to upload device data.



### CAUTION

Before using the online functions of the device manager, you must first connect online using WideField2.

To upload device data, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Tools]–[Device Manager] from the menu bar.

⇒ The device manager opens.

- (3) Select [Online]–[Upload] from the menu bar of the device manager.

⇒ The Save As dialog box is displayed.

- (4) Enter a new file name, and click [Save].

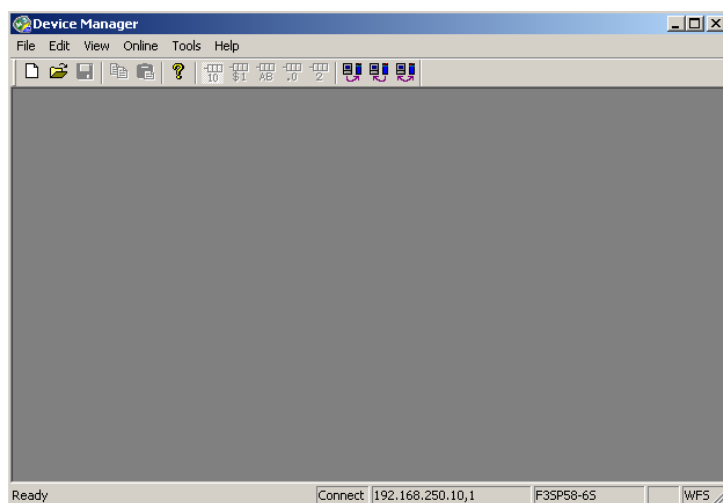
⇒ The Specify Device Range dialog box opens.

- (5) Specify the range of devices you want to upload, and click [OK].

⇒ Uploading starts. When uploading is completed, "End of uploading" is displayed.

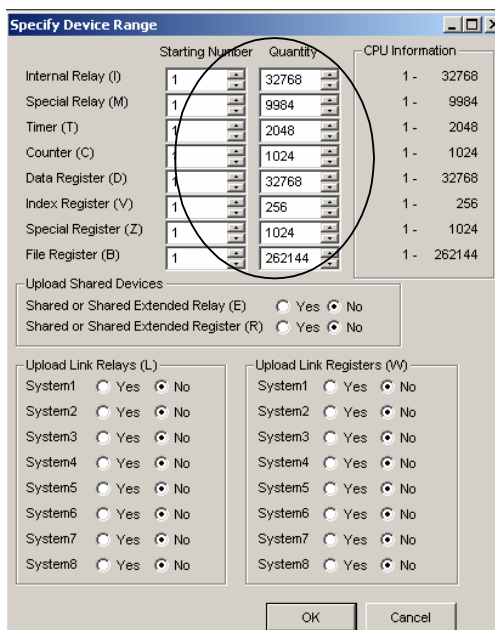
#### TIP

An Uploading dialog box is displayed during uploading.



Step (2)

B22\_32.VSD



Step (5)

B22\_09.VSD

(6) Click [OK].

(7) Select [File]–[Open] from the menu bar.

⇒ The Open dialog box is displayed.

(8) Enter the name of the uploaded file in the [File name] text box, and click [Open].

⇒ The Device File Edit Screen window is displayed.

#### **TIP**

The uploaded device data may also be saved as a device file. It can also be exported to MS-Excel and printed.

#### **TIP**

- The number of devices to be uploaded is specified in units of different sizes for different device types.
- If uploading is aborted, uploaded device data is discarded.

**Table B27.2 Units for Number of Device in Device Manager**

Device	Unit for Number of Devices
Internal relay (I)	32
Special relay (M)	32
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)	2
Special register (Z)	2
File register (B)	2

## B27.4 Downloading Device Data

This section describes how to download device data.



### CAUTION

Before using the online functions of the device manager, you must first connect online using WideField2.

To download device data, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Tools]–[Device Manager] from the menu bar.

⇒ The device manager is displayed.

- (3) Select [Online]–[Download] from the menu bar of the device manager.

⇒ The [Open] dialog box is displayed.

- (4) Enter the name of the file you want to download in the File Name text box, and click [Open].

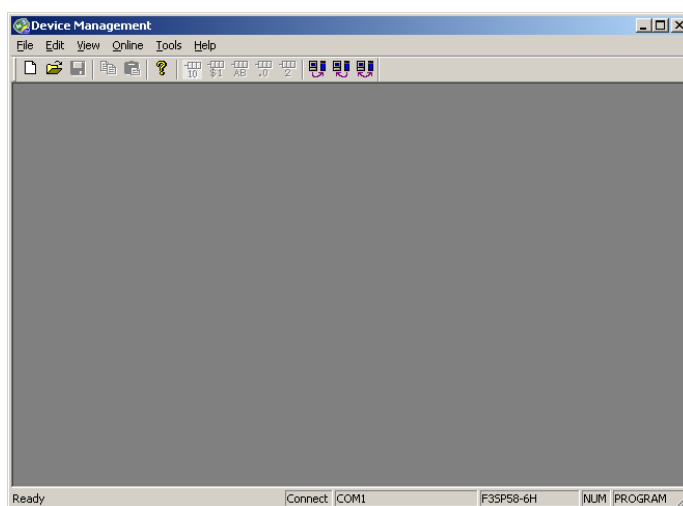
⇒ The Specify Device Range dialog box is displayed.

- (5) Specify the range of devices you want to download, and click [OK].

⇒ Downloading starts. When downloading is completed, "End of downloading" is displayed.

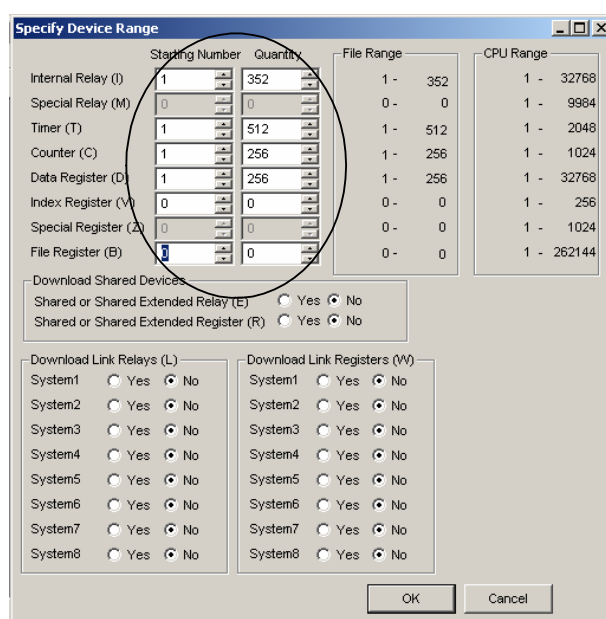
#### TIP

The Downloading dialog box is displayed during downloading.



Step (2)

B22\_32.VSD



Step (5)

B22\_11.VSD

**CAUTION**

---

If downloading is aborted, the device data in the CPU is partially overwritten. To fix the problem, download with valid device data again.

---

**(6) Click [OK].**

⇒ Control returns to the device manager.



## B27.5 Editing Device Data

This section describes how to edit device data.

### B27.5.1 Switching Display Formats

- You can switch between display formats by using [View]–[Display Format] from the menu bar before displaying and editing device data.
- For this purpose, you can use the buttons on the toolbar as illustrated below.
- You can also change the display format for relay devices.

**Decimal**

Enter a decimal number.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	0	65536
D00002	<input checked="" type="checkbox"/>	1	1
D00003	<input checked="" type="checkbox"/>	0	0
D00004	<input checked="" type="checkbox"/>	0	0

**Hexadecimal**

Enter "\$" and a hexadecimal number

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	\$0000	\$00010000
D00002	<input checked="" type="checkbox"/>	\$0001	\$00000001
D00003	<input checked="" type="checkbox"/>	\$0000	\$00000000
D00004	<input checked="" type="checkbox"/>	\$0000	\$00000000

**Binary**

Enter a binary number.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	0000 0000 0000 0000	
D00002	<input checked="" type="checkbox"/>	0000 0000 0000 0001	
D00003	<input checked="" type="checkbox"/>	0000 0000 0000 0000	
D00004	<input checked="" type="checkbox"/>	0000 0000 0000 0000	

**Floating point**

Enter a floating-point number.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>		%5.920432E+020
D00002	<input checked="" type="checkbox"/>		%3.515578E-041
D00003	<input checked="" type="checkbox"/>		%0.000000E+000
D00004	<input checked="" type="checkbox"/>		%0.000000E+000

**Character string**

Enter a character string enclosed within double-quotes

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	"a"	"ab"
D00002	<input checked="" type="checkbox"/>	"b"	"b"
D00003	<input checked="" type="checkbox"/>	""	""
D00004	<input checked="" type="checkbox"/>	""	""

B22\_12.VSD

Figure B27.7 Switching Display Formats

## B27.5.2 Changing Relay Data

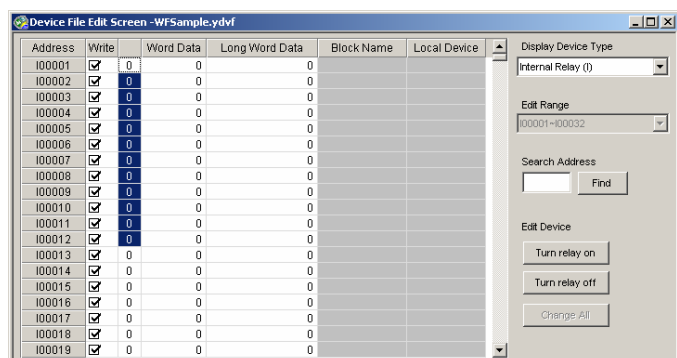
You can change the data of a single relay device or a selected range of relays. Data for the following relay devices can be changed:

- Internal relay (I)
- Special relay (M)
- Shared relay (E)
- Link relay (L)
- Timer relay (T)
- Counter relay (C)

To change relay devices, use the following procedure.

### ◆ Procedure ◆

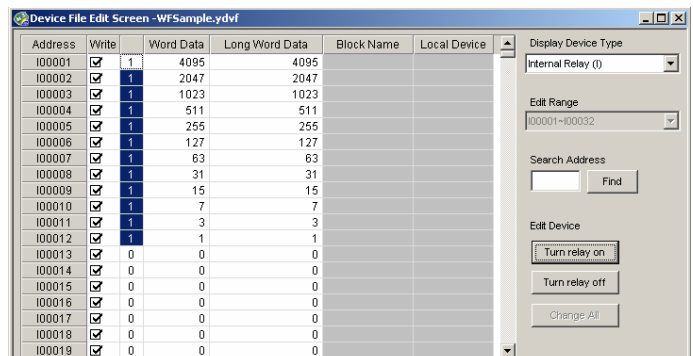
- (1) Display the Device File Edit Screen window of the device manager.
- (2) Select a device or a range of devices to be changed.
- (3) Click [Turn relay on] or [Turn relay off].



Steps (2) and (3)

B22\_13.VSD

⇒ The selected relays are turned on or off accordingly.



Step (3)

B22\_14.VSD

## B27.5.3 Changing Word Data

You can change word data for one device or for a selected range of devices. To change a single device, directly overwrite it with a new value. To change word data for multiple devices, use the Change All dialog box.

### TIP

If you want to change the display format, do so before changing data.



### CAUTION

You cannot select multiple devices when changing long data.

To change word data for multiple devices, use the following procedure.

### ◆ Procedure ◆

- (1) Display the Device File Edit Screen window of the device manager.
  - (2) Select a range of devices to be changed.
  - (3) Click [Change All].
- ⇒ The Change All dialog box is displayed.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	3377	3377
D00002	<input checked="" type="checkbox"/>	0	65536
D00003	<input checked="" type="checkbox"/>	1	1
D00004	<input checked="" type="checkbox"/>	0	65536
D00005	<input checked="" type="checkbox"/>	1	65537
D00006	<input checked="" type="checkbox"/>	1	1

Step (2)

B22\_16\_1.VSD

- (4) Enter a new value in the text box, and click [OK].

Step (4)

B22\_16\_2.VSD

- ⇒ Control returns to the Device File Edit Screen window with the new data displayed.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	3377	8064305
D00002	<input checked="" type="checkbox"/>	123	8061051
D00003	<input checked="" type="checkbox"/>	123	8061051
D00004	<input checked="" type="checkbox"/>	123	8061051
D00005	<input checked="" type="checkbox"/>	123	65659
D00006	<input checked="" type="checkbox"/>	1	1

Step (4)

B22\_16\_3.VSD

### TIP

When you select a long word cell and change data, 2 words of data are changed: data for the selected address and the next higher address.

## B27.5.4 Copying and Pasting

To copy and paste device data, use the following procedure.

### ◆ Procedure ◆

(1) Select a range of cells to be copied.

⇒ The selected cells are highlighted.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	1	131073
D00002	<input checked="" type="checkbox"/>	2	196610
D00003	<input checked="" type="checkbox"/>	3	262147
D00004	<input checked="" type="checkbox"/>	4	327684
D00005	<input checked="" type="checkbox"/>	5	393221
D00006	<input checked="" type="checkbox"/>	6	6

Step (1)

B22\_17\_1.VSD

(2) Select [Edit]–[Copy] from the menu bar.

(3) Move the position cursor to the data position of the first device where data is to be pasted.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	1	131073
D00002	<input checked="" type="checkbox"/>	2	196610
D00003	<input checked="" type="checkbox"/>	3	262147
D00004	<input checked="" type="checkbox"/>	4	327684
D00005	<input checked="" type="checkbox"/>	5	393221
D00006	<input checked="" type="checkbox"/>	6	6

Step (3)

B22\_17\_2.VSD

(4) Select [Edit]–[Paste] from the menu bar.

⇒ The copied cells are pasted.

Address	Write	Word Data	Long Word Data
D00001	<input checked="" type="checkbox"/>	4	327684
D00002	<input checked="" type="checkbox"/>	5	393221
D00003	<input checked="" type="checkbox"/>	6	262150
D00004	<input checked="" type="checkbox"/>	4	327684
D00005	<input checked="" type="checkbox"/>	5	393221
D00006	<input checked="" type="checkbox"/>	6	6

Step (4)

B22\_17\_3.VSD

## B27.5.5 Displaying Local Devices

The Display Local Device function can be used to display devices used as local devices in a project.



### CAUTION

This function does not display tag names.

### TIP

Local devices, as a unique feature of WideField2, can only be used in a particular block. Local devices are automatically allocated according to the configuration setup of WideField2. Using the Display Local Devices function, you can display devices automatically allocated as local devices of each block.

To do this, use the following procedure.

### ◆ Procedure ◆

(1) Open the Device File Edit Screen window of the device manager.

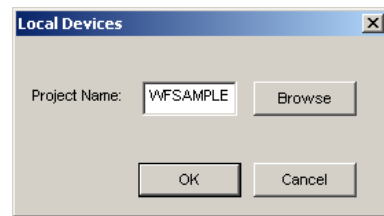
(2) Select [View]–[Local Devices] from the menu bar.

⇒ The Local Devices dialog box is displayed.

**(3) Enter a project name in the Project Name text box, and click [OK].**

#### TIP

Clicking [Browse] displays a list of projects for selection.

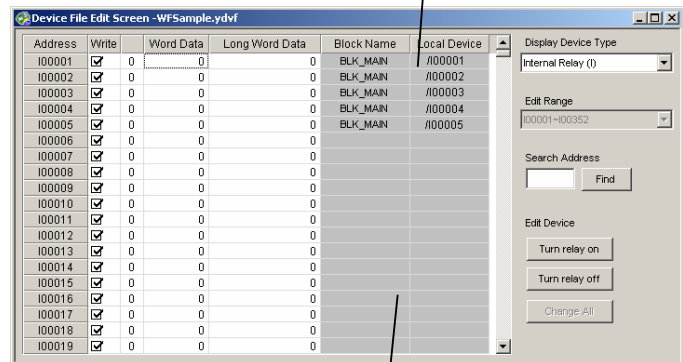


Step (3)

B22\_18.VSD

⇒ The local devices used in the selected project are displayed.

Block names and local devices



Step (3)

B22\_19.VSD

Global devices are not shown.

## B27.5.6 E-mail-Related Device Manager Functions

This section describes device management files for use with E-mail and how to set up CPU write-masks.

### ■ Types of Device Management Files

A user can create two types of device management files: general device management file to be used by the device manager and device management file for E-mail to be used with E-mail functions.

Device management files for E-mail include CPU write mask setup information but general device management files do not.

**Table B27.3 Comparing General Device Management File and E-mail Device Management Files**

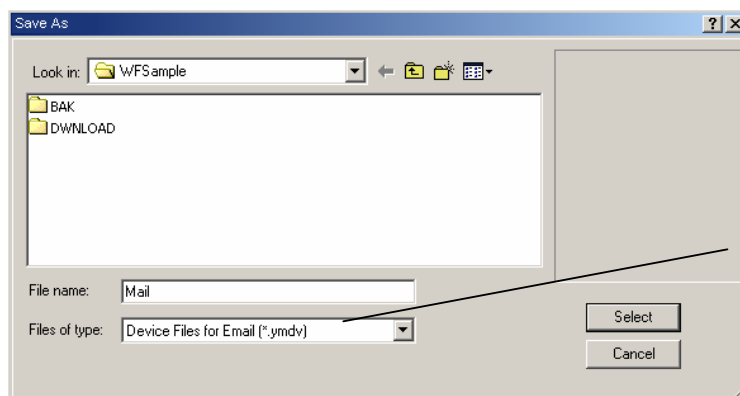
	Device Management File for E-mail	General Device Management File
File name extension	.YMDV	.YDVF
CPU write mask information	Included	Not included
Edit or save	Allowed	Allowed
Download from device manager	Not allowed	Allowed
Use with E-mail function	Allowed	Not allowed

### ■ Creating a Device Management File for E-mail

You can edit a device management file for E-mail the same way you edit a general device management file. To create a device management file for E-mail, change the file type when you save the device management file.

#### TIP

To save a file as a device management file for E-mail, select "Device File for Email (\*.ymdv)" from the File Type drop down list of the Save As dialog box.



B22\_31.VSD

**Figure B27.8 Save As Dialog Box**

Select "Device File for E-mail" as file type.

■ CPU Write Mask

The CPU Write Mask is used to specify devices for which data is to be downloaded.

In the Write column on the device manager Device File Edit Screen window, turn on checkboxes for devices for which data is to be download. If the checkbox of a device is turned off, data for the device will not be downloaded.

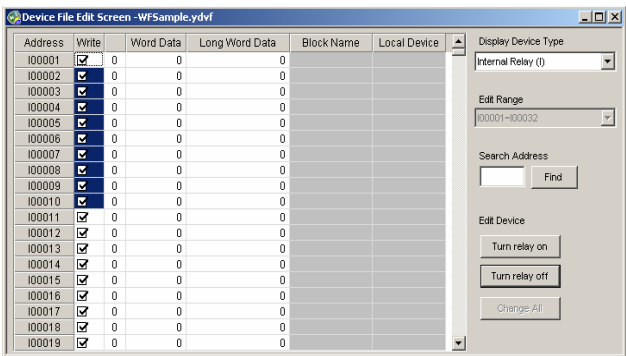
Downloading device data using the E-mail function will only download device values of devices whose CPU Write mask is turned on.

The CPU Write mask can be specified for each device.

To set up the CPU Write mask, use the Device File Edit Screen window of the device manager and follow the procedure given below.

◆ Procedure ◆

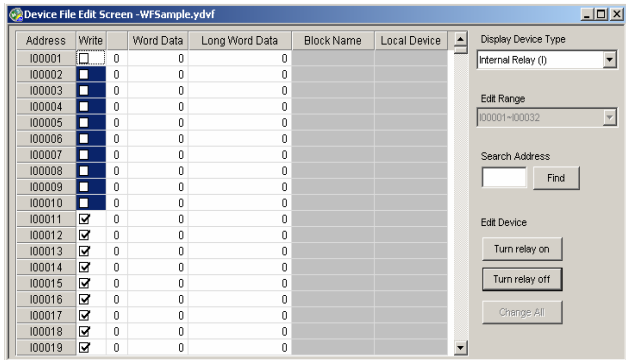
- (1) Display the Device File Edit Screen window of the device manager.
- (2) Select a range of cells in the Write column whose CPU write mask setting is to be changed.



Step (2)

B22\_32.VSD

- (3) Press the [SPACE] key.  
⇒ This toggles the on/off state of the checkboxes.



Step (3)

B22\_33.VSD

TIP

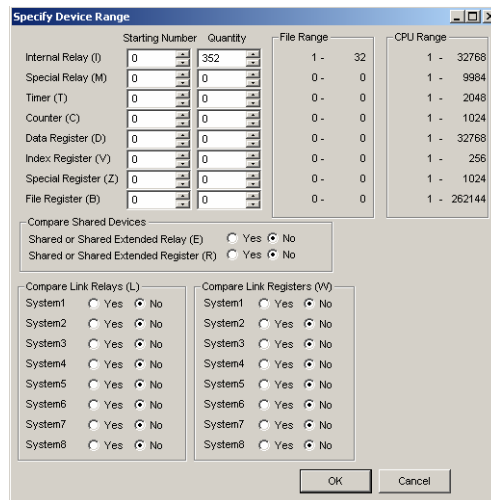
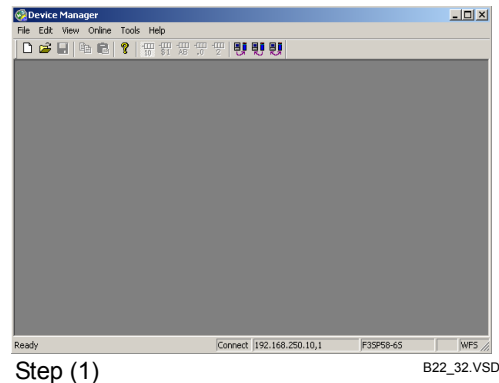
You can also toggle a checkbox in the Write column by clicking on it.

## B27.6 Comparing Device Data

You can compare the contents of a device file against CPU device values. Up to 1024 sets of inconsistent values can be displayed. Beyond this, any further discrepancies detected are ignored. To compare device data, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the device manager is open.
- (2) Select [Online]–[Compare File and CPU] from the menu bar.  
⇒ The Open dialog box is displayed.
- (3) Enter the name of a file to be compared in the [File name] text box, and click [Open].  
⇒ The Specify Device Range dialog box is displayed.
- (4) Specify a device type and a range of devices to be compared, and click [OK].



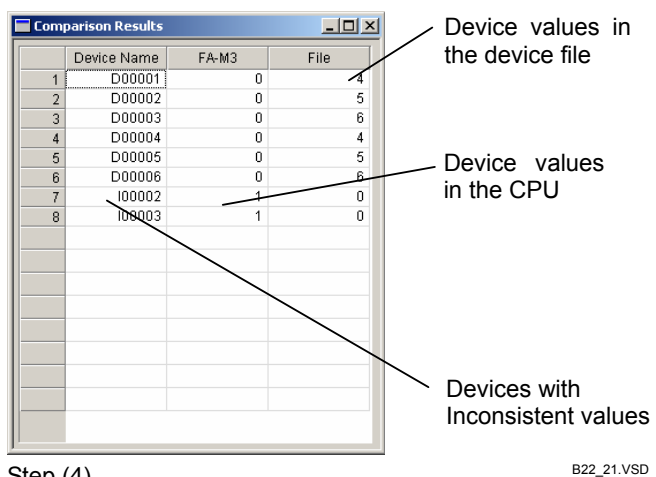
- ⇒ Comparison begins. The Comparison Results window will be displayed when the comparison is completed.

#### TIP

While comparison is in progress, the Comparing dialog box is displayed.

- (5) Close the Comparison Results window.

⇒ Control returns to the device manager.





## B27.7 Exporting to MS-Excel for Printing

You can export device data to MS-Excel.

Device data exported to MS-Excel can be printed or plotted in graphs using functions in MS-Excel. Device data is exported in CSV file format. The specifications of MS-Excel dictate the number of device data that can be exported.



### CAUTION

Before exporting and printing device data with MS-Excel, you must ensure that MS-Excel is installed in the personal computer.

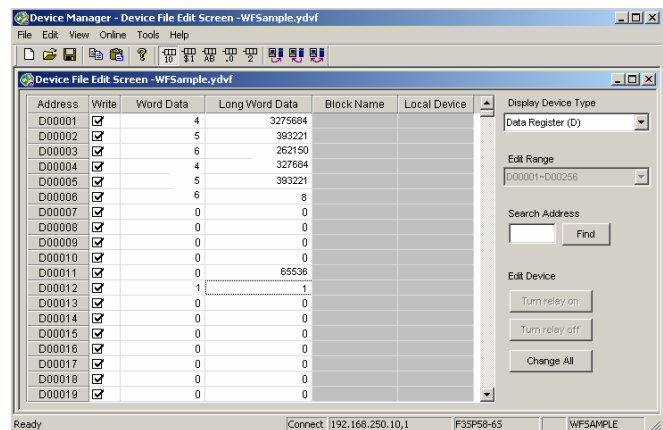
To export to MS-Excel, use the following procedure.

### ◆ Procedure ◆

- (1) Open the Device File Edit Screen window of the device manager.
- (2) Select [Tools]–[Export] from the menu bar.  
⇒ The Save As dialog box is displayed.
- (3) Confirm that "csv file (\*.csv)" is selected in the Save as type drop down list, enter a file name, and click [Save].
- (4) Run MS-Excel and open the saved file.
- (5) Print or create graphs for the device data with MS-Excel.

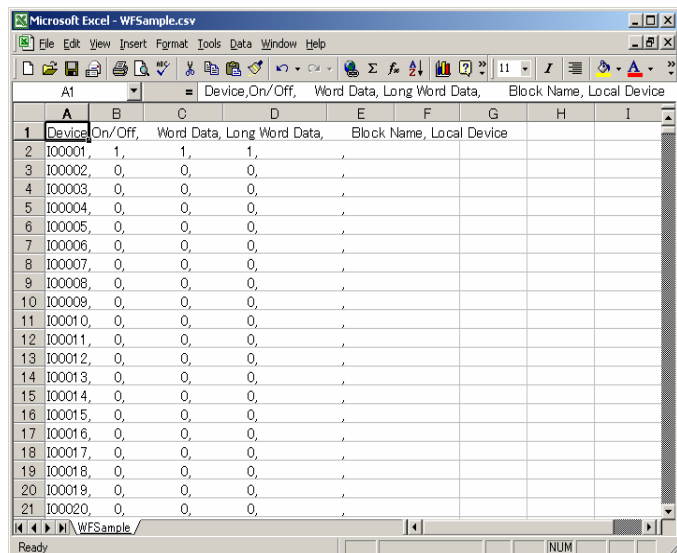
### SEE ALSO

For details on how to use MS-Excel, see the manuals or help information for MS-Excel.



Step (1)

B22\_36.VSD



Step (4)

B22\_22.vsd

## B27.8 Opening Device Files Created Using WideField Or CADM3

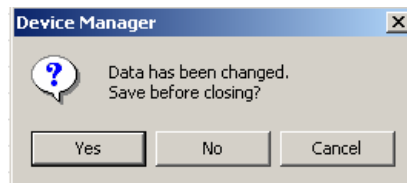
You can use WideField2 to read device files created using WideField or CADM3. The required procedure is given below.

### ◆ Procedure ◆

- (1) Confirm that the device manager screen is open.
  - (2) Select [File]–[Open WideField/CADM3 Device File] from the menu bar.
- ⇒ If the Device File Edit screen is open, it closes.

#### TIP

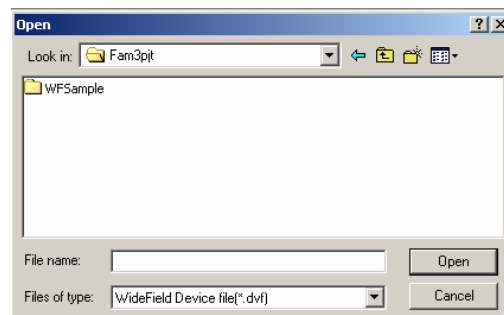
If you have made changes to the data, a dialog box is displayed to confirm whether to save the changes. Clicking [Yes] saves the changes; Clicking [No] closes the window without saving the changes; Clicking [Cancel] aborts file opening.



Step(2)

B2208\_02.vsd

- ⇒ The Open dialog box is displayed.
- (3) Select the device file to be opened and click [Open].



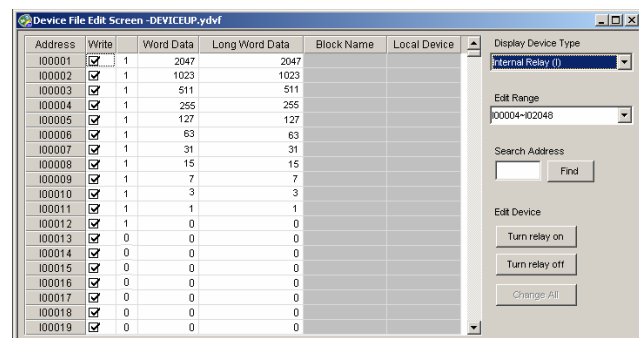
Step (3)

B2208\_01.VSD

- ⇒ The WideField/CADM3 device file is converted into a WideField2 device file and displayed in the Device File Edit screen.

#### TIP

The converted file will be created in the same folder storing the original WideField/CADM3 device file with the new file name extension of ".ydvf". If a file name with the same name already exists, a dialog box is displayed to confirm whether to overwrite the existing file. The original WideField/CADM3 remains intact.



Step (3)

B2208\_03.VSD

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## B28. Using Macros

This chapter describes how to create and use macros.

### B28.1 About Macros

#### B28.1.1 What are Macros?

Macros are a series of processing instructions defined as one instruction.

By assigning a name to a macro, you can then use the macro just like any other existing instructions.

#### B28.1.2 The Purpose of Macros

Using macros has the following advantages.

- **Increases program readability**

Program readability generally decreases as the size of a program grows. As a result, debugging and maintenance become more difficult. Using macros, however, increases program readability, facilitating debugging and maintenance.

- **Reduces the number of program steps**

Coding a program with repeated group of instructions increases the number of program steps. Bringing these steps into a single macro reduces them to a single program step.

- **Promotes modular programming**

This facilitates reuse of past resources. By reusing macros, which have undergone testing, this will reduce the time required for debugging. Furthermore, macros can be created independently, allowing many developers to work in parallel.

- **Accumulates know-how**

Processes that are difficult to achieve using existing instructions are accumulated as original know-how in the form of macros. By protecting these macros, secrecy is maintained.

- **Easier to use than subroutines**

Macros offer the following benefits, not available with subroutines:

- A macro can be considered and used as a black box.

A subroutine may change the value of devices used internally. Accordingly, you must be careful not to use such devices outside the subroutine. When using a macro, however, you do not have to pay any attention to its internal devices.

- Parameter passing to a macro is easier.

With subroutines, you have to pre-define the interface specifying which devices are for input and which devices are for output. With macros, however, you can dynamically change the number of parameters and the devices used for the interface.

- You do not have to include macros in a program.

You have to include subroutines, but not macro definitions, in a program. Macros are automatically linked and transferred to the CPU.

## B28.1.3 Precautions When Using Macros

The following restrictions apply to macros. Abide by these restrictions when using macros.

- **Compatible CPU types**

Some CPU types do not support the use of macros.

- **Maximum number of macros**

The maximum number of macros allowed in an executable program depends on the CPU type. The same macro, however, can be used as many times as required in an executable program.

- **Maximum number of macros allowed in a macro block**

Only one macro definition can be created in a macro file. A macro file has the same name as the macro contained therein.

- **Maximum number of parameters that can be passed to a macro**

Up to 16 parameters can be passed by a macro calling instruction to a macro. Input and output macro calling instructions allow up to three parameters to be registered. To register more than three parameters, use the PARA instruction.

- **Compatible devices**

Normal devices, local devices and the following macro devices can be used in a macro body:

Pointer (P)

Macro relay (H)

Macro register (A)

Macro index register (U)

Considering the nature of macros, we recommend that you use only these P, H, A, U devices in a macro definition.

A pointer (P) is a register that stores the parameter to be transferred to a macro definition. Macro relays (H), macro registers (A) and macro index registers (U) are equivalent to internal relays (I), data registers (D) and index registers (V) respectively, and may be used in a macro definition.

- **Coding of tag name**

In a macro definition, tag names can be used for normal and local devices and macro devices P, H, A, and U.

- **Using local devices in macros**

If local devices are used in a macro, do not call the same macro twice. Save the macro with a different name and call the new macro instead.

### TIP

Macro devices are provided for exclusive use in macro instructions. Macro devices include pointers (P), macro relays (H), macro registers (A), and macro index registers (U). Macro devices and devices that are used in a block occupy different areas. Hence, macros using macro devices can be highly independent.

Pointers are devices to which parameters passed to a macro instruction are copied in a macro. They are used when arguments are to be computed in a macro. Up to 16 pointers can be used.

### SEE ALSO

- For details on macro devices P, H, A, and U, see "Sequence CPU – Functions."
- For details on the limitation of structure macros, see Section B32.5, "Structure Macros."

## B28.1.4 Output Macro Call and Input Macro Call Instructions

- **Output Macro Call instruction**  
A macro call instruction to be used on the output side in a block.
- **Input Macro Call instruction**  
A macro call instruction to be used on the input side in a block
- **Output of Input Macro instruction**  
This is the instruction used by a macro called by the input macro calling instruction to return a macro execution result to the calling block. If a register device is specified as a parameter, the instruction execution result is off when the value of the register is zero, and on when the value of the register is non-zero.
- **Macro instructions**  
Macro instructions can be created independently of the input or output of the calling side.  
A macro called by the input macro calling instruction requires an NMOUT instruction to return the instruction execution result.

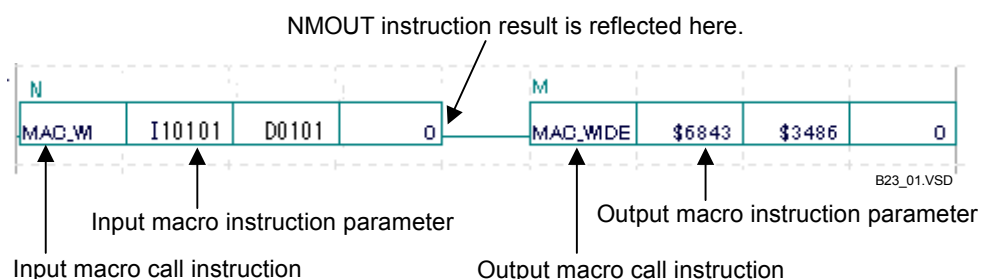


Figure B28.1 Macro Instructions

## B28.1.5 Macro Devices and Macro Local Devices

### ● Macro Devices

Macro devices A, H, and U are provided for exclusive use with macro instructions. They can be shared by multiple macros.

Macro devices are not affected by the block that invokes the macro. However, when the same macro device is used by multiple macros, the macros compete for the device.

Macro devices are basically used in instructions that complete execution in one scan.

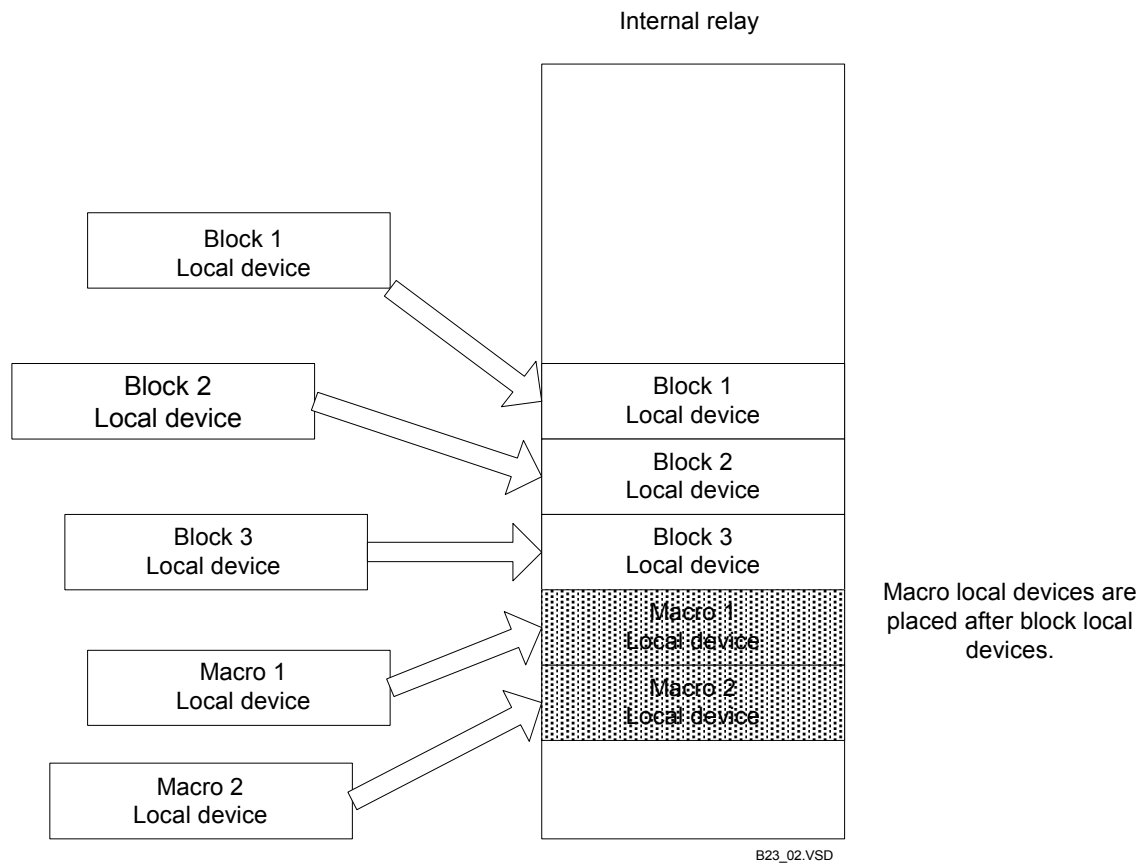
### ● Macro Local Devices

Macro local devices used in a macro are independent of other macros. Unlike normal macro devices (A, H, and U), which are shared among macros, macro local devices used in one macro are not affected by other macros.

Using macro local devices allows you to develop macros that complete execution in multiple scans.

Local devices of macros, like those of blocks, may use internal relays (/I), data registers (/D), file registers (/B), timers (/T), and counter (/C).

As many macro local devices as specified in the Local Device/Properties dialog box are automatically allocated. Figure B26.2 illustrates how macro local devices are implemented as actual devices, using internal relays (I) as an example. Macro local devices are allocated after block local devices.



**Figure B28.2 Implementation of Macro Local Devices as Actual Devices**



## CAUTION

Observe the following points when using macro local devices:

- If a macro uses local devices, you may not call the same macro again. If you need the same macro, save it as a macro with a different name before calling it.
- Do not nest macros.

## B28.1.6 About Structure Macros

You can develop macros that use structures as their arguments. These macros are called structure macros.

Structure macros and ordinary macros use the same file naming rules and file management methods but different instructions and devices.

### SEE ALSO

For details on structure macros, see Chapter B32, "Structures."

## ■ Instructions

### ● STRCT Instruction

Structure macros must have a STRCT instruction at their beginning.

The STRCT instruction declares the types of the arguments (structure type definition tag names) for the structure macro.

```
-----[ STRCT Q1 Structure type definition tag name ]
```

### ● SCALL Instruction

This is the instruction used by a block to call a structure macro.

Specify one structure macro name and two structure names as parameters.

Set the parameters for structure names to zero if they are not required.

## ■ Q Devices

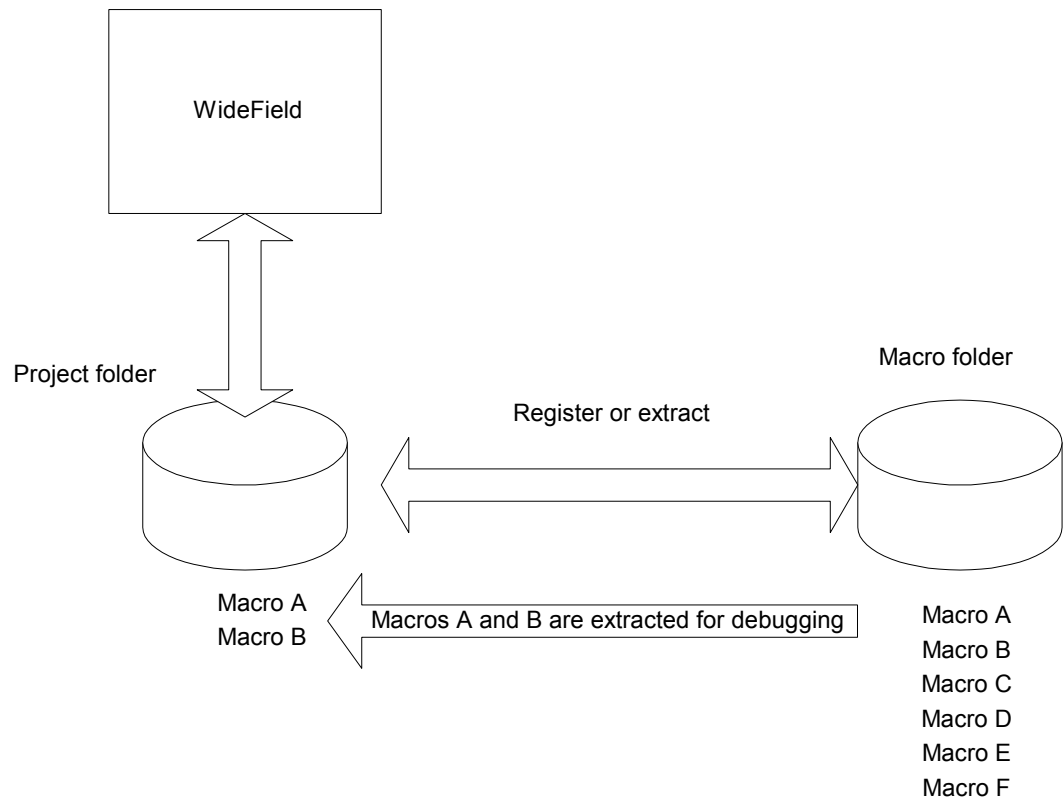
Structure arguments passed from a block are given virtual Q structure type names in a macro.

The Q designation uses the "Q1.<member name>" format, for example, where Q1 is handled like a structure type.

The two Q devices that can be used are Q1 and Q2.

## B28.2 Developing Macros

This section describes how to develop macros. Macros created in a project are registered in a macro folder. You cannot directly edit or debug macro definitions stored in a macro folder. You can think a macro folder as a library where debugged macroinstructions are registered. Normally, you would create and temporarily store macros in a project, retrieve and debug them, and register them in a macro folder when you finished debugging.



B23\_03.VSD

Figure B28.3 Creating Macros

- **Initial setup of macros**  
Specify where macro definitions are to be stored.
- **Creating macros**  
Create macro definitions in a project. Or, retrieve registered macros for debugging.
- **Using macros**  
Insert codes in a block to call a macro created earlier.
- **Transferring macros**  
Transfer macros to the CPU using the project download function.
- **Debugging macros**  
Debug macros from a monitor screen.
- **Registering macros**  
Register macros in the macro folder so that it can be used by other projects.



## B28.2.1 Initial Setup of Macros

Initial setup sets a folder for storing macros. The folder acts like a library where debugged macros are registered and stored. Use the following procedure.

### ◆ Procedure ◆

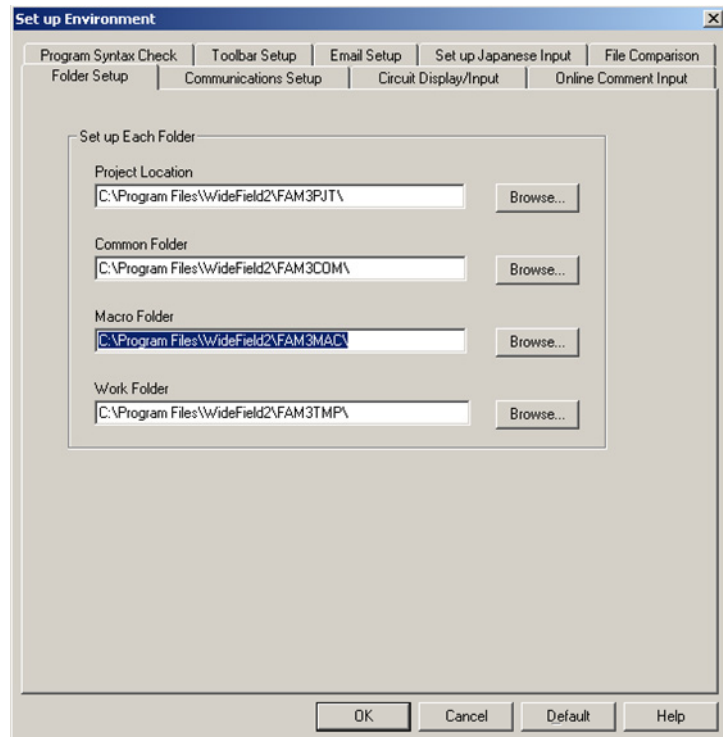
(1) Confirm that WideField2 is open.

(2) Select [Tools]–[Set up Environment] from the menu bar.

⇒ The Set up Environment dialog box is displayed with the Folder Setup tab selected.

(3) Enter a macro folder name in the **Macro Folder** text box, and click [OK].

⇒ The Set up Environment dialog box closes and control returns to WideField2.



Step (3)

B23\_04.VSD

## B28.2.2 Creating Macros

You cannot put macro definitions in an ordinary block. To create a new macro, specify a macro name and enter the macro definition. There are two types of macro definitions: those in a project that are yet to be debugged and those in a macro folder that have already been debugged. Before you can debug and modify macro definitions, you must retrieve them to a project folder.

To create new macros, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the project in which the macro is to be created is open.

#### SEE ALSO

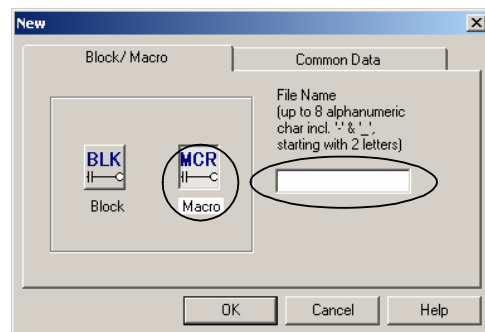
For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [File]–[New] from the menu bar.

⇒ The New dialog box is displayed with the Block/Macro tab selected.

- (3) Click [Macro], enter a new macro file name in the File Name text box, and click [OK].

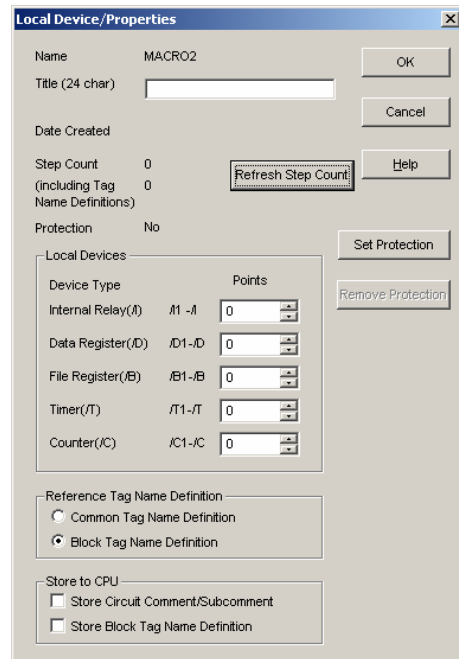
⇒ The Local Device/Properties dialog box is displayed.



Step (3)

B23\_21A.VSD

- (4) Enter an appropriate value for input item on the Local Device/Properties dialog box and click [OK].



The 'Local Device/Properties' dialog box is shown. It contains the following fields and controls:

- Name:** MACRO2
- Title (24 char):** [Empty text box]
- Date Created:** [Empty text box]
- Step Count:** 0
- (Including Tag Name Definitions):** 0
- Protection:** No
- Buttons:** OK, Cancel, Help, Refresh Step Count, Set Protection, Remove Protection.
- Local Devices section:**
  - Device Type:** Internal Relay (A)
  - Points:** A1 -I, 0
  - Data Register (D):** D1 -D, 0
  - File Register (B):** B1 -B, 0
  - Timer (T):** T1 -T, 0
  - Counter (C):** C1 -C, 0
- Reference Tag Name Definition:**
  - ☐ Common Tag Name Definition
  - ☒ Block Tag Name Definition
- Store to CPU:**
  - ☐ Store Circuit Comment/Subcomment
  - ☐ Store Block Tag Name Definition

Step (4)

B23\_22A.VSD

⇒ The Edit Macro window is displayed.

- (5) Create a macro in the Edit Macro window.

### SEE ALSO

For details on how to create macros, see Chapter B3, "Creating and Managing Blocks and Macros."

- (6) Close the Edit Macro window.

⇒ A dialog box is displayed confirming whether to save the macro.

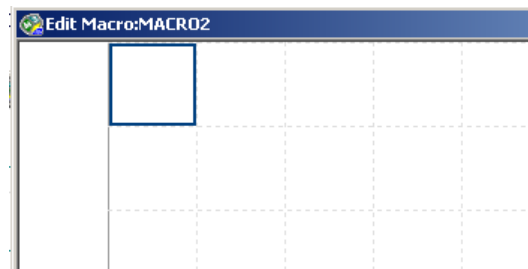
- (7) Click [Yes].

⇒ Control returns to WideField2.



### CAUTION

Macro and block names must be unique.



The 'Edit Macro:MACRO2' window is shown. It features a grid with a blue border around the top-left cell, indicating the current selection or edit area.

Step (4)

B23\_05.VSD

## ■ Retrieving Macros from a Macro Folder

To retrieve macros that are registered in a macro folder, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the project is open.

#### SEE ALSO

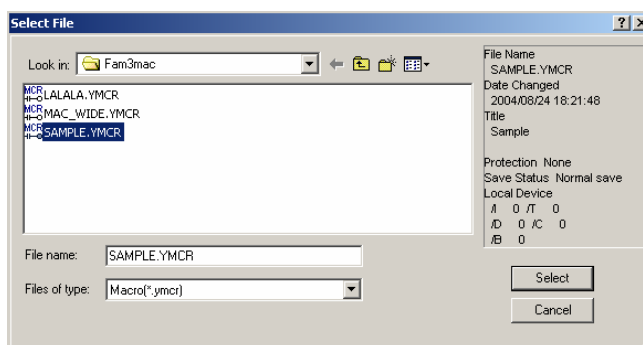
For details on how to open a project, see  
Section B2.2.2, "Opening a Project."

(2) Select [Project]–[Extract Macro] from the menu bar.

⇒ The Select File dialog box is displayed.

(3) Enter in the File Name text box the name of the macro to be retrieved, and click [Select].

⇒ The Edit Macro window opens with the selected macro displayed.



Step (3)

B23\_06.VSD

## ■ Displaying Macro Files Stored in a Project

To open macro files stored in a project, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the project is open.

#### SEE ALSO

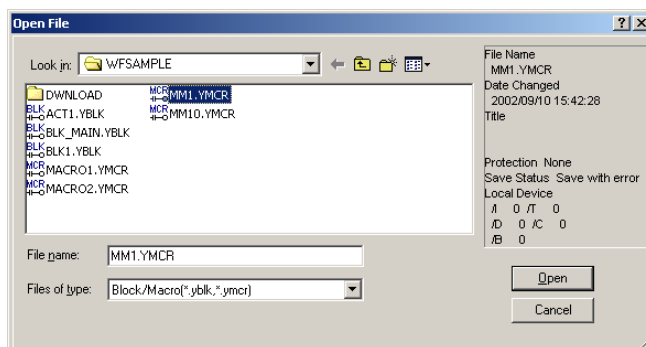
For details on how to open a project, see  
Section B2.2.2, "Opening a Project."

(2) Select [File]–[Open]–[Block/Macro] from the menu bar.

⇒ The Open dialog box is displayed.

(3) Select a macro file by clicking, or enter in the File Name text box the name of the macro file to be opened and click [Open].

⇒ The Edit Macro window opens with the selected macro displayed.



Step (3)

B23\_07.VSD

## ■ Editing Macros

The same functions for editing ladder programs are provided for editing macros. You can edit macros or define tag names using the same procedure as ladder program editing. In macro editing, you can also use macro relays (H), macro registers (A), macro index registers (U), and pointers (P), which are available only for macros.



### CAUTION

You must always put a MRET (macro return) instruction at the end of a macro.

A macro that is called by the Call Input Macro instruction must end with one MRET (macro return) instruction or at least one NMOUT (macro execution result within a macro block) instruction.

### TIP

When the NMOUT (macro execution result within a macro block) instruction is executed, a logical operation result from the execution of an input-type macro instruction is transferred to the next instruction.

## ■ Editing Local Device Setup and Properties for Macros

You can edit macro local device setup and properties, similar to editing with a block, by selecting [Edit]–[Local Device/Properties] from the menu bar.

## B28.2.3 Using Macros

To use a macro, follow the same procedure for entering an application instruction in normal program block editing.

There are two ways to enter a macro instruction: typing and selecting. To input a macro instruction from the keyboard, use the following procedure.

Example

MCALL EXTMOV Parameter 1 Parameter 2 Parameter 3

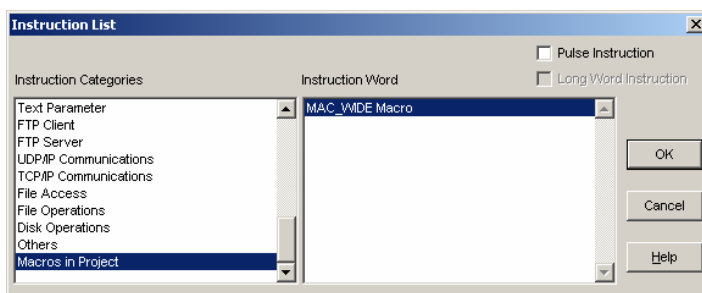
In offline editing, the [Instruction Categories] list box in the Instruction List dialog box includes [Macros in project] and [Macros in macro folder] in its display.

In online editing, the [Instruction Categories] list box in the Instruction List dialog box includes [Macros in CPU] in its display.

Displayed instructions include the following macros:

**Table B28.1 Macro Instructions Displayed in Instruction List**

Instruction categories	Macro Instructions Displayed in Instruction List
Macros in project	Macro instructions created in a project
Macros in macro folder	Macro instructions in the macro folder
Macros in CPU	Macro instructions downloaded to the CPU.



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**Figure B28.4 Instruction List Dialog Box (in offline editing)**

Parameters 1, 2, and 3 are to be set by the calling side. You can use any device. In macro definitions, parameters 1, 2, and 3 correspond to pointers P1, P2, and P3 respectively.

While you can pass up to 16 parameters to a macro definition, you must use the PARA instruction before the MCALL (NCALL) instruction if you intend to pass more than three parameters.

Example

PARA D00001 4

This example uses D1 as the fourth parameter of a macro instruction.

## B28.2.4 Transferring Macros

Macros are transferred by downloading. When an executable program is transferred, the macros used in the program are also transferred automatically. If there are two macros with the same name, one each in the project folder and the macro folder, only the macro in the project folder is transferred.

If an executable program contains macros, in addition to normal errors, the following errors may also occur during program syntax checking or downloading.

### ● Errors

- **Macro not found.**  
A macro definition is not found in a project or macro folder.
- **Number of steps exceeds the maximum limit.**  
When counting the number of steps of a block, the number of steps in macro definitions is also counted.
- **MRET instruction is not at the end**  
A macro must have a MRET instruction at its end.
- **Number of macros exceeds the maximum limit for the model.**  
The maximum number of macro types allowed depends on the CPU type.
- **Global device overlaps local device area**  
If a macro uses macro local devices, they are added behind the setup range for blocks. When using global devices, always take macro local devices into consideration.
- **Invalid local device setting**  
If a macro uses local devices, you must set a start number for the local devices, taking into consideration the number of macro local devices.



### CAUTION

You need not register macros when you develop an executable program.

When an executable program is downloaded to the CPU, macros are automatically linked and downloaded together.

No checking is done for the presence of a macro execution result instruction.

## B28.2.5 Debugging Macros

To monitor or debug macros, you can use the program monitor or device monitor window. You have to open a project before you can debug macros.

To debug macros, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online and a project is open.

#### SEE ALSO

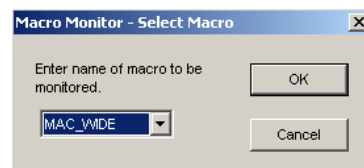
For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

For details on how to open a project, see Section B2.2.2, "Opening a Project."

- (2) Select [Online]–[Macro Monitor] from the menu bar.

⇒ The Macro Monitor - Select Macro dialog box opens with a list of active macros displayed.

- (3) Select a macro to be monitored, and click [OK].



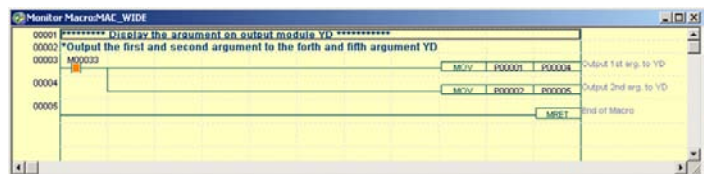
Step (3)

B23\_10.VSD

⇒ The Macro Monitor window for the selected macro is displayed.

#### TIP

If a macro is password-protected, the Password Entry dialog box will appear. In this case, enter a password and click [OK].



Step (3)

B23\_23.VSD

#### TIP

You can open multiple macro monitor windows for different macro types.



### CAUTION

You cannot monitor pointer devices (P) with the macro monitor. Their values are always displayed as zero.



**CAUTION**

If no project is open and no tag name definition/comment is downloaded, or if an open project and a downloaded executable program disagree, the following limitations apply:

- If no project is open and no tag name definition/comment is downloaded  
No tag names or comments will be displayed.  
You cannot save online-edited contents to a file.
- If an open project and a downloaded executable program disagree and no tag names and comments are downloaded to CPU  
Tag names or comments may not be displayed correctly.

## ■ Exiting the Macro Monitor

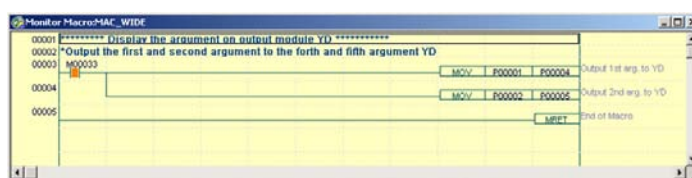
To exit from the macro monitor, select [File]–[Close] from the menu bar while you are in the Macro Monitor window.

## ■ Editing Macro Definitions Online

To edit macro definitions online, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Macro Monitor window is open.
- (2) Select [Debug/Maintenance]–[Start Online Editing] from the menu bar.  
⇒ Edit macro definitions online the same way as with normal blocks.
- (3) When you are finished with editing, select [Debug/Maintenance]–[End Online Editing] from the menu bar.  
⇒ Online editing ends.



Step (3)

B23\_23.VSD

**CAUTION**

Some macro circuits cannot be modified online. To modify such circuits, use offline editing.

**CAUTION**

The MRET instruction and circuits containing the MRET instruction cannot be edited online.



## ■ Monitoring Macro Devices

To monitor macro devices, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that WideField2 is connected online.

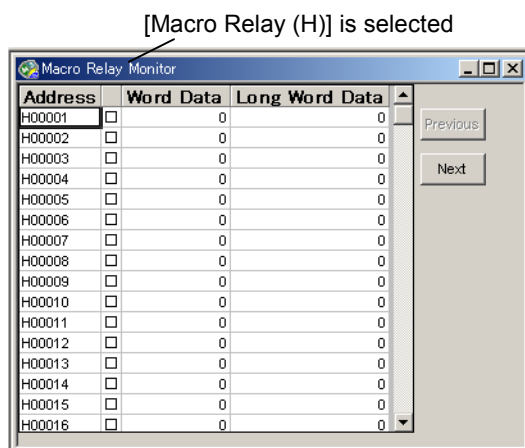
#### SEE ALSO

For details on online connection procedures, see Section B11.1, "Connecting and Disconnecting."

- (2) Select [Online]–[Device Monitor] from the menu bar, followed by either [Macro Relay (H)], [Macro Register (A)], or [Macro Index Register (U)].

⇒ The selected macro device is launched, and the Macro Relay Monitor, Macro Register Monitor, or Macro Index Register Monitor window is displayed.

- (3) When you have finished monitoring, close the window.



Step (2)

B23\_26.VSD



### CAUTION

You cannot monitor pointer devices (P) with the macro monitor. Their values are always displayed as zero.

## B28.2.6 Registering Macros

You can register debugged macros in a macro folder so that they can be used in other projects.

To register a macro, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that a project is open.

#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) Select [Project]–[Register Macro] from the menu bar.

⇒ The Select File dialog box is displayed.

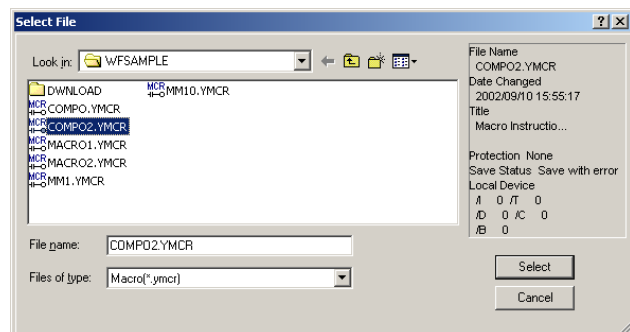
(3) Select a file or enter a file name and click [Select].

#### TIP

If a macro with the same name is already registered in the folder, a dialog box appears to confirm whether you really want to overwrite the existing macro.

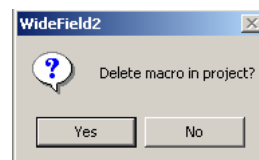
⇒ A dialog is displayed to confirm whether to delete the macro in the project.

(4) Click [Yes] if you want to delete the macro in the project; click [No] if you want to retain the macro in the project.



Step (3)

B23\_12.VSD



Step (4)

B23\_27.VSD

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## B29. Using Local Devices

This chapter describes how to set up and use local devices in programs.

### B29.1 What are Local Devices?

Local devices are independent devices in a block. Unlike normal devices, local devices are used only within a block. Using local devices, you can program highly independent ladder programs without concerning yourself with the allocations of the local devices within the program (You only need to allocate some normal devices to be used as local devices).

The following devices can be used as local devices

- Internal relay (I)
- Data register (D)
- File register (B)
- Timer (T) (only timers with 10 ms precision)
- Counter (C)

Local devices use a different addressing notation from normal devices. Local devices are prefixed with a slash (/) before their address number.

#### Notation Examples

/I00001	Local internal relay
/D00001	Local data register
/B00001	Local file register
/T00001	Local timer
/C00001	Local counter

Address numbers of local devices are taken as consecutive numbers, starting with 1 and continuing for the quantity set up for each block. For example, if 32 internal relays (I) are designated as local devices, then the addresses of the devices will be /I00001 to /I00032.

Local devices offer the following merits:

- Allocations of local devices are transparent to the user throughout the entire program.  
Without local devices, a global change in device allocation in a program requires you to change device allocations of each block. With local devices, global device allocations are transparent to each block.
- Facilities reuse of blocks in other projects.  
Program codes involving local devices need not be modified when used in other projects.

## B29.2 Setting Local Devices

Setting up local devices involves setting up 2 items: firstly, the number of local devices to be used in each block and secondly, the location for allocating all local devices in a project.

The figure below illustrates how local devices for each block is allocated. In this setup example, blocks 1, 2, and 3 use 32, 64, and 96 internal relays (I) as local devices respectively; allocated starting with device number I00321.

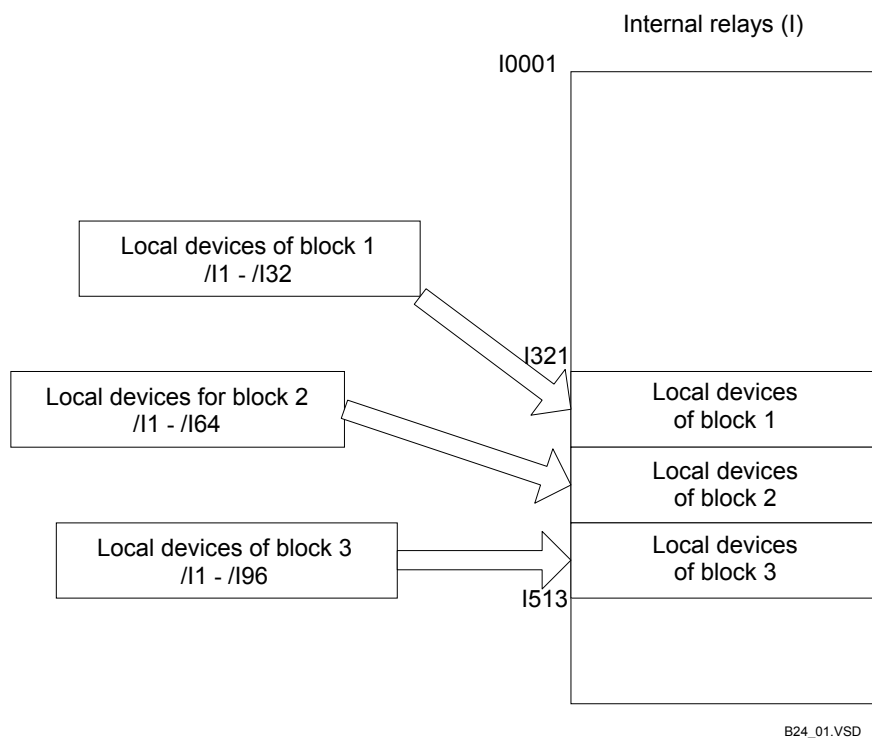


Figure B29.1 Allocation of Local Devices

Table B29.1 Example for Allocation of Local Devices

Block	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

## B29.2.1 Block Setup for Local Devices

To perform local devices setup for each block, use the following procedure.

### ◆ Procedure ◆

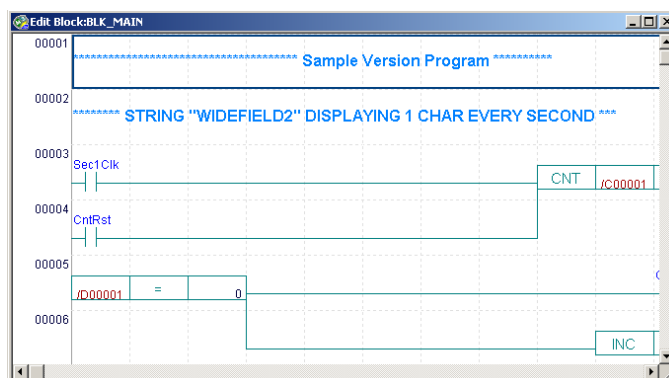
- (1) Confirm that the Edit Block window is displayed.

#### SEE ALSO

For details on how to display the Edit Block window, see B3, "Creating and Managing Blocks and Macros."

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

⇒ The Local Device/Properties dialog box opens.



Step (1)

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- (3) Specify the number of local devices for each device type, and click [OK].

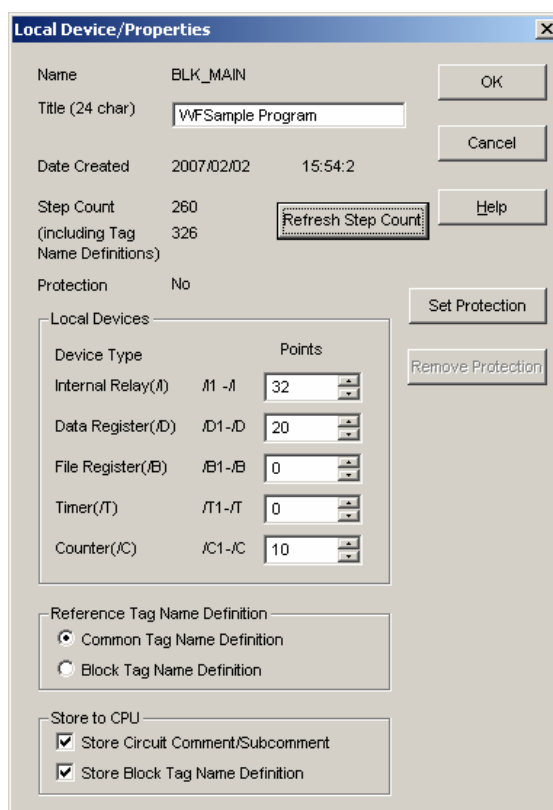
#### TIP

In this setup example, the following local devices are to be used in blocks.

Internal relay /I1 to /I32  
Data register /D1 to /D10  
File register /B1 to /B10  
Timer /T1 to /T10  
Counter /C1 to /C10

Set the quantity for the local devices in units of 32 for internal relays, units of 2 for data registers and file registers, units of 1 for timers and counters.

⇒ Control returns to the Edit Block window.



Step (3)

B24\_02A.VSD

## B29.2.2 Project Setup for Local Devices

To perform local device setup for a project, use the following procedure.

### ◆ Procedure ◆

(1) Ensure that the project is open.

#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) Select [Project]–[Configuration] from the menu bar.

⇒ The Configuration dialog box opens.

(3) Click the Power Failure/Local tab.

(4) Set the starting number for each local device type.

#### TIP

The numbers in the Number of Devices Currently Registered column indicate the total number of registered local devices used in all blocks in the project. You should refer to the total number displayed and set the starting numbers so that the device allocations are within allowable range.

(5) Click [OK].

Device Type	Starting Number	Points	Setup Range	Available Setup Range
Internal Relay(I)	1	1024	I00001 - I01024	I00001 - I32768
100us Timer	0	0	-	-
1ms Timer	0	0	-	-
10ms Timer	0	0	-	T00001 - T01024
100ms Timer	0	0	-	T01025 - T01920
100ms Continuous Counter(C)	1921	128	T01921 - T02048	T01921 - T02048
Shared Relay(E)	1	1024	C00001 - C01024	C00001 - C01024
Link Relay(L)	0	0	-	L00001 - L72048
Data Register(D)	1	32768	D00001 - D32768	D00001 - D32768
Shared Register(R)	0	0	-	-
Link Register(W)	0	0	-	W00001 - W72048

Local Devices	Starting Number	Number of Devices Currently Registered	Setup Range	Available Setup Range
Internal Relay(I)	32001	32	I32001 - I32032	I00001 - I32768
Data Register(D)	32001	20	D32001 - D32020	D00001 - D32768
File Register(F)	0	0	-	F00001 - F262144
Timer(T)	0	0	-	T00001 - T01024
Counter(C)	1001	10	C01001 - C01010	C00001 - C01024

Steps (3) to (5)

B24\_03.VSD



### CAUTION

- Before using local devices, you must turn on the Setup option button in the Configuration group box in the Define Program Components dialog box. Otherwise, you will not be able to use local devices.
- Note that the total number of local devices displayed in the configuration does not include macro local devices. Therefore, when you set a starting device number, consider the number of macro local devices currently used so that the device range will not be exceeded.

#### SEE ALSO

For details on the Define Program Components dialog box, see Section B7.1.1, "Defining Components of an Executable Program."



## B29.3 Programming with Local Devices

Local devices are used in exactly the same way as normal devices. All instructions that can use internal relays (I), data registers (D), file registers (B), timers (T), and counters (C) can also use local devices.

The only difference in programming between normal and local devices is that the address of a local device is prefixed with a slash (/).

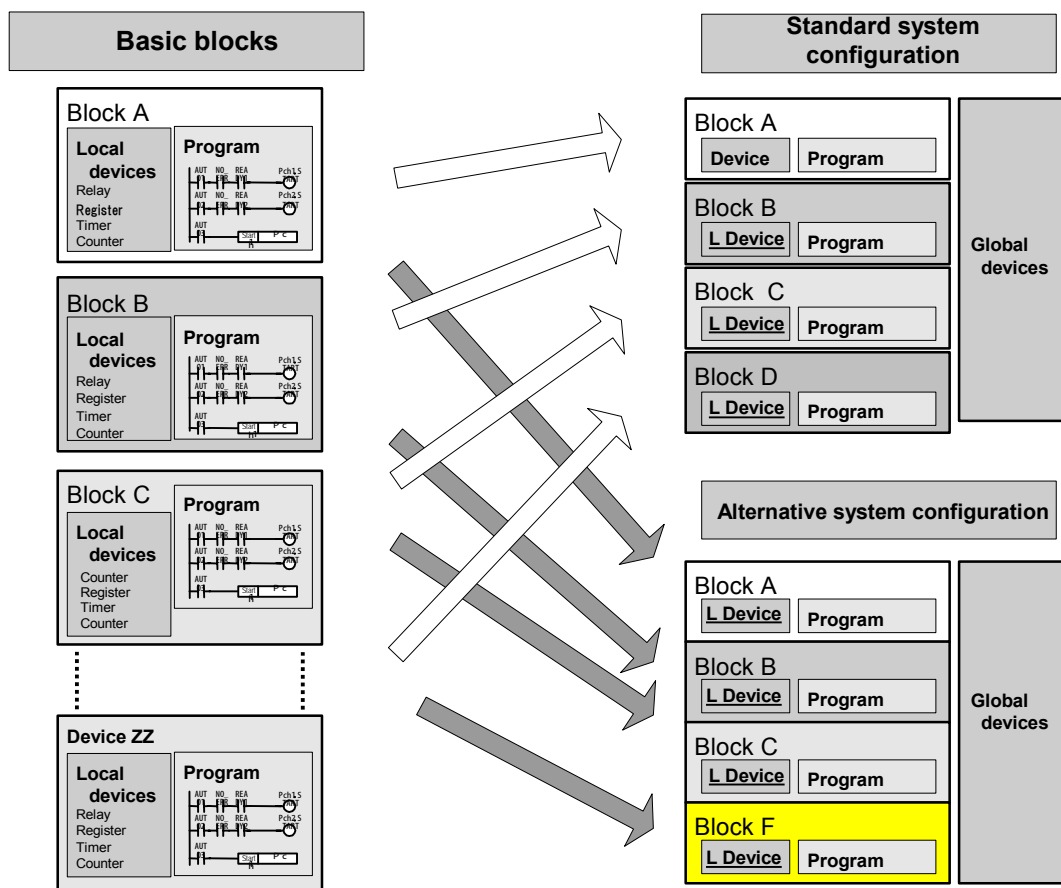
Devices allocated to local devices are displayed with a different color.



Figure B29.2 A Sample Program Using Local Devices

## B29.4 Reusing Programs Containing Local Devices

In cases where you need to modify part of a standard program, as is often required in customizing design for a piece of equipment, using local devices in the initial program development will facilitate program reuse because you would not need to reallocate devices.



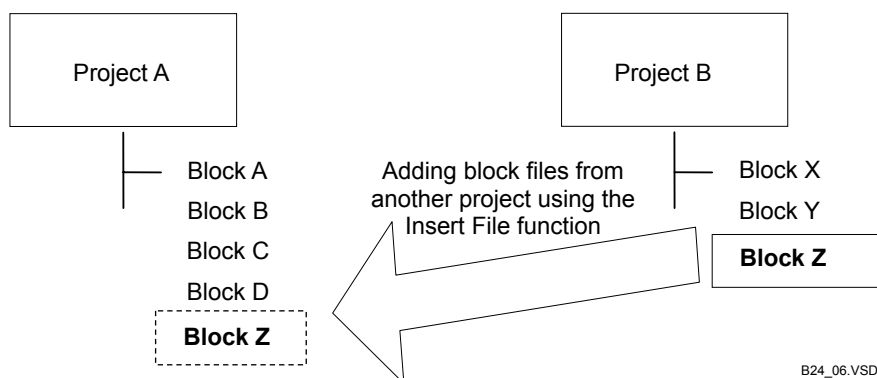
B24\_05.VSD

Figure B29.3 Reusing Blocks Using Local Devices

Next, we will explain how to add customized blocks.

## B29.4.1 Reusing Blocks

When you use blocks in another project, you do not have to modify codes for local devices because they will not conflict with devices of other blocks. You may have to modify codes involving normal devices before reusing the blocks. You can make use of the Replace in Projection function or Change I/O Installation Position function to make batch changes.



**Figure B29.4 Adding a Block from Project B to Project A**

To reuse blocks, use the following procedure.

### ◆ Procedure ◆

#### (1) Open a new project.

##### SEE ALSO

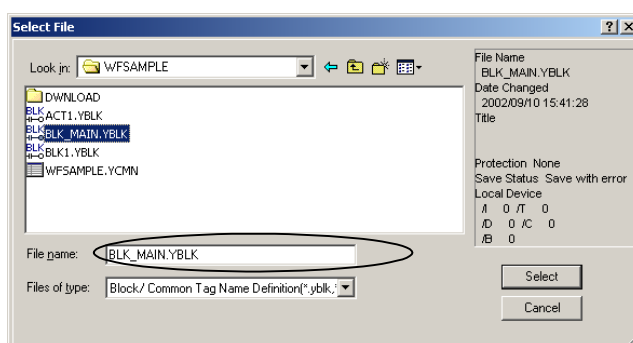
For details on how to open a project, see Section B2.2.2, "Opening a Project."

#### (2) Select [Project]–[Insert File] from the menu bar.

⇒ The Select File dialog box is displayed.

#### (3) Enter in the File Name text box the file name of the block to be reused, and click [Select].

⇒ The specified block is added to the new project.



**Step (3)**

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## B29.4.2 Project Setup

To set up the project, use the following procedure.

### ◆ Procedure ◆

#### (1) Add blocks to be reused.

##### SEE ALSO

For details on how to add blocks to be reused, see Section B29.4.1, "Reusing Blocks."

#### (2) Select [Project]–[Define Program Components] from the menu bar.

⇒ The Define Program Components dialog box is displayed.

#### (3) On the right list box (list of blocks) of the Component Blocks group box, click the blocks to be reused, and then click [← Select].

⇒ The selected blocks are moved to the left list box.

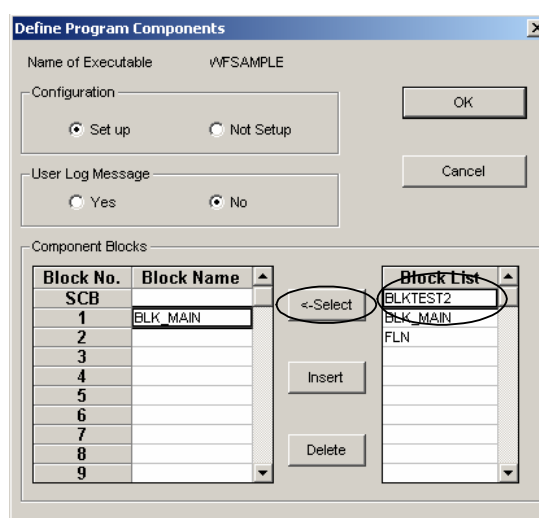
#### (4) Click [OK].

⇒ The selected blocks are added as component blocks.

#### (5) Specify a starting number for the local devices.

##### SEE ALSO

For details on how to set the starting number for local devices, see Section B29.2.2, "Project Setup for Local Devices."



Steps (3) and (4)

B24\_13.VSD

## B30. Using Group Tag Names

Tag names can be grouped into a single group tag name to be used like a data structure. Group tag names allow data relationship, structure and clustering to be easily understood at a glance. This function is especially useful when there are groups of data with the same components.

By standardizing the names of group members, group tag names also help in program standardization.

## B30.1 Defining Group Tag Names

This section explains how to assign group tag names, using a multi-axis positioning module as an example.

Group tag names are implemented by defining the component members of a group (group template definition) and assigning a group name to the component members (read group name).

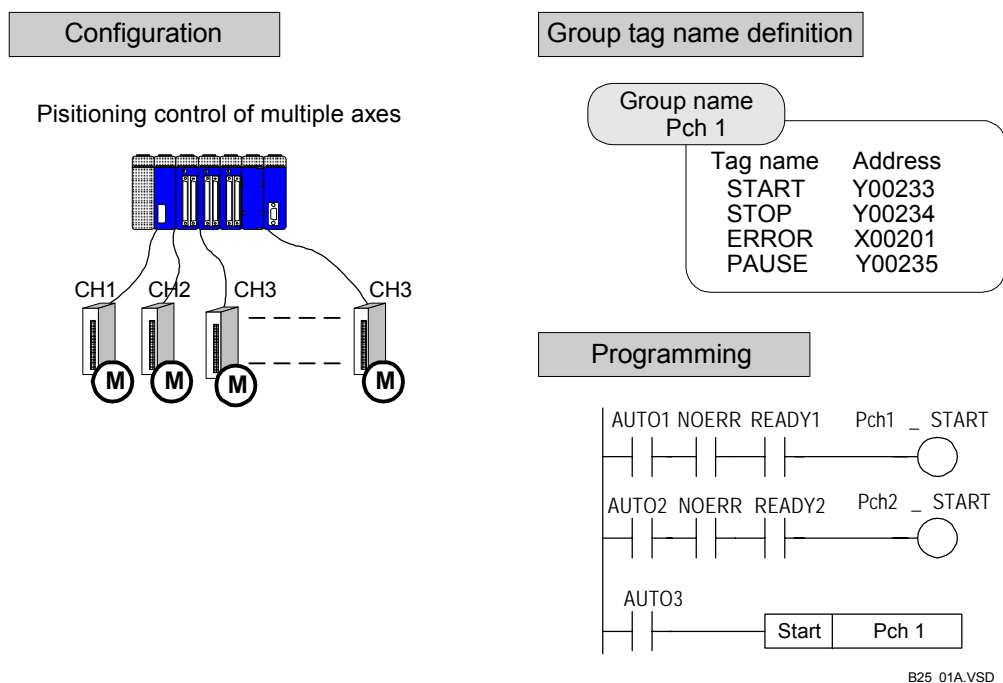


Figure B30.1 Defining Group Tag Names

### ■ Defining the Component Members of a Group

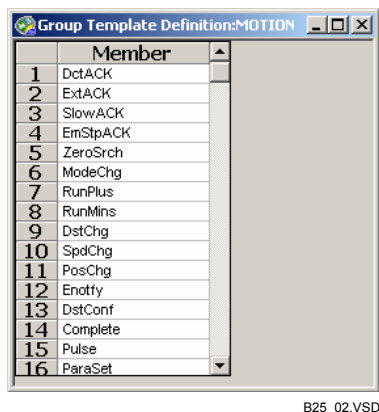
For example, the F3NC52-0N module has its I/O relays defined as shown in the table below. The module is capable of controlling two axes, with similar relays defined for each axis.

In the table below, X□□□01 and X□□□17 are input relays for Operation Instruction ACK for axes 1 and 2 respectively.

Table B30.1 Definition of Input Relays (X) of the F3NC52-0N Positioning Module

Input relay number		Operation when ON
AX1 (axis 1)	AX2 (axis 2)	
X□□□01	X□□□17	Start Operation Instruction ACK
X□□□02	X□□□18	Extended Command ACK
X□□□03	X□□□19	Decelerate and Stop ACK
X□□□04	X□□□20	Stop Immediately ACK
X□□□05	X□□□21	End of Origin Search
X□□□06	X□□□22	Switch Control Mode ACK
X□□□07	X□□□23	Operating in Positive Direction
X□□□08	X□□□24	Operating in Negative Direction
X□□□09	X□□□25	Change Target Position ACK
X□□□10	X□□□26	Change Speed ACK
X□□□11	X□□□27	Write Current position ACK
X□□□12	X□□□28	Error notification
X□□□13	X□□□29	Specified Position Detected Notification
X□□□14	X□□□30	End of Positioning
X□□□15	X□□□31	End of Pulse Output
X□□□16	X□□□32	Set Parameters ACK

In this example, a group template for the input relays (X) is defined as follows. The name of the group template is "MOTION."



**Figure B30.2 Group Template Definition Window**

Using this group template definition, for example, you can represent all Start Operation Instruction ACK terminals (X□□□01 and X□□□17) with a single member name DctACK.

### SEE ALSO

For details on how to create group templates, see Section B5.5.1, "Creating Group Templates."

## ■ Assigning Group Names

You can open the Block Tag Name Definition window to define group tag names for axes 1 and 2. To do this, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Block Tag Name Definition window is open.

#### SEE ALSO

For details on how to display the Block Tag Name Definition window, see Section B5.2.1, "Basic Operations for Editing Tag Name Definition."

- (2) Select [View]–[Display Format]–[Address List] from the menu bar.
- (3) Select [View]–[Display Device]–[Input Relay (X)] from the menu bar.

#### TIP

In this example, we assume that the module is mounted in slot 2.

Tag Name	Address	I/O Comment (32 char)
	M00034	Always Off
	M00035	Enable 1 scan at operation start
	M00036	0.01 s clock
	M00037	0.02 s clock
	M00038	0.1 s clock
	M00039	0.2 s clock
	M00040	1 s clock
OneSecClik	M00041	2 s clock
	M00042	1 min clock
	M00066	No error in transmission Sub Unit
	M00129	Run mode flag
	M00130	Debug mode flag
	M00131	Stop mode flag
	M00132	Suspend flag
	M00133	Execution flag
	M00134	Remote/local flag
	M00135	Run-from-ROM/RAM flag
	M00136	Run-at-power-on flag
	M00172	Set clock time
	M00173	Input-offline flag
	M00174	Output-offline flag
	M00175	Shared-I/O-offline flag
	M00176	Link-I/O-offline flag
	M00188	Carry flag
	M00193	Self-diagnosis error

Step (1)

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- (4) Click the address row (i.e., X00201) to be defined, and select **[Functions]–[Read Group]** from the menu bar.

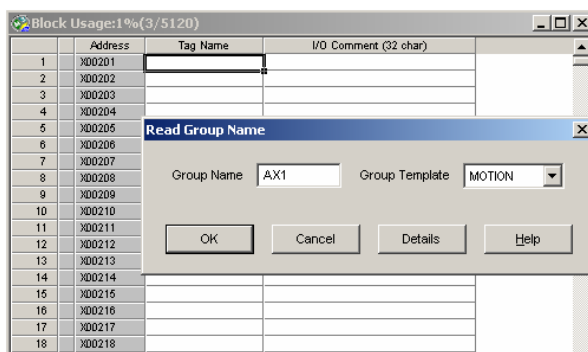
⇒ The Read Group Name dialog box is displayed.

- (5) Select a group template (i.e., **MOTION**), enter a group name (i.e., **AX1**) in the Group Name text box, and click **[OK]**.

### SEE ALSO

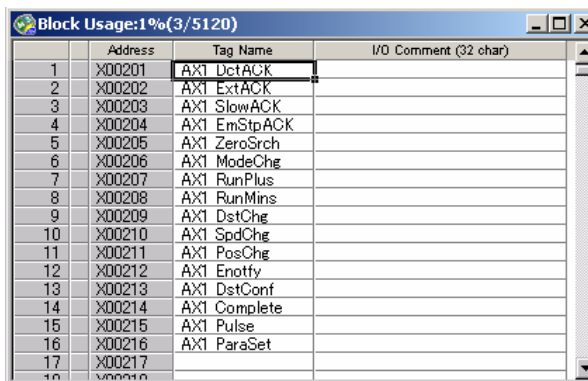
For details on how to create group templates, see Section B5.5.1, "Creating Group Templates."

⇒ Control returns to the Block Tag Name Definition window. Devices X00201–X00216 are assigned tag names in the form of "AX1\_<member name>".



Steps (4) and (5)

B25\_03\_1.VSD



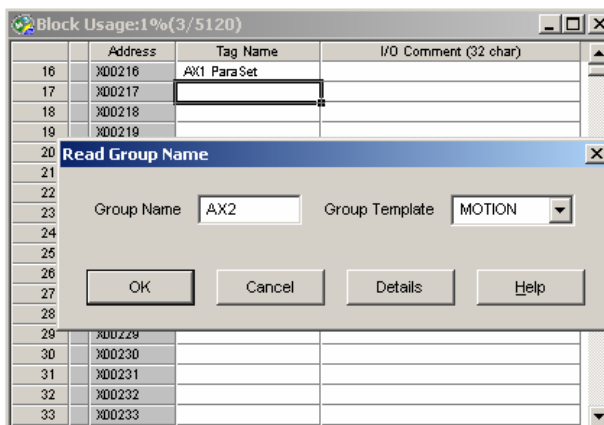
Step (5)

B25\_03\_2.VSD

- (6) Click the next address row to be defined (i.e., X00217), and select **[Functions]–[Read Group]** from the menu bar.

⇒ The Read Group Name dialog box is displayed.

- (7) Select the same group template (i.e., **MOTION**), enter another group name (i.e., **AX2**) in the Group Name text box, and click **[OK]**.



Steps (6) and (7)

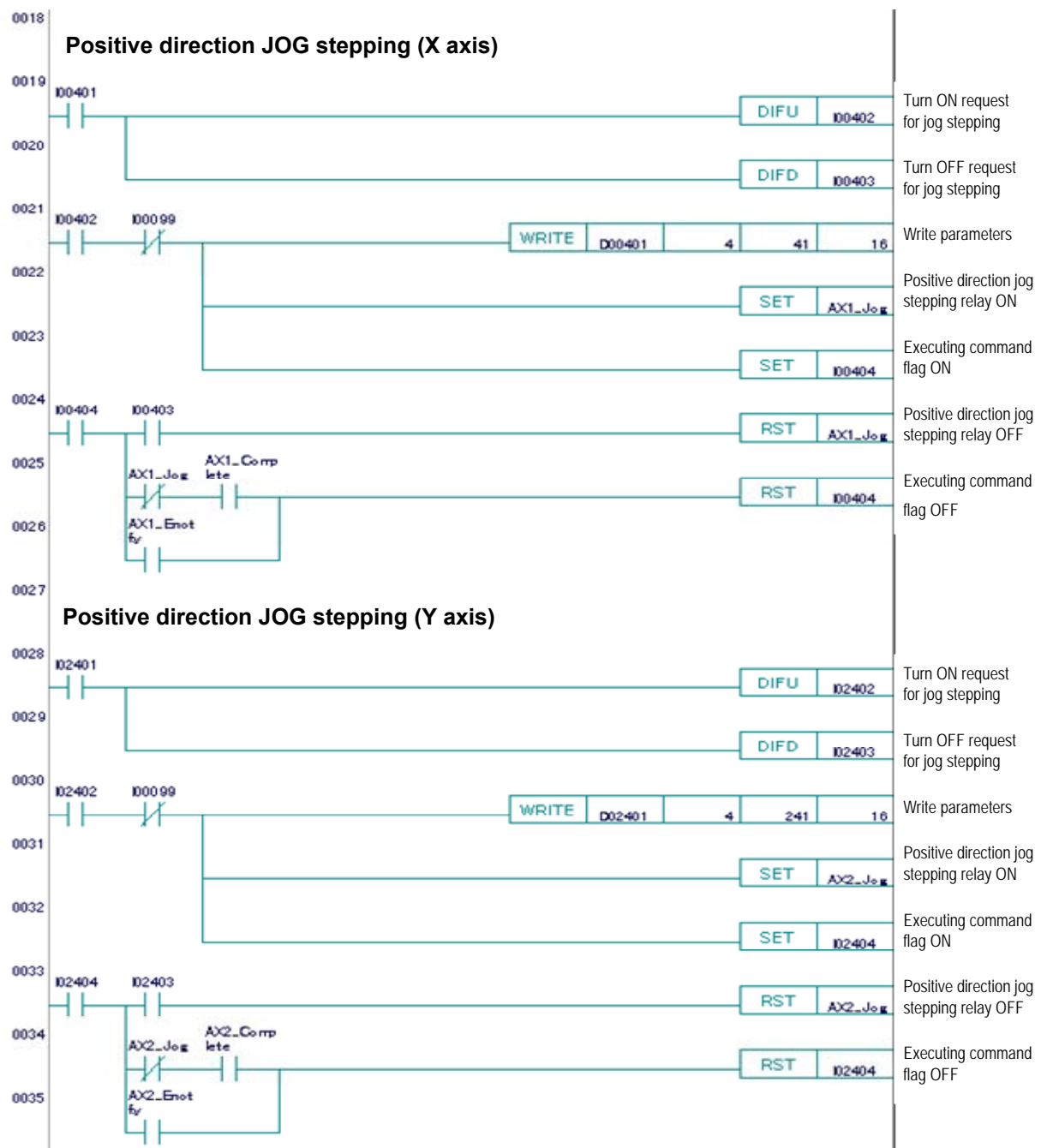
B25\_03\_3.VSD



⇒ Control returns to the Block Tag Name Definition window. Devices X00217-X00232 are assigned tag names in the form of "AX2\_<member name>". This concludes the assignment of group tag names. As each device is assigned a tag name in the form of "group name + member name" (e.g. device X201 assigned with tag name AX1\_DctACK and device X271 assigned with tag name AX2\_DctACK), it is easy to see the corresponding axis and signal function.

## B30.2 Programming Using Group Tag Names

The following sample program uses group tag names defined in Section B30.1.



B25\_07A.VSD

Figure B30.3 Sample Program Using Group Tag Names

In this example, the same circuit pattern is repeated for the X and Y axes. Reading the program, you will notice that you can understand the meaning of devices (and their signals) represented using tag name more easily than the devices represented using address numbers.

Group templates eliminate the need to define every signal individually. In addition, if you define group templates systematically, you can standardize naming conventions and improve program readability.

While the above example is for a 2-axis positioning module, tag name definition using group templates is especially useful for a module with many channels or a system using a number of identical modules.

---

## B31. Storing Comments and Tag Name Definitions

Circuit comments, subcomments, and tag name definitions you have edited with WideField2 can be stored to the CPU of the FA-M3.



### CAUTION

- 
- This function is only available with certain CPU types (F3SP□□-□S).
  - If the CPU is installed with a ROM pack with larger capacity than the CPU RAM and a project is too large to be stored in the RAM, the tag name definitions are automatically transferred to the ROM. In this case, the RAM will store the project less the tag name definitions. While, as seen from WideField2, the whole project can be handled as if it is stored normally, you must be careful when you manipulate the RAM directly.
- 

### SEE ALSO

- 
- For details on how to use the ROM, see Chapter B24, "Operating the ROM."
  - For details on how to store structure information to the CPU, see Chapter B32, "Structures."
-

## B31.1 Setup for Storing Comments

### B31.1.1 Setup for Circuit Comments, Subcomments, and Block Tag Name Definitions

You can select whether to store the circuit comments, subcomments, and block tag name definitions of an individual block to the CPU. To do this, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that the Edit Block window is open.

##### SEE ALSO

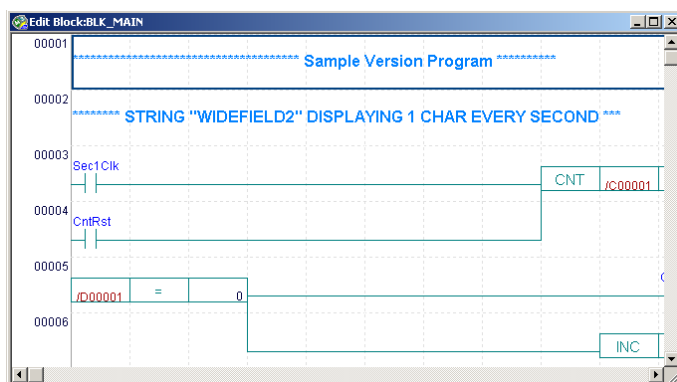
For details on how to open the Edit Block window, see Chapter B3, "Creating and Managing Blocks and Macros."

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

⇒ The Local Device/Properties window is displayed.

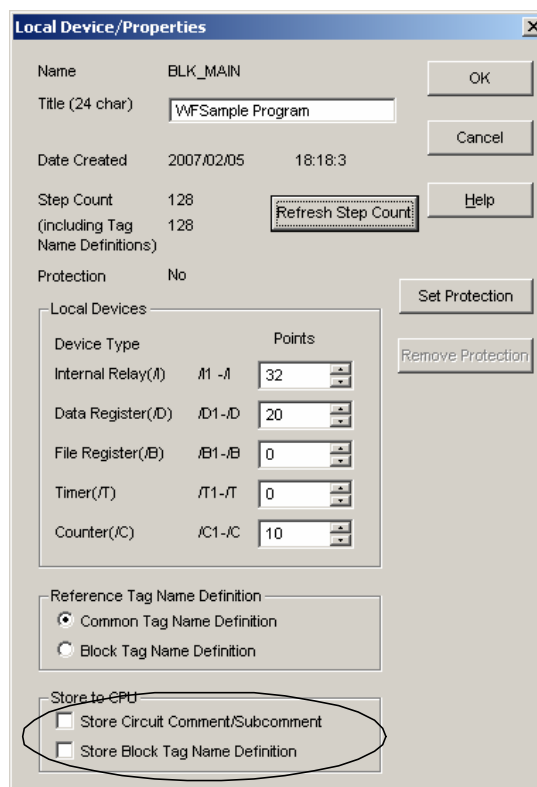
- (3) Turn on checkboxes in the Store to CPU group box for categories to be stored to the CPU, and click [OK].

⇒ The Local Device/Properties window closes.



Step (1)

B26\_01.VSD



Step (3)

B26\_02.VSD

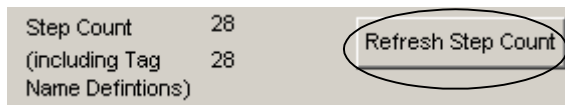
**TIP**

If you set in the Local Device/Properties window to store comments and tag name definitions of a block to the CPU, the total step count for all blocks will also change.

To check the current step count, click [Refresh Step Count].

The number of steps as displayed is calculated as follows:

- Step count = number of ladder steps + number of comment steps
- (Including Tag Name Definitions) = number of ladder steps + number of comment steps + number of tag name definitions

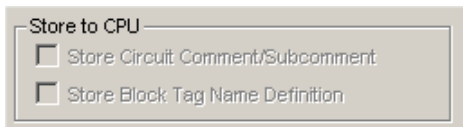


B26\_03.VSD

**Figure B31.1 Step Count Calculation**

You can setup the items to be stored to the CPU for each block.

If the CPU selected in the project is not capable of storing comments or block tag name definitions, the Store to CPU group box appears as follows:



B26\_04.VSD

**Figure B31.2 When Comments and Block Tag Name Definitions cannot be stored to CPU**

## B31.1.2 Setup for Common Tag Name Definitions

You can specify whether you want to store the common tag name definitions of a project to the CPU. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that a project is open.

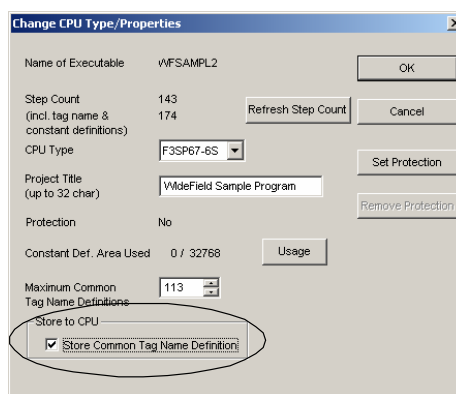
#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Open Project."

(2) Select [Project]–[Change CPU Type/Properties] from the menu bar.

⇒ The Change CPU Type/Properties dialog box is displayed.

**(3) Check the Store Common Tag Name Definition checkbox, and click [OK].**



Step (3)

B26\_05.VSD

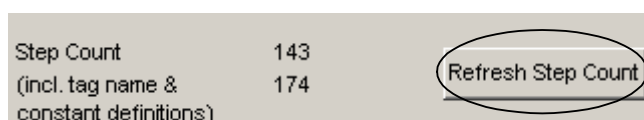
### TIP

If you set in the Local Device/Properties window so that the common tag name definitions will be stored to the CPU, the total number of steps for the whole blocks will also change.

To check for the current number of steps, click [Refresh Step Count].

The number of steps as displayed is calculated as follows:

- Number of steps = number of ladder steps + number of comment steps
- (Including Tag Name Definitions) = number of ladder steps + number of comment steps + number of tag name definition steps + number of constant definition steps



B26\_06.VSD

**Figure B31.3 Step Count Calculation**

The number of constant definition steps is the size of used constant definition data after compression, and varies with the actual definitions.



### CAUTION

When comments and tag name definitions are stored to the CPU, the total step count will change accordingly. Therefore, when you store comments and tag name definitions to the CPU, pay attention to the maximum number of steps allowed for each CPU type.

**Table B31.1 Step Count Calculation**

Categories	Step count calculation (in units of steps)
Circuit comment	When stored to CPU: 1 + Number of valid bytes/4
	When not stored to CPU: 1
Subcomment	When stored to CPU: 1 + Number of valid bytes/4
	When not stored to CPU: 1
Tag name definition	When stored to CPU: 0 + Byte size of compressed data/4
	When not stored to CPU: 0

Note: Number of valid bytes refers to the number of bytes for the characters of a comment.



### CAUTION

For a CPU module that supports constant definition, an empty area of about 31 steps is reserved even no constant definition is used within a project.

## B31.2 Online Operations

Online operations allow you to download and upload comments and tag name definitions (stored in the CPU of FA-M3) just like ordinary ladder programs.

### SEE ALSO

For details on project online functions, see Chapter B12, "Downloading;" Chapter B13, "Uploading;" and Chapter B14, "Comparing File and CPU."



### CAUTION

If the CPU type specified for a project does not support storage of comments or block tag name definitions, these online operations cannot be used.

### B31.2.1 Downloading

To download comments and tag name definitions to the CPU, use the following procedure.

#### ◆ Procedure ◆

(1) Confirm that a project is open.

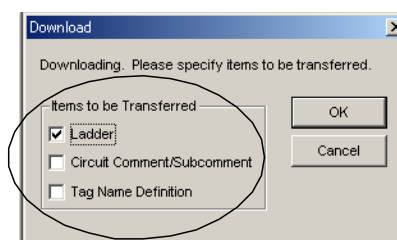
#### SEE ALSO

For details on how to open a project, see Section B2.2.2, "Opening a Project."

(2) Select [Online]–[Download]–[Project], or [Online]–[Download]–[Block/Macro] from the menu bar.

⇒ The Download dialog box is displayed.

(3) In the [Items to be Transferred] group box, turn on checkboxes for items to be transferred, and click [OK].



Step (3)

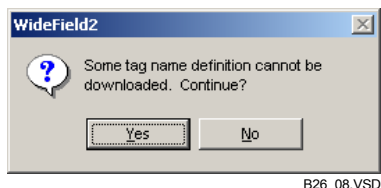
B26\_07.VSD

---

**TIP**

If you have selected [Download]–[Block/Macro] earlier from the menu bar and the destination for downloaded block/macro tag name definitions is set in the ROM, the following dialog box is displayed.

This dialog box is not displayed if you have selected [Download]–[Project] earlier.



**Figure B31.4 Partial Download Confirmation Dialog Box**

Clicking [Yes] starts the downloading process.

Clicking [No] displays the Select Block/Macro dialog box.

---

## B31.2.2 Uploading

If comments and tag name definitions are stored in the CPU, they are also uploaded automatically together with the adder programs.

## B31.2.3 Comparing

You can compare the comments and tag name definitions stored in a CPU with those set in the project currently open in WideField2.

---

**TIP**

Tag name definition comparison is performed only for tag name definitions stored in the CPU.

---

## B31.2.4 Online Editing

If the Local Device/Properties dialog box has been set to store comments or tag name definitions to the CPU, you can edit circuit comments and subcomments online.

---

**TIP**

Selecting [Edit]–[Convert] from the menu bar reflects program modifications on the CPU.

---



---

## B32. Structures

This chapter describes WideField2 structures.

### TIP

---

This chapter covers all aspects in the use of WideField2 structures.

---

### ■ What Is a Structure?

A structure is a group of data represented under a unified name.

Grouping data into a structure improves device representation and readability.

While you can define individual tag names to devices required to implement a particular function, you can also assign a single structure name to a group of devices and represent individual data within the mechanism of the structure as members of the structure.

The FA-M3 provides instructions and macros, which support structure parameters.

## ■ Structure Implementation Example

The figure below shows a structure implementation example using a matrix.

In this example, a program is to be created for several sets of inspection data, each consisting of four data items.

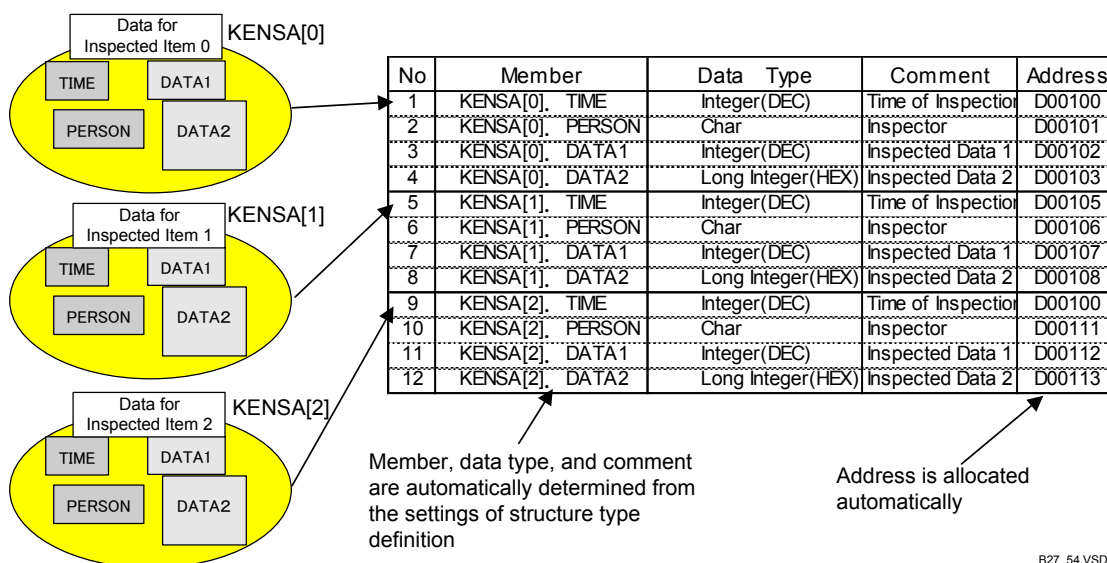


Figure B32.1 Structure Implementation Example

## ● Data Simplification and Processing Using Structures

In the above example, you can represent multiple inspection data items with a single structure named "KENSA" to simplify data representation. Each structure contains four data items as members under a single name KENSA. The program uses the format "KENSA[<array number>].TIME" to represent a particular TIME data item and can thus refer to all TIME data items by simply incrementing the array number. This approach simplifies the program and improves program readability.

## ● Using Structures with WideField2

To use a structure, you must first define the structure type using WideField2. In the above example, set the 4 inspection data as structure members, each with its own data type and comment, to create the structure type.

Next, define the structure objects in the project. You can use a structure in a program only after defining a structure object, which includes defining a structure name and an array, and assigning a starting address.

## ■ Structure Related Functions

Structures are implemented using all the WideField2 functions. However, you will mainly use the following functions to create and debug structures.

### ● Editing Functions

- Block edit
- Tag name definition (structure object definition)
- Structure type definition
- Macro-related functions

### ● Debugging Functions

- Block monitor
- Registered device monitor



### CAUTION

---

F3SP□□-□S CPUs support all structure-related functions.

---

### SEE ALSO

---

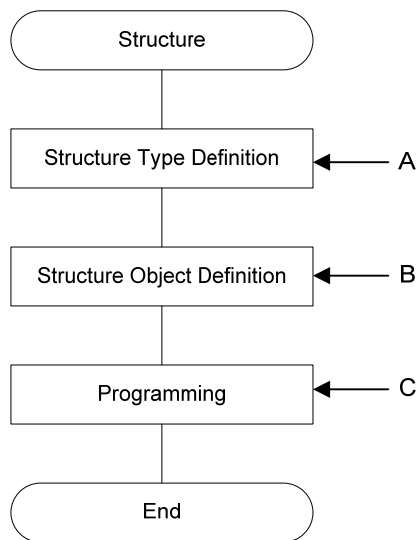
For details on CPU type limitations, see Chapter B11, "Overview of Online Functions."

---

## B32.1 Overview of Structures

### B32.1.1 Using Structures in WideField2

This Section describes how to write programs using structures. The flowchart below illustrates the relevant procedure.



B27\_01.VSD

**Figure B32.2 Programming Using Structures**

- A Create a structure type definition file for an arbitrary structure name in the Structure Type Definition window.

In the Structure Type Definition window, create a structure type by entering the structure members and their data types and I/O comments. The structure type definition file is saved in the common folder.

- B Open a project for the program, followed by a block tag name definition or common tag name definition file. Next, define structure objects in the Structure Object Definition dialog box.

In the Structure Object Definition dialog box, first set a structure name. Then, set the structure name to refer to a structure type definition created earlier. You can now use the structure type in the ladder diagram edit window.

#### TIP

Before you can use tag names in program editing, you must establish the relationship between a tag name and its address using tag name definition. Likewise, before you can use a structure in program editing, you must first specify a structure name and its structure type definition

- C Enter structure parameters in the Edit Block window.

## B32.1.2 Structure-related Limitations

The following restrictions apply to use of structures.

**Table B32.1 Structure Specifications**

Item	Parameter	Limitation
Compatible CPUs		F3SP□□-□S only
Structure character string	Structure name	Up to 7 alphanumeric characters, beginning with 2 letters. The hyphen ("-") and underscore ("_") special characters can be used for the third and subsequent characters.
	Structure member	1 to 8 alphanumeric characters, including the hyphen ("-") and underscore ("_") special characters.
	Separator	The period (".") mark is used as the separator between a structure name and a structure member name.
Structure member	Number of structure members	Up to 2048 members. Up to 2048 devices may be used for each device type. (A long-word member uses two devices. If only register devices are used, up to 2048 are allowed. This limitation applies to each device type, regardless of members of other device types.)
Structure array	Number of arrays	32,767 maximum
	Array parameter and array specification	Limitations vary with instructions: <ul style="list-style-type: none"> <li>■ For instructions requiring structure name parameters (STMOV instruction) Only index registers, macro index registers or decimal arrays can be specified. Examples:            - [STMOV kozo[1], kozo2]            - [STMOV kozo[V01], kozo2]</li> <li>■ For instructions requiring structure member parameters (except for STMOV instruction) Only decimal arrays can be specified.</li> <li>■ For instructions requiring non-array parameters Arrays may not be used with Q1 or Q2 structure macros.</li> </ul>
	Array number	0 to 32766 (except for STMOV instruction) 0 to 2047 (for STMOV instruction)
Index modifier	Structure member index modification	Not allowed (e.g. "structure. member; V01" is invalid)
Structure macro	Structure argument	Up to two arguments
	Structure name representation	When structures are passed as macro arguments, assign structure names "Q1" and "Q2". Structure names are represented as Q1 and Q2; members are represented as "Q1.AAA".
	Macro nesting	A macro cannot call a structure macro. A macro must not contain a SCALL instruction.
I/O comment		Up to 32 characters
Number of steps	If structure members are used	The number of steps is calculated the same way as for constant indexing.

## B32.2 Defining Structure Types

### B32.2.1 What Is a Structure Type Definition?

A structure type definition is a definition file defining the members of a structure and their data types under a single structure name.

In a structure type definition, you define a structure type definition name, the members of the structure, as well as the data types and I/O comments of the members.

Structure types created using structure type definition are used as data types to declare structure objects in structure object definition. A structure type definition file is required to define structure objects.

A structure type definition consists of the following components.

#### ● Structure Type Definition File Management

A structure type definition file has a file name extension of ".YGRS."

Structure type definition files are stored and managed in the common folder, together with group templates.

#### ● Structure Type Definition Name

A structure type definition name is a name assigned to a group of structure members.

It is used as the name of the structure type definition file.

This same structure type definition name is also used in structure object definitions.

#### ● Member

A member is a constituent unit (range of devices) of a structure.

#### ● Data type

Each member has a data type. Members are allocated different types of devices according to their data types.

Each member must be assigned a data type.

**Table B32.2 Structure Data Type**

Data Type	Device Type	Remarks
Relay	Relay device	—
Integer (DEC)	Register device	Displays as decimal in the registered device monitor.
Integer (HEX)	Register device	Displays as hexadecimal in the registered device monitor.
Integer (BCD)	Register device	Displays as BCD (binary coded decimal) in the registered device monitor.
Long integer (DEC)	Register device	A long integer requires two registers. Displays as decimal in the registered device monitor.
Long integer (HEX)	Register device	Requires two registers. Displays as hexadecimal in the registered device monitor.
Long integer (BCD)	Register device	Requires two registers. Displays as BCD (binary coded decimal) in the registered device monitor.
Char	Register device	Displays as characters in the registered device monitor.
Float	Register device	Requires two registers. Displays as floating point in the registered device monitor.
Input relay	Input relay	—
Output relay	Output relay	—

#### ● I/O Comments

You can enter an I/O comment for each member.

Usage of I/O comments in structures is exactly the same as tag name definitions.

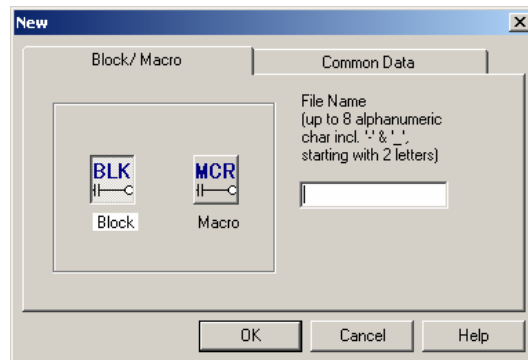
## B32.2.2 Creating a New Structure Type Definition

Before using a structure, you must first create a structure type definition. To do this, use the following procedure.

### ◆ Procedure ◆

(1) Select [File]–[New] from the menu bar.

⇒ The New dialog box will be displayed.

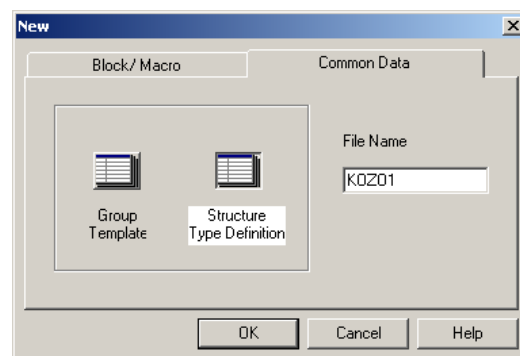


Step (1)

B27\_02.VSD

(2) Click the Common Data tab, and select [Structure Type Definition].

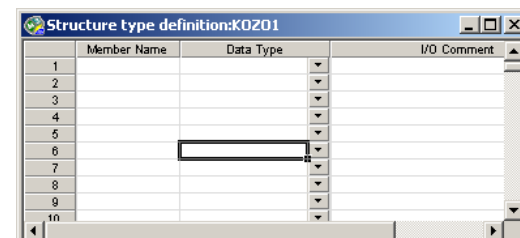
(3) Enter a structure type definition name in the File Name text box, and click [OK].



Steps (2) and (3)

B27\_03.VSD

⇒ The Structure Type Definition window is displayed.



Step (3)

B27\_04.VSD

## B32.2.3 Changing Structure Type Definitions

Structure type definitions can be modified.

You can add members to or remove members from a structure type definition file.

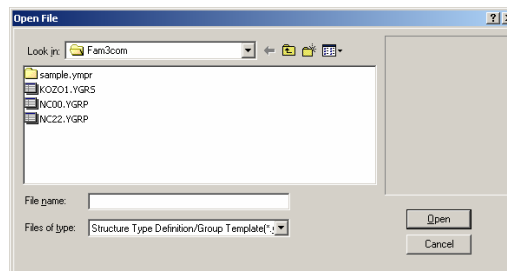
As changes to a structure type definition file is automatically reflected over a project, there is no need to also change structure object definitions.

To modify a structure type definition, use the following procedure.

### ◆ Procedure ◆

- (1) Select [File]–[Open]–[Structure Type Definition/Group Template] from the menu bar.

⇒ The Open File dialog box is displayed.



Step (1)

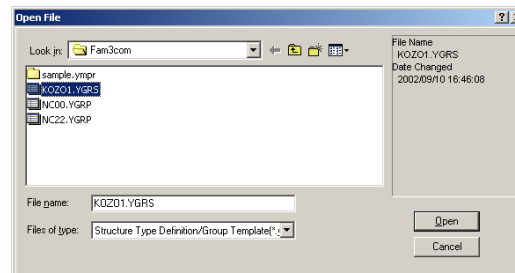
B27\_05.VSD

- (2) Select a structure type definition file (with file extension “.YGRS”) and click [Open].

⇒ The Structure Type Definition window is displayed.

#### TIP

Selecting a group template file opens the Group Template Definition window.



Step (2)

B27\_06.VSD



## B32.2.4 Exiting the Structure Type Definition Window and Saving Changes to File

To exit structure type definition and save changes made to a file, use the following procedure.

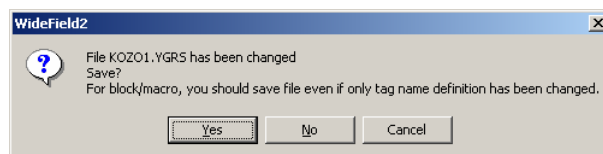
### ◆ Procedure ◆

(1) Click the [Close] button at the upper right corner of the Structure Type Definition window, or select [File]–[Close] from the menu bar.

⇒ A save confirmation dialog box is displayed.

(2) To save, click [Yes].

⇒ The structure type definition file is saved and the Structure Type Definition window closes.



Step (2)

B27\_07.VSD



### CAUTION

If no data type is defined or there is an error in the definition, an error message is displayed and the save operation is cancelled.

### TIP

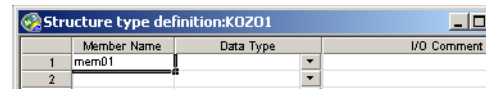
To save changes made to a structure type definition file, select [File]–[Save As], or [File]–[Save] from the menu bar.

## B32.2.5 Editing Structure Type Definitions

You define structure members, as well as their data types and I/O comments using structure type definition. The relevant procedure is given below.

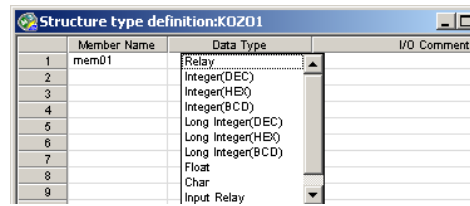
### ◆ Procedure ◆

- (1) Check that the Structure Type Definition window is open.
- (2) Double-click a [Member Name] cell, or move the cursor to a cell and press the [F2] key. Next, enter a member name.
- (3) Select a data type from the [Data Type] drop-down list on the line where you have entered a member name.
- (4) Double-click the [I/O Comment] cell on the same line, or move the cursor to the cell and press the [F2] key. Next, enter an I/O comment.
- (5) Repeat steps (2) to (4) for other members, as required.



Step (2)

B27\_08\_01.VSD



Step (3)

B27\_08\_02.VSD



Step (4)

B27\_08\_03.VSD

## ■ Other Editing Operations

### ● Removing a Cell

To remove a cell, move the cursor to the cell, and press the [Delete] key.

### ● Removing a Range of Cells

To remove a range of cells, select the cell range, and press the [Delete] key.

### ● Copying a Cell or a Range of Cells

To copy data to the clipboard, select a cell or a range of cells and select [Edit]–[Copy] from the menu bar.

### ● Pasting Cells

To paste the content of the clipboard to a range of cells (destination cells), move the cursor to the first destination cell and select [Edit]–[Paste] from the menu bar. You can paste member names, data types, and I/O comments either collectively or individually. If invalid data is pasted to a cell, an error message will appear when the file is saved.

### ● Undoing

The undo function is not available.

### ● Find

The find function is not available for member names.

## B32.3 Defining Structure Objects

### B32.3.1 Overview of Structure Object Definition

Structure object definition is an edit function for declaring structure names. It allows structures to be used in a project or a block.

In structure name declaration, you specify a structure name, the name of a structure type definition file to be used by the structure name, the array size, and the starting addresses allocated to each device used by the members.

Structure object definition is a sub-function of the common tag name definition or block/macro tag name definition functions.

#### ■ Elements of a Structure Object Definition

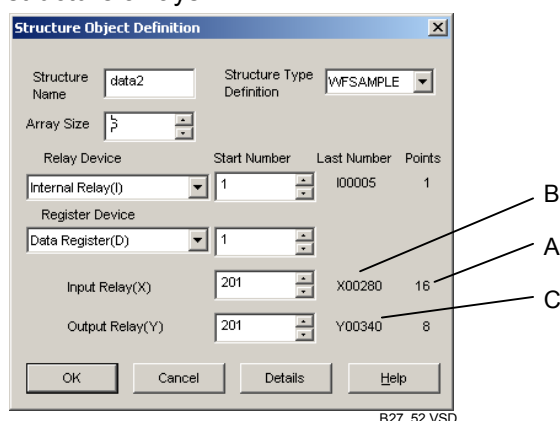
**Table B32.3 Elements of a Structure Object Definition**

Item	Description	Limitation
Structure name	Any name given to a structure type	Up to 7 alphanumeric characters, beginning with 2 letters.
Structure type definition	A structure type definition file which the structure name refers to.	A structure type definition file in the common folder
Array	Specifies a structure array size.	0 to 32767, 0 to 2047 for STMOV instruction
Relay device	Relay-type members are allocated devices sequentially, starting with the specified device.	Internal relays (L/I) are allowed. (local devices are only allowed in block tag name definitions)
Register device	Register-type members are allocated devices sequentially, starting with the specified device.	Data registers (D, /D) and file registers (B, /B) are allowed. (local devices are only allowed in block tag name definitions)
Input relay	Input relay-type members are allocated devices sequentially, starting with the specified device.	The maximum number of points allowed for a module is not taken into consideration.
Output relay	Output relay-type members are allocated devices sequentially, starting with the specified device.	The maximum number of points allowed for a module is not taken into consideration.



#### CAUTION

Although input and output relays can be set regardless of the maximum allowed for a module, if an unavailable relay number is allocated in structure object definition, an error will be generated at the time of downloading or execution. Be extra careful when using structure arrays.

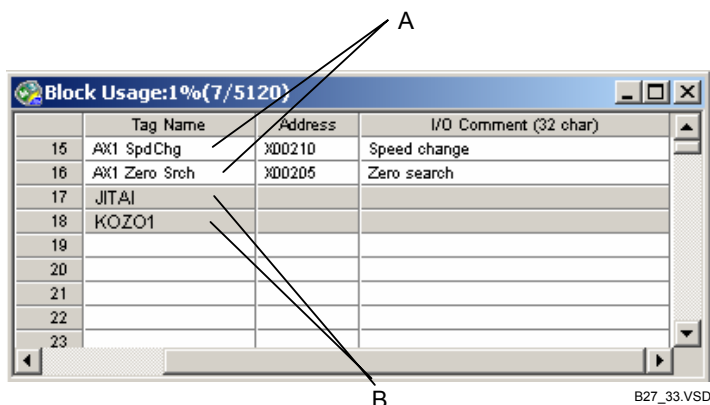


**Figure B32.3 Invalid I/O Relay Settings in Structure Object Definition**

- A Number of input relays to be used for each array
- B The last address of the input relays allocated in the structure  
X00264 and later addresses are invalid.
- C The last address of the output relays allocated in a structure

## ■ Structure Names in A Tag Name Definition Edit Window

This section explains the display of structure names in a Block Tag Name Definition window.



**Figure B32.4 Structure Names in a Tag Name Definition Window**

- A Tag name and address  
Displays tag names, with corresponding addresses and I/O comments.  
Data is displayed as black text against a white background.
- B Structure name  
Only structure names are shown.  
Data is displayed as black text against a gray background.



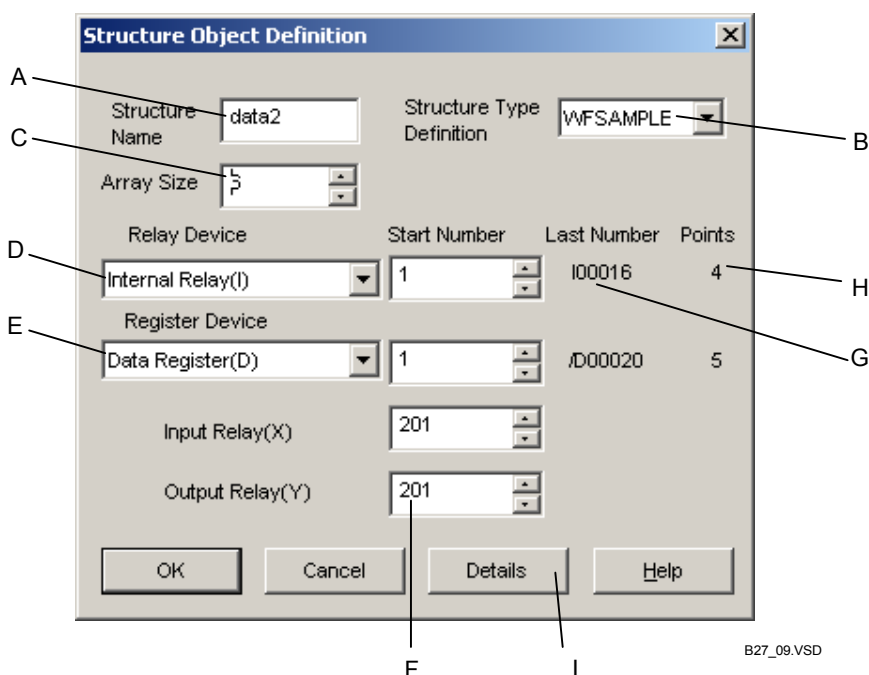
### CAUTION

All tag names in the tag name definition display in a block monitor are displayed as inactive so it is difficult to distinguish between tag names and structure names. Double-clicking a displayed structure tag name, or moving the cursor to a structure tag name and pressing the [F2] key opens the Structure Object Definition dialog box.

### B32.3.2 Structure Object Definition Dialog Box

This Section describes the content of the Structure Object Definition dialog box.

You can define a structure object for a structure name in the Structure Object Definition dialog box.



**Figure B32.5 Structure Object Definition dialog box**

- A Specify a structure name.
- B Select a structure object definition file name.
- C Specify the array size.
- D Select a relay device type.
- E Select a register device type.
- F Specify the starting address allocated for each device type.
- G Displays the last device number allocated to the structure members.
- H Displays the number of devices required for each structure array element.
- I Use this button to view the content of the structure type definition specified in the [Structure Type Definition] field.

### B32.3.3 Editing Structure Object Definitions

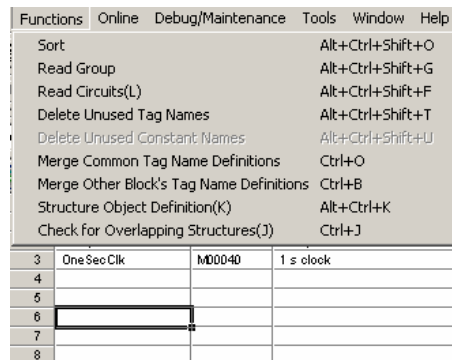
To create a new structure object definition in the common block tag name definition or a block tag name definition, use the following procedure.

#### ◆ Procedure ◆

- (1) Confirm that the Common Tag Name Definition or Block Tag Name Definition window is open.

- (2) Move the cursor to a line with a structure name or a blank line, and select [Functions]–[Structure Object Definition] from the menu bar.

⇒ The Structure Object Definition dialog box is displayed.

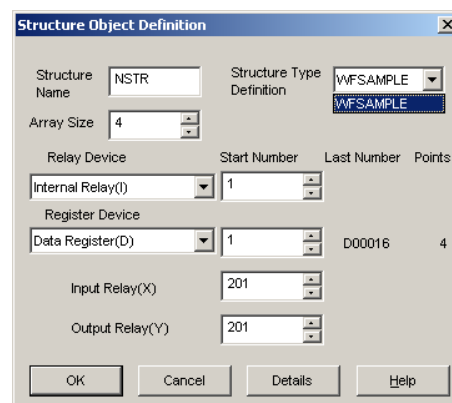


Step (2)

B27\_10.VSD

- (3) Enter a structure name in the [Structure Name] text box.
- (4) Select a structure type definition from the [Structure Type Definition] drop-down list.
- (5) Specify the array size using the [Array Size] spin box. Specify "0" if no array is to be used.
- (6) Select a relay device type and a register device type from the [Relay Device] and [Register Device] drop-down lists respectively.
- (7) Specify the first address allocated for each device type using the [Start Number] spin box.
- (8) Check that all entries are correct, and click [OK].

⇒ The Structure Object Definition dialog box closes. The registered structure is displayed in a cell in black text against a gray background in the Common Tag Name Definition window or Block Tag Name Definition window.



Steps (3) to (8)

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Block Usage: 1%(10/5120)

	Tag Name	Address	I/O
1	Cnt Rst	I00001	Count Reset
2	Always On	M00033	Always On
3	One Sec Clk	M00040	1 s clock
4	data		
5	data2		
6	NSTR		
7			
8			
9			

Step (8)

B27\_14.VSD

## ■ Modifying

You can modify a structure object definition for an existing structure name.

In the Common or Block Tag Name Definition window, double-click a cell containing a structure name displayed as black text against a gray background, or move the cursor to such a cell and select [Functions]–[Structure Object Definition] from the menu bar. The Structure Object Definition dialog box will be displayed.

Modify the entries in the same way as for creating a new structure object.

### **TIP**

---

You can change the structure name in a Structure Object Definition dialog box. Once the structure name is changed, the old structure name is no longer defined. To keep the old structure object definition, first copy the structure tag name, and then change the structure name of the copy.

---

## ■ Deleting

To delete a structure object definition, move the cursor to the cell containing its structure name, and press the [Delete] key.



### B32.3.4 Devices Allocated to Structures

A structure defined in structure object definition acquires normal and local devices as structure member devices as required by the relevant structure type definition file.

#### ■ Number of Devices Required

The number of devices required by a structure depends on the following parameters:

- Number of members as defined in the structure type definition
- Member data type as defined in the structure type definition
- Array size as defined in the structure object definition

For a member of relay data type, one relay corresponds to one relay device and is so acquired. For a member of integer or character data type, one word corresponds to one register device and is so acquired. For a member of long integer or floating data type, one long word corresponds to two register devices and is so acquired.

#### ■ How Devices are Allocated

Devices of each device type acquired in a structure occupy contiguous areas, beginning with the starting number for allocating the device type specified in the structure object definition.

#### ■ Displaying Allocated Devices

The screenshot shows the 'Structure Object Definition' dialog box. It has a title bar with a close button. Inside, there are fields for 'Structure Name' (data2), 'Structure Type Definition' (WFSAMPLE), and 'Array Size' (5). Below these is a table with four columns: 'Relay Device', 'Start Number', 'Last Number', and 'Points'. The table contains four rows of data. At the bottom are four buttons: 'OK', 'Cancel', 'Details', and 'Help'.

Relay Device	Start Number	Last Number	Points
Internal Relay(I)	1	I00024	4
Register Device			
Data Register(D)	1	D00024	4
Input Relay(X)	201	X00218	3
Output Relay(Y)	201	Y00350	3

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**Figure B32.6 Structure Object Definition (displaying allocated devices)**

For each device type, devices with addresses between the [Start Number] and [Last Number] displayed in the Structure Object Definition window are devices allocated to the structure name.

## B32.3.5 Tag Name Definition Window Operations

The Common Tag Name Definition or Block Tag Name Definition window is used to allocate addresses to tag names and to define structure objects for structure names.

This section describes and compares the display and operations of tag name definition lines and structure name definition lines in the Common Tag Name Definition window and the Block Tag Name Definition window.

**Table B32.4 Comparison between Behaviors of Structure Names and Tag Names in Tag Name Definition Windows**

Item or Function	Condition e.g. area	Description for Each Object Type	
		Structure Name	Tag Name
Content displayed in tag name definition	Tag name	Structure name	Tag name
	Address	Blank	Address
	I/O comment	Blank	I/O comment
Display sequence	Registered devices (by address)	Structure names are displayed behind tag names	
	Registered Devices (by tag name)	Structure names are interleaved with tag names in the display (in alphabetic order)	
	Address list	Structure names are not displayed	
Display of definition errors	Tag name	Display is the same as for tag names	
Text input	Tag name	Structure object definition edit window is displayed.	Tag name is overwritten.
	Address	Structure object definition edit window is displayed.	Address is overwritten.
	I/O comment	Structure object definition edit window is displayed.	I/O comment is overwritten.
Double clicking	Tag name	Structure object definition edit window is displayed.	Edits tag name
	Address	Structure object definition edit window is displayed.	Edits address
	I/O comment	Structure object definition edit window is displayed.	Edits I/O comment
Copying cells	Tag name	The entire structure object definition is copied.	The tag name is copied
	Address	Ignored	The address is copied
	I/O comment	Ignored	The I/O comment is copied
Pasting a tag name	Tag name	The structure is deleted and the structure name becomes a tag name.	Becomes a tag name.
	Address	Ignored	Error
	I/O comment	Ignored	Pasted.
Pasting a structure name	Tag name	Structure is overwritten.	Structure is overwritten.
	Address	Structure is overwritten.	Structure is overwritten.
	I/O comment	Structure is overwritten.	Structure is overwritten.
Deleting a cell	Tag name	Structure name is deleted.	Tag name is deleted
	Address	Ignored	Address is deleted
	I/O comment	Ignored	I/O comment is deleted
Find	Tag name or address search	Tag names are searched.	
Sort		Handled the same way as tag names.	
Reading circuits		Not available	
Merging common tag name definitions		Not available	
Merging other block tag name definitions		Not available	
Deleting unused tag names		Cannot be deleted.	

## B32.3.6 Checking Structure Devices for Overlaps

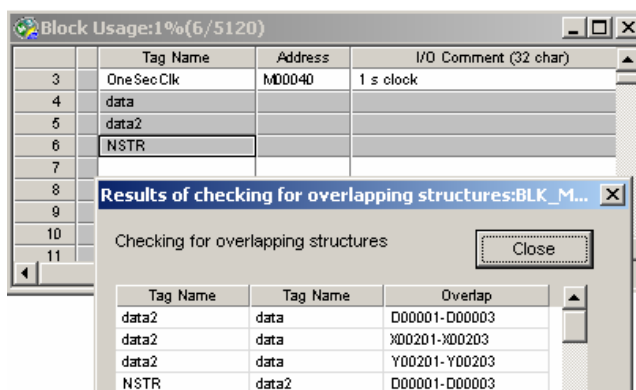
While tag names and addresses in tag name definitions are automatically checked for overlaps at the time of data entry, device addresses allocated to structure members are not automatically checked for overlaps.

To check for device overlaps in structure object definitions, use the Check for Overlapping Structures function as follows.

### ◆ Procedure ◆

- (1) Confirm that the Common Tag Name Definition window or Block Tag Name Definition window is open, and select [Functions]–[Check for Overlapping Structures] from the menu bar.

⇒ The Results of Checking for Overlapping Structures window is displayed.



Step (1)

B27\_51.VSD

### ■ Display of Results

The Results of Checking for Overlapping Structures window lists overlapping structure names or tag names by displaying the starting and ending addresses of the corresponding devices.

An error is displayed if overlap check cannot be done because the structure type for a structure name is undefined or otherwise.

Up to 256 instances of overlaps may be displayed.

#### ● [Tag Name]

Overlapping structure names and tag names are displayed.

#### ● [Overlap]

For tag name overlaps, the name of the overlapping device is displayed.

For structure name overlaps, the range of overlapping devices is displayed e.g. "D00001 – D00016".



### CAUTION

Overlap checking is not available with other types of tag name definition.

## B32.4 Programming Using Structures

This section describes how to use structure parameters in the Edit Block window.

### B32.4.1 Display of Structure Parameters in Program Editing Windows

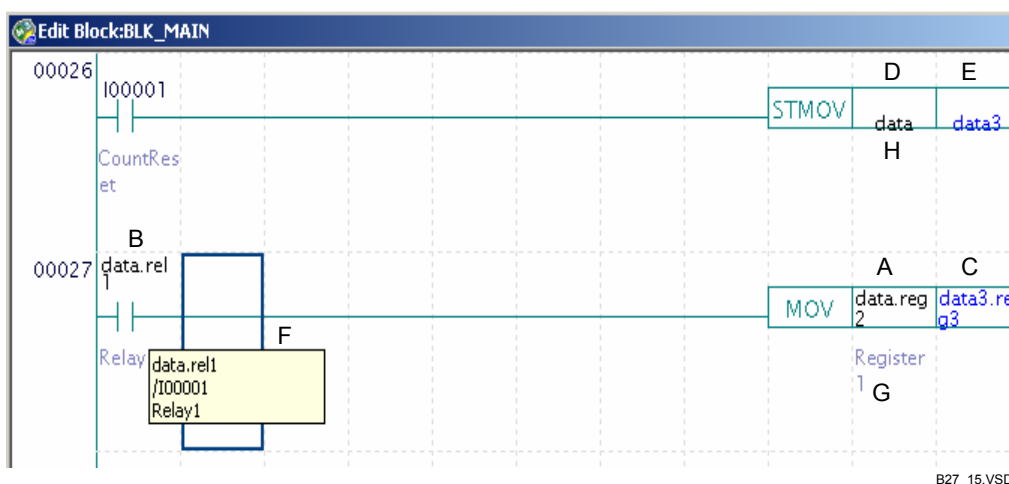
This section describes how structure parameters are displayed in the Edit Block window, as compared to tag name parameters.

#### ■ Difference between Structures and Tag Names

**Table B32.5** Difference between Structures and Tag Names

Item	Details	Structure Member	Structure Name	Tag Name
Display of instruction parameters	Normal display	Displays "<structure name>.<member>".	Displays structure name.	Displays tag name.
	Address display mode	Displays "<structure name>.<member>".	Displays structure name.	Displays allocated address.
Display color of instruction parameter	Defined	Black (A)	Black (D)	Black
	Defined as local device	Brown (B)	—	Brown
	Undefined	Blue (C)	Blue (E)	Blue
I/O comment	Display	Displays I/O comments as assigned in structure type definition (G).	No display (H)	Displays assigned I/O comment.
TipHelp	Display	Displays structure type definition content for a specific member (F).	No display	Displays tag name definition content.

Note: Letters A to H in the table refer to the parts of Figure B32.7 indicated by the corresponding letters.



**Figure B32.7** Structure Parameters in the Edit Block Window

#### ■ Limitations on Display of Structures

The following limitations apply to the display of structure member names.

- If the full name of a structure member, including array representation, cannot be displayed, the name is displayed as the parameter string followed by "...". In this case, you can use TipHelp to confirm its full name.

## B32.4.2 Entering Structures in a Program Editing Windows

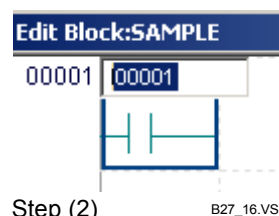
This section describes how to enter structure parameters in the Edit Block window. To enter structure parameters, use the following procedure.

### ◆ Procedure ◆

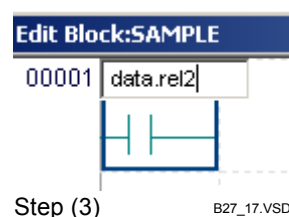
(1) Confirm that the Edit Block window is open.

(2) Double-click a cell to be edited, or move the cursor to a cell and press the [Enter] key.

⇒ The cell is now ready for editing.



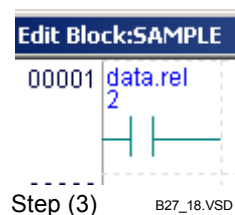
(3) Enter a structure member name in the cell and press the [Enter] key.



⇒ The content of the cell is updated.

#### TIP

The procedure for entering a structure member name and other parameters for an application instruction is similar to that for entering tag names, addresses, block names, and other parameters.



### ■ Array Index

An array index must always be enclosed within square brackets, like "data[1]" and "data[0].rel2."

### ■ Limitations for Structure Parameter Input

The following limitations apply to the input of structure parameters:

- You cannot change the name or I/O comments for a structure name or a structure in an Edit Block window. To change the I/O comment of a structure member, use structure type definition.
- The Address Assignment dialog box is not displayed when a structure member is entered.

## B32.4.3 Finding and Replacing during Program Editing

This section describes how to find and replace structure members or structure names in the Edit Block window.

In the Edit Block window, you can find or replace structure members or structure names in essentially the same way as ordinary tag names. You can assume that the procedures for finding and replacing structure members or structure names are the same as that for finding and replacing ordinary tag names unless otherwise described in this section.

### SEE ALSO

For details on how to find and replace tag names, see Sections B4.7.1, "Finding Device" and B4.7.4, "Replace."

## ■ Finding and Replacing

### ● Search String for Finding and Replacing

To search for a structure or structure member name, open the Find dialog box and enter the structure member or structure name in the [Search String] text box.

### ● Using the Wildcard

The use of wildcard in finding and replacing structure members is the same as for tag names.

**Table B32.6 Examples of Uses of Wildcard**

Wild card Entered for Find/replace	Examples of Matches
MITA*	MITAKA MITAKA.STATION MITAKA.STORE MITAKA[10].STATION
MITAKA.*	MITAKA.STATION MITAKA.STORE MITAKA[10].STATION
*.STATION	MITAKA.STATION MITAKA[10].STATION MITATMP.STATION

### ● Finding and Replacing Arrays

- You cannot include an array index when entering the search string for a find/replace operation. Otherwise an error will occur. For example, "KOZO[V01].\*" is an invalid search string.
- If you enter a structure member or structure name as the search string for a find/replace operation and turn on option [Displayed Device] on the screen, all structure members containing the name, regardless of whether they include array indices, are included in the search. For example, if you enter "KOZO[\*].rel1" as the search string, then "KOZO.rel1," "KOZO[1].rel1," and "KOZO[\*].rel1" are possible matches.
- When searching for a structure member with the [Used Device] option selected, arrays are considered in the search.

(For instance, if you enter the search string as "KOZO.rel1", then an instruction parameter whose device range includes the address allocated to "KOZO.rel1" will return a match. Similarly, if you enter the search string as "KOZO[1].rel1", then all instruction parameters whose device range include the address allocated to "KOZO[1].rel1" will return a match)

## B32.4.4 Instructions and Instruction Parameters

This section describes instructions provided for use with structures. It also describes how to use structure names as parameters of such instructions.

### SEE ALSO

For details on instructions, see "Sequence CPU – Instructions" (IM34M6P12-03E).

## ■ Instructions for Structures

### ● STMOV (structure move instruction)

- Use

Transfers structure data.

In general, only a constant can be used in an instruction as an index modifier for structure members. To use a variable modifier for a structure array in a normal instruction, you can first use the STMOV instruction to move the structure array element to a non-array temporary structure and then use the members of the temporary structure as parameters in a normal instruction. With this, you can achieve the same result as using a variable index modifier. After execution of the normal instruction completes, you again use the STMOV instruction to return the resultant data to the original structure array.

- Parameters

The first and second parameters of the STMOV instruction are structure names. However, if the specified parameters are not of the same structure type, the instruction may not operate correctly and may inadvertently change the values of other devices.

You can use index registers or macro index registers as array indices. For a constant index, enter a value between 0 to 2047 in decimal representation.

### ● SCALL (structure macro call instruction)

In a SCALL instruction, the first parameter is a structure macro name, the second and third parameters are structure names to be passed as arguments to the macro.

Only decimal constants are allowed as array indices. The constant must be a value between 0 and 32766.

Index devices cannot be used as array indices.

### ● STRCT (structure declaration instruction)

The STRCT instruction is always placed in the first line of a structure macro and can be up to 2 lines long.

It parameterizes the type of a macro argument.

The first parameter is a device (Q1 or Q2) used as a structure pointer within the macro. The second parameter is a structure type name.

## ■ Structure Member Parameters in Normal Instructions

Structure members can also be used as parameters in normal instructions.

Only decimal constants are allowed as array indices. The constant must be a value between 0 and 32766.

Index devices cannot be used as array indices.

## B32.5 Structure Macros

Structure macros and normal macros have the same procedures for creation and file management but differ in structure-related operations.

This section describes the differences between structure macros and normal macros.

The figure below shows how a structure macro instruction is called in a block and also how the parameters are handled at the structure macro end.

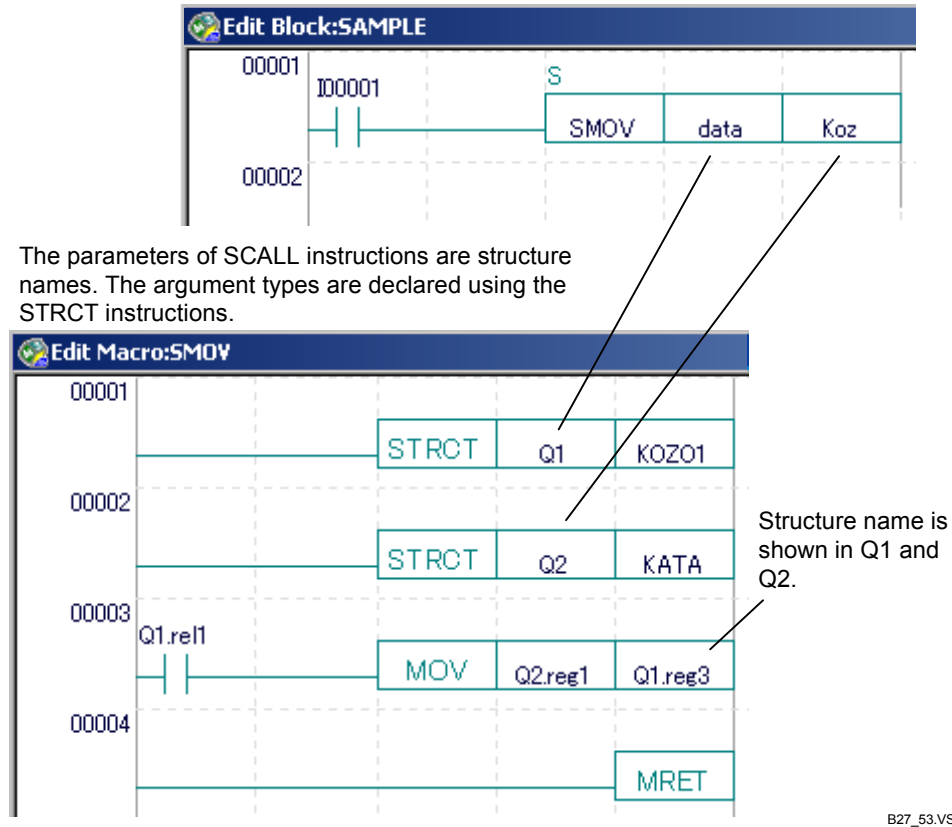


Figure B32.8 Structure Macro Call



## B32.5.1 Differences Between Structure Macros and Normal Macros

This section describes the differences between structure macros and normal macros.

### ■ Comparison Table for Structure Macros and Normal Macros

Table B32.7 Differences between Structure Macros and Normal macros

Item	Structure Macro	Normal macro
Macro call instruction	SCALL	MCALL
Number of macro arguments	2	3
Macro argument type	Structure	Device
Argument type declaration instruction	STRCT (structure declaration instruction)	None
Coding of macro arguments within a macro	Q1.member Q2.member	P1, P2, ....
Nesting	MCALL instructions can be coded within a macro, but not SCALL instructions	MCALL instructions can be coded within a macro, but not SCALL instructions
PARA instruction	9 to 16 allowed	4 to 16 allowed

### ■ Representation of Structure Members

Structure names passed as parameter arguments to a structure macro cannot be used as-is in the macro. In a structure macro, structure name arguments are changed into “Q1” and “Q2” and represented as such.

## B32.5.2 Setting Argument Types of A Structure Macro

Structure arguments can be used in structure instructions.

The STRCT instruction is used for structure arguments. It requires two arguments: structure pointer and structure type name.

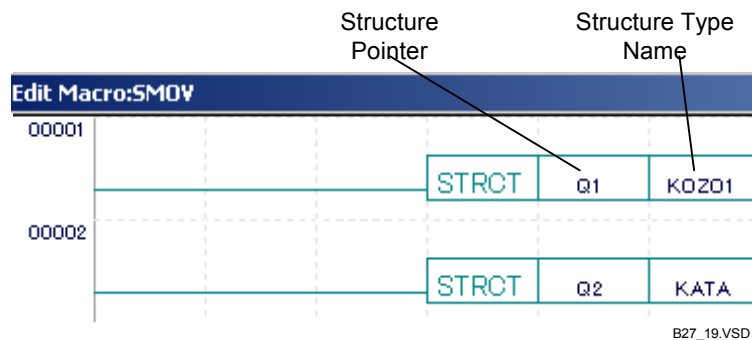


Figure B32.9 Structure Macro Argument Type Declaration

### ● Structure Pointer (Q Device)

A Q device is a structure pointer device used within a macro.

A Q device is a pointer to the given structure name, with its structure type name given by the second parameter.

Structure members within a macro are coded as "Q1.member" and "Q2.member".

### ● Structure Type Name

The structure type name parameter specifies the structure type name of the macro argument.

You can specify the name of any structure type definition file stored in the common folder as the structure type name parameter.



### CAUTION

When calling a structure macro within a block, you must pass an argument of the same structure type as that specified in the STRCT instruction. Passing a structure argument of a different structure type may lead to unexpected behaviors.

### B32.5.3 Structure Macro Programming

This section shows a sample program, which uses a structure in a structure macro.

#### ● Sample Program Codes for the Calling Block

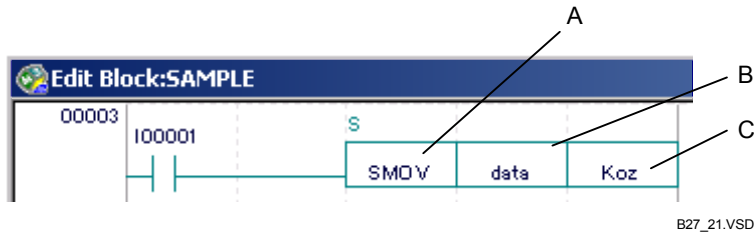


Figure B32.10 Sample Program Codes for the Calling Block

#### ● Sample Program Codes for the Macro

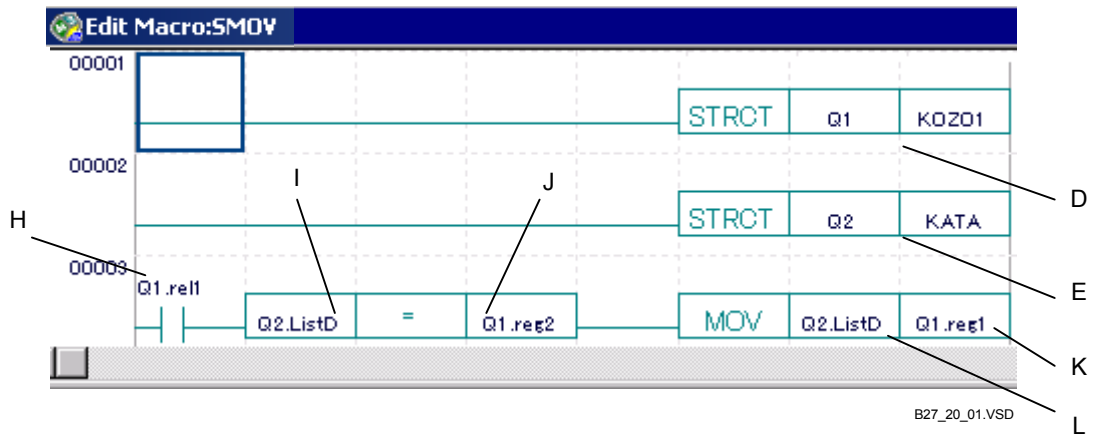


Figure B32.11 Sample Program Codes for the Macro

#### ● Structure Type Definition

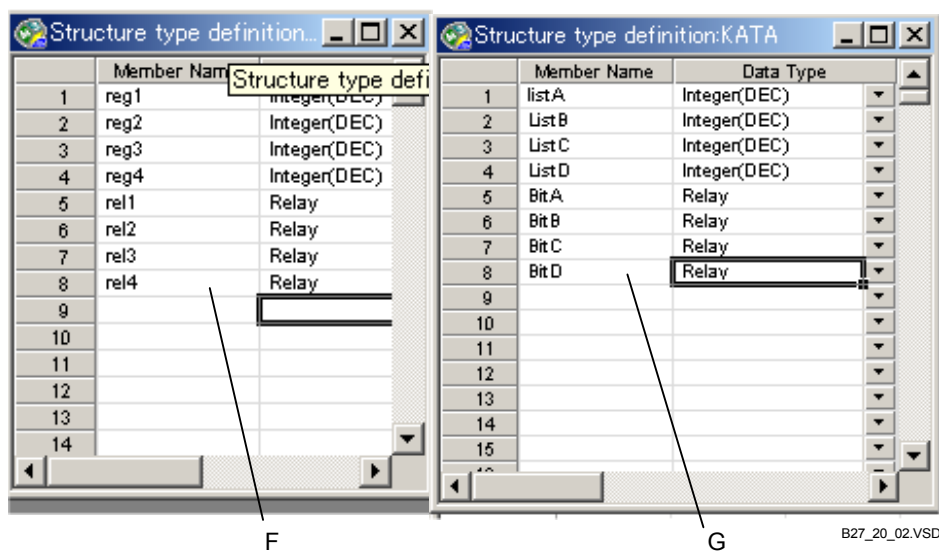


Figure B32.12 Structure Type Definition

The operations of the block and macro shown in figures B32.10, B32.11 and B32.12 are described below.

- **Block**

- A Calls the SMOV macro. The SMOV macro requires 2 arguments.
- B Specifies structure object name “data” for argument “Q1”; “data” has structure type name “KOZO1”.
- C Specifies structure object name “Kozo” for argument “Q1”; “Kozo” has structure type name “KATA”.

- **Argument Structure Type Declaration**

- D Declares macro argument “Q1” as having structure type “KOZO1”.
- E Declares macro argument “Q2” as having structure type “KATA”.

- **Structure Type Definition**

- F Defines structure type (“KOZO1”) declared for “Q1” earlier.
- G Defines structure type (“KATA”) declared for “Q2” earlier.

- **Sample Program**

- H “Q1.rel1” in the program refers to “data.rel1”.
- I, L “Q2.ListD” in the program refers to “Kozo.ListD”.
- J “Q1.reg2” in the program refers to “data.reg2”.
- K “Q1.reg1” in the program refers to “data.reg1”.

## B32.6 Structure-related Functions for Projects

This section describes functions that are provided for management of projects containing structures.

### B32.6.1 Checking for Overlapping Structures

For each structure registered with objects in a block tag name definition or the common tag name definition, the Check for Overlapping Structures function checks whether the structure object uses addresses allocated to another structure or tag name in the tag name definition.

---

#### TIP

In the Common Tag Name Definition window and Block Tag Name Definition window, WideField2 automatically performs overlap checks for addresses allocated to tag names and displays the items in a different color. However, overlap check is not automatically performed for structure objects. You need to perform overlap checks manually.

---

To perform overlap checks, use the following procedure.

#### ◆ Procedure ◆

- (1) **Confirm that the Common Tag Name Definition window or Block Tag Name Definition window is open, and select [Functions]–[Check for Overlapping Structures] from the menu bar.**

⇒ Overlap check is performed and the result is displayed in the Results of Checking for Overlapping Structures dialog box.

- (2) **Click [Close].**

⇒ The Results of Checking for Overlapping Structures dialog box closes.

---

#### TIP

The following items are displayed in the Results of Checking for Overlapping Structures dialog box.

- Structure object overlaps errors
- Errors where structure objects and addresses allocated to tag names overlap.

Overlap Range. For tag name overlaps, the name of the overlapping device is displayed. For structure name overlaps, the range of overlapping devices is displayed.

- Structure object name.
  - Tag name.
-

## B32.6.2 Finding in Project and Replacing in Project

This section gives an overview of finding and replacing structure members and structure names over an entire project and describes the required procedures.

### ■ Overview

#### ● Overview of Find Function for Structure Members and Structure Names

Searching for structure members and structure names is essentially the same as searching for tag names.

In the Find in Project dialog box, select [Displayed Device] as the [Search Object] and enter a structure name, structure member name or a string of the form "structure name.\*" in the [Search String] text box.

If you have selected [Used Device] instead of [Displayed Device] as the [Search Object] in the Find in Project dialog box, then enter a structure member name in the [Search String] dialog box. The [Used Device] option includes array values in its search.

Structure member parameters and structure name parameters coded in the program are searched for the given string, in a similar way to searching for tag names.

#### SEE ALSO

For details of project search, see Section B7.2.2, "Finding in Project."

The table below lists the search results for some example search strings with option [Displayed Device] selected.

**Table B32.8 Search Strings and Search Results**

Program Data	Search String	Search Result
dataS (tag name) data (structure name) data.reg1 (structure member) data.rel1 (structure member)	data	data
	data.reg1	data.reg1
	data.*	data.reg1 data.rel1
	data*	dataS data data.reg1 data.rel1

The table below lists the search results for some example search strings with option [Used Device] selected.

**Table B32.9 Search Strings and Search Results**

Program Data	Search String	Search Result
dataS (tag name) data (structure name) data2 (structure name) array index 2 data.rel1 (structure member) data2[1].rel1 (structure member)	data.reg1	First instruction with "data.reg1" included within the used device range of its instruction parameters.
	data2[1].reg1	First instruction with "data2[1].reg1" included within the used device range of its instruction parameters.

#### ● Overview of Replacement of Structure Member Names and Structure Names

Structure replacement applies to structure names used in parameters.

Turning on the [Replace in Tag Name Definitions too] checkbox in the Project Replace dialog box also replaces structure names in tag name definitions.

#### SEE ALSO

For details on replacement over a project, see Section B7.2.4, "Replacing in Project."

## ● Find and Replace for Structure Arrays

- You cannot include array representation in search or replace strings. If a specified search or replace string contains an array, an error is generated. For example, "KOZO[V01].\*" is not a valid search string.
- Search or replacement of structure members or structure names searches all elements of arrays, as well as non-array structures. For example, search string "KOZO.rel1" matches "KOZO.rel1", "KOZO[1].rel1" and the pattern "KOZO[\*].rel1".

## ■ Procedure for Finding in a Project

This section describes how to search for a structure member or structure name over a project. The relevant procedure is given below.

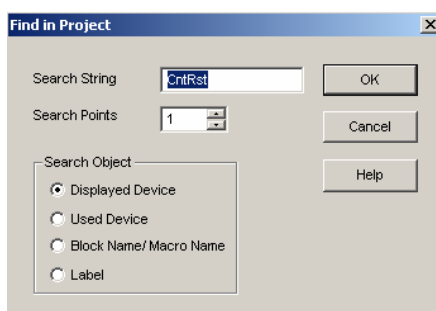
### ◆ Procedure ◆

(1) Select [Project]–[Find in Project] from the menu.

⇒ The Project Find dialog box opens.

(2) Enter a search string in the [Search String] text box, turn on the [Displayed Device] or [Used Device] option button in the [Search Object] group box and click [OK].

⇒ The Results of Project Search window is displayed.



Step (2)

B27\_23.VSD

### TIP

Searching for a structure member name also searches for any address allocated to the structure member name; similarly, searching for an address also searches for any structure member name assigned to the address. For instance, if "St1.rew1=D00102" is defined in the tag name definition, then searching for "St1.rew1" or "D00102" with [Displayed Device] or [Used Device] option selected produces the same result.

## ■ Procedure for Replacing in a Project

This section describes how to replace a structure name over an entire project. The relevant procedure is given below.

### ◆ Procedure ◆

(1) Open the desired project and close all blocks and tag name definitions being edited.

(2) Select [Project]–[Replace in Project] from the menu.

⇒ The Project Replace dialog box opens.

(3) Enter the structure name to be replaced and the new structure name in the [Old Value] and [New Value] text boxes respectively, turn on the [Structure→Structure] option button in the [Replacement Method] group box and click [OK].

#### TIP

To replace structure members, turn on the [Tag Name→Tag Name] option button in the [Replacement Method] group box.

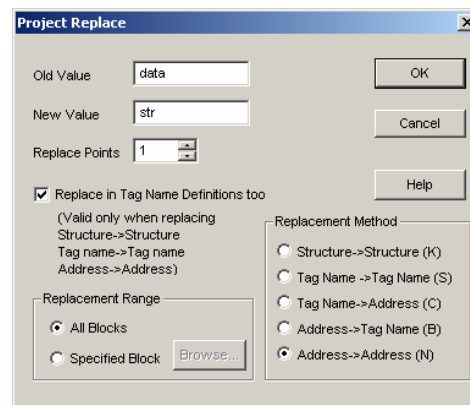
#### TIP

To also replace tag names in tag name definitions, turn on the [Replace in Tag Name Definitions too] checkbox.

⇒ Replacement begins and the Replace in Project–Progress dialog box is displayed with the progress of the project replacement.

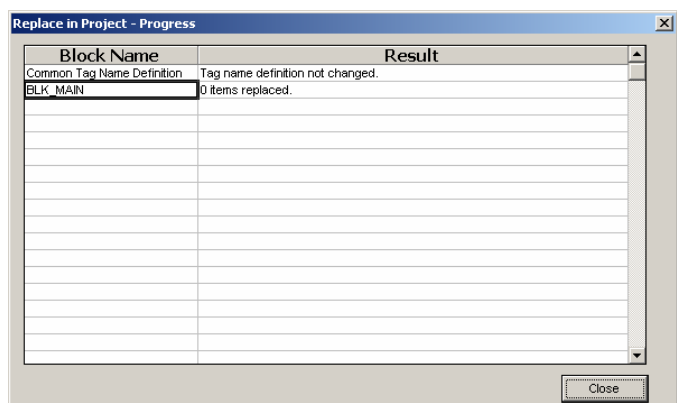
(4) Click [Close].

⇒ The Replace in Project–Progress dialog closes



Step (3)

B27\_25.VSD



Step (4)

B27\_26.VSD



### B32.6.3 Changing I/O Installation Position

The Change I/O Installation Position function does not change structure parameters in the program but only changes starting numbers for allocating input relays or output relays defined in structure object definitions in the common tag name definition or block tag name definitions.

#### SEE ALSO

For details on the change I/O installation position function, see Section B7.2.7, “Changing I/O Installation Position.”

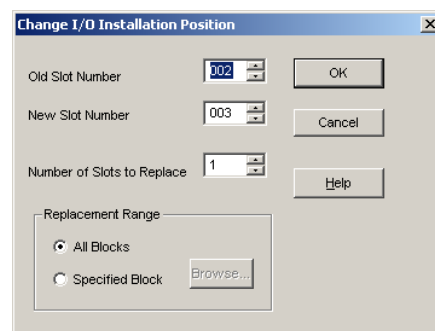
#### ◆ Procedure ◆

- (1) Check that the project to be changed is open and close all blocks and tag name definitions being edited.
- (2) Select [Project]–[Change I/O Installation Position] from the menu.  
⇒ The Change I/O Installation Position dialog box opens.
- (3) Specify the slot number to be replaced, the new slot number and the number of slots to be replaced using the [Old Slot Number], [New Slot Number] and [Number of Slots to Replace] spin buttons respectively, and click [OK].

#### TIP

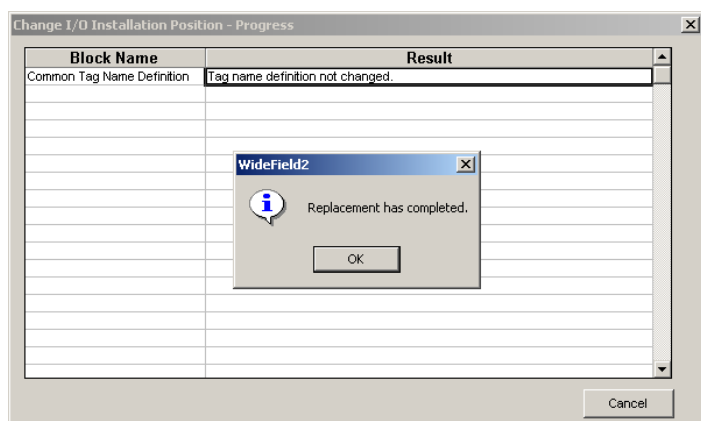
Turning on the [Specified Block] option button in the [Replacement Range] group box allows you to perform slot changes on selected blocks only.

- ⇒ A Change I/O Installation Position – Progress dialog box is displayed with replacement progress and results information.



Step (3)

B27\_27.VSD



Step (3)

B27\_28.VSD

## B32.6.4 Structure-related Syntax Check Errors

This section describes structure-related errors that are checked by the program check function.

The syntax errors that are checked at the time of downloading and at the beginning when a program is transferred to ROM are the same.

All the error items belong to the severity class of errors.

**Table B32.10 Syntax Check Errors**

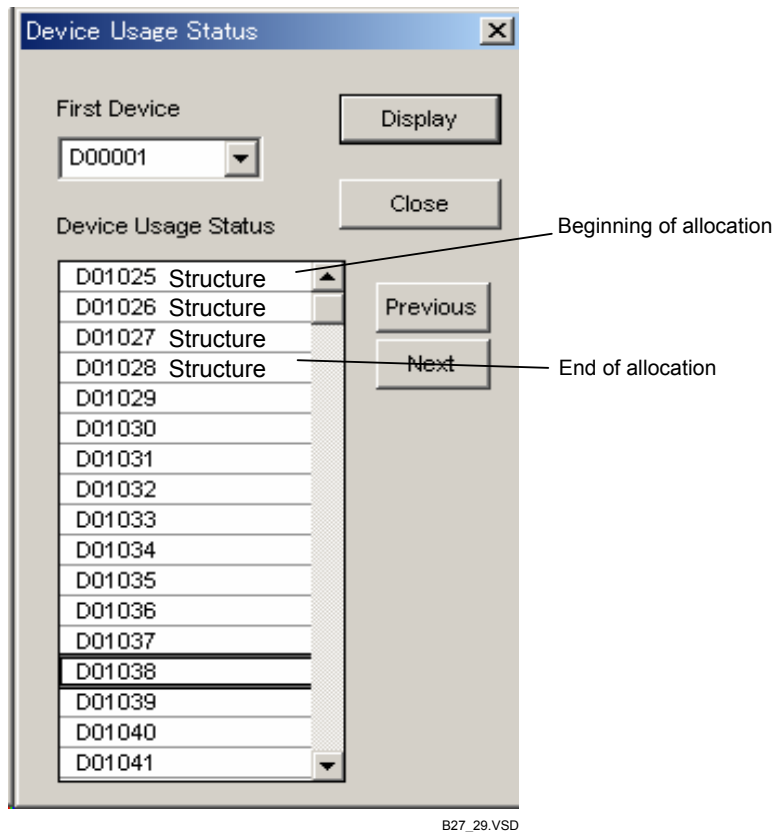
Error Message	Possible Causes	Troubleshooting
No address assigned to tag name	A structure object is yet to be defined.	Define a structure object for the structure name.
	A structure member does not exist.	Check that the structure member used in the program is defined in the structure type definition.
Structure type differs	The S and D parameters of a STMOV instruction do not have the same structure type definition name.	Make sure that the S and D parameters of a STMOV instruction have the same structure type definition name.
STRCT instruction error	A STRCT instruction is coded incorrectly.	A STRCT instruction must be the first line of a macro and not longer than 2 lines. Q1 and Q2 must be set once and only once.
Cannot use this instruction parameter on selected CPU type.	CPU selection error	Select a CPU that supports structures.
Structure type definition file not found	Structure type definition file specified in a structure type definition does not exist in the common folder.	Place the corresponding structure type definition file into the common folder.
Device is invalid or out of range	The number of device points used in a structure exceeds 2048. This error is generated when there are too many long word members in a structure.	Reduce the number of members in the structure type definition.
	A constant specified for the array of a structure name is not within the range of 0 to 2047.	Use an index register instead, or change the value of the index.

### B32.6.5 Used Devices List

The used devices list displays the usage of devices as parameters within a block. However, note that device ranges in structures, even if not used in program, are already reserved.

When a structure name or structure member is used in a program, all members are considered to be used in the program. Therefore, some of the devices displayed in the used devices list may actually not be used in the program but are listed because other members of the same structure name are used.

#### ■ Used Devices List Screen Example



**Figure B32.13 Used Devices List**

All addresses between the start number and the end number for allocation are displayed as “structure”, which indicates that the devices are used as structure members.

## B32.7 Online Functions

### B32.7.1 Monitoring Structures in a Registered Device Monitor

Structure members can be added to a registered device monitor by structure name (in the case of a structure array, one structure array element).

This section describes the specifications relating to registered device monitors for structures.

#### ■ Screen Layout

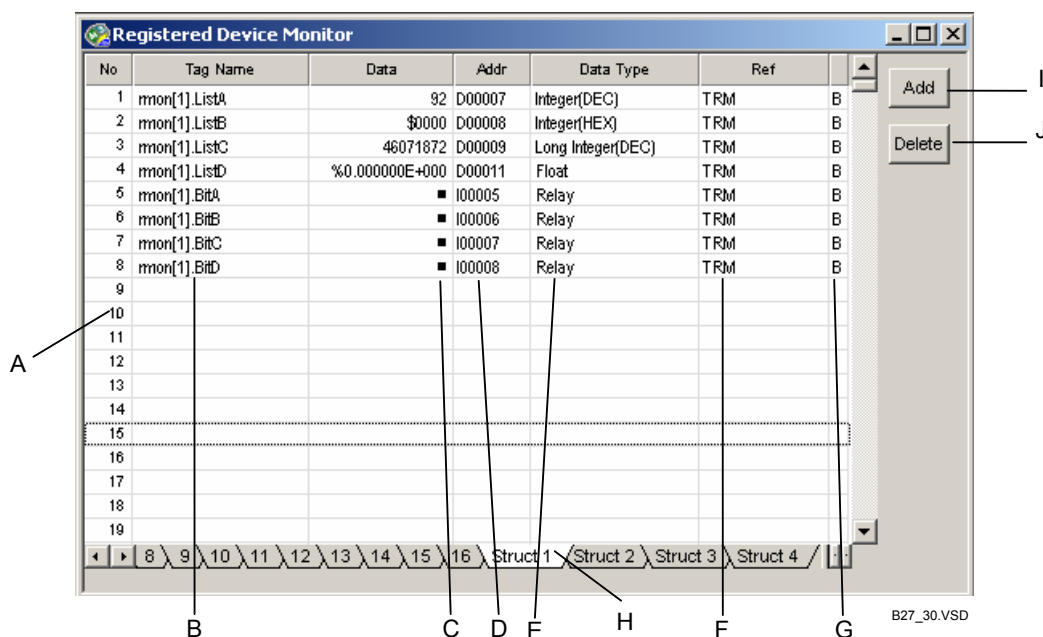


Figure B32.14 Registered Device Monitor for Structures

Table B32.11 Registered Device Monitor for Structures

Symbol	Item	Description
A	No.	Displays the line number within the registered device monitor.
B	Tag name	Displays the tag name in the form "structure name member". Array index for a structure name is also displayed.
C	Data	Displays member data. The display format is according to the data type specified in the structure type definition.
D	Address	Displays the actual device allocated to a structure member.
E	Data type	Displays the data type specified in the structure type definition.
F	Reference	Displays the block where the structure object is defined. Displays the "common tag name definition" string for structure objects defined in the common tag name definition.
G	Reference type	Displays the reference for tag name definitions. B: Block tag name definition M: Macro tag name definition Blank: Common tag name definition
H	Sheet	4 data sheets are provided specifically for structure registered device monitors.
I	Register	Displays the Register Structure dialog box and registers a structure.
J	Delete	Deletes a data sheet.

## ■ Data Display Format

The display format of a data item follows the data type registered in the structure type definition.

## ■ Registering to a Registered Device Monitor

To register a structure in the registered device monitor, use the following procedure.

### ◆ Procedure ◆

(1) Confirm that the **Registered Device Monitor** window is displayed.

(2) Select one of the following sheets:  
[Struct 1] to [Struct 4].

⇒ The registered device monitor sheet for structures is displayed.

(3) Select **[Online]–[Registered Device Monitor]–[Add]** from the menu bar, or click **[Add]** in the **[Registered Device Monitor]** window.

⇒ The Register Structure dialog box is displayed.

(4) Set the reference type, reference list, structure name, array number and click **[OK]**.

⇒ The settings are registered and displayed.

Step (4)

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### TIP

Use the Register Structure dialog box to specify the structure to be monitored.

Set all information required for monitoring.

**Table B32.12 Register Structure Dialog**

Item	Description
Reference type	Select the tag name definition where the structure object is defined. Select either [Block Tag Name Definition], [Macro Tag Name Definition] or [Common Tag Name Definition].
Reference list	Displays a list of blocks (macros).
Structure name	Displays a list of structure names found in the selected reference type.
Array number	If the selected structure is an array, specify the array index. The values that can be selected are determined by the array size set in the structure object definition. This item is disabled if the selected structure is not an array.



### CAUTION

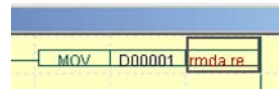
Q structures cannot be registered to a registered device monitor.

## ■ Registering from a Block Monitor

To perform registration from a block monitor, use the following procedure.

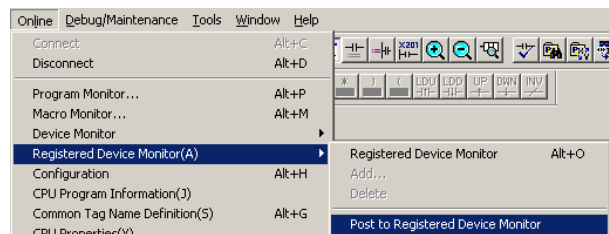
### ◆ Procedure ◆

- (1) Confirm that the Registered Device Monitor window is displayed.
- (2) Select one of the following sheets:  
[Struct 1] to [Struct 4].  
⇒ The registered device monitor sheet for structures is displayed.
- (3) Open the Block Monitor window.
- (4) Move the cursor to a structure member.



Step (4) B27\_31\_01.VSD

- (5) Select [Online]–[Registered Device Monitor]–[Post to Registered Device Monitor] from the menu bar.  
⇒ The structure member is added to the registered device monitor.



Step (5)

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## ■ Prerequisites for Registering to Registered Device Monitor

The following are prerequisites for registering a structure member to the Registered Device Monitor.

- A project is open.
- The structure object is defined in the tag name definition.
- The structure type definition file referred in the structure object definition exists in the common folder.

## ■ Procedures for Debugging

The user interface for debugging structure members in a Registered Device Monitor window is the same as that for normal tag names and addresses and includes the following functions: change word, change long word, forced set, forced reset, etc.

## B32.7.2 Transferring Structure Definitions

This section describes how to transfer various types of structure definition information to the CPU.

### ■ Transferring Structure Type Definitions

#### ● Downloading or Transferring to ROM

Downloading transfers all structure type definition files referred to by structure names defined in a project (common tag name definition and block tag name definitions). Structure type definitions are downloaded only if setup is performed to download tag name definitions.

Structure type definitions are downloaded together with common tag name definitions. If a project is configured to not download tag name definitions, structure type definitions are also not downloaded.

#### TIP

Structure type definitions are not transferred with the block and macro download functions.

#### ● Uploading

You can upload structure type definitions stored in the CPU together with common tag name definitions.

When unloading completes, a dialog box is displayed to confirm whether to save data to the common folder.

Structure type definition files can only be unloaded to the common folder and not elsewhere.

#### TIP

Structure type definitions are not transferred by uploading of block /macro.

Structure type definitions are not transferred by uploading of common tag name definition.

#### ● Comparing

Comparison with structure type definition transferred to the CPU is only done in the common tag name definition comparison function.

**Table B32.13 Results of Comparison**

Condition	Message	Category	Block Name	Instruction Number
When structure type definition file does not exist	Structure type definition file not on the personal computer.	Warning	Structure type definition file name	None
When the structure type definition does not match the structure type definition in the CPU	Structure type definition differs.	Warning	Structure type definition file name	None

#### TIP

Structure type definitions are not compared in block comparison.

## ■ Transferring Structure Object Definitions

Transfers of structure object definitions depend on the transfers of tag name definitions.

### ● Download, Upload or ROM Transfer

Transfers of structure objection definitions depend on the transfers of tag name definitions where the structure object definitions are defined.

### ● Comparing

Contents of structure object definitions are not compared.

## B32.7.3 Monitoring Structure Parameters in Block Monitors

This section describes the display of structure parameters in block monitor windows and the debugging functions.

## ■ Prerequisites for Displaying Structures

### ● Structure Members

The following are prerequisites for displaying structure members in a block monitor.

- The project to be monitored is open.
- The reference tag name definition of the block exists and is accessible.
- The structure name is defined in tag name definition.

If the above conditions are not fully satisfied, the actual addresses allocated to the structure members at the time of downloading are displayed.

### ● Structure Name

Structure names used in circuits are always displayed as structure names, without exception.

## ■ Monitoring Structure Parameter Data

### ● Structure Members

Structure members can be monitored in normal block monitors. The display of data in a monitor is similar to that for tag names.

Members with arrays are also monitored.

The data display format depends on the [View]–[Display Format] settings on the menu bar. The data type set for each member is ignored in a block monitor.

#### TIP

If the full name of a structure member, including array representation, cannot be displayed, the name is displayed as the parameter string followed by "...". In this case, you can use TipHelp to confirm its full name.

### ● Q Structure Members

Q Structure Members cannot be monitored in a block monitor.

### ● Structure Name

Instructions coded with structure names as instruction parameters cannot be monitored.

If a parameter is a structure name, the data area is displayed as blanks.



## ■ Display of Structure Members in Address Display Mode

Normally, by selecting [View]–[Display Address] from the menu bar, you can switch parameters displayed as tag names into their allocated addresses.

However, the display of structure members do not change even when you select [View]–[Display Address] from the menu bar.

## ■ Display of I/O Comments

I/O comments set in structure type definitions are displayed, just as in offline mode.

I/O comments of Q structures are not displayed.

## ■ TipHelp Display

TipHelp for structure members is displayed, regardless of the presence or absence of arrays.

TipHelp is not displayed for structure name parameters.

TipHelp is not displayed for Q structure members.

## ■ Debugging Functions

### ● Forced Set, Forced Reset, Change Word Data, Change Long Word

All these settings can be performed by specifying a structure member and selecting the corresponding function from the [Debug/Maintenance] menu on the menu bar.

## B32.7.4 Online Editing

This section describes the restrictions in online-editing of blocks containing structures.

### ■ Editing Structure Members

Structure members can be edited online, just as in offline mode.

### ■ Edit-Prohibition of Circuits Containing Structure-related Instructions

Circuits containing SCALL instructions, STMOV instructions or STRCT instructions are edit-prohibit circuits in online mode.

### ■ Inserting Empty Lines above STRCT Instructions

Inserting empty lines above a STRCT instruction is not allowed.

### ■ Adding Instructions

SCALL instructions, STMOV instructions and STRCT instructions cannot be added in online-edit mode.

## B32.7.5 Other Online Debugging Functions

### ● Sampling Trace

Structure members cannot be set up for sampling trace.

## B33. Using Remote OME

Remote OME is the abbreviation for remote Operation, Maintenance & Engineering of equipment as proposed by Yokogawa Electric Corporation. It allows users to tune and maintain a remote instrument off-site via a remote communications line.

WideField2 supports three remote operation environments for remote OME: dedicated line connection, dialup connection via a modem, and E-mail via the Internet.

## B33.1 Means for Using Remote OME

The remote OME function is available when a personal computer running the WideField2 software is connected to a remote FA-M3 through one of the following communication means.

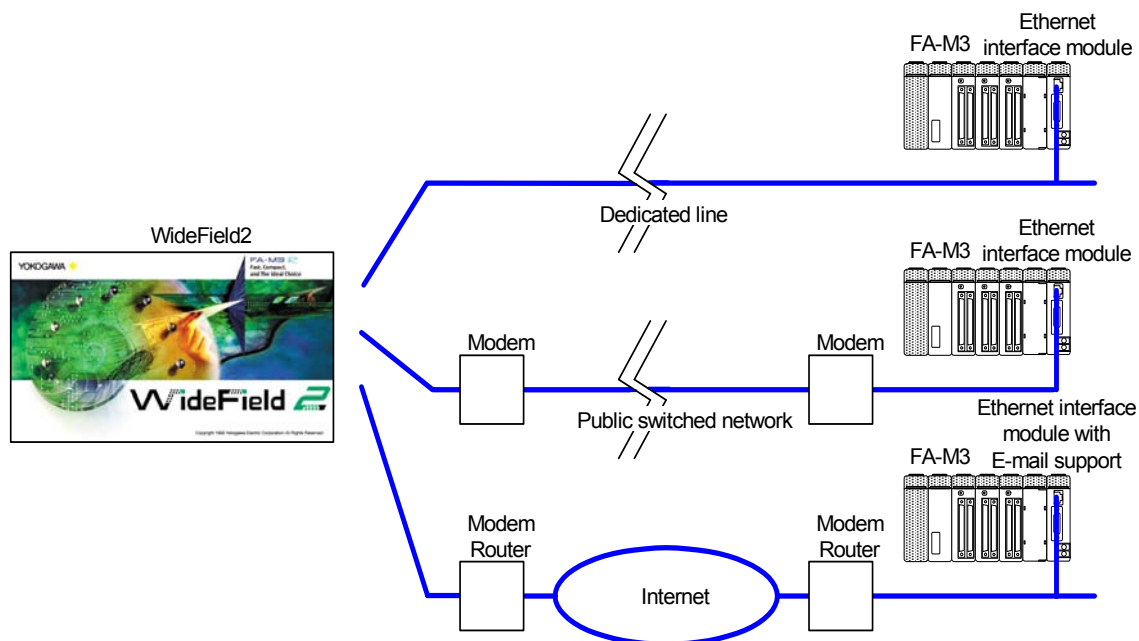


Figure B33.1 Means for Using Remote OME

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### ■ Using a Dedicated Line

Remote OME can be implemented in a local network using a dedicated line. Such local networks include intranets, in-house LANs, and PLC dedicated networks.

You can access the FA-M3 online, just like in normal Ethernet connection, by using its IP address set with an Ethernet interface module.

When connected online through a dedicated line, you can use all the normal WideField2 online functions.

#### SEE ALSO

For details on online connections, see Chapter B11, "Overview of Online Functions."

For details on the online functions, see Chapters B12, "Downloading," through B27, "Device Manager."

## ■ Using a Public Switched Network

You can connect WideField2 to a remote FA-M3 by dialing up from a personal computer through a modem.

When connected through dial-up line (with no Internet connection), you can use all the normal WideField2 online functions.

---

### **SEE ALSO**

For details on dialup connection, see Section B33.2, "Dialup Connection."

For details on online connections, see Chapter B11, "Overview of Online Functions."

For details on the online functions, see Chapters B12, "Downloading," through B27, "Device Manager."

---

## ■ Using the Internet

You can also use Remote OME via the Internet through a modem, dialup router, or other means.

Communications between networks on the Internet is normally protected by firewalls, which do not allow direct online connections. Thus, WideField2 uses Email as a communications medium to access an FA-M3 through the Internet. This allows a user to send and receive data and perform Remote OME.

---

### **SEE ALSO**

For details on dialup connections, Section B33.2, "Dialup Connection."

For details on online connections, see Chapter B11, "Overview of Online Functions."

For details on the online functions, see Chapters B12, "Downloading," through B27, "Device Manager."

---

## B33.2 Dialup Connection

Before you can use the Remote OME over a public switched network (including the Internet), you must first establish a dialup connection from your personal computer.



### CAUTION

The procedures for establishing and terminating a dialup connection and the corresponding screen display depend on the operating system running on the personal computer.

### SEE ALSO

For details on the procedures for establishing and terminating a dialup connection and the corresponding screen display, see the user's manual for the operating system of the personal computer.

### B33.2.1 Establishing a Dialup Connection

You can establish a dialup connection from a personal computer to a public switched network using a modem.

### TIP

If you use dial-up connection to access the Internet, and if the [Dialup] option of the Email Setup tab of the Set up Environment dialog box is selected, you must establish a dialup connection before initiating any operation that accesses the receive and send mail servers. If your personal computer is not connected when you attempt to execute such operations, a dialog box will open requesting you to establish a dialup connection.

### SEE ALSO

For details on the Email Setup tab of the Set up Environment dialog box, see Section B33.4.1, "Email Environment Setup."

To establish a dialup connection, use the following procedure.

### ◆ Procedure ◆

(1) Double-click the [My Computer] icon  
on the Windows desktop.

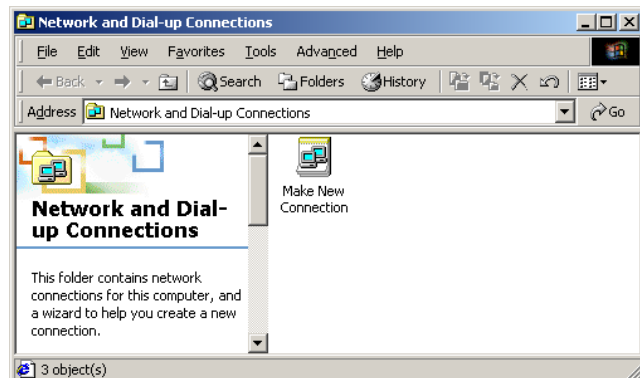
⇒ The My Computer window opens.

**(2) Double-click the [Network and Dial-up Connections] icon.**

⇒ The Network and Dial-up Connections window opens.

**(3) Click the [Make New Connection] icon.**

⇒ The Network Connection Wizard dialog box opens.



Step (3)

B2802\_01.VSD

**(4) Enter required values in the series of Network Connection Wizard dialog boxes, and at the end, click [Finish].**

**TIP**

On the Network Connection Wizard screens, enter a connection destination, a phone number to call, and other dialup connection information.

**TIP**

If you use Internet connection, ask your ISP or network administrator for help on the required setup to establish a dialup connection.



Step (4)

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⇒ The Network Connection Wizard dialog closes and control returns to the Network and Dial-up Connections window. A new dialup connection setup is created.

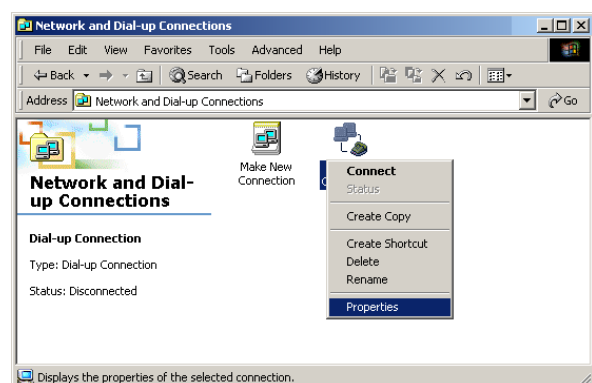
**(5) Right-click the newly created dialup connection icon ([My Connection] in this example), and select [Properties].**

⇒ The My Connection dialog box opens with the [General] tab selected.

**(6) Turn off the [Use Area Code and Dialing Properties] checkbox, and enter a phone number.**

**TIP**

If you use a modem to access a public switched network other than the Internet, append "##3" to the phone number. This suffix is the command for PIAFS transmission. Do not use the suffix for Internet connections.



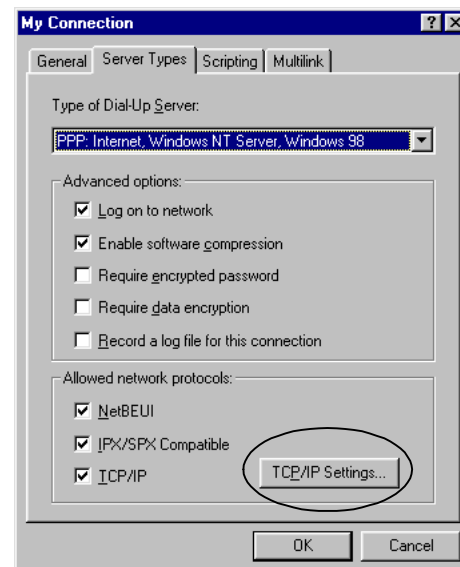
Step (5)

B2802\_03.VSD

(7) Select the [Server Types] tab, and make settings as shown on the right.

(8) Click [TCP/IP Settings].

⇒ The TCP/IP Settings dialog box opens.



Steps (7) and (8)

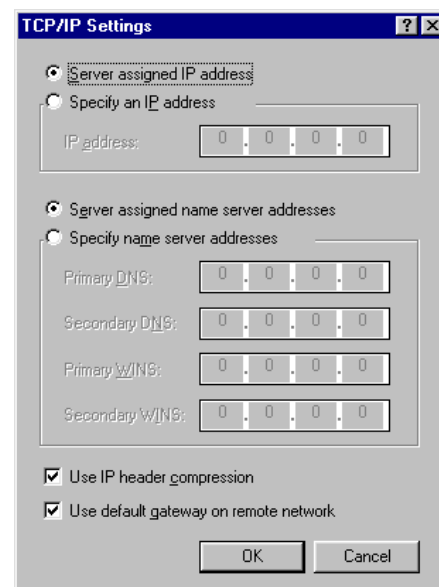
B2802\_04.VSD

(9) Turn on the [Specify an IP address] option button, enter the IP address of your personal computer in the [IP address] text box, and click [OK].

⇒ The TCP/IP Settings dialog box closes and control returns to the My Connection dialog box.

#### TIP

The IP address setup is required if you are using a public switched network via a modem. If you use the Internet, the IP address setting depends on the ISP and the connection method to be used. For further information, consult your ISP or network administrator.



Step (9)

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**(10) Click [OK].**

⇒ The My Connection dialog box closes and control returns to the Network and Dial-up Connections window.

**(11) Double-click the dialup connection icon ([My Connection] in this example).**

⇒ The My Connection dialog box opens.

**(12) Enter a user name and a password, and click [Connect].**

⇒ The dialup connection is made. If the connection is successful, a "Logged on to the network" message is displayed, and a network icon is displayed at the right end of the task bar.

**(13) Double-click the network icon.**

⇒ The Dial-Up Network dialog box opens.



Step (12)

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**TIP**

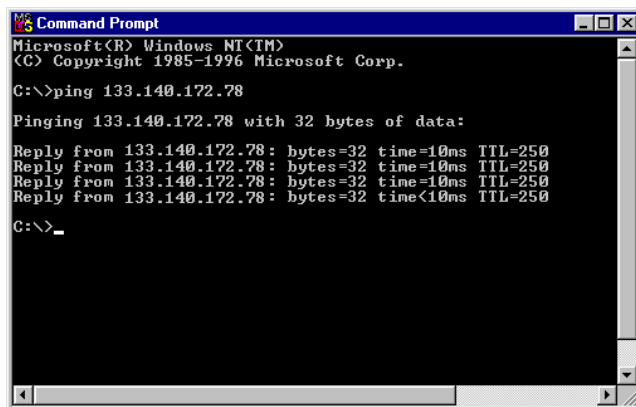
If you are establishing connection through a public switched network via a modem, you can check whether the personal computer is successfully connected to the remote network.

To do this, open the Windows Command Prompt window, type "Ping xxx.xxx.xxx.xxx", where "xxx.xxx.xxx.xxx" is the destination IP address, and press the [Enter] key.

If connection is successful, the following messages will be displayed:

Reply from XXX.XXX.XXX.XXX: byte=32 time=999ms TTL=999

(where "XXX.XXX.XXX.XXX" is the destination IP address, and "999" is a number))

A screenshot of a Windows Command Prompt window. The title bar reads "Command Prompt". The window content shows the following text:

```
Microsoft(R) Windows NT(TM)  
(C) Copyright 1985-1996 Microsoft Corp.  
C:\>ping 133.140.172.78  
Pinging 133.140.172.78 with 32 bytes of data:  
Reply from 133.140.172.78: bytes=32 time=10ms TTL=250  
Reply from 133.140.172.78: bytes=32 time=10ms TTL=250  
Reply from 133.140.172.78: bytes=32 time=10ms TTL=250  
Reply from 133.140.172.78: bytes=32 time<10ms TTL=250  
C:\>_
```

B2802\_08.VSD

**Figure B33.2** Command Prompt Window

## B33.2.2 Terminating a Dialup Connection

To terminate a dialup connection to the Internet, use the following procedure.

### ◆ Procedure ◆

- (1) Ensure that the Dial-Up Network dialog box is open.

#### TIP

To open the Dial-Up Network dialog box, double-click the dialup connection icon in the task bar.

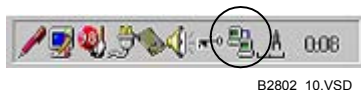
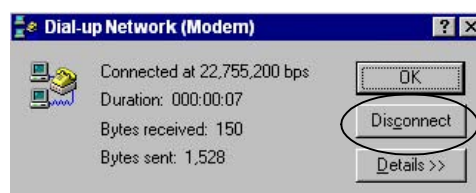


Figure B33.3 Dialup Connection Icon

Select [Status] in the displayed menu.

- (2) Click [Disconnect].

⇒ The personal computer is disconnected.



Step (2)

#### TIP

You can also disconnect by clicking the dialup connection icon in the task bar of Windows and selecting [Disconnect] from the displayed menu.

#### TIP

If you are connected via the Internet, and if the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, you can disconnect an Internet connection in WideField2. To do so, select [Tools]–[Mail]–[Disconnect] from the menu bar, or select [Disconnect] from the popup menu in the Received Mails window.

#### SEE ALSO

For details on the Email Setup tab in the Set up Environment dialog box, see Section B1.2.8, "Email Setup."



#### CAUTION

An error is generated if a dialup connection is terminated while WideField2 is connected online. Never terminate a dialup connection while you are using an online function (e.g., online edit, download, upload, or send/receive mail).

---

## B33.3 Using WideField2 Online Functions

You can use all the WideField2 online functions through an Ethernet connection if you are connected via a dedicated line or a public switched network not going through the Internet.

### SEE ALSO

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For details on dialup connection, see Section B33.2, "Dialup Connection."

For details on online connection, see Chapter 10, "Overview of Online Functions."

For details on the online functions, see Chapters B11, "Downloading" through B25, "Device Manager."

---



### CAUTION

In Remote OME through the Internet, you cannot use the normal WideField2 online functions. Remote OME through the Internet is implemented by E-mails.

---

### SEE ALSO

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For details on Remote OME by Email, see Section B33.4, "Remote OME by Email."

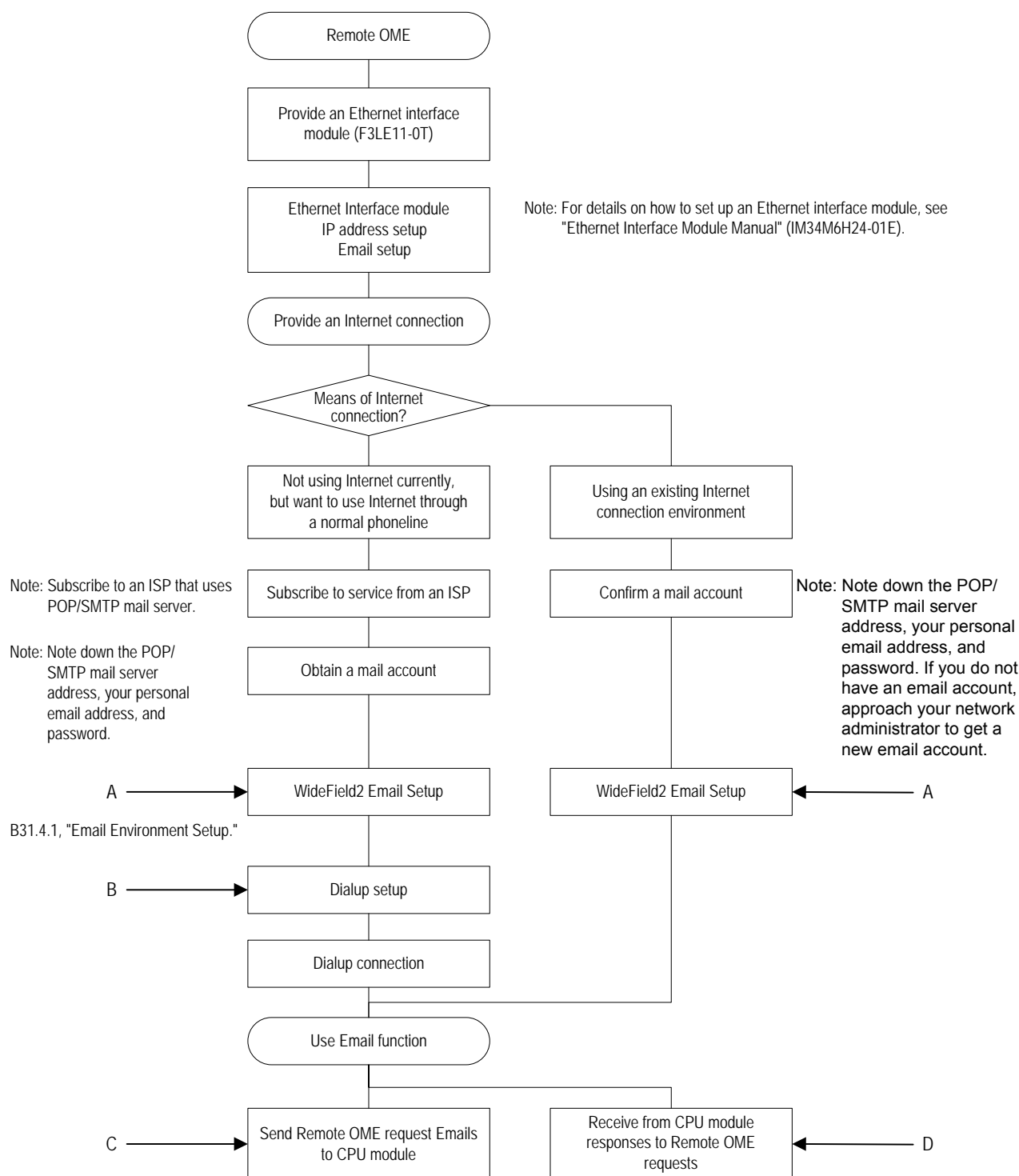
---

## B33.4 Remote OME by Email

Communications between networks on the Internet is normally protected by firewalls, which do not allow direct online connections.

To avoid passing through firewalls, WideField2 achieves Remote OME for remote maintenance by sending and receiving Emails over the Internet.

The flowchart for conducting Remote OME by Email over the Internet is given below.



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**SEE ALSO**

- A: See Section B33.4.1, "Email Environment Setup."
- B: See Section B33.2, "Dialup Connection."
- C: See Section B33.4.2, "Requests to CPU Module."
- D: See Section B33.4.3, "Receiving Emails."

**TIP**

The procedure for connecting to Internet depends on ISP and network environment settings. For details, consult your ISP or network administrator.

## B33.4.1 Email Environment Setup

To set up the WideFiled2 Email environment, use the following procedure.

### ◆ Procedure ◆

(1) Select [Tools]–[Set up Environment] from the menu bar.

⇒ The Set up Environment dialog box opens.

(2) Click the Email Setup tab.

(3) Enter the required Email settings, and click [OK].

Steps (2) and (3)

B2804\_01.VSD

The Email setup data you have to enter includes the following items.

### ● Recipient Information

The following table lists the setup items for the recipient (i.e., FA-M3).

**Table B33.1 Recipient Information Setting**

Field Name	Initial Value	Valid Parameter Values	Description
Mail address	Previous setting or blank	A character string not longer than 256 characters and valid as email address(es)	Sets mail addresses assigned to CPUs as destinations for emails. You can enter multiple mail addresses using commas as delimiters. You can also select mail addresses from a list box containing up to 16 previous email address settings remembered by the system.
CPU number	Previous setting or 1	1 to 4	Sets the CPU number to connect to.
LE password	Previous setting or blank (For a previous setting, the actual password is masked and displayed as asterisks ("**"))		Sets the password for the Ethernet module to connect to. The password defined here is stored in conjunction with the CPU mail address.
CPU security password	Previous setting or blank		Sets the password defined for the security function running on the CPU. The password defined here is stored in conjunction with the CPU mail address.

## ● Sender Information

The following table lists setup items for the sender (i.e., WideField2).

**Table B33.2 Sender Information Setting**

Field Name	Initial Value	Valid Parameter Values	Description
WideField2 mail address	Previous setting or blank	A character string not longer than 256 characters and valid as an email address	Sets a mail address assigned to WideField2 (PC) to be used as the mail source.
Reply-To address	Previous setting or blank	A character string not longer than 256 characters and valid as an email address	Sets the mail address to be used as the address for mails returned from a CPU. If the mail return address is the same as the address assigned to WideField2, this setting is optional.
Mail server for receiving	Previous setting or blank	IP address Character string, valid as a host name	Sets the server to be used for receiving mails using either an IP address or a host name.
Port number for receive mail server	Previous setting or 110	Numerical value	Sets the port number assigned to the POP protocol for the receive mail server.
Mail server for sending	Previous setting or blank	IP address Character string, valid as a host name	Sets the server to be used for sending mails using either an IP address or a host name.
Port number for send mail server	Previous setting or 25	Numerical value	Sets the port number assigned to the SMTP protocol for the send mail server used for sending.
POP user name	Previous setting or blank		Sets the user name to be used when connecting to the receive mail server.
Password			Sets the password for the POP user name. This password is used when connecting to the receive mail server. If a password is not set here, the system displays a dialog to prompt for password entry when a connection is made to the receive mail server.
Authentication	Previous setting or 'standard'		Sets the user authentication method for the receive mail server.
Mails on server	Previous setting or 'Delete All'		Specifies whether to delete received mails on the receive mail server. Delete All: Receives all mails stored on the receive mail server and at the same time, removes them from the mail server. Keep: Do not remove received mails from the receive mail server. Only receives all mails that have arrived since the last receive operation.
Dialup	Previous setting or 'no'		Sets whether to perform dialup connection when connecting to the receive mail server or send mail server. Dialup connection cannot be selected if the dialup network function is not installed on the PC used.
Telephone directory entry name to use	Previous setting or blank	Entry name created as a telephone directory entry name in the dialup network function.	Selects a telephone directory entry name for performing dialup connection from a list of telephone directory entry names created. Telephone directory entries are created using the dialup network function.

### TIP

For details on how to set up the mail server, contact your ISP or network administrator.



**SEE ALSO**

For details on how to set up a dialup connection, see Section B33.2, "Dialup Connection."

## B33.4.2 Requests to CPU Module

WideField2 controls a remote FA-M3 CPU module by sending email requests to the module and receiving email responses from the module.

FA-M3 automatically analyzes an email request from WideField2 and returns an email to WideField2 as its response.

This section describes the transmission of email requests for Remote OME functions from WideField2 to an FA-M3 CPU module.

The following types of Remote OME email requests are described in subsequent sections.

- A Download program
- B Upload program
- C Program file size
- D Set up sampling trace
- E Upload sampling trace results
- F Upload device data
- G Download device data
- H Device data mail size
- I Upload system log
- J Upload user log

### ■ A Download Program

The Download Program email requests to download a program from WideField2 and to store it in the CPU module. To send a Download Program request email, use the following procedure.

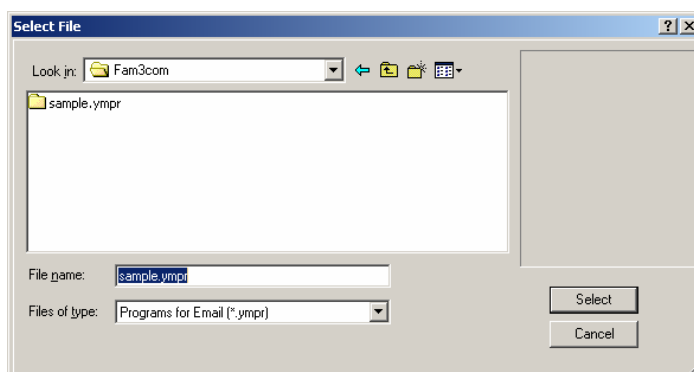
#### ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[Download] from the menu bar.

⇒ The Select File dialog box opens.

(2) Select a program to be downloaded, and click [Select].

⇒ The Specify Operating Mode dialog box opens.



Steps (2) and (3)

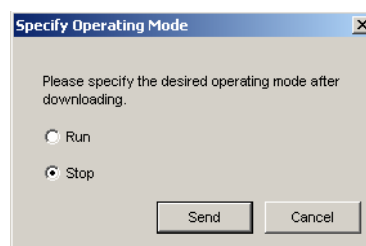
B2804\_05.VSD

**(3) Turn on the [Run] or [Stop] option button, and click [Send].**

**TIP**

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not yet established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (3)

B2804\_06.VSD

⇒ The download request Email is sent to the CPU module, and the program is downloaded to the CPU.

**TIP**

You can check the response of the CPU module to the download request Email by reading the Email returned from the CPU module.

**SEE ALSO**

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."



**CAUTION**

- The only programs that can be downloaded are programs that have been previously uploaded by Email and saved in files.
- If you download a program to the CPU by Email while WideField2 is connected online to the same CPU, WideField2 may no longer operate normally. In this case, select [Online]–[Disconnect] from the menu bar to disconnect, and then select [Online]–[Connect] from the menu bar to reconnect before using the online functions.

## ■ B Upload Program

This email requests the CPU module to upload a program to WideField2. To send an upload program request email, use the following procedure.

### ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[Upload] from the menu bar.

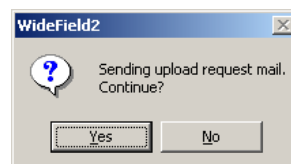
⇒ A confirmation dialog box opens.

(2) Click [Yes].

#### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (2)

B2804\_07.VSD

⇒ The upload program request Email is sent to the CPU module

#### TIP

You can check the response of the CPU module to the upload request Email by reading the Email returned from the CPU module. You can save the uploaded program by saving the received Email.

#### SEE ALSO

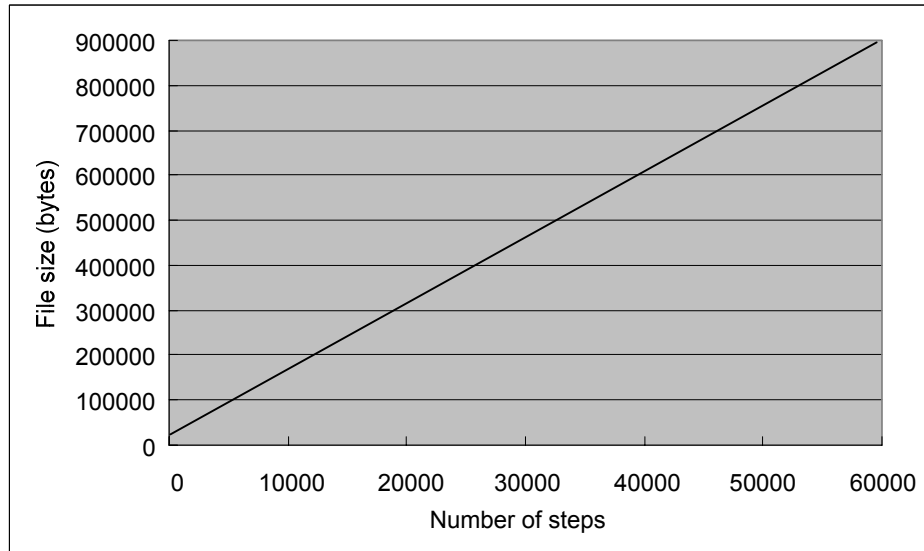
For details on receiving emails, see Section B33.4.3, "Receiving Emails."

## ■ C Program File Size

The file size of an uploaded program increases in proportion to the number of steps in the program. The file size also depends on whether tag name definitions are included in the upload.

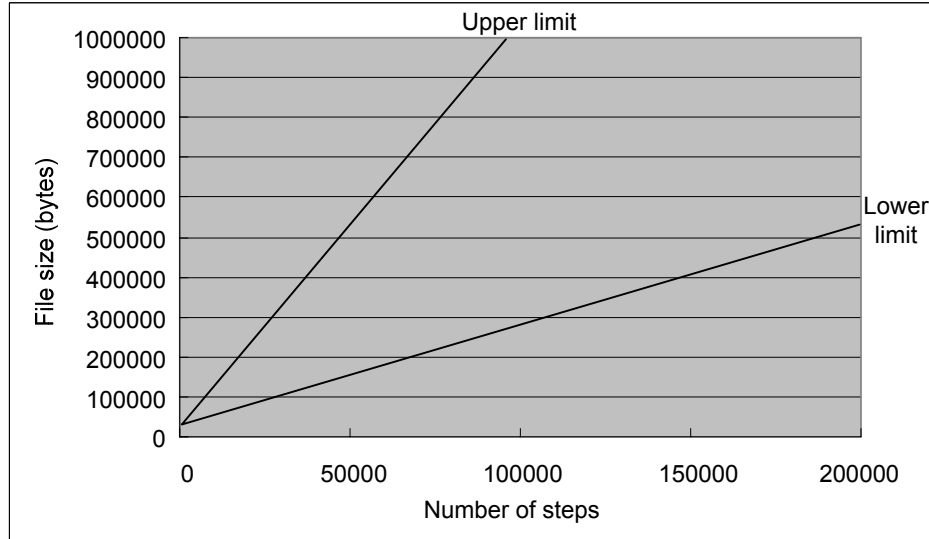
If tag name definitions are included in the uploaded program, the size of the created file also depends on the ratio of the number of tag name definitions to the number of steps.

The relationship between a file size and the number of steps is illustrated below.



B2804\_17.VSD

**Figure B33.4 File Size of a Program with No Tag Name Definitions**



B2804\_18.VSD

**Figure B33.5 File Size of a Program with Tag Name Definitions**

## ■ D Set up Sampling Trace

This Email requests to transfer a sampling trace setup file from WideField2 to a CPU module.

### TIP

To create a sampling trace setup file, use the sampling trace tool. You can set up a sampling trace so that the CPU module will automatically return trace results at the end of the sampling trace. Use the Email receive function to receive sampling trace results, and save the data to a file.

To review saved sampling trace results, use the sampling trace tool.

### SEE ALSO

For details on the sampling trace tool, see Chapter B24, "Sampling Trace Tool."

To send a set up sampling trace request email, use the following procedure.

## ◆ Procedure ◆

- (1) Select [Tools]–[Mail]–[Sampling Trace]–[Setup] from the menu bar.

⇒ The Select File dialog box opens.

- (2) Select a sampling trace setup file to be transferred to the CPU module, and click [Select].

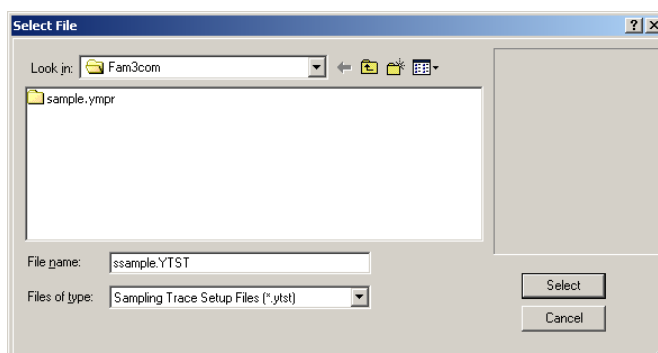
⇒ The Get Trace Results dialog box opens.

- (3) Specify how the CPU module should behave when tracing completes by turning on either the [Automatic mail reply at end of tracing] or [Trace setup only] option button, and click [Send].

### TIP

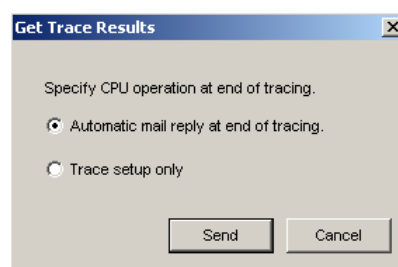
If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (2)

B2804\_08.VSD



Step (3)

B2804\_09.VSD

⇒ The set up sampling trace email is sent to the CPU module.

---

**TIP**

If the [Automatic mail reply at end of tracing] option button is turned on in the Get Trace Results dialog box, sampling trace results are automatically returned to the sender of the request email by the CPU module. You can review the returned sampling trace results by reading the return Email.

You can check the response of the CPU module to the set up sampling trace request Email by reading the Email returned from the CPU module.

---

---

**SEE ALSO**

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

---

## ■ E Upload Sampling Trace Result

This Email request obtains sampling trace results stored in the CPU module.

### TIP

The upload sampling trace result request Email sends only a request email, without sending a setup file. Sampling trace results are returned from the CPU module by Email.

You need not use the upload function if the [Automatic mail reply at end of tracing] option button in the Get Trace Results dialog box is turned on at the time when you send the set up sampling trace request Email.

Sampling trace results returned from the CPU module are saved in a format that can be reviewed using the sampling trace tool.

To send an upload sampling trace result request Email, use the following procedure.

## ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[Sampling Trace]–[Results] from the menu bar.

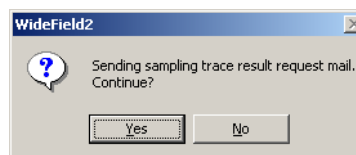
⇒ A confirmation dialog box opens.

(2) Click [Yes].

### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not yet established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (2)

B2804\_10.VSD

⇒ The upload sampling trace result request Email is sent to the CPU module.

### TIP

You can check the response of the CPU module to the sampling trace result request Email by reading the Email returned from the CPU module. You can save the sampling trace results by saving the returned Email.

You can review the saved sampling trace results with the sampling trace tool.

### SEE ALSO

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

For details on the sampling trace tool, see Chapter B26, "Sampling Trace Tool."

## ■ F Upload Device Data

This Email requests the CPU module to upload device data to WideField2.

### TIP

The upload device data request email sends only a mail request. The uploaded data is transmitted from the CPU module by Email.

Device data returned from the CPU module is saved in a format that can be reviewed with the device manager.

To send an upload device data request Email, use the following procedure.

## ◆ Procedure ◆

- (1) Select [Tools]–[Mail]–[Device]–[Upload] from the menu bar.

⇒ The Set up Points to Upload dialog box opens.

- (2) Set the range of FA-M3 device data to be uploaded, and click [Send].

### TIP

Clicking [Refer to CPU] displays the complete range of devices for different CPU module types.

### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not yet established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection. Transfer by Email is not available if a dialup connection is not established.

⇒ The upload device data request Email is sent to the CPU module.

Step (2)

B2804\_11.VSD

### TIP

You can check the response of the CPU module to the upload device request Email by reading the Email returned from the CPU module. By saving the received mail, you can save the device data.

You can review the saved device data with the device manager.

## SEE ALSO

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

For details on the device manager, see Chapter B27, "Device Manager."



## ■ G Download Device Data

This Email requests to download device data to the CPU module.

### TIP

To create a device data file, use the device manager.

### SEE ALSO

For details on the device manager, see B27, "Device Manager."

To send a download device data request Email, use the following procedure.

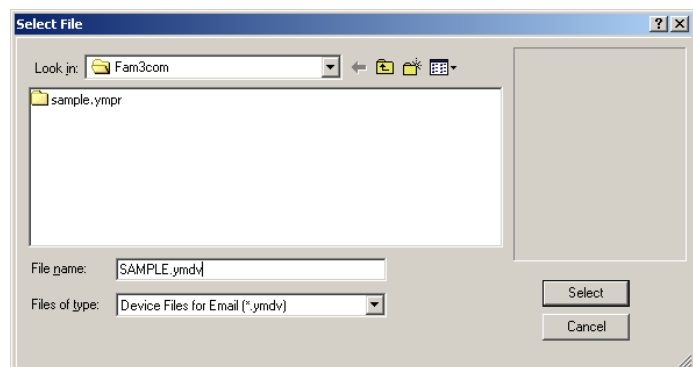
## ◆ Procedure ◆

- (1) Select [Tools]–[Mail]–[Device]–  
[Download] from the menu bar.

⇒ The Select File dialog box opens.

- (2) Select a device data file to be  
downloaded to the CPU module, and  
click [Select].

⇒ The Set up Points to Download dialog box opens.



Step (2)

B2804\_12.VSD

- (3) Confirm that the Set up Points to  
Download dialog box is open.

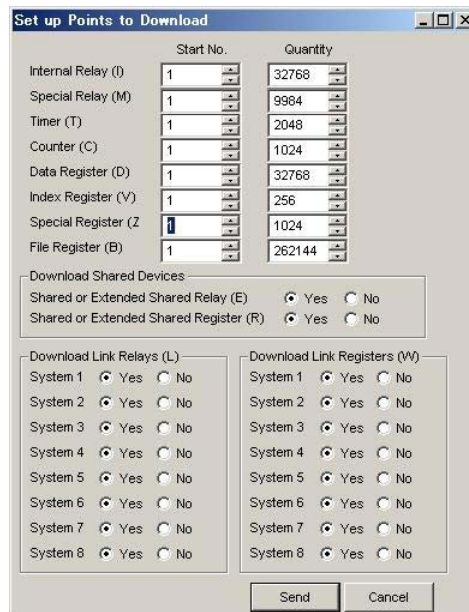
- (4) Set the range of devices to be  
downloaded to the FA-M3, and click  
[OK].

### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.

⇒ The download device data request Email is sent to the FA-M3.



Step (3)

B2804\_13VSD

---

**TIP**

You can check the response of the CPU module to the download device request Email by reading the Email returned from the CPU module..

---

**SEE ALSO**

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

---

**CAUTION**

Only device data files with formats suitable for Email transfer (that is, device data files with filename extension of ".ymdv" can be downloaded). Device data files with filename extension ".ydvf" cannot be downloaded. Using the device manager, change the format of the device data files before saving.

---

## ■ H Device Data Mail Size

The mail sizes of device data sent or received differ for relay devices and register devices, and can be determined as follows:

- Relay devices : Number of device points x 5 (bytes)
- Register devices : Number of device points x 2 (bytes)

If both relay and register devices are transferred, calculate the mail sizes for relay and register devices separately and then sum the results.

The actual size is slightly larger than the calculated size because of the addition of a mail header and data on the number of points.

## ■ I Upload System Log

This Email requests the CPU module to upload a system data log to WideField2.

### TIP

This upload system log request Email sends only a mail request. The system log is transmitted to WideField2 from the CPU module by Email.

The received system log is saved in a format readable in WideField2 when you save the received Email. To review the saved system log with WideField2, select [File]–[Open] from the menu bar.

To send an upload system log request Email, use the following procedure.

## ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[System Log] from the menu bar.

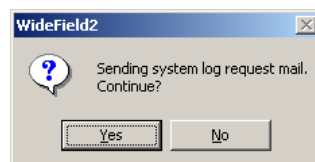
⇒ A confirmation dialog box opens.

(2) Click [Yes].

### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not yet established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (2)

B2804\_14.VSD

⇒ The load system log request Email is sent.

### TIP

You can check the response of the CPU module to the upload system log request Email by reading the Email returned from the CPU module. By saving the received Email, you can save the returned data as system log data.

## SEE ALSO

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

## ■ J Upload User Log

This Email requests the CPU module to upload a user log to WideField2.

### TIP

This upload user log request Email sends only a request mail. The user log is transmitted to WideField2 from the CPU module by Email.

The received user log is saved in a format readable in WideField2 when you save the received Email. To review the saved user log in WideField2, select [File]–[Open] from the menu bar.

To send an upload user log request Email, use the following procedure.

## ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[User Log] from the menu bar.

⇒ A confirmation dialog box opens.

(2) Click [Yes].

### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Transfer by Email is not available if a dialup connection is not established.



Step (2)

B2804\_15.VSD

⇒ The upload user log request Email is sent.

### TIP

You can check the response of the CPU module to the upload user log request Email by reading the Email returned from the CPU module. By saving the received Email, you can save the returned data as user log data.

## SEE ALSO

For details on receiving Emails, see Section B33.4.3, "Receiving Emails."

### B33.4.3 Receiving Emails

FA-M3 data transmitted in emails as responses to requests from WideField2 is stored in the mailbox of WideField2.

You can monitor the status and acquire data of the FA-M3 by opening and processing these Emails in WideField2.

#### SEE ALSO

For details on request Emails sent to an FA-M3 CPU module, see Section B33.4.2, "Requests to CPU Module."

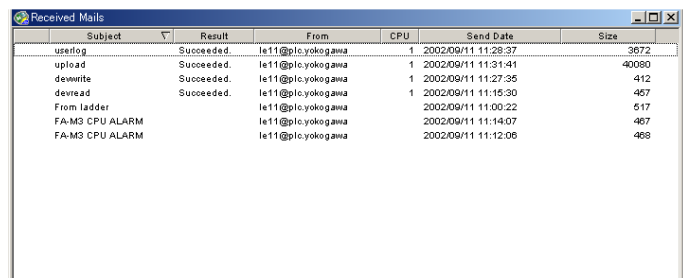
## ■ Displaying a List of Received Emails

To display a list of Emails received by WideField2, use the following procedure.

### ◆ Procedure ◆

(1) Select [Tools]–[Mail]–[Mailbox] from the menu bar.

⇒ The Received Mails window opens. All operations on received Emails can be carried out in this window.



Subject	Result	From	CPU	Send Date	Size
useifog	Succeeded	le11@plc.yokogawa	1	2002/09/11 11:28:37	3672
upload	Succeeded	le11@plc.yokogawa	1	2002/09/11 11:31:41	40080
devwrite	Succeeded	le11@plc.yokogawa	1	2002/09/11 11:27:35	412
devread	Succeeded	le11@plc.yokogawa	1	2002/09/11 11:15:30	457
From ladder		le11@plc.yokogawa		2002/09/11 11:00:22	517
FA-M3 CPU ALARM		le11@plc.yokogawa		2002/09/11 11:14:07	467
FA-M3 CPU ALARM		le11@plc.yokogawa		2002/09/11 11:12:08	468

Step (1)

B2804\_02.VSD

The content of the Received Mails window is described in the following table.

**Table B33.3 Content of the Received Mails Window**

Field Name	Description
(Blank/NEW)	Indicates the read/unread status of received mails. NEW : Unread (not saved) mails Blank : Read (saved or displayed) mails
Subject	Displays the subject of a received mail. The subjects of response mails from FA-M3 are as follows: upload : Upload program download : Download program trace : Set up sampling trace trcread : Sampling trace results devwrite : Download device data devread : Upload device data userlog : User log syslog : System log
Result	For mail responses from CPU modules to request mails from WideField2, displays one of the following response results. Blank : This is not a response mail from a CPU module. Succeeded : The request was successfully executed. Failed : The request was not executed. The reason is indicated by the ErrorCode stored in the mail.
From	Identifies the sender of a mail.
CPU	For mail responses from CPU modules to request mails from WideField2, displays the CPU number (1-4) of the CPU that has executed the request. Displays nothing for mails that are not response from CPU modules.
Send Date	Displays the date and time a mail was received.
Size	Displays in units of bytes the size of a received mail in the mailbox.

#### TIP

- By default, unread mails (labeled with "NEW") are listed in descending order of the time-stamp values before read (with no label) mails, which are also sorted similarly.
- You can sort listed mails by clicking the heading row of the display field to be used as the sort key.

## ■ Displaying the Content of Received Emails in Text Format

To display the content of a received Email in text format, use the following procedure.

### ◆ Procedure ◆

- (1) In the Received Mails window, select a received mail you want to view in text format and press the [Enter] key, or simply double-click the mail.

⇒ The content of the selected mail is displayed in text format.

---

#### TIP

- When an unread mail in the Received Mails window is displayed in text format, its "New" label is removed to indicate that the mail has been read.
  - The content of a received mail (a text file) is displayed using the standard editor associated with the file name extension ".txt".
  - Text files are stored in Unix mailbox format. Therefore, some mails (for example mails in EUC code) may not be correctly displayed in the standard editor.
- 

## ■ Receiving Emails

Emails sent from FA-M3 are stored in the mail server on the Internet. Before you can use such Emails in WideField2, you must first read the mails from the mail server. To do this, use the following procedure.

### ◆ Procedure ◆

- (1) Select [Tools]–[Mail]–[Read Mail] from the menu bar.

---

#### TIP

If the [Dialup] option is selected in the Email Setup tab of the Set up Environment dialog box, but a dialup connection is not established, a dialup connection confirmation dialog box opens prompting you to establish a dialup connection.

Emails are not read if dialup connection is not established.

---

---

#### TIP

If the [Password] field of the [Sender Information] group box is empty in the Email Setup tab of the Set up Environment dialog box, a password input dialog box opens to prompt for a password.

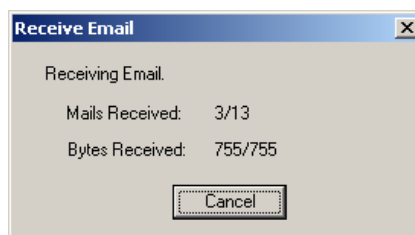
---

**(2) The mails stored in the receive mail server are transferred to WideField2.**

⇒ When all mails are transferred, the outcome of the transfer is displayed.

**TIP**

If you have established a dialup connection in the TIP section of step (1) above, the dialup connection is automatically disconnected.



Step (2)

B2804\_03.VSD



**CAUTION**

If [Mails on Server] is set to [Delete All] in the Email Setup tab of the Set up Environment dialog box, all received mails are deleted from the receive mail server after they are transferred to WideField2. Since WideField2 transfers all mails from the mail server, mails irrelevant to WideField2 may be inadvertently deleted.

For mails that are irrelevant to WideField2, select [File]–[Save As] from the menu bar in the Received Mails window to save them as text files, and then move the text files to your standard mailer (Email software).

Note that If you click [Cancel] in the Receive Email dialog box to terminate an on-going Email transfer, mails already transferred are already deleted from the receive mail server.



**CAUTION**

If you change the [Mails on Server] settings from [Keep] to [Delete All] in the Email Setup tab of the Set up Environment dialog box, the mail you receive immediately after the change may be the same mail received right before the change.



## ■ Saving Received Emails

In the Received Mails window, you can save received mails so as to use them with other WideField2 functions later. You can save received mails in the following file formats:

**Table B33.4 Mail Saving Format**

Sender	Mail Content	Name of Saved File	How to Review
CPU	Uploaded CPU module program	<file name>.YMPR	Cannot be reviewed or modified with WideField2.
	Sampling trace results	<file name>.YTRC	Use the sampling trace tool.
	Uploaded device data	<file name>.YMDV	Use the device manager.
	System log	<file name>.YSLG	Select [File]–[Open]–[Log File] from the menu bar.
	User log	<file name>.YULG	Select [File]–[Open]–[Log File] from the menu bar.
	Error mail	<file name>.YTXT	This is an error response from the CPU module to a request from WideField2. Use a standard text editor or a separate mailer (Email software) to review it.
Others	User mail	<file name>.YTXT	Use a separate mailer (Email software).

To save received mails, use the following procedure.

### ◆ Procedure ◆

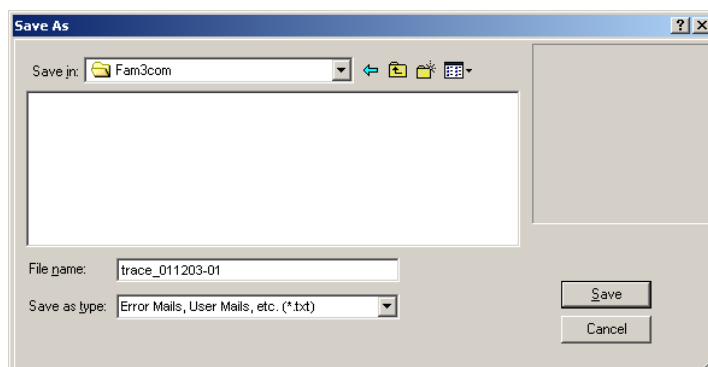
- (1) Confirm that the Received Mails window is open.
- (2) Select a mail to be saved, and select [File]–[Save As] from the menu bar.  
⇒ The Save As dialog box opens.
- (3) Enter a file name and click [Save].

#### TIP

The file format used for saving a mail is automatically determined according to the content of the mail.

#### TIP

If a project is open, received mails are saved in the project folder. Otherwise, they are saved in the Fam3Com folder.



Step (3)

B2804\_04.VSD

**CAUTION**

Programs uploaded and saved through Email cannot be viewed or modified using WideField2.

To view or modify such files, first download the program to the CPU. Next, connect to the CPU module using the Internet or other communications media and perform normal uploading.

**SEE ALSO**

For details on how to download programs to the CPU module, see Section B33.4.2, "Requests to CPU Module."

## ■ Changing the Read/Unread Status of Received Emails

In the Received Mails window, new and unread mails are labeled as "NEW", and mails that have been read have no label.

To change the unread status of a new mail to read status, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Received Mails window is open.
- (2) Select a newly arrived mail whose unread status you want to change, and select [Edit]–[Change Processing Status] from the menu bar.

**TIP**

To select multiple mails, select a range of mails, with the [Shift] key depressed.

⇒ The unread status of the selected mails is changed to the read status (a blank).

## ■ Deleting Received Emails

To delete received mails displayed in the Received Mails window, use the following procedure.

### ◆ Procedure ◆

- (1) Confirm that the Received Mails window is open.
- (2) Select a mail to be deleted, and select [Edit]–[Delete] from the menu bar.

#### **TIP**

---

To select multiple mails, select a range of mails, with the [Shift] key depressed.

---

⇒ The selected mails are deleted.



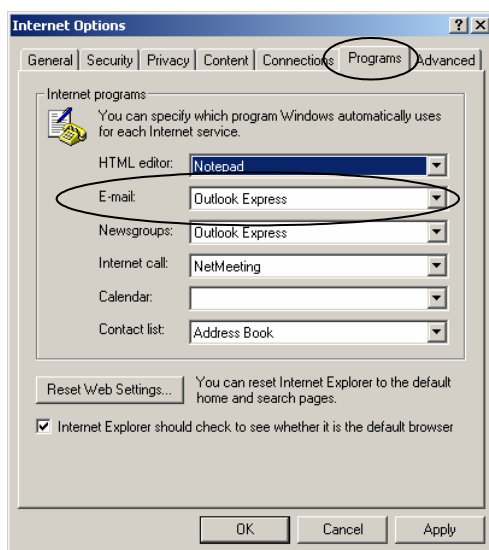
## B34. E-mail Technical Support

The E-mail Technical Support function enables you to send an E-mail query to Yokogawa's technical support center from within WideField2. Selecting this function from the menu starts the mail program and displays a screen for preparing a new E-mail. The E-mail address of Yokogawa's technical support center is automatically entered as the default destination address for your convenience.



### CAUTION

The Mailer program to be invoked is defined in the [E-mail] field on the Programs tab of the Internet Options dialog box of the Internet Explorer software.



Bb30\_01.VSD

**Figure B34.1 Mailer Settings**

### TIP

To display the Internet Options dialog box, select [Internet Options] from the Internet Explorer software or windows control panel.

## ◆ Procedure ◆

### (1) Select [Tools]–[E-mail to Technical Support] from the menu bar.

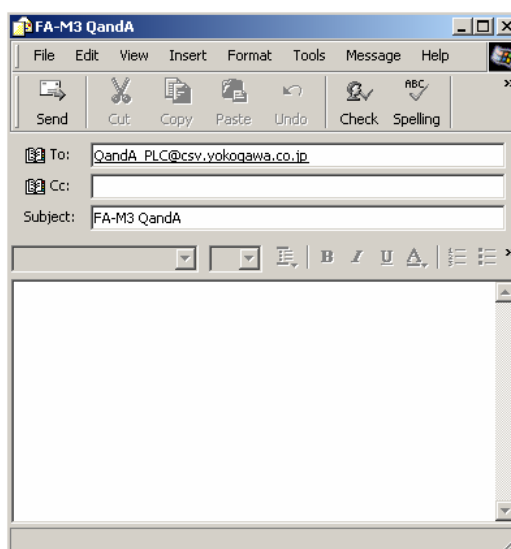
⇒ The mailer program is started and a screen for creating a new E-mail is displayed.

#### TIP

The E-mail address of Yokogawa's Technical Support Center is displayed in the destination address field by default.

### (2) Create and send the mail, according to operating procedures of the mailer program.

⇒ The created mail is sent to Yokogawa's Technical Support Center.



Step (2)

B30\_02.VSD

**FA-M3**

**FA-M3 Programming Tool WideField2**

**PART-C Advanced User's Manual**

**IM 34M6Q15-01E 4th Edition**

This manual describes advanced use of WideField2.





# C1. Precautions When Programming for a Multi-CPU System

If a system uses multiple CPUs, you need to create a project and develop programs for each CPU separately. This chapter describes some precautions when creating the configuration for a multi-CPU system. The slot number to be used in a program is set in the DIO setup in the configuration. CPUs perform I/O refreshing according to this setting. If multiple projects share the same output module, the module may not operate normally. Thus, an output module used by a project should not be used by another project at the same time.

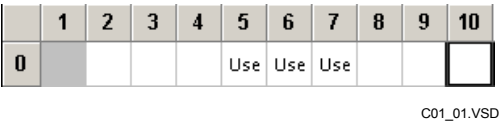


Figure C1.1 Project A Uses I/O Slots 5 to 7

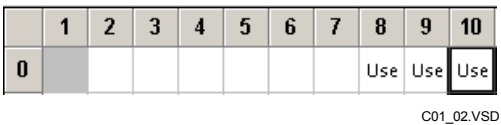


Figure C1.2 Project B Uses I/O Slots 8 to 10



### CAUTION

The F3SP28/38/53/58/59/66/67 modules supports sensor control blocks (SCB) in addition to normal blocks. SCB and normal blocks must be assigned unique slot numbers within the same CPU.

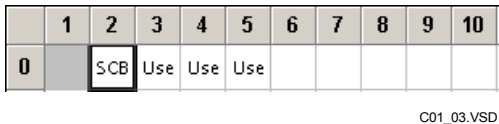


Figure C1.3 SCB Uses Slot 2, and Normal Blocks Use Slots 3 to 5

### TIP

A multi-CPU system refers to a system configuration with two, three, or four CPU modules mounted in a unit.

### SEE ALSO

For details on multi-CPU systems, see "Sequence CPU – Functions."



## C2. Recovering from Communication Errors

This chapter describes how to recover from an error during communications between a personal computer and the FA-M3. If a communications error is detected for whatever reason (often if the communications cable is disconnected or the FA-M3 is switched off), WideField automatically detects the failure and displays the following message on the personal computer screen.

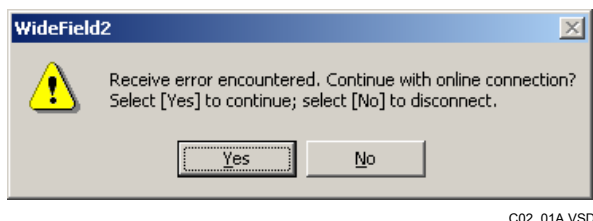


Figure C2.1 Communications Error Message

If you wish to continue the connection, you can check the cable and/or switch off and then switch on the FA-M3, and click [Yes] on the error message dialog box. This recovery measure may remove the cause of the error and allow you to continue operation (this measure will not work if the CPU communications mode before power off is changed after power on).

It is recommended that you click [No] to disconnect (all monitor windows will close automatically), check the communications cable, and reconnect online again by selecting [Online]–[Connect] from the menu bar.

If the power supply to the FA-M3 is inadvertently turned off during Ethernet communications, always click [No] to disconnect. If you click [Yes] in this case, a communications error will again be generated due to connection processing between the personal computer and the Ethernet interface module.

In the case of USB communications, the USB driver recognized by the PC may enter into an unknown state. If connection cannot continue, check the USB cable and/or switch off and then switch on the FA-M3, or disable and then enable the FA-M3 USB driver using Windows device manager.

### TIP

When you select [Edit]–[Convert] from the menu bar to convert a program during online-editing, and then select [Debug/Maintenance]–[End Online Editing] from the menu bar to terminate online editing, online connection is terminated only after the converted program is successfully transferred (the CPU is notified of the program transfer status).

If WideField2 is forced to terminate, or the FA-M3 is switched off, or the communications cable is disconnected during the conversion or transfer, you must switch off and then switch on the FA-M3.

Try to ensure that the above events do not occur during conversion or transfer.

If protection is enabled for the connected CPU, operation cannot continue even if you select [Yes] on the communications error message dialog box even though reconnection may seem to be successful. You should disconnect by selecting [No] on the communications error message dialog box and then try to reconnect.



## C3. How to Use the Find Function Effectively

You can search for the following objects in circuits.

- Devices (by tag name, structure name, structure member name, or address)
- Block names coded in ACT/INACT instructions and macro names coded in MCALL instructions
- Label names coded in CALL and JMP instructions and label names of jump destinations
- Instructions

You can either perform a search on the block or macro being edited or the entire project. The search object is specified the same way but the search result is presented differently. Block/macro search moves the cursor to the object found while project search displays a list of instances found. The following table lists the relevant menu options for various search objects.

**Table C3.1 Search Objects and Search Functions to Use**

Object to Search for	Block Search	Project Search
Device	[Find]–[Find]	[Project]–[Find in Project]
Block name or macro name	[Find]–[Find]	[Project]–[Find in Project]
Label	[Find]–[Find]	[Project]–[Find in Project]
Instruction	[Find]–[Find Instruction]	[Project]–[Find Instruction in Project]



### CAUTION

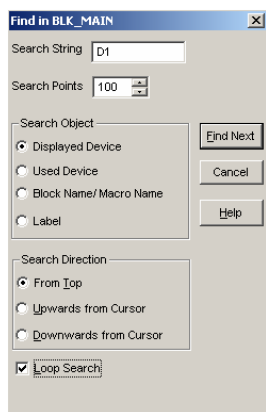
Project search searches all components blocks of an executable program. Project search does not search macros used in a program.

## C3.1 Finding a Specified Range of Devices

When searching for devices, you can specify to search for either an address (e.g., D00001) or a range of addresses (e.g., D00001-D00100).

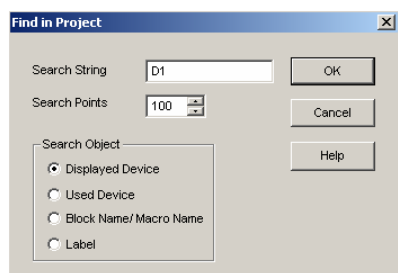
In addition, you can perform the search within the block being edited or over the entire project.

To define a range of devices to search for, specify the search points (number of addresses to be searched).



C03\_01A.VSD

**Figure C3.1** Specifying the Range “D00001-D00100” (Searching within a block)



C03\_04.VSD

**Figure C3.2** Specifying the Range “D00001-D00100” (Searching over an entire project)

### TIP

- If the [Loop Search] checkbox is turned on in the Find dialog box, block search restarts from the beginning of a block when it reaches the end.
- To search for a range of devices having certain common characters, use the wildcard (\*) character in the [Search String] text box of the Find or Find in Project dialog box.

### SEE ALSO

For details on how to use the wildcard (\*) character, see Section B4.7, "Find and Replace."

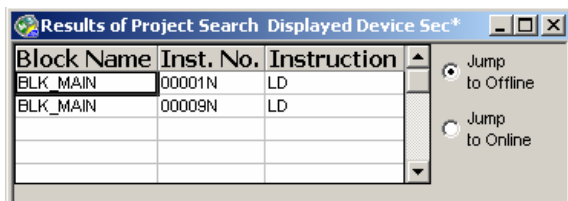
## C3.2 Jumping from the Project Search Result List

Finding in project produces a list of search results. You can display multiple search results screens concurrently.

Double-clicking a data item on the search results list (or selecting it and pressing the [Enter] key) jumps to the corresponding position where the device is used. Specifically, the cursor jumps to the beginning of the instruction where the device is used.

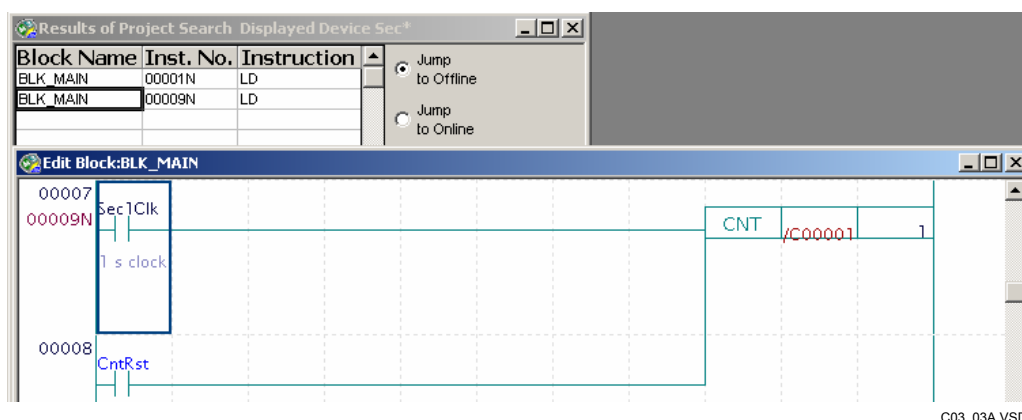
The jump destination may be to an offline editing window or an online monitor window.

Jumping to an online monitor window is allowed only when FA-M3 and WideField2 are connected online.



C03\_02A.VSD

Figure C3.3 Displaying a List of Search Results



C03\_03A.VSD

Figure C3.4 Jumping to the Position where a Device is Used

---

## C3.3 Online Search

In online monitoring, you can search the block or macro you are currently monitoring, but not all blocks in the CPU. To search all blocks, upload the program and then use project search.

To avoid overwriting files on the computer, upload the files to a different project name before performing searches.



### CAUTION

---

You can use structure names or structure member names, but not parameters that are allowed only within macros as search keys in online project search.

In particular, Q structure names or Q structure member names cannot be used as search keys.

---



## C3.4 Quick Search Using Shortcut Keys

While editing and monitoring a program, you can use shortcut keys to perform a quick search. The device in the location of the cursor on the edit screen is used as a search condition, and a search can be performed immediately.

**Table C3.2 Search Function Shortcut Keys**

Type of Search	Shortcut Key		Operation
Find	[Ctrl]+F		Opens the Find dialog box. The device at the cursor position is set as a search condition.
	[Tab]	[Enter]	When the [Tab] key is pressed, the device at the cursor position is set in the Find bar as a search condition. When the cursor is on the Find bar, the search object is searched for each time the [Enter] key is pressed.
	[F3]		When the cursor is on the program edit screen, a search is performed for the device set in the Find bar.
Find in Project	[Ctrl]+[Shift]+F		Opens the Find in Project dialog box. The device at the cursor position is set as a search condition.
	[Tab]	[Shift]+[Enter]	When the [Tab] key is pressed, the device at the cursor position is set in the Find bar as a search condition. When the cursor is on the Find bar, a project search is performed for the search object each time [Shift]+[Enter] is pressed.



## C4. Storing Comments to CPU and Restoring Comments

There are two types of comments: those attached to programs and those attached to devices. The former are circuit comments and subcomments, and the latter are I/O comments.

Circuit comments and subcomments are saved in block and macro files (with file name extensions '.yblk' and '.ymcr') while I/O comments are saved in tag name definition files (with file name extensions '.ysig' and '.ymcs').

Some CPU types allow comments contained in programs created using WideField2 to be stored in the CPU, and also allow these stored comments to be restored to circuits by online operations (upload, program monitor). Stored comments enable more user-friendly edit operations.

Only the CPU types listed in the table below support stored comments in the CPU.

Table C4.1 CPU Types that Support Stored Comments

CPU Type that Support Stored Comments	Remarks
F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S	
F3SP66-4S, F3SP67-6S	

Other CPU types that are not listed in the above table do not support stored comments. Even for CPU types that support stored comments, comments will not be stored to the CPU if programs are downloaded with the stored comments option disabled.

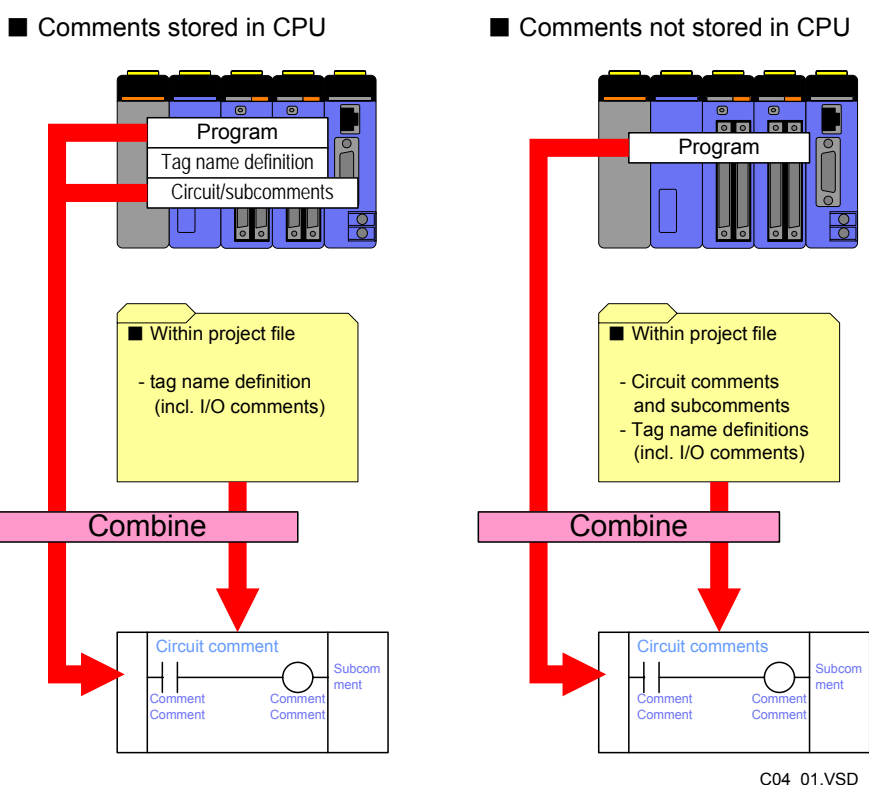
## C4.1 Storage of CPU Comments

Comments within programs created in WideField2 are stored in the CPU during download operations. Downloaded comments can be broadly classified into two categories:

- tag name definition and I/O comments
- circuit comments and subcomments

These comments are restored along with the circuits by WideField2 through upload and program monitor operations.

WideField2 always uses I/O comment data stored with the tag name definition in the project file created on the personal computer regardless of whether I/O comment data is stored in the CPU. If circuit comment and subcomment data is stored in the CPU, WideField2 uses the data for reconstruction on the PC. If not, WideField2 uses the circuit comment and subcomment data saved in the project file for reconstruction (see the figures below).



Comment data that is reconstructed in WideField2 can be modified, added or deleted by online operations (e.g. online edit operations). In some situations (for instance, if the project file is absent in WideField2 or if debug operations are carried out from multiple PCs), however, comment data may become inconsistent between the CPU and the project file.

This chapter describes the various states of stored comment data (the concept of reference for comment integration) and how modified comments are handled in online operations.

## C4.1.1 Reference for Tag Name Definition and I/O Comments

Tag name definition and I/O comment data may be stored in the CPU but the data source used for reconstructing comments in WideField2 varies with the operation performed.

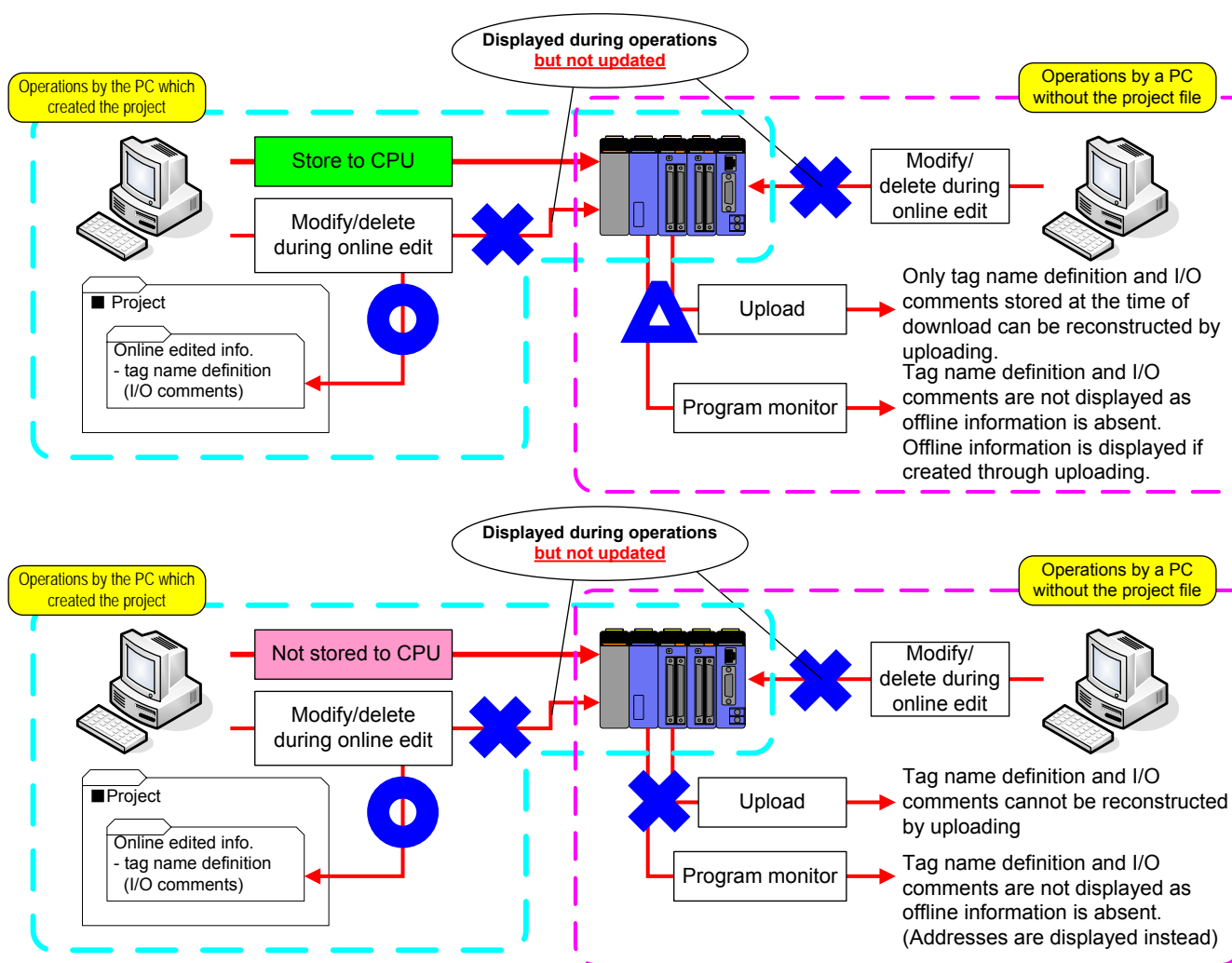
Table C4.2 Reference Source for Combining Tag Name Definition and I/O Comments

WideField2 Operation	Stored to CPU?	Reference
Upload	Yes	Tag name definition in CPU
	No	Tag name definition in project file
Program monitor	Yes	Tag name definition in project file
	No	Tag name definition in project file

If tag name definition and I/O comment data is stored in the CPU, a user may add to or modify the data in the CPU online edit. The program monitor function, however, makes such changes only to the project file and thus the changes are not reflected in the tag name definition and I/O comment data in the CPU.

In addition, on a PC without the project file, tag name definition and I/O comments are not displayed in the program monitor (the information cannot be reconstructed in the program monitor) unless the program monitor is executed after an upload operation.

It can be seen from this description that if comment data is edited from multiple PCs, data may become inconsistent so it is necessary to keep information in the CPU always up-to-date by downloading or consolidate and use the latest project data.



C04\_02.VSD

## C4.1.2 Reference for Circuit Comments and Subcomments

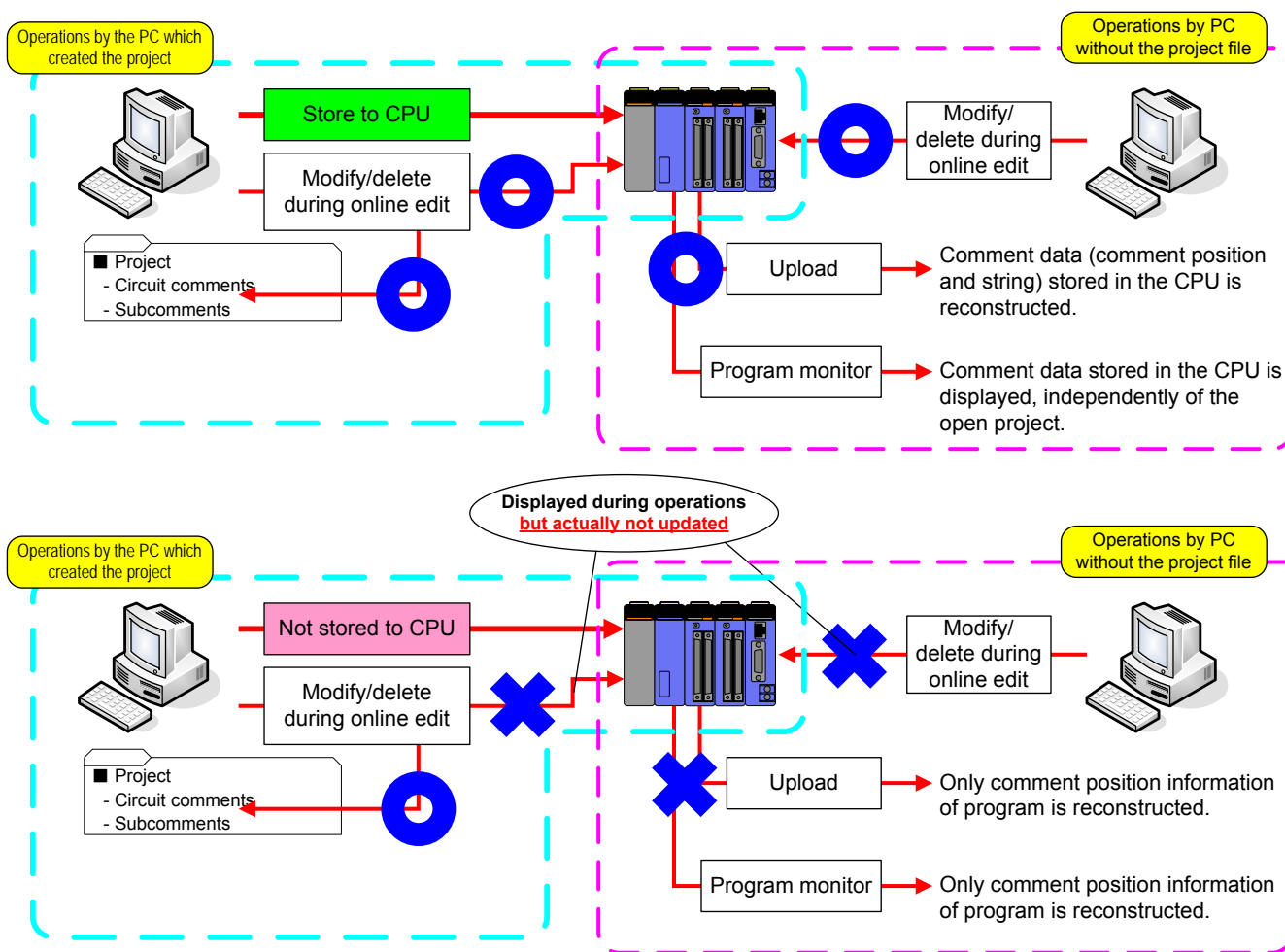
Circuit comment and subcomment data can be stored in the CPU as part of the program. If the comment data is stored in the CPU, it can always be reconstructed but beware that if the data is not stored in the CPU, it is reconstructed by combining with project data.

Table C4.3 Reference Source for Combining Circuit Comments/subcomments

WideField2 Operation	Stored to CPU?	Reference
Upload	Yes	Comment data in CPU
	No	Comment data in project file
Program monitor	Yes	Comment data in CPU
	No	Comment data in project file

If circuit comment and subcomment data is stored in the CPU, data can only be modified or deleted. These online edited changes are written immediately to the CPU. In addition, by reflecting the changes to the project file, data integrity can be secured and ensured even if data is being updated from multiple PCs.

If circuit comment and subcomment data is not stored in the CPU, the data is combined with project data and reconstructed so comment data cannot be reconstructed on a PC with no project file.



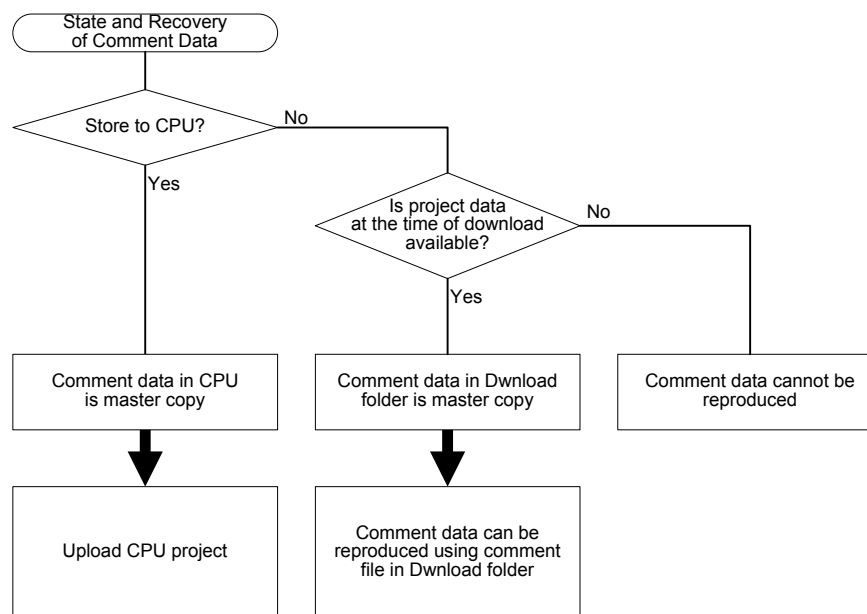
C04\_03.VSD

## C4.2 Integrating Comments

When running WideField2 on multiple PCs, depending on the state of stored comment data in the CPU and the state of offline project data, the master comment data sometimes cannot be constructed.

In such situations, knowing the state of the created comment data will allow you to integrate the comment data, and in the unlikely event that this cannot be done, to restore the data.

The flowchart below shows the measures to be taken under various situations.



C04\_04.VSD

As shown in the above figure, if comment data is stored in the CPU, it can be reconstructed by uploading but tag name definition and I/O comment data will be current only as of the most recent download. If tag name definition or I/O comment has been modified only on another PC, those changes cannot be reconstructed by uploading as they were not updated in the CPU.

If comment data is not stored in the CPU, comment data can still be combined and displayed on another PC by making use of data of the project file stored in the Download folder at the time of download. The procedure for restoring comment data from data in the Download folder is described on the next page.

When monitoring a program on a PC other than the PC where the program is created with no comment data stored in the CPU, comments are not displayed. (only position information of comments is stored in the CPU). However, if project data current as of the time when the project was downloaded to the PC is available, comment data can be reconstructed even on a PC other than the PC where the program is created.

Comment data can be reconstructed by copying block files, macro files (with filename extensions of ".yblk" and ".ymcr") and tag name definition files (with filename extensions of ".ycmn", ".ysig" and ".ymcs") to the PC where monitoring is to be performed.

The procedure for doing so is given below. For ease of explanation, the PC where the project was created is named personal computer 'A', the personal computer where monitoring is to be performed is named personal computer 'B', and it is assumed that project "AAA" has been downloaded to the FA-M3.

## ◆ Procedure ◆

- (1) Create a new project on personal computer 'B'.

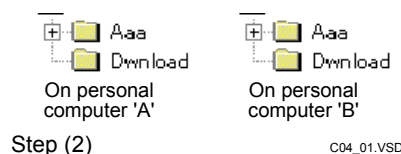
### TIP

We recommend that you make the name of the new project the same as the project downloaded to the FA-M3. (i.e., "AAA").

- (2) Find folder "Download" on personal computer 'A' containing the project that was downloaded to the FA-M3, and copy the entire content of the folder to the newly created project folder on personal computer 'B'.

- (3) Open project "AAA" on personal computer 'B' and start monitoring.

⇒ The monitor screen displays programs with comments.



### TIP

- In step (2) above, you can also restore comment data by uploading the program to project "AAA" on personal computer 'B'. To restore tag name I/O comments, you can also copy tag name definition files (filename extension '.ysig') directly to the project after uploading.
- To upload the project to personal computer 'A' into a different project, say "CCC", create a new project "CCC" and perform step (2), substituting "personal computer B" with "personal computer A" in the instructions. The comments will be restored after uploading.

## SEE ALSO

For details on how to store comments in a CPU, see Chapter B12, "Downloading" and Chapter B31, "Storing Comments and Tag Name Definitions."

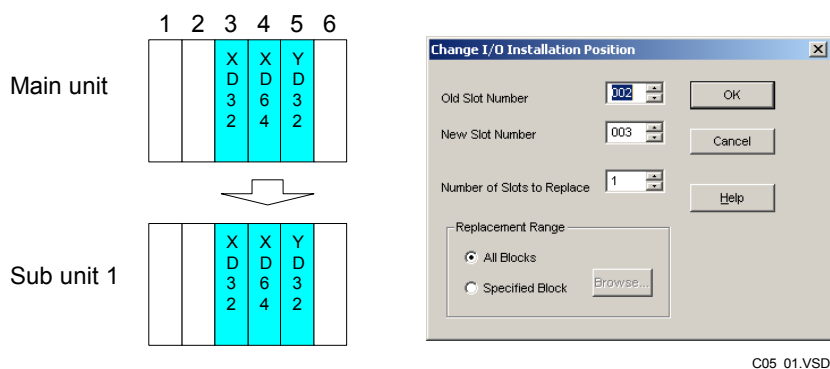


## **C5.     Updating Programs after a Change in the I/O Module Slot Position**

You may sometimes need to change the slot position of an I/O module during debugging or trial runs, or add an I/O module. Manually changing all device addresses used in a program in such situations would be a major retrogression in programming. It would also necessitate debugging the entire program all over again. Using the Change I/O Installation Position function allows you to update the programs easily. The function can be used to change terminal numbers such as "X00301", as well as slot numbers in READ/WRITE and HRD/HWR instructions.

## C5.1 If I/O Module Slot Positions Are Changed

This section describes how to change the slot position of an I/O module. The following description assumes that I/O modules in slots 003-005 are to be relocated to slots 103-105.



C05\_01.VSD

Figure C5.1 Changing I/O Installation Position

The relevant procedure is given below.

### ◆ Procedure ◆

- (1) Select [Project]–[Change I/O Installation Position] from the menu bar.

⇒ The Change I/O Installation Position dialog box opens.

- (2) Enter the old slot number and the new slot number, and click [OK].

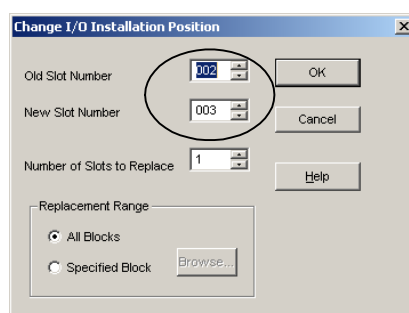
#### TIP

To relocate more than one I/O module, specify a range for the old and new slot numbers.

⇒ The "Change I/O Installation Position - Progress" dialog box is displayed, followed by another dialog box which notifies the completion of replacement process.

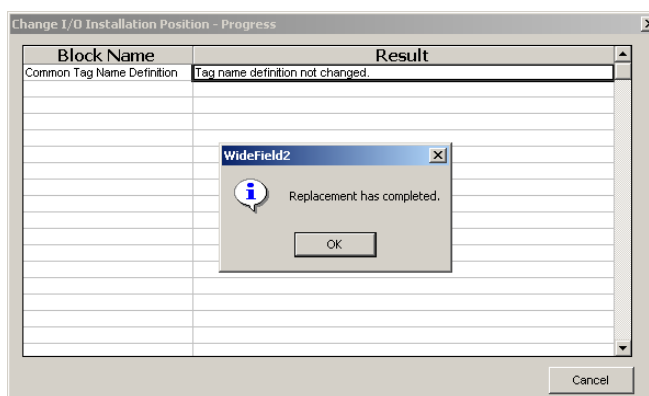
- (3) Click [OK].

⇒ The notification dialog box closes.



Step (2)

C05\_04.VSD



Step (3)

C05\_11A.VSD



## C5.2 If an I/O Module is Added

This section describes how to relocate old modules to make room for a new I/O module. The following description assumes that four existing I/O modules are to be relocated from slots 003-006 to slots 004-007 and a new I/O module is to be inserted in slot 003.

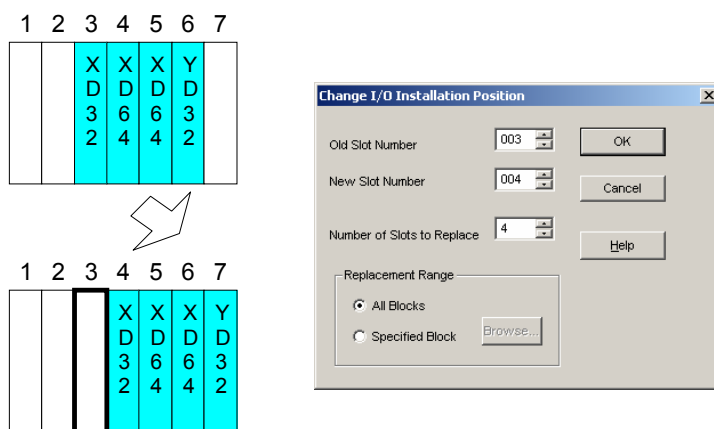


Figure C5.2 Inserting an I/O (Adding an I/O to "003") C05\_02.VSD

The relevant procedure is given below.

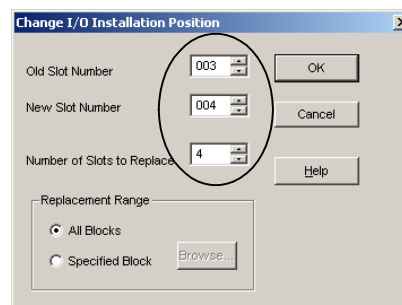
### ◆ Procedure ◆

(1) Select [Project]–[Change I/O Installation Position] from the menu bar.

⇒ The Change I/O Installation Position dialog box opens.

(2) Enter the old slot number, the new slot number and the number of slots to be shifted, and click [OK].

⇒ The "Change I/O Installation Position - Progress" dialog is displayed, followed by another dialog box that notifies the completion of slot replacement.

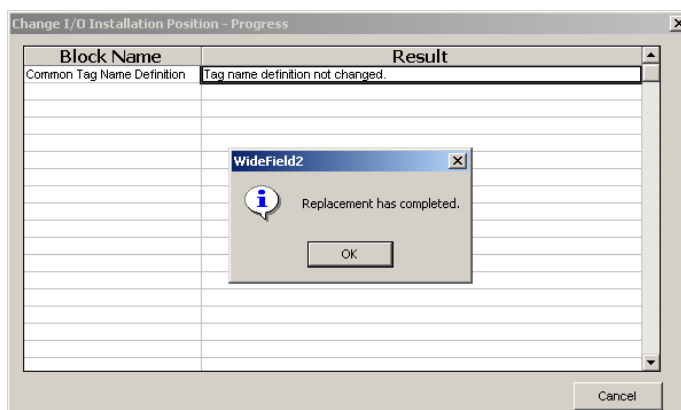


Step (2)

C05\_03.VSD

(3) Click [OK].

⇒ The notification dialog box closes.



Step (3)

C05\_11A.VSD



## C5.3 Reusing a Program in a System with a Different I/O Configuration

To reuse part of an existing program in a system with a different I/O configuration, you must update the blocks to be reused. To update selected blocks only, use the following procedure.

### ◆ Procedure ◆

- (1) Select [Project]–[Change I/O Installation Position] from the menu bar.

⇒ The Change I/O Installation Position dialog box opens.

- (2) Turn on the [Specified Block] option button in the [Replacement Range] group box, and click [Browse].

#### TIP

The [Specified Block] option button is also available when I/O modules are relocated or a new I/O module is added.

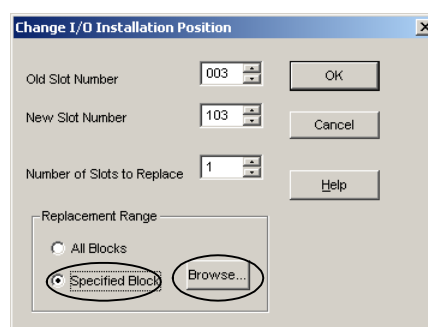
⇒ The Block List dialog box opens.

- (3) Turn on the checkboxes for the blocks to be updated, and click [OK].

⇒ The Block List dialog box closes and control returns to the Change I/O Installation Position dialog box.

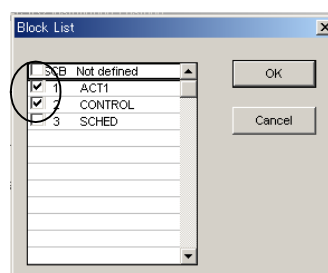
- (4) Click [OK].

⇒ The Change I/O Installation Position dialog box closes. The "Change I/O Installation Position - Progress" dialog box is displayed, followed by a dialog box that notifies the completion of updating.



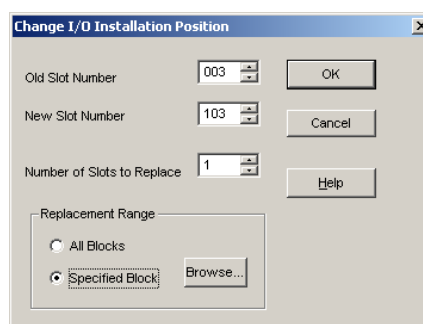
Step (2)

C05\_14.VSD



Step (3)

C05\_13.VSD

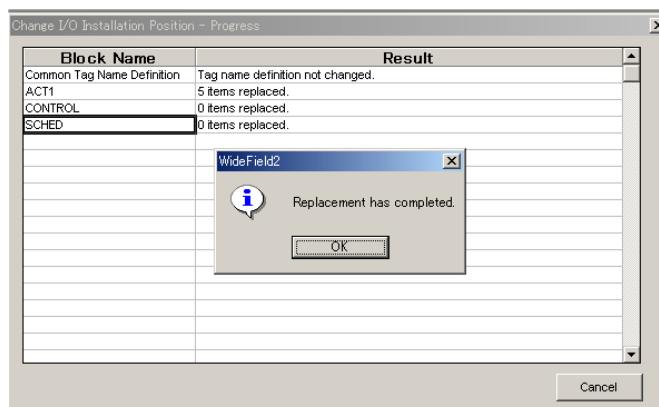


Step (4)

C05\_06.VSD

**(5) Click [OK].**

⇒ The notification dialog box closes.

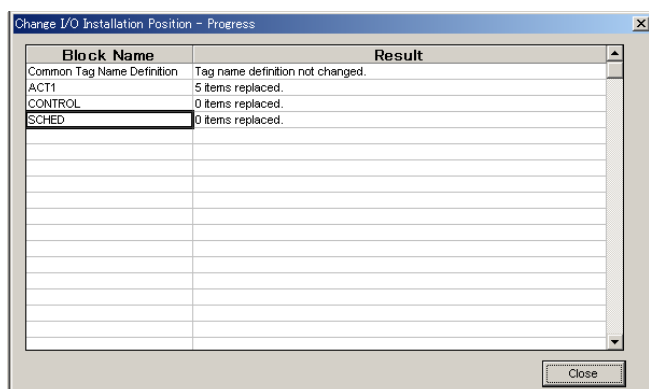


Step (5)

C05\_15A.VSD

**(6) Check the execution status, and click [Close].**

⇒ The "Change I/O Installation Position - Progress" dialog box closes.



Step (6)

C05\_16.VSD





## C6. How to Enter Instructions Quickly

You can enter instructions in three ways:

- Using the mouse.
- Using the function keys
- Using the alphanumeric keys

Using the mouse is the easiest way to enter instructions, and is thus recommended for less experienced users. For more experienced users, however, we recommend using the keyboard as it is the fastest way to enter instructions.

To enter a generic instruction from the keyboard, type its unique mnemonic. As you type a mnemonic, it is automatically converted to the corresponding circuit and displayed.

To enter an instruction from the keyboard using the alphanumeric keys, use the following procedure.

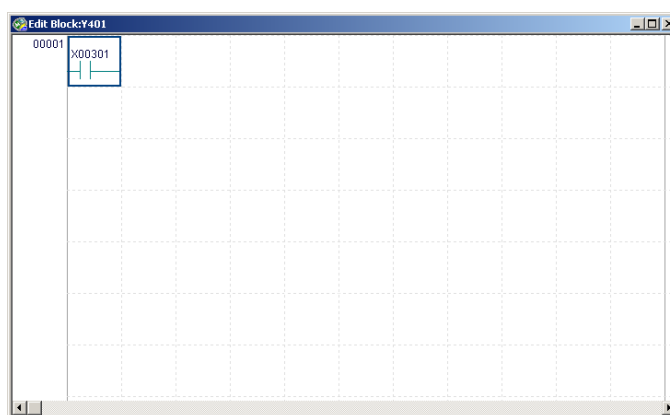
### ◆ Procedure ◆

- (1) Ensure that the Edit Block window is open.

#### SEE ALSO

For details on how to open the Edit Block window, see Section B3.2, "Opening Block and Macro Files."

- (2) Move the position cursor to where an instruction is to be inserted.



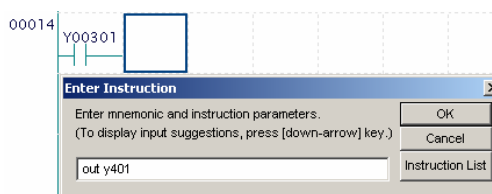
Step (1)

C06\_11.VSD

- (3) Type the mnemonic of an instruction from the keyboard.

**In this example, type "out y401."**

⇒ When you hit the key for the first character of the instruction, the Enter Instruction dialog box opens.



Steps (3) and (4)

C06\_01.VSD

- (4) After entering the instruction, click [OK].

⇒ The instruction is inserted and displayed.



Step (4)

C06\_02.VSD

To enter contacts (contact A or contact B), you may use different instructions for different circuit configurations as follows.

### ● Entering LD (LDN) or AND (ANDN) Instructions

To insert a contact at the beginning of a circuit or as an input condition serial to the previous input condition, use a LD (LDN) or AND (ANDN) Instruction. When used as an input instruction, the LD (LDN) and AND (ANDN) Instructions have the same effect.

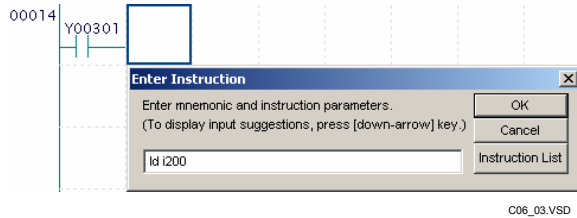


Figure C6.1 Entering A LD Instruction



Figure C6.2 Screen Display after an LD Instruction Is Entered

### ● Entering OR (ORN) Instructions

To insert a contact as an input condition parallel to the previous input condition, use an OR (ORN) instruction. A vertical connection line is automatically drawn to the right of the inserted contact.

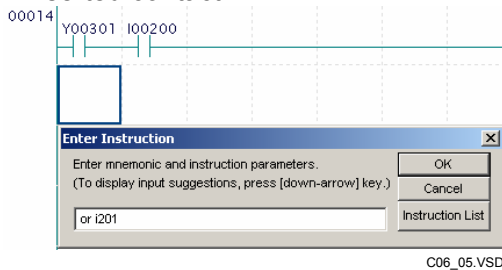


Figure C6.3 Entering an OR Instruction



Figure C6.4 Screen Display after an OR Instruction Is Entered

To edit connection lines, use the function keys and special keys as connection lines has no mnemonics. The following function keys are available for editing connection lines.

Table C6.1 Entering and Deleting Connection Lines

	Input	Deletion
Vertical line	[F8], [/], [I] keys	Shift+F8
Horizontal line	[F9], [-] keys	Delete
Continuation line	[Shift]+[F9], [>], [<] keys	Delete

**TIP**

Vertical lines can be inserted or deleted successively. To enter multiple vertical lines, press the [F8] key, and then press the [Enter] key at each desired location. After drawing the required lines, press the [Esc] key.

To enter an instruction from the keyboard using the function keys, use the following procedure.

**◆ Procedure ◆**

- (1) Ensure that the Edit Block window is open.**

**SEE ALSO**

For details on how to open the Edit Block window, see Section B3.2, "Opening Block and Macro Files."

- (2) Move the position cursor to where an instruction is to be entered.**

- (3) Press the key for the instruction to be entered.**

⇒ The instruction is inserted at the cursor position. If you have entered an output instruction, it is placed at the last column of the row where the cursor is.



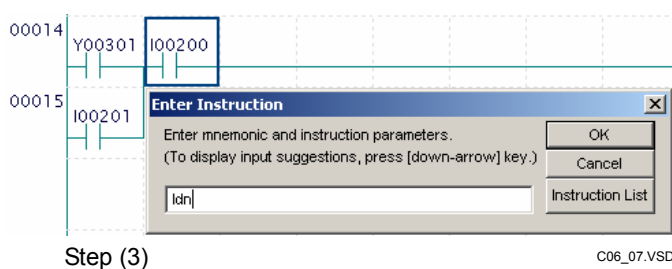
Step (3)

C06\_12.VSD

To change the properties of an existing instruction quickly, use the following procedure.

**● Inverting Contacts and Coils**

To invert a contact A into a contact B or vice versa, or invert an OUT coil into an OUTN coil or vice versa, you need not re-enter the instruction parameters. There are two simpler ways to do so: firstly, by entering only the new instruction mnemonic and inheriting the parameters of an existing instruction (see Figure C6.5) and secondly, by inverting the instruction using special keys.



Step (3)

C06\_07.VSD

**Figure C6.5 Changing a Contact A into a Contact B**

To invert an instruction using a special key, move the cursor over the instruction, and press [Ctrl]+[M]. The table below lists instruction pairs, which can be inverted.

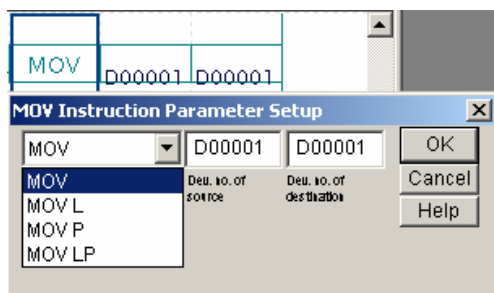
**Table C6.2 Instruction Pairs for Inversion**

Instruction Pairs for Inversion	
Contact A	Contact B
OUT instruction	OUTN instruction
SET instruction	RST instruction
DIFU instruction	DIFD instruction
LDU instruction	LDD instruction
UP instruction	DWN instruction
UPX instruction	DWNX instruction

## ● Changing into Long-word Instruction or Pulse Instruction

Most application instructions have long-word and pulse versions, in addition to the standard word version. There are two ways to change a standard instruction to its long-word or pulse version, or vice versa: by using the instruction parameter setup dialog or by using special keys.

To change the property of an instruction using the instruction parameter setup dialog, double-click, or press the [Enter] key at the instruction position. From the drop-down list in the displayed instruction parameter setup dialog box, select the desired instruction version using the arrow keys.



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**Figure C6.6 Changing the Property of a MOV Instruction**

To invert the property of an instruction using special keys, move the cursor over the instruction and press the special key. The table below lists the properties that can be inverted along with their special keys.

**Table C6.3 Inverting Instruction Property**

Property	Special Keys
Long word<->word instruction	[Ctrl]+[L]
Pulse<->execute-while-on instruction	[Ctrl]+[P]

# C7. How to Use Customization Effectively

The customization functions include:

- Setting colors of circuits and comments and background colors of screens
- Setting severity levels of syntax errors
- Setting the display of menu icons

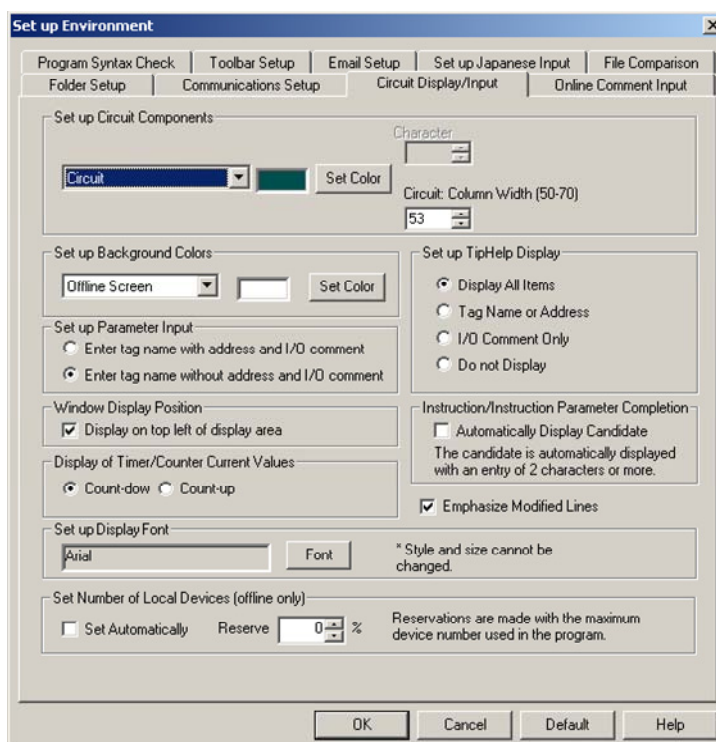
You can use these customization functions in the Setup Environment dialog box, which can be opened by selecting [Tools]–[Setup Environment] from the menu bar.

**Table C7.1 Customization Setup**

Settings	Where to Perform Setting
Setting the colors of circuits and comments and background colors of screens	The [Setup Circuit Display/Input] tab of the Setup Environment dialog box
Setting the severity level of syntax errors	The [Setup Program Syntax Check] tab of the Setup Environment dialog box
Setting the display of menu icons	The [Setup Toolbar] tab of the Setup Environment dialog box.

## ● Setting Colors of Circuits and Comments and Background Colors of Screens

You can set the colors of circuit components and the number of I/O comment lines to be displayed. Setting different background colors for offline and online mode is especially useful. You can also customize the colors of grid lines and cursors. Setting the number of I/O comment lines is useful for adjusting the number of lines to be displayed for a circuit. The font function can be used to change the type of comment used, according to the environment in which it is used. This allows the customization of windows to fit your personal requirements.



**Figure C7.1 Setting the Color of Circuits**

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## ● Setting the Severity Levels of Syntax Errors

You can change the severity levels of syntax errors detected. For example, you can change the severity level of an error from 'Warning' to 'Error' to prevent downloading when the error is detected, or change the severity level from 'Warning' to 'Ignore' to skip checking.

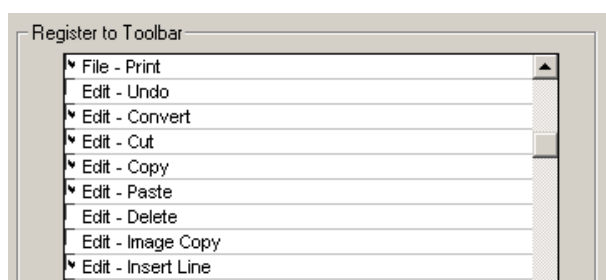


C07\_02.VSD

**Figure C7.2 Syntax Check Setup**

## ● Setting the Display of Menu Icons

There are three ways to select from a menu: using the menu bar, using the menu displayed with a right mouse click, or using icons (buttons) on the toolbar. When using icons to make a menu selection, click an icon displayed in the toolbar. You can customize the functions to be displayed in the toolbar. We recommend that you register functions most frequently used in the toolbar.



C07\_03.VSD

**Figure C7.3 Setting the Display of Menu Icons**

## C8. How to Use Macro Components Effectively

Macros may be classified according to their uses into two types: instruction macros and function macros. The method for creation and invocation is the same for both macro types. To create a macro, select [File]–[New] from the menu bar, select [Macro] in the displayed New dialog box and edit the macro in the same way as editing a block. To call a macro, use the MCALL instruction.

Table C8.1 Two Types of Macros

Type	Characteristics	Uses
Instruction macro	Completes execution in a single scan.	Used in the same way as MOV, CAL, and other standard instructions.
Function macro	Completes execution in multiple scans.	Used to control sophisticated I/O instruments or complicated operations.

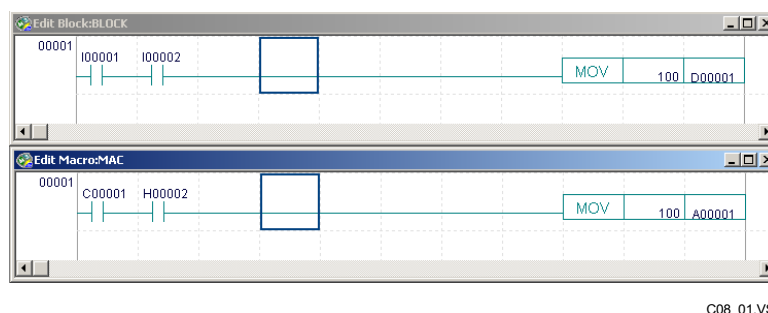
Macros can be shared among users, but should not use devices that are used by other blocks or macros. We describe below how to use devices effectively in macros.

### ● When Using Instruction Macros

Ensure that the devices used in a macro are not used by other blocks. As an instruction macro completes its execution in a single scan, devices of such macros may be shared with other macros.

Macros may use special devices (A, H, and U), not available to blocks.

By using these special devices (A, H, and U), you can safely avoid device overlap problems.



C08\_01.VSD

Figure C8.1 Distribution of Devices between Blocks (upper) and Macros (lower)

### ● When Using Function Macros

Ensure that devices used in a macro are not used by other blocks or macros.

While you can avoid sharing devices with other blocks by using the special A, H, and U devices, if two or more macros are executed in the same scan, the latter macros may inadvertently overwrite contents of the A, H, and U devices stored by earlier macros.

In this case, you can use local devices (/I, /D, /B, /T, and /C) instead. As local devices can be used independently of each other even if they have the same address, their data is assured until a macro completes execution, even if the execution requires multiple scans.

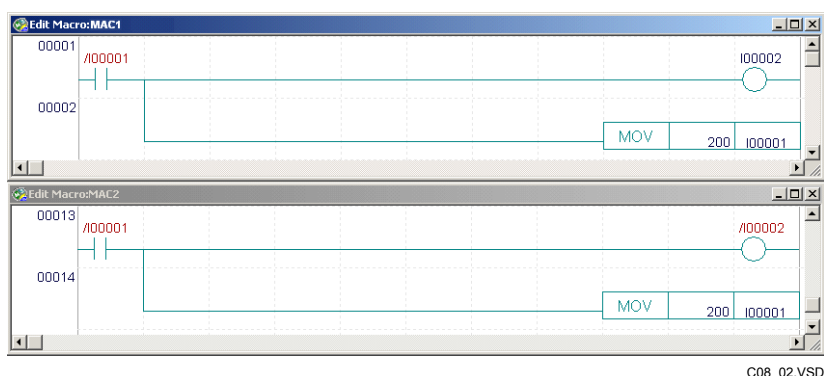


Figure C8.2 Distribution of Devices between Macro 1 (upper) and Macro 2 (lower)



## CAUTION

When using local devices in function macros, note the following precautions. If the same macro must be used in multiple locations, change the name of the macro. As local devices are allocated on a macro basis, calling the same macro in multiple locations causes device overlaps during execution.

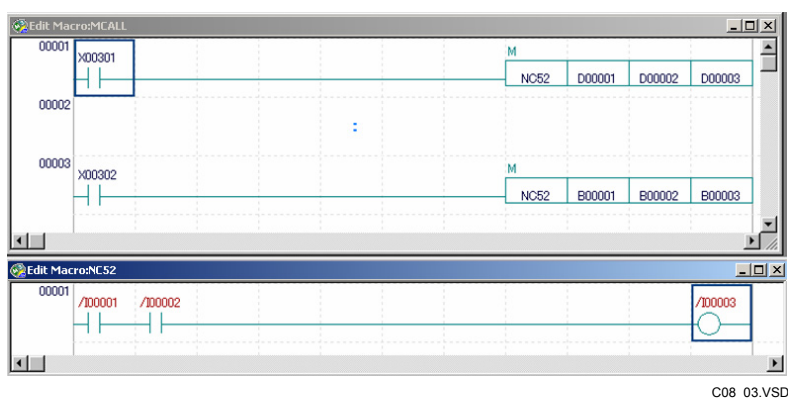


Figure C8.3 Example of Improper Use of the Same Macro at Multiple Locations

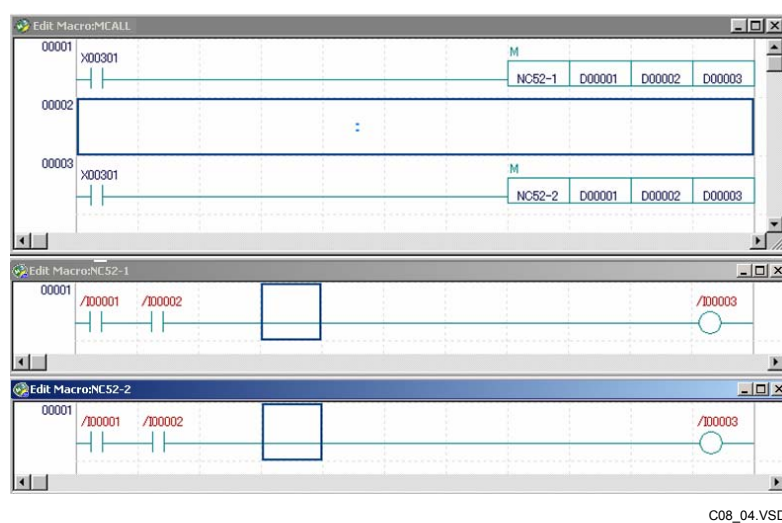


Figure C8.4 Example of Proper Use of the Same Macro at Multiple Locations



## C9. Collaborative Program Development

WideField2 provides an environment that allows collaborative program development by multiple developers. A program to be developed may be divided by function into blocks, which are then assigned to different developers. Each developer creates and tests blocks independently which are then combined in an integration test.

The development procedure is described below.



### CAUTION

If another personal computer downloads a program to the same CPU that is connected online to WideField2 on your personal computer, WideField2 may no longer operate normally. In this case, disconnect your WideField2 from the CPU by selecting [Online]–[Disconnect], and then reconnect to the CPU by selecting [Online]–[Connect] from the menu bar.

#### - A

List data items to be shared among blocks. Classify the devices into global and local areas according to the number of such data items.

Allocate addresses of global devices (e.g., D00001) to data items to be shared among blocks.

Use local devices (e.g., /D00001) for data items that are to be used only within a block.

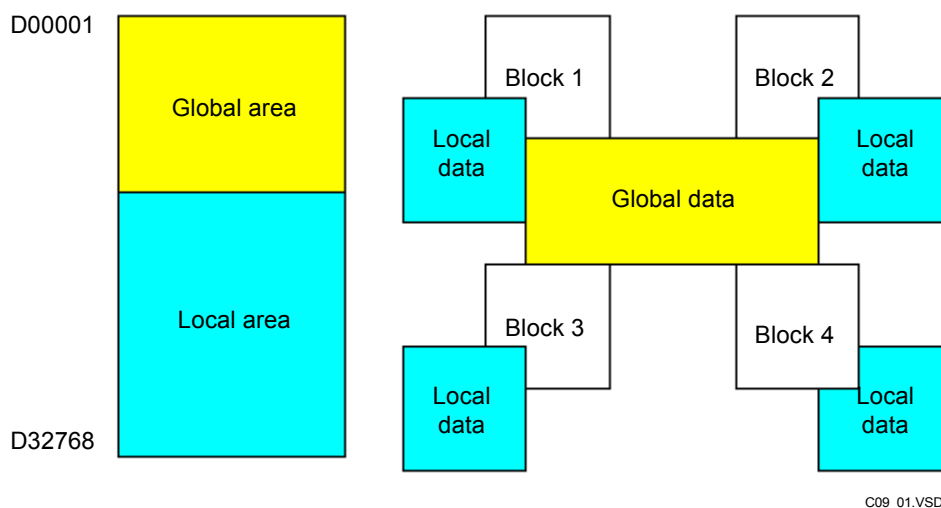


Figure C9.1 Global and Local Areas

#### - B

Create a new common project for all blocks. Perform common setup that applies to all blocks, including configuration and user log messages. In the configuration, set up the global and local areas as determined in step A above.

- C  
Each developer creates his own new project, and writes into it the configuration setup and user log messages created in step B above. He may manually re-enter the data from the keyboard, or simply copy the data using Windows Explorer.

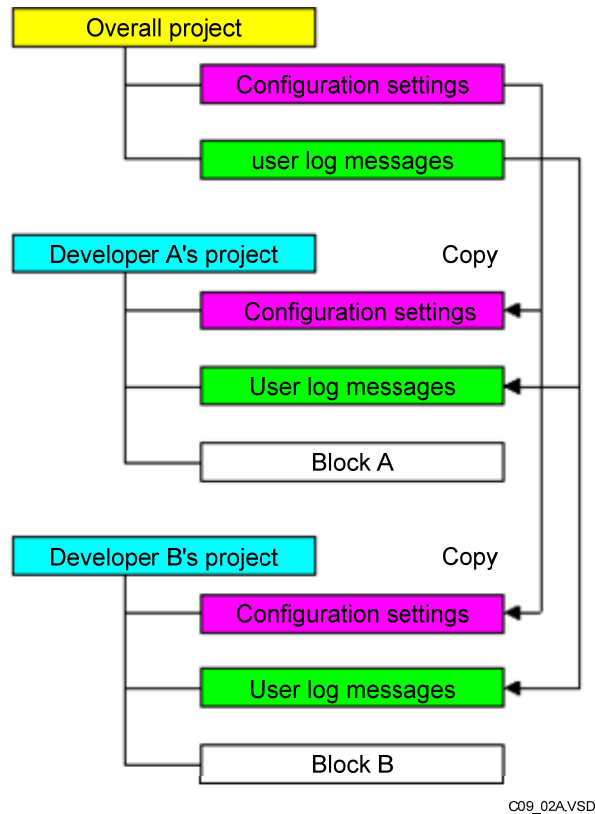


Figure C9.2 Common Project and Block-specific Projects for Each Developer

- D  
Each developer creates blocks assigned to him and creates dummy interface blocks to test and debug interfaces with other blocks.
- E  
Each developer transfers his blocks to the FA-M3 and debugs them. After finishing debugging of a block, he writes it to the common project created in step B by selecting [Project]–[Insert File] from the menu bar, or using the Windows Explorer function.
- F  
Combine all debugged blocks in the common project, and transfer the project to the FA-M3. Perform integration tests to debug the entire project.
- G  
During the integration test, multiple developers may perform debugging, as well as perform online-editing on the same CPU concurrently.

**CAUTION**

---

To transfer the online-edited data to the CPU, first convert the program by selecting [Edit]–[Convert] from the menu bar, and then exit online editing by selecting [Debug/Maintenance]–[End Online Editing] from the menu bar.

While a developer is transferring his online-edited data to the CPU, other developers cannot convert their programs, or exit online editing in WideField2.

When multiple developers are online-editing a program concurrently, it is important to know that once a developer transfers his online-edited changes to the CPU, the existing program in the CPU will no longer be the same as the programs currently edited by the other developers.

---



# C10. Troubleshooting

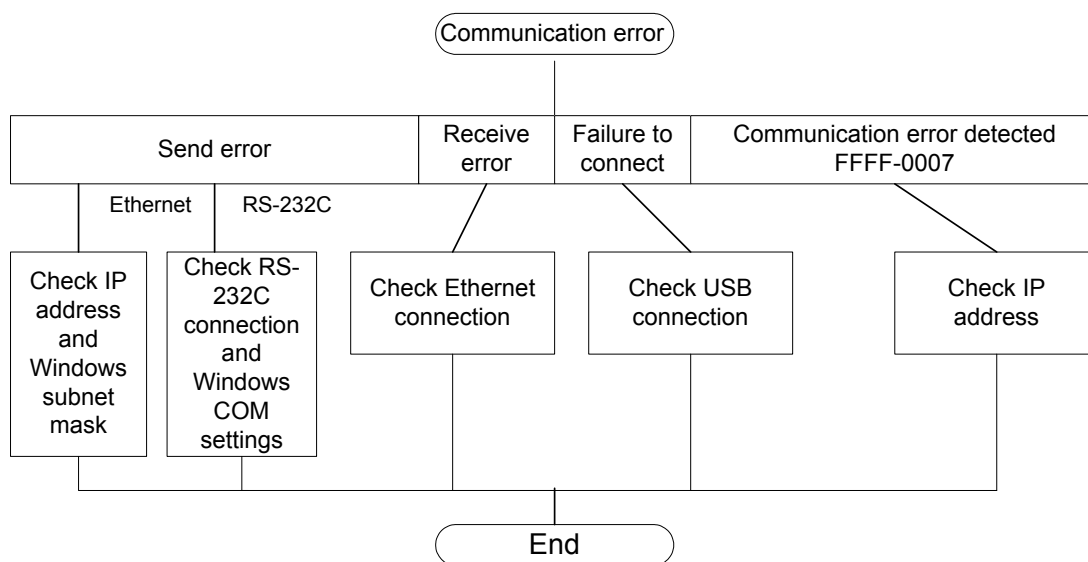
This chapter describes some common problems that you may encounter when using WideField2, and how to perform troubleshooting.



## CAUTION

This chapter suggests some standard measures to troubleshoot various problems but these remedial measures may not always work.

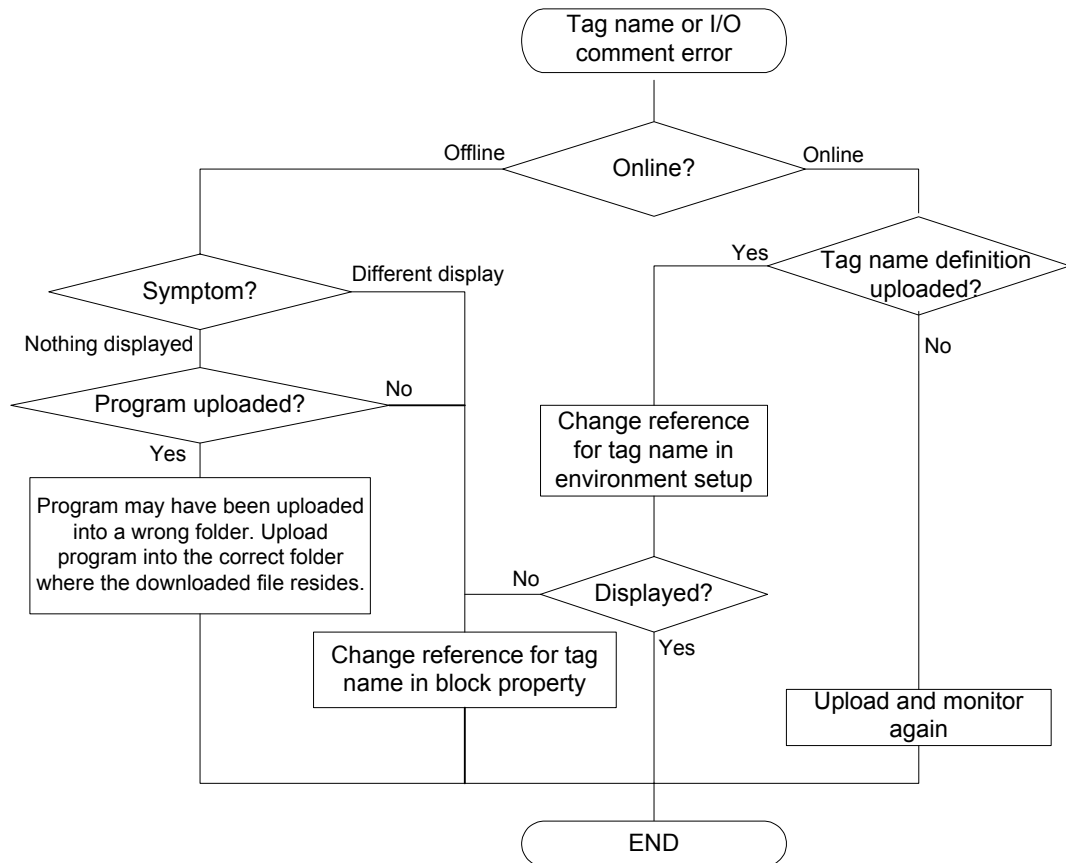
## ■ Communications Failure



C10\_01.VSD

Figure C10.1 Communications Error

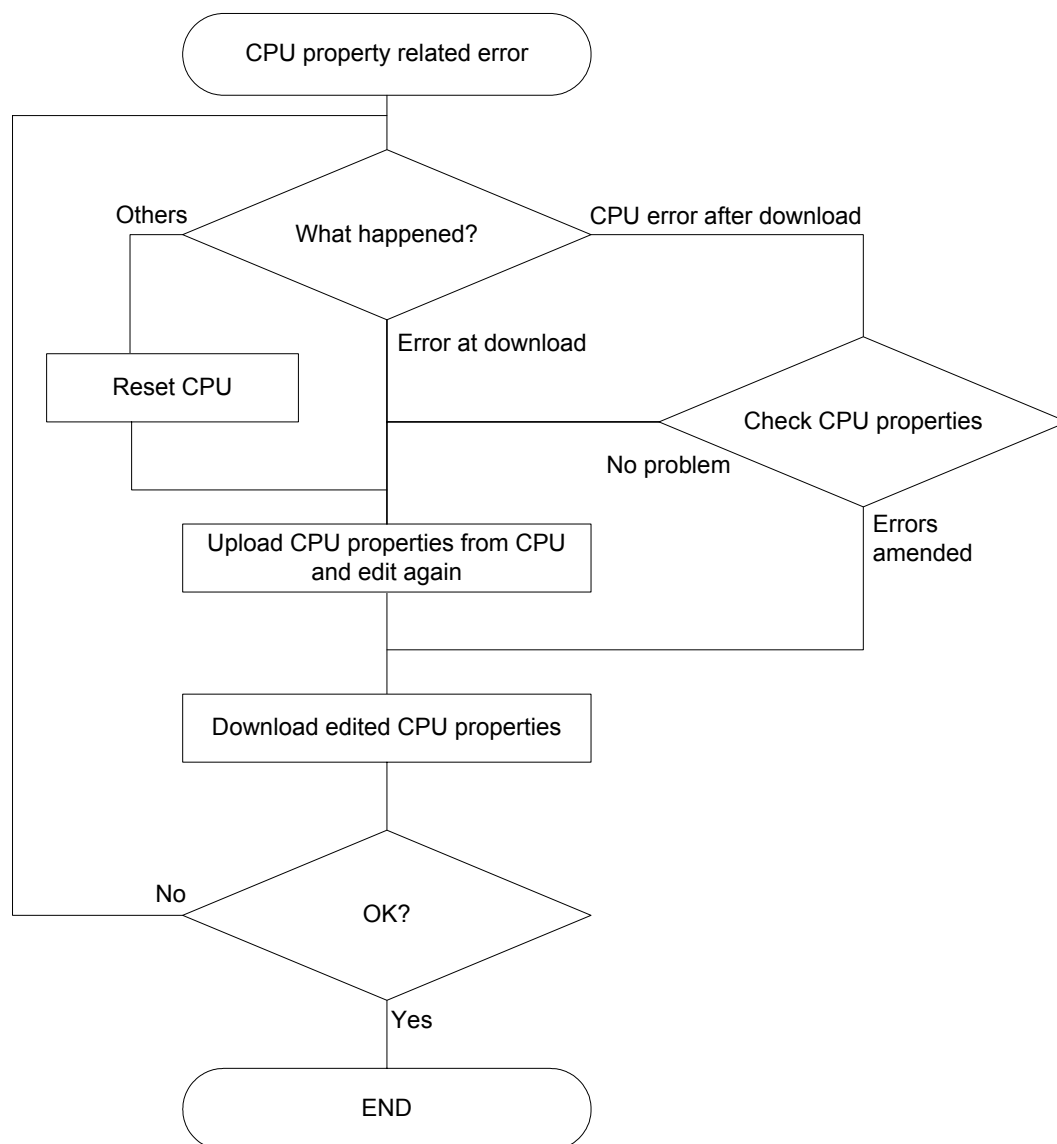
## ■ No or Incorrect Display of Tag Names and I/O Comments



C10\_02.VSD

Figure C10.2 Tag Name Definition Error

## ■ Error Detected When Downloading CPU Properties



C10\_03.VSD

Figure C10.3 CPU Properties Error

## ■ Failure to Establish FL-net Connection in Windows Vista/XP SP2

Windows Vista and XP SP2 feature enhanced security functions. The installed firewall function may affect online connection using FL-net protocol in WideField2.

We describe here how to connect to FA-M3 using FL-net communication.

### ● Connecting using FL-net communication in WideField2

When executing online connection using FL-net communication in WideField2 under Windows XP SP2 environment, you may see the following security warning window. Select [Unblock] in response to the question: "Do you want to keep blocking this program?" to allow this and future connections.



C10\_04.VSD

Figure C10.4 Windows Security Alert

Selecting [Keep Blocking] instead of [Unblock] disallows communication.

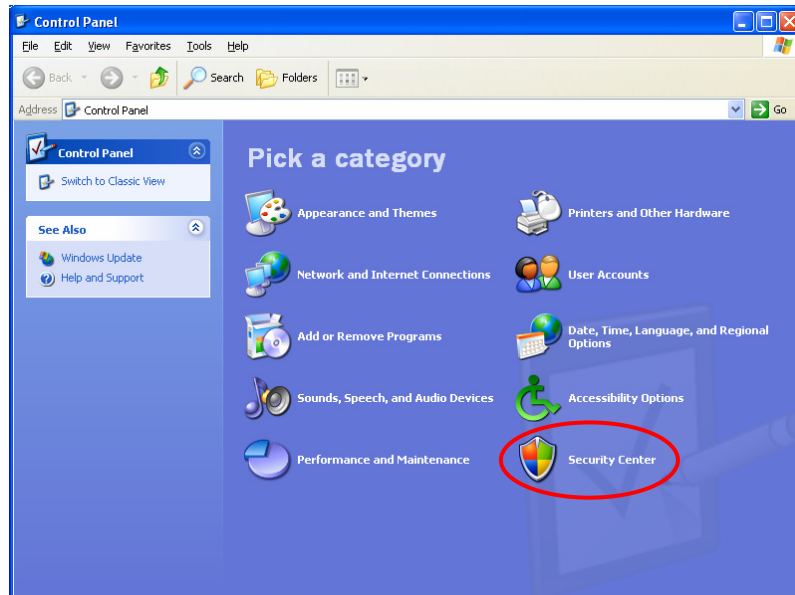
If you select [Keep Blocking], you can still enable communication subsequently by configuring the Windows Firewall as described under "Configuring Windows Firewall to allow online connection using FL-net communication".



## ● Configuring Windows Firewall to allow online connection using FL-net communication

The setup described below can only be performed if you have selected [Keep Blocking] earlier. This setup is not required if you have selected [Unblock] instead.

1. Select and open Security Center from Windows control panel.



C10\_05.VSD

Figure C10.5 Control Panel

2. Select and open Windows Firewall from the Windows Security Center screen.

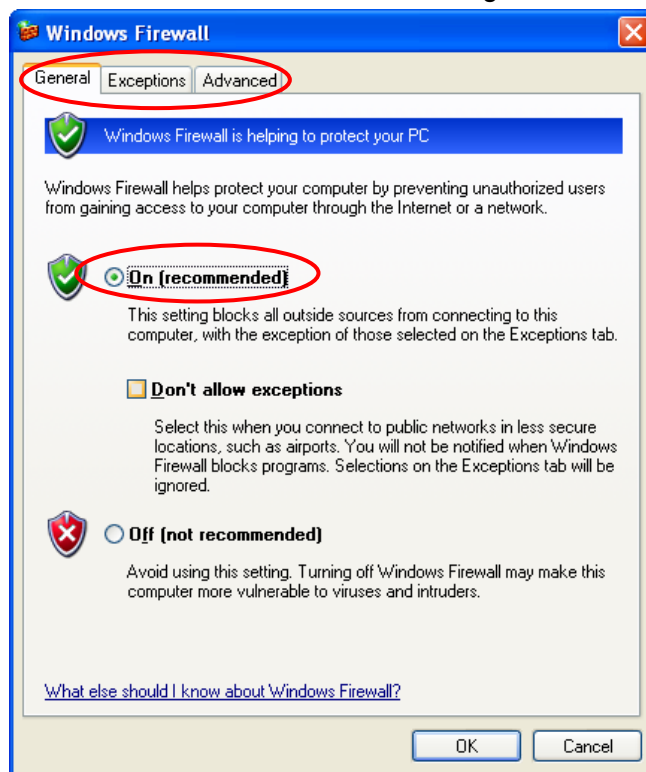


C10\_06.VSD

Figure C10.6 Windows Security Center

### 3. Configure Windows Firewall.

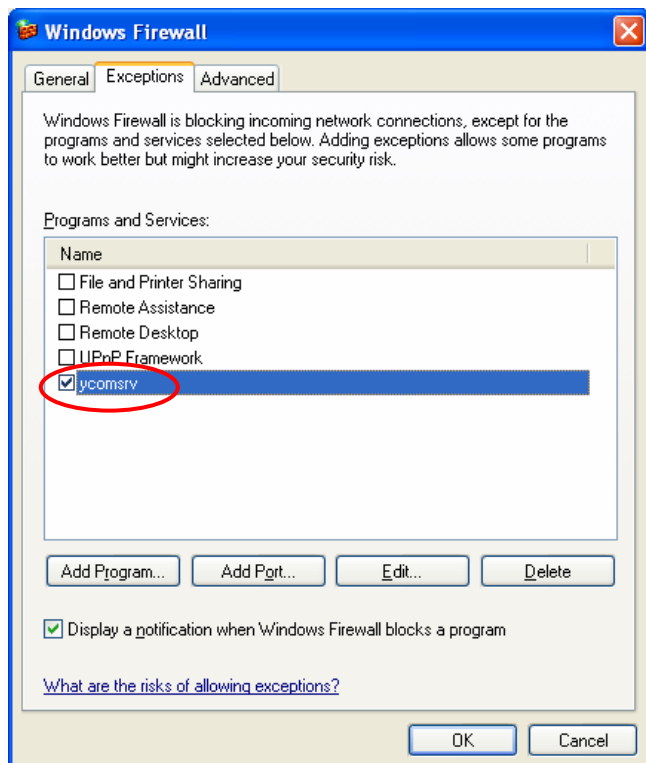
Although you can disable Windows Firewall by selecting [Off] on the General tab screen, we do not recommend doing so.



C10\_07.VSD

Figure C10.7 Windows Firewall

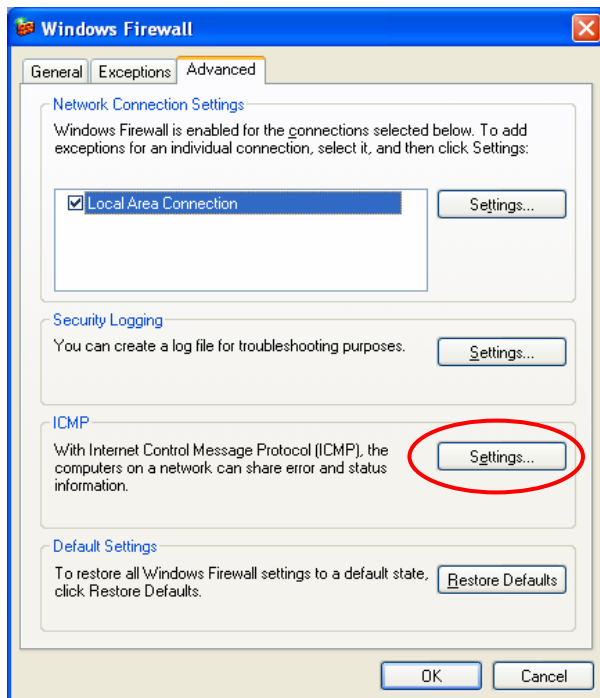
### 4. Click the Exceptions tab and perform setup as shown in the following screen.



C10\_08.VSD

Figure C10.8 Windows Firewall

- Click the Advanced tab, and click [Settings] in the ICMP group box.

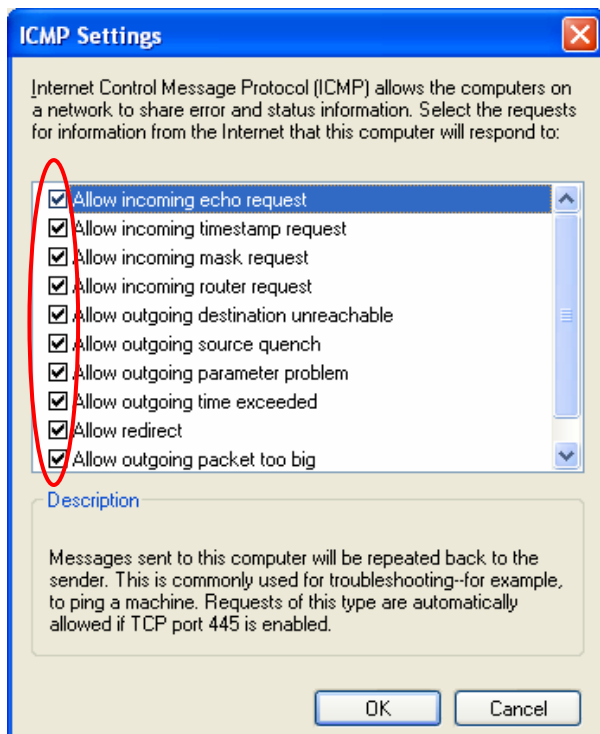


C10\_09.VSD

**Figure C10.9 Windows Firewall**

- Turn on all checkboxes on the ICMP Settings screen.

This configures Windows Firewall to allow ycomsrv requests and responses to pass through.



C10\_10.VSD

**Figure C10.10 ICMP Settings**

- The setup is completed. Click [OK] to close all windows.



# FA-M3

## FA-M3 Programming Tool WideField2

IM 34M6Q15-01E 4th Edition

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