MITSUBISHI ELECTRIC

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Mitsubishi Electric Programmable Controller
MELSEC iQ-F Series

Quick Connection Guide

MELSERVO-JET/J5 Series
for CC-Link IE Field Network Basic



MELSEC iQ-F series × MITSUBISHI ELECTRIC SERVO SYSTEM MELSERVO-JET

INTRODUCTION

Thank you for purchasing the Mitsubishi Electric MELSEC iQ-F series programmable controllers.
This manual describes the settings for communications between FX5 CPU modules and servo amplifiers, which use the CC-Link IE Field Network Basic function.
Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the specifications to handle the product correctly.
When applying the program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.

Regarding use of this product

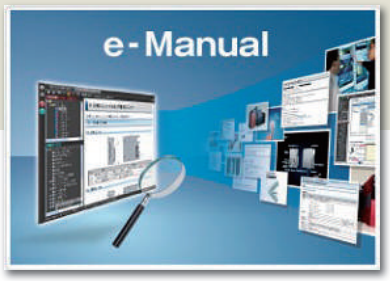
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- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, please contact Mitsubishi Electric sales office.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions into the system.

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http://fa-mel.com/fa/ref/ref.html?k=plceng&software=emaviewer_en

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RELEVANT MANUALS

The following relevant manuals can be downloaded from the Mitsubishi Electric FA site.
www.mitsubishielectric.com/fa/ref/ref.html?kisyu=plcf&manual=download_all

MELSEC iQ-F

[○: Available, —: Not available]

Manual name <manual number>	Available form	
	e-Manual	PDF
MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) <SH-082452ENG>	○	○
MELSEC iQ-F FX5 User's Manual (Application) <JY997D55401>	○	○
MELSEC iQ-F FX5 User's Manual (Ethernet Communication) <JY997D56201>	○	○
MELSEC iQ-F PLCopen Motion Control FB Reference <SH-082351ENG>	○	○

AC servo MELSERVO

[○: Available, —: Not available]

Manual name <manual number>	Available form	
	e-Manual	PDF
MR-JET-G User's Manual (Introduction) <IB-0300448ENG>	○	○
MR-JET User's Manual (Hardware) <IB-0300453ENG>	○	○
MR-JET User's Manual (Function) <IB-0300458ENG>	○	○
MR-JET-G User's Manual (Communication Function) <IB-0300463ENG>	○	○
MR-JET-G User's Manual (Object Dictionary) <IB-0300468ENG>	○	○
MR-JET User's Manual (Adjustment) <IB-0300473ENG>	○	○
MR-JET-G User's Manual (Parameters) <IB-0300478ENG>	○	○
MR-JET User's Manual (Troubleshooting) <IB-0300483ENG>	○	○
MR-J5-G/MR-J5W-G User's Manual (Introduction) <SH-030294ENG>	○	○
MR-J5 User's Manual (Hardware) <SH-030298ENG>	○	○
MR-J5 User's Manual (Function) <SH-030300ENG>	○	○
MR-J5-G/MR-J5W-G User's Manual (Communication Function) <SH-030302ENG>	○	○
MR-J5-G/MR-J5W-G User's Manual (Object Dictionary) <SH-030304ENG>	○	○
MR-J5 User's Manual (Adjustment) <SH-030306ENG>	○	○
MR-J5-G/MR-J5W-G User's Manual (Parameters) <SH-030308ENG>	○	○
MR-J5 User's Manual (Troubleshooting) <SH-030312ENG>	○	○
Rotary Servo Motor User's Manual (HG-KNS/HG-SNS) <IB-0300488ENG>	○	○

Engineering software

[○: Available, —: Not available]

Manual name <manual number>	Available form	
	e-Manual	PDF
GX Works3 Operating Manual <SH-081215ENG>	○	○
Programmable Controller Engineering Software MELSOFT GX Works3 FB Quick Start Guide <L(NA)-08475ENG>	—	○

Others

[○: Available, —: Not available]

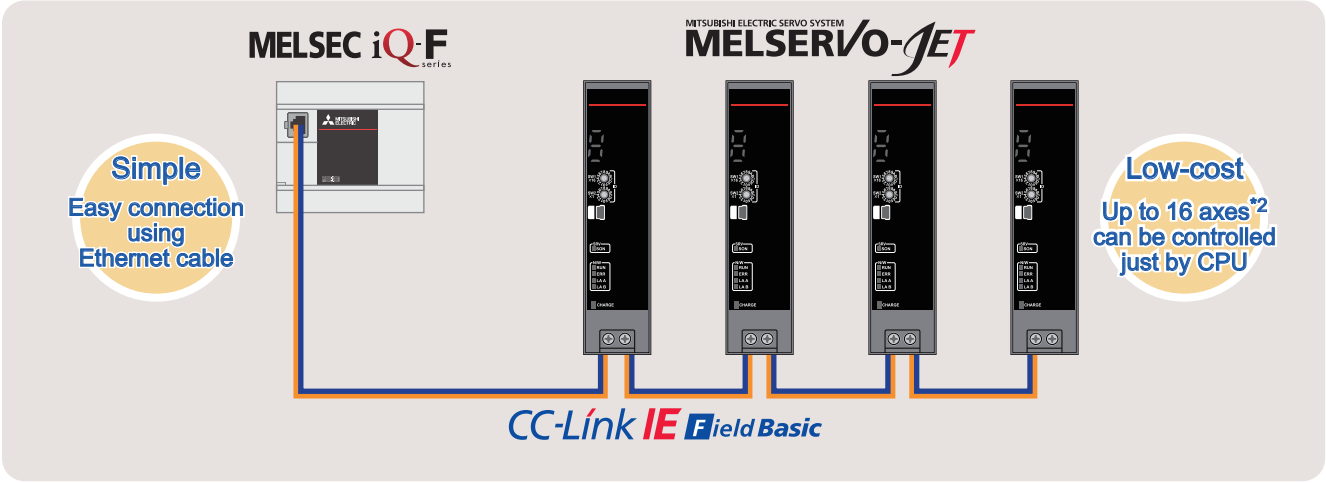
Manual name <manual number>	Available form	
	e-Manual	PDF
CC-Link IE Field Network Basic Reference Manual <SH-081684ENG>	○	○

FEATURES

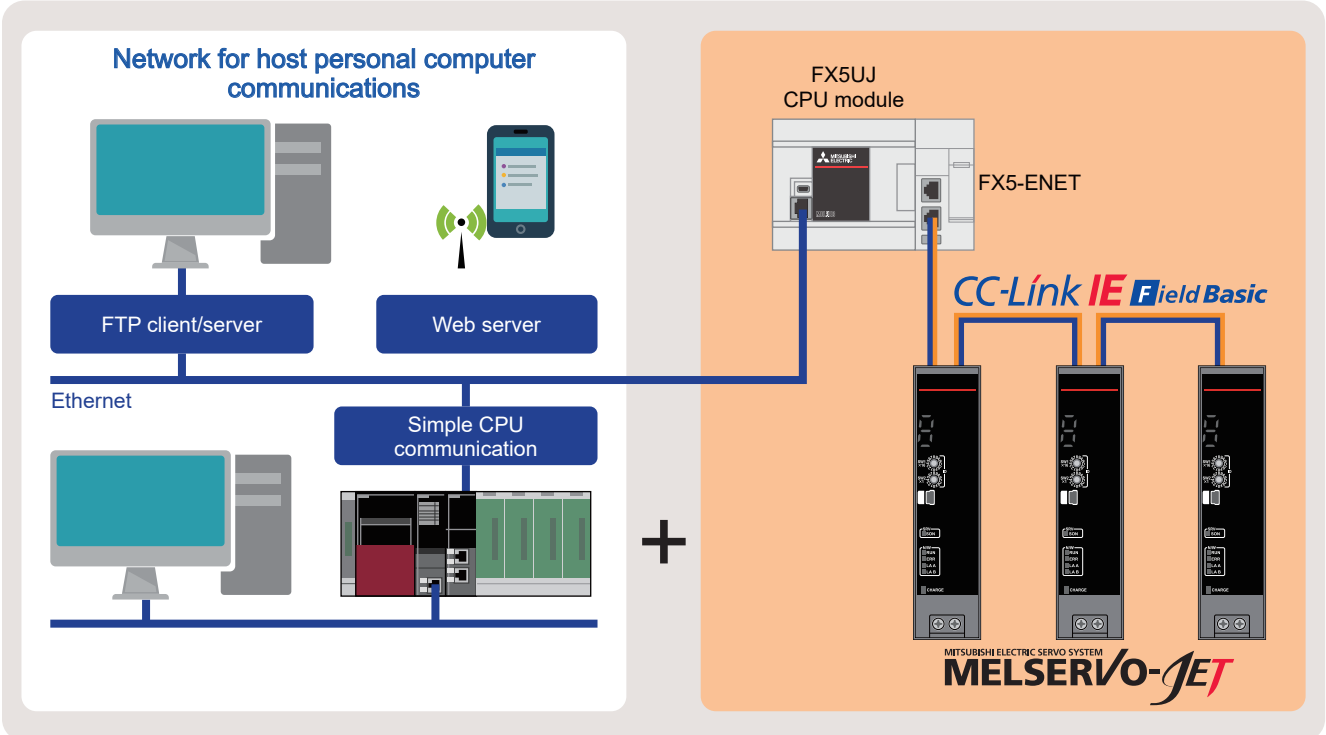
Point1

Simple and low-cost structures

Because the MR-JET-G becomes compatible with CC-Link IE Field Network Basic, the FX5 CPU module with built-in Ethernet port can be connected to the MR-JET-Gs in line topology[*1], which enables simple and low-cost network structures.



In addition, users can build more flexible networks by using Ethernet modules.



*1 Star topology, and the mixture of star and line topology can also be used.

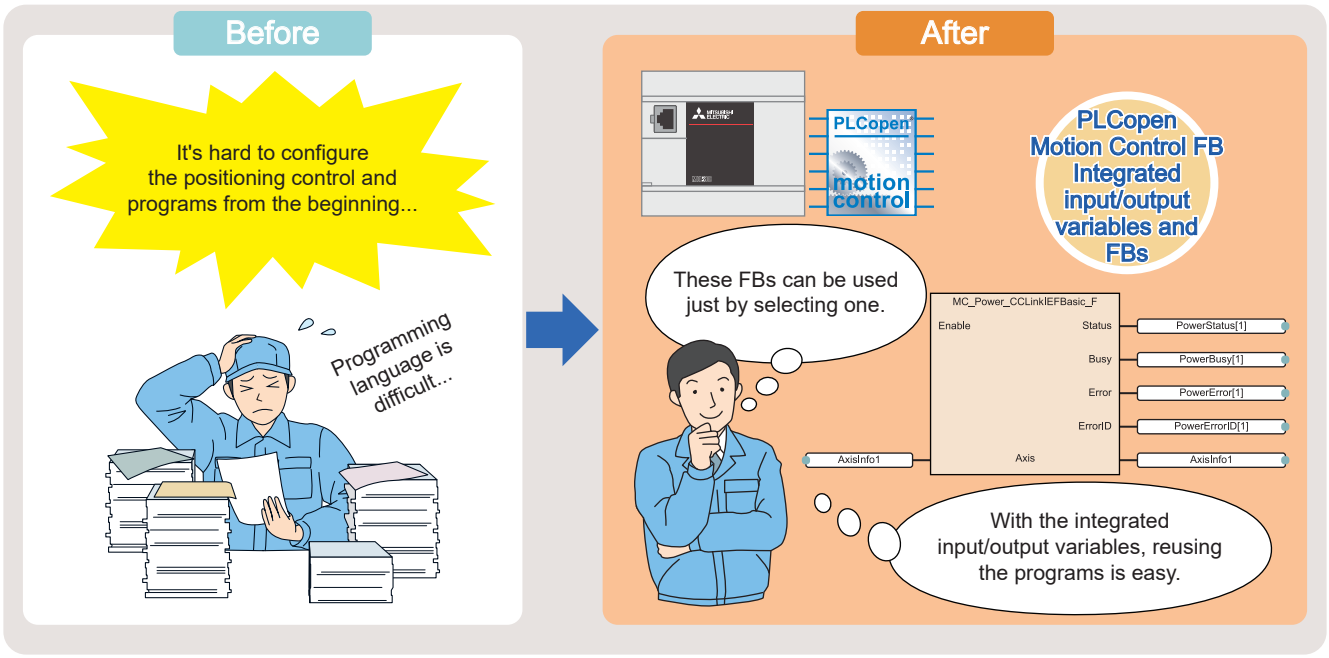
*2 The following show the number of axes each module can control.
- FX5S/FX5UJ CPU module: 8 axes
- FX5U/FX5UC CPU module, FX5-ENET: 16 axes

Point2

Simpler and more user-friendly

FBs compatible with the specifications of PLCopen® Motion Control FBs are available.

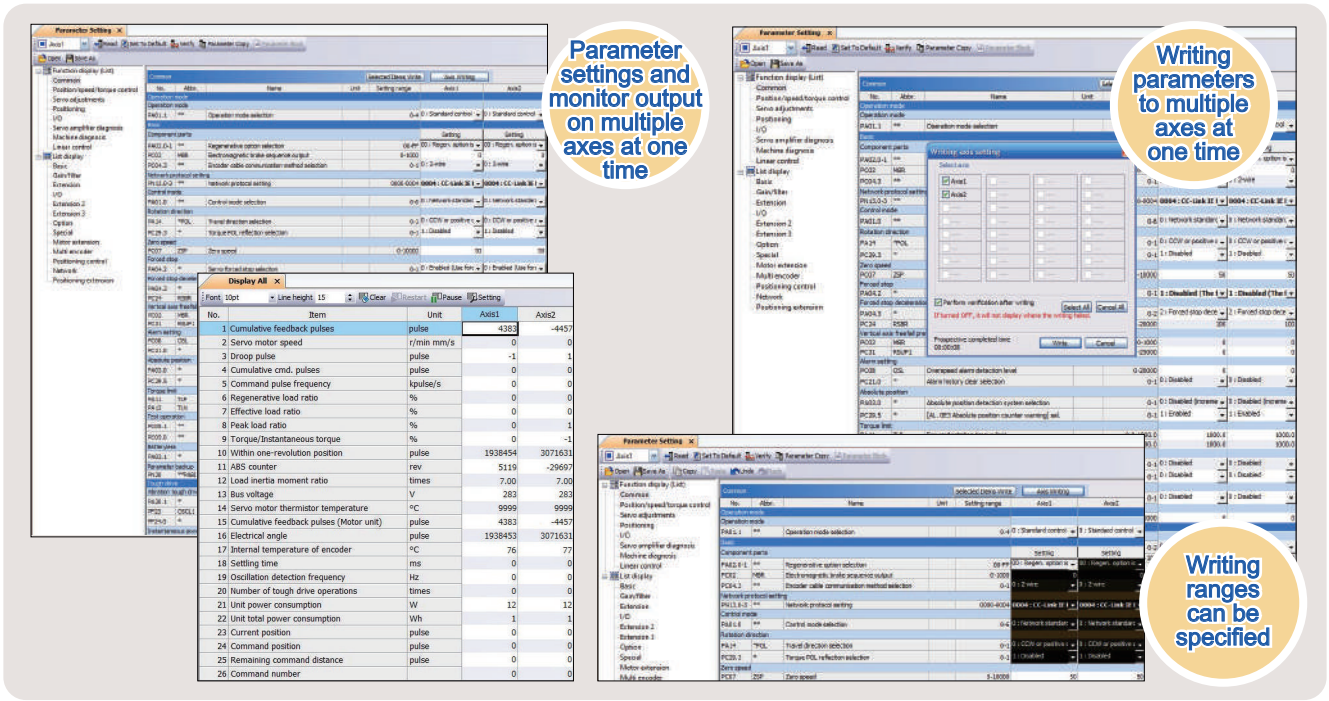
Using the FBs enables the following: reduction of the time required for debugging or the costs on training; improvement of the reusability of software or the quality of equipment or machinery.



Point3

Simple settings using MR Configurator2

Operations from startup to maintenance of servo amplifiers can be easily performed on a personal computer by using MR Configurator2. MR Configurator2 provides various useful functions at every phase such as design, operation, and maintenance.



For features and functions of the servo amplifiers, refer to the following.

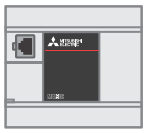
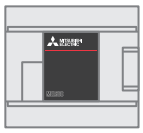
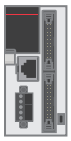
MELSERVO-JET [L(NA)03187ENG]

MEMO

1 PREPARATION

1.1 Applicable Models

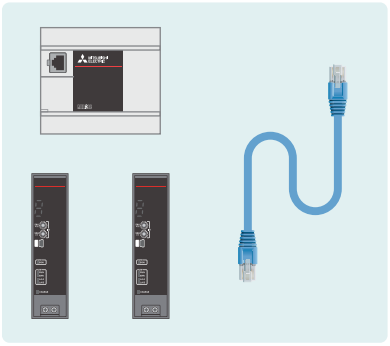
The following models can be used for a series of operations described in this manual.

Programmable controller					Servo amplifier (Ethernet-compatible)	
						
FX5S CPU module	FX5UJ CPU module	FX5U CPU module	FX5UC CPU module	FX5-ENET	MR-JET-G*1	MR-J5-G*2

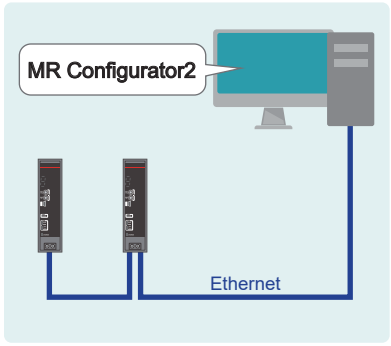
*1 The MR-JET-G-N1 cannot be used.
*2 The MR-J5-G-N1 and the MR-J5W☐ cannot be used.

1.2 Operation Flow Diagram

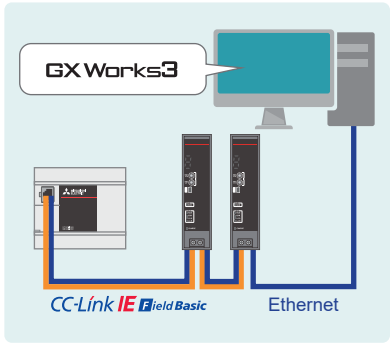
1. Preparing the required products



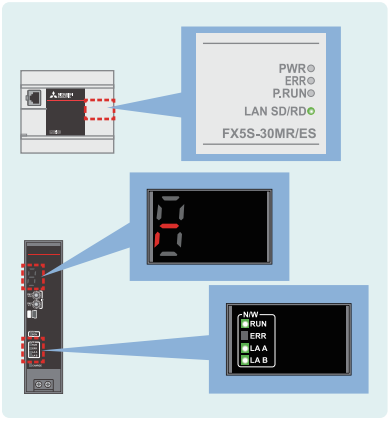
2. Setting the servo amplifiers



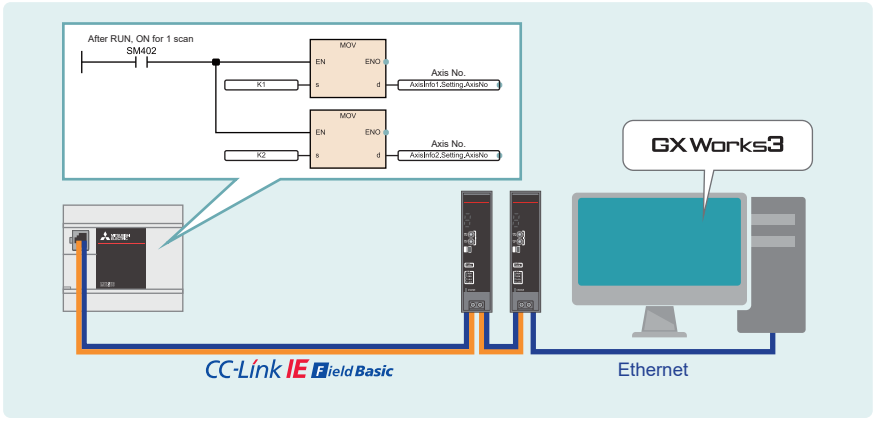
3. Setting the programmable controller



4. Checking the communication status

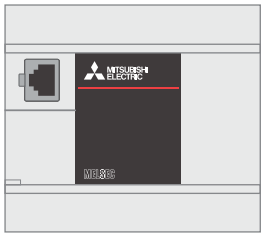
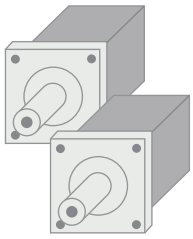


5. Creating programs and checking the operation



1.3 Required Products

This manual describes the procedures required for the communications between FX5 CPU modules and servo amplifiers, using a system configuration example where one FX5S CPU module is connected to two servo amplifiers (MR-JET-G).

FX5S CPU module × 1	MR-JET-G × 2, Servo motor × 2
	 First servo amplifier (Station number 1)  Second servo amplifier (Station number 2)  Servo motor
The FX5S CPU module supports the communications from the first released product.	Use the MR-JET-G satisfying the following. • Firmware version: C5 or later Select applicable servo motors.*1

*1 For applicable servo motors, refer to the following.
MR-JET User's Manual (Hardware) [1.2 Servo amplifier/motor combinations]

Personal computer and software	Ethernet cable × 3
	
GX Works3 • Applicable software version: 1.080J or later MR Configurator2 • Applicable software version: 1.125F or later	Use Ethernet cables compliant with the following standards. • Category 5 or higher, straight cable (double shielded / STP) • IEEE 802.3 (100BASE-TX) • ANSI/TIA/EIA-568-B (Category 5)

Software

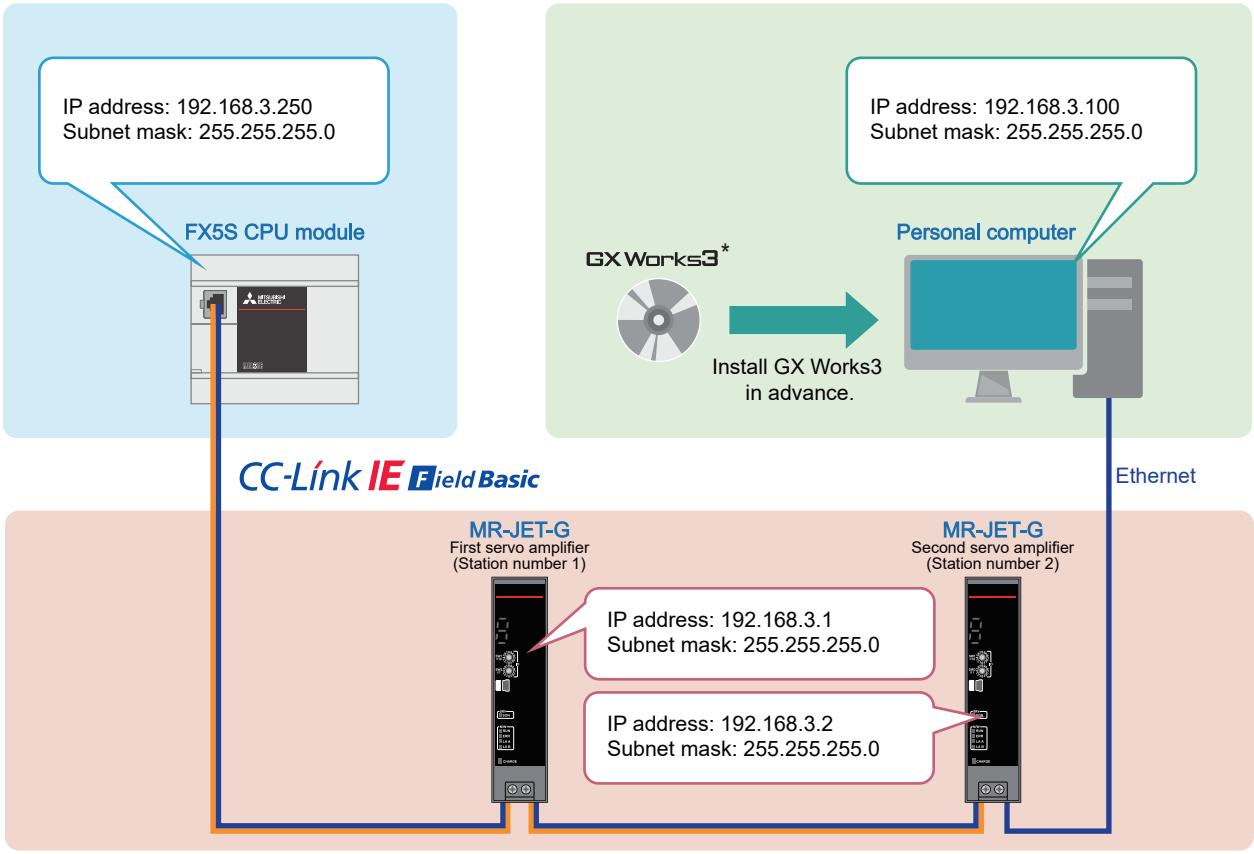
GX Works3 must import the following.

Item	File name	Reference
FB library	MotionControl_CCLinkIEFBasic_F.mslm	Page 19 PROGRAMMABLE CONTROLLER SETTINGS
Profile	0x0002_MR-JET-G(E_CCIEFBasic)_1_en.cspp*1	Page 59 Downloading and Registering a Profile

*1 The file before decompression (such as *.zip) can also be imported.

1.4 System Configuration

This manual uses the system configuration where one FX5S CPU module is connected to two servo amplifiers (MR-JET-G). Use standard Ethernet cables for the connection and configure the system in line topology.
In this example, IP addresses are set to 192.168.3.☐, and subnet masks are set to 255.255.255.0 for all the devices. Note that, when communicating between multiple devices in a same network, the first three values of the IP addresses (first to third octets) need to be the same. For IP addresses used for the devices, users can select them. For subnet masks, set the same address to all the devices.

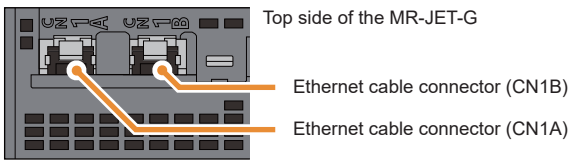


* MR Configurator2 is automatically installed by installing GX Works3.

For the wiring of MR-JET-G to the power supply, refer to the following.
📖MR-JET User's Manual (Hardware) [3 SIGNALS AND WIRING]
For the wiring of MR-J5-G to the power supply, refer to the following.
☞ Page 60 Power supply wiring
For the wiring of an FX5 CPU module to the power supply, refer to the following.
📖MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) [13.4 Power Supply Wiring]
For the wiring between servo amplifiers and servo motors, refer to the following.
📖MR-JET User's Manual (Hardware) [3 SIGNALS AND WIRING]
📖Rotary Servo Motor User's Manual (HG-KNS/HG-SNS)

Point

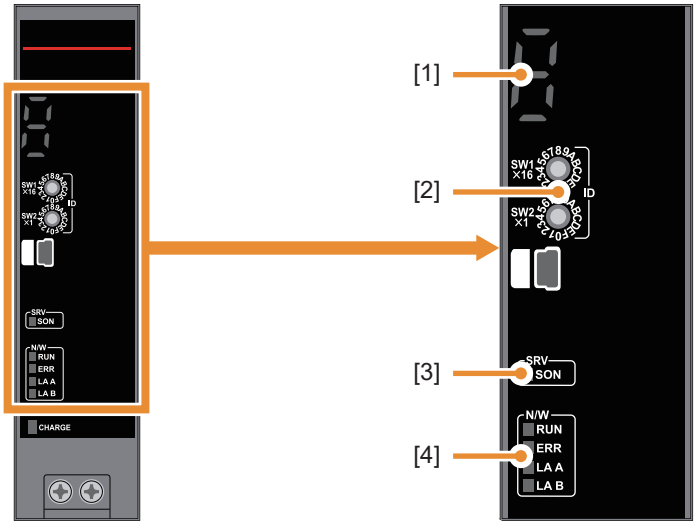
There is no difference between CN1A and CN1B of the servo amplifier, and thus the system configuration does not change by switching the Ethernet cable connection from CN1A connector to CN1B connector, or vice versa.



2 SERVO AMPLIFIER SETTING

2.1 Switch Setting and Display

The IP address can be set with the rotary switches of the MR-JET-G. The communication status and alarm status of the network can be checked with the LEDs.



* A protective film is attached on the front of the servo amplifier before shipment.

No.	Name		Description
[1]	Display		Indicates the servo status and an alarm number using one-digit, seven-segment LEDs.
[2]	Rotary switches (SW1/SW2)		Sets the IP address of the servo amplifier. (☞ Page 14 Ethernet Parameter Settings)
[3]	Servo status display LED (SRV)	SON	Off: Indicates Ready OFF and Servo OFF state. Flashing: Indicates Ready ON and Servo OFF state. On: Indicates Ready ON and Servo ON state.
[4]	Network status display LED (N/W)	RUN	Off: Indicates that an alarm has occurred. On: Indicates that the power is on.
		ERR	Off: Indicates that neither an alarm nor a warning has occurred. Flashing: Indicates that a warning has occurred. On: Indicates that an alarm has occurred.
		LA A	Indicates the link status for CN1A. On: Link-up
		LA B	Indicates the link status for CN1B. On: Link-up

For details on the switch setting and the display of the MR-JET-G, refer to the following.

📖MR-JET-G User's Manual (Introduction) [3.2 Switch setting and display of the servo amplifier]

For details on the switch setting and the display of the MR-J5-G, refer to the following.

☞ Page 60 Display

2.2 List of Related Parameters

The following tables list the servo-amplifier parameters required to be set.
To perform Ethernet communications between servo amplifiers and connected devices, set the servo-amplifier parameters according to the communication specifications of the connected devices. If the initial setting is not configured or the setting has an error, data communications fail.

Related parameters

■Required setting parameters

The following table lists the parameters required to be set to use the FB library described in this manual. Be sure to set these parameters as shown below.

Parameter number	Parameter name	Initial value	Setting value	Description
PA01.0	Control mode selection	0	0	Set "Network standard mode".
PD13.2	INP output signal ON condition selection	0	1	Set "Within the in-position range and at the completion of command output".
PN13.0-3	Network protocol setting	0000h	0004h	Set "CC-Link IE Field Basic".
PN22.0	Default mapping mode selection	0	0	Set the mode 1.

■Optional setting parameters

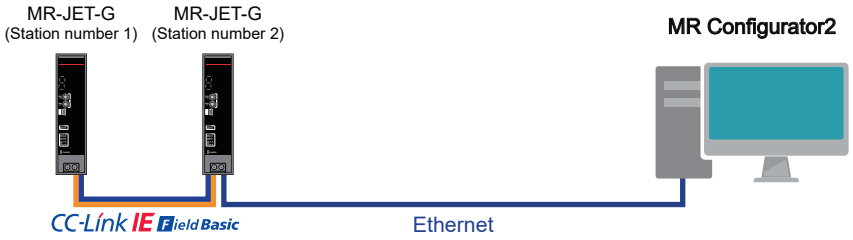
The following table lists the parameters required to be set to use the program examples or for operation check described in this manual. Change the settings according to the system you use.

Parameter number	Parameter name	Initial value	Setting value	Description
PA04.2	Servo forced stop selection	0	1	Set "Disabled (The forced stop input EM1 and EM2 are not used)".
PA06	Electronic gear numerator	1	500	Set the numerator of the fraction of electronic gear to 500.
PA07	Electronic gear denominator	1	1	Set the denominator of the fraction of electronic gear to 1.
PD01.2	Input signal automatic ON selection	0h	Ch	Set as follows. • Forward rotation stroke end (LSP): "ON". • Reverse rotation stroke end (LSN): "ON"
PT45	Homing method	37	-3	Set the data setting method.

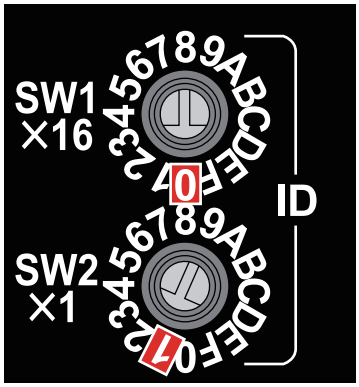
For the MR-J5-G parameters, refer to the following.
☞ Page 60 Parameters

2.3 Ethernet Parameter Settings

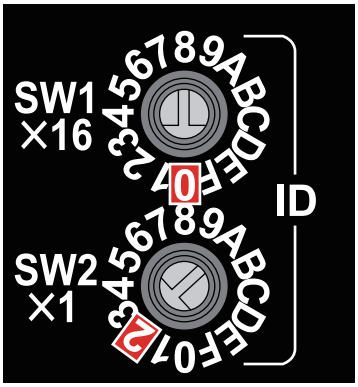
Connect the servo amplifiers and the personal computer with the Ethernet cables, and set the parameters.
This manual describes the parameter setting method using MR Configurator2.



1. When the power of servo amplifiers is off, set the fourth octet of IP addresses of servo amplifiers using the rotary switches.



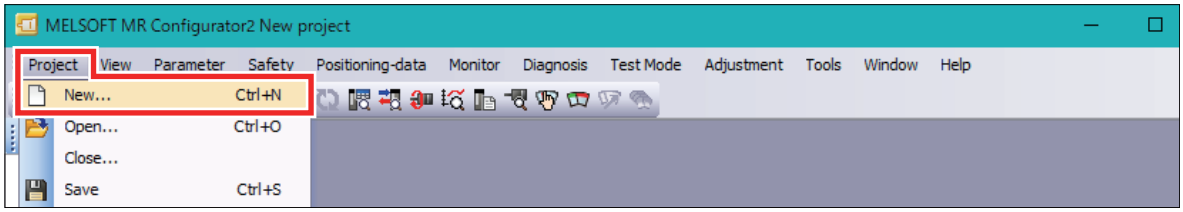
[Station number 1]
Turn the rotary switches to set as shown on the left side.
(01h)
- SW1×16: 0
- SW2×1: 1



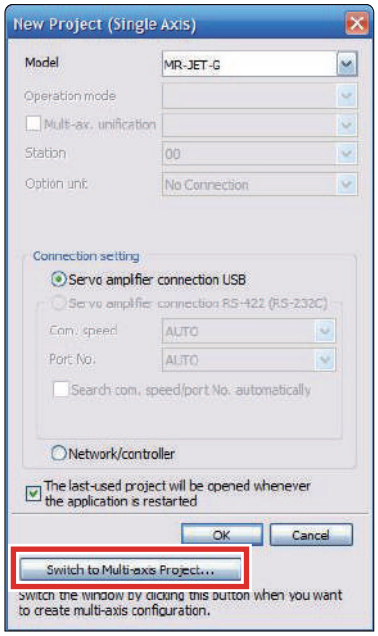
[Station number 2]
Turn the rotary switches to set as shown on the left side.
(02h)
- SW1×16: 0
- SW2×1: 2

2. Power on the servo amplifiers.

3. Start MR Configurator2, and select [Project] ⇨ [New].



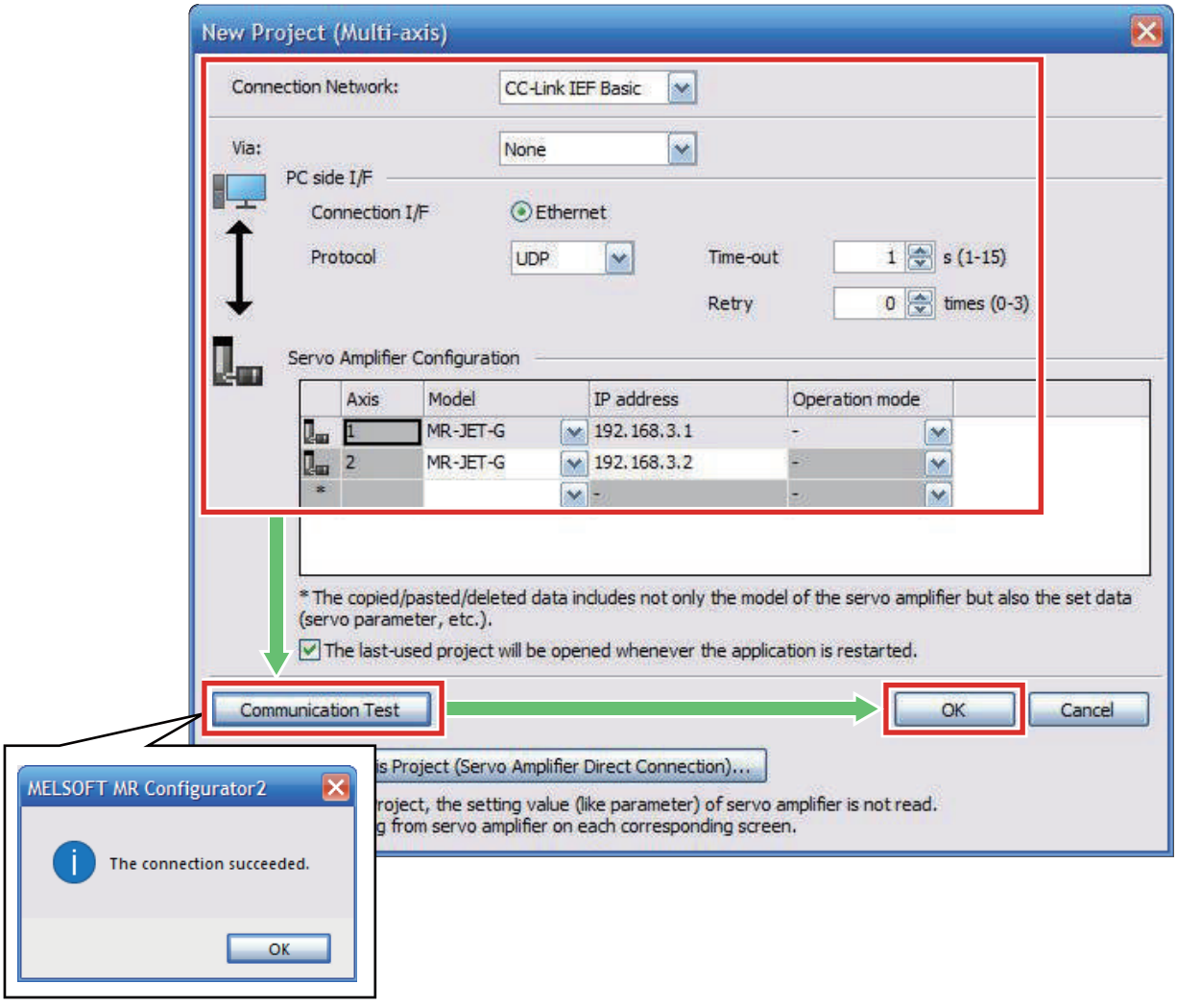
4. Click [Switch to Multi-axis Project].



5. Set as shown below. After the parameters are set, check the connection to the servo amplifiers by clicking [Communications Test]. When the connection has succeeded, click [OK].

Item		Setting value	
		Axis 1	Axis 2
Connection Network		CC-Link IEF Basic	
Via		None	
PC side I/F	Protocol	UDP	
	Time-out	1s	
	Retry	0 times	
Servo Amplifier Configuration	Model	MR-JET-G	MR-JET-G
	IP address*1	192.168.3.1	192.168.3.2

*1 For the fourth octet of IP addresses, the values set by the rotary switches in the step 1 are used. Thus, the IP addresses are as shown below.
· Station number 1: 192.168.3.1
· Station number 2: 192.168.3.2



Precautions

When the communication test detects a connection failure, perform the following.

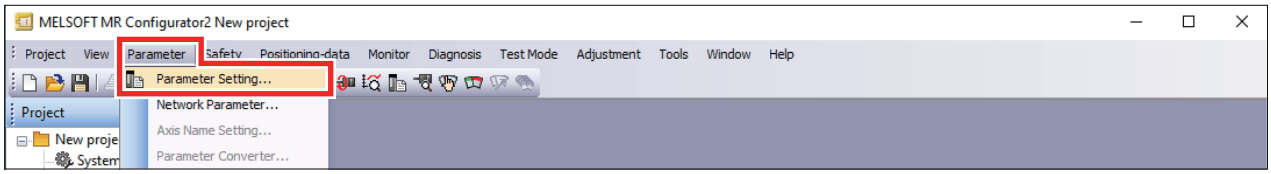
- Check the power supplies of the programmable controller and the servo amplifiers, wiring with Ethernet cables.
- Check the IP address and the subnet mask of the personal computer.
- Initialize the servo amplifiers.

For how to initialize servo amplifiers, refer to the following.

MR-JET-G User's Manual (Introduction) [4.6 Servo amplifier setting initialization]

2.4 Parameter Settings

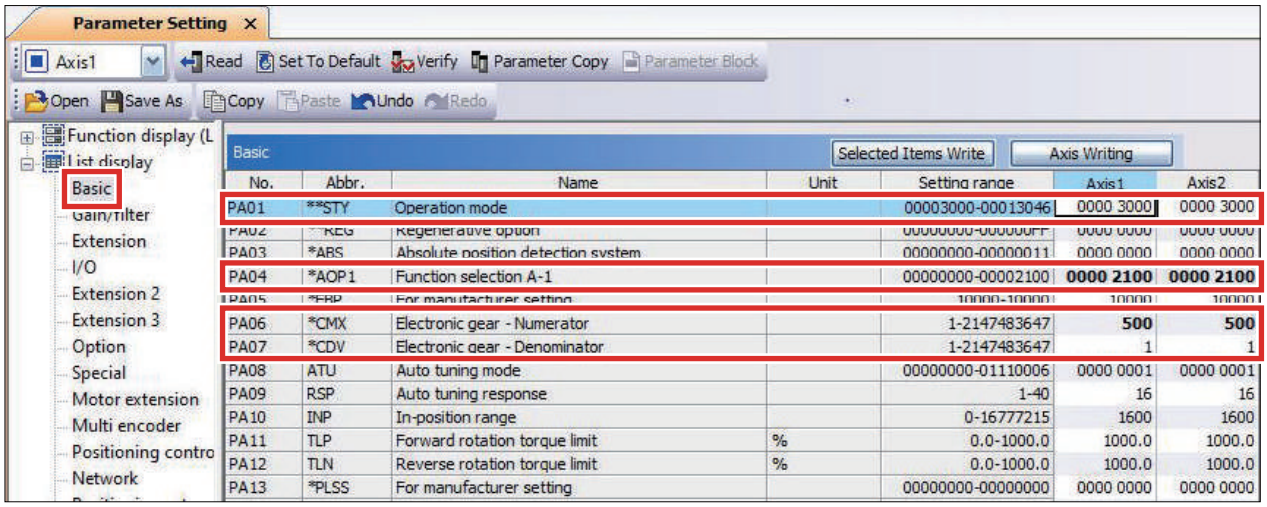
1. Select [Parameter] ⇨ [Parameter Setting].



2. Set each item from [List display]. Set the same value for both axis 1 and axis 2.

List display	No.	Name	Setting value
Basic	PA01	Operation mode	00003000h
	PA04	Function selection A-1	00002100h
	PA06	Electronic gear - Numerator	500
	PA07	Electronic gear -Denominator	1
I/O	PD01	Input signal automatic ON selection 1	00000C00h
	PD13	Function selection D-2	00000100h
Positioning control	PT45	Homing method	-3
Network	PN13	Network protocol setting	00000004h
	PN22	Function selection N-5	00000000h

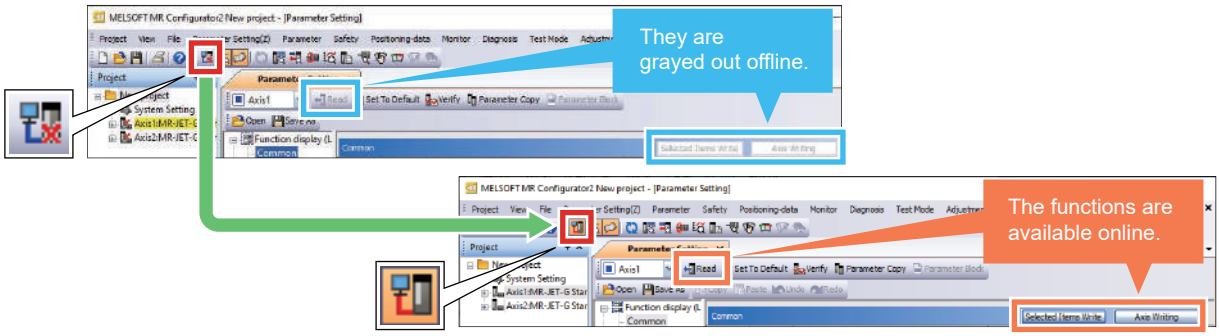
■ When "Basic" is selected



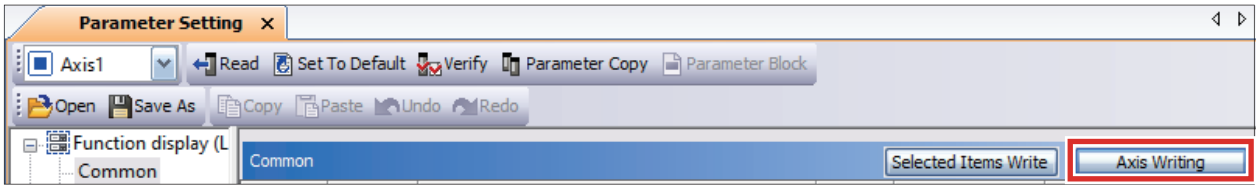
2.5 Write to Servo Amplifier

Write the set parameters to the servo amplifier.

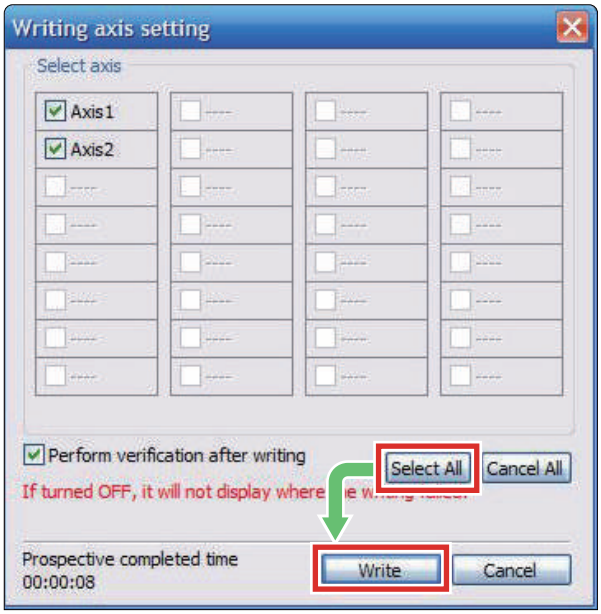
1. Click the following icon on the toolbar to go online.



2. Click [Axis Writing].



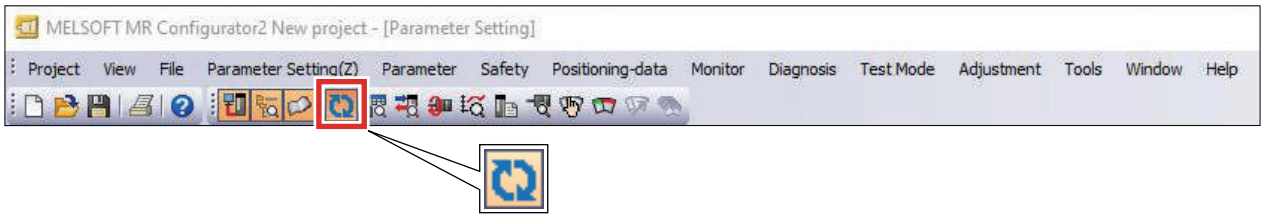
3. Click [Select All], and then click [Write]. After the writing is complete, reset the servo amplifier.



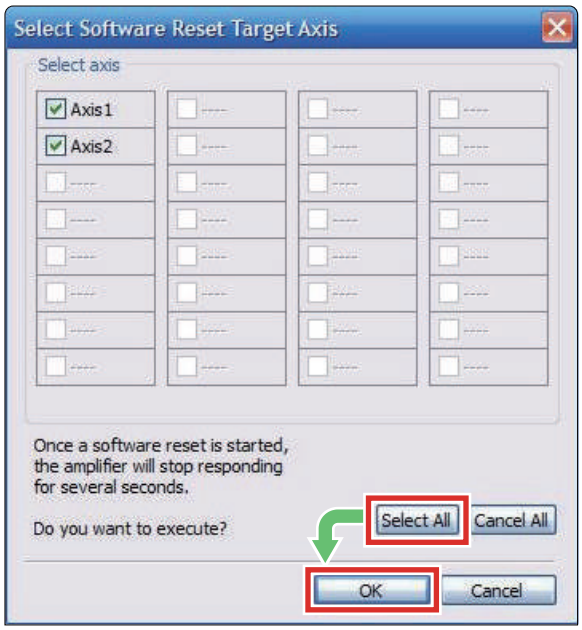
2.6 Servo Amplifier Reset

Reset the servo amplifier. For some parameters, set values do not take effect unless the servo amplifier is reset. This manual describes the reset operation using MR Configurator2.

1. Click the [Software Reset] icon on the toolbar.



2. Click [Select All], and then click [OK].



3 PROGRAMMABLE CONTROLLER SETTINGS

3.1 Part Names

For the part names of the FX5 CPU modules, refer to the following.

MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) [3.1 CPU Module]

3.2 Downloading the FB Library

In this manual, the FB library for servo amplifiers compatible with CC-Link IE Field Network Basic is used.

To obtain the FB library, please contact your local Mitsubishi Electric representative.

3.3 Importing the FB Library

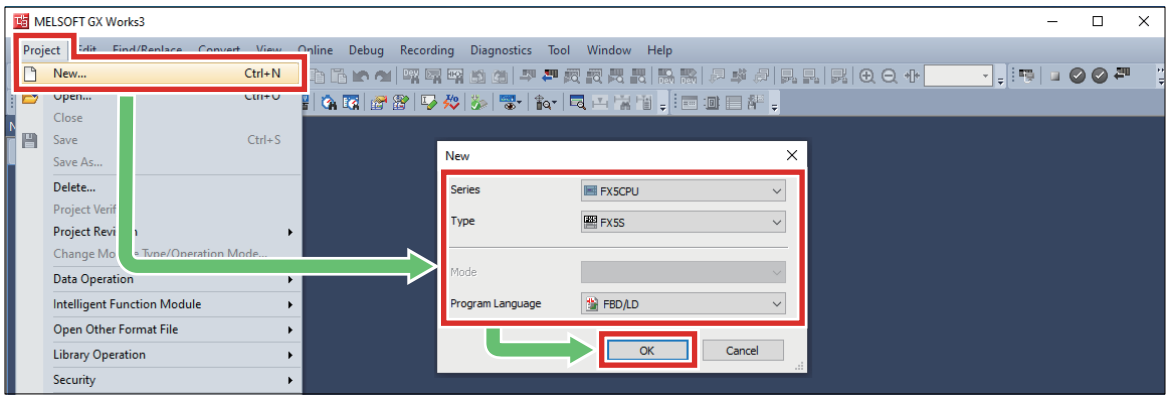
This section describes how to register the obtained FB library to GX Works3.

Decompress the FB library folder (zip file) before registering the FB library.

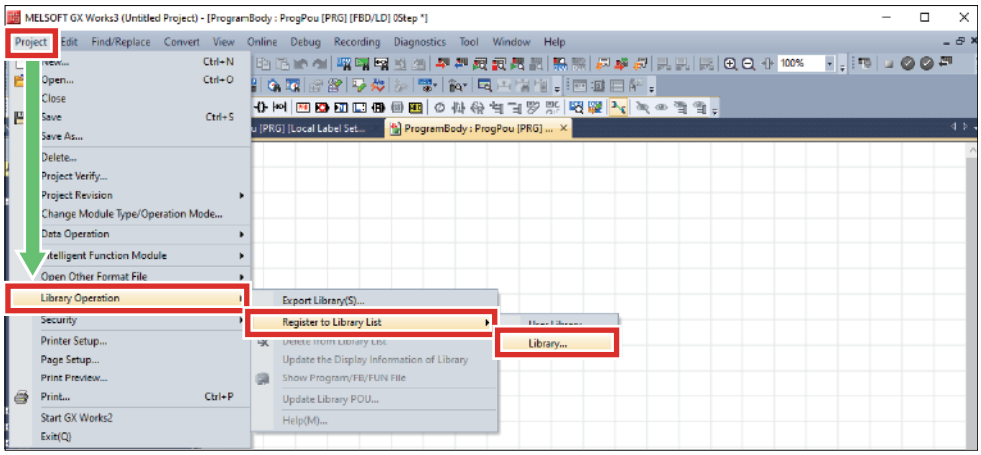
1. Start GX Works3, and select [Project] ⇨ [New].

Set as follows, and click [OK].

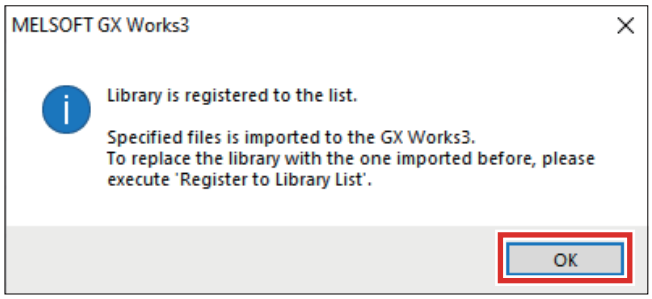
Item	Setting value
Series	FX5CPU
Type	FX5S
Program Language	FBD/LD



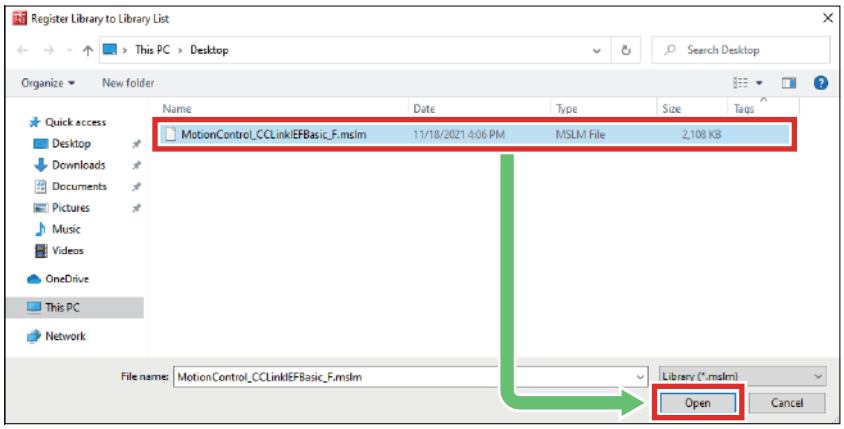
2. Select [Project] ⇨ [Library Operation] ⇨ [Register to Library List] ⇨ [Library].



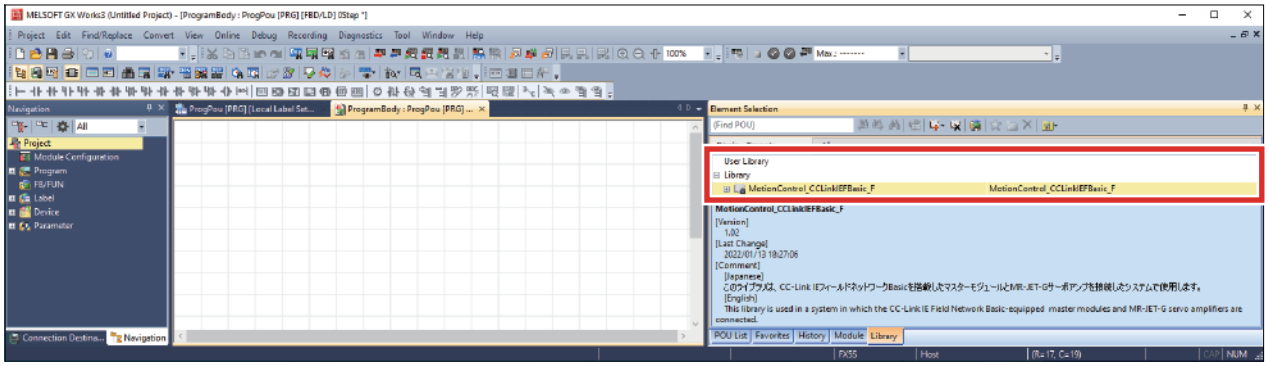
3. When the following window appears, click [OK].



4. Select the "MotionControl_CCLinkIEFBasic_F.mslm" file in the decompressed FB library folder, and click [Open].



5. The selected file is added to [Library] in the "Element Selection" window.

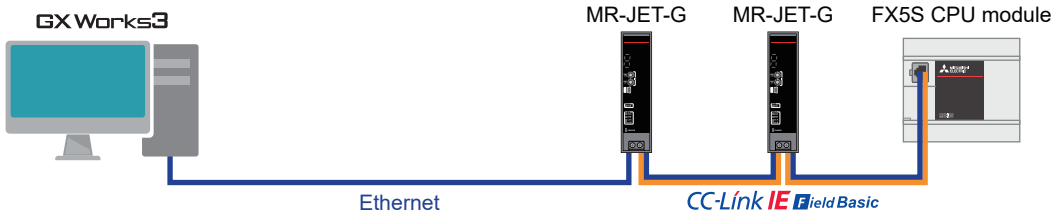


Point

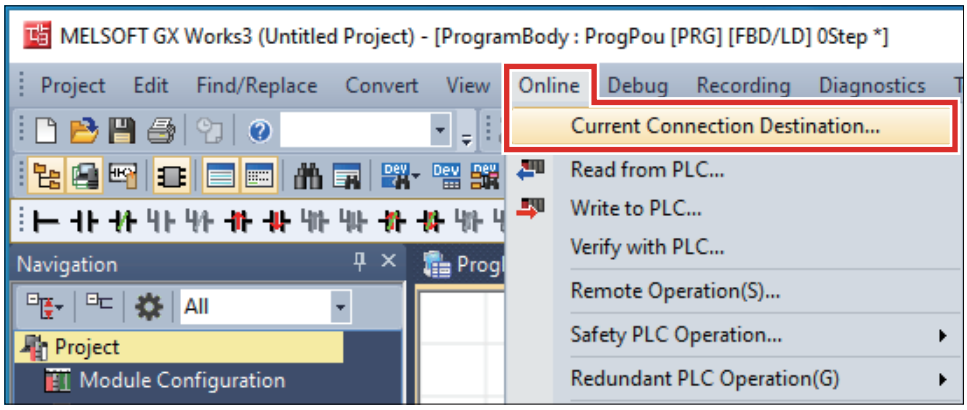
If the "Element Selection" window is not displayed, go to the menu bar, and select [View] ⇨ [Docking Window] ⇨ [Element Selection] to open the window.

3.4 Communication Settings of GX Works3

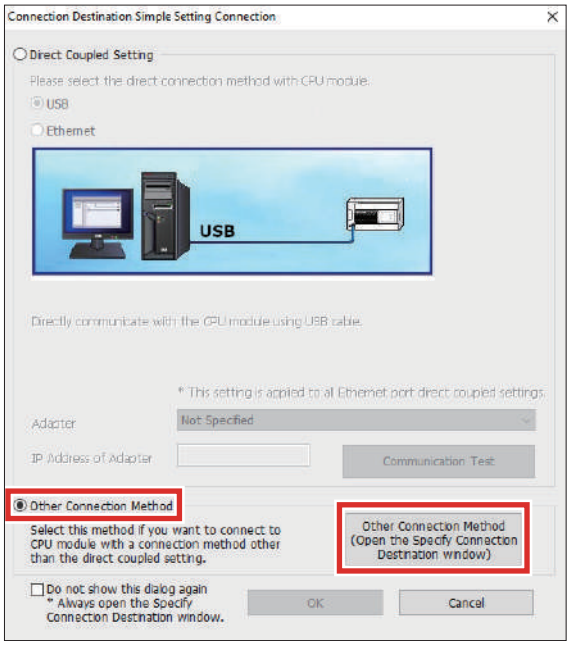
Connect the personal computer, the programmable controller, and servo amplifiers with the Ethernet cables. Perform the communications test before setting parameters for the programmable controller,



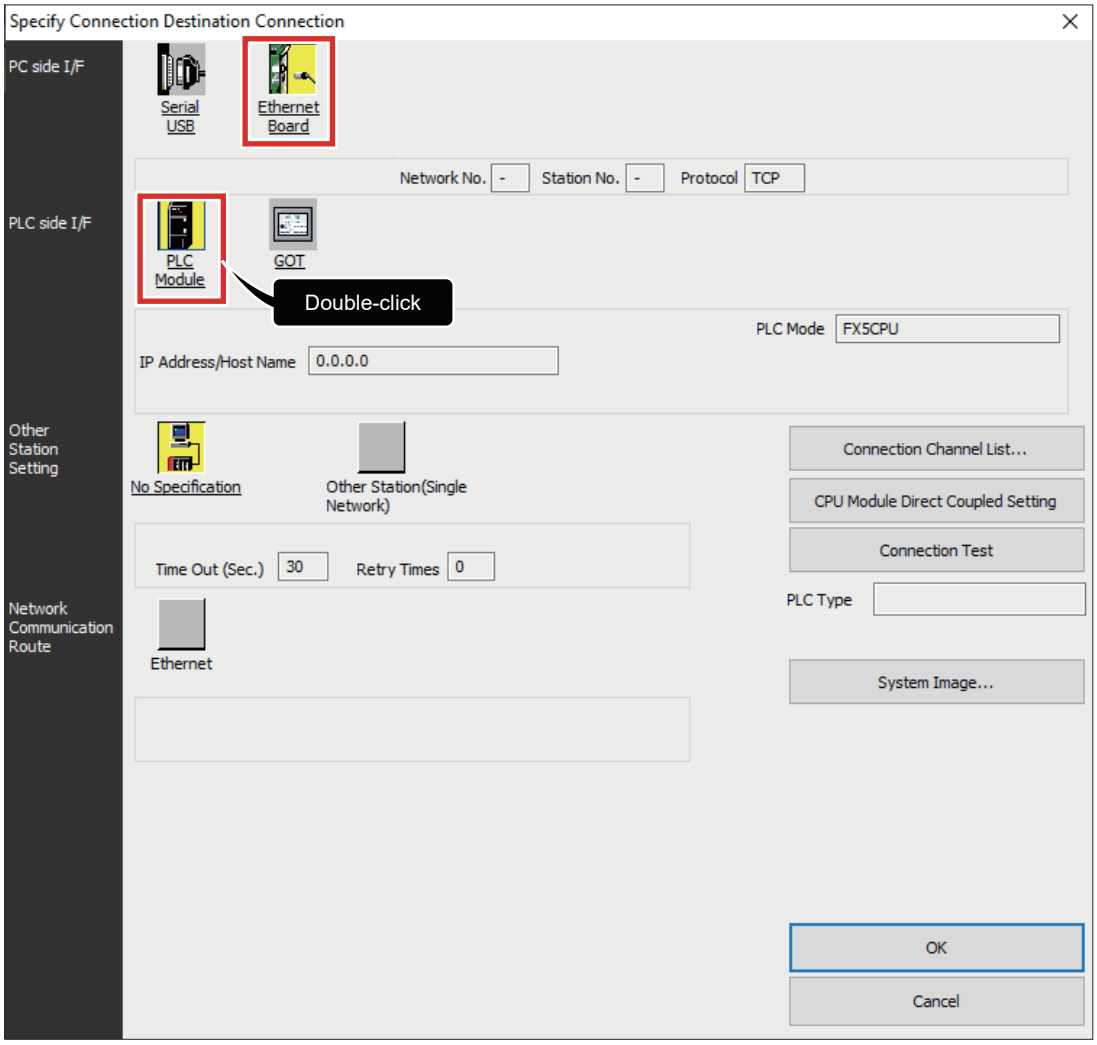
1. Select [Online] ⇨ [Current Connection Destination].



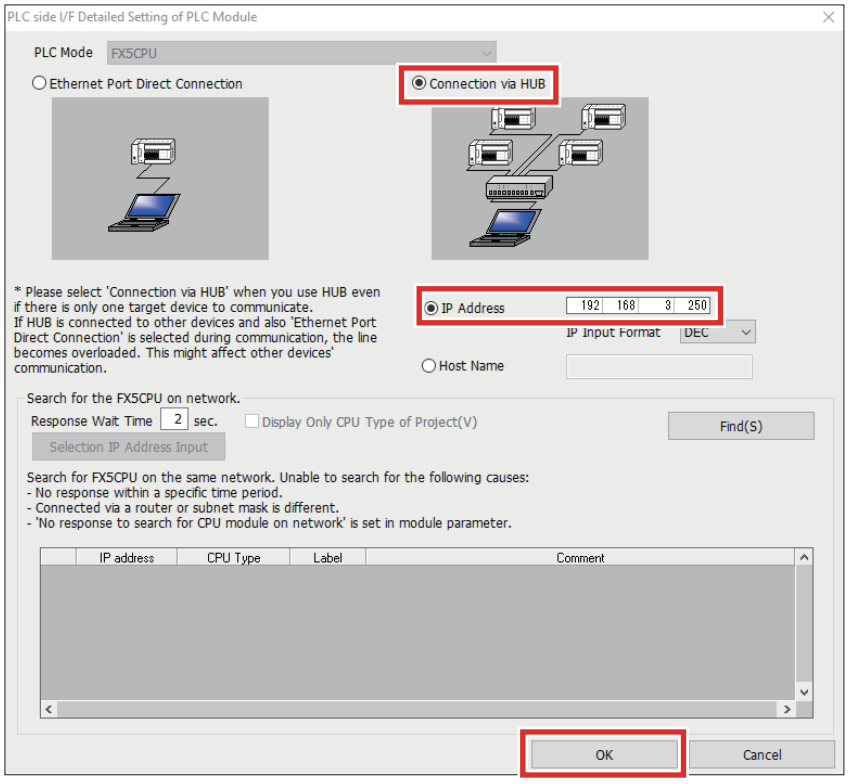
2. Select [Other Connection Method], and then click [Other Connection Method].



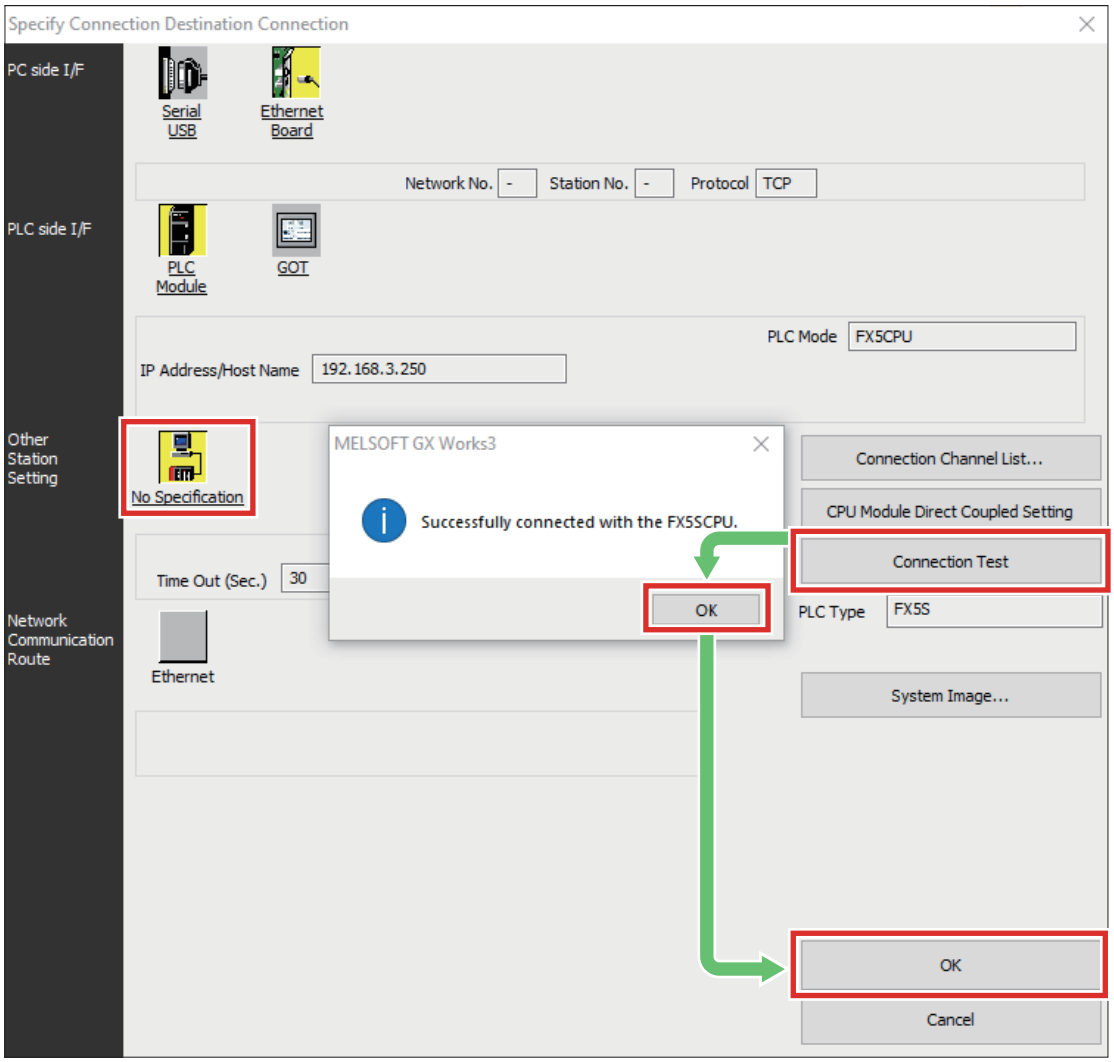
3. Select [Ethernet Board] of "PC side I/F", and then double-click [PLC Module] of "PLC side I/F".



4. Select [Connection via HUB], input "192.168.3.250" for "IP Address", and click [OK].



5. Select [No Specification] of "Target Station", and then click [Communication Test]. When the connection has succeeded, click [OK].



Precautions

When the communications test detects a connection failure, perform the following.

- Check the power supplies of the programmable controller and the servo amplifiers, wiring with Ethernet cables.
- Check the IP address and the subnet mask of the personal computer.
- Initialize the programmable controller.

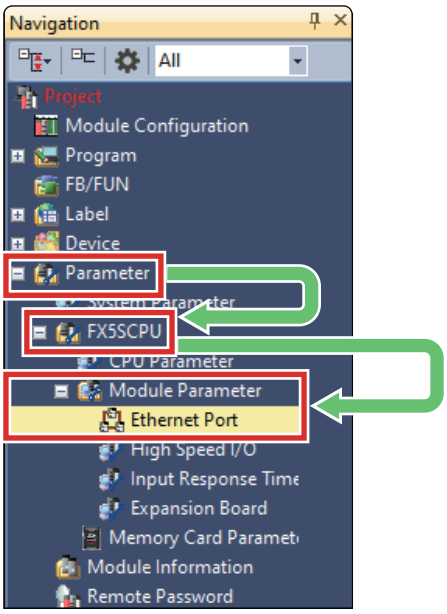
For how to initialize the programmable controller, refer to the following.

GX Works3 Operating Manual [18.6 Initializing/Clearing a Memory]

3.5 Parameter Settings

This section describes how to set parameters required for the programmable controller using GX Works3.

1. In the "Navigation" window of GX Works3, select [Parameter] ⇨ [FX5SCPU] ⇨ [Module Parameter] ⇨ [Ethernet Port].



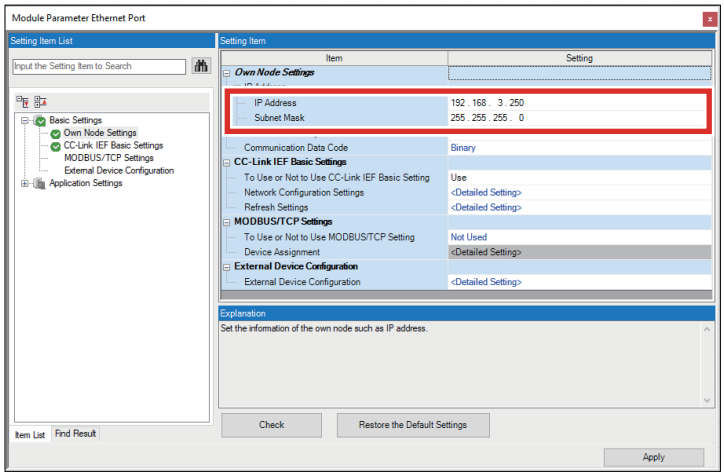
Point

If the "Navigation" window is not displayed, go to the menu bar, and select [View] ⇨ [Docking Window] ⇨ [Navigation] to open the window.

2. Set an IP address and a subnet mask in "Own Node Settings" of "Basic Settings".

In this manual, the following setting values are used. (For the setting values, refer to ☞ Page 11 System Configuration.)

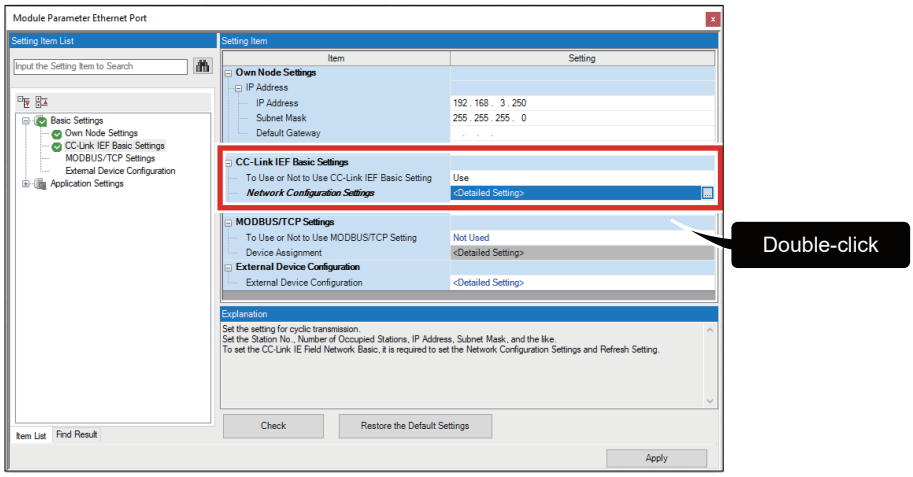
Item	Setting value
IP Address	192.168.3.250
Subnet Mask	255.255.255.0



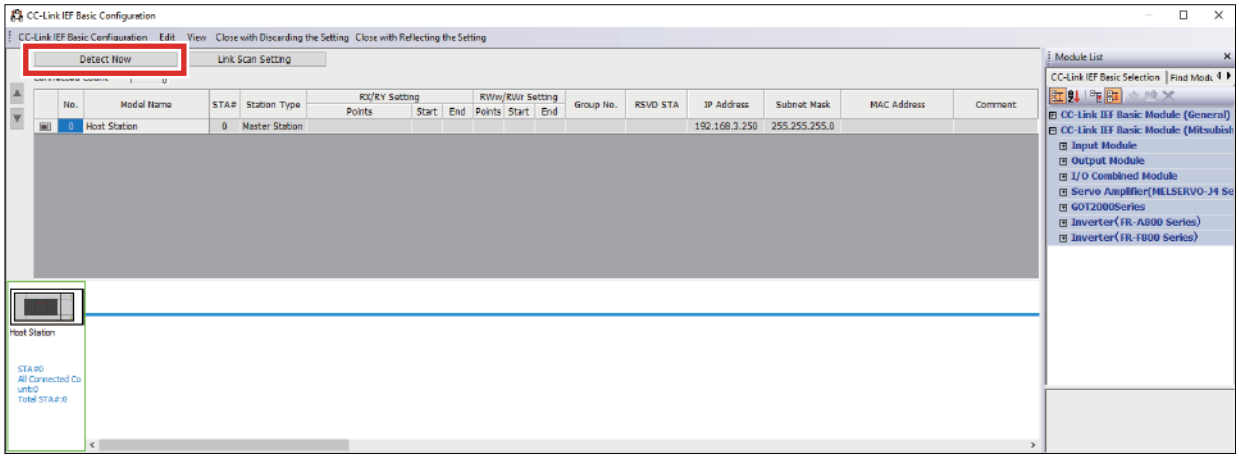
Point

An IP address is not set by default. When an IP address is not set, the CPU module operates with IP address 192.168.3.250.

3. In "CC-Link IEF Basic Setting", select "Use" for "To Use or Not to Use CC-Link IEF Basic Settings", and double-click "Detailed Setting" of "Network Configuration Settings".



4. Click [Detect Now].



When the MR-JET-G profile is not registered, refer to the following.

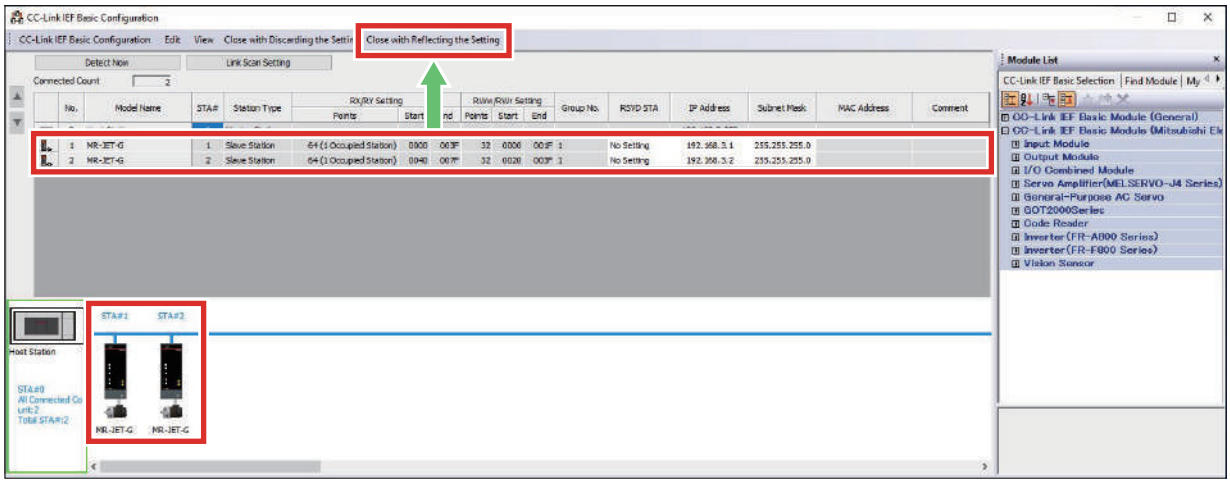
☞ Page 59 Downloading and Registering a Profile

5. The information of the servo amplifiers connected to the programmable controller is displayed in the table. Check the settings of model name, reserved station, IP address, and subnet mask, and click [Close with Reflecting the Setting].

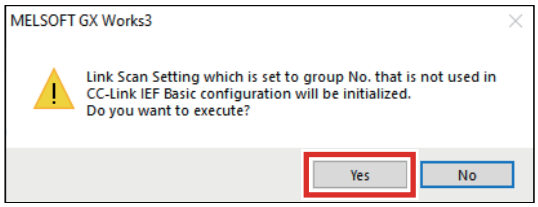
In this manual, the following setting values are used. (For the setting values, refer to ☞ Page 11 System Configuration.)

If a displayed value is different from the one in the table below, correct the value.

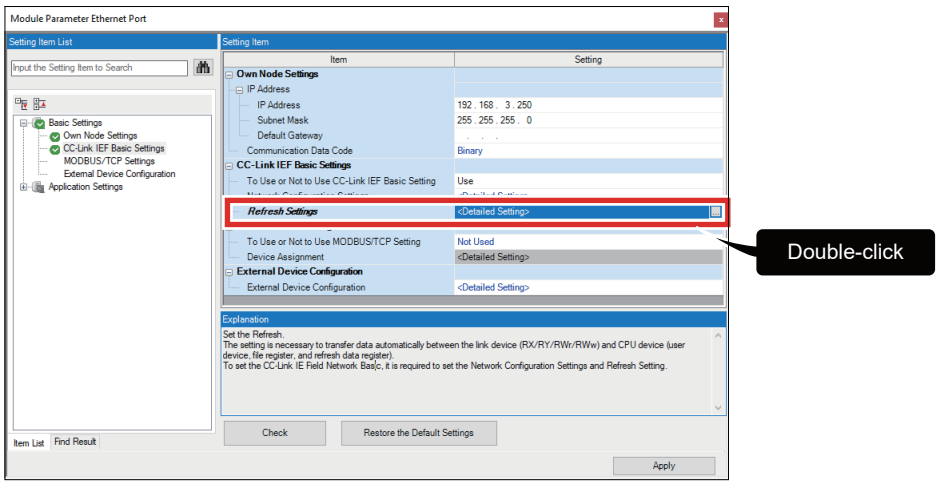
Model Name	STA#	RSVD STA	IP Address	Subnet Mask
MR-JET-G	1	No Setting	192.168.3.1	255.255.255.0
MR-JET-G	2	No Setting	192.168.3.2	255.255.255.0



When the following window appears, click [Yes].

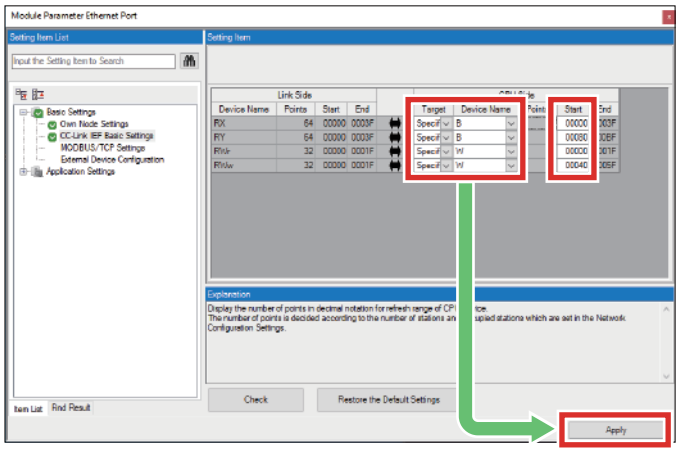


6. Next, set parameters to automatically perform data transfer between link devices of the servo amplifiers and devices of the programmable controller. Double-click "Detailed Setting" of "Refresh Settings".



7. Select "Specify Device" for the refresh targets on the CPU module side, and set the names and start addresses of the devices to be assigned to the link devices. After the setting, click [Apply]. In this manual, the following setting values are used.

Device name of the link side	Target	Device Name	Start
RX	Specify Device	B	00000
RY	Specify Device	B	00080
RWr	Specify Device	W	00000
RWw	Specify Device	W	00040



Data flow between the master station and remote stations using link devices

This manual describes data communications using cyclic transmission, for which the link devices of the servo amplifiers are used. Each link device is assigned as shown below. For how to set global labels, refer to the following.

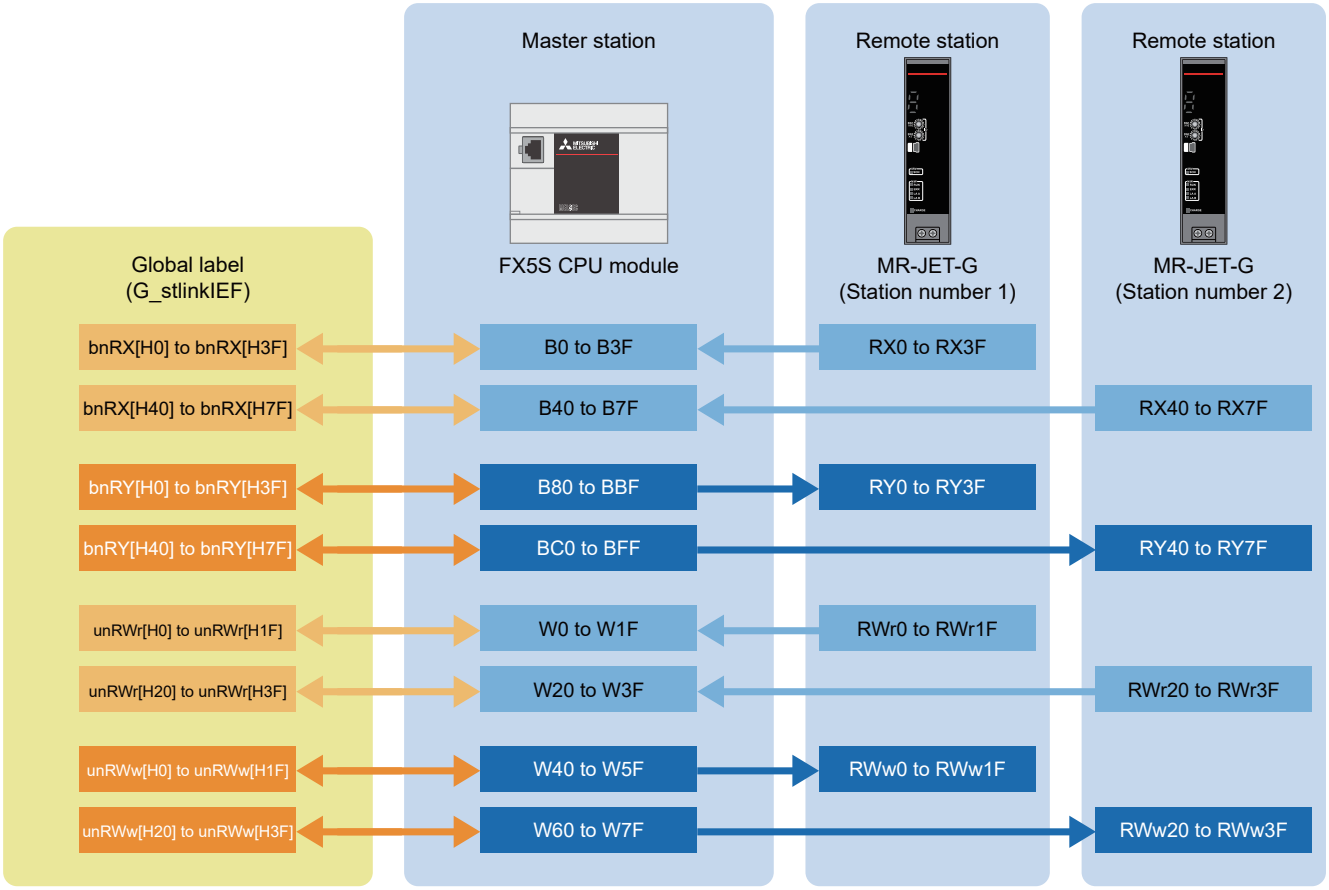
☞ Page 29 Adding Structures and Global Labels

■MR-JET-G (Station number 1)

Assignment target device on the programmable controller side	Number of points	Link device on the servo amplifier side
B0 to B3F	64	RX0 to RX3F
B80 to BBF	64	RY0 to RY3F
W0 to W1F	32	RWr0 to RWr1F
W40 to W5F	32	RWw0 to RWw1F

■MR-JET-G (Station number 2)

Assignment target device on the programmable controller side	Number of points	Link device on the servo amplifier side
B40 to B7F	64	RX40 to RX7F
BC0 to BFF	64	RY40 to RY7F
W20 to W3F	32	RWr20 to RWr3F
W60 to W7F	32	RWw20 to RWw3F



Precautions

The above areas are used as the link devices for network. Do not use these areas for the other purposes.

Labels for starting communications

Among the link devices, some are assigned to labels for starting cyclic communications, as shown below.

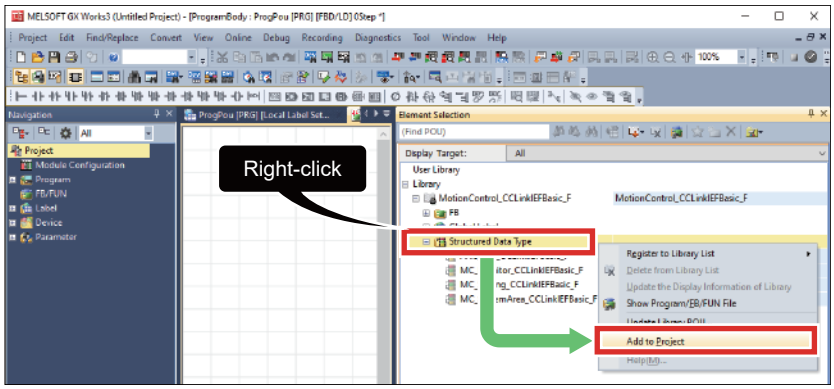
Label name (Station number 1)	Label name (Station number 2)	Description
G_stlinkIEF.bnRX[H3F]	G_stlinkIEF.bnRX[H7F]	Cyclic communication ready
G_stlinkIEF.bnRY[H3F]	G_stlinkIEF.bnRY[H7F]	Cyclic communication ready command

3.6 Adding Structures and Global Labels

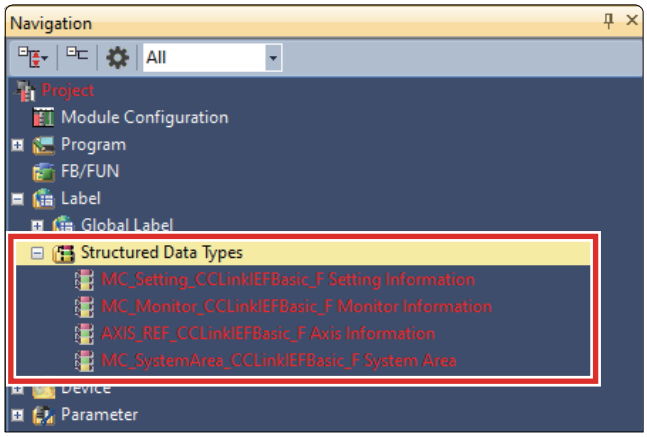
This section describes how to add structures and global labels in the FB library to the project.

Addition of structures

1. Select [MotionControl_CCLinkIEFBasic_F] ⇨ [Structured Data Type] in the registered FB library. Right-click on [Structured Data Type] and select [Add to Project].



2. The following will be added to [Structured Data Types] of [Label].

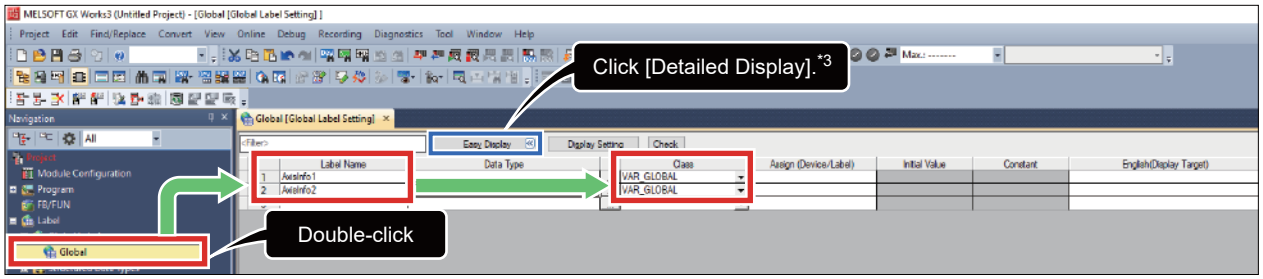


- MC_Setting_CCLinkIEFBasic_F Setting Information
- MC_Monitor_CCLinkIEFBasic_F Monitor Information
- AXIS_REF_CCLinkIEFBasic_F Axis Information
- MC_SystemArea_CCLinkIEFBasic_F System Area

Addition of global labels 1

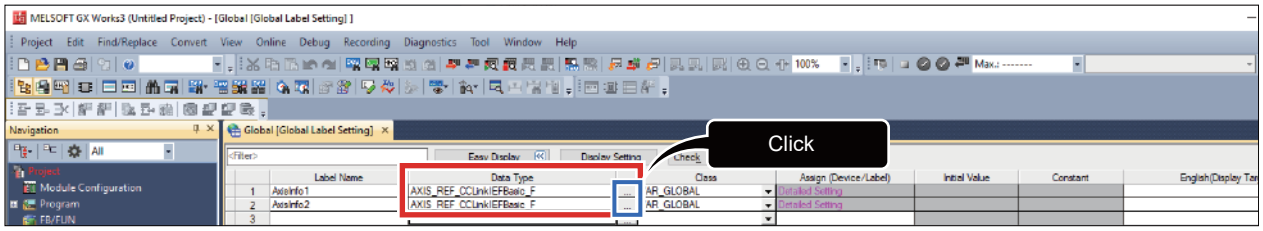
1. Select [Label] ⇨ [Global Label] ⇨ [Global]. Double-click [Global] and set as follows.

Label Name*1	Class*2
AxisInfo1	VAR_GLOBAL
AxisInfo2	VAR_GLOBAL



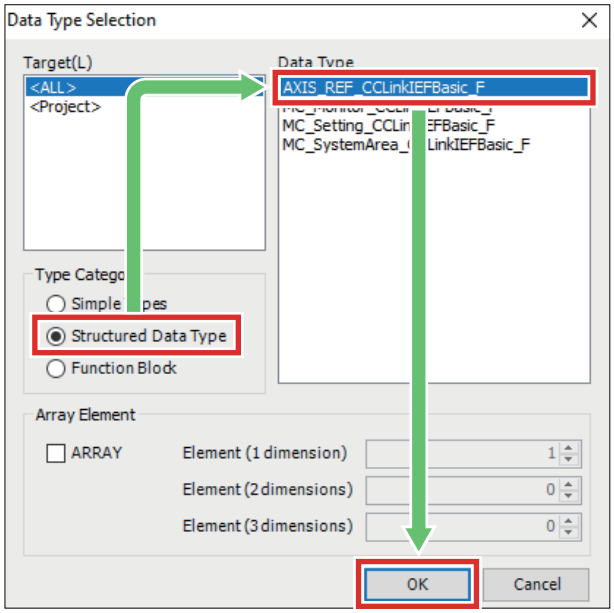
2. Set Data Type as shown below.

Label Name	Data Type	Class
AxisInfo1	AXIS_REF_CCLinkIEFBasic_F	VAR_GLOBAL
AxisInfo2	AXIS_REF_CCLinkIEFBasic_F	VAR_GLOBAL



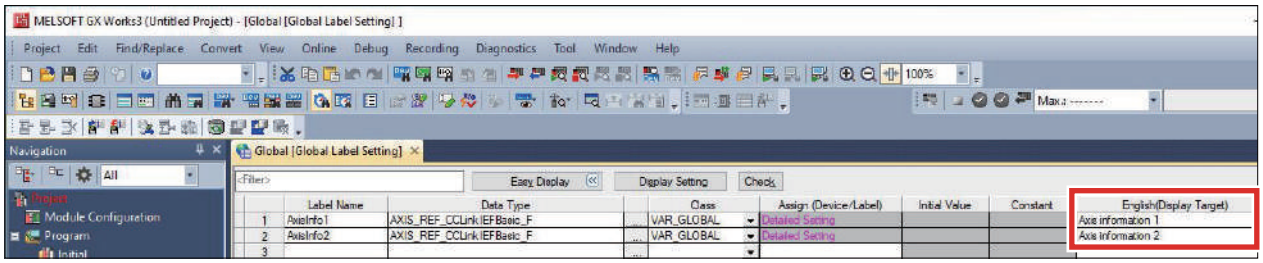
To set Data Type, click [...] and follow the step in the figure below.

Type Category	Data Type
Structured Data Type	AXIS_REF_CCLinkIEFBasic_F



3. Input comments (English) as shown below.

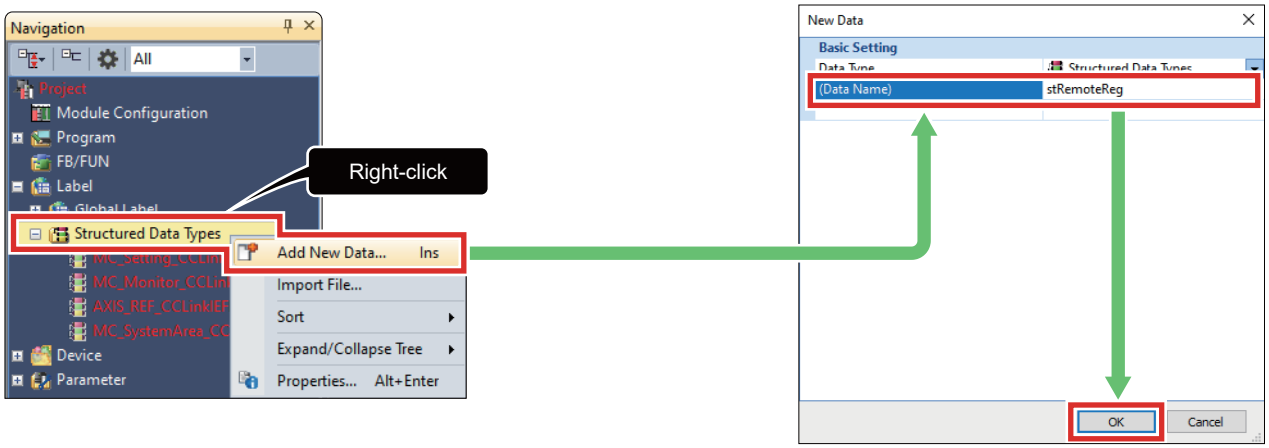
Label Name	Data Type	Class	English
AxisInfo1	AXIS_REF_CCLinkIEFBasic_F	VAR_GLOBAL	Axis information 1
AxisInfo2	AXIS_REF_CCLinkIEFBasic_F	VAR_GLOBAL	Axis information 2



*1 Any desired label name can be set.
*2 The field will be displayed by clicking [Detailed Display].
*3 When [Detailed Display] is selected, [Easy Display] is displayed.

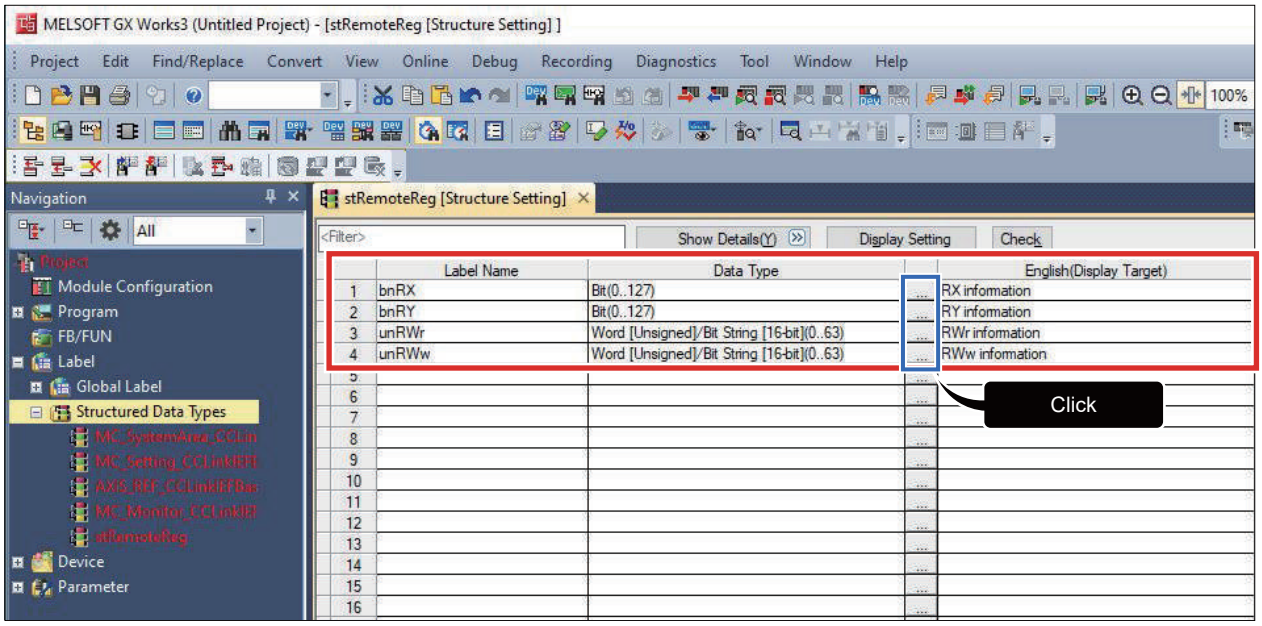
Addition of structures (labels)

1. Right-click on [Structured Data Types] in [Label], and select [Add New Data]. Input "stRemoteReg"[*1] for "Data Name", and click [OK].



2. Set labels for the structure as shown below. For how to input the label names and comments (English), refer to ☞ Page 30 Addition of global labels 1.

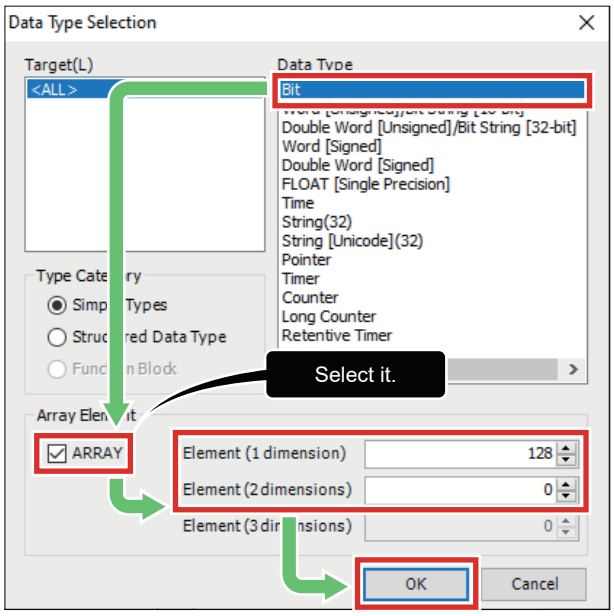
Label Name[*2]	Data Type	English
bnRX	Bit (0..127)	RX information
bnRY	Bit (0..127)	RY information
unRWr	Word [Unsigned]/Bit String [16-bit] (0..63)	RWr information
unRWw	Word [Unsigned]/Bit String [16-bit] (0..63)	RWw information



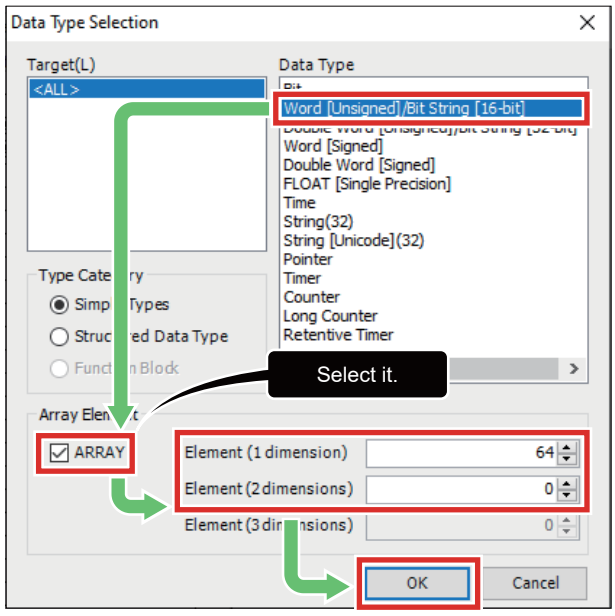
To set Data Type, click [...] and follow the step in the figures below.

Label Name	Data Type	Element (1 dimension)*3	Element (2 dimensions)*3
bnRX, bnRY	Bit	128	0
unRWr, unRWw	Word [Unsigned]/Bit String [16-bit]	64	0

[bnRX, bnRY]



[unRWr, unRWw]

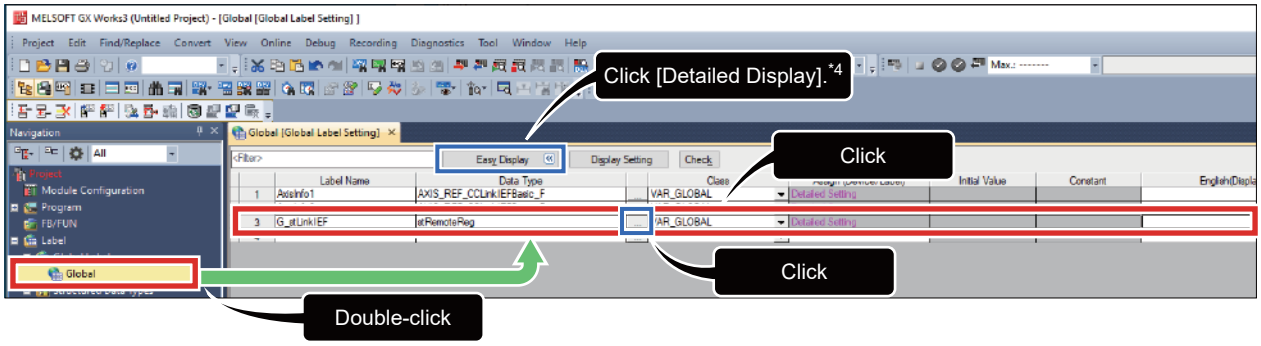


*1 Any desired data name can be set.
*2 Set the specified label names. (fixed)
*3 This field can be set when "Array" is selected.

Addition of global labels 2

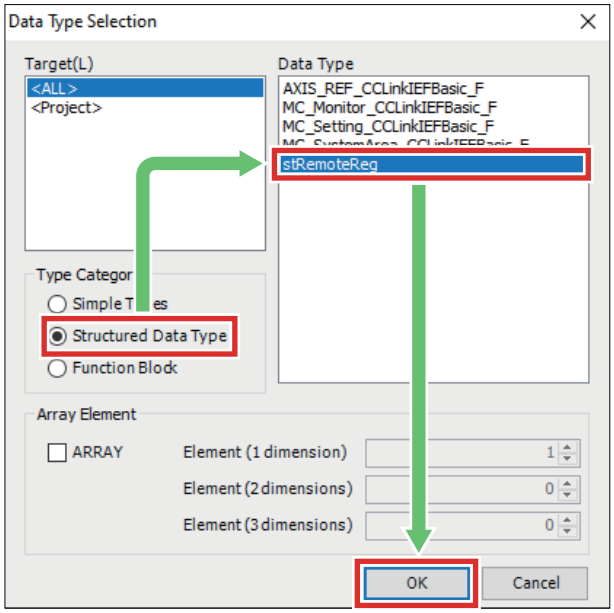
1. Select [Label] ⇨ [Global Label] ⇨ [Global]. Double-click [Global] and set the label as follows. For how to input the label name, class, and comment (English), refer to ☞ Page 30 Addition of global labels 1.

Label Name*1	Data Type*2	Class*3	English
G_stLinkIEF	stRemoteReg	VAR_GLOBAL	Link device



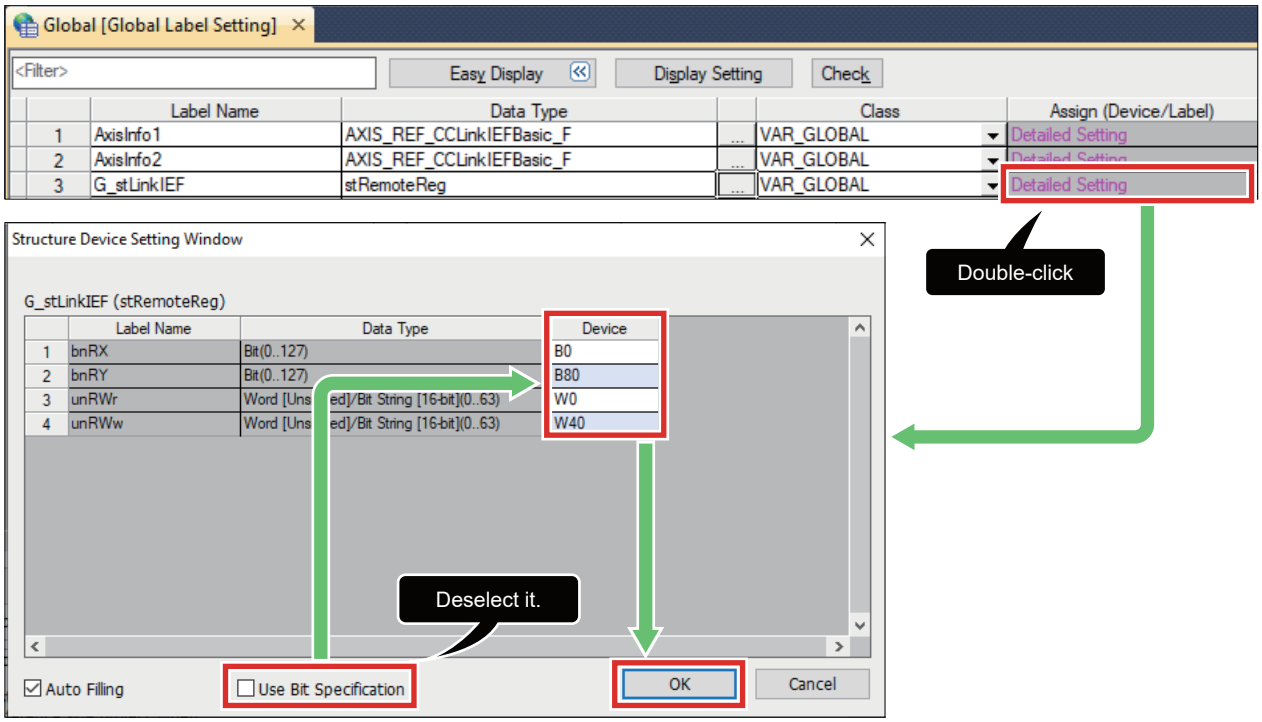
To set Data Type, click [...] and follow the step in the figure below.

Type Category	Data Type
Structured Data Type	stRemoteReg



2. Double-click "Detailed Setting" of "G_stLinkIEF" set in step 1. "Detailed Setting" is located in [Assign (Device/Label)] column. Deselect [Use Bit Specification], set the device as shown below, and click [OK].

Label Name	Data Type	Device
bnRX	Bit (0..127)	B0*5
bnRY	Bit (0..127)	B80*5
unRWr	Word [Unsigned]/Bit String [16-bit] (0..63)	W0
unRWw	Word [Unsigned]/Bit String [16-bit] (0..63)	W40



*1 Set the specified label name. (fixed)

*2 Set the data name of the structure you have specified before here. (☞ Page 32 Addition of structures (labels))
Because the data type can be selected in "Data Type Selection", you do not need to input characters in this field.

*3 The field will be displayed by clicking [Detailed Setting].

*4 When [Detailed Setting] is selected, [Easy Display] is displayed.

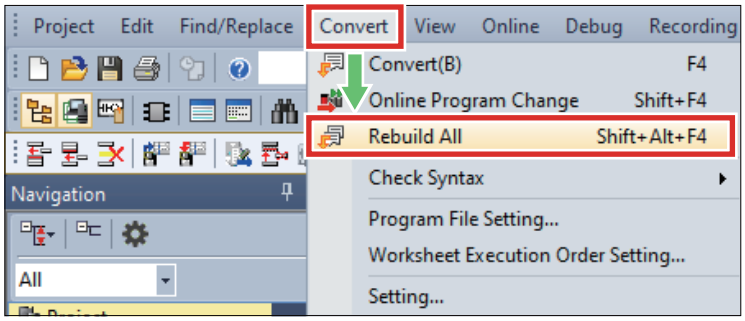
*5 To input this value in the field, [Use Bit Specification] must be deselected.

3.7 Writing Data to the Programmable Controller

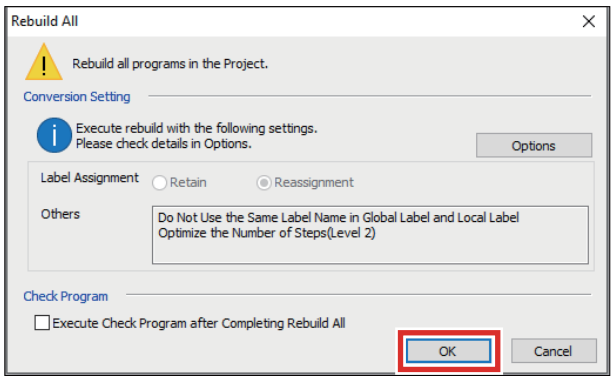
Write the parameter settings and programs to the programmable controller. Before the write execution, the operation to determine the parameters and programs is required.

Execute the write to the programmable controller while the CPU module is in STOP state.

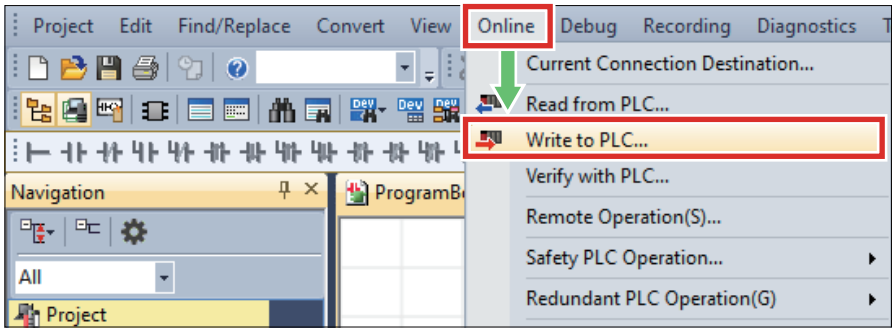
1. Select [Convert] ⇨ [Rebuild All].



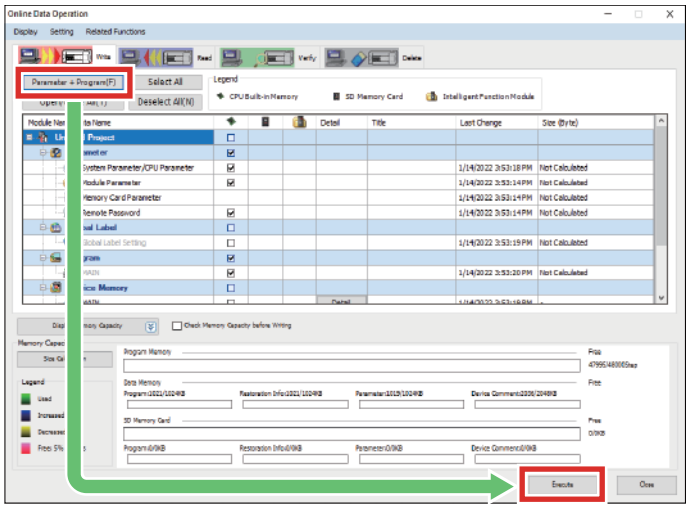
2. Click [OK].



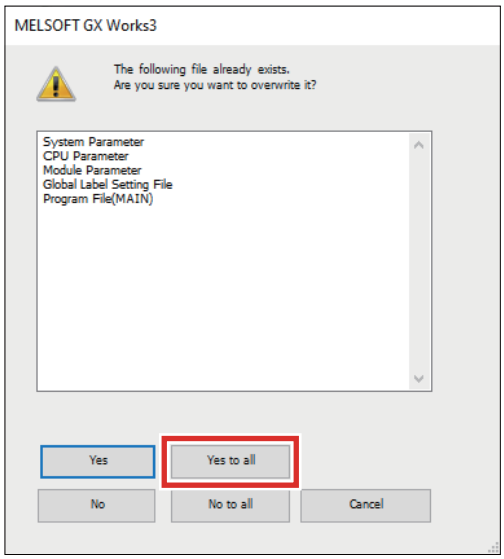
3. Select [Online] ⇨ [Write to PLC].



4. Click [Parameter + Program], and click [Execute].



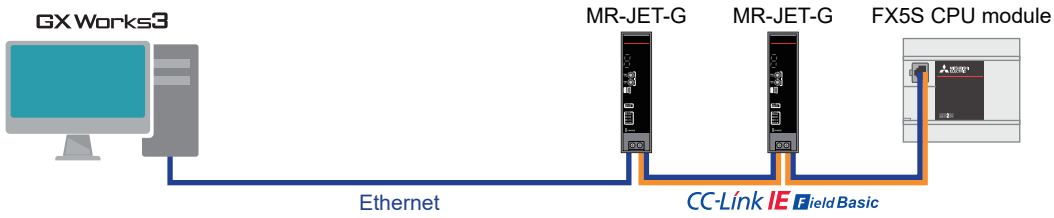
5. When the following window appears, click [Yes to all].



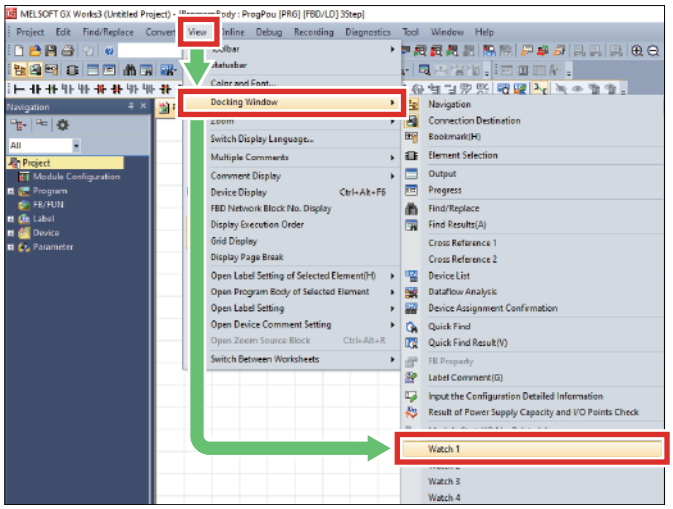
6. After the writing is complete, reset (or power off and on) the programmable controller.

4 COMMUNICATIONS CHECK OVER CC-Link IE Field Network Basic

Check communications over CC-Link IE Field Network Basic while the servo amplifiers are connected to the programmable controller.

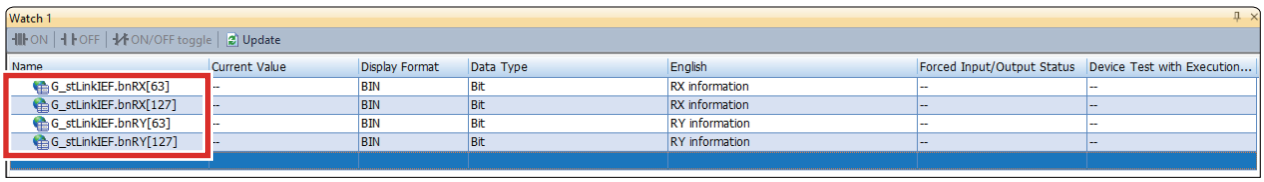


1. In GX Works3, select [View] ⇨ [Docking Window] ⇨ [Watch 1], and click [Watch 1].

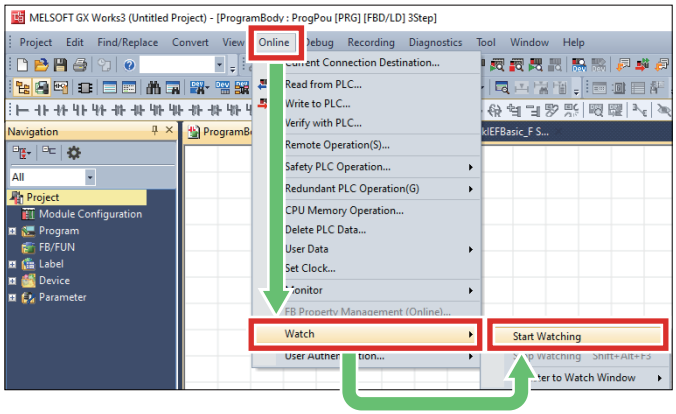


2. Register the following in "Name".

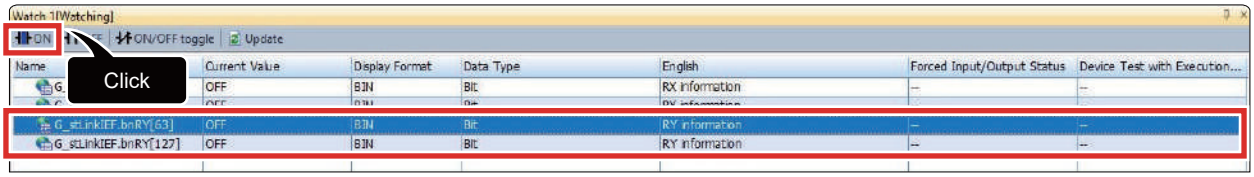
- G_stLinkIEF.bnRX[63]
- G_stLinkIEF.bnRX[127]
- G_stLinkIEF.bnRY[63]
- G_stLinkIEF.bnRY[127]



3. Select [Online] ⇨ [Watch] ⇨ [Start Watching]. Click [Start Watching] to go online.

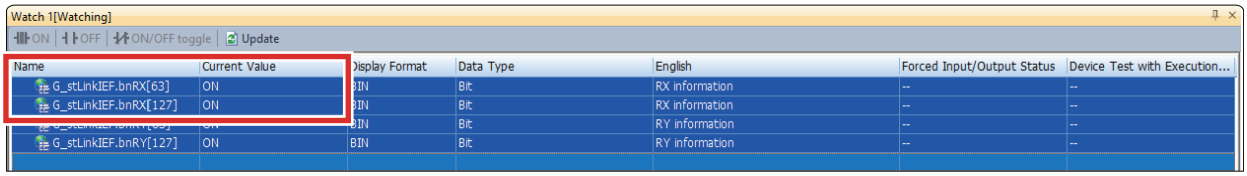


4. Click [ON] while the rows of G_stLinkIEF.bnRY[63] and G_stLinkIEF.bnRY[127] are selected.



■ When communications have no problems

"Current Value" of G_stLinkIEF.bnRX[63] and G_stLinkIEF.bnRX[127] turn ON.



After checking that the communications are normal, turn OFF G_stLinkIEF.bnRY[63] and G_stLinkIEF.bnRY[127] so that G_stLinkIEF.bnRX[63] and G_stLinkIEF.bnRX[127] turn OFF.

■ When communications have errors

"Current Value" of G_stLinkIEF.bnRX[63] and G_stLinkIEF.bnRX[127] do not turn ON. Check parameter settings or error status.

For parameter settings, refer to the following.

☞ Page 25 Parameter Settings

For how to check the error status, refer to the following.

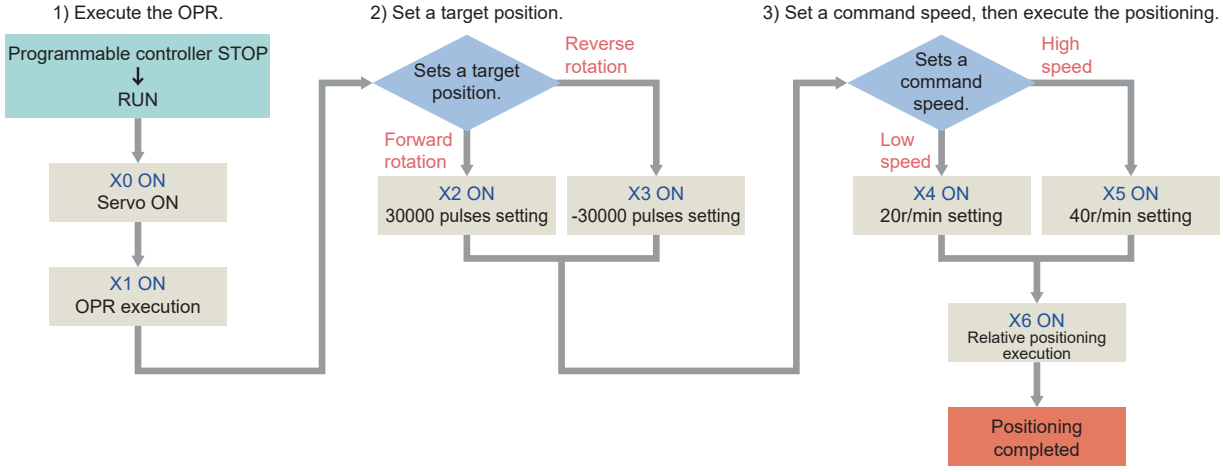
☞ Page 54 TROUBLESHOOTING

5 CREATING PROGRAMS

5.1 Operation

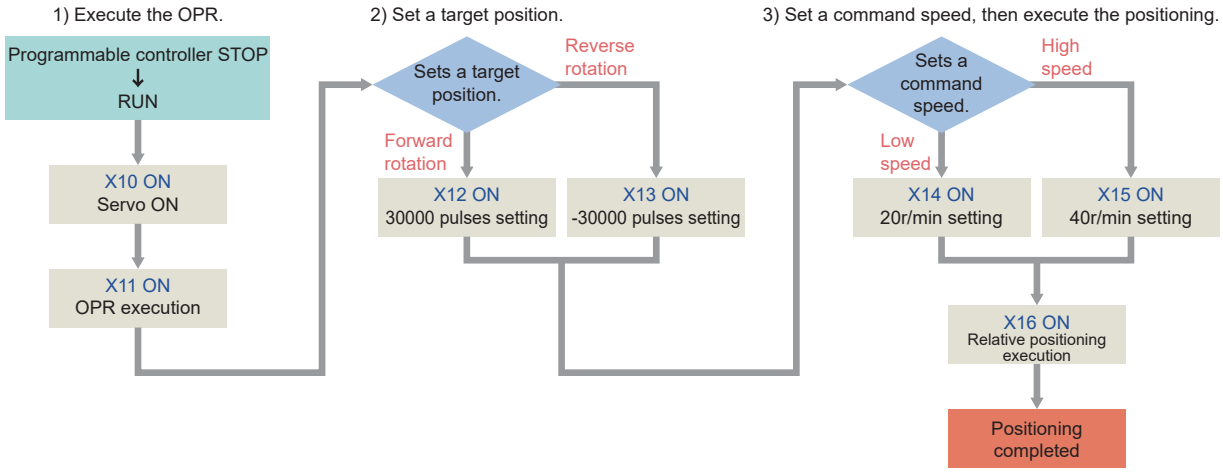
MR-JET-G (Station number 1)

This program is to specify a target position and command speed, and to execute the relative positioning. The MR-JET-G on the station number 1 performs the positioning according to the instructions.



MR-JET-G (Station number 2)

This program is to specify a target position and command speed, and to execute the relative positioning. The MR-JET-G on the station number 2 performs the positioning according to the instructions.



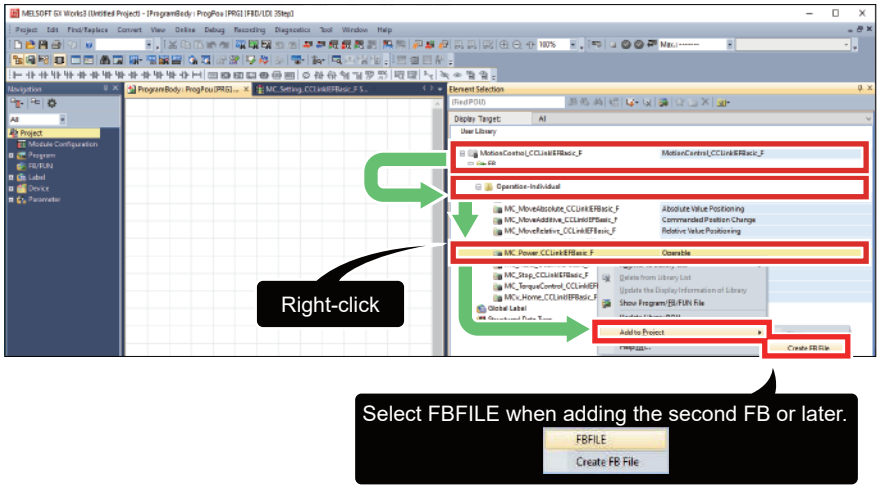
5.2 Adding the FB Library

This section describes how to add the function blocks (FBs) in the FB library to the project.

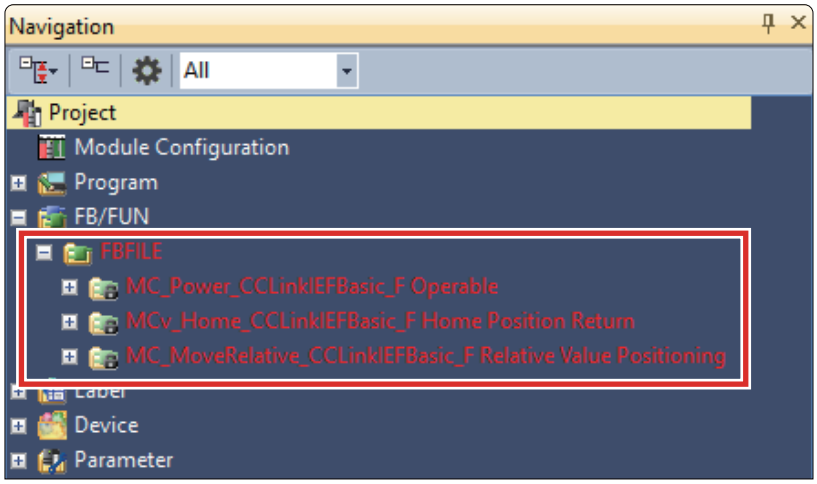
1. Select [MotionControl_CCLinkIEFBasic_F] ⇨ [FB] ⇨ [Operation-Individual] in the FB library. From [Operation-Individual], select an FB to be added and right-click on it, then select [Add to Project] ⇨ [Create FB File]. When repeating it to add two or more FBs, select [Add to Project] ⇨ [FBFILE].

[FBs to be added]

- MC_Power_CCLinkIEFBasic_F
- MCv_Home_CCLinkIEFBasic_F
- MC_MoveRelative_CCLinkIEFBasic_F



2. The FBs will be added to [FBFILE] of [FB/FUN].

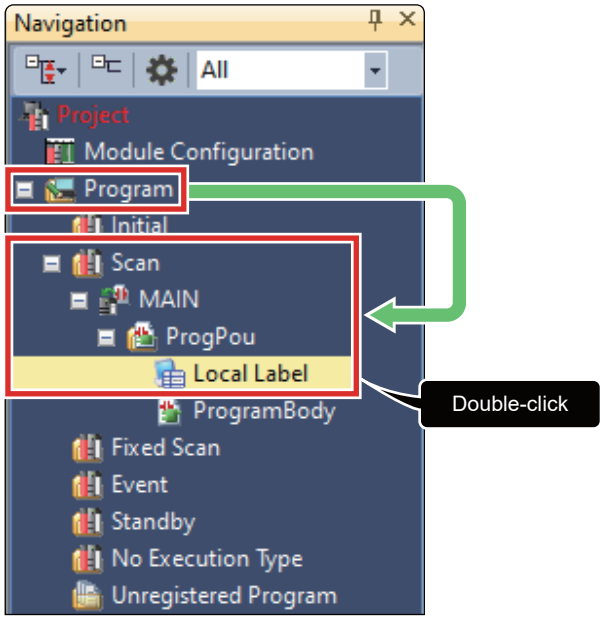


5.3 Local Labels

Set local labels to use for the programs.

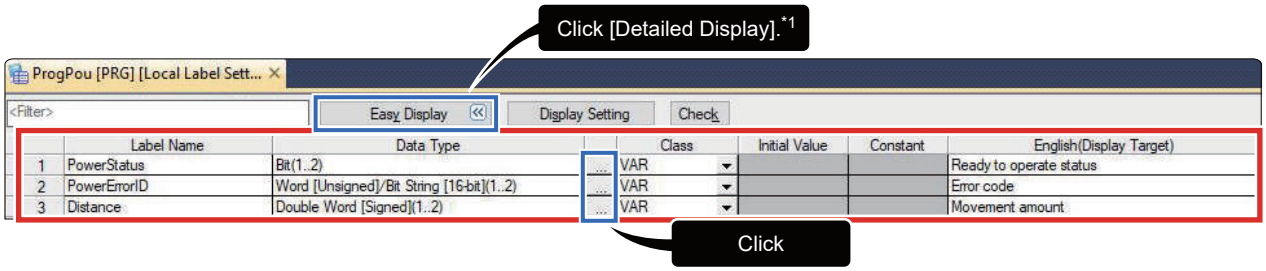
How to set local labels

1. In the "Navigation" window, select [Program] ⇨ [Scan] ⇨ [MAIN] ⇨ [ProgPou] ⇨ [Local Label]. Double-click [Local Label].



2. Set the local labels as shown below. For how to input the label name, class, and comment (English), refer to ☞ Page 30 Addition of global labels 1.

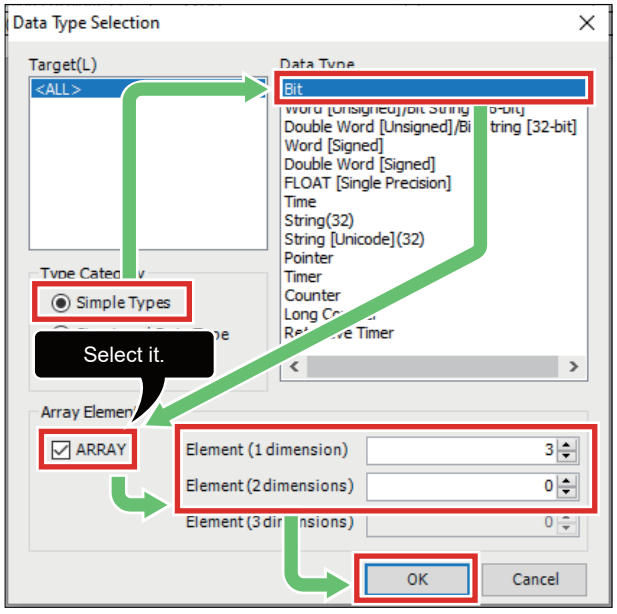
Label Name	Data Type	Class	English
PowerStatus	Bit (1..2)	VAR	Ready to operate status
PowerErrorID	Word [Unsigned]/Bit String [16-bit] (1..2)	VAR	Error code
Distance	Double Word [Signed] (1..2)	VAR	Movement amount



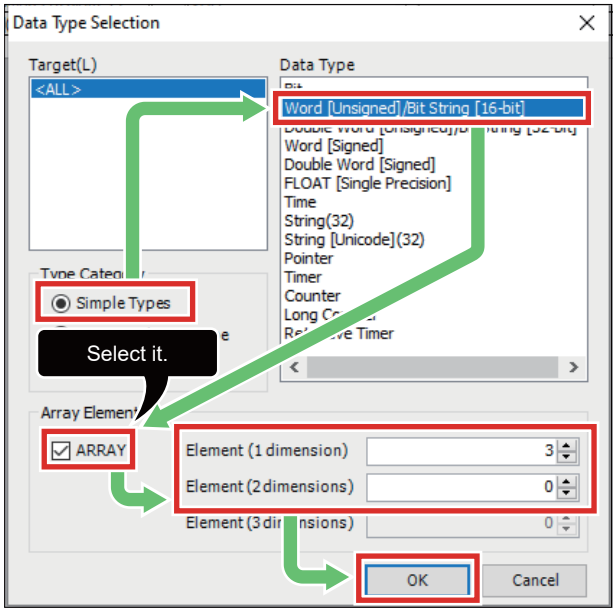
To set Data Type, click [...] and follow the step in the figures below.

Setting value	Type Category	Data Type	Element (1 dimension)*2	Element (2 dimensions)*2
Bit (1..2)	Simple Types	Bit	3	0
Word [Unsigned]/Bit String [16-bit] (1..2)	Simple Types	Word [Unsigned]/Bit String [16-bit]	3	0
Double Word [Signed] (1..2)	Simple Types	Double Word [Signed]	3	0

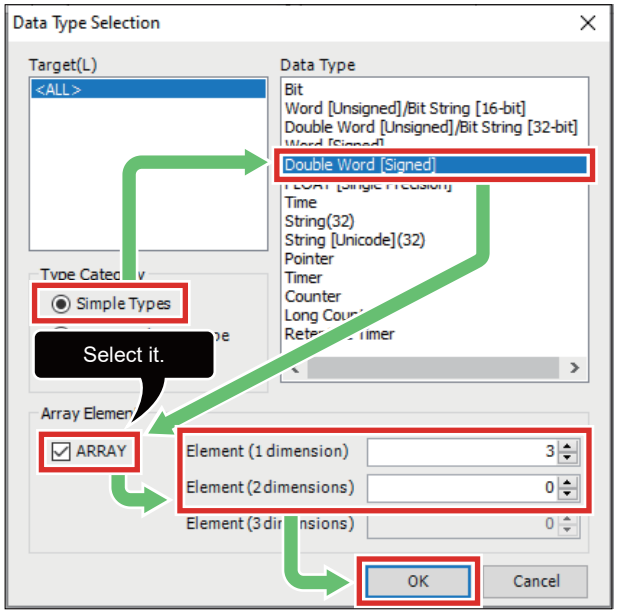
[Bit (1..2)]



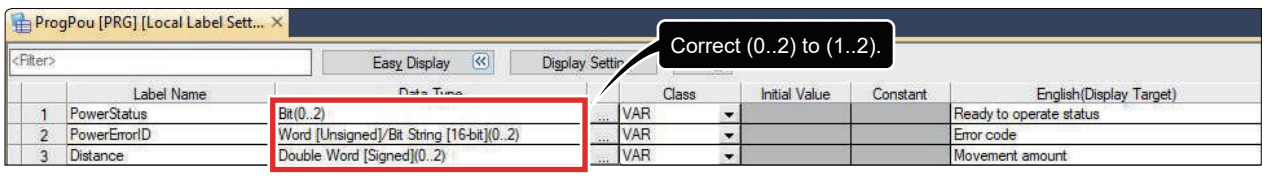
[Word [Unsigned]/Bit String [16-bit] (1..2)]



[Double Word [Signed] (1..2)]



For the data type having a suffix of (0..2), correct the suffix to (1..2).*3



*1 When [Detailed Setting] is selected, [Easy Display] is displayed.
*2 This field can be set when "Array" is selected.
*3 When the suffix is corrected, a value for "Element (1 dimension)" in the "Data Type Selection" window is changed to 2.

List of local labels

The following table lists the local labels to be used in this manual. Set them by referring to "How to set local labels".

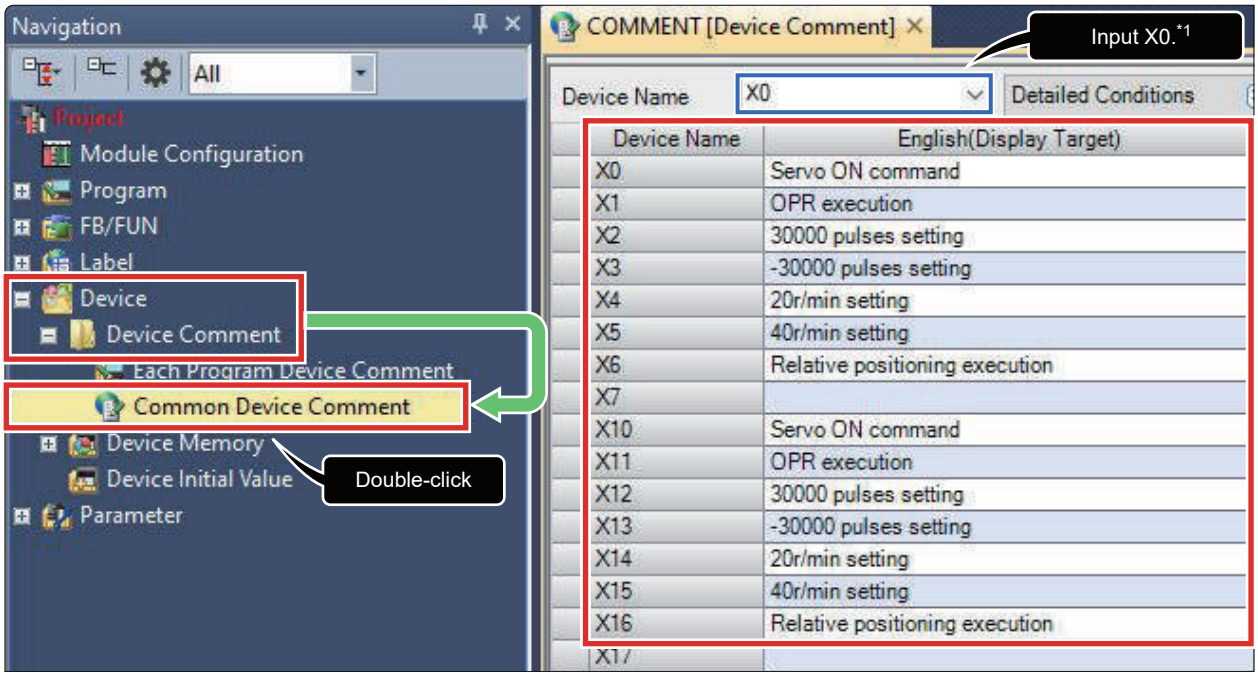
Label Name	Data Type	Class	English
PowerStatus	Bit (1..2)	VAR	Ready to operate status
PowerBusy	Bit (1..2)	VAR	Ready to operate (executing)
PowerError	Bit (1..2)	VAR	Ready to operate (error)
PowerErrorID	Word [Unsigned]/Bit String [16-bit] (1..2)	VAR	Error code
HomeDone	Bit (1..2)	VAR	OPR completed
HomeBusy	Bit (1..2)	VAR	OPR (executing)
HomeCommandAborted	Bit (1..2)	VAR	OPR interrupted
HomeError	Bit (1..2)	VAR	OPR (error)
HomeErrorID	Word [Unsigned]/Bit String [16-bit] (1..2)	VAR	Error code
MoveRelDone	Bit (1..2)	VAR	Relative positioning completed
MoveRelBusy	Bit (1..2)	VAR	Relative positioning (executing)
MoveRelCommandAborted	Bit (1..2)	VAR	Relative positioning interrupted
MoveRelError	Bit (1..2)	VAR	Relative positioning (error)
MoveRelErrorID	Word [Unsigned]/Bit String [16-bit] (1..2)	VAR	Error code
Distance	Double Word [Signed] (1..2)	VAR	Movement amount
Velocity	Double Word [Signed] (1..2)	VAR	Speed

5.4 Device Comments

Set device comments to use for the programs.

In the "Navigation" window, select [Device] ⇨ [Device Comment] ⇨ [Common Device Comment]. Double-click [Common Device Comment] and set the comments as shown below.

Device Name	English
X0	Servo ON command
X1	OPR execution
X2	30000 pulses setting
X3	-30000 pulses setting
X4	20r/min setting
X5	40r/min setting
X6	Relative positioning execution
X10	Servo ON command
X11	OPR execution
X12	30000 pulses setting
X13	-30000 pulses setting
X14	20r/min setting
X15	40r/min setting
X16	Relative positioning execution



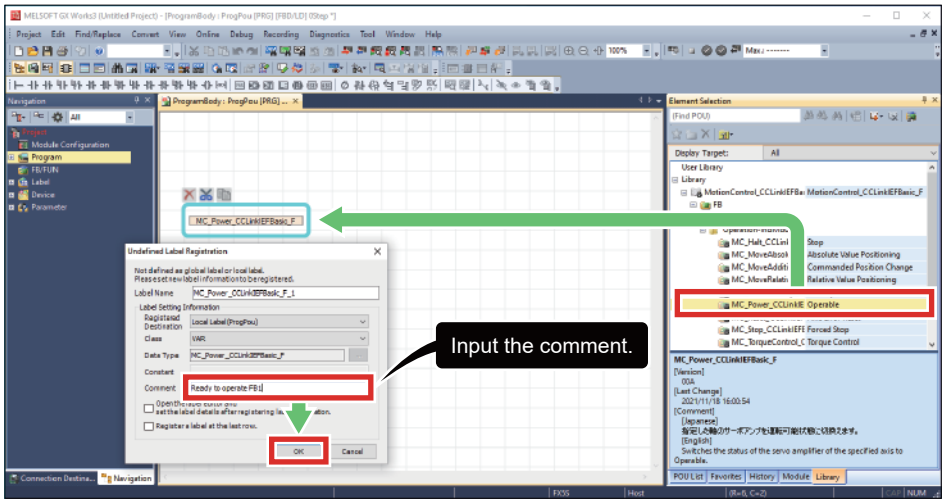
*1 Input X0 here when the devices of X0 and later are not displayed on the screen.

5.5 How to Use the FB Library

Select an FB registered in the library from "Element Selection" window, and drag and drop it to the program editor. Create an input ladder and an output ladder of the pasted FB to create a program.
Arrange the FB input ladder to the left side, and output ladder to the right side of the window in the same manner as standard ladder programs.

1. Select [Library] tab of the "Element Selection" window. Select [Library] ⇨ [MotionControl_CCLinkIEFBasic] ⇨ [FB]. From [FB], select an FB to be used, and drop it in the program editor. When the "Undefined Label Registration" window appears, input the label name and comment and click [OK]. The following table lists the FBs to be used in this manual.

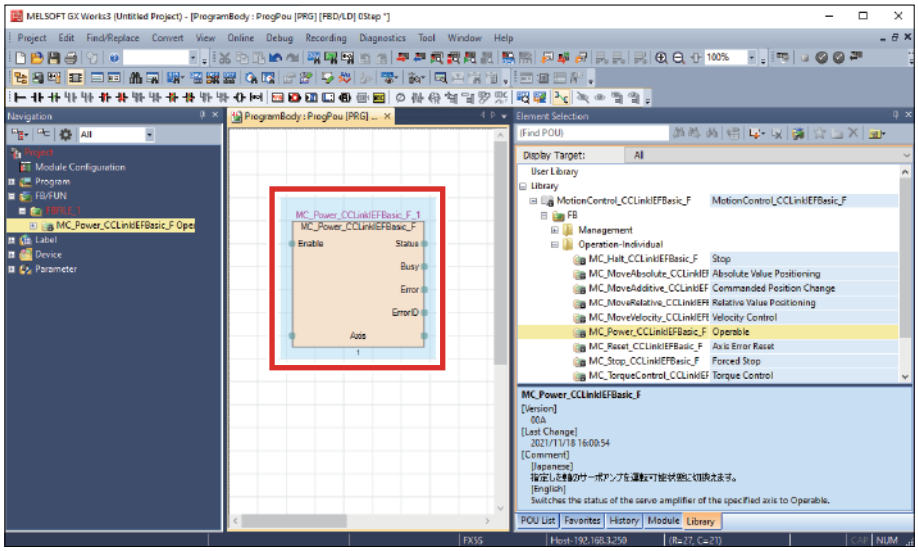
FB	Label Name	Comment
MC_Power_CCLinkIEFBasic_F	MC_Power_CCLinkIEFBasic_F_1	Ready to operate FB1
	MC_Power_CCLinkIEFBasic_F_2	Ready to operate FB2
MCv_Home_CCLinkIEFBasic_F	MCv_Home_CCLinkIEFBasic_F_1	OPR FB1
	MCv_Home_CCLinkIEFBasic_F_2	OPR FB2
MC_MoveRelative_CCLinkIEFBasic_F	MC_MoveRelative_CCLinkIEFBasic_F_1	Relative positioning FB1
	MC_MoveRelative_CCLinkIEFBasic_F_2	Relative positioning FB2



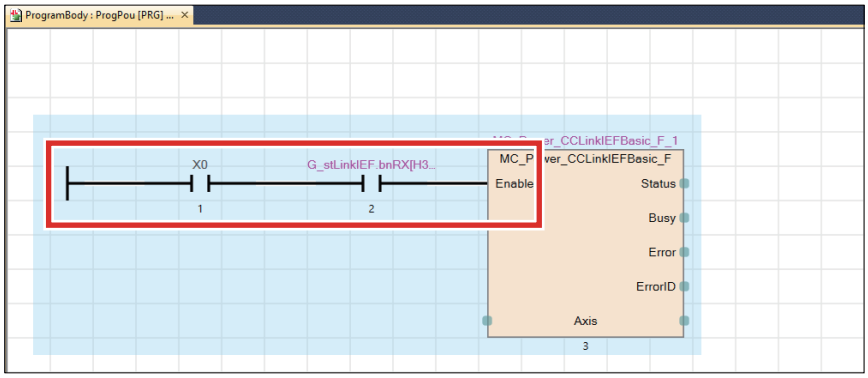
Point

When the program editor is not displayed, in the "Navigation" window, select [Program] ⇨ [Scan] ⇨ [MAIN] ⇨ [ProgPou] ⇨ [ProgramBody], and double-click [ProgramBody].

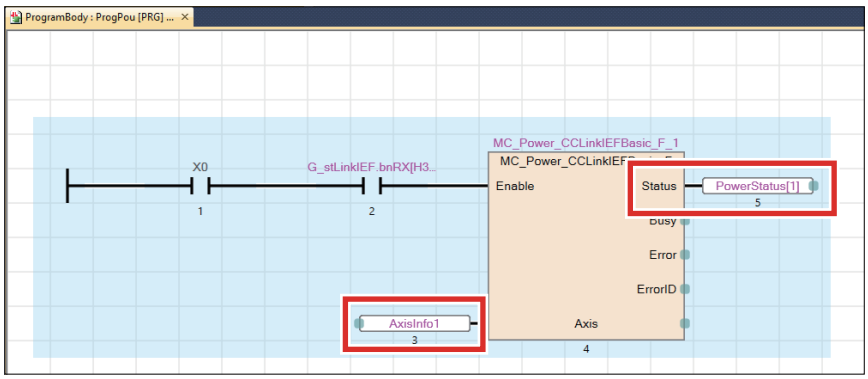
2. The FB is pasted to the program editor.



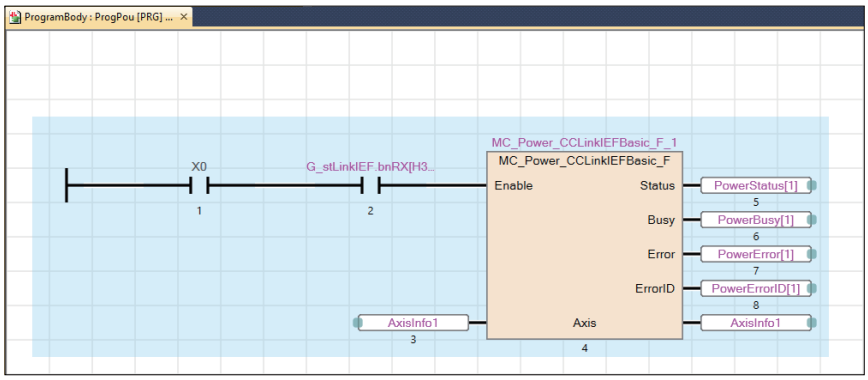
3. Arrange a busbar, contact X0, and G_stLinkIEF.bnRX[H3F] in the program editor, and link them to Enable of the FB.



4. Link Axis information to the left side of the FB. Link the output to the right side of the FB.



5. Repeat these steps to create the ladder.



In this manual, the FB library provided by Mitsubishi Electric is used.

For how to set the FB library, refer to the following.

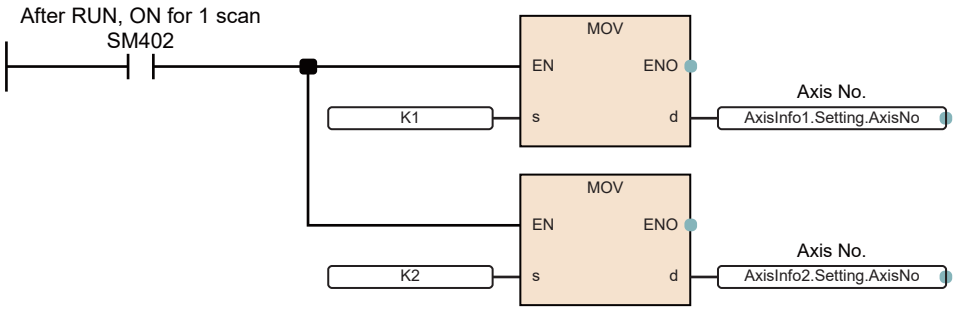
☞ Page 19 Downloading the FB Library

☞ Page 20 Importing the FB Library

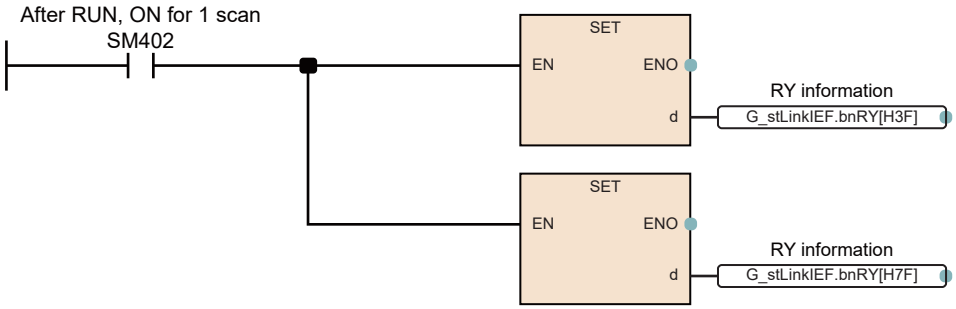
5.6 Program Examples

The following programs are designed to control the servo amplifiers. The programs use the FBs for servo amplifiers compatible with CC-Link IE Field Network Basic.
This section provides the sample programs for the station number 1 and station number 2.

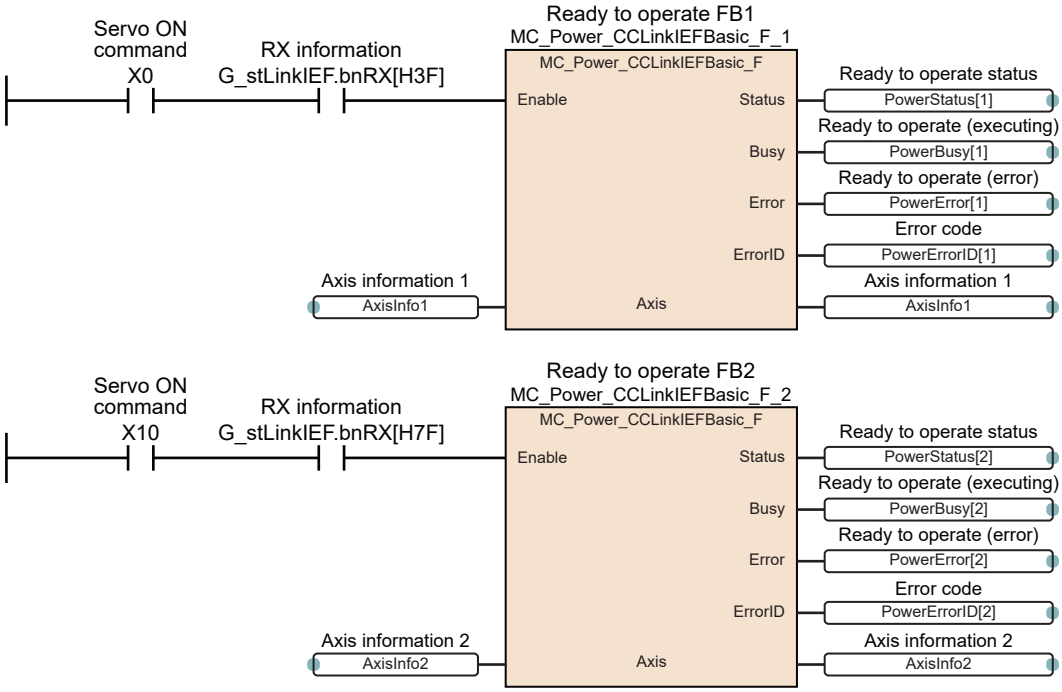
Initial setting



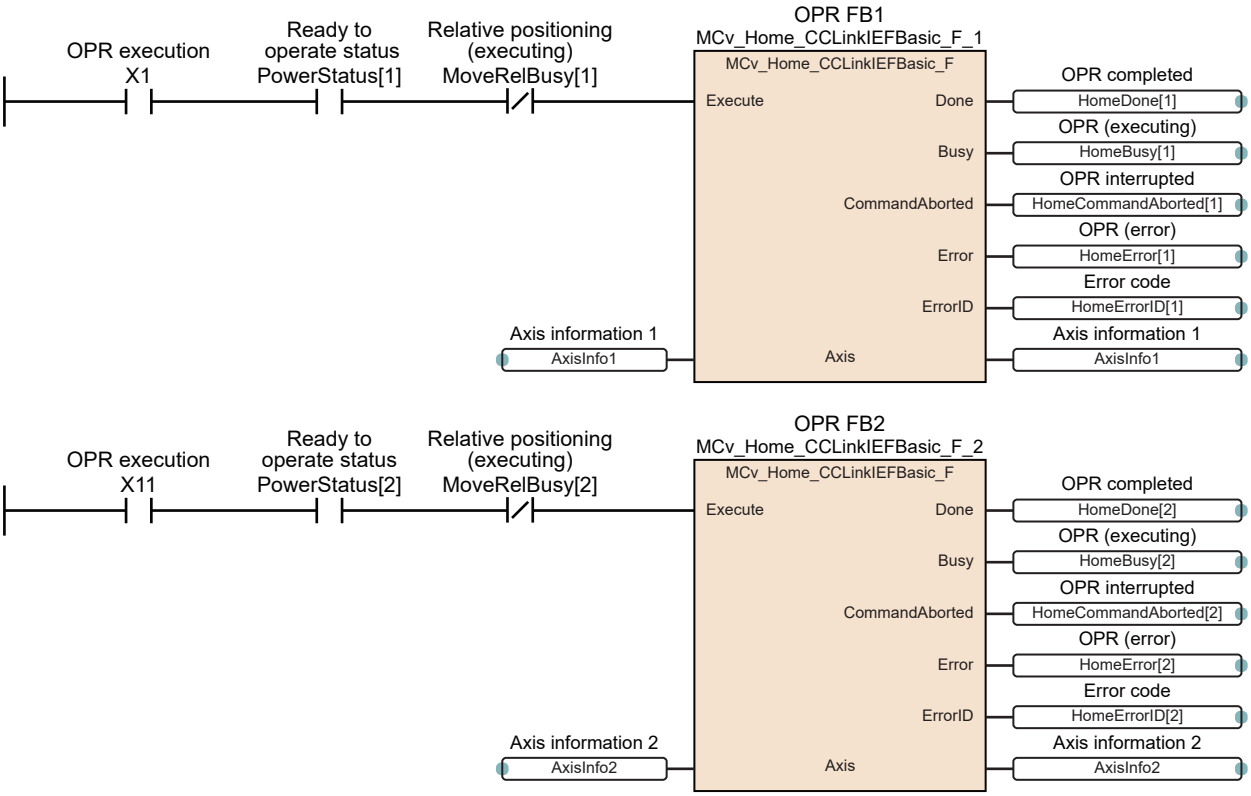
Starting communications using CC-Link IE Field Network Basic



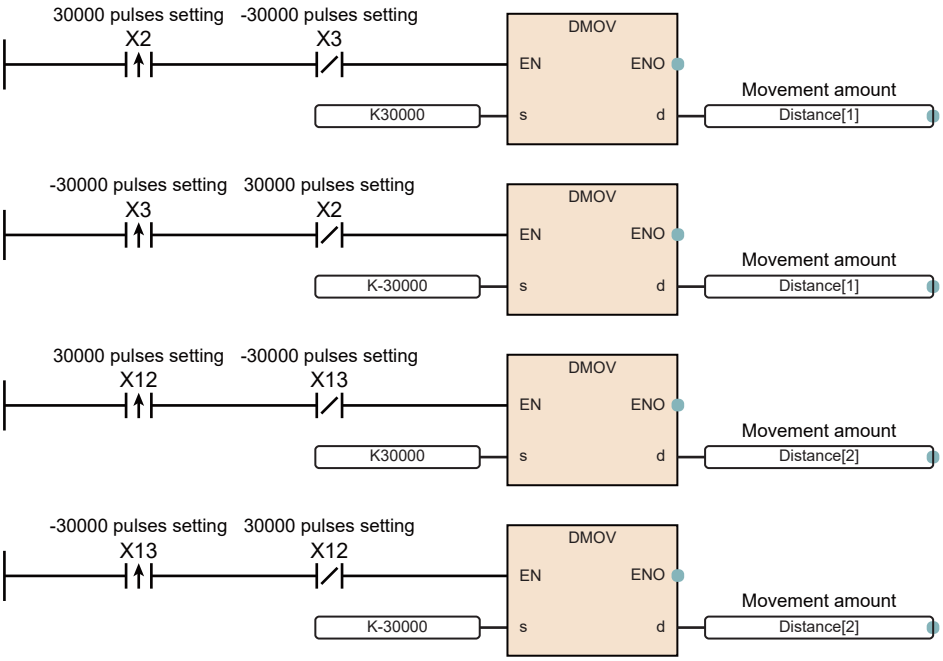
Servo ON



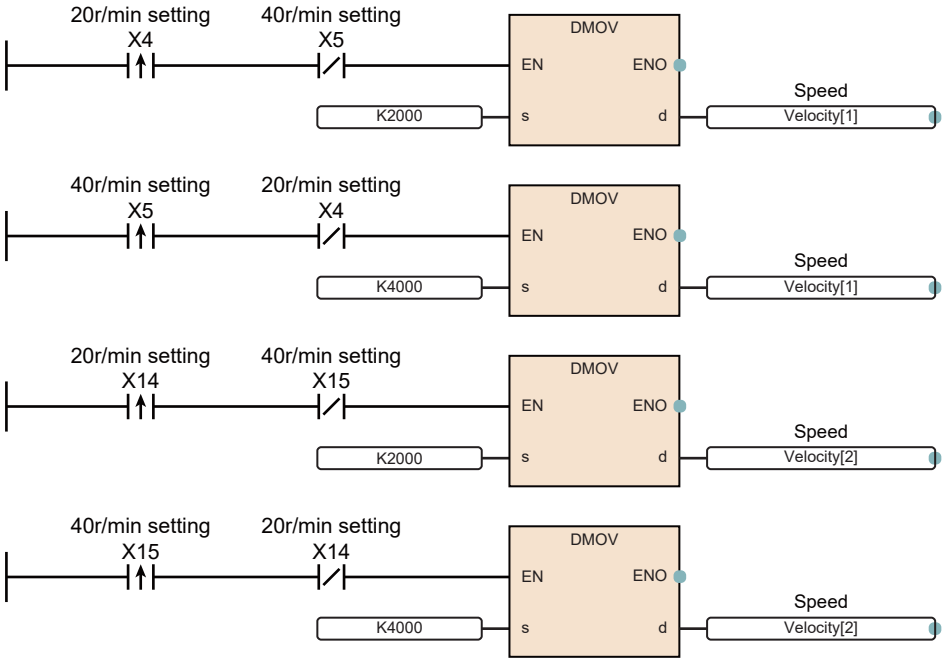
OPR



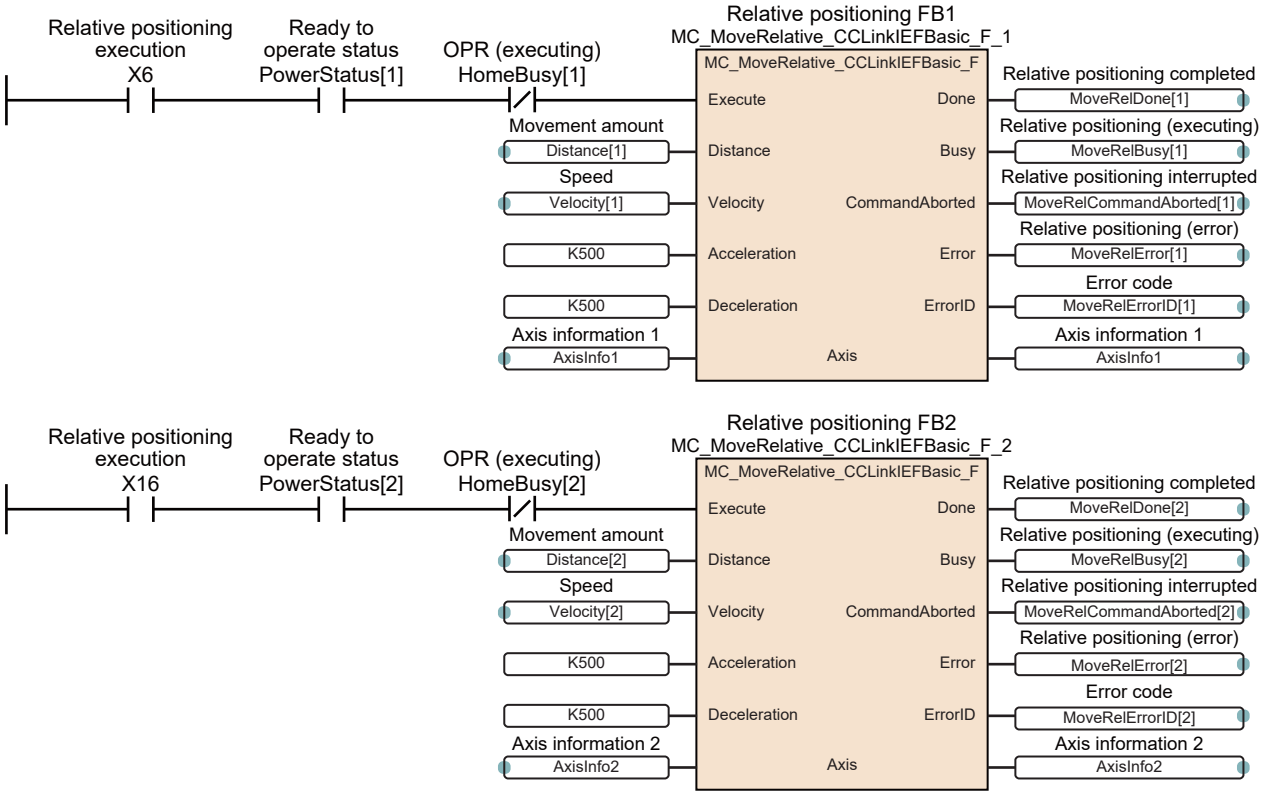
Setting the movement amounts



Setting the speed



Relative positioning



Point

To display the comments, go to the menu bar and select [Display] ⇨ [Comment] ⇨ [Device/Label Comment].

5.7 Writing Data to the Programmable Controller

Write the programs and the settings to the programmable controller. For how to do it, refer to the following.

☞ Page 35 Writing Data to the Programmable Controller

5.8 Operation Check

After writing the programs and the parameters to the programmable controller, check whether the programmable controller and servo amplifiers communicate data properly.

Check it by following the procedures below.

Point

An input signal X, such as Servo ON, can be forcibly turned on in the program of GX Works3 by following the steps below.

❶ Press the F3 key while the FBD/LD program is displayed in GX Works3. (The monitor execution status is entered.)

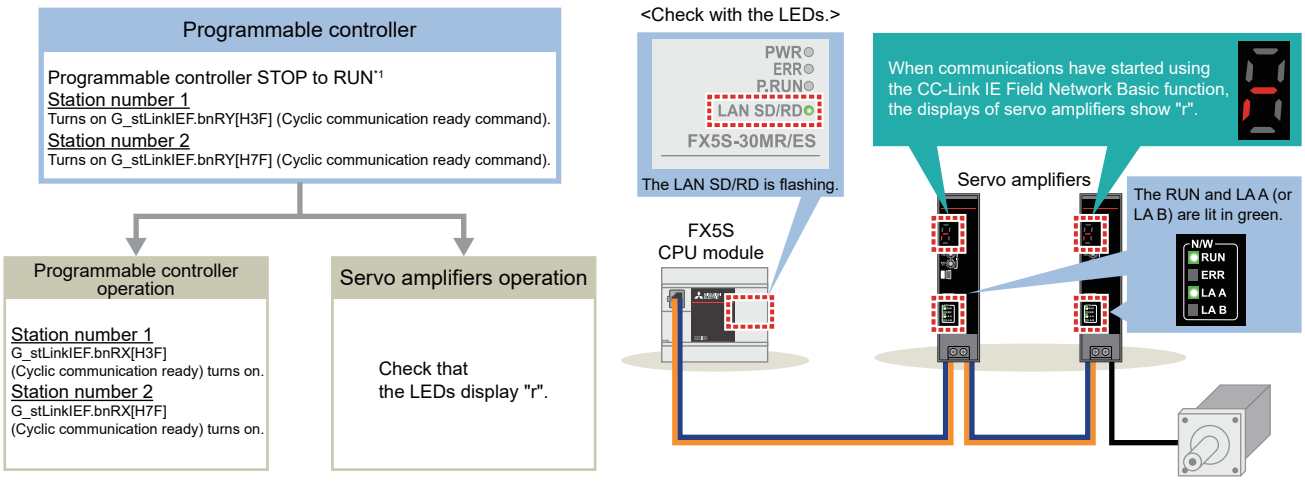
❷ Place the cursor on a device (such as X0) or a label (such as bnRY[H4F]) to be turned on.

❸ Pressing the Enter key while the Shift key is being pressed turns on the device or label.

(Doing the same once again turns it off.)

To clear the monitor execution status, press the F3 key while the Alt key is being pressed.

Starting cyclic communications



*1 The program turns on Cyclic communication ready command when the programmable controller enters the RUN state. (☞ Page 47 Starting communications using CC-Link IE Field Network Basic)

Servo ON

Programmable controller

Station number 1
Turns on X0 (Servo ON command).
Station number 2
Turns on X10 (Servo ON command).

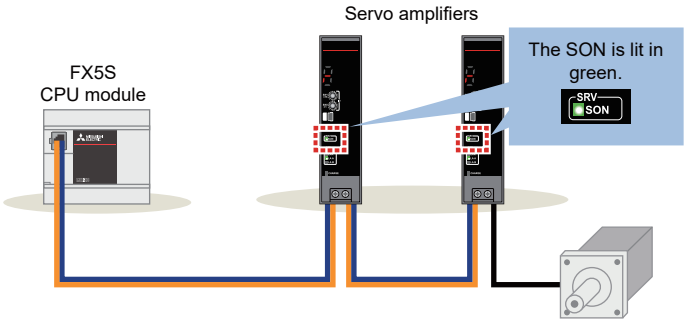
Programmable controller operation

Station number 1
PowerStatus[1] (Ready to operate status) and PowerBusy[1] (Ready to operate (executing)) turn on.
Station number 2
PowerStatus[2] (Ready to operate status) and PowerBusy[2] (Ready to operate (executing)) turn on.

Servo amplifiers operation

Station number 1
The SON lights in green.
Station number 2
The SON lights in green.

<Check with the LEDs.>



Executing the OPR

Programmable controller

Station number 1
Turns on X1 (OPR execution).
Station number 2
Turns on X11 (OPR execution).

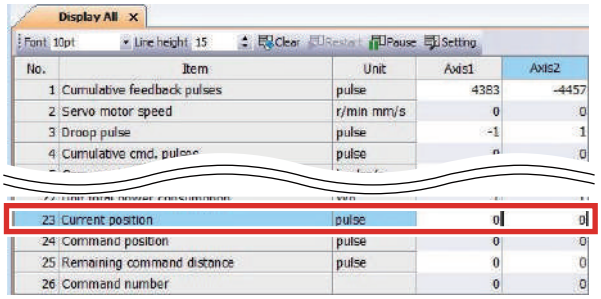
Programmable controller operation

Station number 1
HomeDone[1]
(OPR completed) turns on.
Station number 2
HomeDone[2]
(OPR completed) turns on.

Servo amplifiers operation

"Current position" becomes 0.

<Check with MR Configurator2.>*1



*1 For how to check the servo amplifier state with MR Configurator2, refer to the following.
☞ Page 53 How to check the servo amplifier state

Executing the relative positioning

Programmable controller

1) Sets a target position.
   Station number 1
   Turns on X2 (30000 pulses setting) or X3 (-30000 pulses setting).
   Station number 2
   Turns on X12 (30000 pulses setting) or X13 (-30000 pulses setting).
2) Sets a command speed.
   Station number 1
   Turns on X4 (20r/min) or X5 (40r/min).
   Station number 2
   Turns on X14 (20r/min) or X15 (40r/min).
3) Executes the relative positioning.
   Station number 1
   Turns on X6 (Relative positioning execution).
   Station number 2
   Turns on X16 (Relative positioning execution).

Positioning start

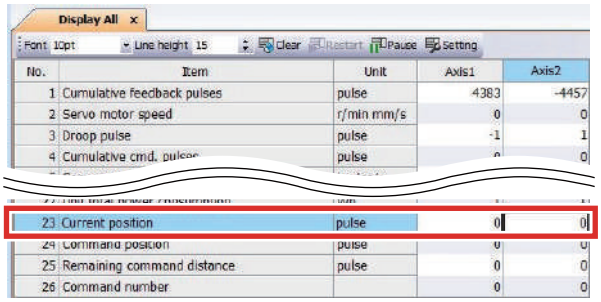
Programmable controller operation	Servo amplifiers operation
Station number 1 MoveRelBusy[1] (Relative positioning (executing)) turns on. Station number 2 MoveRelBusy[2] (Relative positioning (executing)) turns on.	"Current position" and "Command position" change from 0 to the other values. "Servo motor speed" changes to the set command speed.

Positioning completed

Programmable controller operation	Servo amplifiers operation
Station number 1 MoveRelDone[1] (Relative positioning completed) turns on. Station number 2 MoveRelDone[2] (Relative positioning completed) turns on.	"Current position" and "Command position" change to the value of the set target position. "Servo motor speed" changes to 0.

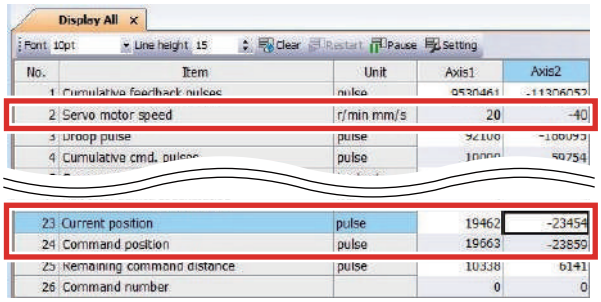
<Check with MR Configurator2.>*1

Before positioning start



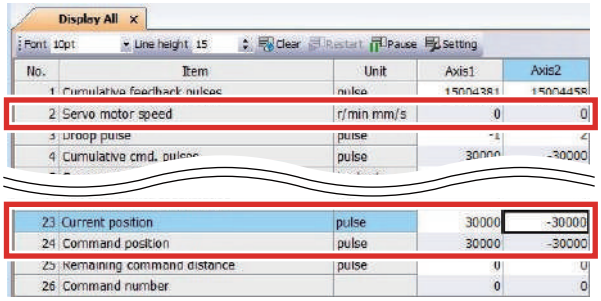
No.	Item	Unit	Axis1	Axis2
1	Cumulative feedback pulses	pulse	4383	-4457
2	Servo motor speed	r/min mm/s	0	0
3	Droop pulse	pulse	-1	1
4	Cumulative cmd. pulses	pulse	0	0
23	Current position	pulse	0	0
24	Command position	pulse	0	0
25	Remaining command distance	pulse	0	0
26	Command number		0	0

Positioning in progress



No.	Item	Unit	Axis1	Axis2
2	Servo motor speed	r/min mm/s	20	-40
4	Cumulative cmd. pulses	pulse	10000	60754
23	Current position	pulse	19462	-23454
24	Command position	pulse	19663	-23859
25	Remaining command distance	pulse	10338	6141
26	Command number		0	0

At the completion of positioning



No.	Item	Unit	Axis1	Axis2
2	Servo motor speed	r/min mm/s	0	0
4	Cumulative cmd. pulses	pulse	30000	-30000
23	Current position	pulse	30000	-30000
24	Command position	pulse	30000	-30000
25	Remaining command distance	pulse	0	0
26	Command number		0	0

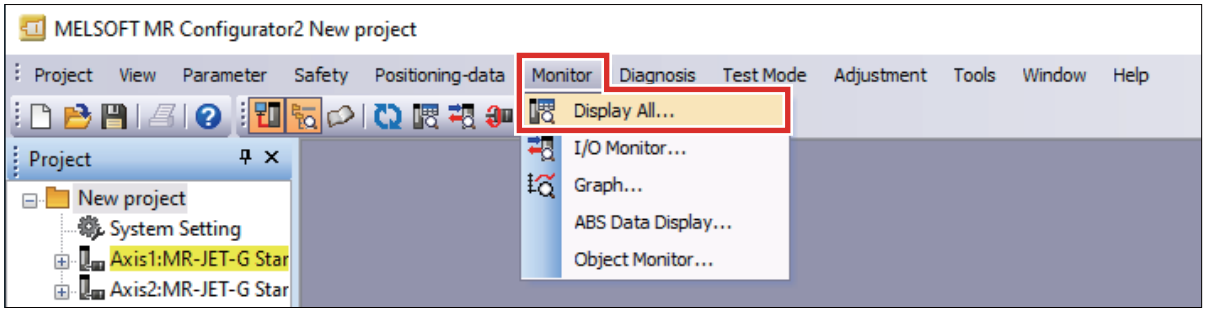
*1 For how to check the servo amplifier state with MR Configurator2, refer to the following.
☞ Page 53 How to check the servo amplifier state

How to check the servo amplifier state

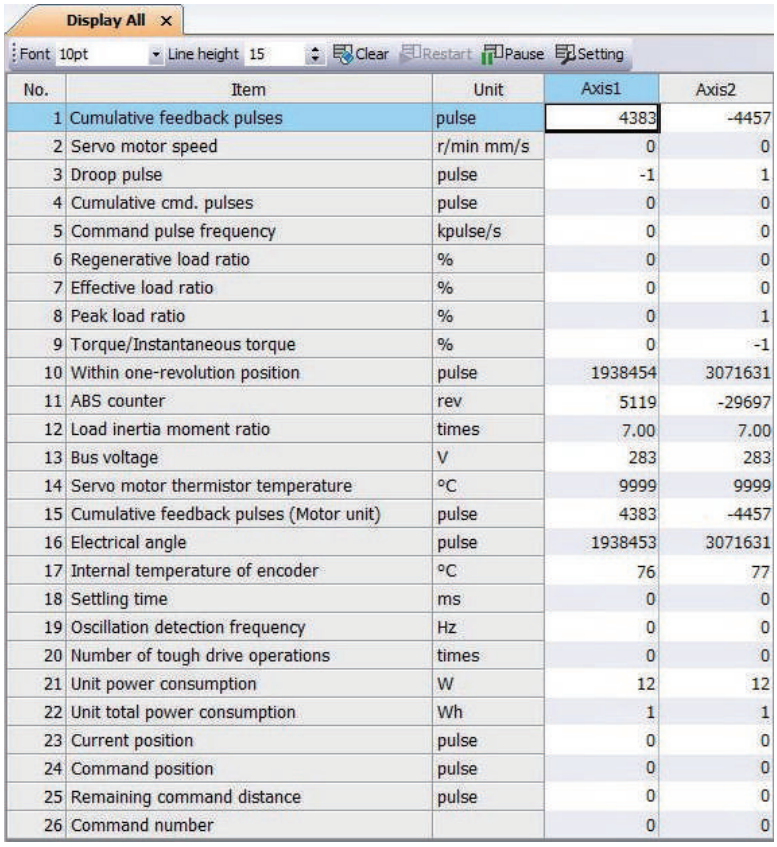
1. Place MR Configurator2 online, select [Monitor] ⇨ [Display All], and click [Display All].

For how to go online, refer to the following.

☞ Page 17 Write to Servo Amplifier



2. The servo amplifier state is quantified and displayed by each item.



No.	Item	Unit	Axis1	Axis2
1	Cumulative feedback pulses	pulse	4383	-4457
2	Servo motor speed	r/min mm/s	0	0
3	Droop pulse	pulse	-1	1
4	Cumulative cmd. pulses	pulse	0	0
5	Command pulse frequency	kpulse/s	0	0
6	Regenerative load ratio	%	0	0
7	Effective load ratio	%	0	0
8	Peak load ratio	%	0	1
9	Torque/Instantaneous torque	%	0	-1
10	Within one-revolution position	pulse	1938454	3071631
11	ABS counter	rev	5119	-29697
12	Load inertia moment ratio	times	7.00	7.00
13	Bus voltage	V	283	283
14	Servo motor thermistor temperature	°C	9999	9999
15	Cumulative feedback pulses (Motor unit)	pulse	4383	-4457
16	Electrical angle	pulse	1938453	3071631
17	Internal temperature of encoder	°C	76	77
18	Settling time	ms	0	0
19	Oscillation detection frequency	Hz	0	0
20	Number of tough drive operations	times	0	0
21	Unit power consumption	W	12	12
22	Unit total power consumption	Wh	1	1
23	Current position	pulse	0	0
24	Command position	pulse	0	0
25	Remaining command distance	pulse	0	0
26	Command number		0	0

6 TROUBLESHOOTING

6.1 Checking Procedure

This section describes how to check the state of the programmable controller and the servo amplifiers.

Check with the LED status

Check the communication status with the LEDs of the programmable controller and the servo amplifiers.

For the programmable controller, ☞ Page 55 Check with the LED status

For the servo amplifiers, ☞ Page 57 Check with the display LED

Check depending on the error

Check the following depending on the error that has occurred in the programmable controller or the servo amplifiers.

For the programmable controller, ☞ Page 55 Check of error details

For the servo amplifiers, ☞ Page 57 Check with MR Configurator2

■Wiring

☞ Page 11 System Configuration

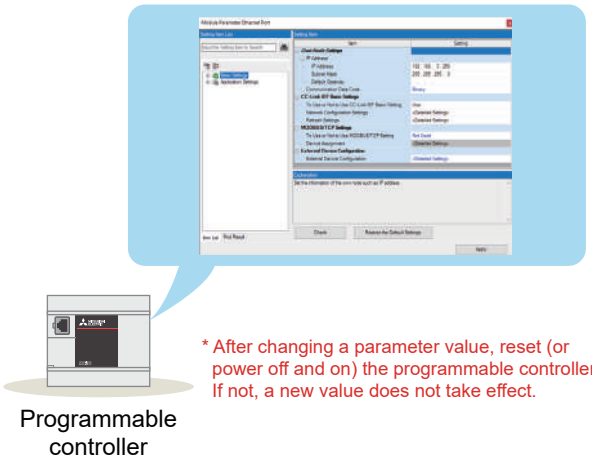
- Are the Ethernet cables fully inserted?

■Communication settings

For the programmable controller, ☞ Page 25 Parameter Settings

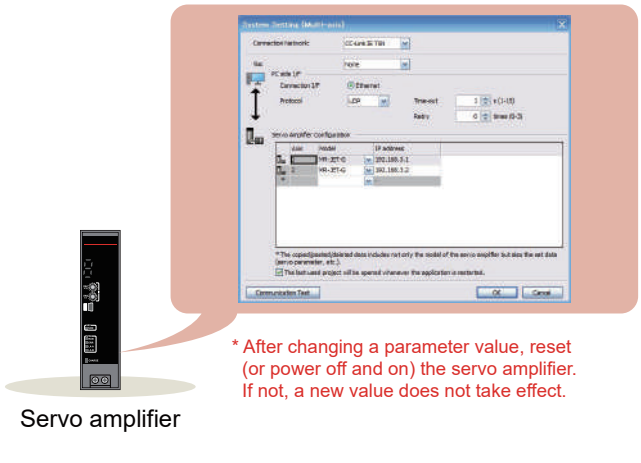
For the servo amplifiers, ☞ Page 14 Ethernet Parameter Settings

- Do the parameter settings on GX Works3 match with the parameter settings on the servo amplifiers?
- Are the IP addresses and the subnet masks of the programmable controller and the servo amplifiers set properly?



Programmable controller

* After changing a parameter value, reset (or power off and on) the programmable controller. If not, a new value does not take effect.



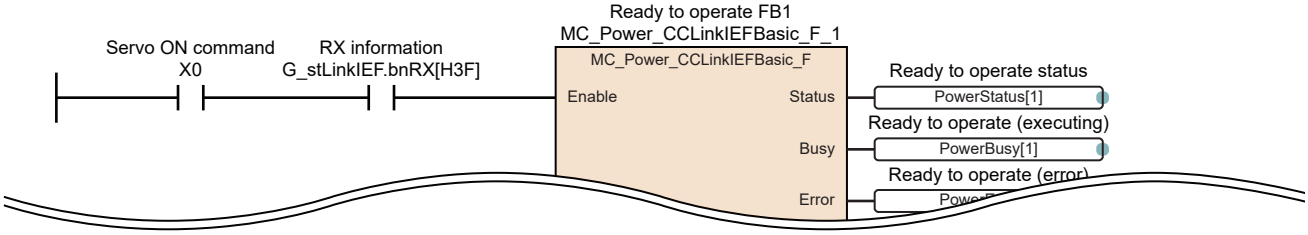
Servo amplifier

* After changing a parameter value, reset (or power off and on) the servo amplifier. If not, a new value does not take effect.

■Programs

☞ Page 47 Program Examples

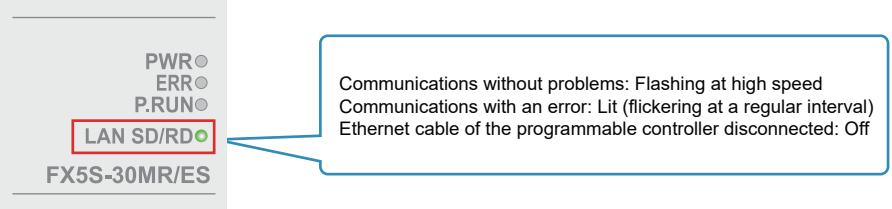
- Are the programs created as shown in the program examples?



6.2 Checking the Programmable Controller

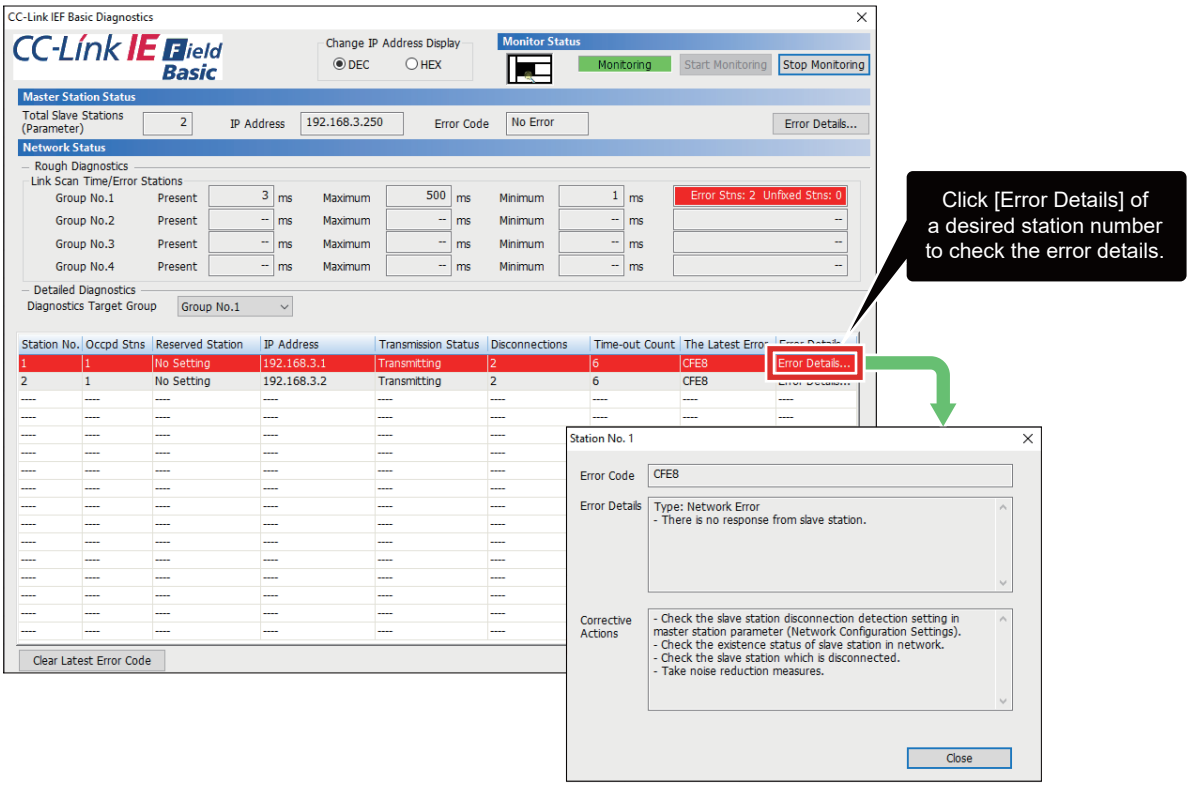
Check with the LED status

Check the programmable controller status with the LED.



Check of error details

Go to the menu bar of GX Works3. Select [Diagnostics] ⇨ [CC-Link IEF Basic Diagnostics]. The network status are listed, and error details of the programmable controller can be checked at "Detailed Diagnostics".



List of error codes

The following table lists the error codes related to the CC-Link IE Field Network Basic function.

Error code	Error name	Error details and cause	Action
CFC0H	Cyclic transmission error (master station)	The cyclic transmission cannot be performed because multiple master stations exist in the same network address.	Check whether the master stations are properly placed in the networks.
CFC1H	Cyclic transmission error (master station)	The cyclic transmission cannot be performed because an error has occurred in cyclic transmission.	Take measures to reduce noise. If the same error is displayed again after the retry, please consult your local Mitsubishi representative.
CFC8H	Cyclic transmission error (master station)	The cyclic transmission cannot be performed because a remote station controlled by another master station exists.	Check whether the master stations are properly placed in the networks. Check the remote station where the error has occurred.
CFC9H	Cyclic transmission error (master station)	The cyclic transmission cannot be performed because two or more remote stations having the same IP address exist in the same network address.	Check the status of remote stations in the networks. Check the remote stations where the error has occurred.
CFD0H	Master station error	The port No. (61450) to be used for CC-Link IE Field Network Basic has already been used.	Check and correct the port No. used in Ethernet function.
CFD1H	Master station error	An invalid value has been set for the subnet mask.	Check the parameter setting.
CFE0H	Cyclic transmission error (remote station)	The cyclic transmission was executed for the remote station controlled by another master station.	Check whether the master stations are properly placed in the networks. Check the remote station where the error has occurred.
CFE1H	Cyclic transmission error (remote station)	The number of occupied stations that has been specified from the master station is unusable.	Check the number of occupied stations in the master station parameter (Network Configuration Settings).
CFE8H	Cyclic transmission error (remote station)	There is no response from the remote station.	Check the remote station disconnection detection setting in the master station parameter (Network Configuration Settings). Check the status of remote stations in the networks. Check the remote station which is disconnected. Take measures to reduce noise.
CFE9H	Cyclic transmission error (remote station)	Two or more remote stations having the same IP address exist in the same network address.	Check the remote stations where the error has occurred.
CFF0H	Remote station error	An error has occurred in a remote station.	Check the remote station where the error has occurred.

For details on troubleshooting, refer to the following.

CC-Link IE Field Network Basic Reference Manual [9 TROUBLESHOOTING]

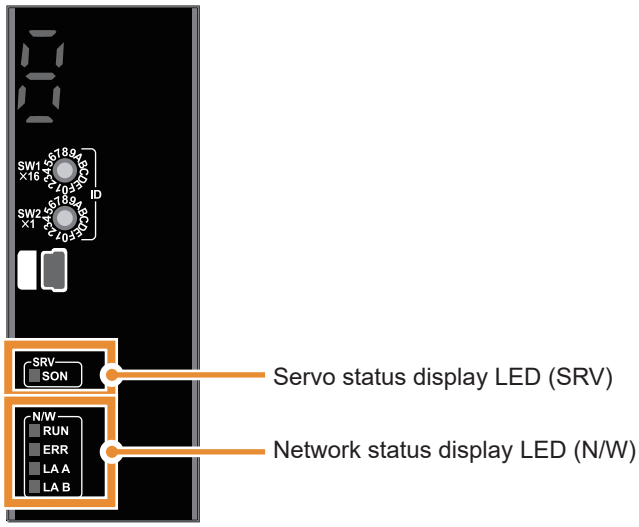
For details on the error codes, refer to the following.

MELSEC iQ-F FX5 User's Manual (Application) [Appendix 3 Error Code]

6.3 Checking the Servo Amplifiers

Check with the display LED

The operation status can be checked with the servo status display LED of the servo amplifier.



For details on the LEDs of the servo amplifier, refer to the following.

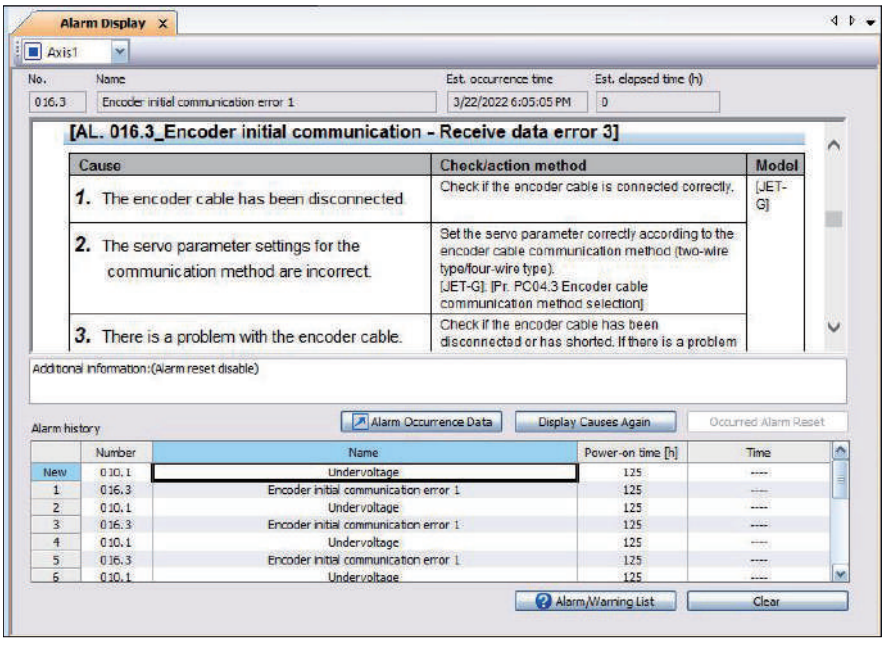
☞ Page 12 Switch Setting and Display

For details on the display of MR-J5-G servo amplifiers, refer to the following.

☞ Page 60 Display

Check with MR Configurator2

Go to the menu bar of MR Configurator2. Select [Diagnosis] ⇨ [Alarm Display]. If an error has occurred on the servo system, the details of the alarm or the warning can be checked with the following window.



For details on alarm numbers of the MR-JET-G, refer to the following.

MR-JET User's Manual (Troubleshooting)

For details on alarm numbers of the MR-J5-G, refer to the following.

☞ Page 60 Alarm numbers

APPENDICES

Appendix 1 Application Examples of the FB Library

The following table lists the FBs included in the FB library for servo amplifiers compatible with CC-Link IE Field Network Basic. Create programs by combining the FBs according to applications.

List of FBs for servo amplifiers compatible with CC-Link IE Field Network Basic

Name	Description
MC_Power_CCLinkIEFBasic_F (Ready to operate)	Sets the servo amplifier of the specified axis to the ready-to-operate state.
MCv_Home_CCLinkIEFBasic_F (OPR)	Executes the OPR for the specified axis.
MC_Stop_CCLinkIEFBasic_F (Forced stop)	Stops the specified axis forcibly.
MC_Halt_CCLinkIEFBasic_F (Stop)	Stops the specified axis.
MC_MoveAbsolute_CCLinkIEFBasic_F (Absolute positioning)	Sets a target position (absolute position) for the specified axis, and executes the positioning.
MC_MoveRelative_CCLinkIEFBasic_F (Relative positioning)	Moves the object a specified movement amount from the position of current value of specified axis.
MC_MoveAdditive_CCLinkIEFBasic_F (Target position change)	Adds a specified relative position to the positioning command of the specified axis immediately before the execution, and executes the positioning.
MC_MoveVelocity_CCLinkIEFBasic_F (Speed control)	Controls the speed of specified axis with a set value.
MC_TorqueControl_CCLinkIEFBasic_F (Torque control)	Performs a torque control for the specified axis with a set value.
MC_Reset_CCLinkIEFBasic_F (Axis error reset)	Clears an error of the specified axis.
MCv_ReadMultiObject_FX5CPUEN (Multiple objects read)	Reads multiple objects from the servo amplifier by using the FX5 CPU module.
MCv_WriteMultiObject_FX5CPUEN (Multiple objects write)	Writes data to multiple objects of the servo amplifier by using the FX5 CPU module.
MCv_ChangeMapping_FX5CPUEN (Mapping change)	Changes the mapping of servo amplifiers to be communicated with using the CC-Link IE Field Network Basic. The mapping change is performed by using the FX5 CPU module.

Examples of programs using FBs

Program example	FB used	Reference
Servo ON	MC_Power_CCLinkIEFBasic_F (Ready to operate)	☞ Page 47 Servo ON
OPR	MCv_Home_CCLinkIEFBasic_F (OPR)	☞ Page 48 OPR
Relative positioning	MC_MoveRelative_CCLinkIEFBasic_F (Relative positioning)	☞ Page 49 Relative positioning

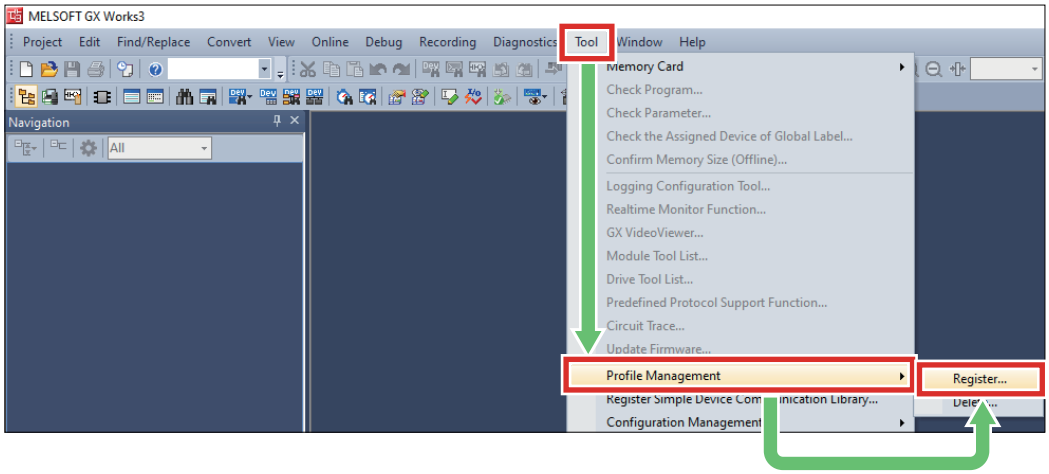
For examples of the other programs, refer to the following.

📖 MELSEC iQ-F PLCopen Motion Control FB Reference [4 OPERATION EXAMPLES]

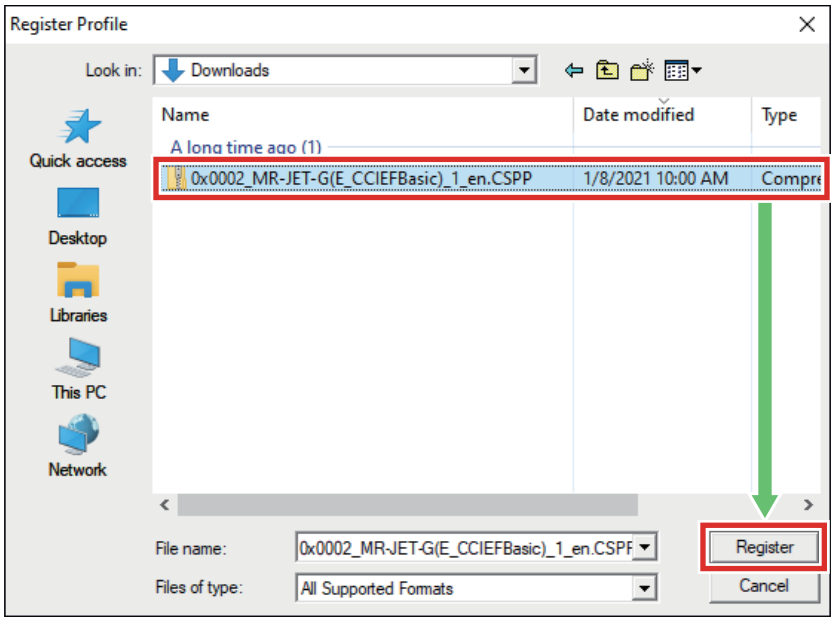
Appendix 2 Downloading and Registering a Profile

A profile is the data that stores information of a connected device (such as a model).
A profile can be used on a personal computer after it is registered using GX Works3 and shared with other MELSOFT products. Once a profile is registered using GX Works3, the profile data is reflected to other MELSOFT products.
To register or delete a profile, log on to the personal computer as a user with the administrator privilege, and close the project in advance.

1. To obtain the profile data, please contact your local Mitsubishi Electric representative.
2. Start GX Works3, and select [Tool] ⇨ [Profile Management] ⇨ [Register].



3. Select the obtained file on the "Register Profile" window, and click [Register]. A profile is a compressed file (such as *.zip, *.ipar, and *.cspp). Register the profile without decompressing.



Appendix 3 Supplementary Information

Information on servo amplifiers

The following are the manuals and sections having information of the MR-J5-G.

■Power supply wiring

📖MR-J5 User's Manual (Hardware) [3 SIGNALS AND WIRING]

■Display

📖MR-J5-G/MR-J5W-G User's Manual (Introduction) [3.2 Switch setting and display of the servo amplifier]

■Parameters

📖MR-J5-G/MR-J5W-G User's Manual (Parameters)

■Link devices (RWr, RWw, RX, RY)

📖MR-J5-G/MR-J5W-G User's Manual (Communication Function) [2.4 APPENDIX]

■Alarm numbers

📖MR-J5 User's Manual (Troubleshooting)

REVISIONS

Revision date	Version	Description
May 2022	A	First edition
January 2023	B	■Modified parts Front cover, INTRODUCTION, RELEVANT MANUALS, TRADEMARKS

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WARRANTY

Please confirm the following product warranty details before using this product.

MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) [WARRANTY]
MR-JET-G User's Manual (Introduction) [WARRANTY]
MR-J5-G/MR-J5W-G User's Manual (Introduction) [WARRANTY]

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- Before using the product introduced in this manual, please read the manuals for the product carefully to handle the product correctly.
- This product has been manufactured as a general-purpose part for general industries, etc., and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, please contact Mitsubishi Electric sales office.
- The product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions into the system.
- For design, wiring, and other precautions, read "SAFETY PRECAUTIONS" in the relevant manuals.

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Germany	MITSUBISHI ELECTRIC EUROPE B.V. German Branch Mitsubishi-Electric-Platz 1, 40882 Ratingen, Germany	Tel : +49-2102-486-0 Fax : +49-2102-486-7780
UK	MITSUBISHI ELECTRIC EUROPE B.V. UK Branch Travellers Lane, UK-Hatfield, Hertfordshire, AL10 8XB, U.K.	Tel : +44-1707-28-8780 Fax : +44-1707-27-8695
Ireland	MITSUBISHI ELECTRIC EUROPE B.V. Irish Branch Westgate Business Park, Ballymount, Dublin 24, Ireland	Tel : +353-1-4198800 Fax : +353-1-4198890
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Spain	MITSUBISHI ELECTRIC EUROPE, B.V. Spanish Branch Carretera de Rubi, 76-80-Apdo. 420, E-08190 Sant Cugat del Valles (Barcelona), Spain	Tel : +34-935-65-3131 Fax : +34-935-89-1579
France	MITSUBISHI ELECTRIC EUROPE B.V. French Branch 25, Boulevard des Bouvets, 92741 Nanterre Cedex, France	Tel : +33-1-55-68-55-68 Fax : +33-1-55-68-57-57
Czech Republic	MITSUBISHI ELECTRIC EUROPE B.V. Czech Branch, Prague Office Pekarska 621/7, 155 00 Praha 5, Czech Republic	Tel : +420-255-719-200
Poland	MITSUBISHI ELECTRIC EUROPE B.V. Polish Branch ul. Krakowska 48, 32-083 Balice, Poland	Tel : +48-12-347-65-00
Sweden	MITSUBISHI ELECTRIC EUROPE B.V. (Scandinavia) Hedvig Mollersgata 6, 223 55 Lund, Sweden	Tel : +46-8-625-10-00 Fax : +46-46-39-70-18
Russia	MITSUBISHI ELECTRIC (RUSSIA) LLC St. Petersburg Branch Piskarevsky pr. 2, bld 2, lit “Sch”, BC “Benua”, office 720; 195027 St. Petersburg, Russia	Tel : +7-812-633-3497 Fax : +7-812-633-3499
Turkey	MITSUBISHI ELECTRIC TURKEY A.S. Umraniye Branch Serifali Mah. Kale Sok. No:41 34775 Umraniye - Istanbul, Turkey	Tel : +90-216-969-2500 Fax : +90-216-661-4447
UAE	MITSUBISHI ELECTRIC EUROPE B.V. Dubai Branch Dubai Silicon Oasis, P.O.BOX 341241, Dubai, U.A.E.	Tel : +971-4-3724716 Fax : +971-4-3724721
South Africa	ADROIT TECHNOLOGIES 20 Waterford Office Park, 189 Witkoppen Road, Fourways, South Africa	Tel : +27-11-658-8100 Fax : +27-11-658-8101
China	MITSUBISHI ELECTRIC AUTOMATION (CHINA) LTD. Mitsubishi Electric Automation Center, No.1386 Hongqiao Road, Shanghai, China	Tel : +86-21-2322-3030 Fax : +86-21-2322-3000
Taiwan	SETSUYO ENTERPRISE CO., LTD. 6F, No.105, Wugong 3rd Road, Wugu District, New Taipei City 24889, Taiwan	Tel : +886-2-2299-2499 Fax : +886-2-2299-2509
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Thailand	MITSUBISHI ELECTRIC FACTORY AUTOMATION (THAILAND) CO., LTD. 12th Floor, SV.City Building, Office Tower 1, No. 896/19 and 20 Rama 3 Road, Kwaeng Bangpongpang, Khet Yannawa, Bangkok 10120, Thailand	Tel : +66-2682-6522-31 Fax : +66-2682-6020
Vietnam	MITSUBISHI ELECTRIC VIETNAM COMPANY LIMITED Unit 01-04, 10th Floor, Vincom Center, 72 Le Thanh Ton Street, District 1, Ho Chi Minh City, Vietnam	Tel : +84-28-3910-5945 Fax : +84-28-3910-5947
Indonesia	PT. MITSUBISHI ELECTRIC INDONESIA Gedung Jaya 8th Floor, JL. MH. Thamrin No.12, Jakarta Pusat 10340, Indonesia	Tel : +62-21-31926461 Fax : +62-21-31923942
India	MITSUBISHI ELECTRIC INDIA PVT. LTD. Pune Branch Emerald House, EL-3, J Block, M.I.D.C., Bhosari, Pune-411026, Maharashtra, India	Tel : +91-20-2710-2000 Fax : +91-20-2710-2100
Australia	MITSUBISHI ELECTRIC AUSTRALIA PTY. LTD. 348 Victoria Road, P.O. Box 11, Rydalmere, N.S.W 2116, Australia	Tel : +61-2-9684-7777 Fax : +61-2-9684-7245

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

www.MitsubishiElectric.com