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Mitsubishi Electric Programmable Controller
MELSEC iQ-F Series

Quick Connection Guide

FREQROL-A800/F800/E800 Series
for CC-Link IE Field Network Basic

MELSEC iQ-F series × FREQROL E800

INTRODUCTION

Thank you for purchasing the Mitsubishi Electric MELSEC iQ-F series programmable controllers.
This manual describes the communication settings with inverters using the CC-Link IE Field Network Basic function of the FX5 CPU module.
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

- This product has been manufactured as a general-purpose part for general industries, 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.
- 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.

Note

- If in doubt at any stage during the installation of the product, always consult a professional electrical engineer who is qualified and trained to the local and national standards. If in doubt about the operation or use, please contact your local Mitsubishi Electric representative.
- Mitsubishi Electric will not accept responsibility for actual use of the product based on these illustrative examples. Please use it after confirming the function and safety of the equipment and system.
- The content, specifications etc. of this manual may be changed, for improvement, without notice.
- The information in this manual has been carefully checked and is believed to be accurate; however, if you notice a doubtful point, an error, etc., please contact your local Mitsubishi Electric representative. When doing so, please provide the manual number given at the end of this manual.
- The term "Slave station" and "Authentication Class" have been replaced with "Device station" and "CC-Link IE TSN Class" in accordance with CC-Link Partner Association's policy. However, the terms have not been replaced yet in some areas in the engineering tool, and there may be differences between some window images of the engineering tool and the corresponding description in this manual. In that case, read the terms in the engineering tool's windows as follows.

Network name	Term used in software window	Term after change
CC-Link IE Field Network Basic function	Slave station	Remote station

Quick and satisfying browsing

e-Manual Viewer

e-Manual Viewer allows users to browse optimized FA-related documents such as Mitsubishi Electric FA product manuals.
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Copying program examples to an engineering tool

Program examples contained in a document can be directly copied to an engineering tool, eliminating the need of inputting the programs.

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■Introduction for the concept and features of e-Manual Viewer is available on the following website.
www.mitsubishielectric.com/fa/ref/ref.html?k=plceng&smerit=emaviewer_win
■The installation file for Windows® can be downloaded from the following website.
www.mitsubishielectric.com/fa/ref/ref.html?k=plceng&software=emaviewer_en

CONTENTS

RELEVANT MANUALS

The following relevant manuals can be downloaded from the Mitsubishi Electric FA site.
www.mitsubishielectric.co.jp/fa/ref/ref.html?kisyu=plcf&manual=download_all
[○: Available, —: Not available]

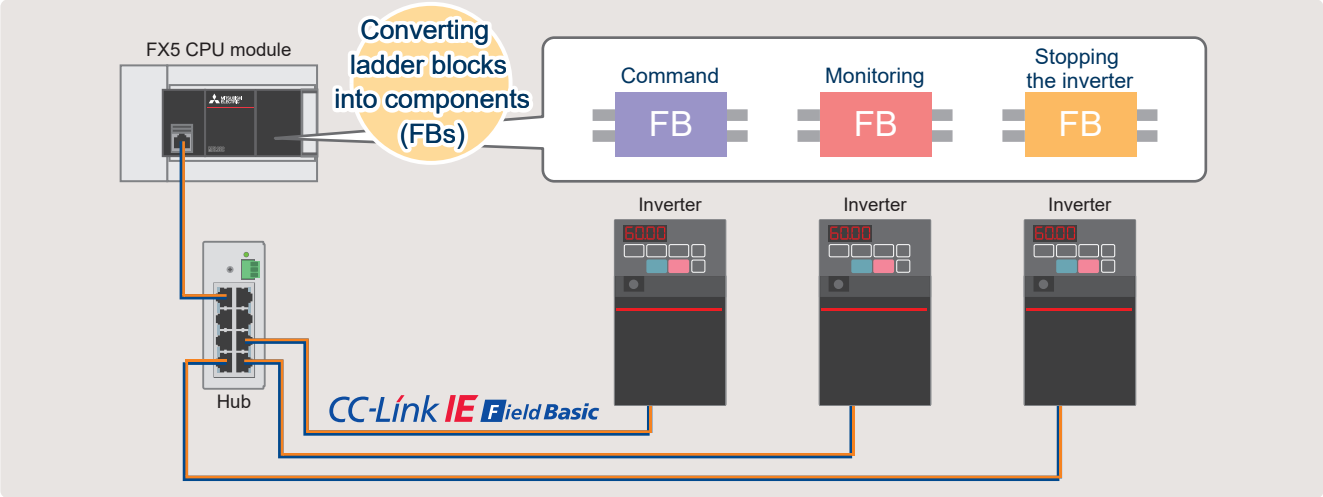
Manual name <manual number>	Available form	
	e-Manual	PDF
MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware) <SH-082452ENG>	○	○
MELSEC iQ-F FX5 User's Manual (Application) <JY997D55401>	○	○
MELSEC iQ-F FX5 User's Manual (Ethernet Communication) <JY997D56201>	○	○
CC-Link IE Field Network Basic Reference Manual <SH-081684ENG>	○	○
FB Library Reference Manual for CC-Link IE Field Network Basic Compatible Inverters <FBM-1065/1066>	—	○
GX Works3 Operating Manual <SH-081215ENG>	○	○
Programmable Controller Engineering Software MELSOFT GX Works3 FB Quick Start Guide <L-08475ENG>	—	○
FR Configurator2 Instruction Manual <IB-0600516ENG>	○	○
E800-E Inverter Safety Guideline <IB-0600860ENG>	—	○
FR-E800 Instruction Manual (Connection) <IB-0600865ENG>	○	○
FR-E800 Instruction Manual (Function) <IB-0600868ENG>	○	○
FR-E800 Instruction Manual (Communication) <IB-0600871ENG>	○	○
FR-E800 Instruction Manual (Maintenance) <IB-0600874ENG>	○	○
FR-A800 Instruction Manual (Detailed) <IB-0600503ENG>	○	○
FR-F800 Instruction Manual (Detailed) <IB-0600547ENG>	○	○
A800-E / F800-E Ethernet Function Manual <IB-0600628ENG>	—	○

KEY FEATURES

Point1

Easy programming using FB library*1

FB (function block) library is a collection of FBs that are used in GX Works3. Various programs required to operate the MELSEC iQ-F series modules can be designed easily by dragging and dropping FBs from the FB library to a program editor and inputting devices, drastically reducing the cost and time required for programming.

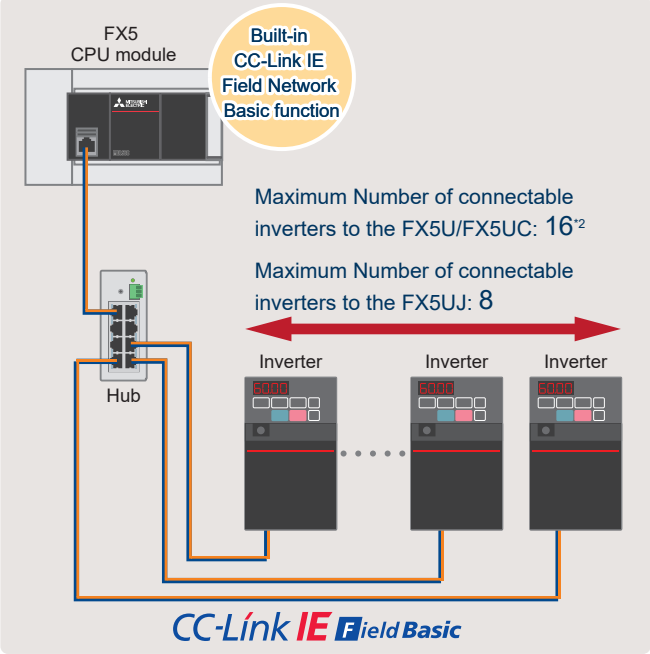


*1 FB libraries can be downloaded for free from the Mitsubishi Electric FA website.
www.mitsubishielectric.co.jp/fa/ref/ref.html?kisyu=plcf&samplelibrary=download_all

Point2

Easy system construction

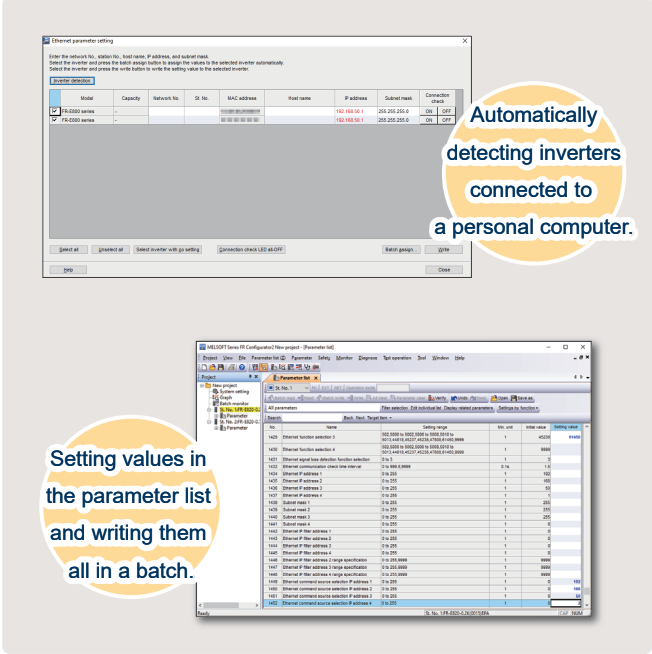
Using the CC-Link IE Field Network Basic function equipped in the FX5 CPU module eliminates the need of extension devices. Parameter settings can be easier because the entire setting is performed on GX Works3 and automatically detected inverter station information via Ethernet is reflected to corresponding parameters.



Point3

Easy inverter setting using FR Configurator2

Operations from startup to maintenance of inverters can be easily performed on a personal computer by using FR Configurator2. Various convenient functions of FR Configurator2 support every phase such as design, operation, and maintenance.

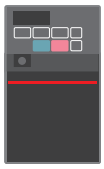
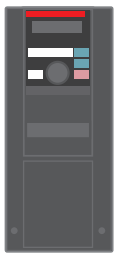
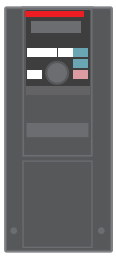


*2 Number of connectable inverters differs depending on firmware version.

1 PREPARATION

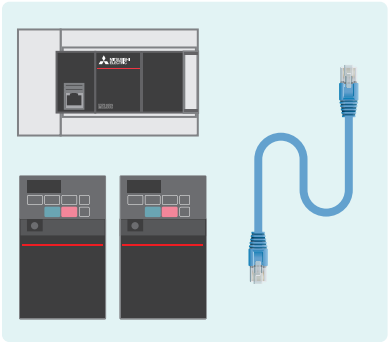
1.1 Applicable Models

The models described in this guide are shown in the following table.

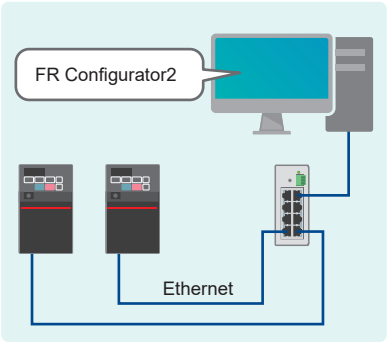
Programmable controller			Inverter (Ethernet model)		
					
FX5U CPU module	FX5UC CPU module	FX5UJ CPU module	FR-E800-E	FR-A800-E	FR-F800-E

1.2 Operation Flow Diagram

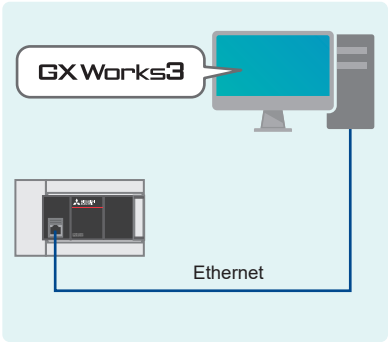
1. Preparing the required products



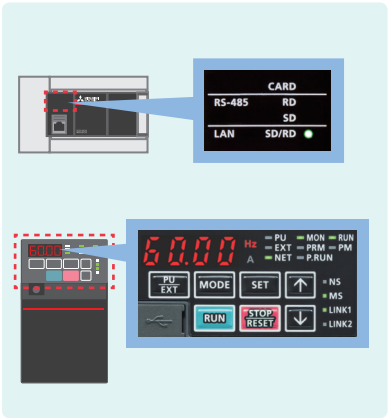
2. INVERTER SETTINGS



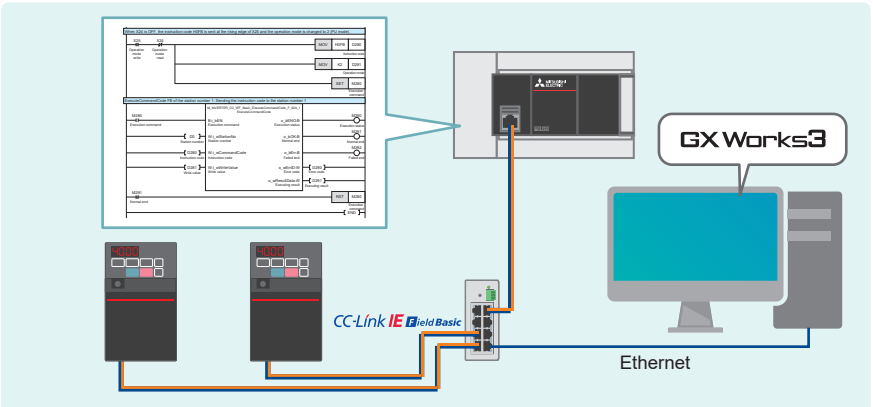
3. PROGRAMMABLE CONTROLLER SETTINGS



4. Checking the communication status

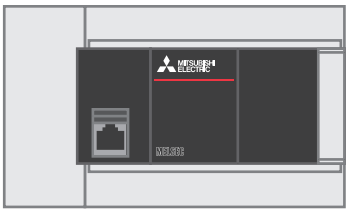
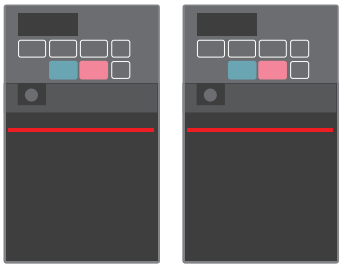


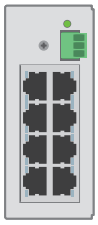
5. Program examples and checking the operation



1.3 Required Products

In a system configuration example of this manual, two inverters (FR-E800-E) are connected to the FX5U CPU module.

FX5U CPU module	FR-E800-E × 2	Personal computer and software
	 First inverter (Station number 1) Second inverter (Station number 2)	
Use an FX5U CPU module that meets the following conditions. • Serial number: 17X**** or later • Firmware version: 1.110 or later	The PU port can be found when the front cover is removed. ■FR-E800-E models • FR-E820-☐EPA/EPB • FR-E840-☐EPA/EPB • FR-E860-☐EPA/EPB	GX Works3 • Supported software version: 1.050C or later FR Configurator2 • Supported software version: 1.19V or later

Ethernet cable × 4	Hub
	
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)	Use a hub that meets the following conditions. • Compliance with the IEEE 802.3 (100BASE-TX) • Equipped with the auto MDI/MDI-X function • Equipped with the auto-negotiation function • Switching hub (layer 2 switch)*1

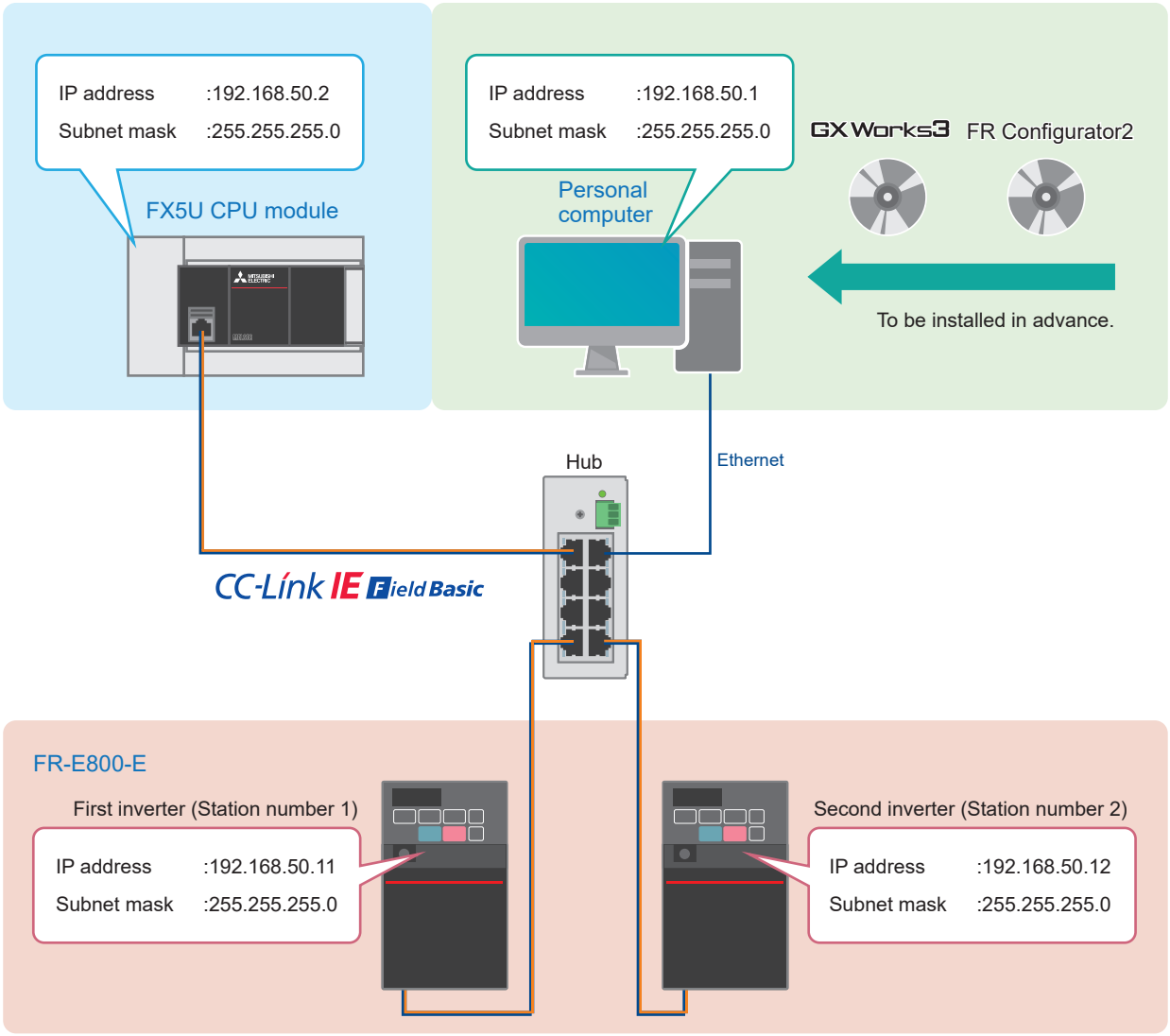
*1 A repeater hub cannot be used.

1.4 System Configuration

This section describes the system configuration in which two inverters (FR-E800-E) are connected to the FX5U CPU module. The inverters are connected into a star type using a switching hub and standard Ethernet cables.

When multiple inverters communicate with each other in a same network, the first three values of the IP addresses (first to third octets) need to be the same. Assign IP addresses to the inverters to be used in advance. Assign a same subnet mask value to the modules to be used.

In this manual, IP addresses 192.168.50.☐ and a subnet mask 255.255.255.0 are assigned to the inverters and the FX5U CPU module.



For the power supply wiring of FR-E800-E series, refer to the following.

Chapter 2 Installation and Wiring in the FR-E800 Instruction Manual (Connection)

For the power supply wiring of FR-A800-E/F800-E, refer to the following.

Page 58 Power supply wiring

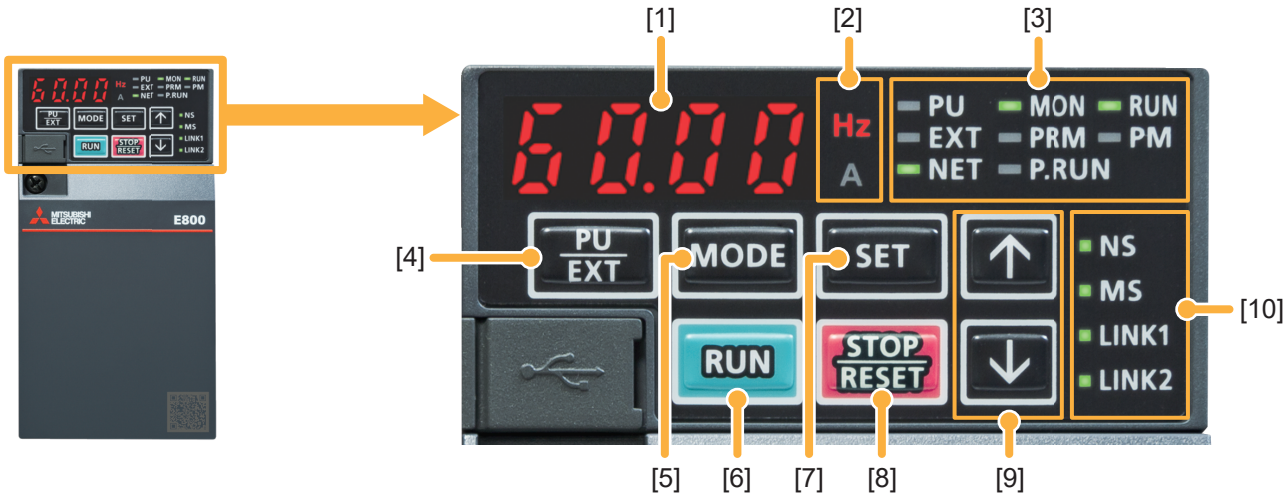
For the power supply wiring of the FX5U, FX5UC, and FX5UJ CPU modules, refer to the following.

Section 13.4 Power Supply Wiring in the MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

2 INVERTER SETTINGS

2.1 Names of the Parts on the Operation Panel

Inverter parameter settings and error content can be checked on the operation panel.



*: The operation panel cannot be removed from the inverter.

No.	Name		Description
[1]	Monitor (4-digit LED)		Shows a numeric value (readout) of a monitor item such as the frequency and a parameter number.
[2]	Unit indication		Hz: ON when the actual frequency is monitored. (Blinks when the set frequency is monitored.) A: ON when the current is monitored. (Both "Hz" and "A" are OFF to indicate a value other than the frequency or the current.)
[3]	Inverter operation mode LEDs	PU	ON when the inverter is in the PU operation mode.
		EXT	ON when the inverter is in the External operation mode. (Lit at power-ON at initial setting.)
		NET	ON when the inverter is in the Network operation mode.
	Operation panel status LEDs	MON	ON or blinks only when the first, second, or third monitor is displayed.
		PRM	Lit to indicate parameter setting mode. The LED blinks when the inverter is in the easy setting mode.
	PLC function LED	P.RUN	ON when the PLC function of the inverter is valid.
	Operating status LED	RUN	ON or blinks during inverter running. ON: During forward rotation operation. Blinks slowly (1.4-second cycle): During reverse rotation operation. Blinks quickly (0.2-second cycle): Operation is disabled although the start command is given.
	Controlled motor type LED	PM	ON when the inverter is set to control the PM motor. The LED blinks during test operation.
[4]	PU/EXT key		Switches between the PU operation mode, the PUJOG operation mode, and the External operation mode.
[5]	MODE key		Switches the operation panel to a different mode.
[6]	RUN key		Executes a start command.
[7]	SET key		Confirms each selection. When this key is pressed during the monitor mode, the monitor item changes.
[8]	STOP/RESET key		Stops the operation commands. Resets the inverter when the protective function is activated.
[9]	UP/DOWN key (↑↓ key)		Changes the frequency and parameter settings.
[10]	Operation status LEDs	NS	Shows communication status.
		MS	Shows inverter status.
		LINK1	Shows connector for communication (PORT1) status.
		LINK2	Shows connector for communication (PORT2) status.

For details on the FR-E800-E operation panel, refer to the following.

📖Section 2.1 Operation panel in the FR-E800 Instruction Manual (Function)

For details on the FR-A800-E/F800-E operation panel, refer to the following.

☞ Page 58 Operation panel

2.2 List of Related Parameters

The following tables list the parameters which are required to be set.

To make communications between an inverters and a connected device, set the inverter parameters to match the communication specifications of the connected device. Data communications cannot be made if the settings are not made or if there is any setting error.

Required parameter settings

Parameter	Name	Initial value	Setting value (Inverter station number 1)	Setting value (Inverter station number 2)	Description
Pr.77	Parameter write selection	0	2		Parameter write is set to [enable].
Pr.544	CC-Link extended setting	0	18		Set the function of the remote register for the CC-Link IE Field Network Basic to [Compatible with the octuple setting of CC-Link Ver.2].
Pr.1424	Ethernet communication network number	1	1		Set this parameter when making communications between the inverters and FR Configurator2. Set a network number to Pr.1424 and a station number to Pr.1425.
Pr.1425	Ethernet communication station number	1	1	2	
Pr.1427	Ethernet function selection 1	5001	5001		Set this parameter when making communications between the inverters and FR Configurator2. In this manual, use Pr.1427 and Pr.1428 with the initial values.
Pr.1428	Ethernet function selection 2	45237	45237		
Pr.1429	Ethernet function selection 3	45238	61450		Change the settings of the application to [CC-Link IE Field Network Basic].
Pr.1430	Ethernet function selection 4	9999	9999		Use this parameter with the initial value.
Pr.1434	Ethernet IP address 1	192	192		Set an IP address of the inverter to be connected to Ethernet.
Pr.1435	Ethernet IP address 2	168	168		
Pr.1436	Ethernet IP address 3	50	50		
Pr.1437	Ethernet IP address 4	1	11	12	
Pr.1438	Subnet mask 1	255	255		Set a subnet mask which the IP address of the inverter belongs to.
Pr.1439	Subnet mask 2	255	255		
Pr.1440	Subnet mask 3	255	255		
Pr.1441	Subnet mask 4	0	0		
Pr.1449	Ethernet command source selection IP address 1	0	192		Set an IP address of the FX5U CPU module.
Pr.1450	Ethernet command source selection IP address 2	0	168		
Pr.1451	Ethernet command source selection IP address 3	0	50		
Pr.1452	Ethernet command source selection IP address 4	0	2		

Parameter settings (for adjustment and operation)

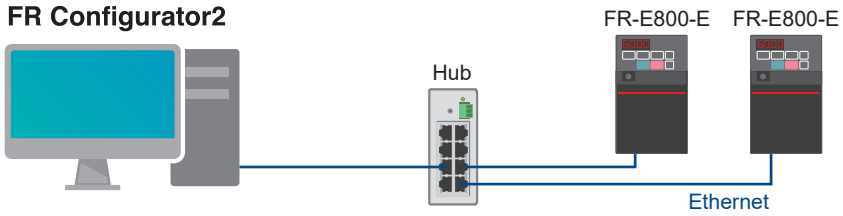
Parameter	Name	Initial value	Setting value (Common for both inverters)	Description
Pr.1432	Ethernet communication check time interval	1.5 (= 1.5 seconds)	5.0 (= 5 seconds)	Set "9999" during adjustment, and set a value in accordance with the system specification during operation. • 9999: No communication check (signal loss detection) • 0: Ethernet communication is available, but the inverter output is shut off in the NET operation mode. • 1 to 9998: Set the interval of the communication check (signal loss detection) time for all devices with IP addresses in the range specified for Ethernet command source selection (Pr.1449 to Pr.1454).

For the FR-A800-E/F800-E parameters, refer to the following.

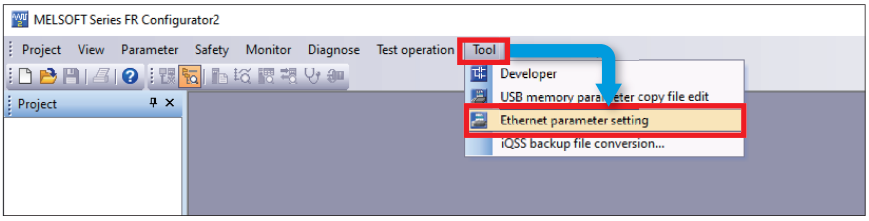
☞ Page 58 Parameters

2.3 Ethernet Parameter Settings

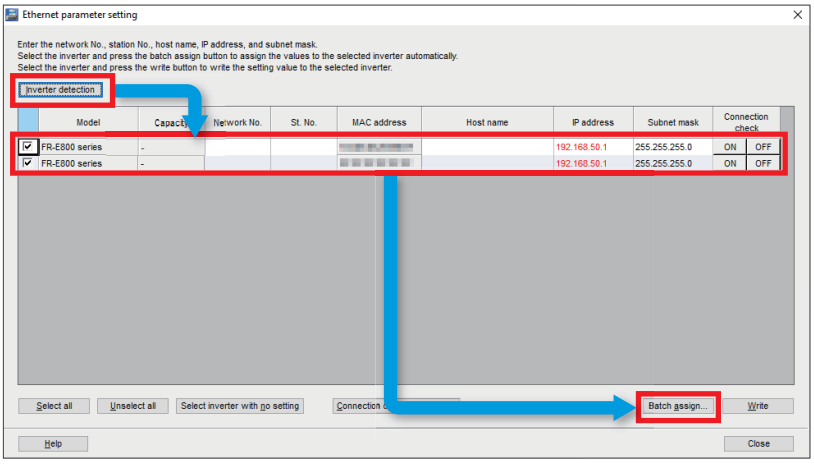
Parameters are set by connecting the inverters and the personal computer over Ethernet.
In this manual, FR Configurator2 is used to set the parameters. The following describes how to set the parameters using FR Configurator2.



1. Start FR Configurator2, and select [Ethernet parameter setting] from the [Tool] menu bar.

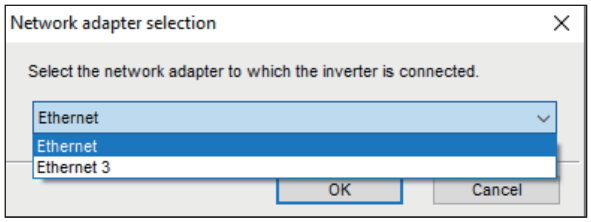


2. When the inverters connected to the personal computer are detected automatically, their information, such as the model and capacity, are displayed. Check that displayed information is correct, and click the [Batch assign] button.



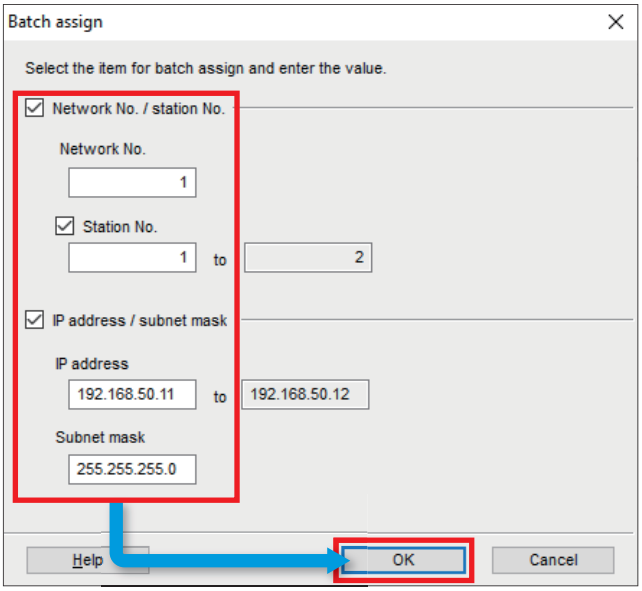
Point

When the personal computer has multiple Ethernet ports or uses a USB converter, the following window appears. On this window, select a network adapter which is connected to the inverters.

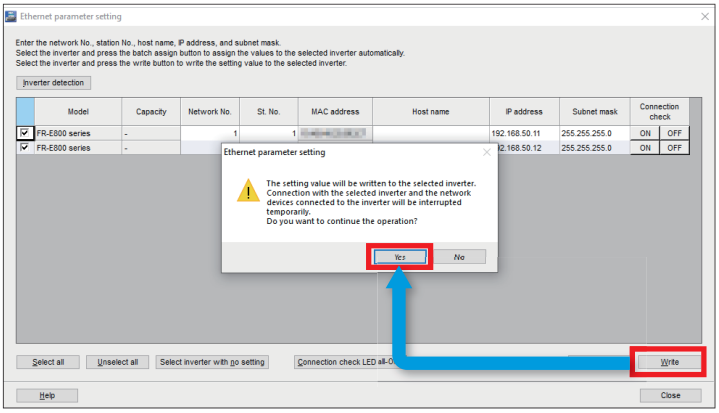


3. Select the checkboxes of "Network No. / station No.", "Station No.", and "IP address / subnet mask", and click the [OK] button. In this manual, the following setting values are used.

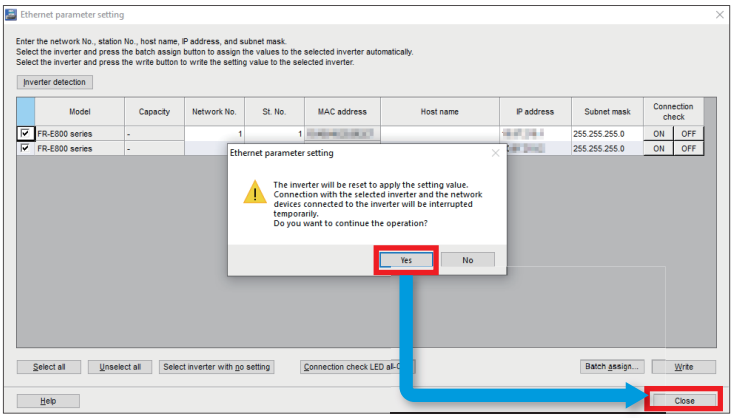
Parameter	Setting value
Network No.	1
Station No.	1
IP address	192.168.50.11
Subnet mask	255.255.255.0



4. Click the [Write] button, and click the [Yes] button on the window, which asks whether to write the setting values to the inverters, to reflect the setting values.

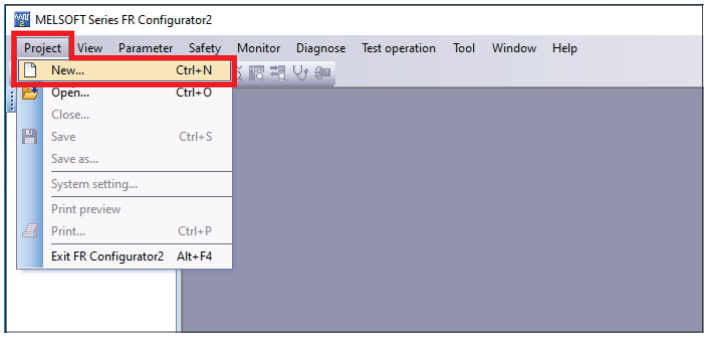


5. When the inverters are reset, the Ethernet parameter setting is complete. Click the [Close] button to close the "Ethernet parameter setting" window, and move to the parameter setting.

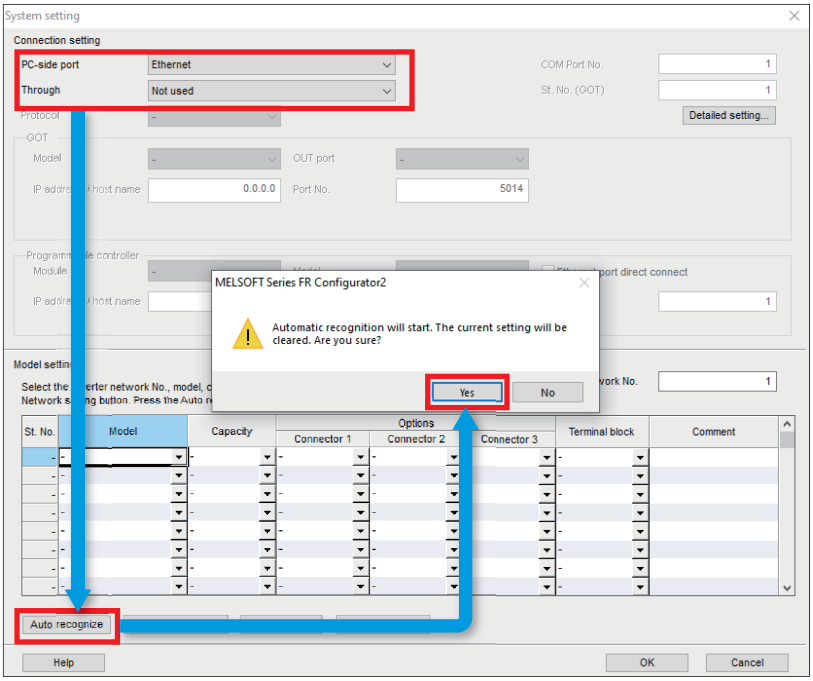


2.4 Parameter Settings

1. Select [Project] on the toolbar ⇨ [New].

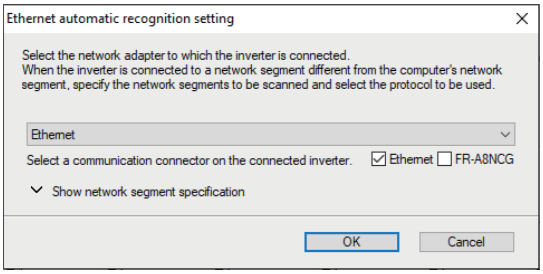


2. In the "Connection setting" field, select "Ethernet" for "PC-side port" and "Not used" for "Through", and click the [Auto recognize] button. Click the [Yes] button on the window, which asks whether to clear the current settings, to execute automatic recognition.

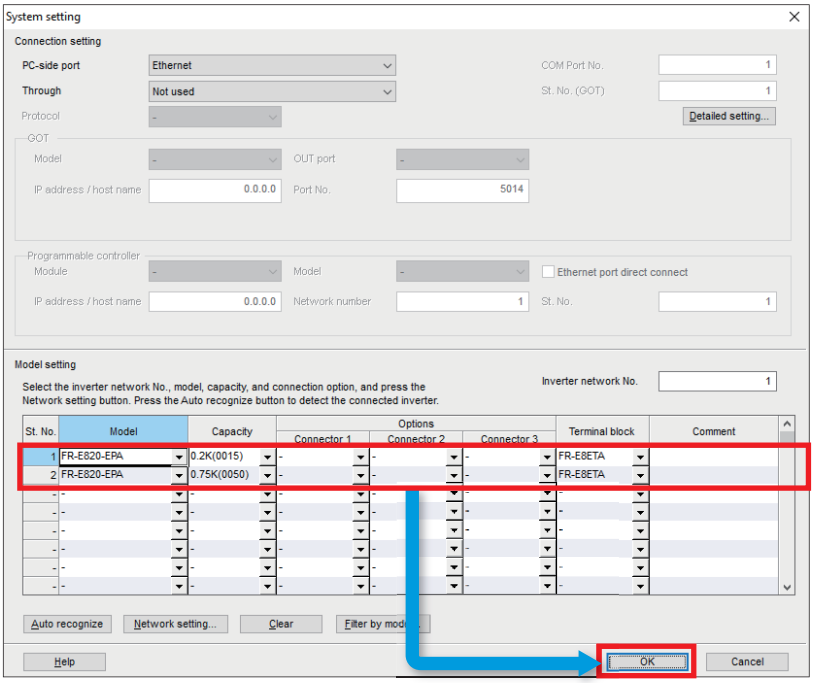


Point

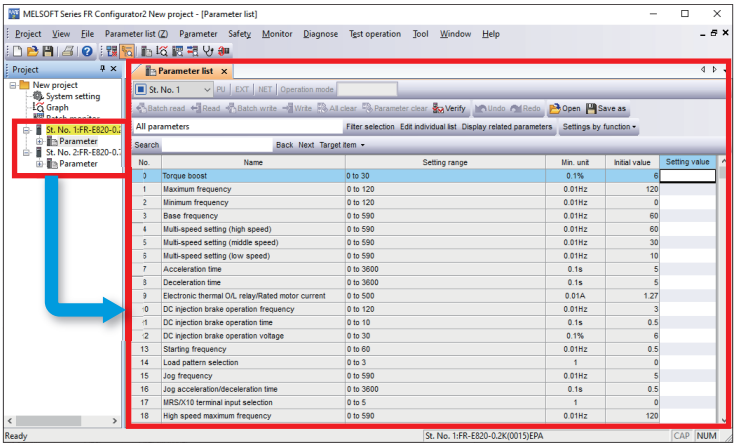
When the personal computer has multiple Ethernet ports or uses a USB converter, the following window appears. On this window, select a network adapter which is connected to the inverters.



3. When the auto-recognized inverter information is displayed, check that the displayed model, capacity, and other information are correct. Click the [OK] button.



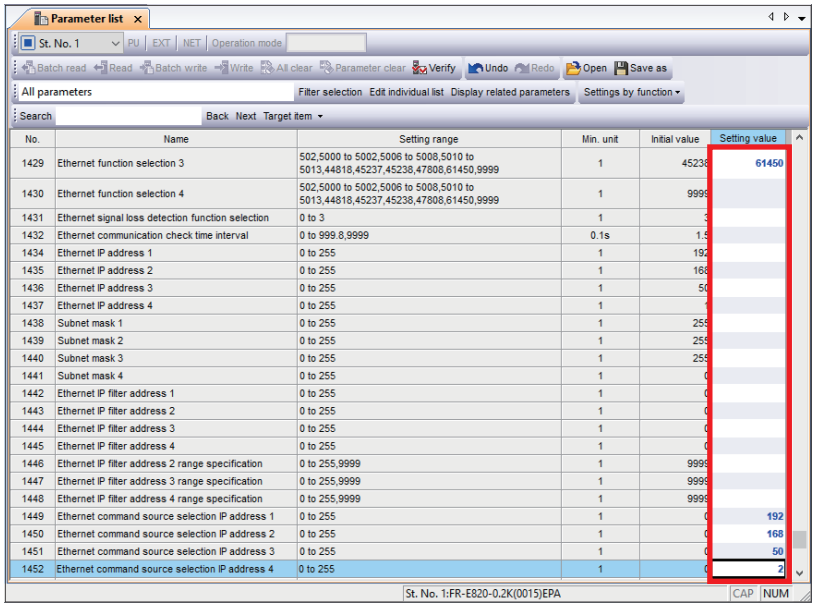
4. In the [Project] window, the inverter models of station number 1 and station number 2 are displayed. Double-click "Parameter" under the inverter model to open the parameter list.



Point

If the [Project] window is not displayed, select [Project window] from [Docking Window] in the [View] menu to open the window.

5. Enter the parameter setting values. For parameters and setting values to be used, refer to ☞ Page 10 List of Related Parameters.



No.	Name	Setting range	Min. unit	Initial value	Setting value
1429	Ethernet function selection 3	502,5000 to 5002,5006 to 5008,5010 to 5013,44818,45237,45238,47808,61450,9999	1	45238	61450
1430	Ethernet function selection 4	502,5000 to 5002,5006 to 5008,5010 to 5013,44818,45237,45238,47808,61450,9999	1	9999	
1431	Ethernet signal loss detection function selection	0 to 3	1	3	
1432	Ethernet communication check time interval	0 to 999.8,9999	0.1s	1.5	
1434	Ethernet IP address 1	0 to 255	1	192	
1435	Ethernet IP address 2	0 to 255	1	168	
1436	Ethernet IP address 3	0 to 255	1	50	
1437	Ethernet IP address 4	0 to 255	1	1	
1438	Subnet mask 1	0 to 255	1	255	
1439	Subnet mask 2	0 to 255	1	255	
1440	Subnet mask 3	0 to 255	1	255	
1441	Subnet mask 4	0 to 255	1	0	
1442	Ethernet IP filter address 1	0 to 255	1	0	
1443	Ethernet IP filter address 2	0 to 255	1	0	
1444	Ethernet IP filter address 3	0 to 255	1	0	
1445	Ethernet IP filter address 4	0 to 255	1	0	
1446	Ethernet IP filter address 2 range specification	0 to 255,9999	1	9999	
1447	Ethernet IP filter address 3 range specification	0 to 255,9999	1	9999	
1448	Ethernet IP filter address 4 range specification	0 to 255,9999	1	9999	
1449	Ethernet command source selection IP address 1	0 to 255	1	0	192
1450	Ethernet command source selection IP address 2	0 to 255	1	0	168
1451	Ethernet command source selection IP address 3	0 to 255	1	0	50
1452	Ethernet command source selection IP address 4	0 to 255	1	0	2

For parameter setting on the operation panel, refer to the following.

📖Section 2.1.2 Basic operation of the operation panel in the FR-E800 Instruction Manual (Function).

Point

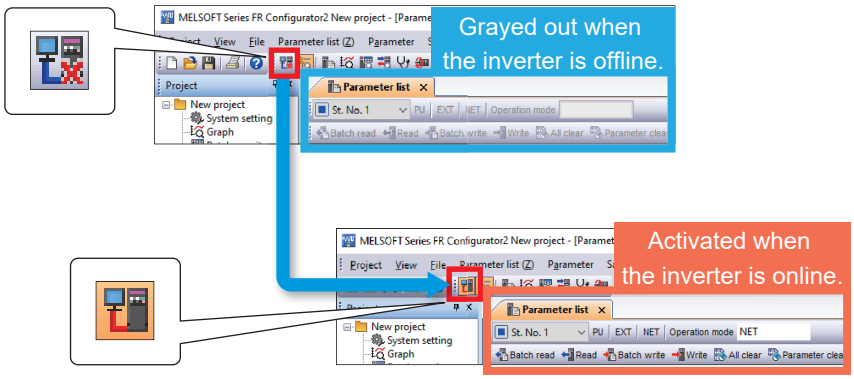
The following parameters are set during Ethernet parameter setting, therefore, entering their setting values is not necessary. (☞ Page 11 Ethernet Parameter Settings)

- Pr.1424 (Ethernet communication network number)
- Pr.1425 (Ethernet communication station number)
- Pr.1434 to Pr.1437 (Ethernet IP address)
- Pr.1438 to Pr.1441 (Subnet mask)

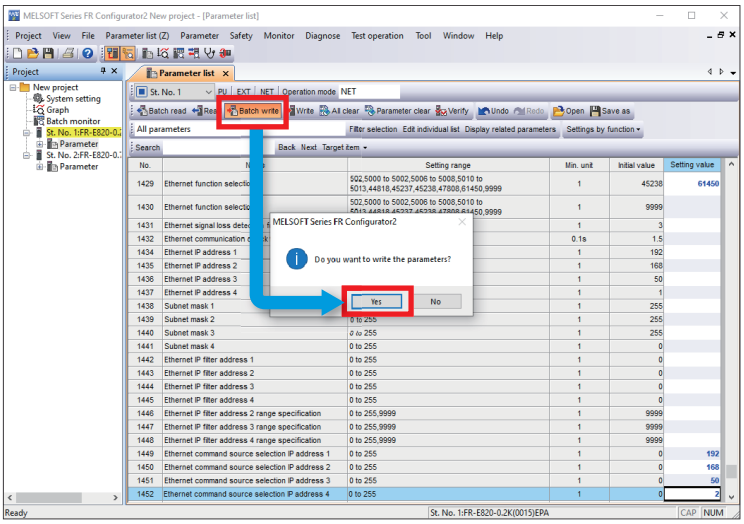
2.5 Writing Data to the Inverters

The parameter setting values entered in the parameter list are written to each inverter.

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

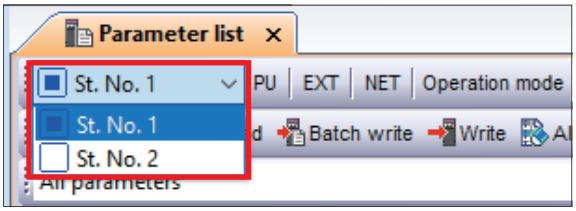


2. Click [Batch write], and click the [Yes] button on the window which asks whether to write the parameters. After the parameters are written to the inverter, reset the inverter.



Point

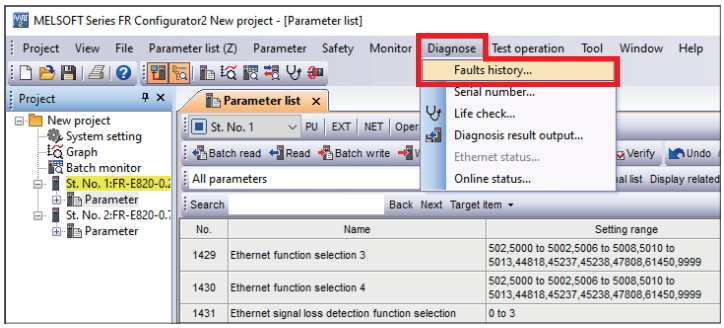
A parameter list can be switched between the station number 1 and the station number 2 by selecting the following the station number list.



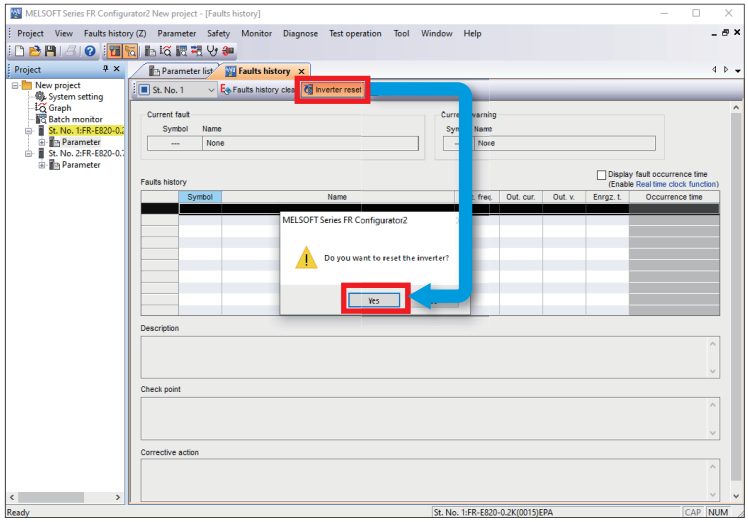
2.6 Inverter Reset

After the parameters are changed, the inverters must be reset. Otherwise, the changed settings are not reflected. In this manual, FR Configurator2 is used to reset the inverters. The following describes how to reset the inverters using FR Configurator2.

1. Select [Fault history] from the [Diagnose] menu bar on the toolbar.



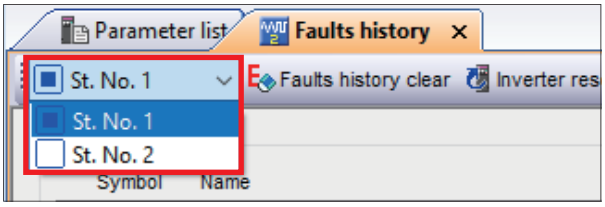
2. Click [Inverter reset], and click the [Yes] button on the window which asks whether to reset the inverter. When the inverter (station number 1) is reset, the parameter setting is complete.



3. Set the parameters for the inverter station number 2 using the same procedure as the inverter station number 1.
For the parameter setting of the inverter station number 2, start from the step 4 of in 2.4 Parameter Setting. (For the parameter setting procedure, refer to ☞ Page 13 Parameter Settings.)

Point

An alarm history can be switched between the station number 1 and the station number 2 by selecting the following station number list.



3 PROGRAMMABLE CONTROLLER SETTINGS

3.1 Part Names

For the part names of the FX5U, FX5UC, and FX5UJ CPU modules, refer to the following.

Chapter 3 PART NAMES in the MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

3.2 Downloading the FB Library

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

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

3.3 Importing the FB Library

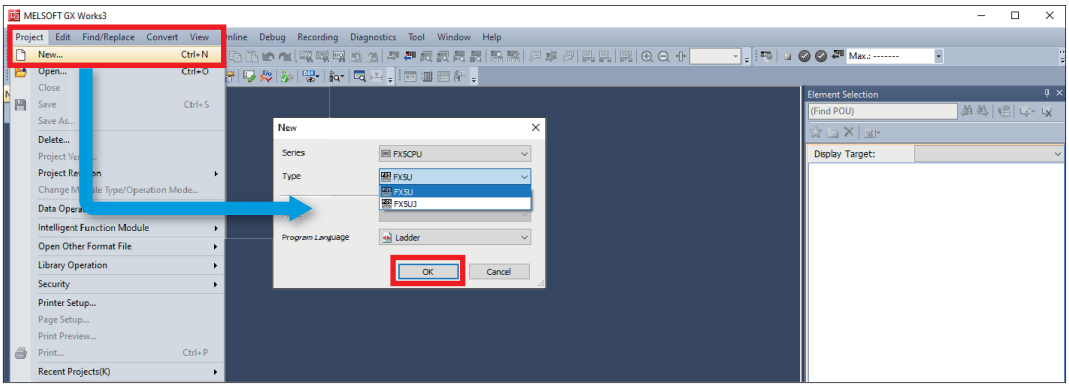
This section describes how to register the obtained FB library to GX Works3.

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

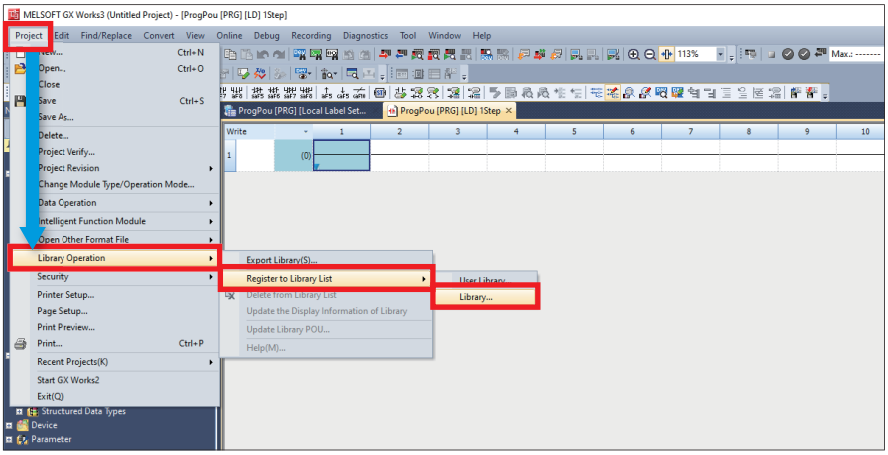
1. Start GX Works3, and select [Project] on the toolbar ⇨ [New].

In this manual, the following setting values are used.

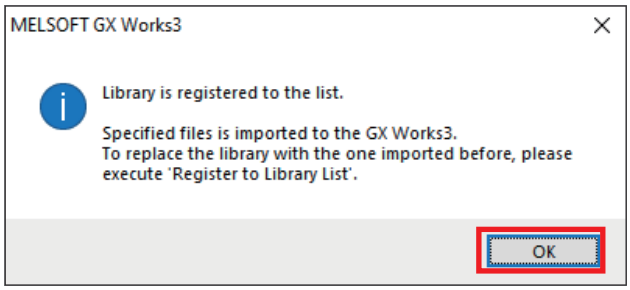
Item	Setting value
Series	FX5CPU
Type	FX5U
Program Language	Ladder



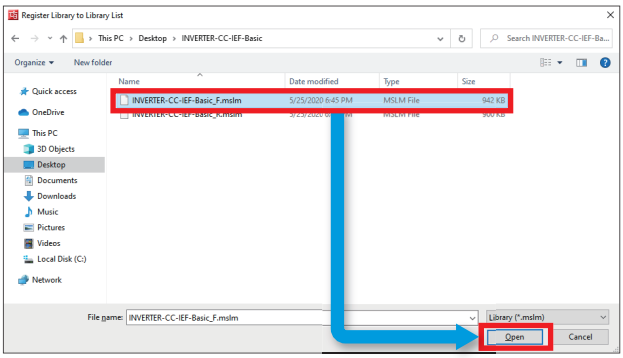
2. Select [Project] on the toolbar ⇨ [Library Operation] ⇨ [Register to Library List] ⇨ [Library].



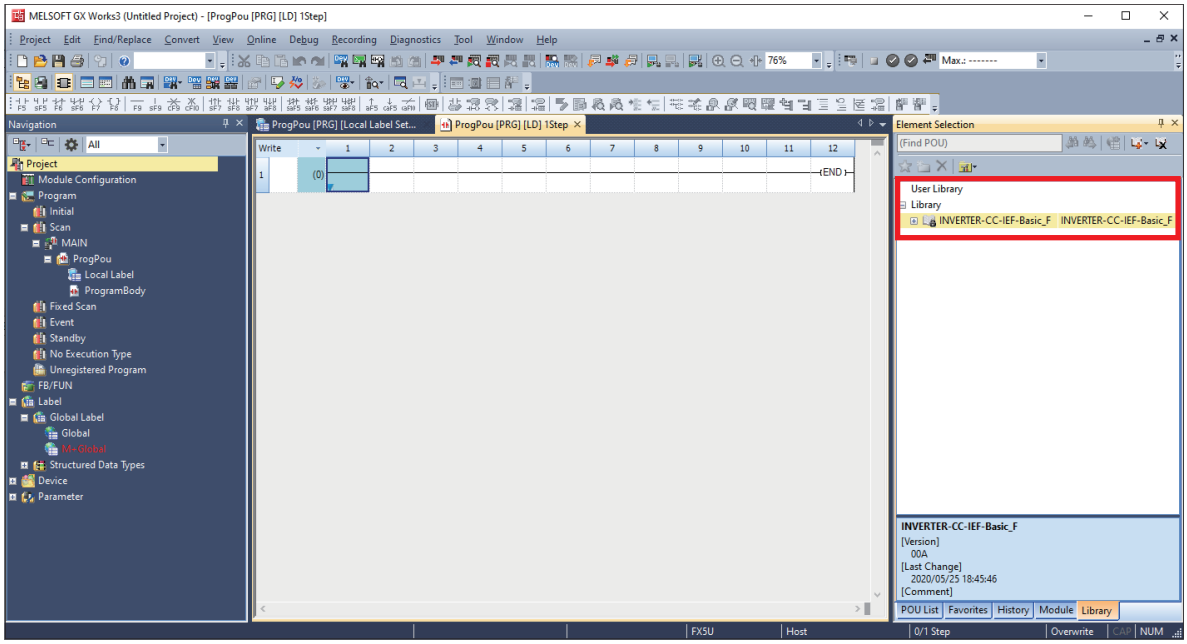
3. When the following window appears, click the [OK] button.



4. Select the "INVERTER-CC-IEF-Basic_F.mslm" file in the decompressed FB library folder, and click the [Open] button.



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

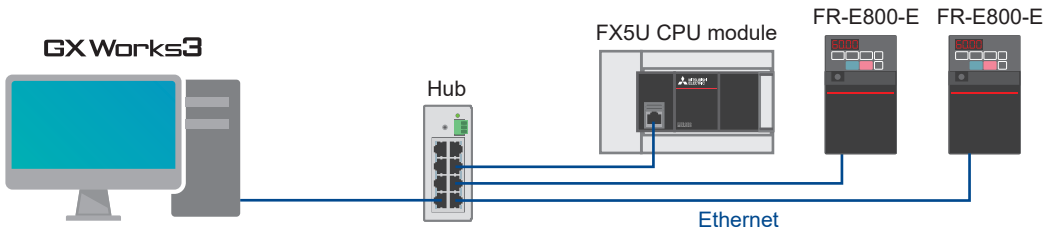


Point

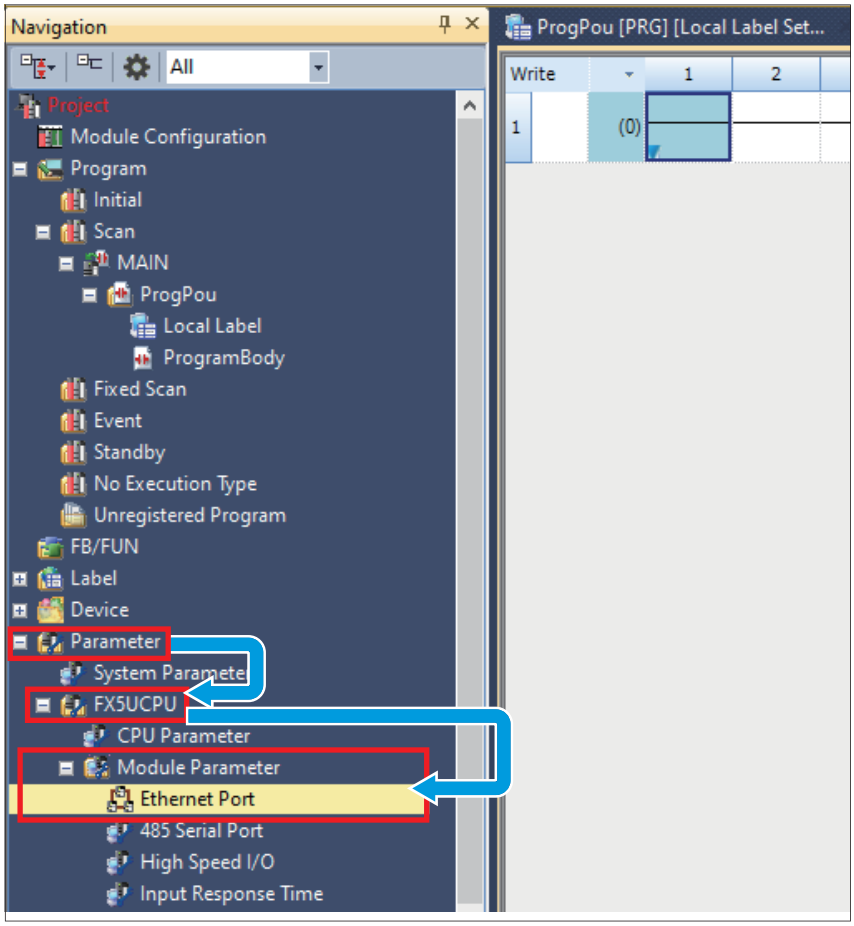
If the "Element Selection" window is not displayed, select [View] on the toolbar ⇨ [Docking Window] ⇨ [Element Selection] to open the window.

3.4 Parameter Settings

This section describes how to set parameters required for the programmable controller using GX Works3. To set the parameters, connect the personal computer, the programmable controller, and the inverters over Ethernet.



1. In the "Navigation" window, select [Parameter] ⇨ [FX5UCPU] ⇨ [Module Parameter] ⇨ [Ethernet Port].



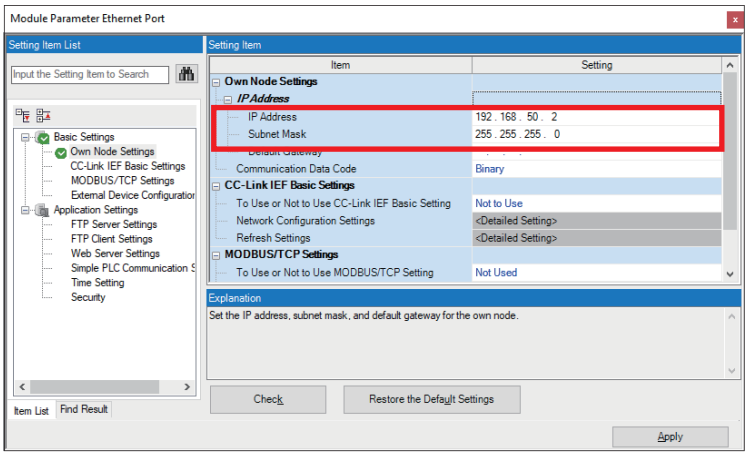
Point

If the "Navigation" window is not displayed, select [View] on the toolbar ⇨ [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 8 System Configuration.)

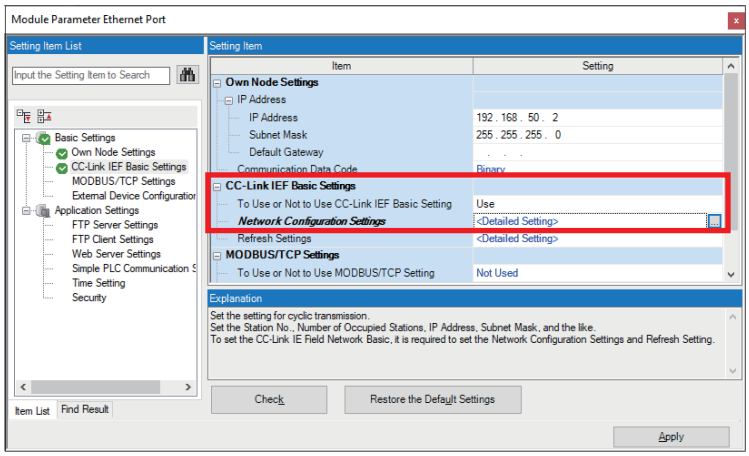
Item	Setting value
IP Address	192.168.50.2
Subnet Mask	255.255.255.0



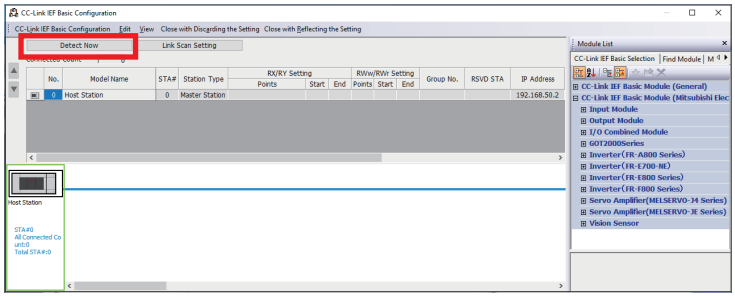
Point

An IP address is not set by default. When an IP address is not set, the IP address 192.168.3.250 is set.

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



4. Click the [Detect Now] button.



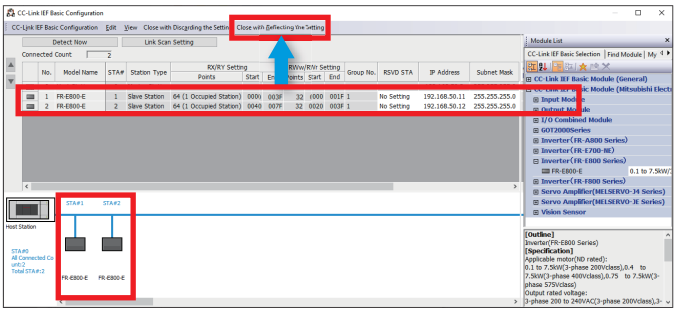
When the FR-E800-E profile is not registered, refer to the following.

☞ Page 56 Downloading and Registering a Profile

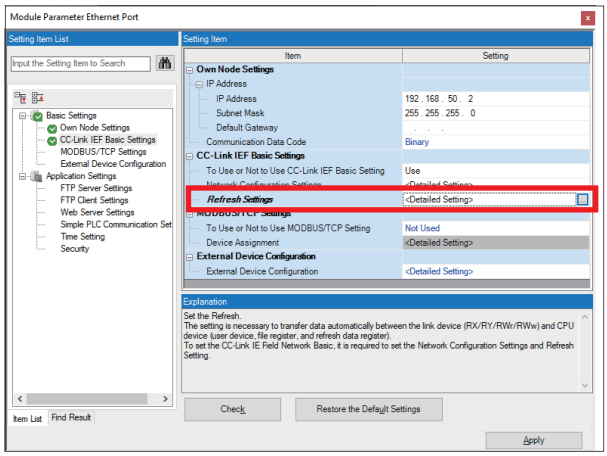
5. The information of the inverters connected to the programmable controller is reflected in the table. Check the settings of model name, reserved station, IP address, and subnet mask, and click [Close with Reflecting the Setting].

In this manual, the following setting values are used. (For the setting values, refer to ☞ Page 8 System Configuration.)

Model Name	STA#	RSVD STA	IP Address	Subnet Mask
FR-E800-E	1	No Setting	192.168.50.11	255.255.255.0
FR-E800-E	2	No Setting	192.168.50.12	255.255.255.0

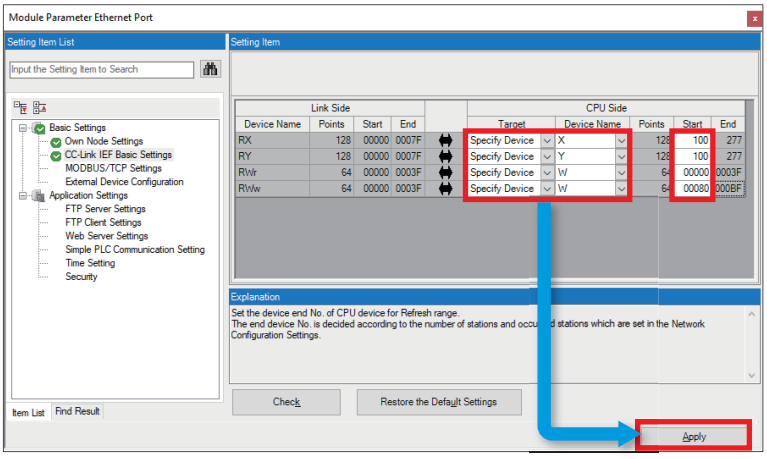


6. Next, set parameters to perform data transfer automatically between link devices of the inverters and devices of the programmable controller. Double-click "<Detailed Setting>" of "Refresh Settings".



7. Select "Specify Device" for the refresh target on the CPU module side, and set the name and start address of the device to be assigned. After the device is set, click the [Apply] button. In this manual, the following setting values are used.

Target	Device Name	Start
Specify Device	X	100
Specify Device	Y	100
Specify Device	W	00000
Specify Device	W	00080



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

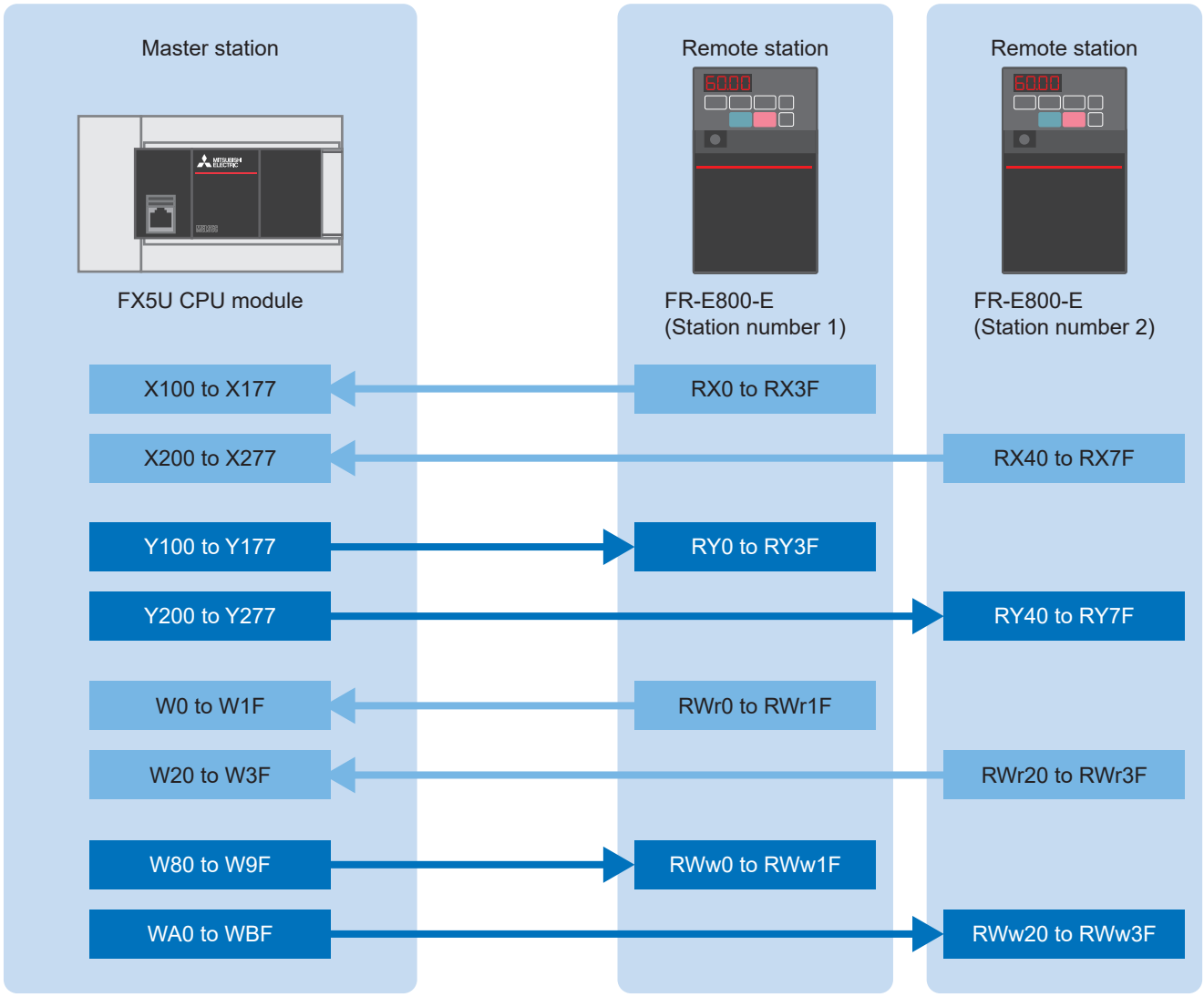
In this manual, since [Compatible with the octuple setting of CC-Link Ver.2] is selected for the CC-Link extended setting (Pr.544) of the inverters, assign the link devices of each inverter to the following devices of the programmable controller. (For the inverter settings, refer to ☞ Page 10 List of Related Parameters.)

■FR-E800-E (Station number 1)

Assignment target device on the programmable controller side	Number of points	Link device on the inverter side
X100 to X177	64	RX0 to RX3F
Y100 to Y177	64	RY0 to RY3F
W0 to W1F	32	RWr0 to RWr1F
W80 to W9F	32	RWw0 to RWw1F

■FR-E800-E (Station number 2)

Assignment target device on the programmable controller side	Number of points	Link device on the inverter side
X200 to X277	64	RX40 to RX7F
Y200 to Y277	64	RY40 to RY7F
W20 to W3F	32	RWr20 to RWr3F
WA0 to WBF	32	RWw20 to RWw3F



Precautions

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

Mainly-used devices

The following tables list the functions and the assignment target device numbers of the mainly-used link devices (remote input, remote output, and remote registers).

■Bit device (X)

Device number (Station number 1)	Device number (Station number 2)	Description
X100	X200	Forward running
X101	X201	Reverse running
X102	X202	Running (terminal RUN function)
X104	X204	Overload warming
X105	X205	Pr.193 assignment function (NET Y1)
X107	X207	Fault (terminal ABC function)
X114	X214	Monitoring
X115	X215	Frequency setting completion (RAM)
X116	X216	Frequency setting completion (RAM, EEPROM)
X117	X217	Instruction code execution completed
X132	X232	Error status flag
X133	X233	Remote station ready

■Bit device (Y)

Device number (Station number 1)	Device number (Station number 2)	Description
Y100	Y200	Forward rotation command
Y101	Y201	Reverse rotation command
Y102	Y202	High-speed operation command (terminal RH function)
Y103	Y203	Middle-speed operation command (terminal RM function)
Y104	Y204	Low-speed operation command (terminal RL function)
Y110	Y210	Pr.185 assignment function (NET X1)
Y111	Y211	Output stop (terminal MRS function)
Y113	Y213	Pr.184 assignment function (RES)
Y114	Y214	Monitor command
Y115	Y215	Frequency setting command (RAM)
Y116	Y216	Frequency setting command (RAM, EEPROM)
Y117	Y217	Instruction code execution request
Y132	Y232	Error reset request flag

■Word device

Device number (Station number 1)	Device number (Station number 2)	Description	
		Upper 8 bits	Lower 8 bits
W0000	W0020	First monitor value	
W0001	W0021	Second monitor value	
W0002	W0022	Reply code 2	Reply code 1
W0003	W0023	Data to be read	
W0008	W0028	Fault record No.	Fault record (fault data)
W0009	W0029	Fault record (output frequency)	
W000A	W002A	Fault record (output current)	
W000B	W002B	Fault record (output voltage)	
W000C	W002C	Fault record (energization time)	
W0080	W00A0	Monitor code 2	Monitor code 1
W0081	W00A1	Set frequency (0.01 Hz increments)	
W0082	W00A2	Link parameter extended setting	Instruction code
W0083	W00A3	Data to be written	
W0088	W00A8	Fault record No.	H00
W008C	W00AC	Torque command or torque limit	

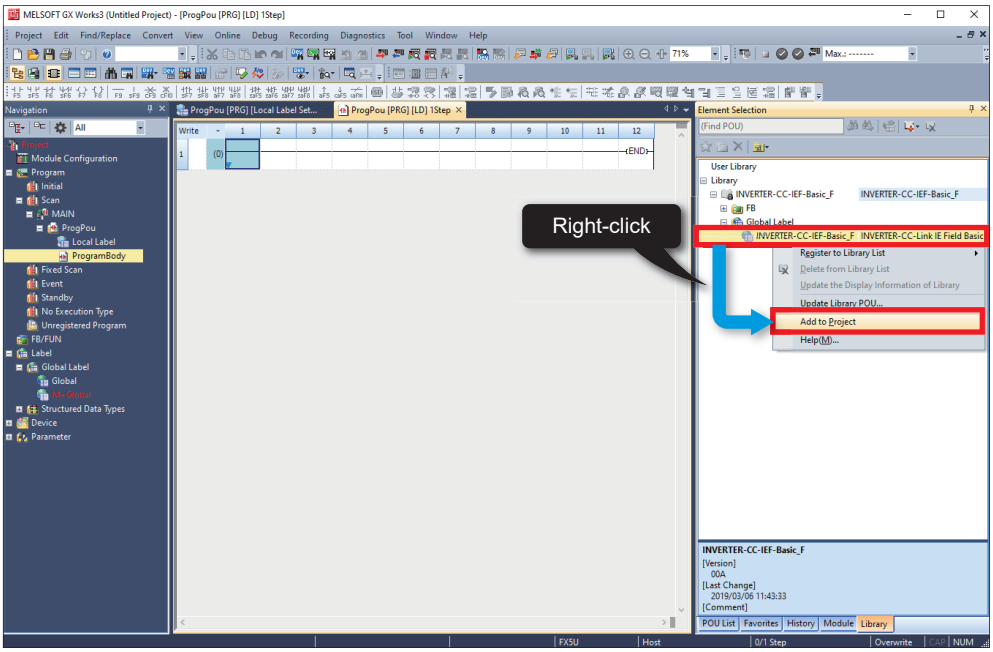
For details on the remote input, remote output, and remote register areas not listed in this manual, refer to the following.
📖Section 2.6.4 Parameters related to CC-Link IE Field Network Basic in the INVERTER FR-E800 Instruction Manual (Communication)

For details on the remote input, remote output, and remote registers of FR-A800-E and FR-F800-E, refer to the following.
☞ Page 58 Remote input, remote output, and remote registers

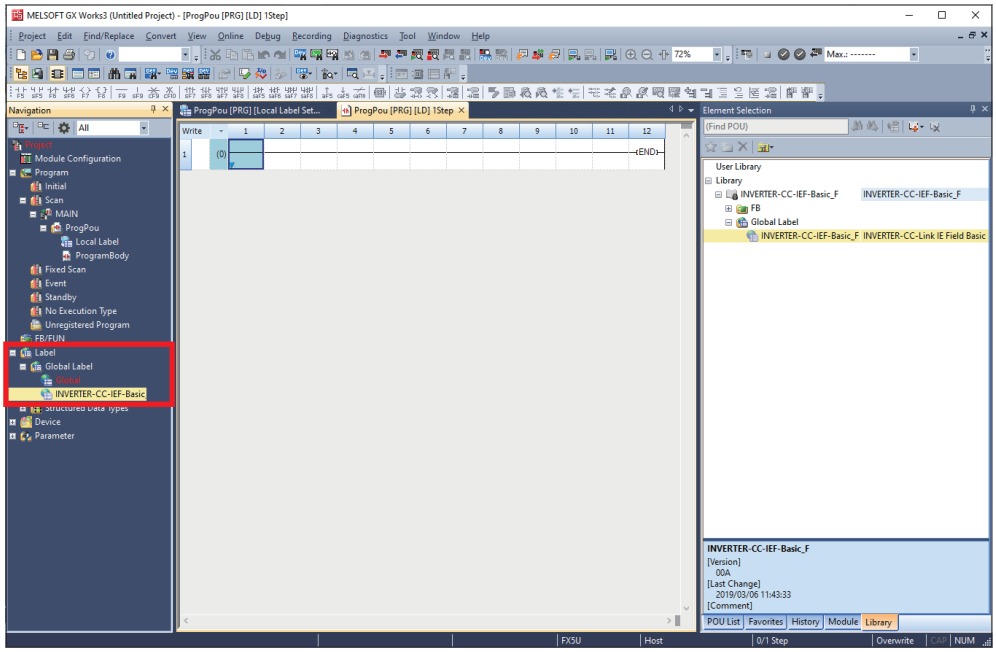
3.5 Adding Global Labels

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

1. In the "Element Selection" window, select [Global Label] ⇨ [INVERTER-CC-IEF-Basic_F] of the imported FB library. Right-click [INVERTER-CC-IEF-Basic_F], and select [Add to Project].



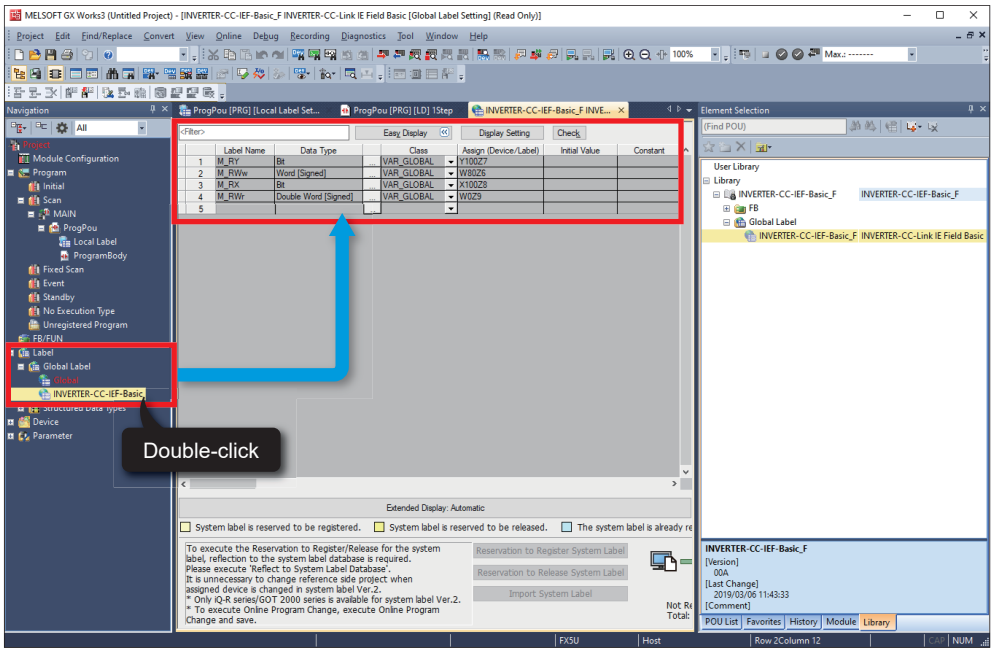
2. In the "Navigation" window, [INVERTER-CC-IEF-Basic_F] is added to [Global Label].



How to check the global label assignment areas

To display the global labels used in the FB library, select [Global Label] ⇨ [INVERTER-CC-IEF-Basic_F] in [Label], and double-click [INVERTER-CC-IEF-Basic_F]. The following table lists the initial settings of the devices used in the global labels.

Label Name	Data Type	Class	Assign (Device/Label)
M_RX	Bit	VAR_GLOBAL	X100Z8
M_RY	Bit	VAR_GLOBAL	Y100Z7
M_RWr	Double Word [Signed]	VAR_GLOBAL	W0Z9
M_RWw	Word [Signed]	VAR_GLOBAL	W80Z6

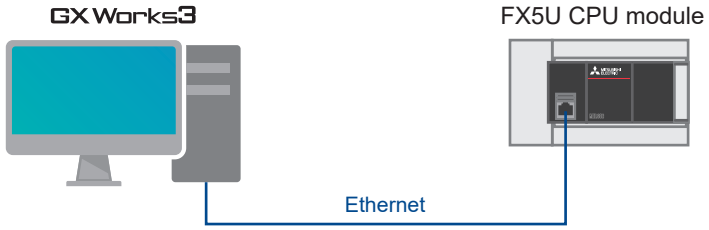


For how to change global labels, refer to the following.

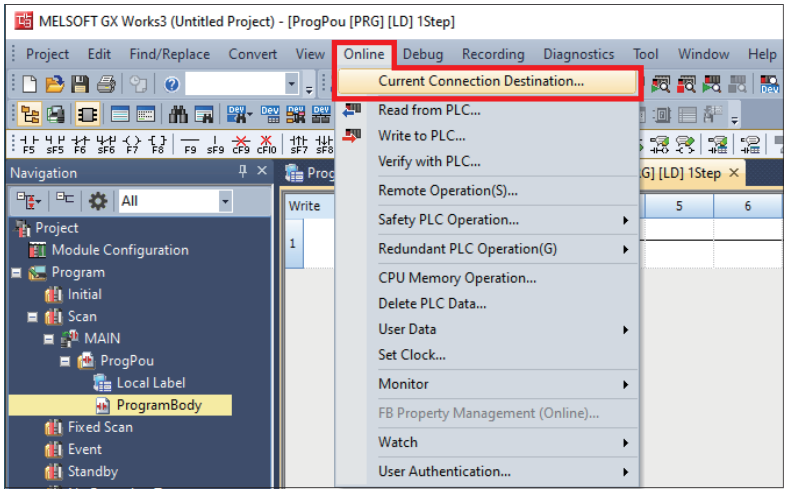
Section 1.5.1 Recommended global label settings in the FB Library Reference Manual for CC-Link IE Field Network Basic Compatible Inverters

3.6 Communication Settings of GX Works3

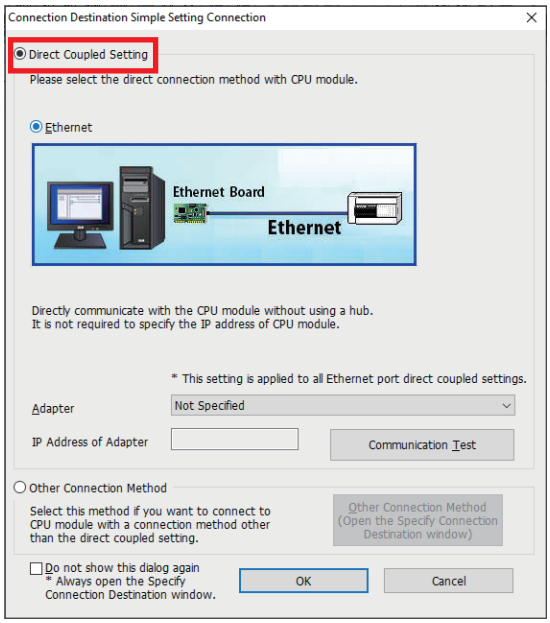
This section describes the communication settings of GX Works3. Directly connect an Ethernet port of the personal computer where GX Works3 has been installed to the FX5U CPU module as shown below. To write data to the FX5U CPU module, a communication test needs to be performed first.



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

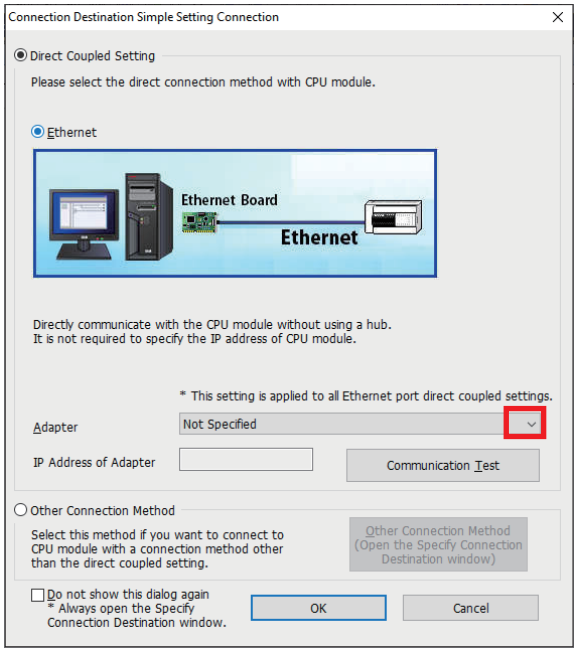


2. Select "Direct Coupled Setting".

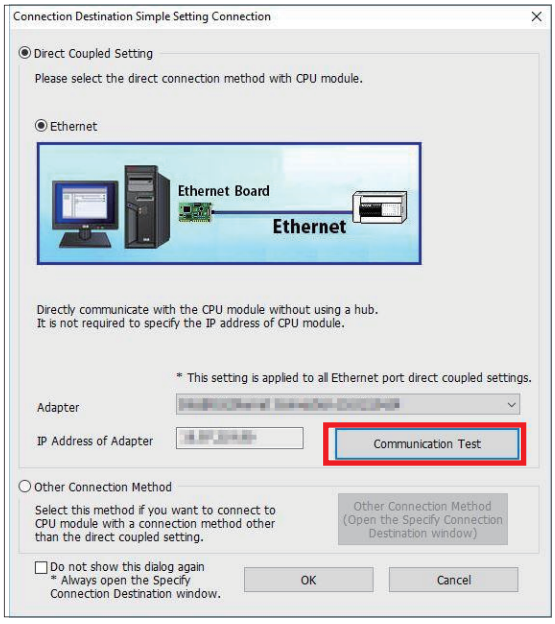


3. Specify an Ethernet adapter of the personal computer which is used when the personal computer is directly connected to the CPU module.

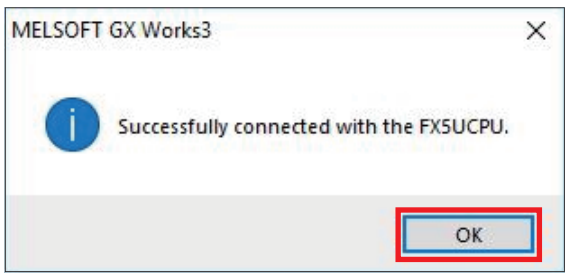
When "Not Specified" is set, select an adapter to be used from the drop-down list.



4. After the adapter is selected, click the [Communication Test] button.



5. When the following window appears, click the [OK] button.



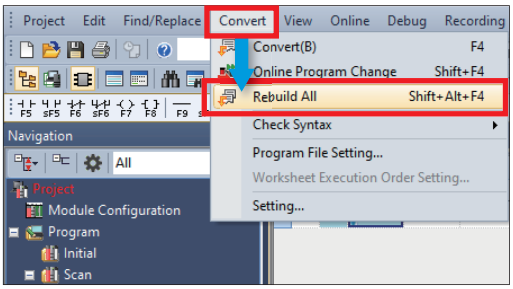
For the connection via a hub, refer to the following.

Section 4.2 Connection Via a Hub in the MELSEC iQ-F FX5 User's Manual (Ethernet Communication)

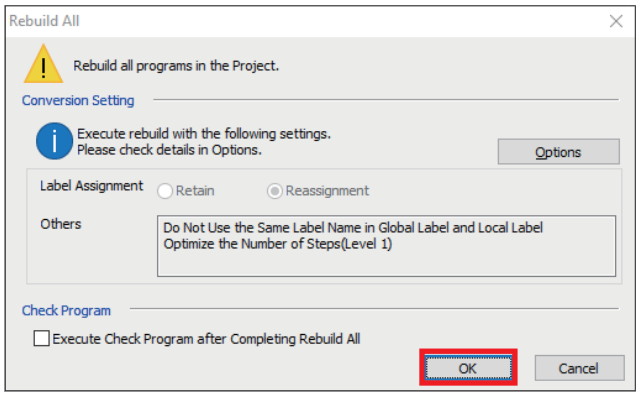
3.7 Writing Data to the Programmable Controller

This section describes how to write programs and parameters to the programmable controller. The programs and the parameters must be determined before writing them to the programmable controller.

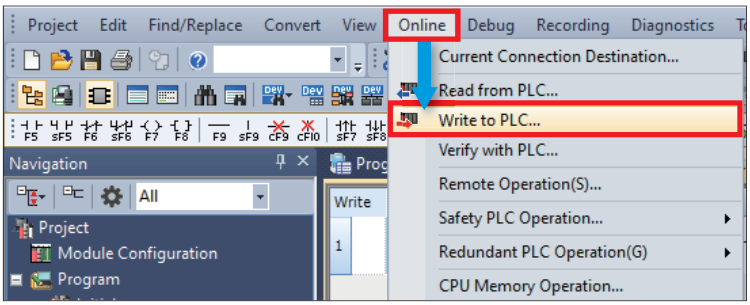
1. Select [Convert] ⇨ [Rebuild All].



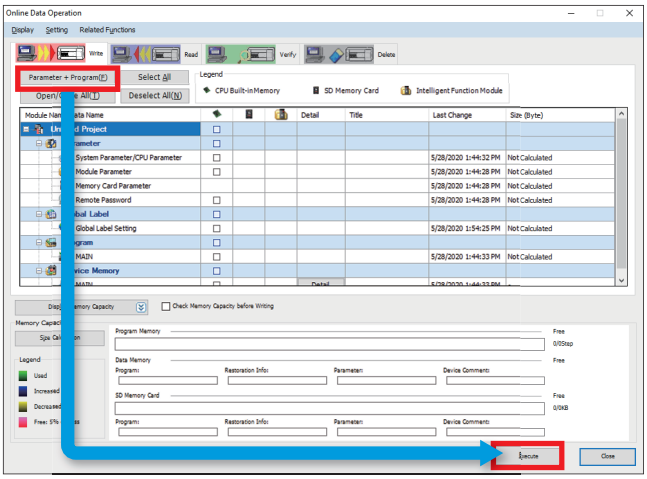
2. Click the [OK] button.



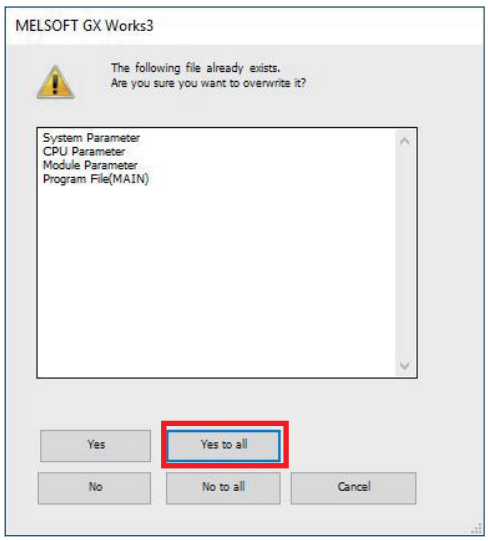
3. Select [Online] ⇨ [Write to PLC].



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



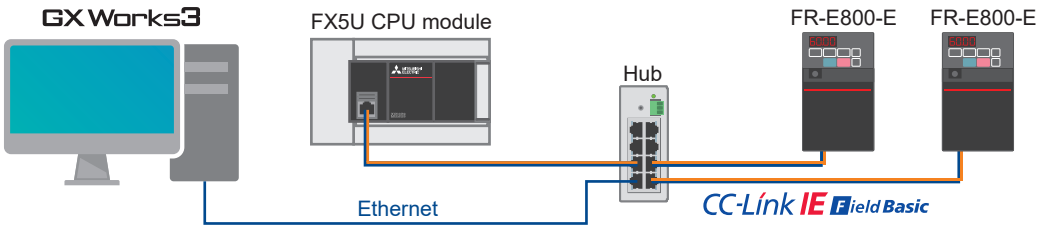
5. When the following window appears, click the [Yes to all] button.



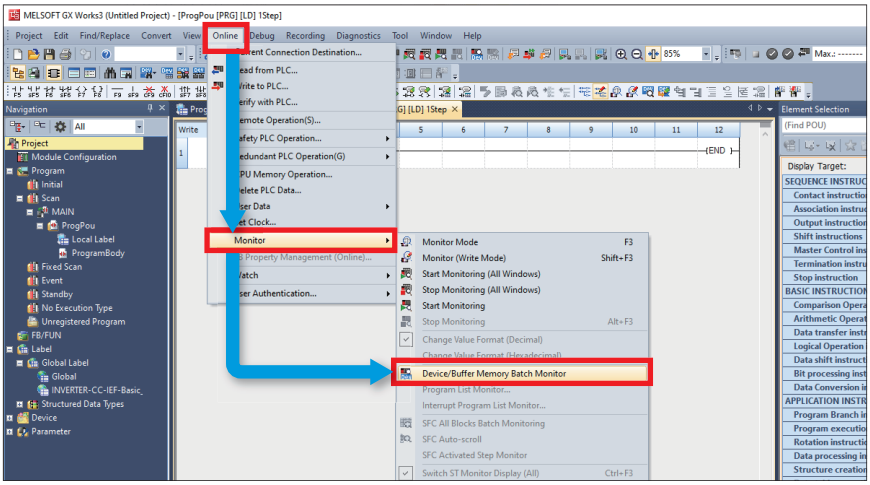
6. After the programs and the parameters are written to the programmable controller, reset or power OFF and ON the programmable controller.

4 COUMMUNICATION CHECK OVER CC-Link IE Field Network Basic

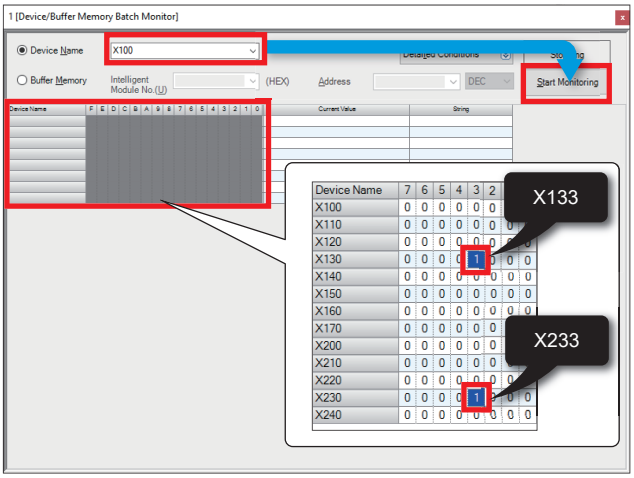
This chapter describes how to check communications over CC-Link IE Field Network Basic in the system where the inverters and the programmable controller are connected.



1. On GX Works3, select [Online] on the toolbar ⇨ [Monitor] ⇨ [Device/Buffer Memory Batch Monitor].



2. Enter "X100" in "Device Name", and click the [Start Monitoring] button. To make sure that the inverters and the programmable controller are communicating properly, check X133 of the station number 1 and X233 of the station number 2 which are the "Remote station ready" signals of these stations.



■Normal communications

X133 of the station number 1 and X233 of the station number 2 are ON (set to "1" on the monitor window).

■Faulty communications

X133 of the station number 1 and X233 of the station number 2 are OFF (set to "0" on the monitor window). Check the error status.

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

☞ Page 46 TROUBLESHOOTING

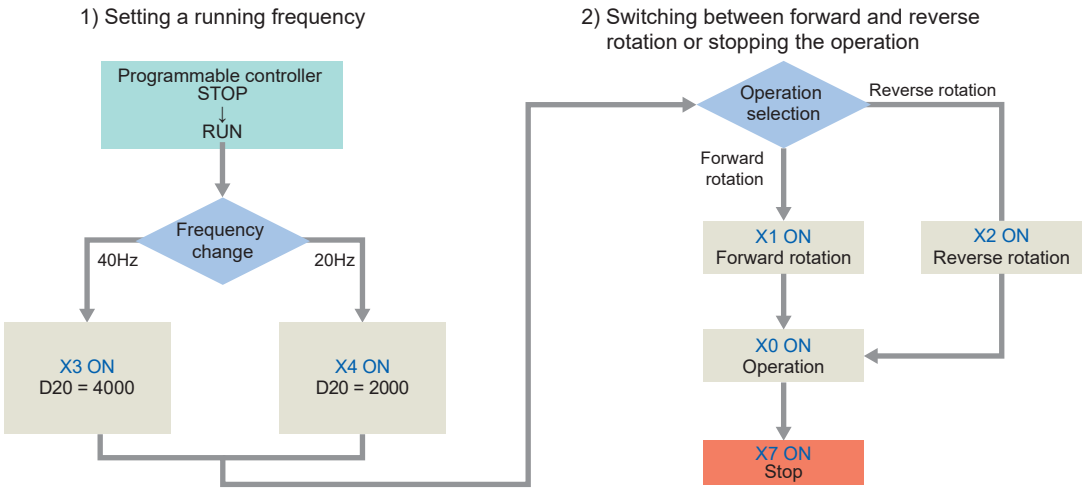
MEMO

5 PROGRAM EXAMPLES

5.1 Operation

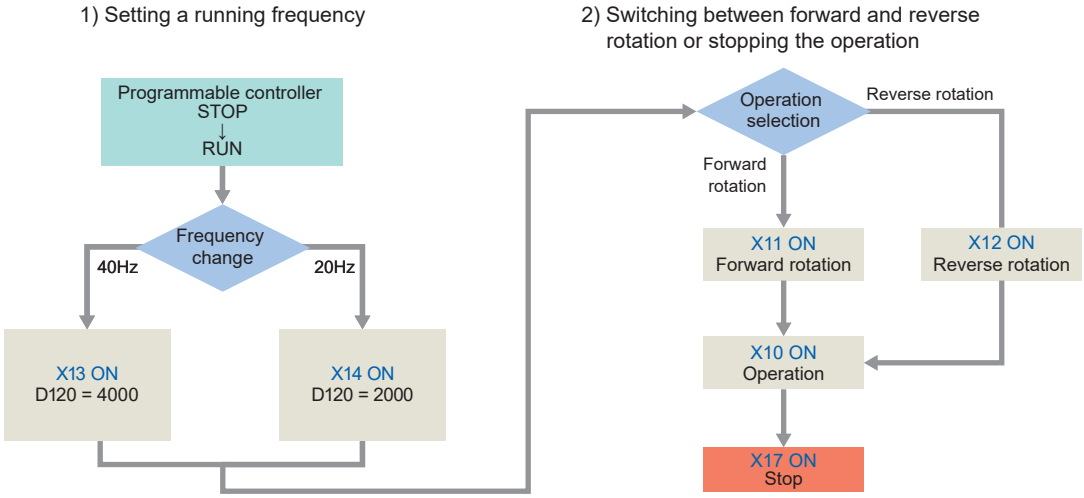
FR-E800-E (Station number 1)

This program allows forward rotation (X1) and reverse rotation (X2) to control operations of the station number 1. The frequency setting can be changed by changing a value set in D20.



FR-E800-E (Station number 2)

This program allows forward rotation (X11) and reverse rotation (X12) to control operations of the second inverter (station number 2). The frequency setting can be changed by changing a value set in D120.

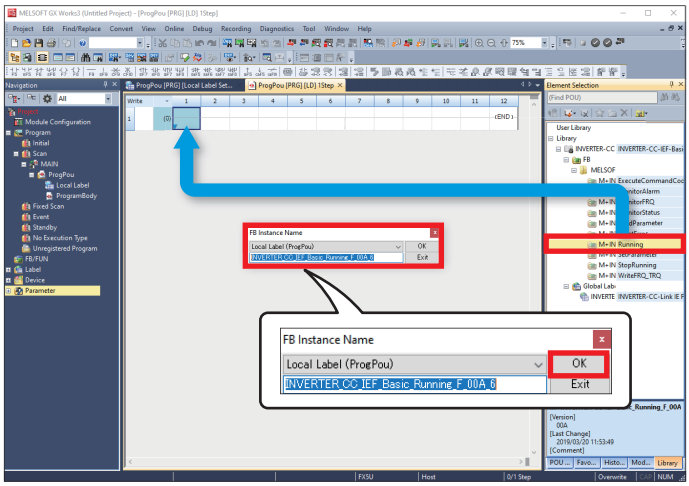


In this manual, the FB library provided by Mitsubishi Electric is used.
For how to set the FB library, refer to the following.
☞ Page 18 Downloading the FB Library
☞ Page 19 Importing the FB Library

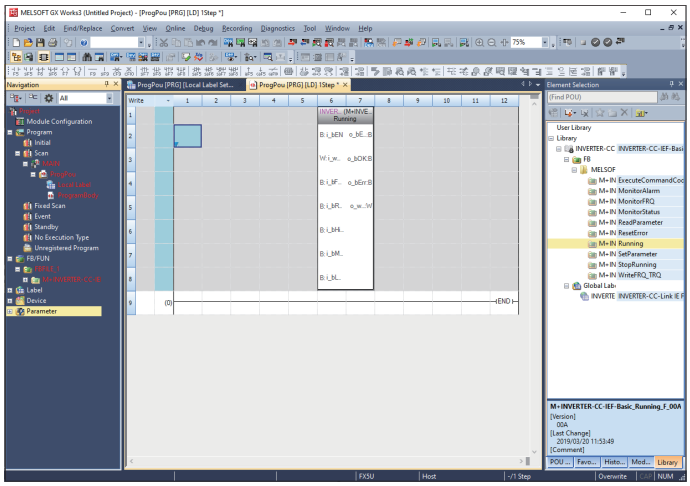
5.2 How to Use the FB Library

The FBs in the imported FB library can be used by selecting an applicable FB in the "Element Selection" window and dragging and dropping it to the program editor. After the FB is pasted, create an input ladder and an output ladder of the pasted FB, and complete a program.
Insert FB input circuits to the left side and output circuits to the right side of the ladder window in the same manner as standard ladder programs.

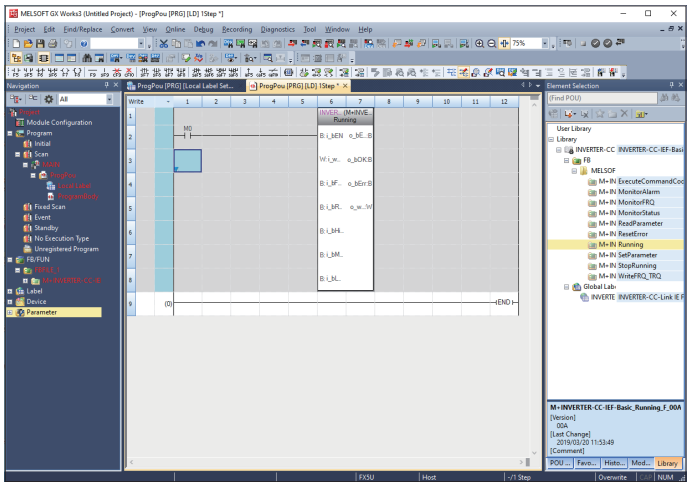
1. To display the FB list, click the [Library] ⇨ [INVERTER-CC-IEF-Basic_F] ⇨ [FB] ⇨ [MELSOFT_FBFILE] in the "Element Selection" window. Select an FB to be used, and drop it in the program editor. When the "FB Instance Name" window appears, click the [OK] button.



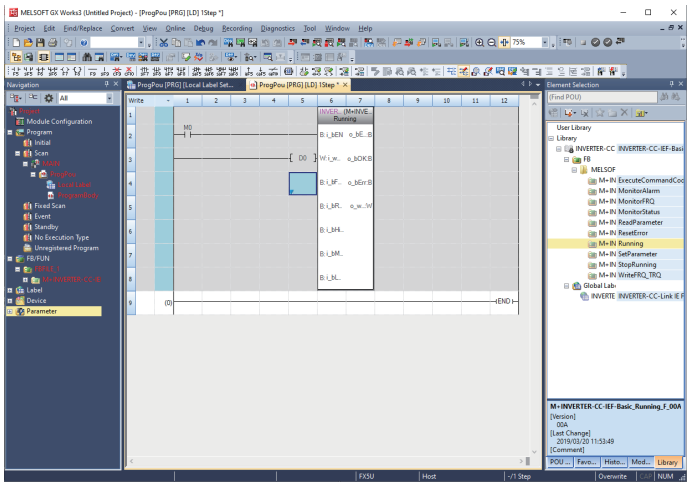
2. The FB is pasted to the program editor.



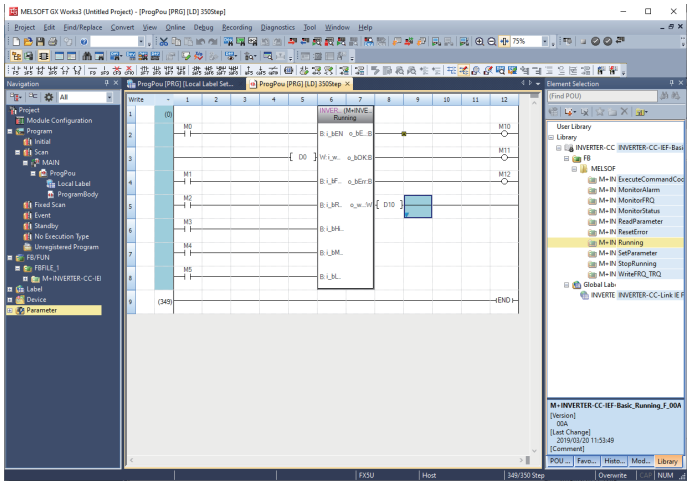
3. Insert a contact and input to B:i_bEN.



4. Insert an FB Word device input to the left side of the FB. Insert an FB Word device output to the right side of the FB.



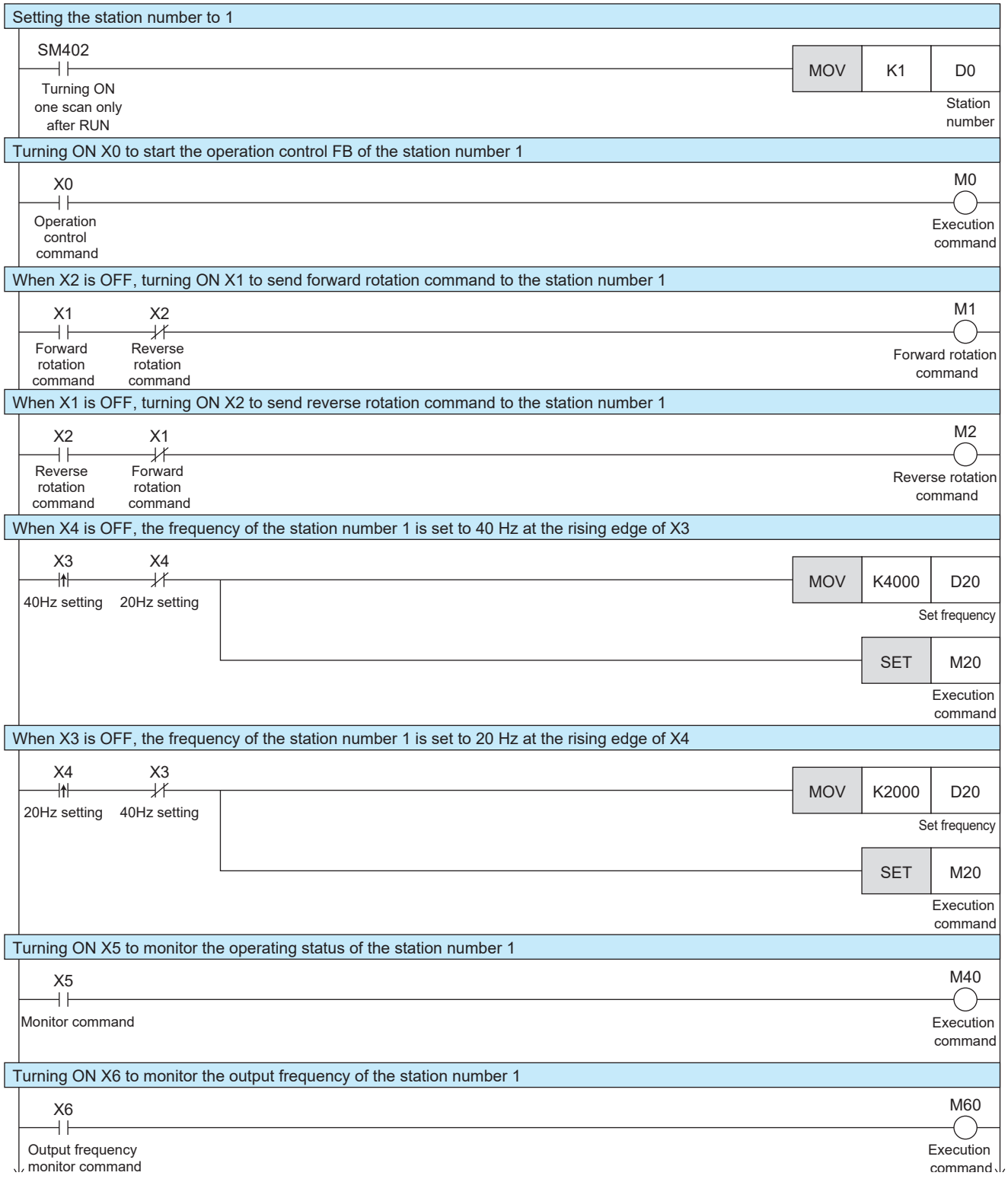
5. Repeat these steps to create ladders.

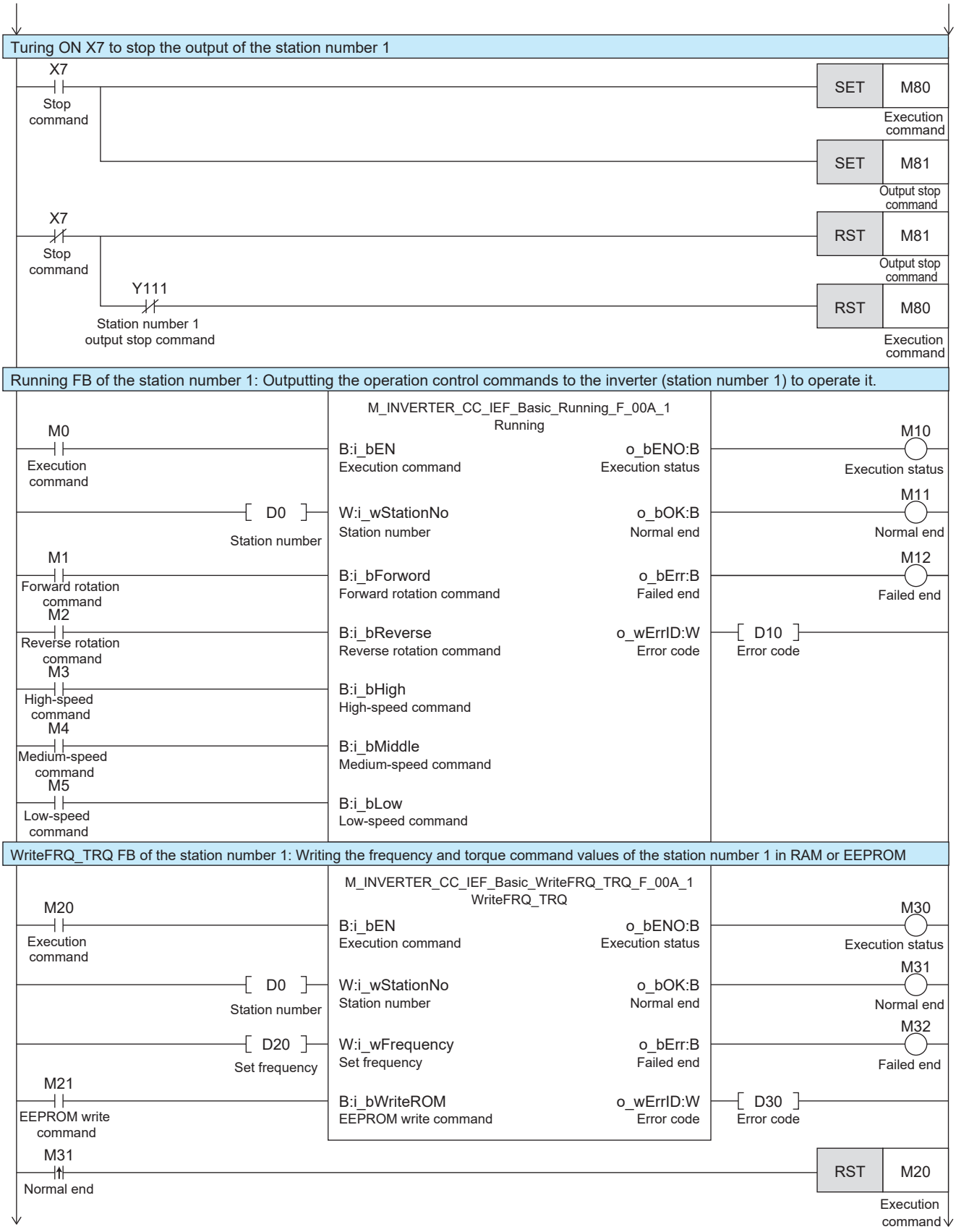


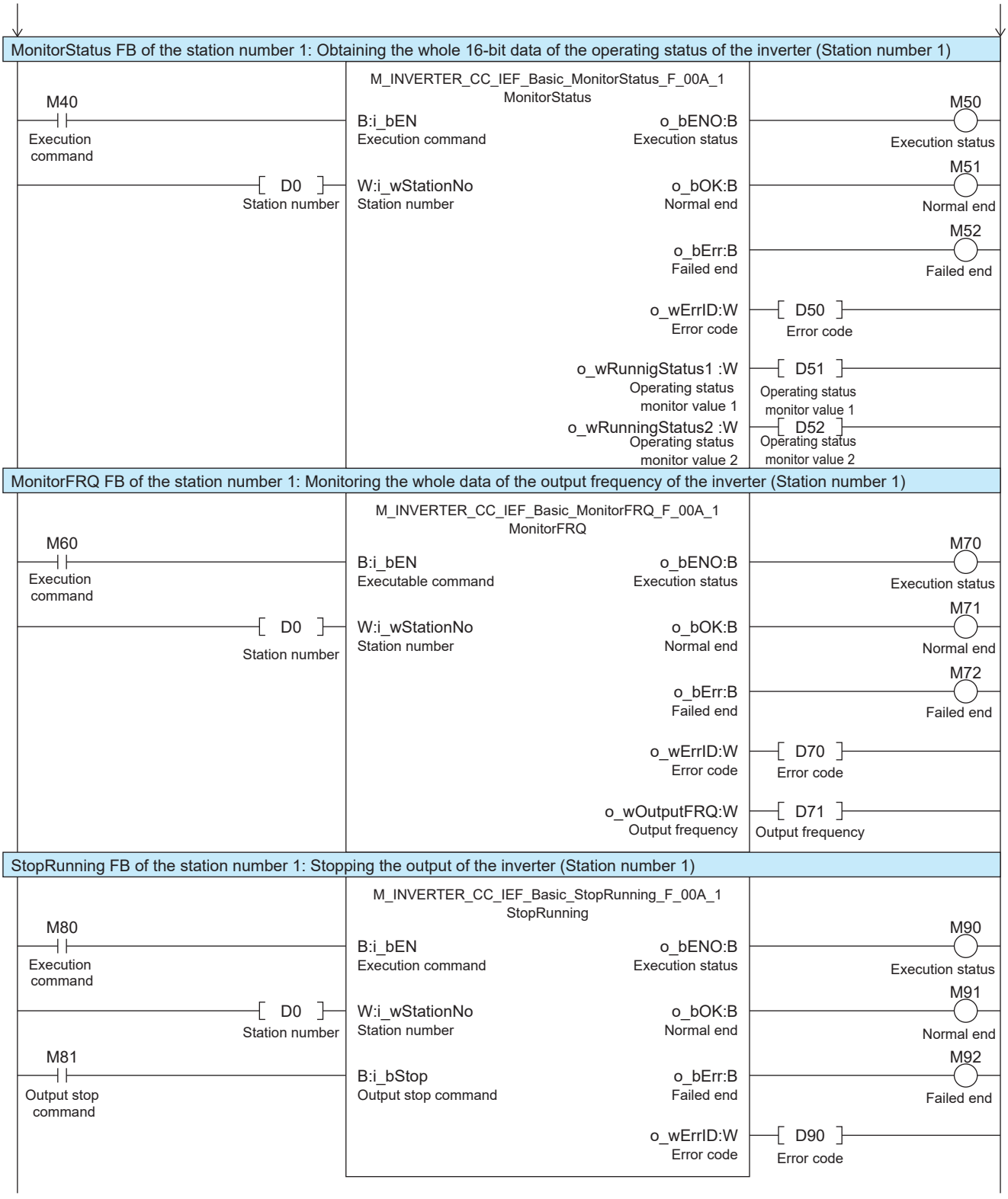
5.3 Program Examples

The following programs are designed to control the inverters (station numbers 1 and 2) using the FB library for CC-Link IE Field Network Basic compatible inverters.
This section provides the program examples for the station numbers 1 and 2.
When using e-Manual Viewer, the program copy function is available to perform programming. For details, refer to the following.
☞ Page 54 How to Use the Program Copy Function of e-Manual

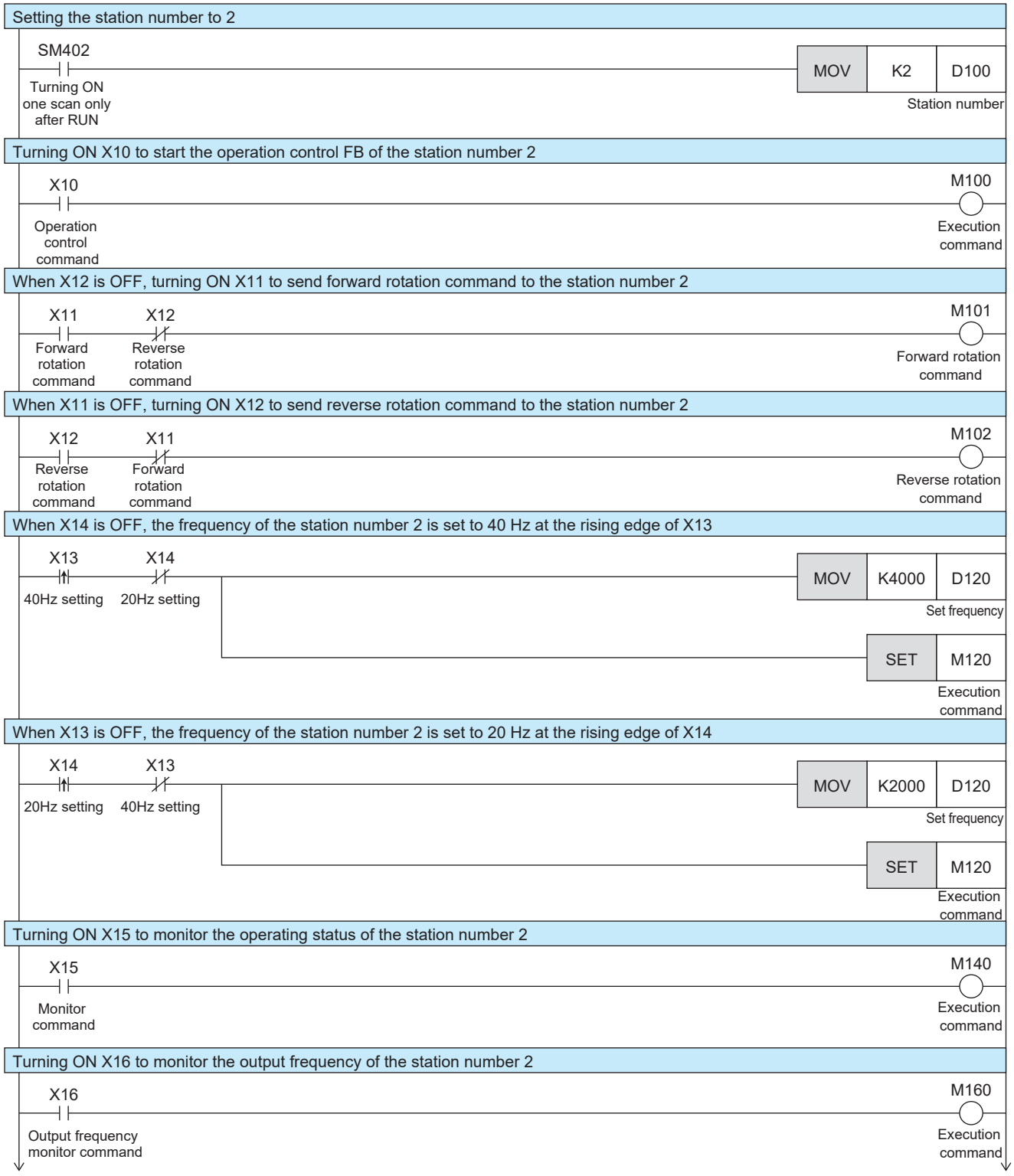
Program example for the station number 1

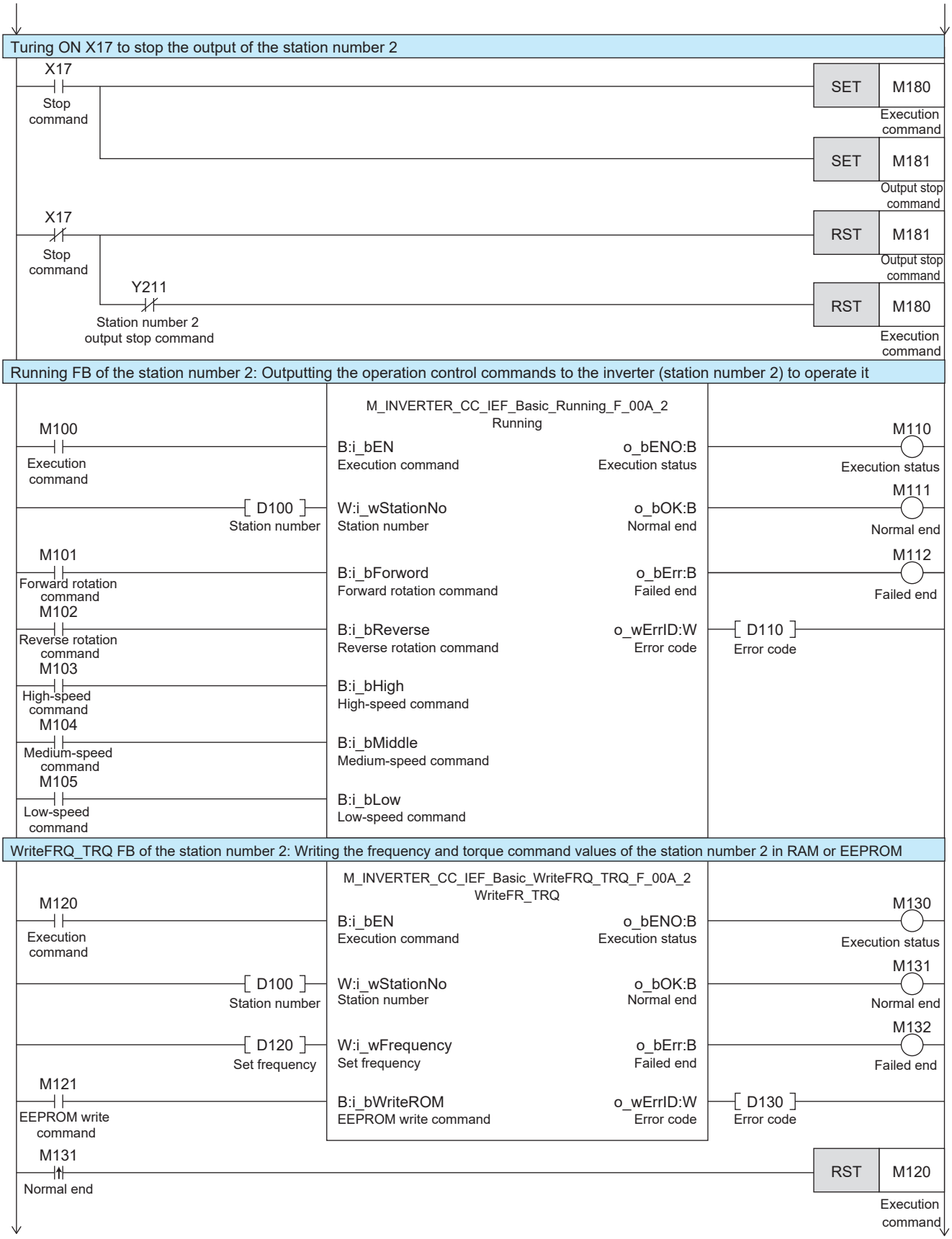


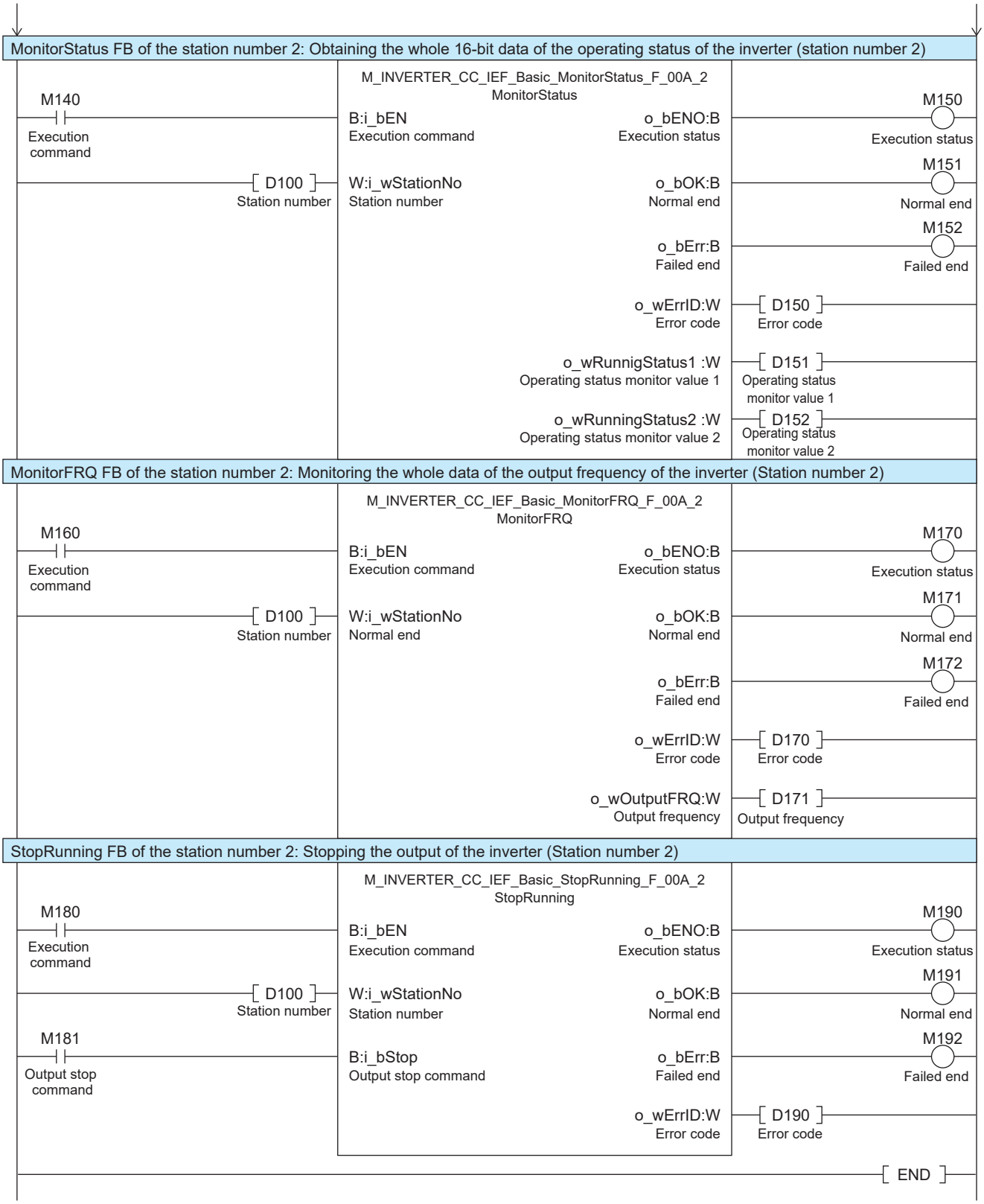

Turing ON X7 to stop the output of the station number 1
X7
Stop command
SET M80
Execution command
SET M81
Output stop command
X7
Stop command
RST M81
Output stop command
Y111
Station number 1 output stop command
RST M80
Execution command
Running FB of the station number 1: Outputting the operation control commands to the inverter (station number 1) to operate it.
M_INVERTER_CC_IEF_Basic_Running_F_00A_1
Running
M0
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M10
Execution status
D0
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M11
Normal end
M1
Forward rotation command
B:i_bForword
Forward rotation command
o_bErr:B
Failed end
M12
Failed end
M2
Reverse rotation command
B:i_bReverse
Reverse rotation command
o_wErrID:W
Error code
D10
Error code
M3
High-speed command
B:i_bHigh
High-speed command
M4
Medium-speed command
B:i_bMiddle
Medium-speed command
M5
Low-speed command
B:i_bLow
Low-speed command
WriteFRQ_TRQ FB of the station number 1: Writing the frequency and torque command values of the station number 1 in RAM or EEPROM
M_INVERTER_CC_IEF_Basic_WriteFRQ_TRQ_F_00A_1
WriteFRQ_TRQ
M20
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M30
Execution status
D0
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M31
Normal end
D20
Set frequency
W:i_wFrequency
Set frequency
o_bErr:B
Failed end
M32
Failed end
M21
EEPROM write command
B:i_bWriteROM
EEPROM write command
o_wErrID:W
Error code
D30
Error code
M31
Normal end
RST M20
Execution command


MonitorStatus FB of the station number 1: Obtaining the whole 16-bit data of the operating status of the inverter (Station number 1)
M_INVERTER_CC_IEF_Basic_MonitorStatus_F_00A_1
MonitorStatus
M40
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M50
Execution status
D0
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M51
Normal end
o_bErr:B
Failed end
M52
Failed end
o_wErrID:W
Error code
D50
Error code
o_wRunnigStatus1 :W
Operating status monitor value 1
D51
Operating status monitor value 1
o_wRunningStatus2 :W
Operating status monitor value 2
D52
Operating status monitor value 2
MonitorFRQ FB of the station number 1: Monitoring the whole data of the output frequency of the inverter (Station number 1)
M_INVERTER_CC_IEF_Basic_MonitorFRQ_F_00A_1
MonitorFRQ
M60
Execution command
B:i_bEN
Executable command
o_bENO:B
Execution status
M70
Execution status
D0
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M71
Normal end
o_bErr:B
Failed end
M72
Failed end
o_wErrID:W
Error code
D70
Error code
o_wOutputFRQ:W
Output frequency
D71
Output frequency
StopRunning FB of the station number 1: Stopping the output of the inverter (Station number 1)
M_INVERTER_CC_IEF_Basic_StopRunning_F_00A_1
StopRunning
M80
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M90
Execution status
D0
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M91
Normal end
M81
Output stop command
B:i_bStop
Output stop command
o_bErr:B
Failed end
M92
Failed end
o_wErrID:W
Error code
D90
Error code

Program example for the station number 2




Turing ON X17 to stop the output of the station number 2
X17
Stop command
SET M180
Execution command
SET M181
Output stop command
X17
Stop command
RST M181
Output stop command
Y211
Station number 2 output stop command
RST M180
Execution command
Running FB of the station number 2: Outputting the operation control commands to the inverter (station number 2) to operate it
M_INVERTER_CC_IEF_Basic_Running_F_00A_2
Running
M100
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M110
Execution status
D100
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M111
Normal end
M101
Forward rotation command
B:i_bForword
Forward rotation command
o_bErr:B
Failed end
M112
Failed end
M102
Reverse rotation command
B:i_bReverse
Reverse rotation command
o_wErrID:W
Error code
D110
Error code
M103
High-speed command
B:i_bHigh
High-speed command
M104
Medium-speed command
B:i_bMiddle
Medium-speed command
M105
Low-speed command
B:i_bLow
Low-speed command
WriteFRQ_TRQ FB of the station number 2: Writing the frequency and torque command values of the station number 2 in RAM or EEPROM
M_INVERTER_CC_IEF_Basic_WriteFRQ_TRQ_F_00A_2
WriteFR_TRQ
M120
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M130
Execution status
D100
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M131
Normal end
D120
Set frequency
W:i_wFrequency
Set frequency
o_bErr:B
Failed end
M132
Failed end
M121
EEPROM write command
B:i_bWriteROM
EEPROM write command
o_wErrID:W
Error code
D130
Error code
M131
Normal end
RST M120
Execution command


MonitorStatus FB of the station number 2: Obtaining the whole 16-bit data of the operating status of the inverter (station number 2)
M_INVERTER_CC_IEF_Basic_MonitorStatus_F_00A_2
MonitorStatus
M140
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M150
Execution status
D100
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M151
Normal end
o_bErr:B
Failed end
M152
Failed end
o_wErrID:W
Error code
D150
Error code
o_wRunnigStatus1 :W
Operating status monitor value 1
D151
Operating status monitor value 1
o_wRunningStatus2 :W
Operating status monitor value 2
D152
Operating status monitor value 2
MonitorFRQ FB of the station number 2: Monitoring the whole data of the output frequency of the inverter (Station number 2)
M_INVERTER_CC_IEF_Basic_MonitorFRQ_F_00A_2
MonitorFRQ
M160
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M170
Execution status
D100
Station number
W:i_wStationNo
Normal end
o_bOK:B
Normal end
M171
Normal end
o_bErr:B
Failed end
M172
Failed end
o_wErrID:W
Error code
D170
Error code
o_wOutputFRQ:W
Output frequency
D171
Output frequency
StopRunning FB of the station number 2: Stopping the output of the inverter (Station number 2)
M_INVERTER_CC_IEF_Basic_StopRunning_F_00A_2
StopRunning
M180
Execution command
B:i_bEN
Execution command
o_bENO:B
Execution status
M190
Execution status
D100
Station number
W:i_wStationNo
Station number
o_bOK:B
Normal end
M191
Normal end
M181
Output stop command
B:i_bStop
Output stop command
o_bErr:B
Failed end
M192
Failed end
o_wErrID:W
Error code
D190
Error code
END

5.4 Operation Check

To check that the programmable controller and inverters communicate data without an error, write the programs and parameters to the programmable controller by following the procedure.
Change the programmable controller state from STOP to RUN and check the following.

Turning ON the forward rotation command input

Programmable controller

Station number 1: Turn ON X4 (20 Hz setting), and the X0 (Operation control command) and X1 (Forward rotation command).
Station number 2: Turn ON X14 (20 Hz setting), and the X10 (Operation control command) and X11 (Forward rotation command).

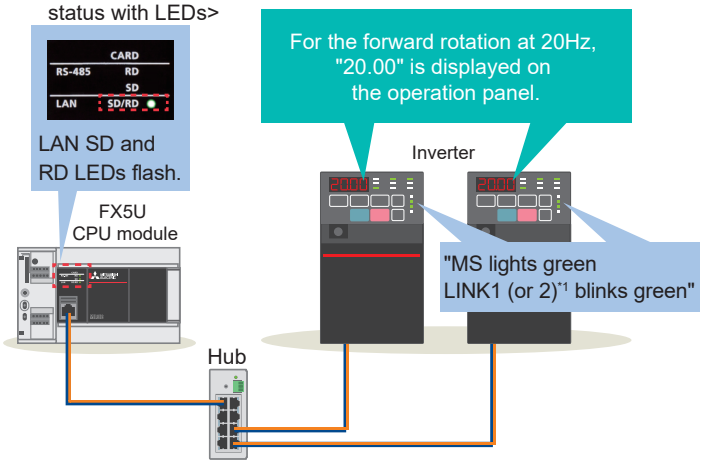
Programmable controller operation

Station number 1
X102 (Inverter running) and X100 (Forward rotation) are ON.
Station number 2
X202 (Inverter running) and X200 (Forward rotation) are ON.

Inverter operation

The 4-digit LED display changes from 0.00 to 20.00 sequentially.

<Checking communication status with LEDs>



*1: The LINK1 or LINK2 LED will blink according to the connected port.

Changing the frequency to 40 Hz (when the forward rotation command remains ON)

Programmable controller

Station number 1: Turn ON X3 (40Hz).
Station number 2: Turn ON X13 (40Hz).

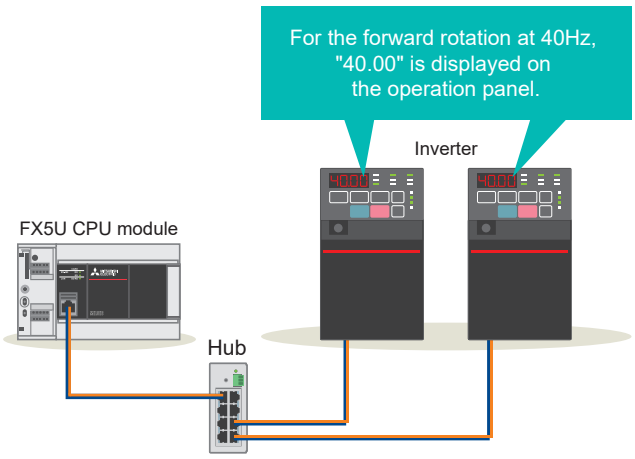
Programmable controller operation

Station number 1
X102 (Inverter running) and X100 (Forward rotation) are ON.

Station number 2
X202 (Inverter running) and X200 (Forward rotation) are ON.

Inverter operation

The 4-digit LED display changes from 20.00 to 40.00 sequentially.



Point

The operation command (such as X1) and the frequency change command (such as X3) can be turned ON forcibly by following the procedure below.
❶Make sure that the ladder diagram is displayed on GX Works3, and press the F3 key. (The status is changed to monitoring.)
❷Place a cursor on the device (such as X1 and X3) to be turned ON.
❸Hold down the Shift key and press the Enter key to turn ON the device.
(Hold down the Shift key and press the Enter key again to turn it OFF.)
Press the F2 key to clear the monitor execution status.

6 TROUBLESHOOTING

6.1 Checking Procedure

This section describes how to check the status of the programmable controller and the inverters.

1. Checking the LED status

Check the communication status with the LEDs of the programmable controller and the inverters.

Programmable controller: ☞ Page 47 Checking the LED status

Inverter: ☞ Page 49 Checking the LED status on the operation panel

2. Checking the error code

Take an action in accordance with the error code.

Programmable controller: ☞ Page 47 Checking the error details

Inverter: ☞ Page 49 Checking on FR Configurator2

■Wiring

☞ Page 8 System Configuration

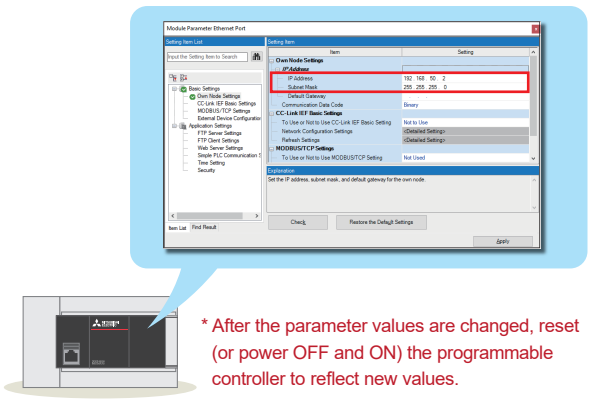
- Are the Ethernet cables fully inserted?

■Communication settings

Programmable controller: ☞ Page 21 Parameter Settings

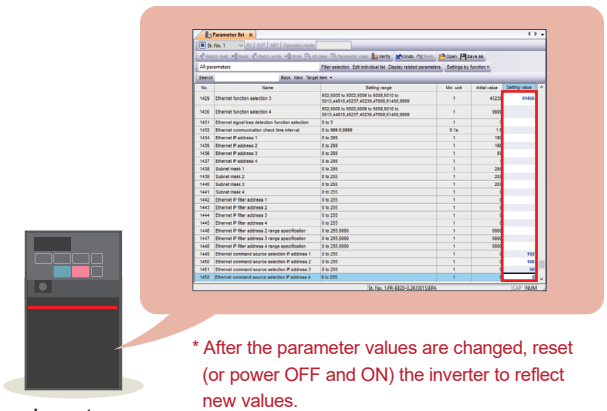
Inverter: ☞ Page 11 Ethernet Parameter Settings

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



* After the parameter values are changed, reset (or power OFF and ON) the programmable controller to reflect new values.

Programmable controller



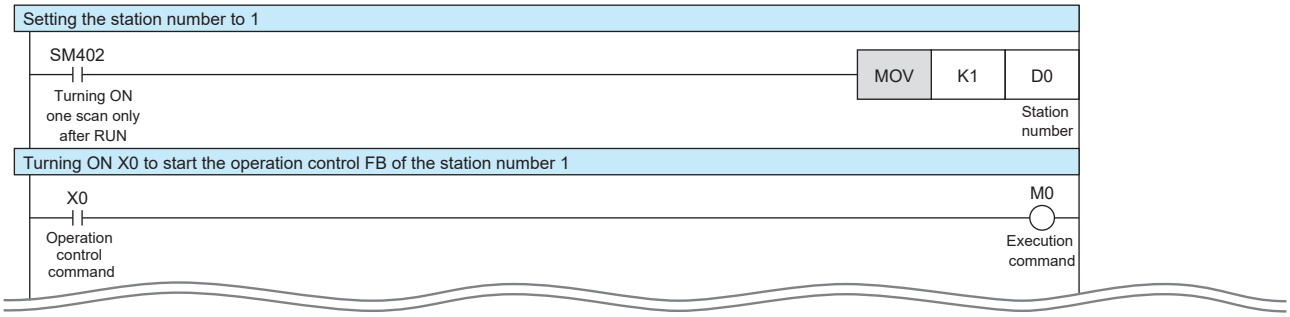
* After the parameter values are changed, reset (or power OFF and ON) the inverter to reflect new values.

Inverter

■Programs

☞ Page 38 Program Examples

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



6.2 Checking the Programmable Controller

Checking the LED status

The communication status is checked with the SD/RD LED of the programmable controller.

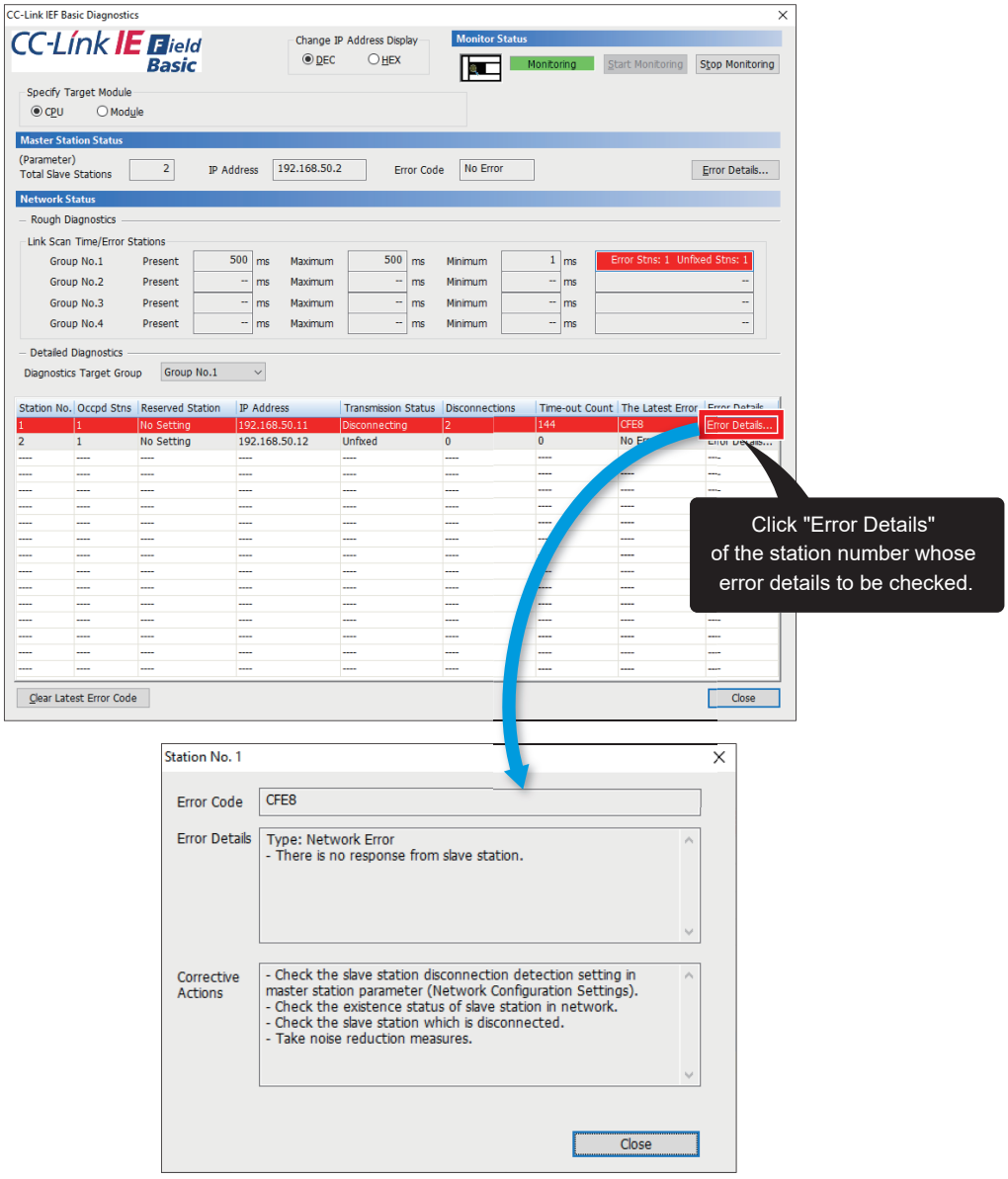
Normal communications: Flashes at high speed.

Faulty communications: ON (Flicks at regular interval.)

Disconnection of Ethernet cable of the programmable controller: OFF

Checking the error details

Select [Diagnostics] on the toolbar ⇨ [CC-Link IEF Basic Diagnostics]. The error details of the programmable controller can be checked at "Network Status".



List of error codes

Error code	Error name	Error details and cause	Action
CFC0H	Cyclic transmission error (master station)	Unable to execute cyclic transmission because multiple master stations exist in the same network address.	Check the existence status of master stations in network.
CFC1H	Cyclic transmission error (master station)	Unable to execute cyclic transmission because the error occurred in cyclic transmission.	Take measures to reduce noise. If the same error is displayed again, please contact your local Mitsubishi representative.
CFC8H	Cyclic transmission error (master station)	Unable to execute cyclic transmission because a remote station controlled by other master station exists.	Check the existence status of master stations in network. Check the remote station where the error has occurred.
CFC9H	Cyclic transmission error (master station)	Unable to execute cyclic transmission 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) used in CC-Link IE Field Network Basic has already been used.	Check the port No. used in Ethernet function.
CFD1H	Master station error	Invalid value has been set in 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 the existence status of master station in network. Check the remote station where the error has occurred.
CFE1H	Cyclic transmission error (remote station)	The unusable number of occupied stations has been specified from master station.	Check the number of occupied stations setting in 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.

Chapter 9 TROUBLESHOOTING in the CC-Link IE Field Network Basic Reference Manual

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

Appendix 3 Error Codes in the MELSEC iQ-F FX5 User's Manual (Application)

6.3 Checking the Inverters

Checking the LED status on the operation panel

The operating status of the inverter is checked with the corresponding LEDs on the operation panel of the inverter.

For the LED status of the inverter, refer to the following.

☞ Page 9 Names of the Parts on the Operation Panel

For the operation panel display of the inverter, refer to the following.

☞ Page 58 Operation panel

Checking on FR Configurator2

The settings of the inverter are checked depending on an error occurred. Refer to the following table.

(For how to check the settings on FR Configurator2, refer to ☞ Page 11 Ethernet Parameter Settings.)

Error	Check point
Communications are not established.	Check that the communication speed is not set to 10 Mbps.
Operation mode does not switch to the Network operation mode.	• Check that the Ethernet cable is installed correctly. (Check for contact fault, break in the cable, etc.) • Check that the inverter is in the External operation mode. • Check that the operation mode switching program is running. • Check that the operation mode switching program has been written correctly.
The inverter does not start in the Network operation mode.	• Check that the inverter starting program is running. • Check that the inverter starting program has been written correctly. • Check that Pr.338 Communication operation command source is not set to External.

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

📖Section 2.4 List of fault displays in the FR-E800 Instruction Manual (Maintenance)

For details on the error messages of FR-A800-E/F800-E, refer to the following.

☞ Page 58 Error messages

APPENDICES

Appendix 1 Example Applications of the FB Library

The following table lists the FBs included in the FB library for CC-Link IE Field Network Basic compatible inverters. Programs are created by combining FBs according to each application.
This section provides the program examples for the station number 1.

List of FBs for CC-Link IE Field Network Basic compatible inverters

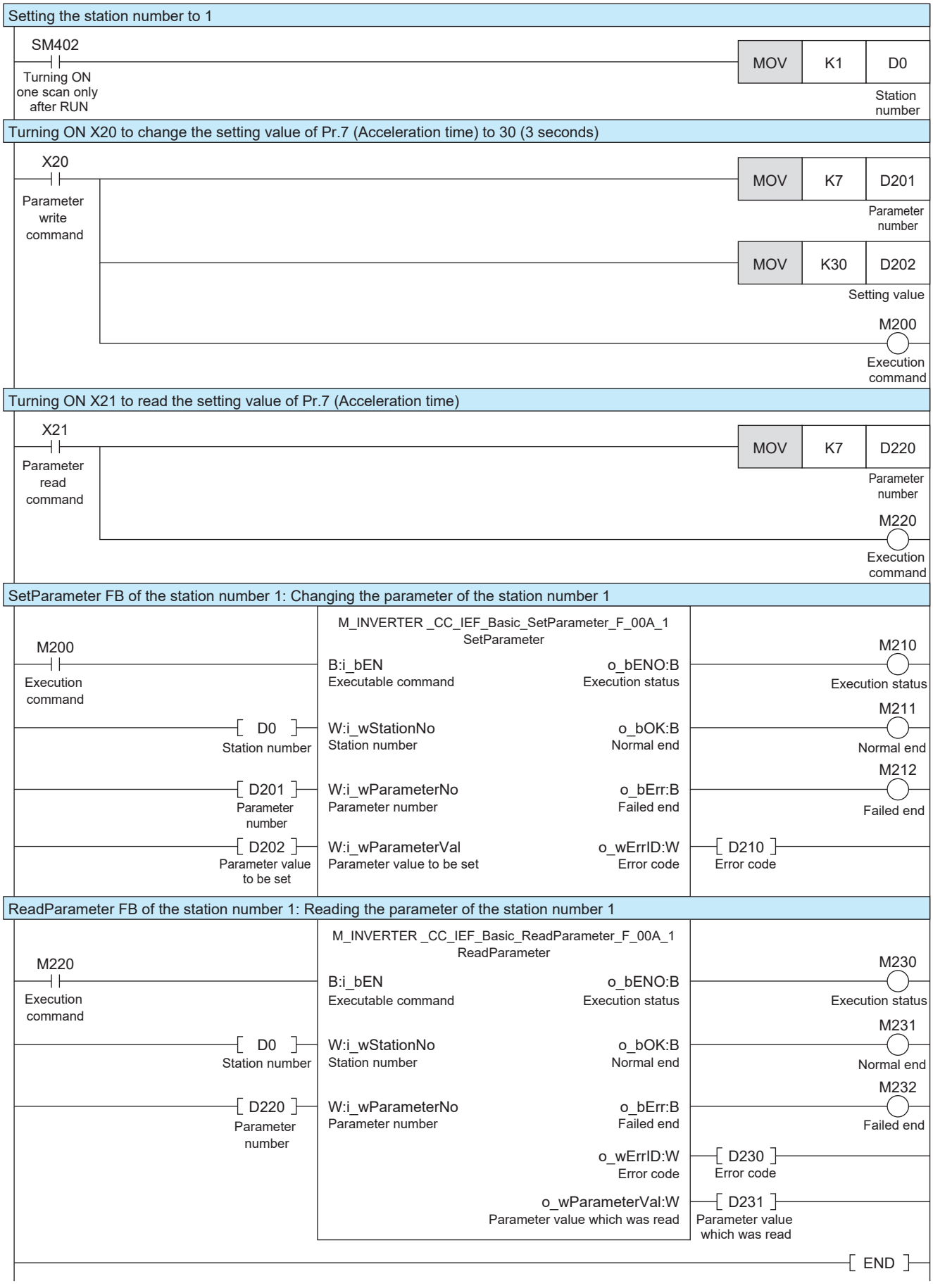
Name	Description
M+INVERTER-CC-IEF-Basic_Running	Outputs inverter operation control commands to operate inverters.
M+INVERTER-CC-IEF-Basic_ResetError	Resets fault of the inverter with the specified station number.
M+INVERTER-CC-IEF-Basic_StopRunning	Stops output of the inverter with the specified station number. (The output is stopped by turning ON the MRS signal.)
M+INVERTER-CC-IEF-Basic_WriteFRQ_TRQ	Writes the frequency/torque command value in RAM or EEPROM. Writing to EEPROM depends on the FB input signal.
M+INVERTER-CC-IEF-Basic_ExecuteCommandCode	Writes an instruction code and processes the instruction.
M+INVERTER-CC-IEF-Basic_SetParameter	Specifies the CC-Link IE Field Network Basic station number and the parameter number and changes the inverter parameter setting.
M+INVERTER-CC-IEF-Basic_MonitorStatus	Obtains the whole 16-bit data of operating status of the inverter with the specified station number.
M+INVERTER-CC-IEF-Basic_MonitorFRQ	Monitors the whole data of output frequency of the inverter.
M+INVERTER-CC-IEF-Basic_MonitorAlarm	Indicates the fault record and the warning record of the inverter with the specified station number.
M+INVERTER-CC-IEF-Basic_ReadParameter	Specifies the CC-Link IE Field Network Basic channel number and the parameter number and reads the inverter parameter setting.

Program examples using FBs

Program example	FB used	Reference
Sending the operation command to the inverter and changing and monitoring a frequency of the inverter	• M+INVERTER-CC-IEF-Basic_Running • M+INVERTER-CC-IEF-Basic_StopRunning • M+INVERTER-CC-IEF-Basic_WriteFRQ_TRQ • M+INVERTER-CC-IEF-Basic_MonitorStatus • M+INVERTER-CC-IEF-Basic_MonitorFRQ	☞ Page 38 Program Examples
Changing and checking the parameter	• M+INVERTER-CC-IEF-Basic_SetParameter • M+INVERTER-CC-IEF-Basic_ReadParameter	☞ Page 51 Changing and checking the parameter
Switching the operation mode	• M+INVERTER-CC-IEF-Basic_ExecuteCommandCode	☞ Page 52 Switching the operation mode
Resetting an inverter error	• M+INVERTER-CC-IEF-Basic_ResetError • M+INVERTER-CC-IEF-Basic_MonitorAlarm	☞ Page 53 Resetting an inverter error

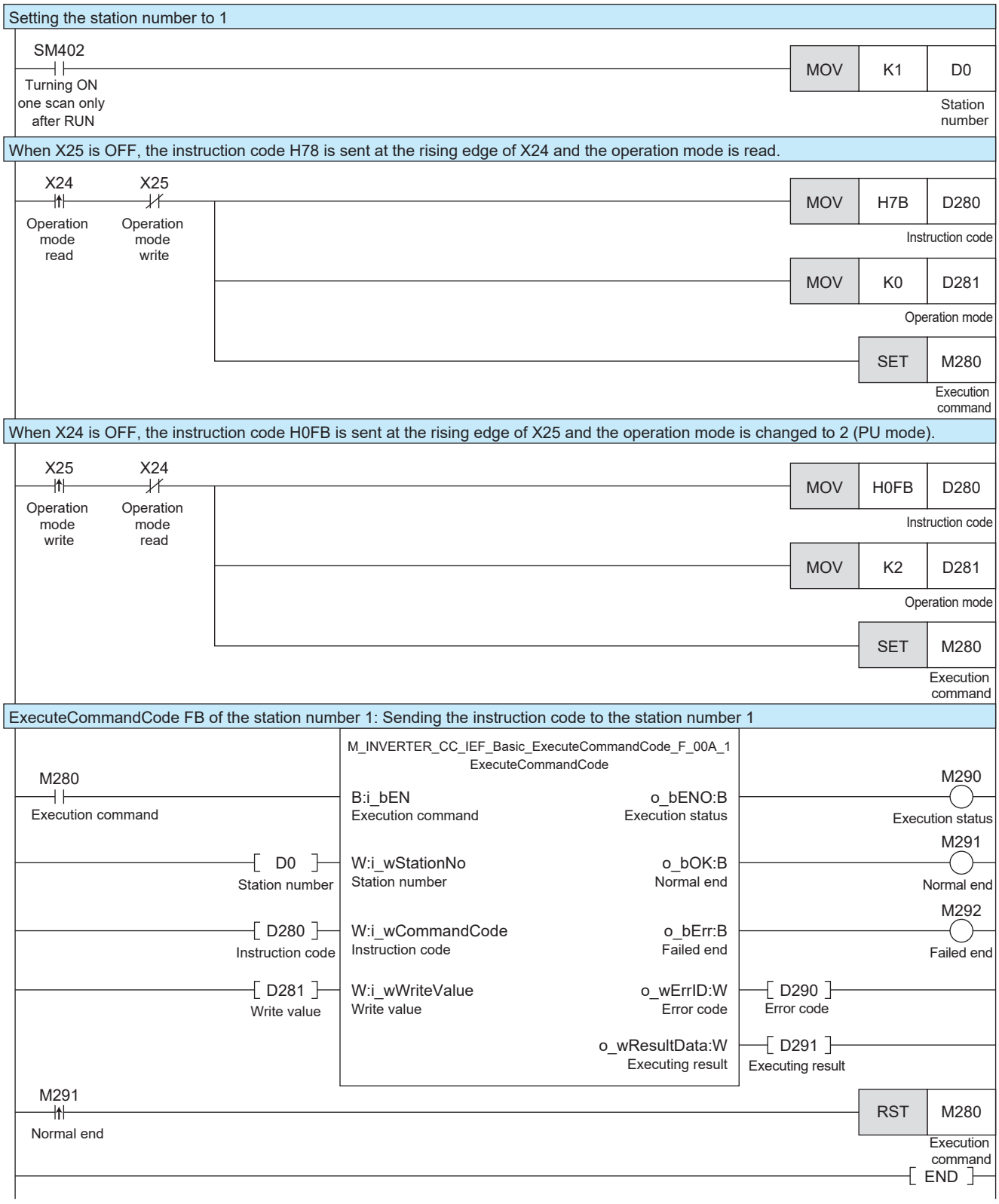
Changing and checking the parameter

This program changes the parameter of the inverter (station number 1). This program example changes an acceleration time.



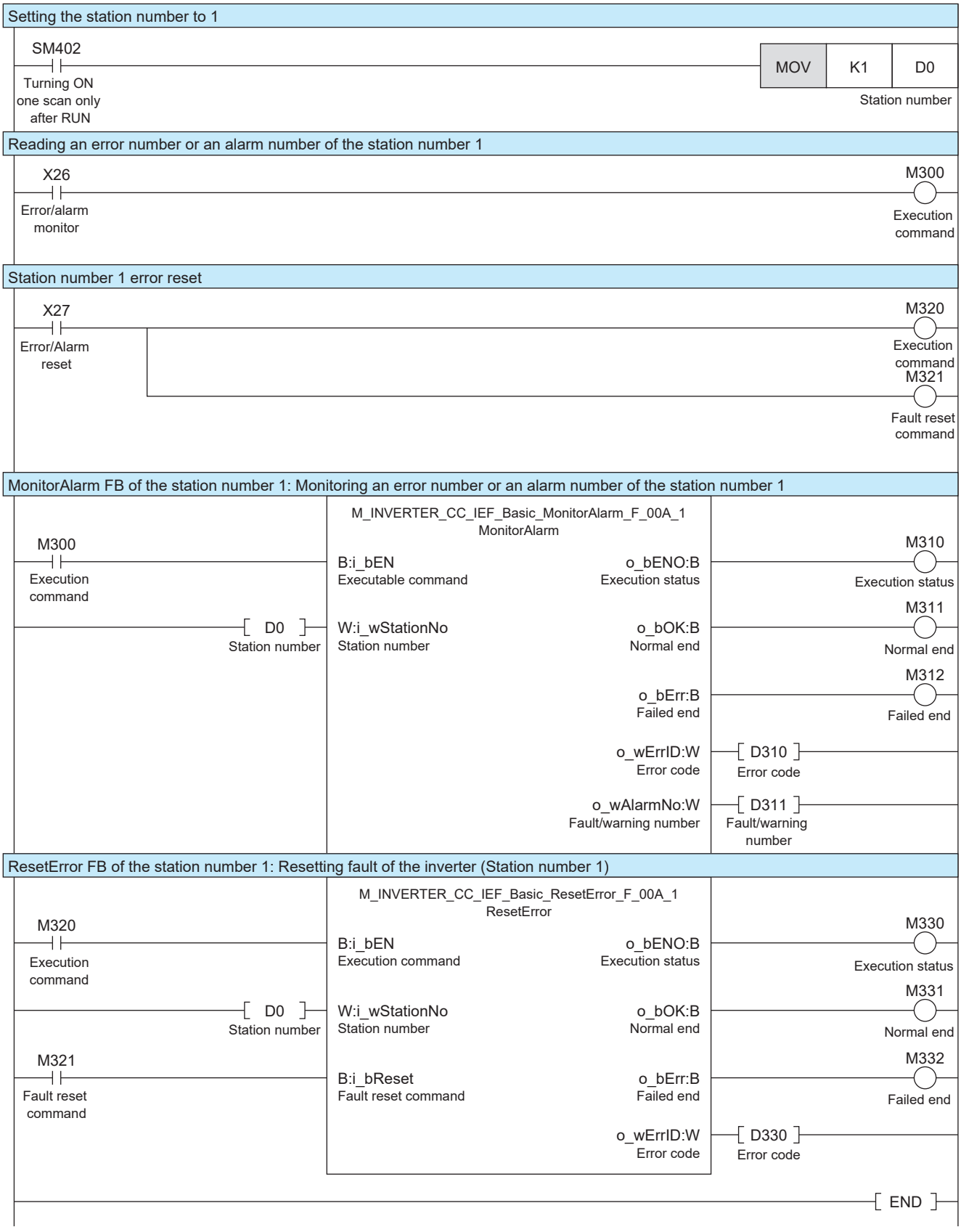
Switching the operation mode

This program sends an instruction code to the inverter (station number 1). This program example reads the current operation mode and switches it to the PU operation mode.



Resetting an inverter error

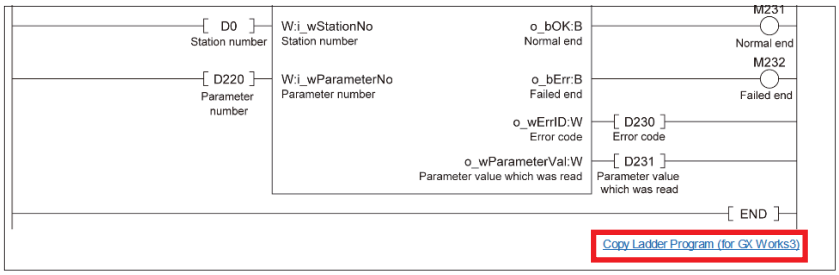
This program checks an error occurred in the inverter (station number 1) and resets the error.



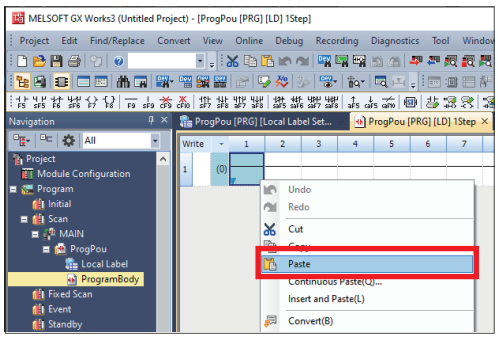
Appendix 2 How to Use the Program Copy Function of e-Manual

Program examples in e-Manual can be copied and pasted to GX Works3.

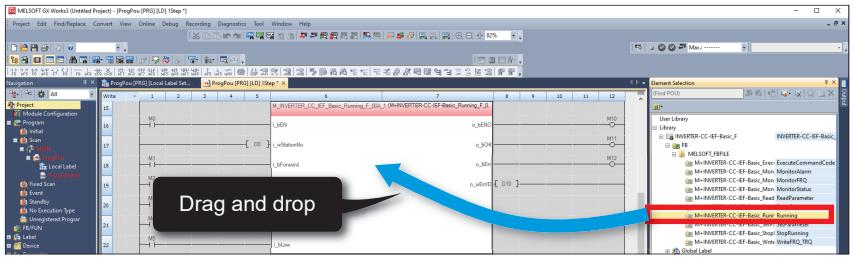
1. Click "Copy Ladder Program (for GX Works3)" in e-Manual.



2. Right-click the mouse on the ladder editor of GX Works3, and select [Paste].

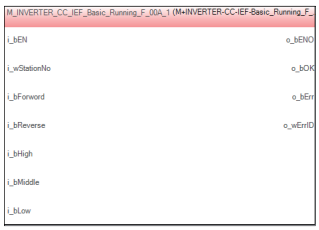


3. The copied program is pasted in undefined state. Select the FB used in the program example from [Library] on the "Element Selection" window, and drag and drop it to the FB area on the ladder editor.

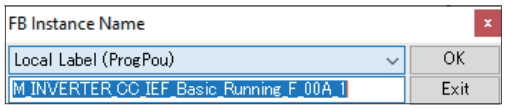


Point

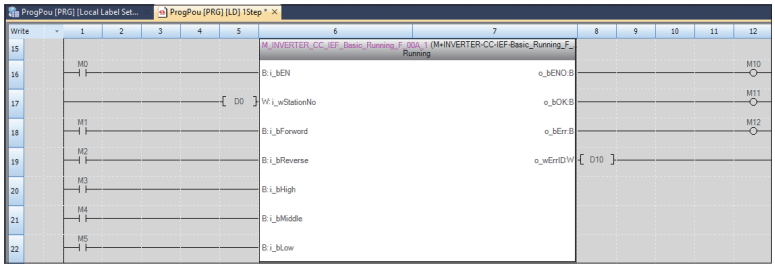
When an FB is used in the program example, the definition of the FB will be unclear immediately after the program is pasted to the ladder editor. Drag and drop the FB from the "Element Selection" window to define the FB properly.

Unclear definition of FB	Properly defined FB
	

4. Click the [OK] button on the "FB Instance Name" window.



5. When the FB is properly defined, the FB instance name is highlighted in gray.



Point

Label items (label name, data type, and others) are copied in the order defined as an example in this manual. Therefore, define label items in the same order as shown on the label editor of the engineering tool.

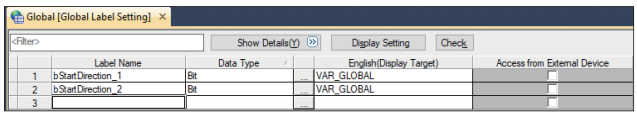
■ **Labels to be defined**

Define global labels as follows.

	Label Name	Data Type		Class	Assign (Device/Label)
1	bStartDirection_1	Bit	...	VAR_GLOBAL	M200
2	bStartDirection_2	Bit	...	VAR_GLOBAL	M201

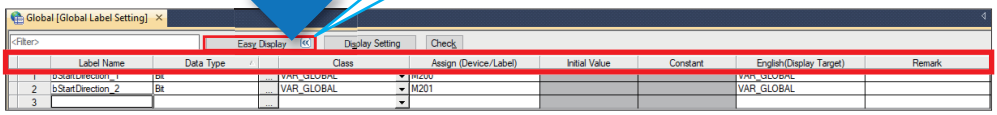
Copy labels (for GX Works3)

Simple display



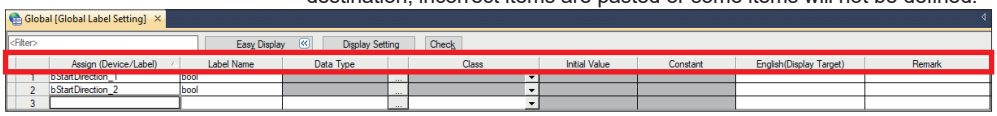
Switch simple display and detailed display using the [Easy Display] and [Show Details] buttons.

■ Same label item order



■ Different label item order

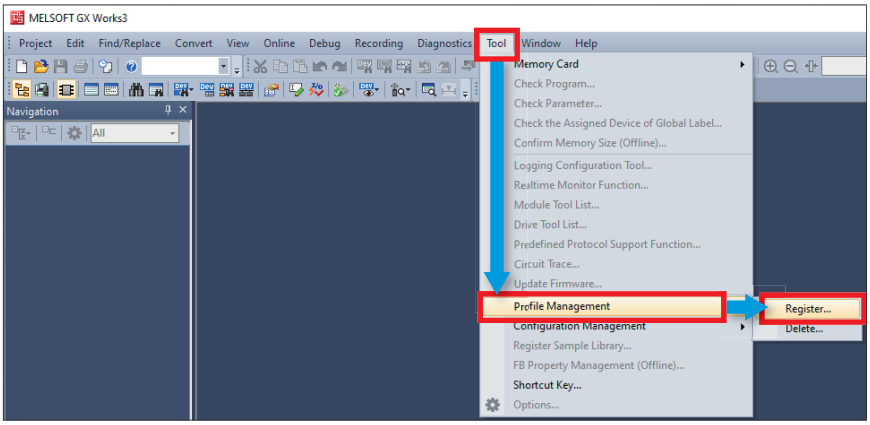
If the label items copied are different order from the order used at the pasting destination, incorrect items are pasted or some items will not be defined.



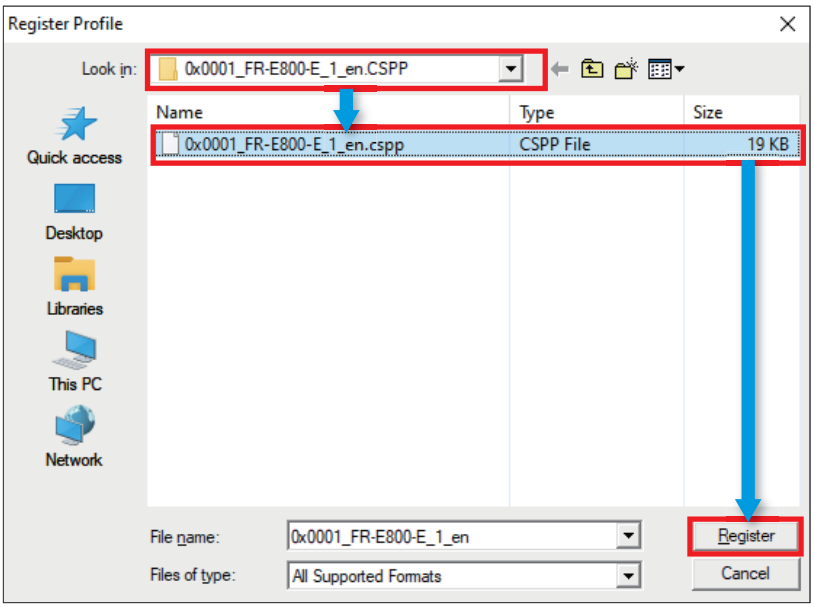
Appendix 3 Downloading and Registering a Profile

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



A

Appendix 4 Supplementary Information

Supplementary information of the programmable controller

For the power supply wiring and the part names of the FX5UC and FX5UJ CPU modules, refer to the following.

■Power supply wiring

Section 13.4 Power Supply Wiring in the MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

■Part names

Chapter 3 PART NAMES in the MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

Supplementary information of the inverter

For the power supply wiring and the operation panel of the FR-A800-E and FR-F800-E, refer to the following.

■Power supply wiring

📖Section 2.5 Main circuit terminals in the FR-A800 Instruction Manual (Detailed)

📖Section 2.5 Main circuit terminals in the FR-F800 Instruction Manual (Detailed)

■Operation panel

Digital characters displayed on the operation panel are as follows.

FR-E800-E

0	1	2	3	4	5	6	7	8	9	A	B	C
												

D	E	F	G	H	I	J	K	L	M	N	O	P
												

Q	R	S	T	U	V	W	X	Y	Z	-	_
											

FR-A800-E/F800-E

0	1	2	3	4	5	6	7	8	9	A	B(b)	C	c	D(d)
														

E(e)	F(f)	G(g)	H	h	I(i)	J(j)	K(k)	L(l)	M(m)	N	n	O	o	P(p)

Q(q)	R	r	S(s)	T(t)	U	u	V	v	W	w	X(x)	Y(y)	Z(z)

📖Section 4.1 Operation panel (FR-DU08) in the FR-A800 Instruction Manual (Detailed)

📖Section 4.1 Operation panel (FR-DU08) in the FR-F800 Instruction Manual (Detailed)

■Parameters

📖Section 5.1 Parameter list in the FR-A800 Instruction Manual (Detailed)

📖Section 5.1 Parameter list in the FR-F800 Instruction Manual (Detailed)

■Remote input, remote output, and remote registers

📖Section 2.5.5 CC-Link IE Field Network Basic in the A800-E/F800-E Ethernet Function Manual

■Error messages

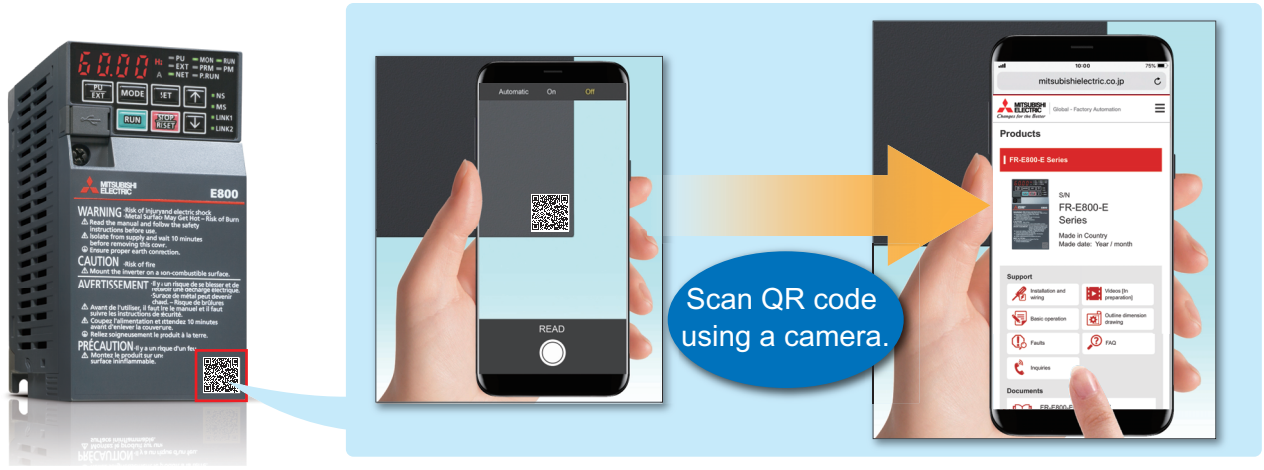
📖Section 6.4 List of the fault displays in the FR-A800 Instruction Manual (Detailed)

📖Section 6.4 List of the fault displays in the FR-F800 Instruction Manual (Detailed)

QR code on the front panel of the FR-E800-E: FR-E800 series start-up support

The website for the FR-E800 series startup support can be accessed by reading a QR code on the front panel of the FR-E800-E using a smartphone or a tablet.

The relevant manuals and the outline dimension drawings are available on the website.



MEMO

REVISIONS

Revision date	Version	Description
June 2020	A	First edition
November 2020	B	■Added or modified parts Section 5.1, 5.3
January 2023	C	■Added or modified parts Front cover, INTRODUCTION, RELEVANT MANUALS, Section 1.4, 3.1, 3.4, 6.2, Appendix 4, WARRANTY, TRADEMARKS

WARRANTY

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

MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)

WARRANTY in the FR-E800 Instruction Manual (Maintenance)

SAFETY PRECAUTIONS

· 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, 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.

TRADEMARKS

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USA	MITSUBISHI ELECTRIC AUTOMATION, INC. 500 Corporate Woods Parkway, Vernon Hills, IL 60061, U.S.A.	Tel : +1-847-478-2100 Fax : +1-847-478-2253
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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
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