

## FACTORY AUTOMATION

# 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" has been replaced with "remote station" in accordance with CC-Link Partner Association's policy. However, the term has 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 term 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    |



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■ The installation file for Windows® can be downloaded from the following website.

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# 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](http://www.mitsubishielectric.co.jp/fa/ref/ref.html?kisyu=plcf&manual=download_all)

[○: Available, —: Not available]

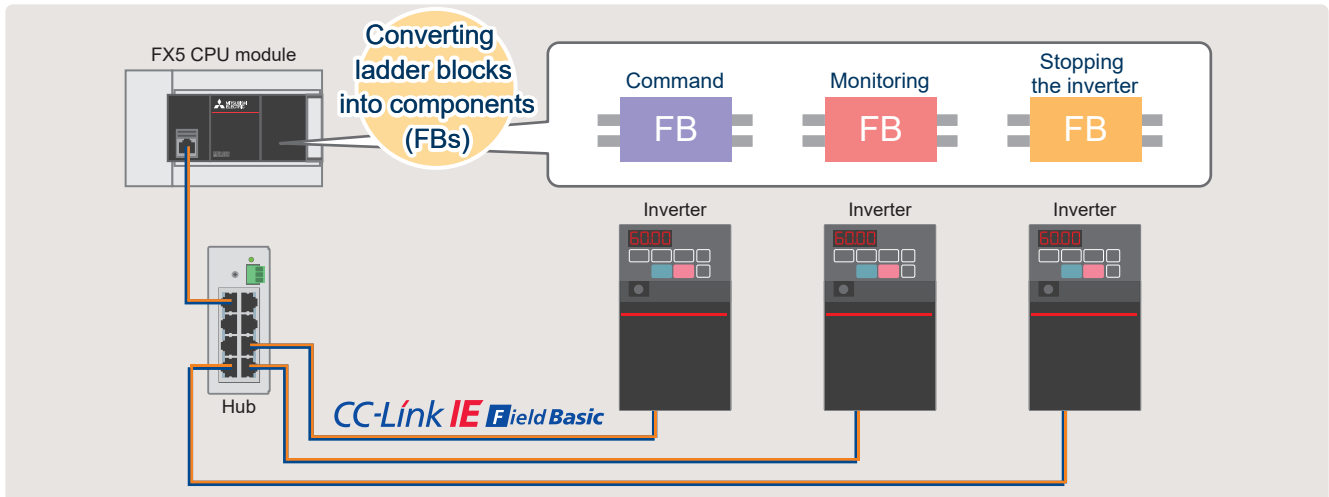
| Manual name<br><manual number>   | Available form |     |
|--|----------------|-----|
|  | e-Manual       | PDF |
| MELSEC iQ-F FX5S/FX5UJ/FX5U/FX5UC User's Manual (Hardware)<br><SH-082452ENG>                           | ○              | ○   |
| MELSEC iQ-F FX5 User's Manual (Application)<br><JY997D55401>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

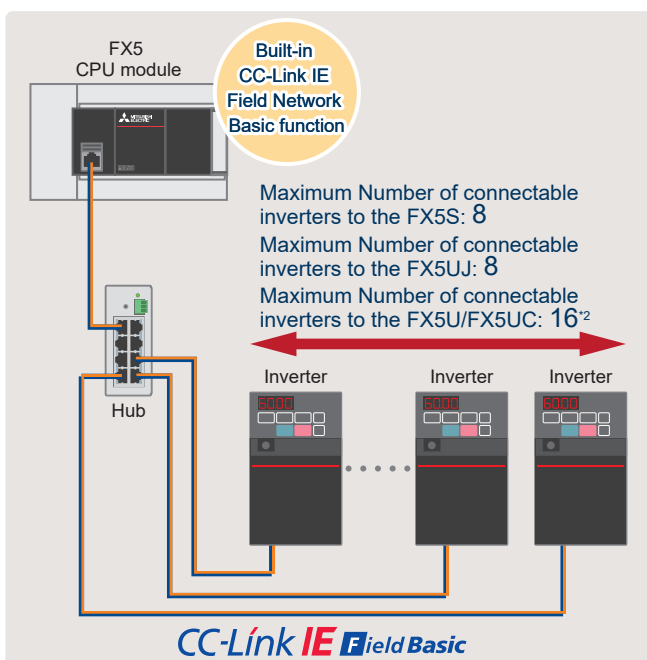


\*1 FB libraries can be downloaded for free from the Mitsubishi Electric FA website.  
[www.mitsubishielectric.co.jp/fa/ref/ref.html?kisyu=plcf&samplelibrary=download\\_all](http://www.mitsubishielectric.co.jp/fa/ref/ref.html?kisyu=plcf&samplelibrary=download_all)

## 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.

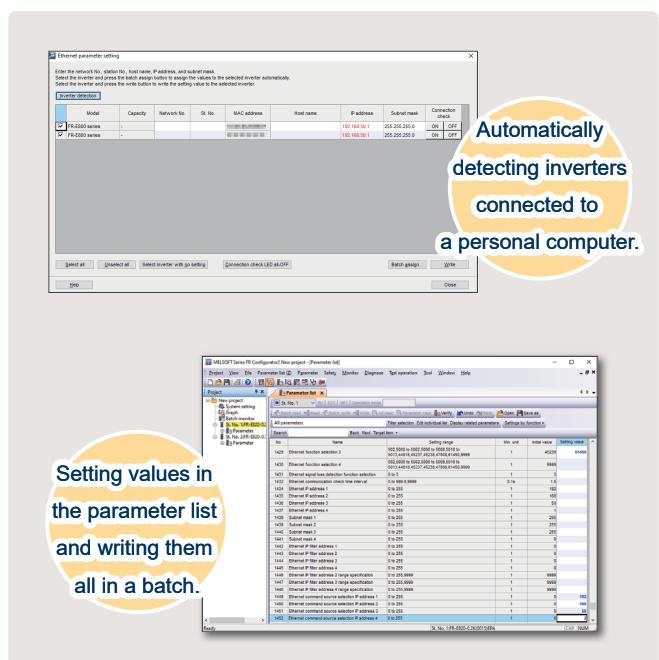


\*2 Number of connectable inverters differs depending on firmware version.

## 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.








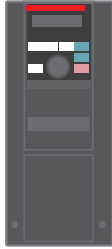

Automatically detecting inverters connected to a personal computer.

Setting values in the parameter list and writing them all in a batch.

# 1 PREPARATION

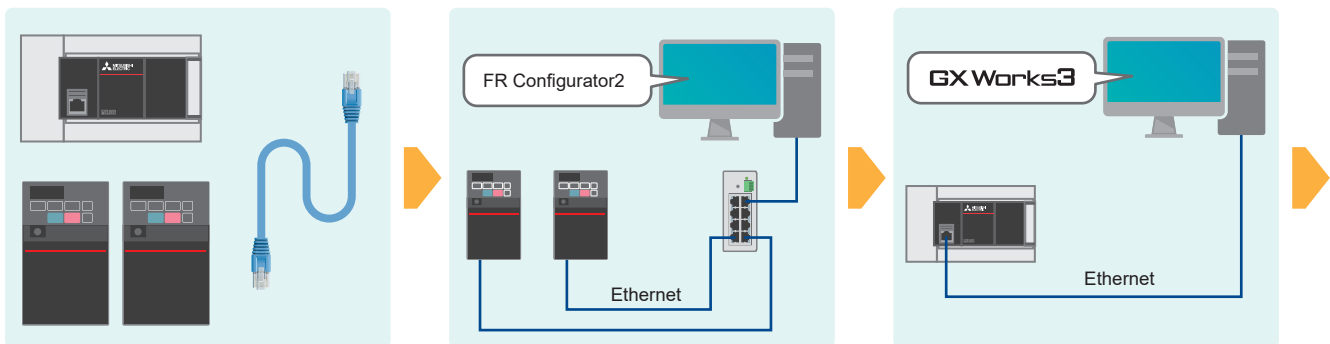
## 1.1 Applicable Models

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

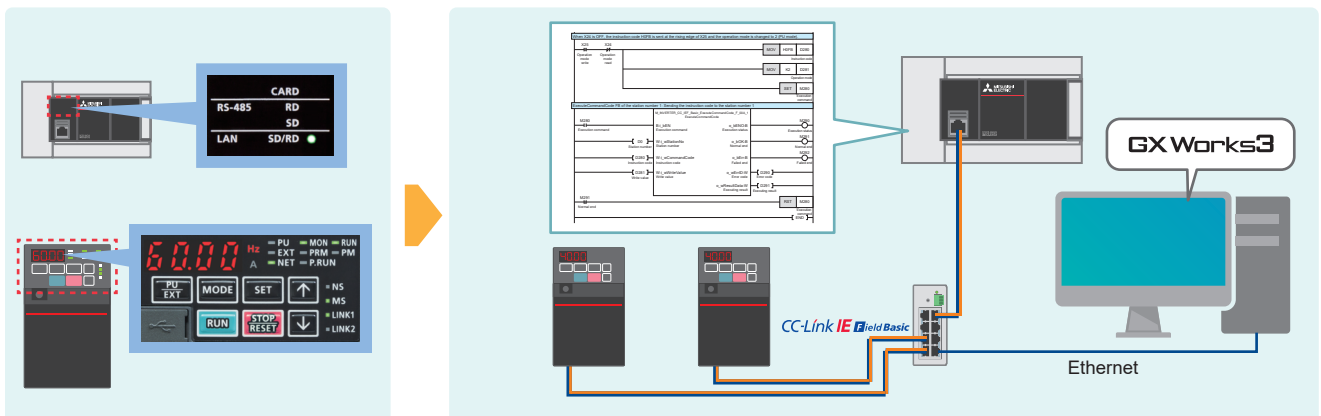
| Programmable controller   |   |   |   | Inverter (Ethernet model)  |   |   |
|---|---|---|---|--|---|---|
|  |  |  |  |  |  |  |
| FX5S CPU module   | FX5UJ CPU module  | FX5U CPU module   | FX5UC CPU module  | FR-E800-E  | FR-A800-E   | FR-F800-E   |

## 1.2 Operation Flow Diagram

1. Preparing the required products
2. INVERTER SETTINGS
3. PROGRAMMABLE CONTROLLER SETTINGS

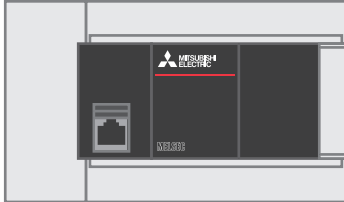
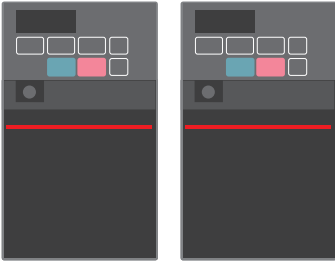




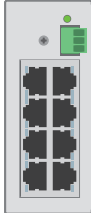
4. Checking the communication status
5. Program examples and checking the operation



# 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  |
|--|---|---|
|  <p>Use an FX5U CPU module that meets the following conditions.</p> <ul style="list-style-type: none"> <li>• Serial number: 17X**** or later</li> <li>• Firmware version: 1.110 or later</li> </ul> |  <p>First inverter (Station number 1)      Second inverter (Station number 2)</p> <p>The PU port can be found when the front cover is removed.</p> <p>■FR-E800-E models</p> <ul style="list-style-type: none"> <li>• FR-E820-□EPA/EPB</li> <li>• FR-E840-□EPA/EPB</li> <li>• FR-E860-□EPA/EPB</li> </ul> |  <p>GX Works3</p> <ul style="list-style-type: none"> <li>• Supported software version: 1.050C or later</li> </ul> <p>FR Configurator2</p> <ul style="list-style-type: none"> <li>• Supported software version: 1.19V or later</li> </ul> |

| Ethernet cable × 4   | Hub   |
|--|---|
|  <p>Use Ethernet cables compliant with the following standards.</p> <ul style="list-style-type: none"> <li>• Category 5 or higher straight cable (double shielded / STP)</li> <li>• IEEE 802.3 (100BASE-TX)</li> <li>• ANSI/TIA/EIA-568-B (Category 5)</li> </ul> |  <p>Use a hub that meets the following conditions.</p> <ul style="list-style-type: none"> <li>• Compliance with the IEEE 802.3 (100BASE-TX)</li> <li>• Equipped with the auto MDI/MDI-X function</li> <li>• Equipped with the auto-negotiation function</li> <li>• Switching hub (layer 2 switch)<sup>*1</sup></li> </ul> |

\*1 A repeater hub cannot be used.

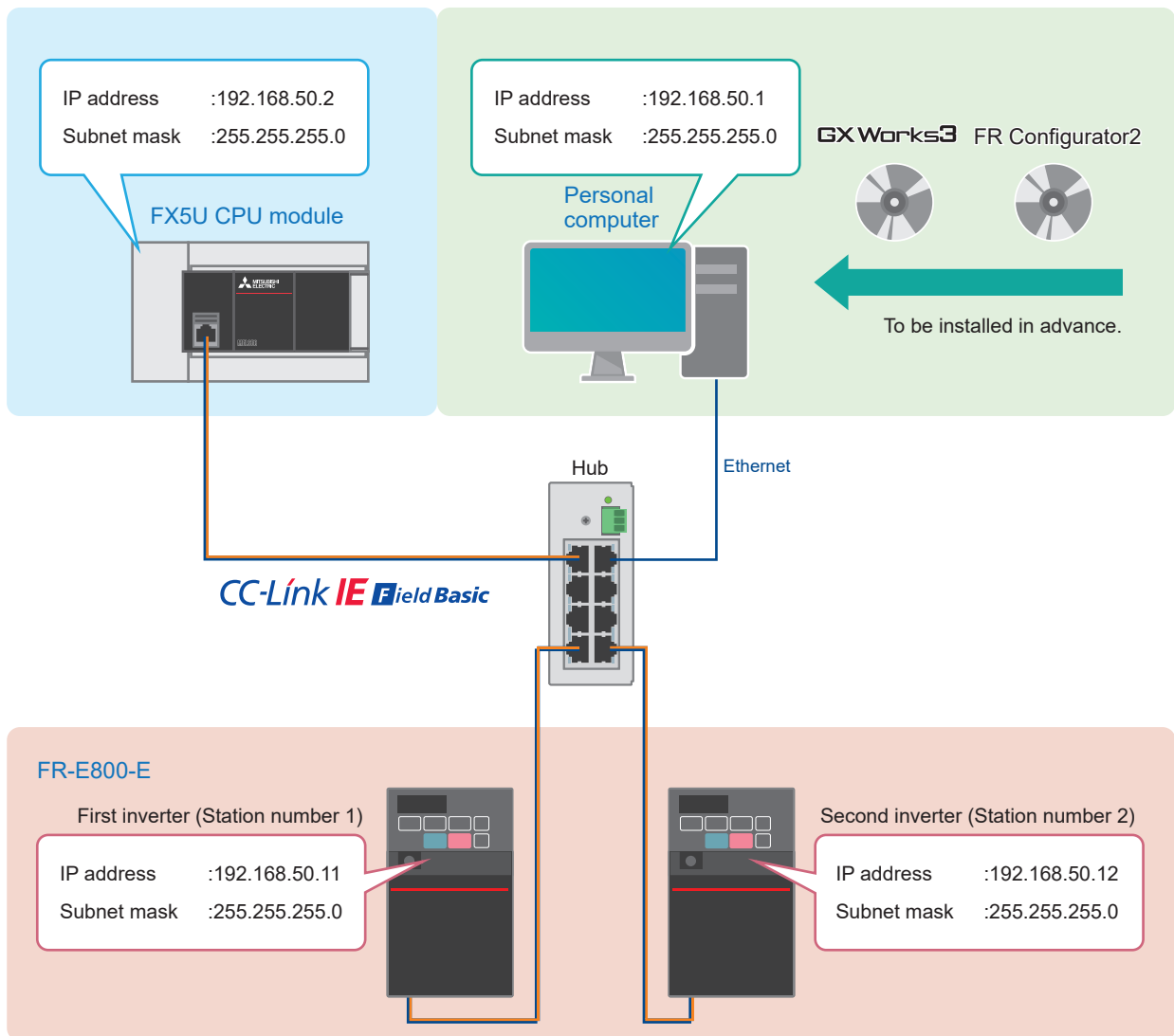


# 1.4 System Configuration

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 57 Power supply wiring

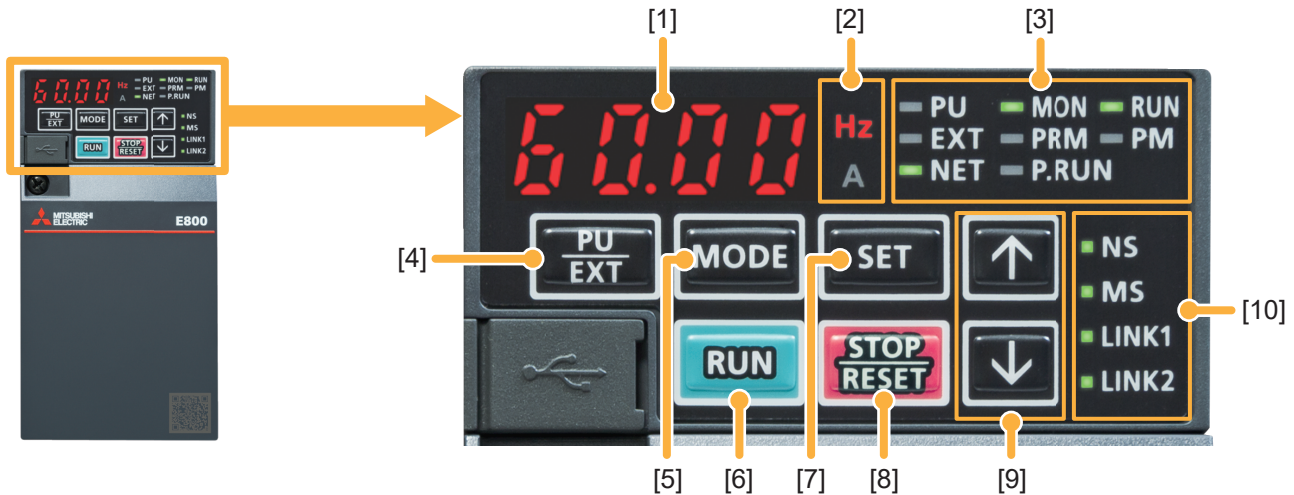
For the power supply wiring of the FX5U, FX5UC, and FX5UJ CPU modules, refer to the following.

📖 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.)<br>A: ON when the current is monitored.<br>(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.<br>ON: During forward rotation operation.<br>Blinks slowly (1.4-second cycle): During reverse rotation operation.<br>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 57 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.  |
| Pr.1425   | Ethernet communication station number          | 1             | 1   | 2   | Set a network number to Pr.1424 and a station number to Pr.1425.   |
| 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                                       |   |  |
| Pr.1439   | Subnet mask 2                                  | 255           | 255                                       |   | Set a subnet mask which the IP address of the inverter belongs to.   |
| 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. <ul style="list-style-type: none"> <li>• 9999: No communication check (signal loss detection)</li> <li>• 0: Ethernet communication is available, but the inverter output is shut off in the NET operation mode.</li> <li>• 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).</li> </ul> |

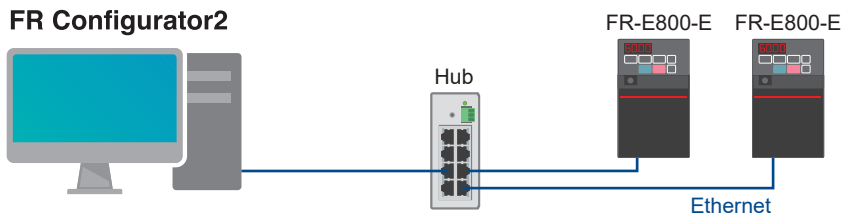
For the FR-A800-E/F800-E parameters, refer to the following.

 Page 57 Parameters

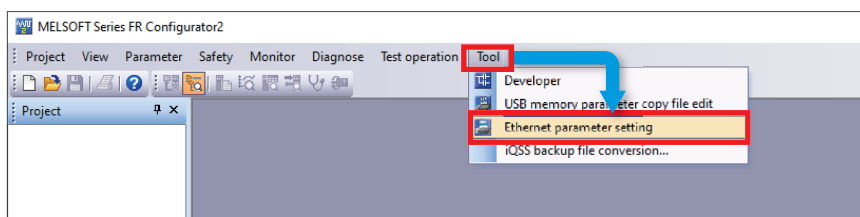
## 2.3 Ethernet Parameter Settings

Parameters are set by connecting the inverters and the personal computer over Ethernet.

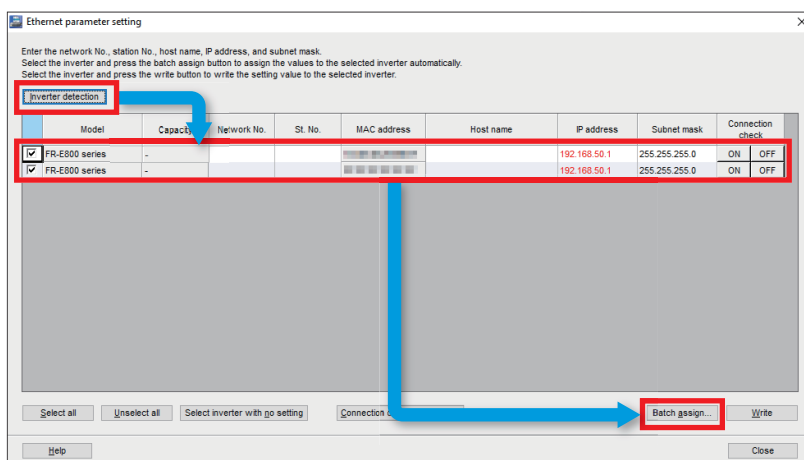
In this manual, FR Configurator2 is used to set the parameters. The following describes how to set the parameters using FR Configurator2.



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

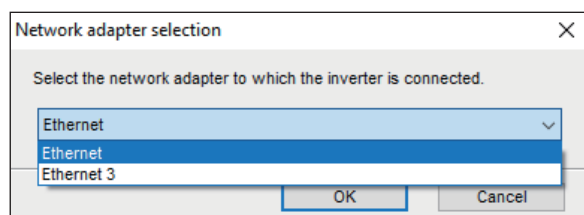


2. When the inverters connected to the personal computer are detected automatically, their information, such as the model and capacity, are displayed. Check that displayed information is correct, and click the [Batch assign] button.



### 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.

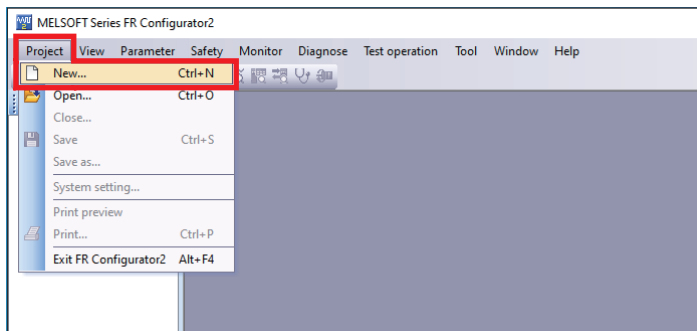
| Parameter   | Setting value |
|-------------|---------------|
| Network No. | 1             |
| Station No. | 1             |
| IP address  | 192.168.50.11 |
| Subnet mask | 255.255.255.0 |

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.

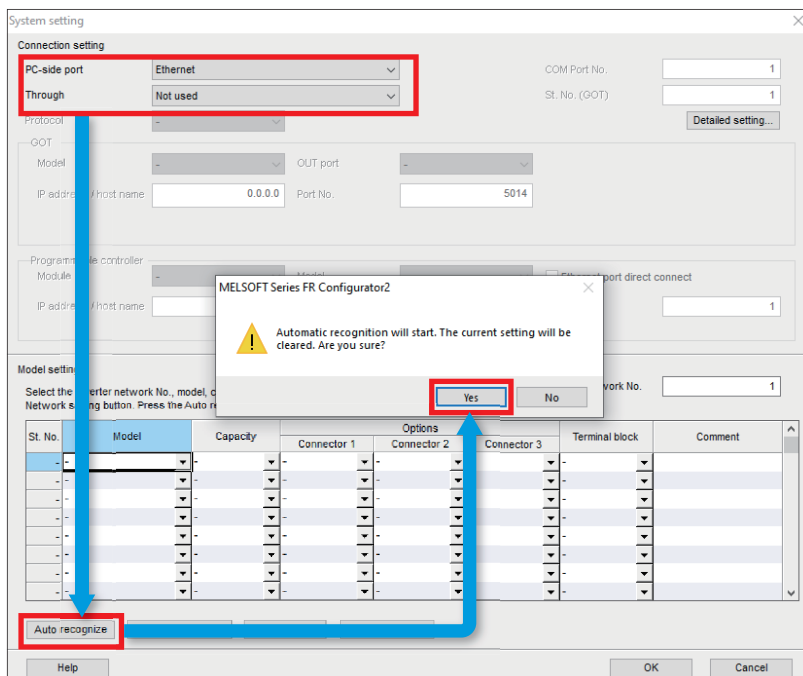
5. When the inverters are reset, the Ethernet parameter setting is complete. Click the [Close] button to close the "Ethernet parameter setting" window, and move to the parameter setting.

## 2.4 Parameter Settings

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

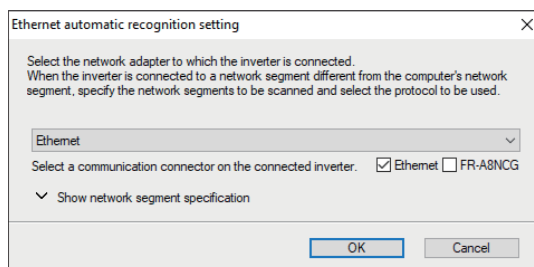


2. In the "Connection setting" field, select "Ethernet" for "PC-side port" and "Not used" for "Through", and click the [Auto recognize] button. Click the [Yes] button on the window, which asks whether to clear the current settings, to execute automatic recognition.



### 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.

System setting

Connection setting

PC-side port: Ethernet  
Through: Not used  
Protocol: -  
COM Port No.: 1  
St. No. (GOT): 1  
Detailed setting...

-GOT  
Model: -  
OUT port: -  
IP address / host name: 0.0.0.0  
Port No.: 5014

Programmable controller  
Module: -  
Model: -  
Ethernet port direct connect:   
IP address / host name: 0.0.0.0  
Network number: 1  
St. No.: 1

Model setting

Select the inverter network No., model, capacity, and connection option, and press the Network setting button. Press the Auto recognize button to detect the connected inverter.

Inverter network No.: 1

| St. No. | Model       | Capacity    | Connector 1 | Connector 2 | Connector 3 | Terminal block | Comment |
|---------|-------------|-------------|-------------|-------------|-------------|----------------|---------|
| 1       | FR-E820-EPA | 0.2K(0015)  | -           | -           | -           | FR-EBETA       |         |
| 2       | FR-E820-EPA | 0.75K(0050) | -           | -           | -           | FR-EBETA       |         |
| -       | -           | -           | -           | -           | -           | -              | -       |
| -       | -           | -           | -           | -           | -           | -              | -       |
| -       | -           | -           | -           | -           | -           | -              | -       |
| -       | -           | -           | -           | -           | -           | -              | -       |
| -       | -           | -           | -           | -           | -           | -              | -       |
| -       | -           | -           | -           | -           | -           | -              | -       |

Auto recognize Network setting... Clear Filter by model

Help OK Cancel

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.

MELSOFT Series FR Configurator2 New project - [Parameter list]

Project View File Parameter list (2) Parameter Safety Monitor Diagnose Test operation Tool Window Help

Project

New project  
System setting  
Graph  
St. No. 1: FR-E820-0.2K(0015)  
St. No. 2: FR-E820-0.75K(0050)  
Parameter

Parameter list


All parameters Filter selection Edit individual list Display related parameters Settings by function

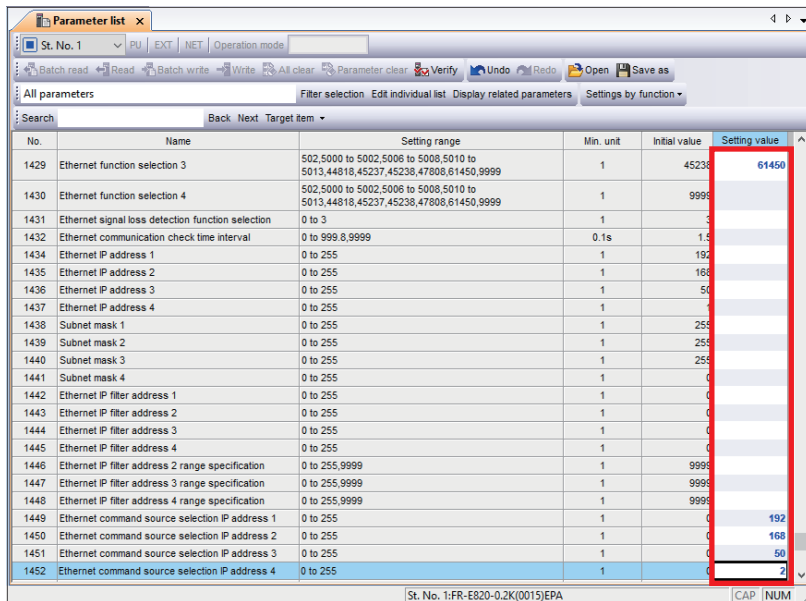
| No. | Name  | Setting range | Min. unit | Initial value | Setting value |
|-----|---|---------------|-----------|---------------|---------------|
| 0   | Torque boost                                      | 0 to 30       | 0.1%      | 6             |               |
| 1   | Maximum frequency                                 | 0 to 120      | 0.01Hz    | 120           |               |
| 2   | Minimum frequency                                 | 0 to 120      | 0.01Hz    | 0             |               |
| 3   | Base frequency                                    | 0 to 590      | 0.01Hz    | 60            |               |
| 4   | Multi-speed setting (high speed)                  | 0 to 590      | 0.01Hz    | 60            |               |
| 5   | Multi-speed setting (middle speed)                | 0 to 590      | 0.01Hz    | 30            |               |
| 6   | Multi-speed setting (low speed)                   | 0 to 590      | 0.01Hz    | 10            |               |
| 7   | Acceleration time                                 | 0 to 3600     | 0.1s      | 5             |               |
| 8   | Deceleration time                                 | 0 to 3600     | 0.1s      | 5             |               |
| 9   | Electronic thermal O/L, relay/Rated motor current | 0 to 500      | 0.01A     | 1.27          |               |
| 10  | DC injection brake operation frequency            | 0 to 120      | 0.01Hz    | 3             |               |
| 11  | DC injection brake operation time                 | 0 to 10       | 0.1s      | 0.5           |               |
| 12  | DC injection brake operation voltage              | 0 to 30       | 0.1%      | 6             |               |
| 13  | Starting frequency                                | 0 to 60       | 0.01Hz    | 0.5           |               |
| 14  | Load pattern selection                            | 0 to 3        | 1         | 0             |               |
| 15  | Jog frequency                                     | 0 to 590      | 0.01Hz    | 5             |               |
| 16  | Jog acceleration/deceleration time                | 0 to 3600     | 0.1s      | 0.5           |               |
| 17  | MRSX10 terminal input selection                   | 0 to 5        | 1         | 0             |               |
| 18  | High speed maximum frequency                      | 0 to 590      | 0.01Hz    | 120           |               |

Ready | St. No. 1: FR-E820-0.2K(0015)EPA | CAP INUM

### 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         |               |               |
| 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)

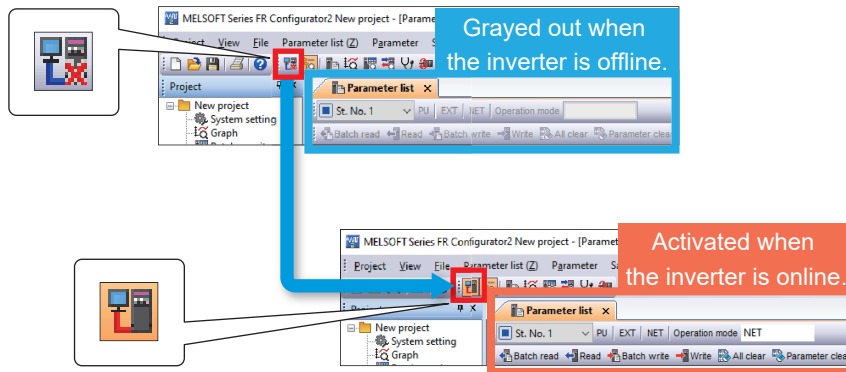
- Pr.1424 (Ethernet communication network number)
- Pr.1425 (Ethernet communication station number)
- Pr.1434 to Pr.1437 (Ethernet IP address)
- Pr.1438 to Pr.1441 (Subnet mask)



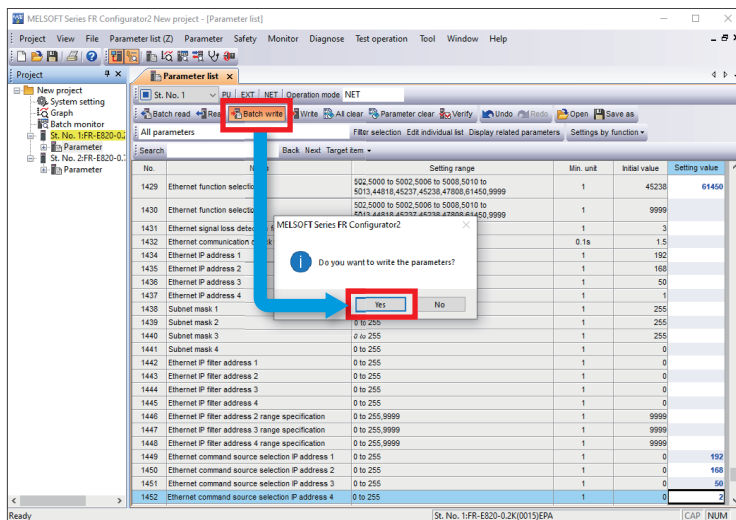
## 2.5 Writing Data to the Inverters

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.

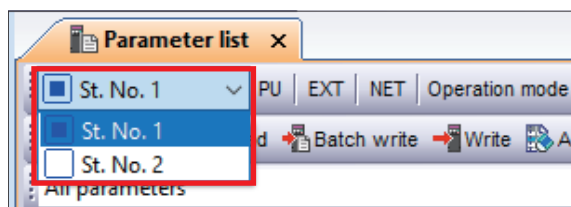


2. Click [Batch write], and click the [Yes] button on the window which asks whether to write the parameters. After the parameters are written to the inverter, reset the inverter.



### Point

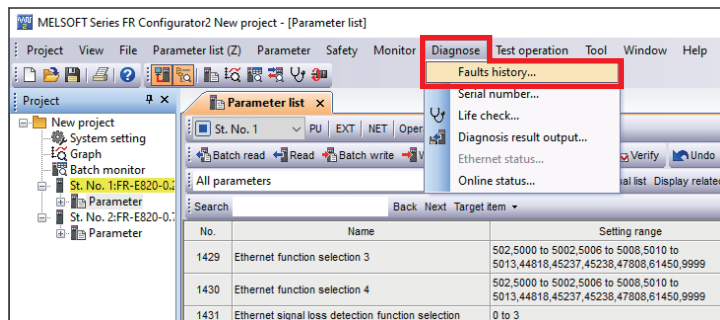
A parameter list can be switched between the station number 1 and the station number 2 by selecting the following station number list.



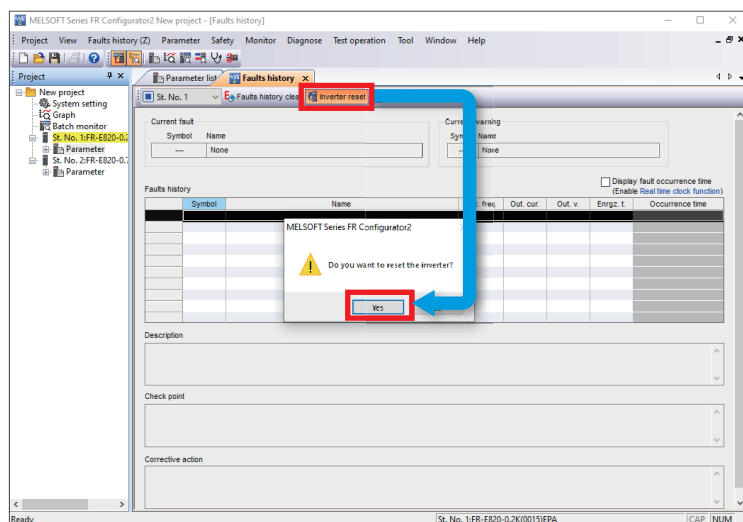
## 2.6 Inverter Reset

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.



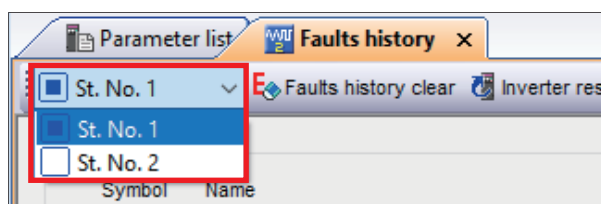
2. Click [Inverter reset], and click the [Yes] button on the window which asks whether to reset the inverter. When the inverter (station number 1) is reset, the parameter setting is complete.



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.

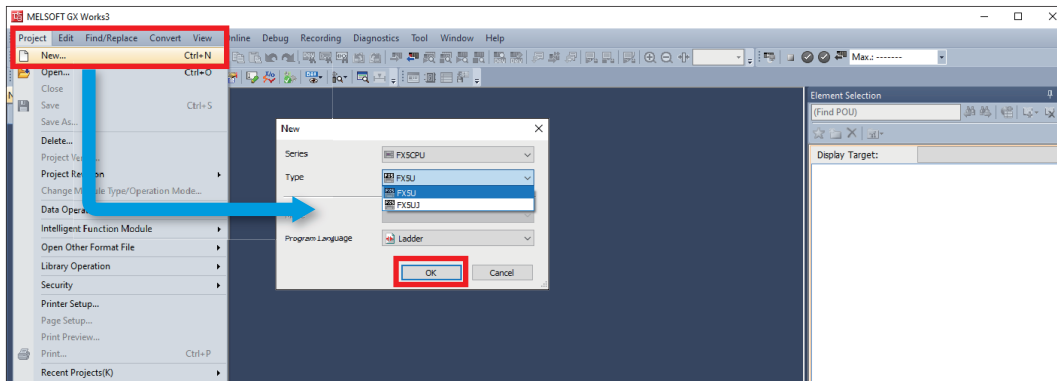
# 3.3 Importing the FB Library

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.

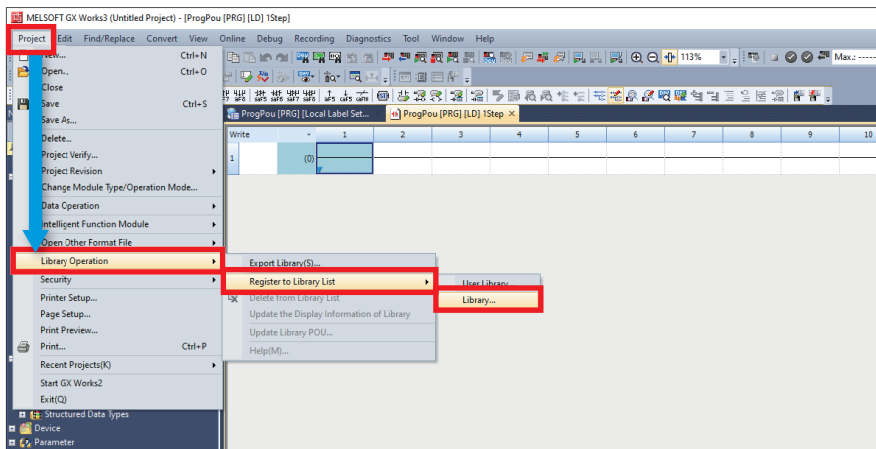
1. Start GX Works3, and select [Project] on the toolbar ⇒ [New].

In this manual, the following setting values are used.

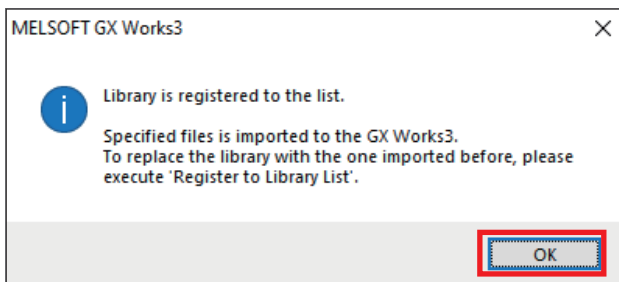
| Item             | Setting value |
|------------------|---------------|
| Series           | FX5CPU        |
| Type             | FX5U          |
| Program Language | Ladder        |



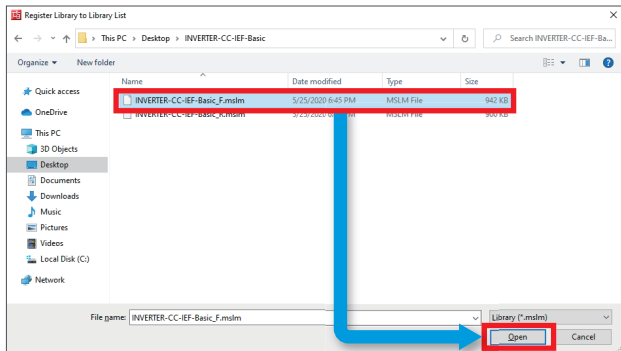
2. Select [Project] on the toolbar ⇒ [Library Operation] ⇒ [Register to Library List] ⇒ [Library].



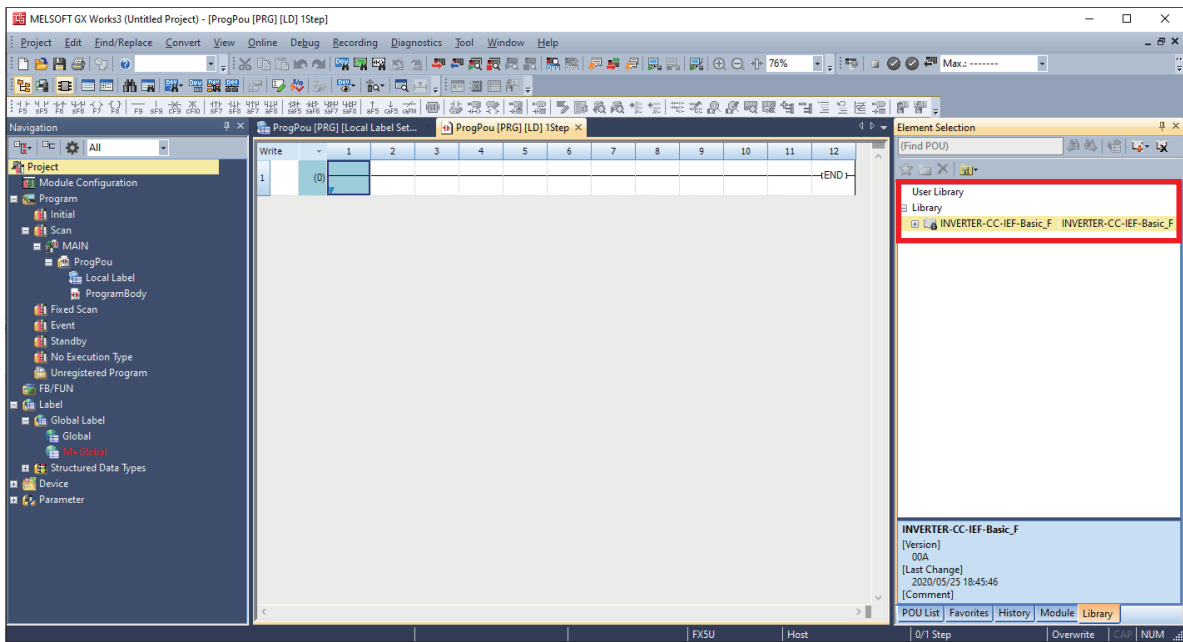
3. When the following window appears, click the [OK] button.



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.

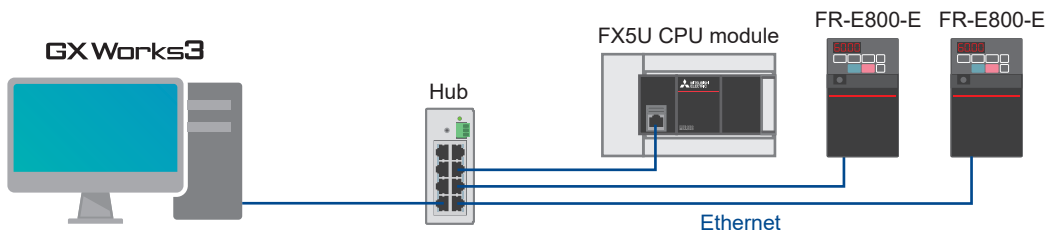


**Point**

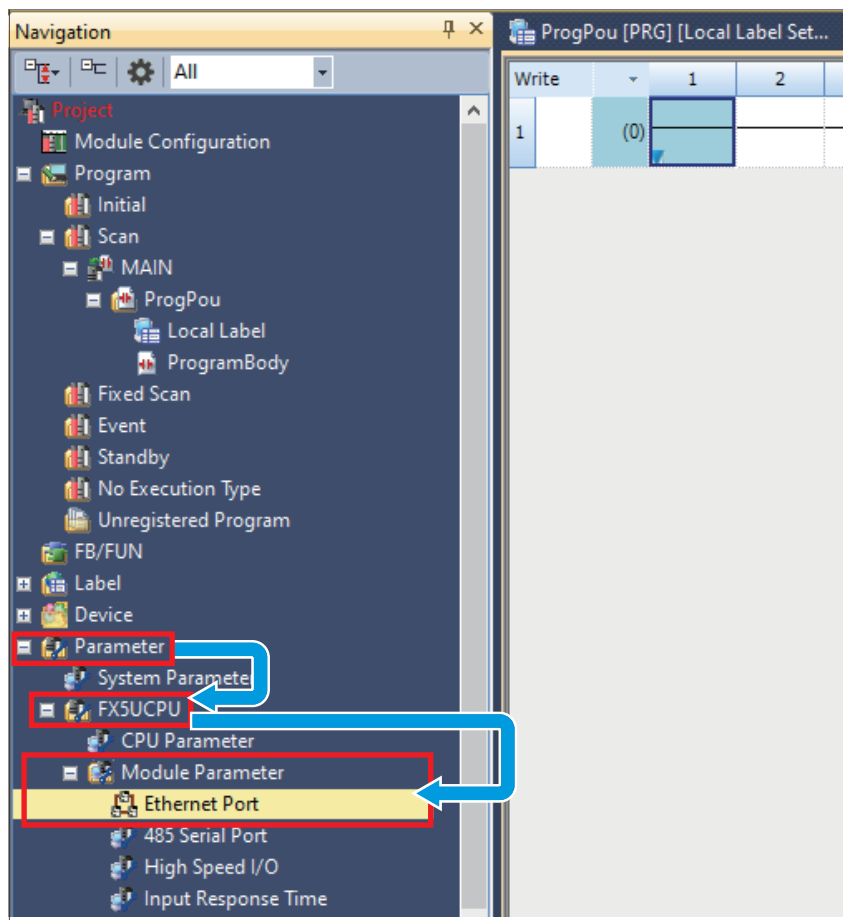
If the "Element Selection" window is not displayed, select [View] on the toolbar ⇒ [Docking Window] ⇒ [Element Selection] to open the window.

## 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].



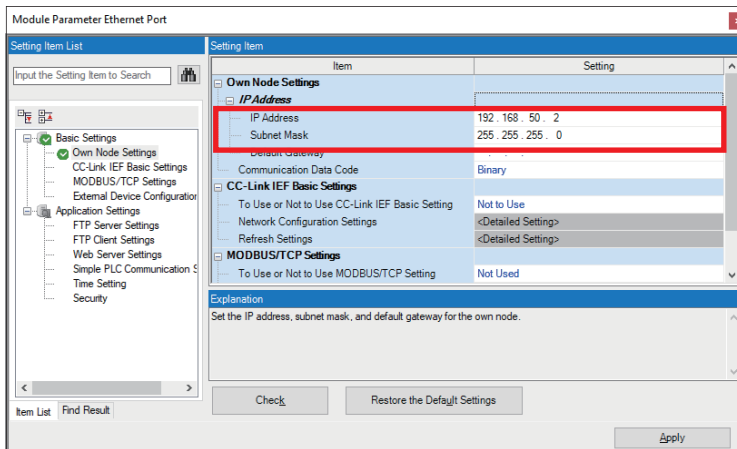
### Point

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".

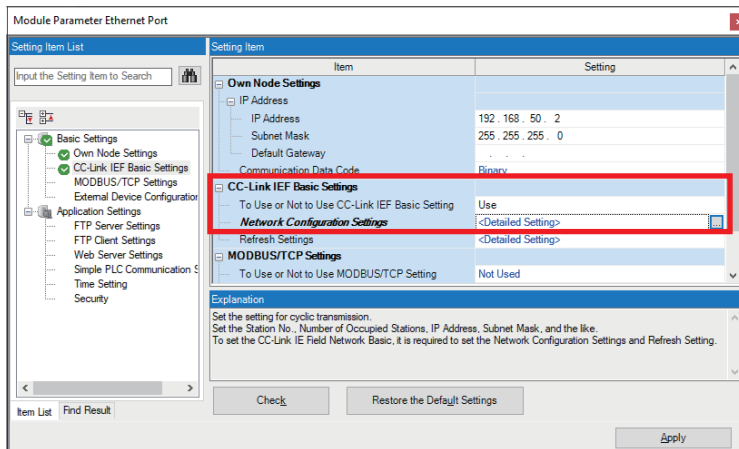
In this manual, the following setting values are used. (For the setting values, refer to  Page 8 System Configuration.)

| Item        | Setting value |
|-------------|---------------|
| IP Address  | 192.168.50.2  |
| Subnet Mask | 255.255.255.0 |

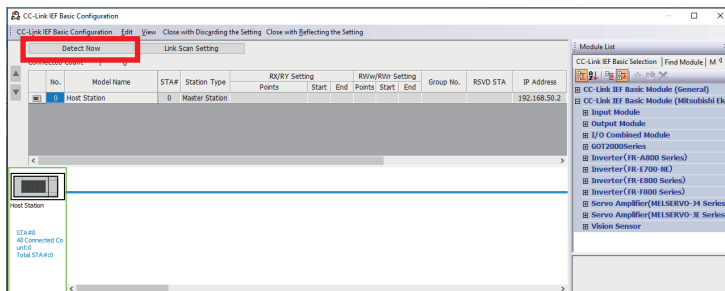


An IP address is not set by default. When an IP address is not set, the IP address 192.168.3.250 is set.


**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.



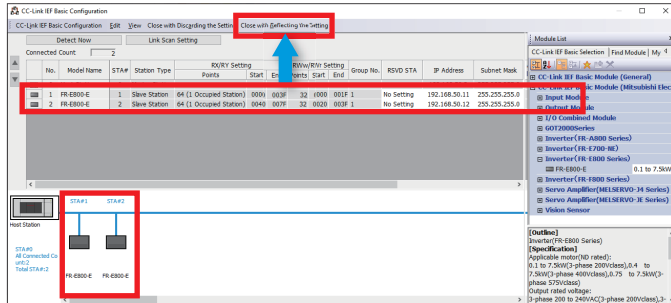
When the FR-E800-E profile is not registered, refer to the following.

 Page 56 Downloading and Registering a Profile

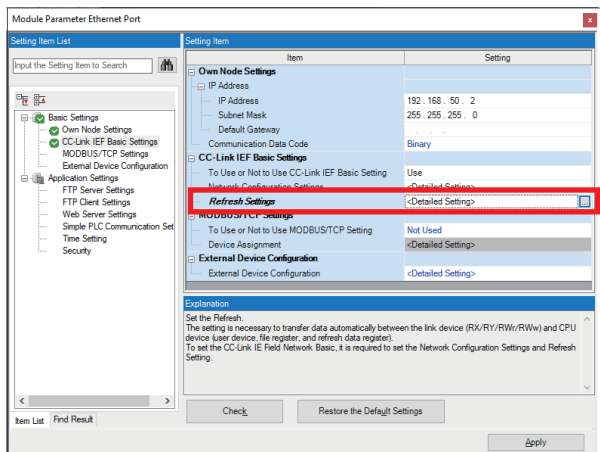
5. The information of the inverters connected to the programmable controller is reflected in the table. Check the settings of model name, reserved station, IP address, and subnet mask, and click [Close with Reflecting the Setting].

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 |

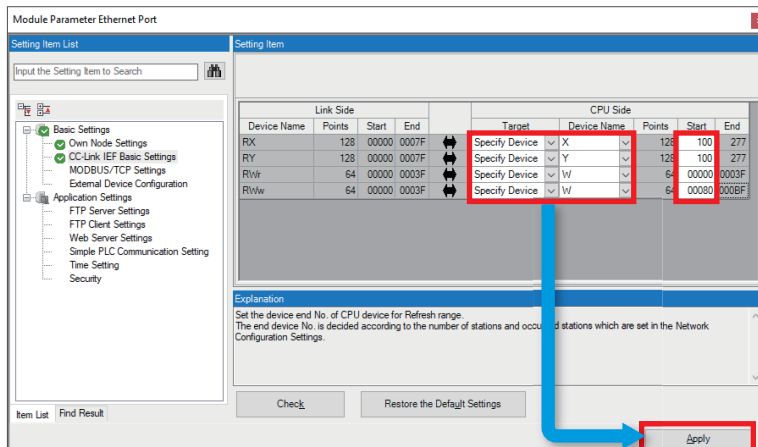


6. Next, set parameters to perform data transfer automatically between link devices of the inverters and devices of the programmable controller. Double-click "<Detailed Setting>" of "Refresh Settings".




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

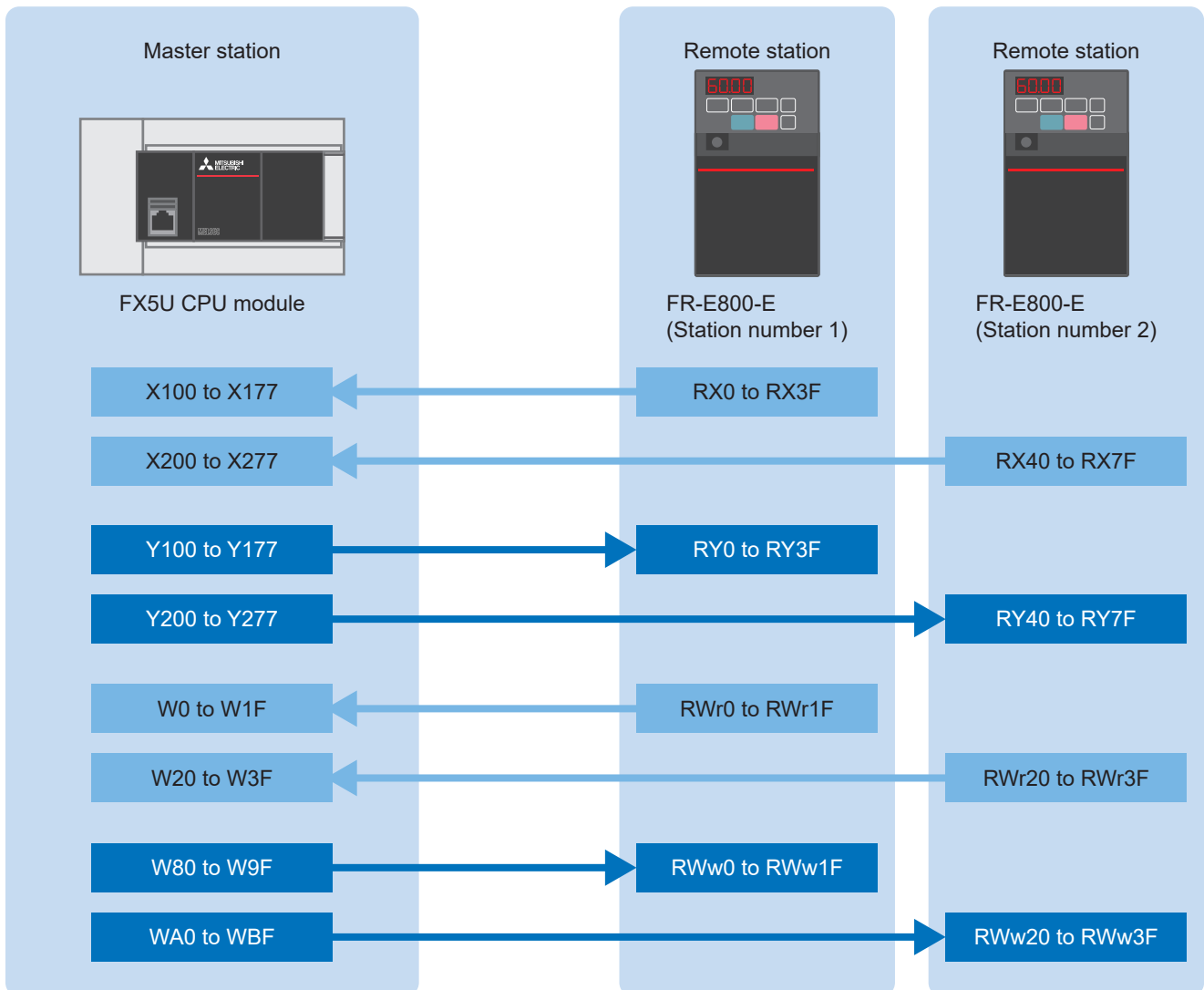
In this manual, since [Compatible with the octuple setting of CC-Link Ver.2] is selected for the CC-Link extended setting (Pr.544) of the inverters, assign the link devices of each inverter to the following devices of the programmable controller. (For the inverter settings, refer to  Page 10 List of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

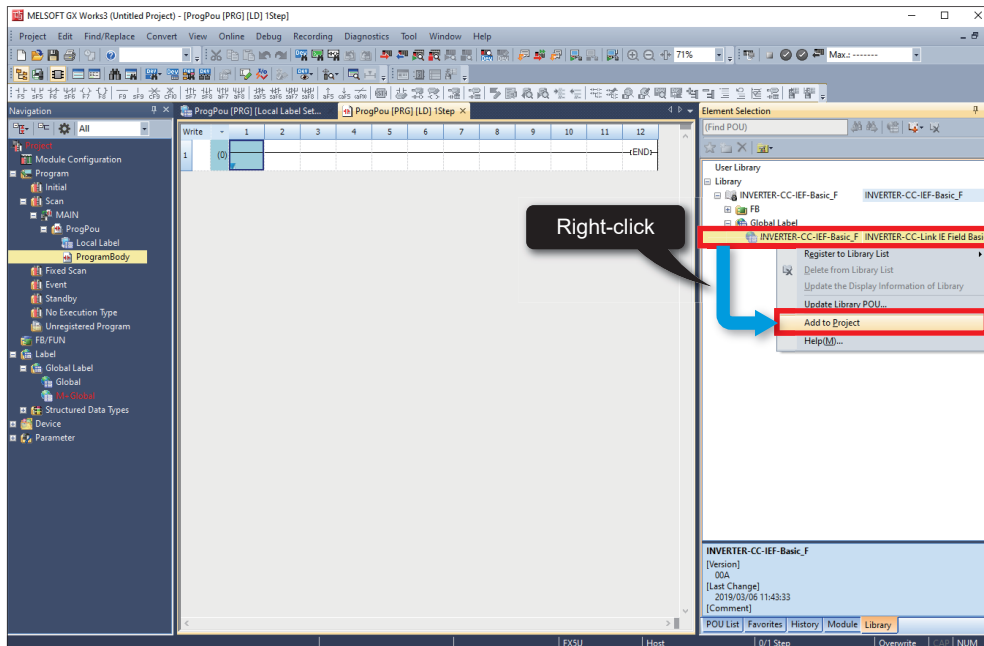
For details on the remote input, remote output, and remote registers of FR-A800-E and FR-F800-E, refer to the following.

 Page 57 Remote input, remote output, and remote registers

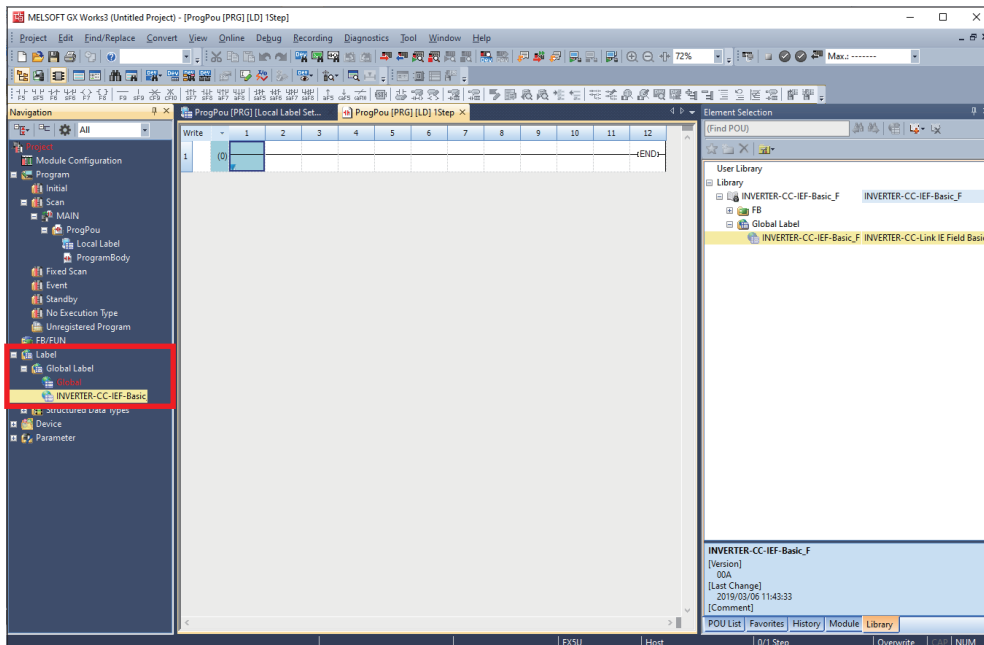
## 3.5 Adding Global Labels

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].

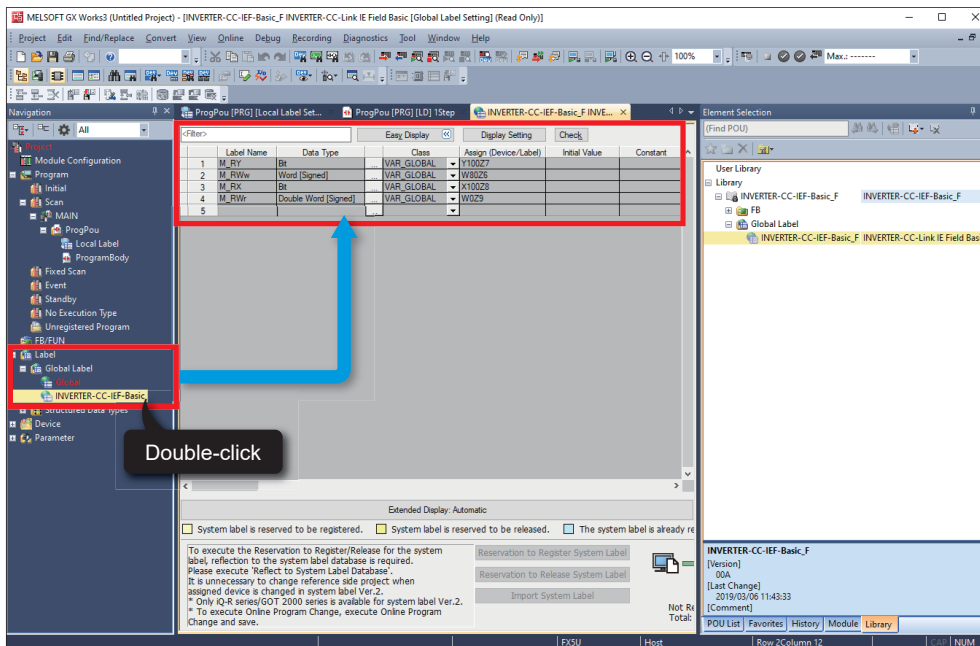


## How to check the global label assignment areas

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                 |

3

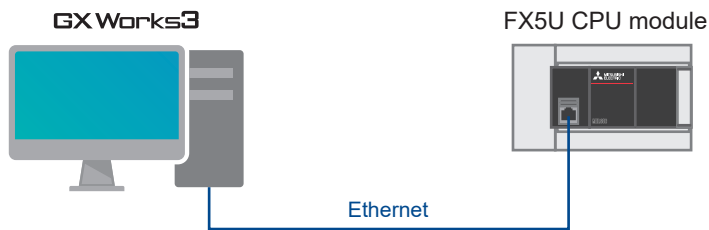


For how to change global labels, refer to the following.

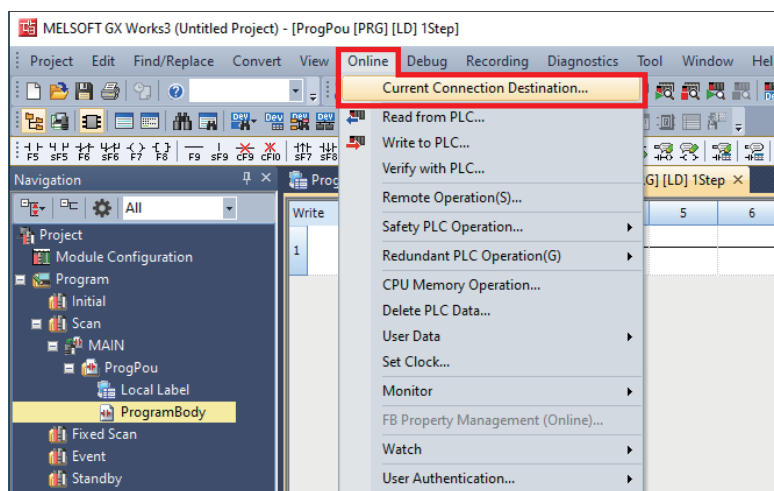
📖 Section 1.5.1 Recommended global label settings in the FB Library Reference Manual for CC-Link IE Field Network Basic Compatible Inverters

## 3.6 Communication Settings of GX Works3

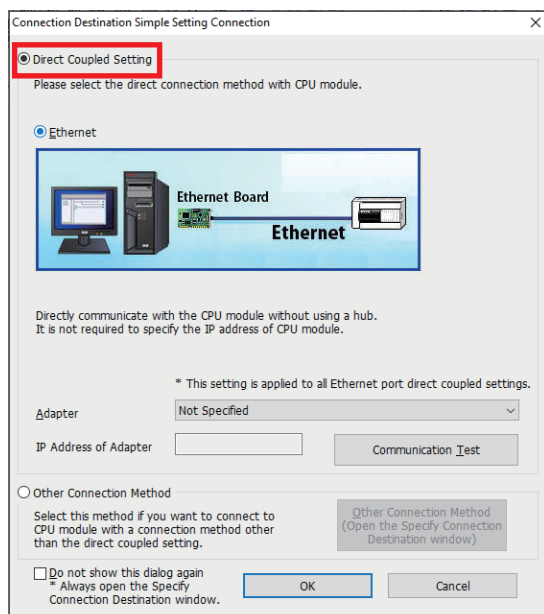
This section describes the communication settings of GX Works3. Directly connect an Ethernet port of the personal computer where GX Works3 has been installed to the FX5U CPU module as shown below. To write data to the FX5U CPU module, a communication test needs to be performed first.



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

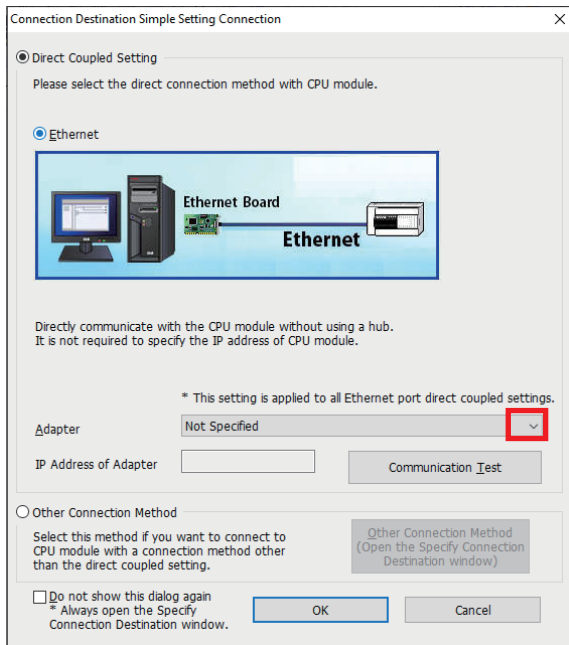


2. Select "Direct Coupled Setting".

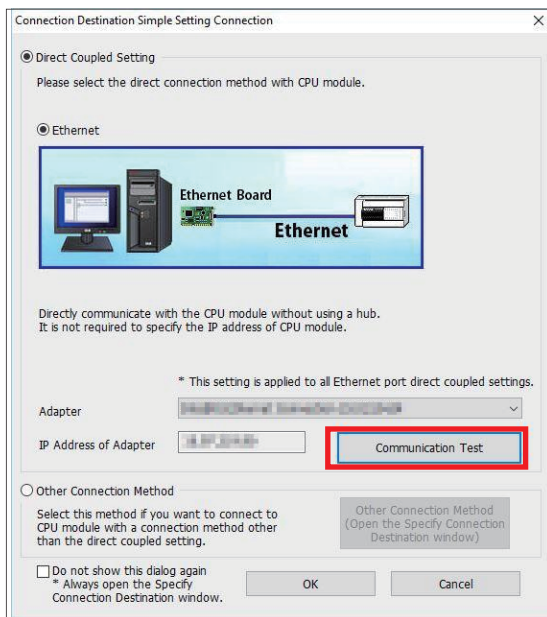


- Specify an Ethernet adapter of the personal computer which is used when the personal computer is directly connected to the CPU module.

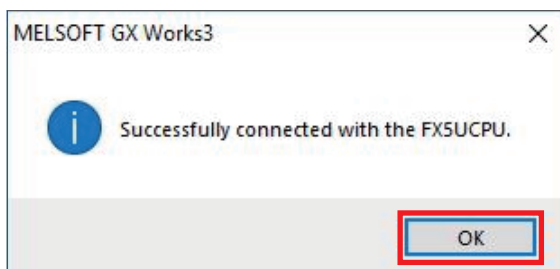
When "Not Specified" is set, select an adapter to be used from the drop-down list.



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



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



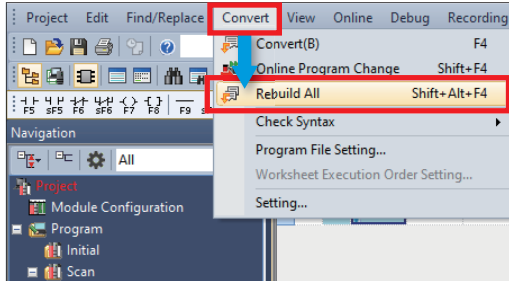
For the connection via a hub, refer to the following.

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

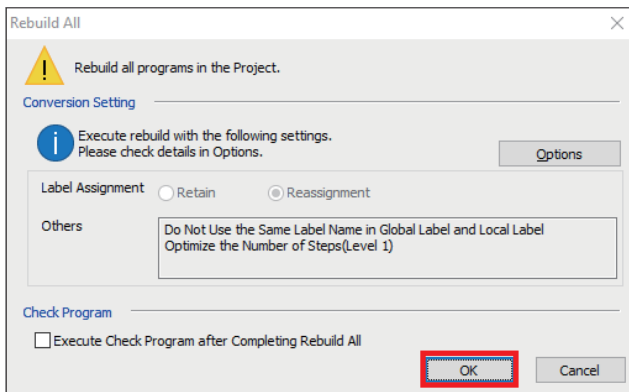
# 3.7 Writing Data to the Programmable Controller

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.

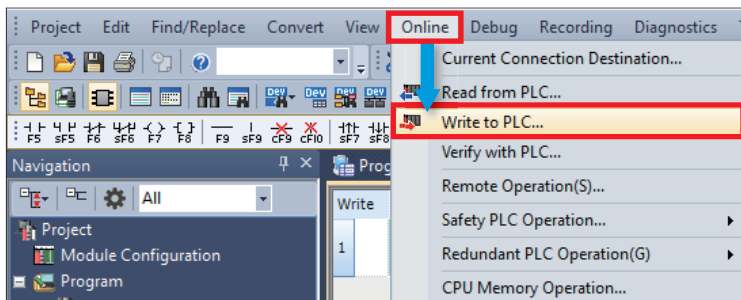
1. Select [Convert] ⇒ [Rebuild All].



2. Click the [OK] button.

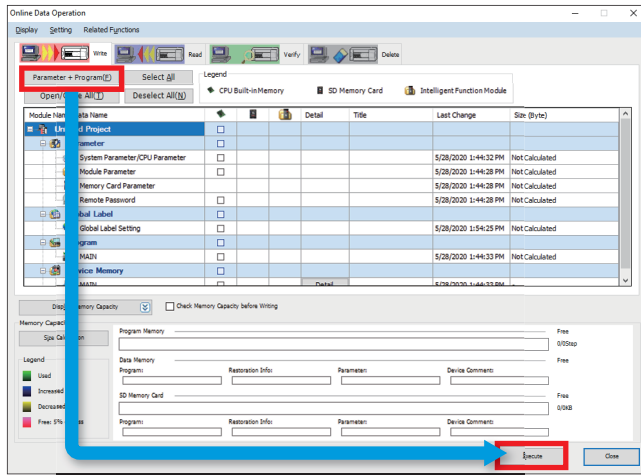


3. Select [Online] ⇒ [Write to PLC].

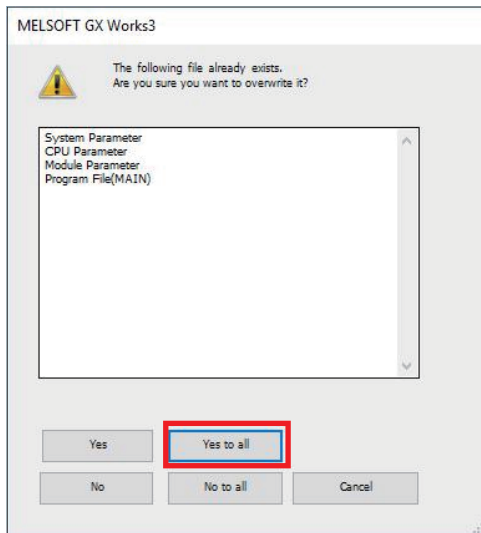




4. Click the [Parameter + Program] button, and click the [Execute] button.



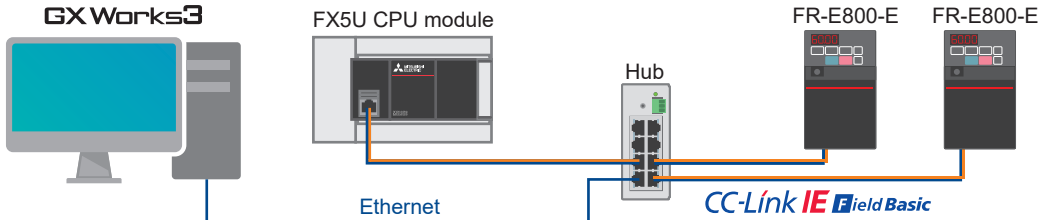
5. When the following window appears, click the [Yes to all] button.



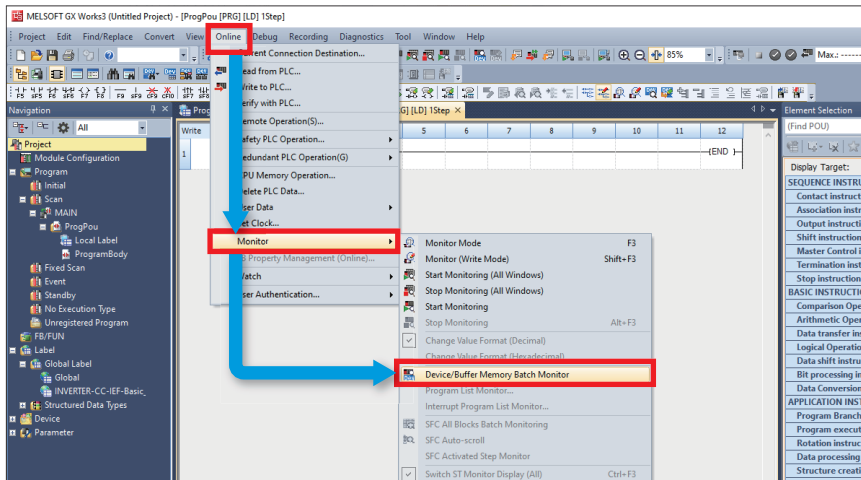
6. After the programs and the parameters are written to the programmable controller, reset or power OFF and ON the programmable controller.

# 4 COUmmUNICATION CHECK OVER CC-Link IE Field Network Basic

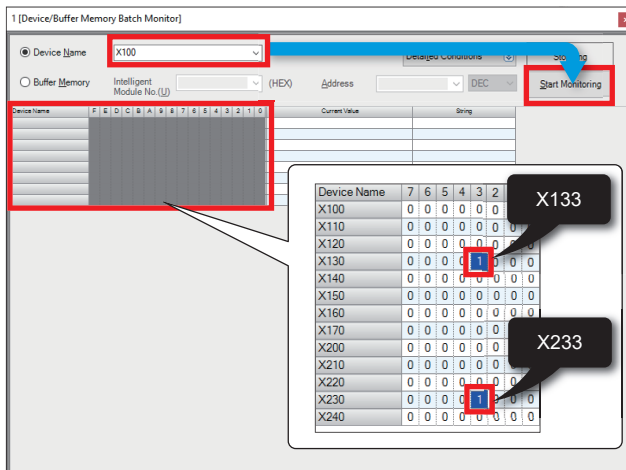
This chapter describes how to check communications over CC-Link IE Field Network Basic in the system where the inverters and the programmable controller are connected.



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



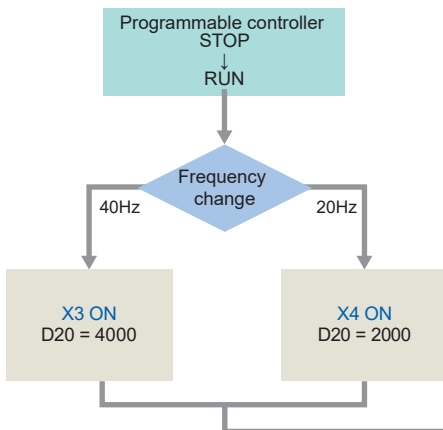
# 5 PROGRAM EXAMPLES

## 5.1 Operation

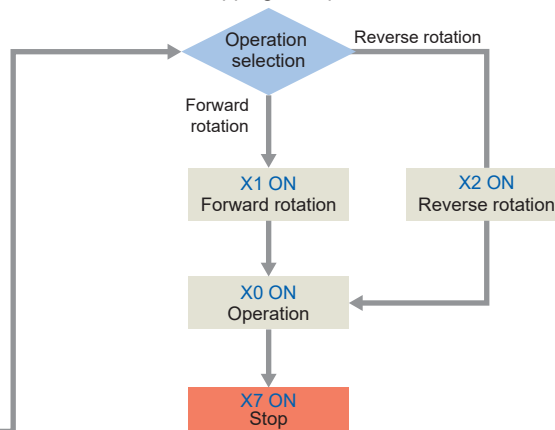
### FR-E800-E (Station number 1)

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.

1) Setting a running frequency



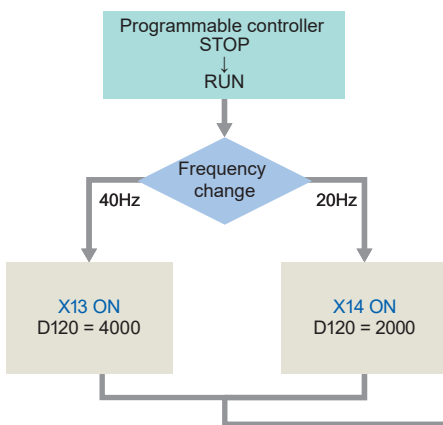
2) Switching between forward and reverse rotation or stopping the operation



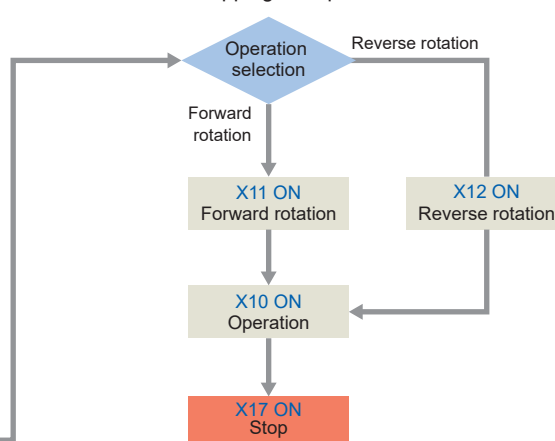
### FR-E800-E (Station number 2)

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.

1) Setting a running frequency



2) Switching between forward and reverse rotation or stopping the operation



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

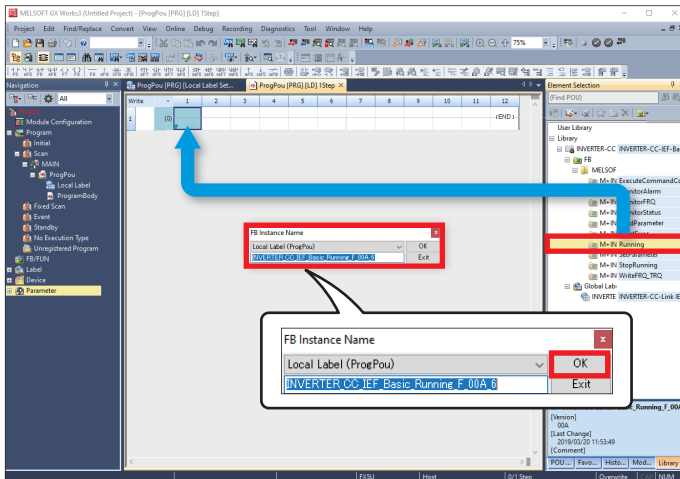
☞ Page 19 Importing the FB Library

## 5.2 How to Use the FB Library

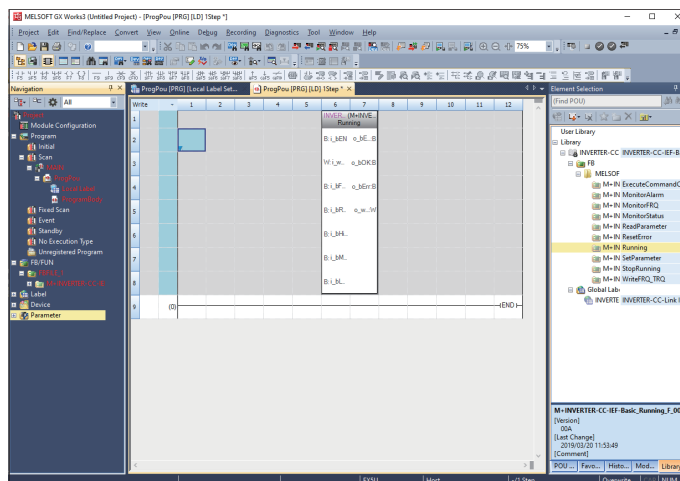
The FBs in the imported FB library can be used by selecting an applicable FB in the "Element Selection" window and dragging it to the program editor. After the FB is pasted, create an input ladder and an output ladder of the pasted FB, and complete a program.

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.

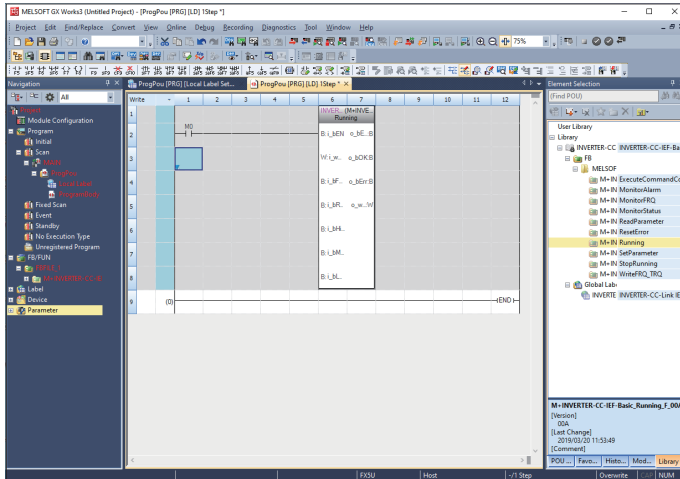
1. To display the FB list, click the [Library] ⇒ [INVERTER-CC-IEF-Basic\_F] ⇒ [FB] ⇒ [MELSOFT\_FBFILE] in the "Element Selection" window. Select an FB to be used, and drop it in the program editor. When the "FB Instance Name" window appears, click the [OK] button.



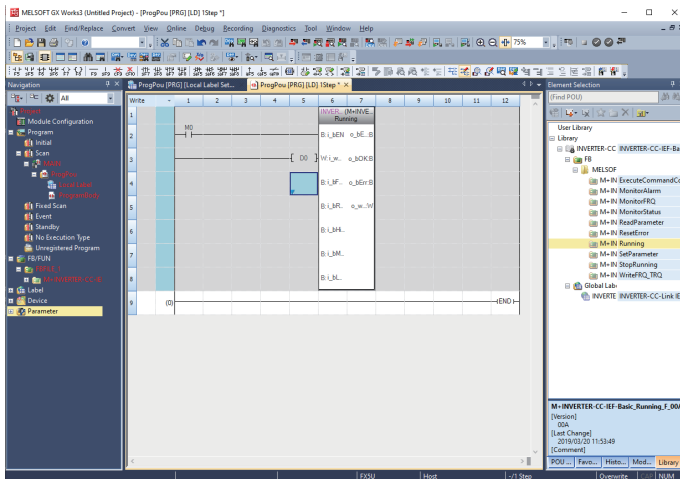
2. The FB is pasted to the program editor.



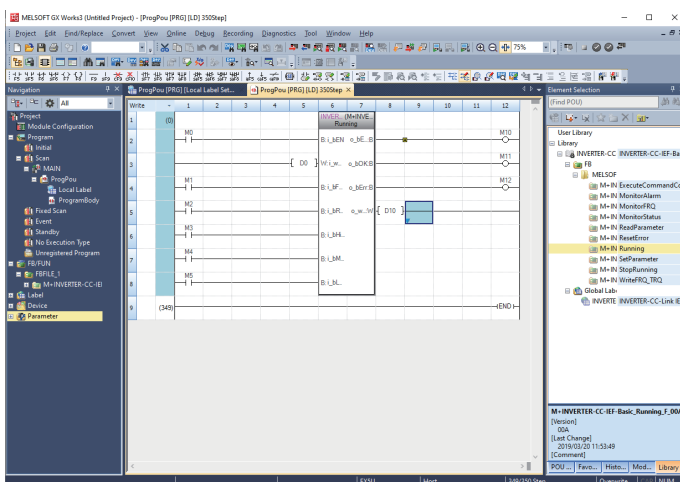
**3. Insert a contact and input to B:i\_BEN.**



**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

---

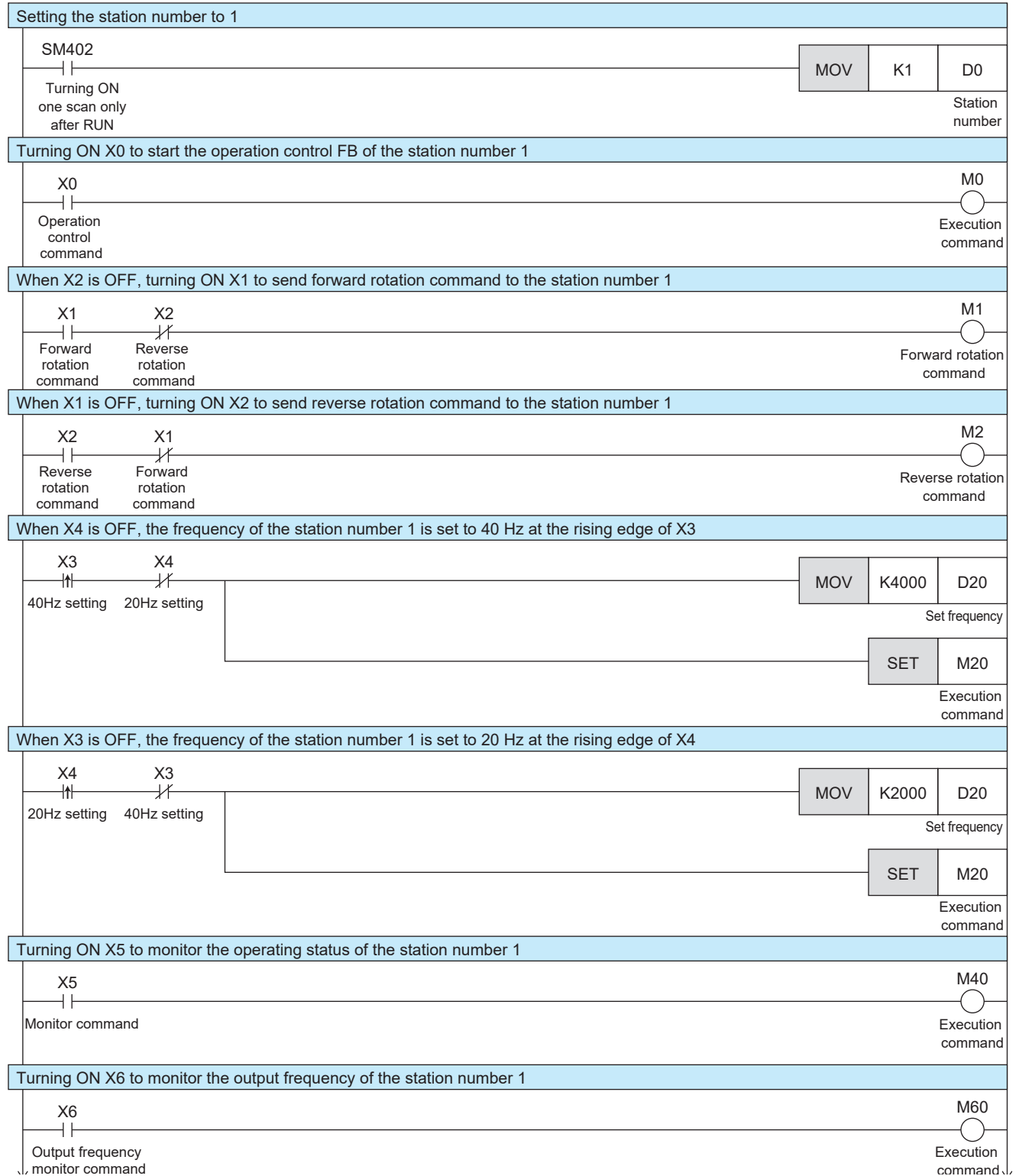
The following programs are designed to control the inverters (station numbers 1 and 2) using the FB library for CC-Link IE Field Network Basic compatible inverters.

This section provides the program examples for the station numbers 1 and 2.

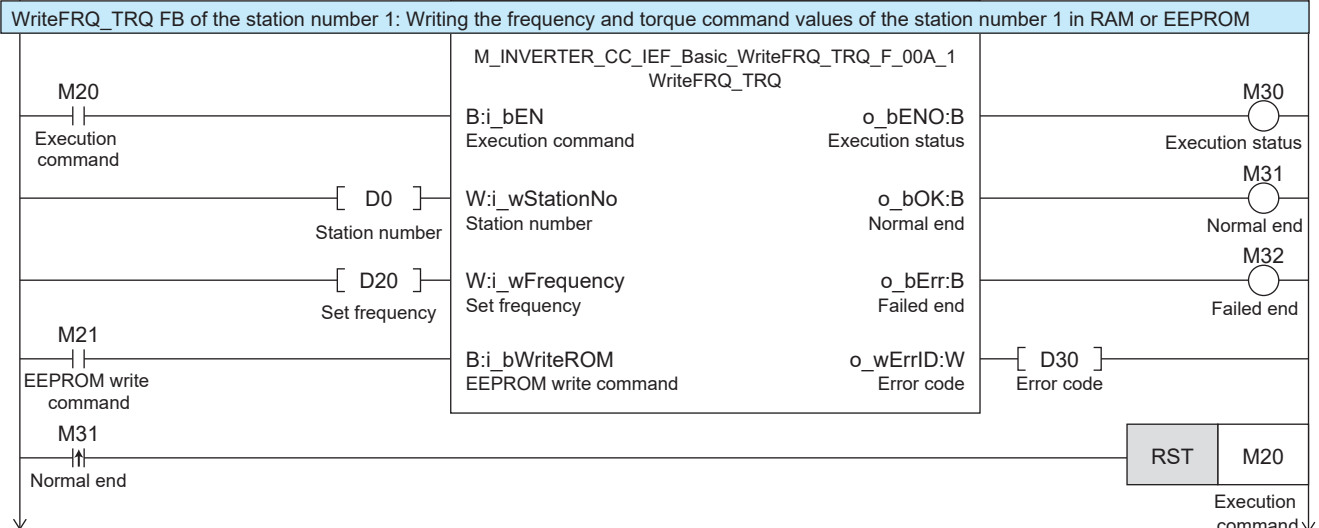
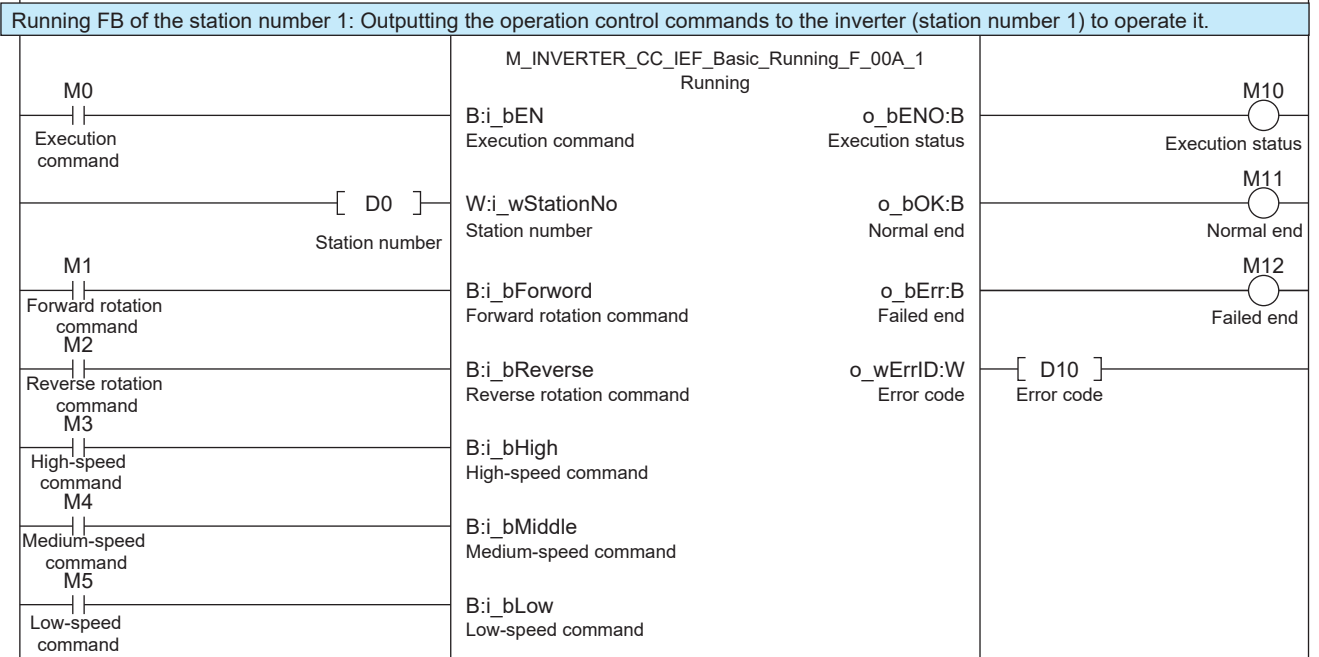
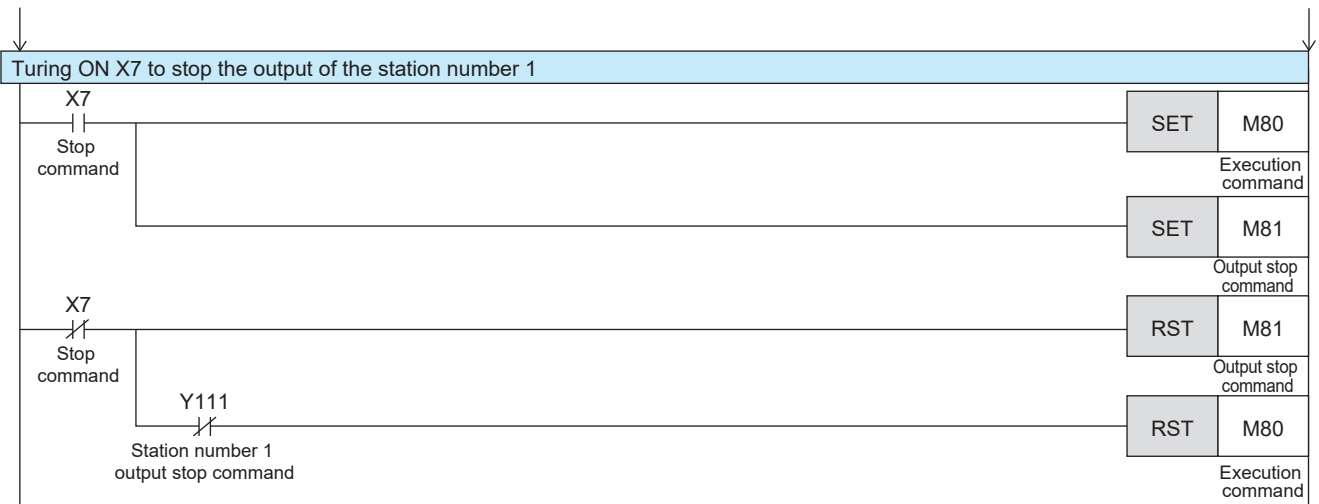
When using e-Manual Viewer, the program copy function is available to perform programming. For details, refer to the following.

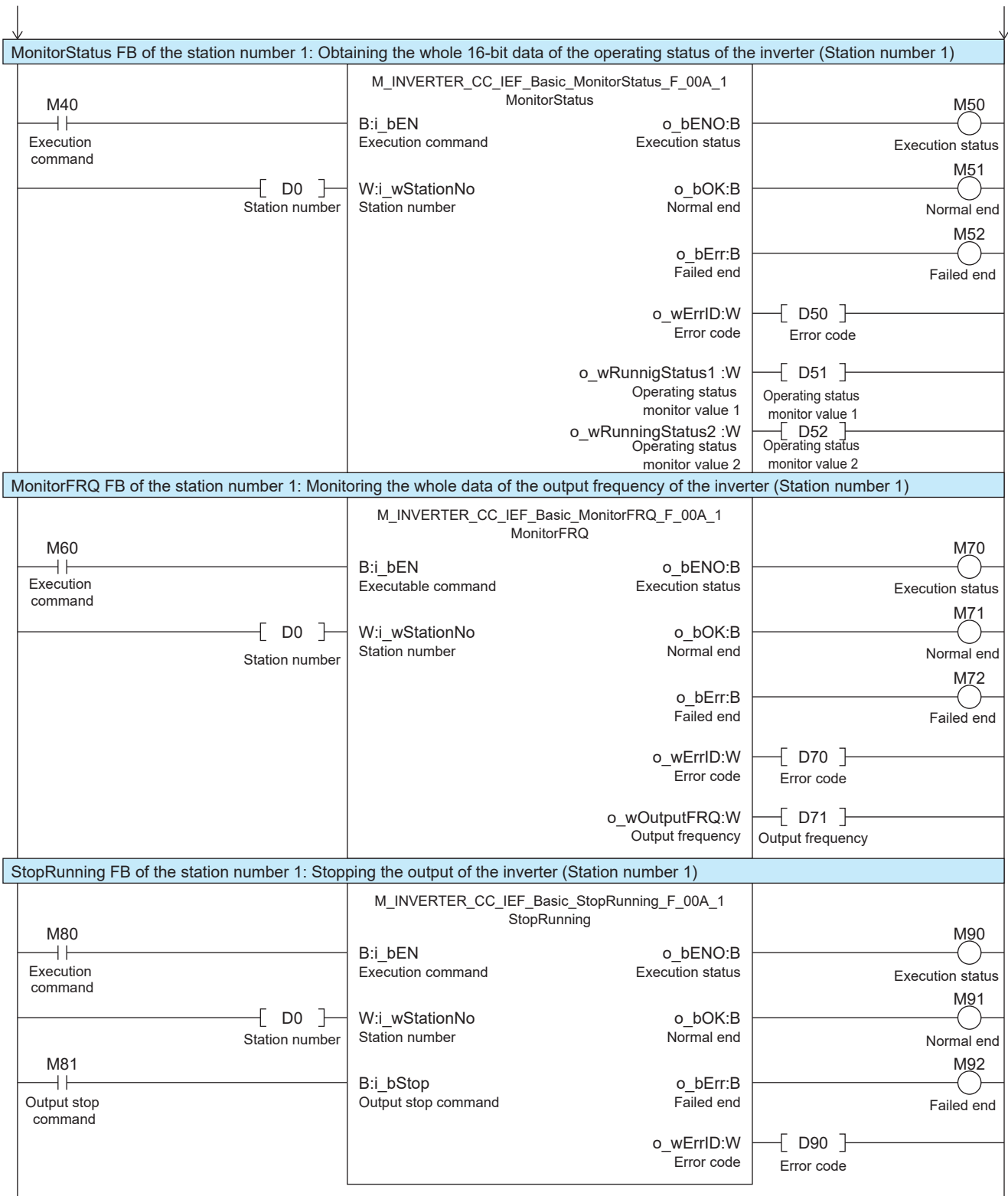
 Page 54 How to Use the Program Copy Function of e-Manual

## Program example for the station number 1

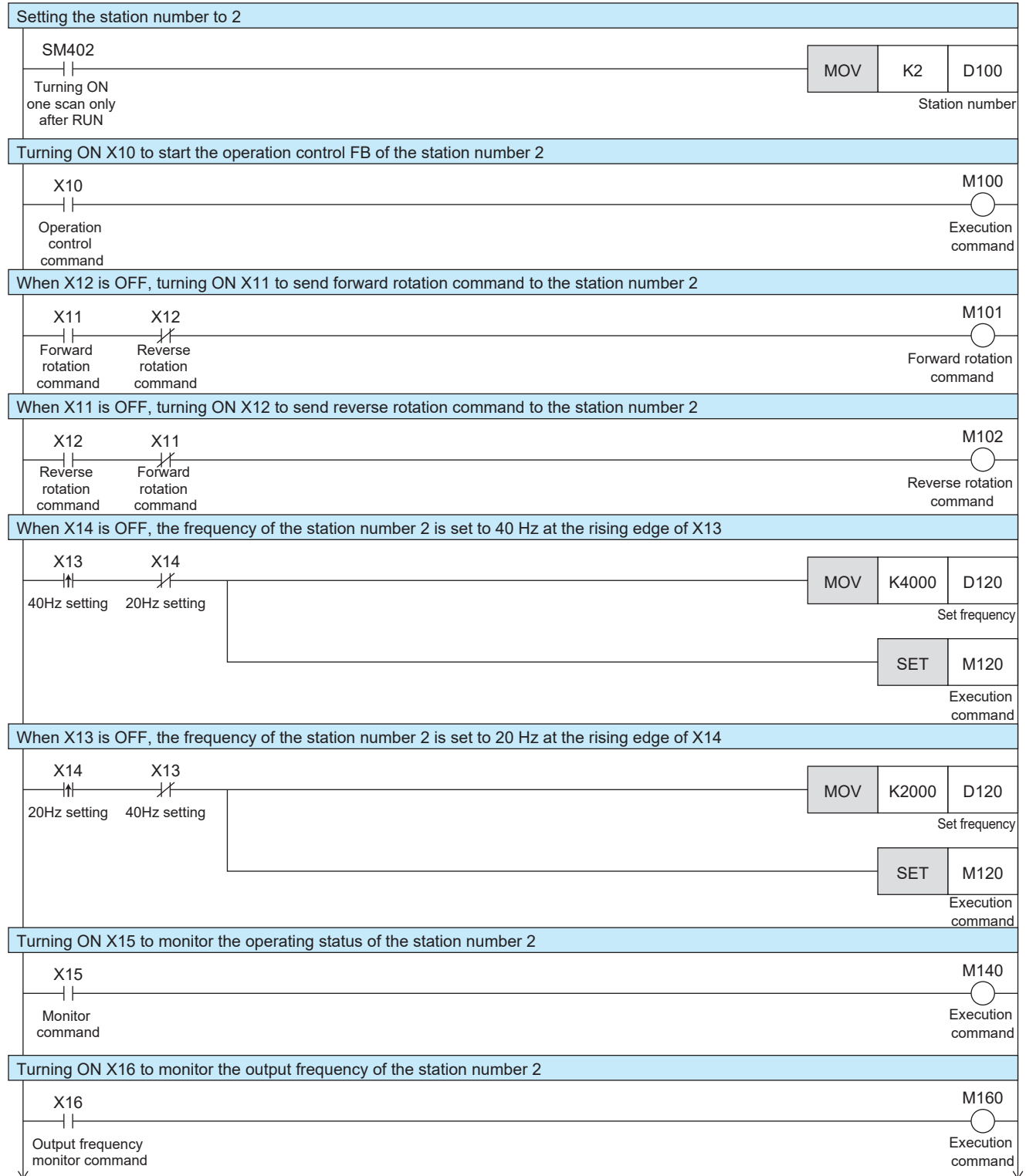


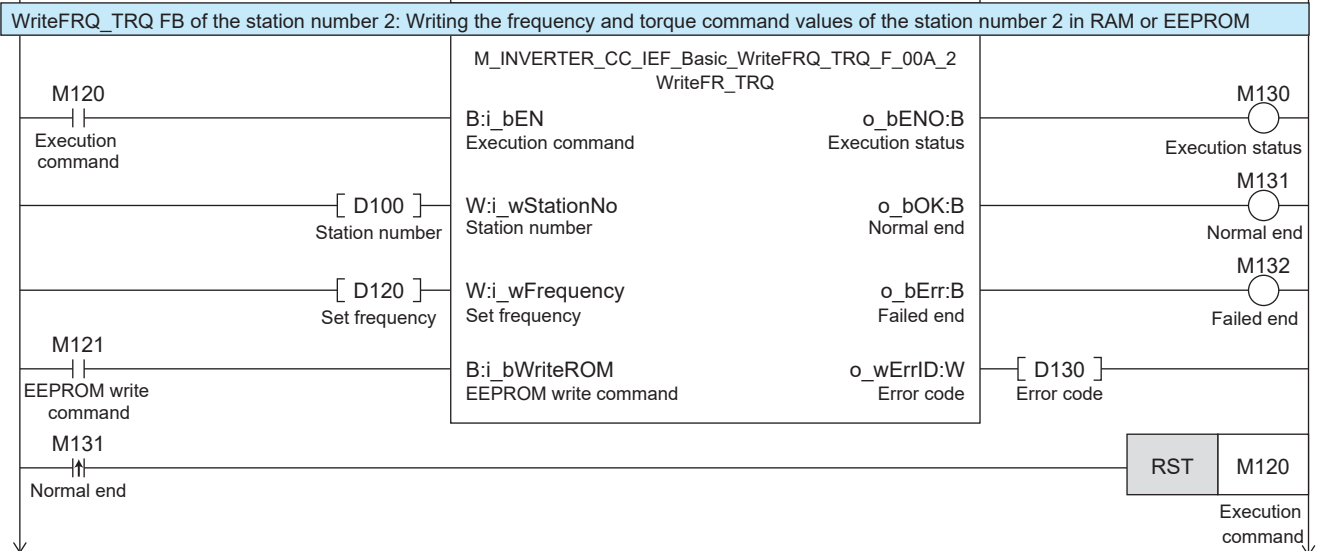
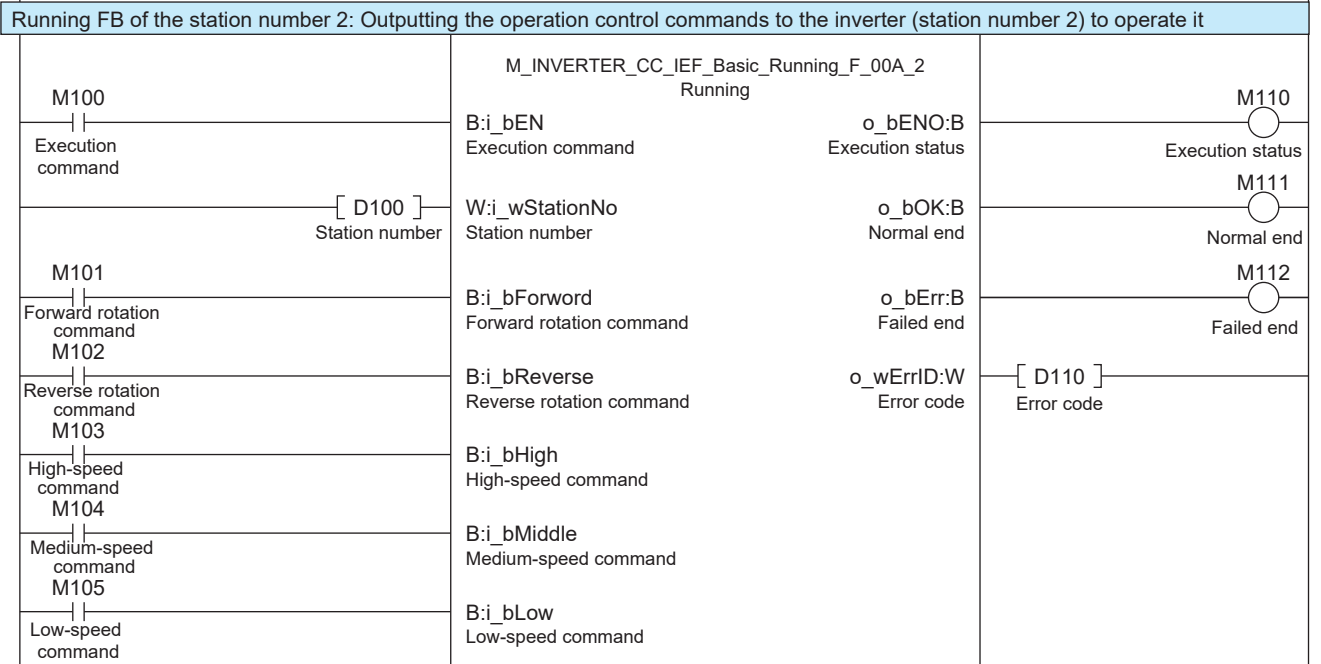
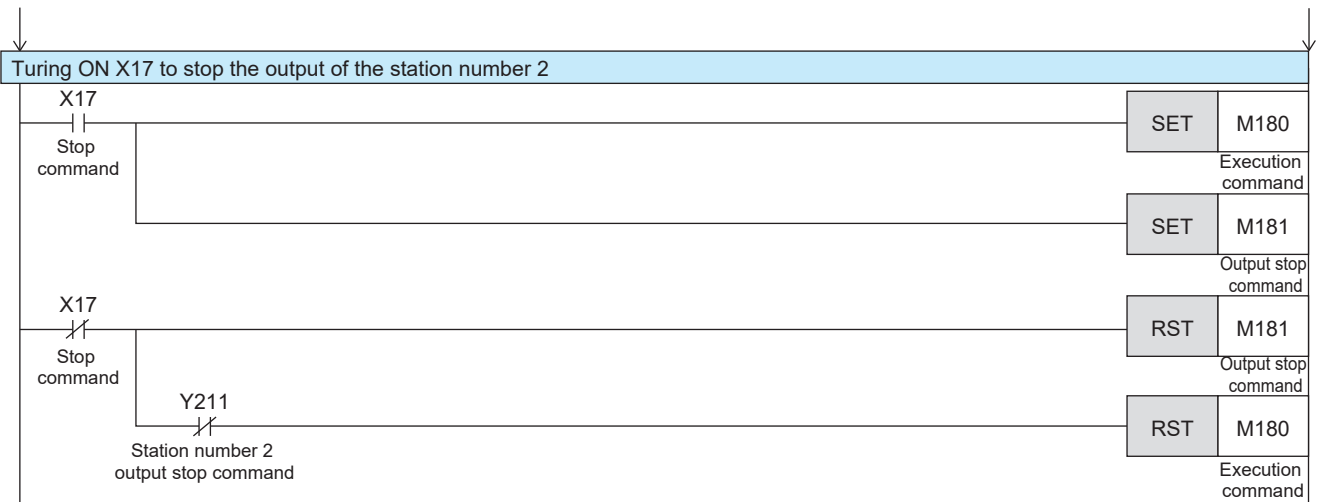


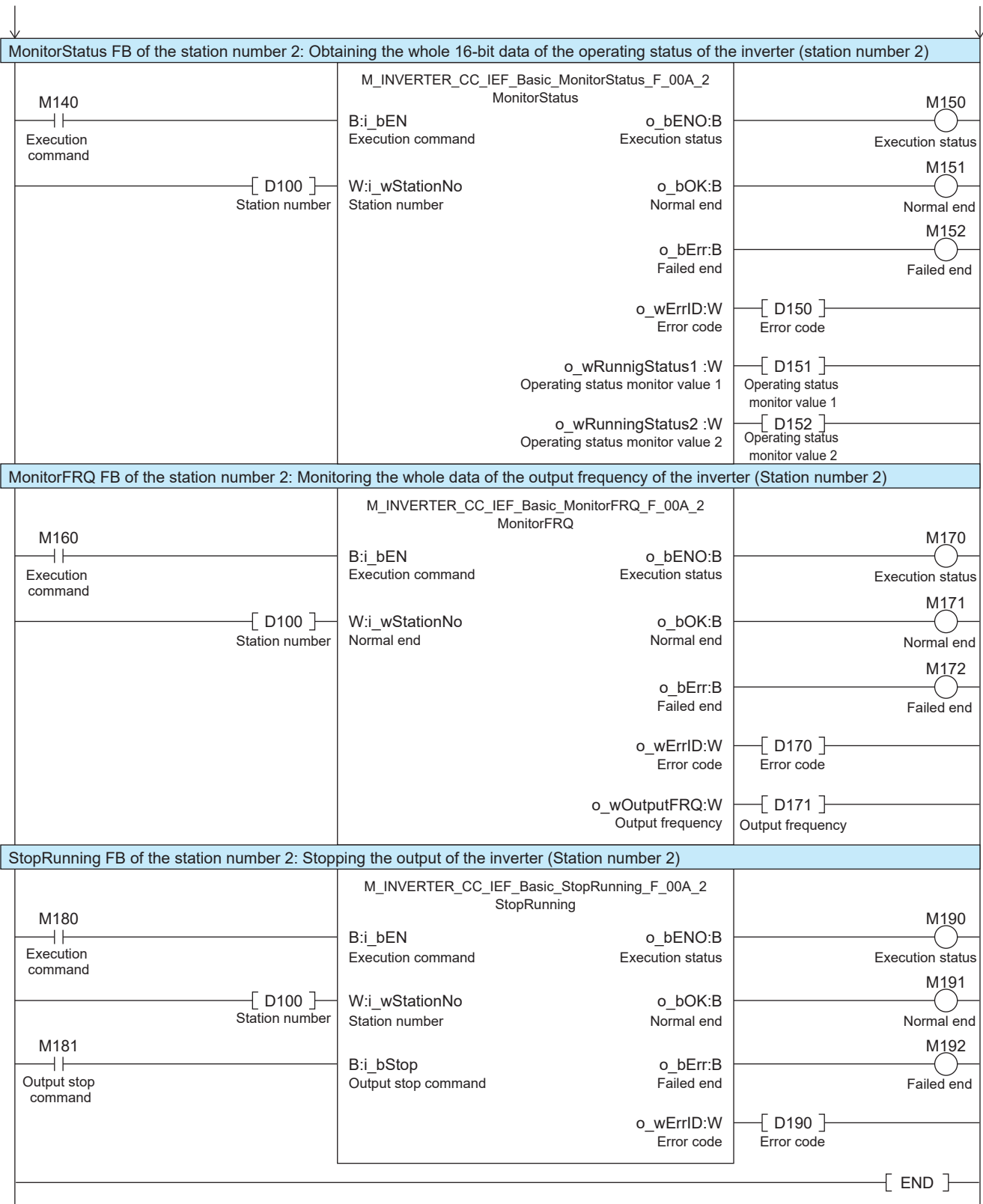




## Program example for the station number 2





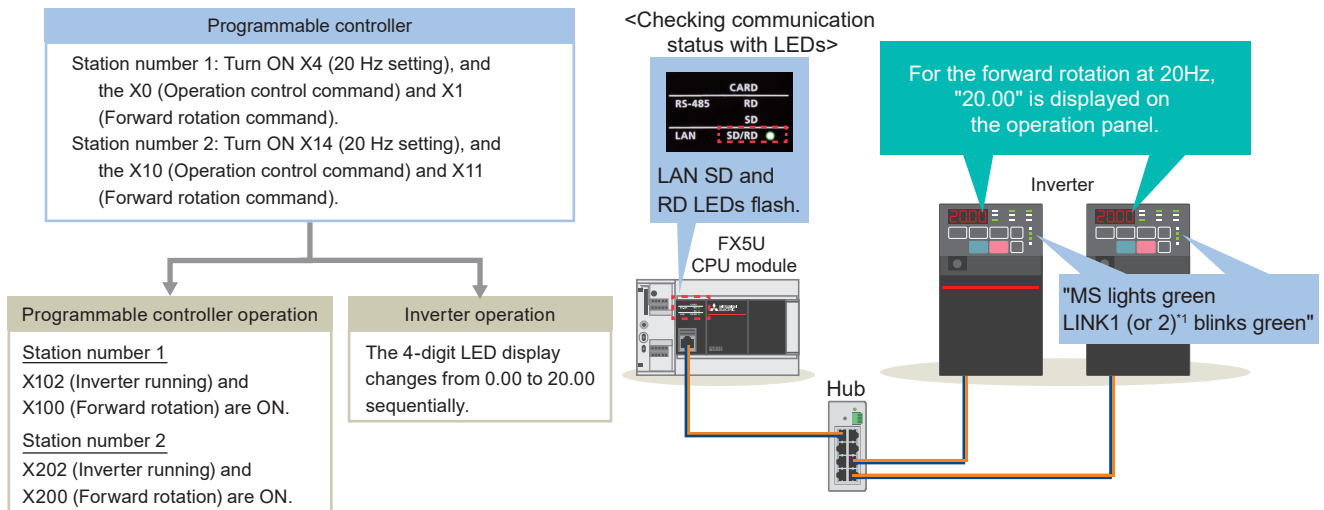


## 5.4 Operation Check

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.

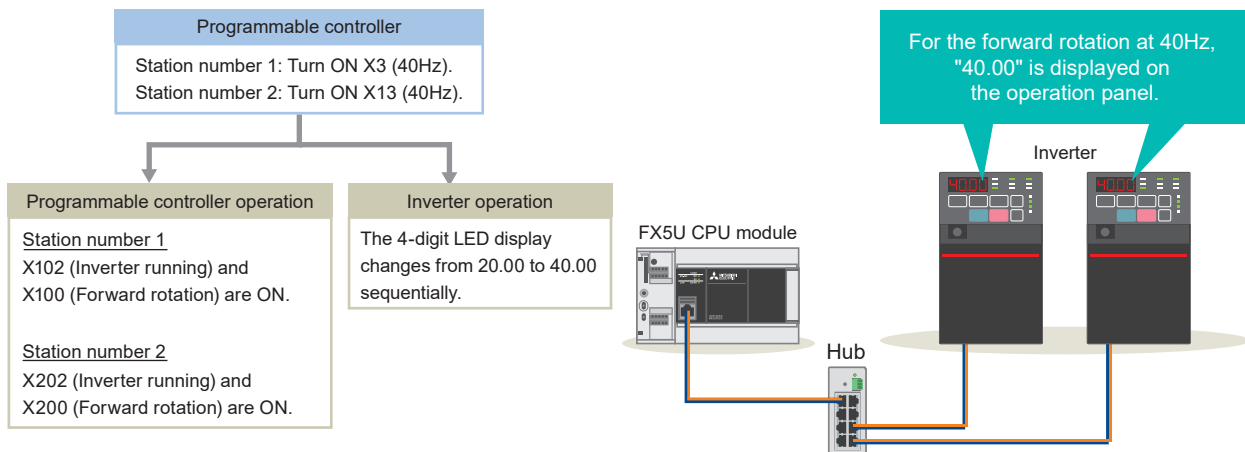
Change the programmable controller state from STOP to RUN and check the following.

### Turning ON the forward rotation command input



\*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)



#### 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.

- ① Make sure that the ladder diagram is displayed on GX Works3, and press the **[F3]** key. (The status is changed to monitoring.)
- ② Place a cursor on the device (such as X1 and X3) to be turned ON.
- ③ Hold 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

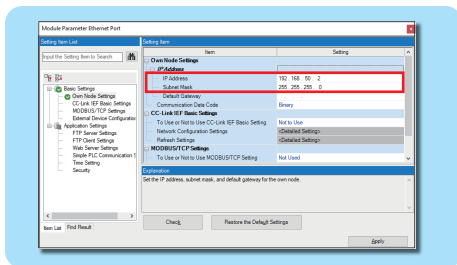
- Are the Ethernet cables fully inserted?

### Communication settings

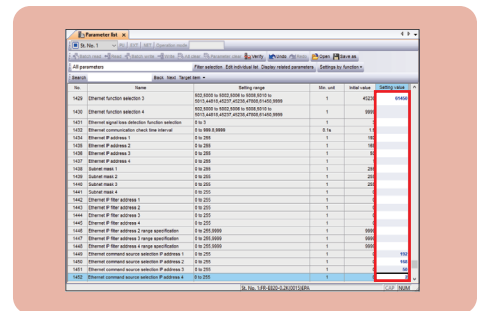
Programmable controller: Page 21 Parameter Settings

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.

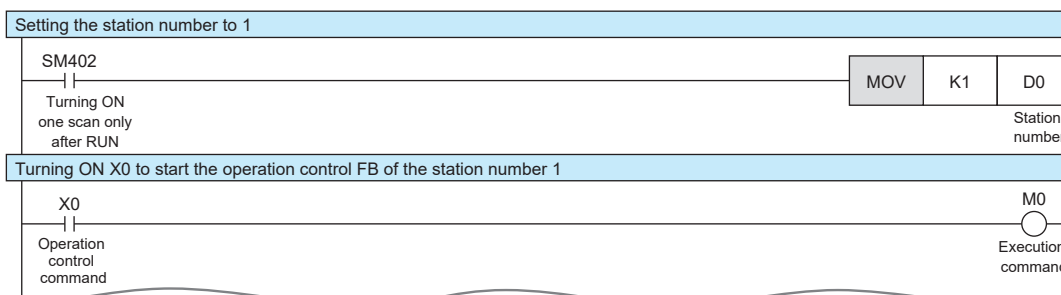


\* After the parameter values are changed, reset (or power OFF and ON) the inverter to reflect new values.

### Programs

Page 38 Program Examples

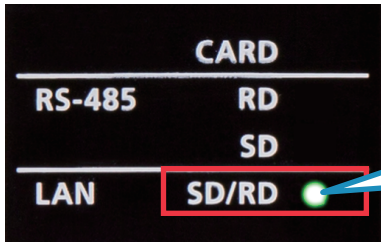
- Are the programs created as shown in the program examples?



# 6.2 Checking the Programmable Controller

## Checking the LED status

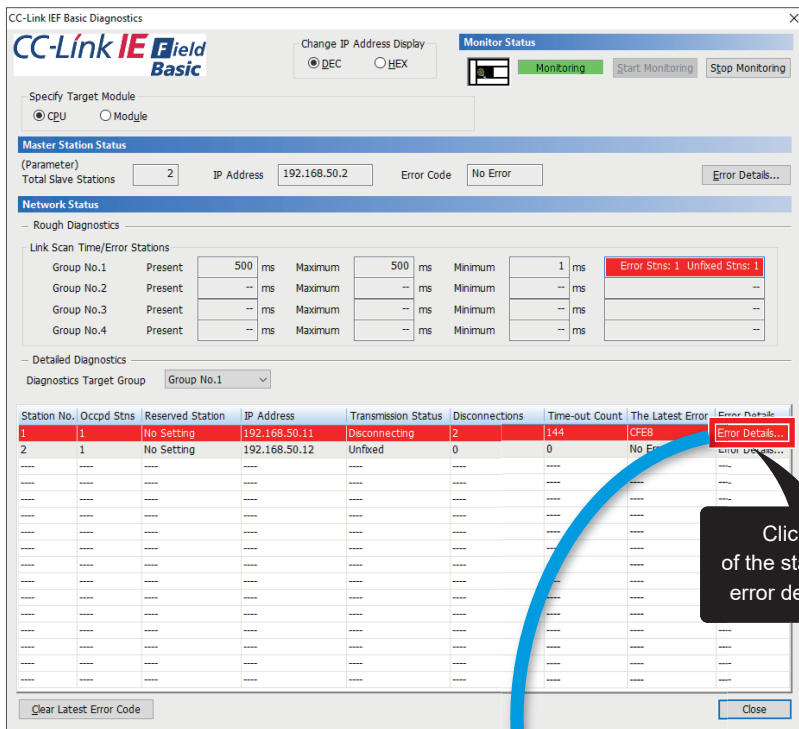
The communication status is checked with the SD/RD LED of the programmable controller.



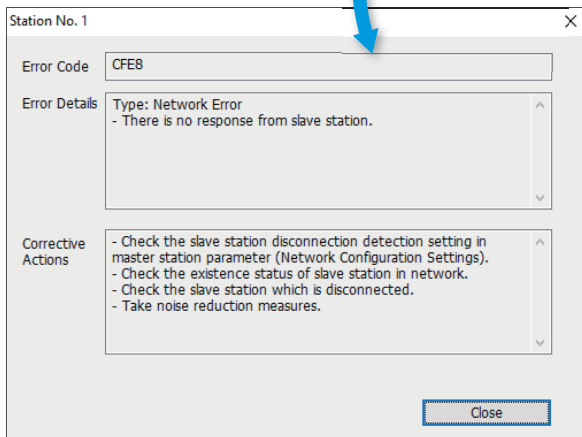
Normal communications: Flashes at high speed.  
Faulty communications: ON (Flicks at regular interval.)  
Disconnection of Ethernet cable of the programmable controller: OFF

## 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".



Click "Error Details" of the station number whose error details to be checked.






## 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.<br>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.<br>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.<br>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.<br>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).<br>Check the status of remote stations in the networks.<br>Check the remote station which is disconnected.<br>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 57 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. | <ul style="list-style-type: none"> <li>• Check that the Ethernet cable is installed correctly. (Check for contact fault, break in the cable, etc.)</li> <li>• Check that the inverter is in the External operation mode.</li> <li>• Check that the operation mode switching program is running.</li> <li>• Check that the operation mode switching program has been written correctly.</li> </ul> |
| The inverter does not start in the Network operation mode.    | <ul style="list-style-type: none"> <li>• Check that the inverter starting program is running.</li> <li>• Check that the inverter starting program has been written correctly.</li> <li>• Check that Pr.338 Communication operation command source is not set to External.</li> </ul>  |

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 57 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.   |

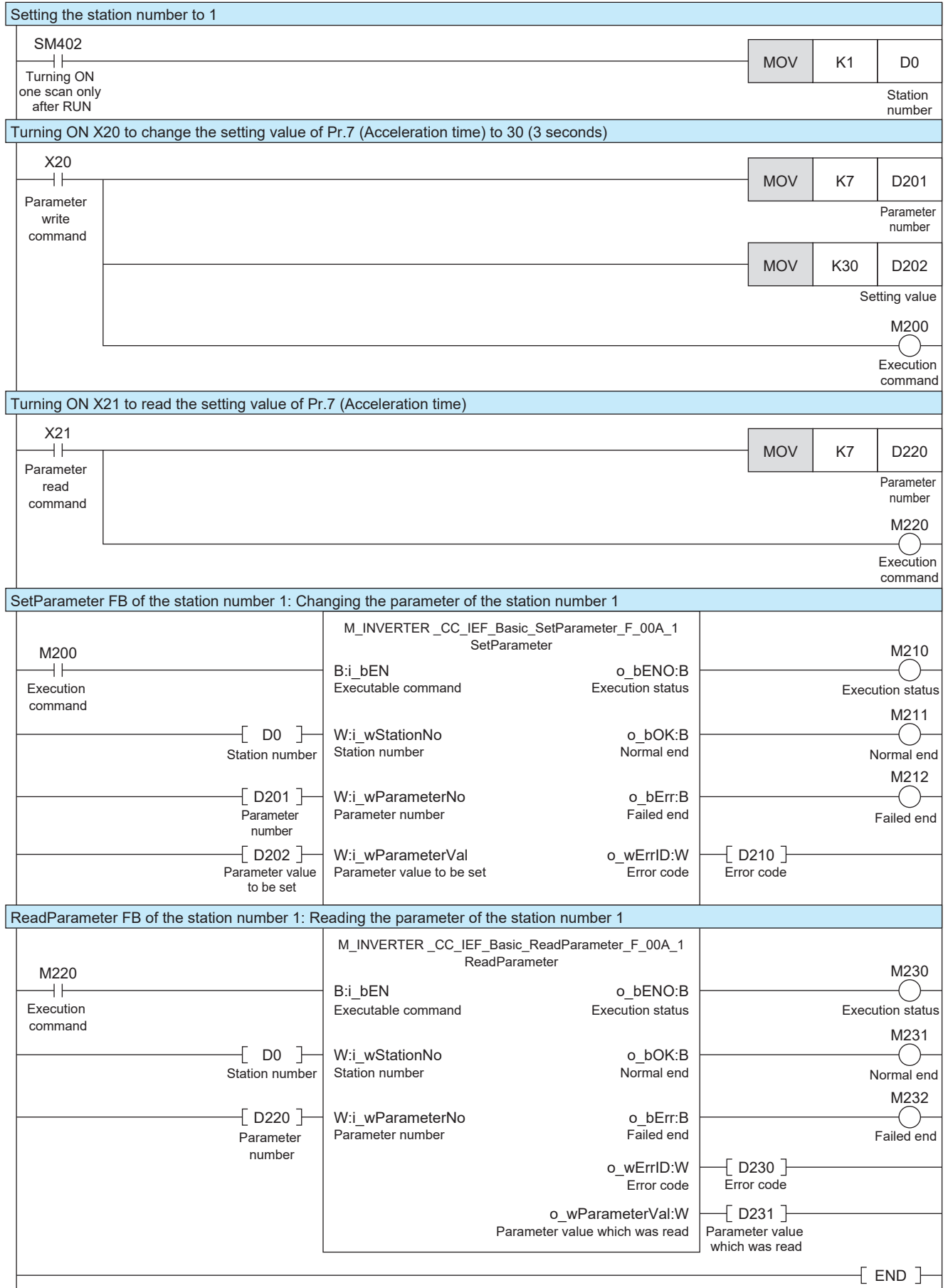
### Program examples using FBs

| Program example   | FB used   | Reference                                     |
|---|---|---|
| Sending the operation command to the inverter and changing and monitoring a frequency of the inverter | <ul style="list-style-type: none"> <li>M+INVERTER-CC-IEF-Basic_Running</li> <li>M+INVERTER-CC-IEF-Basic_StopRunning</li> <li>M+INVERTER-CC-IEF-Basic_WriteFRQ_TRQ</li> <li>M+INVERTER-CC-IEF-Basic_MonitorStatus</li> <li>M+INVERTER-CC-IEF-Basic_MonitorFRQ</li> </ul> | ☞ Page 38 Program Examples                    |
| Changing and checking the parameter   | <ul style="list-style-type: none"> <li>M+INVERTER-CC-IEF-Basic_SetParameter</li> <li>M+INVERTER-CC-IEF-Basic_ReadParameter</li> </ul>   | ☞ Page 51 Changing and checking the parameter |
| Switching the operation mode  | <ul style="list-style-type: none"> <li>M+INVERTER-CC-IEF-Basic_ExecuteCommandCode</li> </ul>  | ☞ Page 52 Switching the operation mode        |
| Resetting an inverter error   | <ul style="list-style-type: none"> <li>M+INVERTER-CC-IEF-Basic_ResetError</li> <li>M+INVERTER-CC-IEF-Basic_MonitorAlarm</li> </ul>  | ☞ Page 53 Resetting an inverter error         |

A

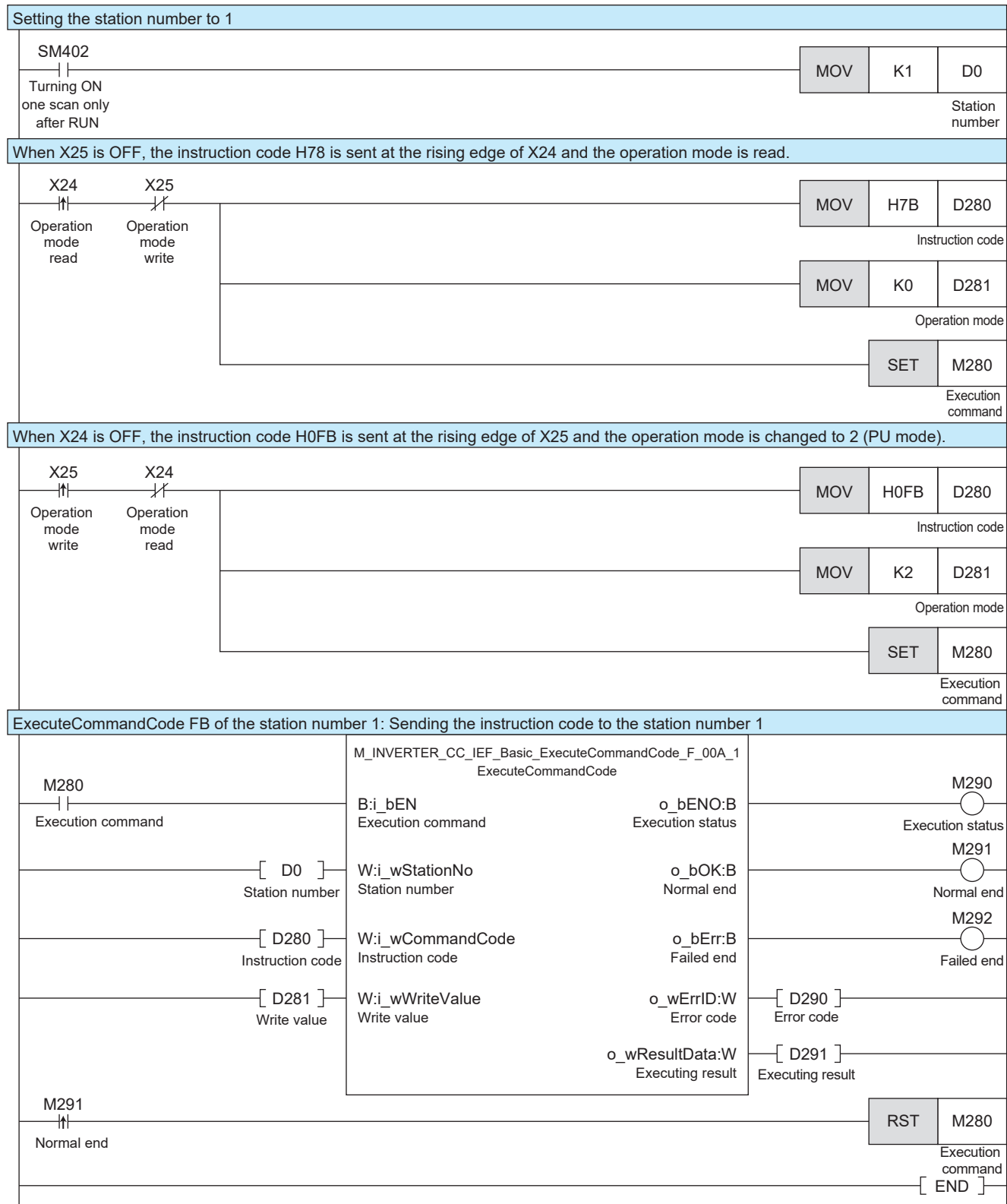
## Changing and checking the parameter

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



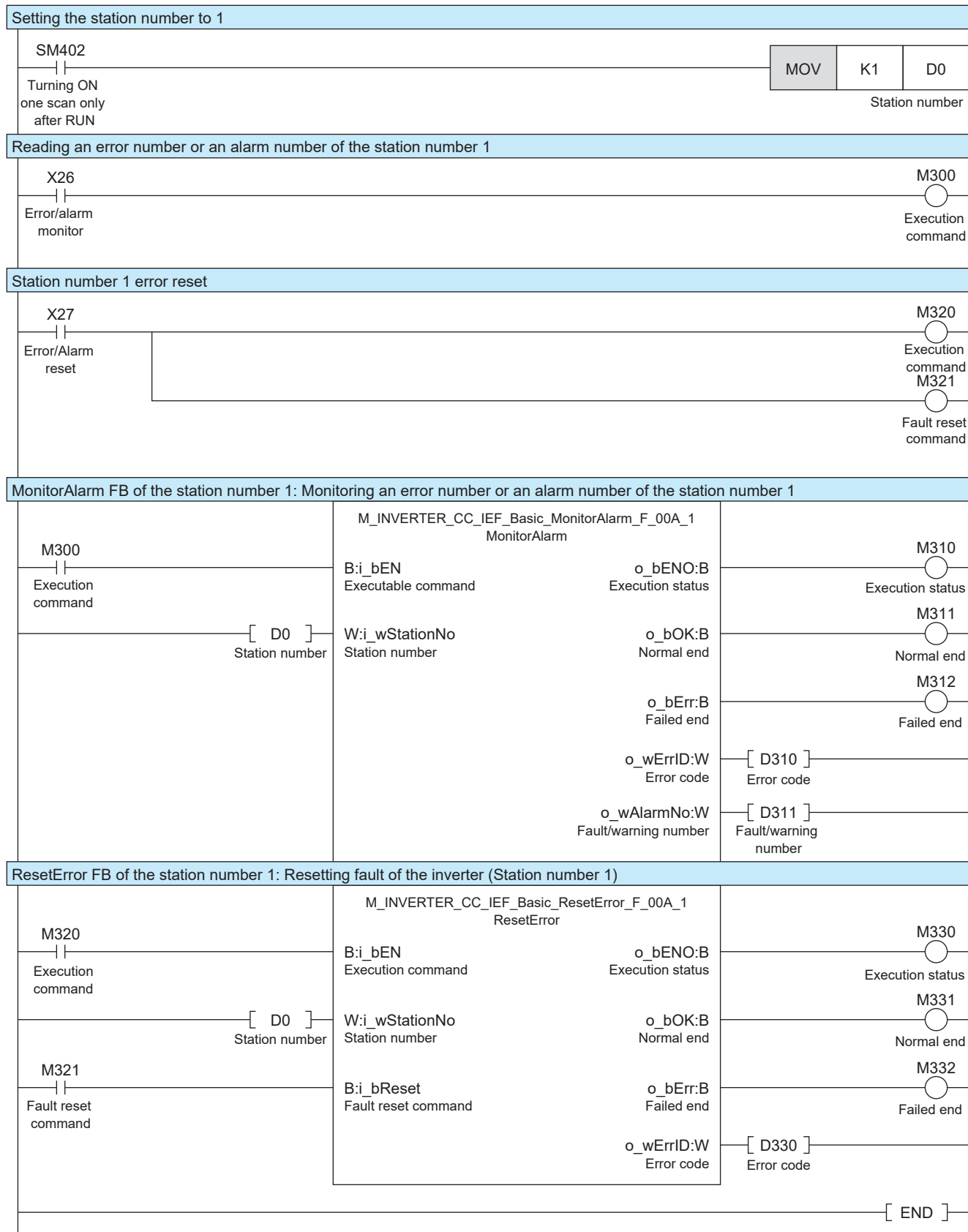
## Switching the operation mode

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

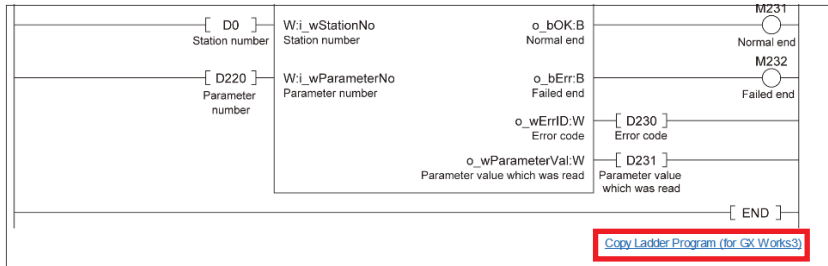
This program checks an error occurred in the inverter (station number 1) and resets the error.



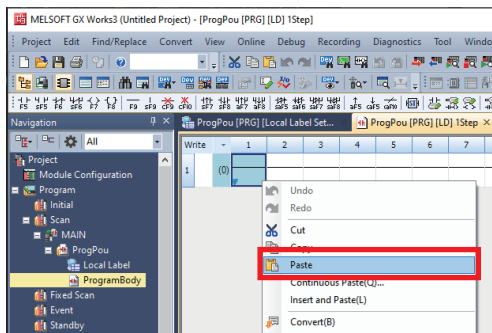
# Appendix 2 How to Use the Program Copy Function of e-Manual

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

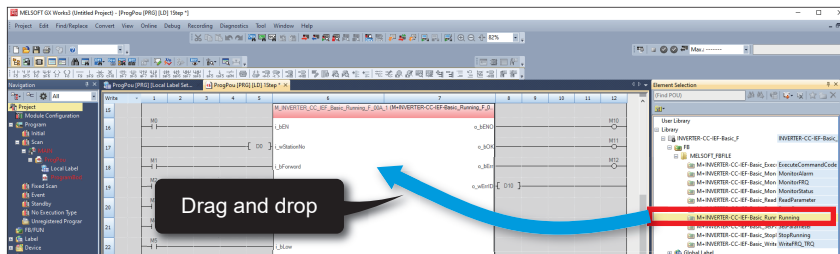
1. Click "Copy Ladder Program (for GX Works3)" in e-Manual.



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.



A

## 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.

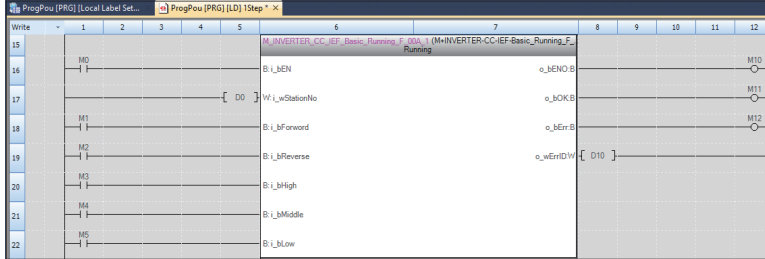
| Unclear definition of FB  |           |
|---|-----------|
| M_INVERTER_CC_IEF_Basic_Running_F_00A_1 (M-INVERTER-CC-IEF-Basic_Running_F_00A_1) |           |
| L_bEN   | e_bENO    |
| L_wStationNo  | e_bOKB    |
| L_bForward  | e_bErrB   |
| L_bReverse  | e_wErrIDV |
| L_bHigh   |           |
| L_bMiddle   |           |
| L_bLow  |           |

| Properly defined FB   |           |
|---|-----------|
| M_INVERTER_CC_IEF_Basic_Running_F_00A_1 (M-INVERTER-CC-IEF-Basic_Running_F_00A_1) |           |
| B_L_bEN   | e_bENO B  |
| W_L_wStationNo  | e_bOKB    |
| B_L_bForward  | e_bErr B  |
| B_L_bReverse  | e_wErrIDV |
| B_L_bHigh   |           |
| B_L_bMiddle   |           |
| B_L_bLow  |           |

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



- 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.



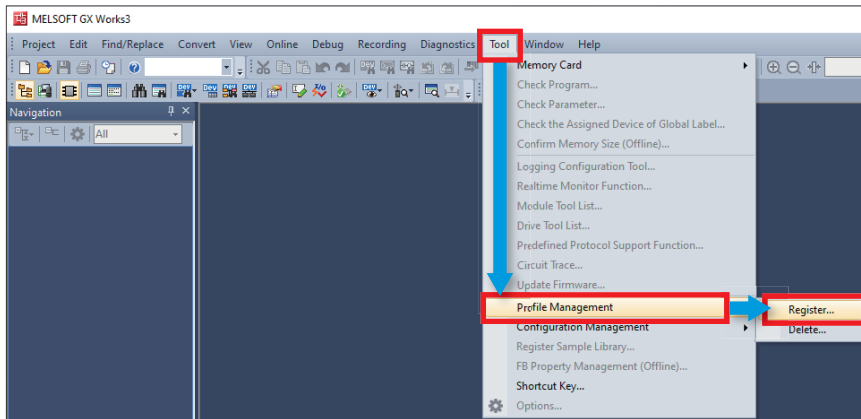
# Appendix 3 Downloading and Registering a Profile

A profile is the data that stores information of a connected device (such as a model).

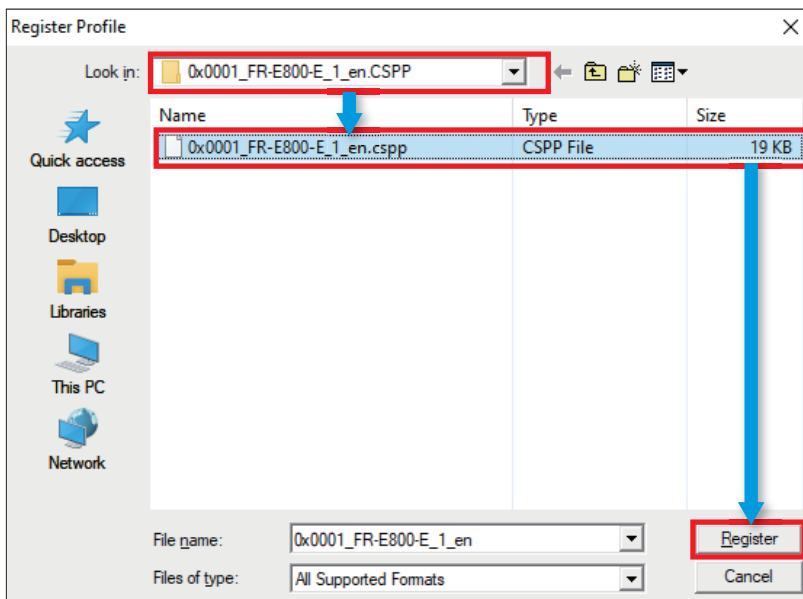
A profile can be used on a personal computer after it is registered using GX Works3 and shared with other MELSOFT products. Once a profile is registered using GX Works3, the profile data is reflected to other MELSOFT products.

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.



# Appendix 4 Supplementary Information

## 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 |   |   |   |   |   |   |   |   |   |   |   |      | FR-A800-E/F800-E |      |      |      |   |      |      |      |      |      |      |      |      |   |      |   |
|-----------|---|---|---|---|---|---|---|---|---|---|---|------|------------------|------|------|------|---|------|------|------|------|------|------|------|------|---|------|---|
| 0         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C    | 0                | 1    | 2    | 3    | 4 | 5    | 6    | 7    | 8    | 9    | A    | B(b) | C    | c | D(d) |   |
| 0         | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | b | C    | 0                | 1    | 2    | 3    | 4 | 5    | 6    | 7    | 8    | 9    | A    | b    | C    | c | d    |   |
| D         | E | F | G | H | I | J | K | L | M | N | O | P    | E(e)             | F(f) | G(g) | H    | h | I(i) | J(j) | K(k) | L(l) | M(m) | N    | n    | O    | o | P(p) |   |
| d         | E | F | G | H | I | J | K | L | M | N | O | P    | E                | F    | G    | H    | h | I    | J    | K    | L    | M    | N    | n    | O    | o | P    |   |
| Q         | R | S | T | U | V | W | X | Y | Z | - | _ | Q(q) | R                | r    | S(s) | T(t) | U | u    | V    | v    | W    | w    | X(x) | Y(y) | Z(z) |   |      |   |
| q         | r | s | t | u | v | w | x | y | z | - | _ | Q    | R                | r    | S    | s    | T | t    | U    | u    | V    | v    | W    | w    | X    | x | Y    | 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

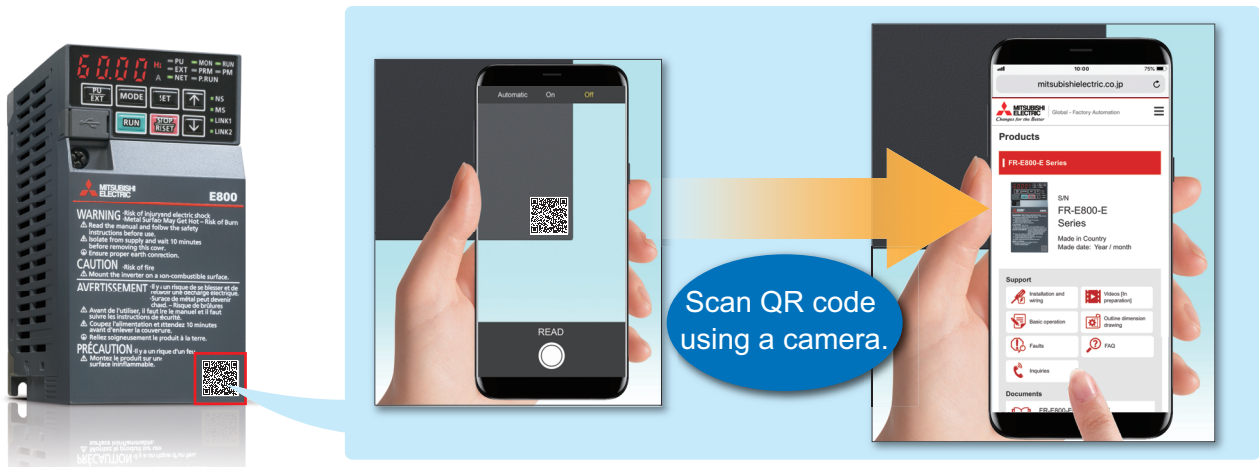
📖 Section 6.4 List of the fault displays in the FR-A800 Instruction Manual (Detailed)

📖 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.



# REVISIONS

| Revision date | Version | Description  |
|---------------|---------|--|
| June 2020     | A       | First edition  |
| November 2020 | B       | ■Added or modified parts<br>Section 5.1, 5.3   |
| January 2023  | C       | ■Added or modified parts<br>Front cover, INTRODUCTION, RELEVANT MANUALS, Section 1.4, 3.1, 3.4, 6.2, Appendix 4,<br>WARRANTY, TRADEMARKS |
| February 2023 | D       | ■Added or modified parts<br>KEY FEATURES, Section 1.1, Appendix 4  |

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# WARRANTY

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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

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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, 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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