



**MELSOFT**

**FR Configurator2**

**INSTRUCTION MANUAL**

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**INVERTER SETUP SOFTWARE**

**SW1DND-FRC2-E**

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# INTRODUCTION

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Thank you for choosing this Mitsubishi Electric Inverter Setup Software.

This Instruction Manual provides handling information and precautions for use of this product. Incorrect handling might cause an unexpected fault. Before using the software, please read this Instruction Manual carefully to use the software to its optimum performance.

Please forward this Instruction Manual to the end user.

When reading this Instruction Manual, note the following.

- This Instruction Manual is written on the basis that Windows® 7 Professional (32-bit) (English version) is the operating system.  
To use this software on the 64-bit system, read "\Program Files" used in this Instruction Manual as "\Program Files (x86)".
- Drive D is described as the DVD drive and Drive C as the hard disk drive.

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## For Maximum Safety

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- This product has not been designed or manufactured for the use with any equipment or system operated under life-threatening conditions.
  - Please contact our sales office when you are considering using this product in special applications such as passenger mobile, medical, aerospace, nuclear, power or undersea relay equipment or system.
  - Although this product was manufactured under conditions of strict quality control, you are strongly advised to install safety devices to prevent serious accidents when it is used in facilities where breakdowns of the product are likely to cause a serious accident.
- 

## Design precautions

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- To maintain the security (confidentiality, integrity, and availability) of the inverter and the system against unauthorized access, DoS<sup>\*1</sup> attacks, computer viruses, and other cyberattacks from external devices via network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions. We shall have no responsibility or liability for any problems involving inverter trouble and system trouble by DoS attacks, unauthorized access, computer viruses, and other cyberattacks.
  - Depending on the network environment, the inverter may not operate as intended due to delays or disconnection in communication. Carefully consider what type of environment this product will be used in and any safety issues related to its use.
- 

\*1 DoS: A denial-of-service (DoS) attack disrupts services by overloading systems or exploiting vulnerabilities, resulting in a denial-of-service (DoS) state.

# MEMO

# CHAPTER 1 OUTLINE

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# 1 OUTLINE

This chapter explains the outline for use of this product.

Always read the instructions before using the software.

The available connection methods and usable parameters differ depending on the inverter. For details, refer to the Instruction Manual of the inverter.

## ◆ Abbreviation / generic name

Item	Description
Operation panel	Operation panel (FR-DU08) and LCD operation panel (FR-LU08)
Parameter unit	Parameter unit (FR-PU07)
PU	Operation panel and parameter unit
Inverter	Mitsubishi Electric inverter / sensorless servo
FR-A800	Mitsubishi Electric FR-A800 series / FR-A800 Plus series inverter
FR-B	Mitsubishi Electric FR-B inverter (A800 specifications)
FR-B3	Mitsubishi Electric FR-B3 inverter (A800 specifications)
FR-B4	Mitsubishi Electric FR-B4 inverter (A800 specifications)
FR-F800	Mitsubishi Electric FR-F800 series inverter
FR-E800	Mitsubishi Electric FR-E800 series inverter
FR-CS80	Mitsubishi Electric FREQROL-CS80 inverter
FR-A700	Mitsubishi Electric FR-A700 series inverter
FR-B (700)	Mitsubishi Electric FR-B inverter (A700 specifications)
FR-B3 (700)	Mitsubishi Electric FR-B3 inverter (A700 specifications)
FR-D700	Mitsubishi Electric FR-D700 series inverter
FR-F700	Mitsubishi Electric FR-F700 series inverter
FR-F700P	Mitsubishi Electric FR-F700P series inverter
FR-E700	Mitsubishi Electric FR-E700 series inverter
FR-E700-NE	Mitsubishi Electric FR-E700 inverter Ethernet model
FR-E700EX	Mitsubishi Electric FR-E700EX series sensorless servo drive unit
FR-D700-G	Mitsubishi Electric FR-D700-G series sensorless servo drive unit
FR-E560	Mitsubishi Electric FR-E500 series inverter
Pr.	Parameter number (Number assigned to function)
PU operation	The start and frequency commands are given by the operation panel, parameter unit, or RS-485 communication, via the PU connector.
NET operation	The start and frequency commands are given via the RS-485 terminals, a communication option, or the Ethernet connector.
External operation	The start and frequency commands are given by an external potentiometer and switches, via control circuit terminals.
Combined operation	Combined operation using the PU (operation panel / parameter unit) and External operation
Mitsubishi Electric standard motor	SF-JR
Mitsubishi Electric constant-torque motor	SF-HRCA
Vector control dedicated motor	SF-V5RU

## ◆ Mark

- [ ]: Indicates a menu selected from menu bar, or button used on windows.
- " ": Indicates a title name of a window.

# 1.1 Before using this software

This software is an effective support tool for startup and maintenance of the Mitsubishi Electric general-purpose inverter. The following functions can be performed efficiently on a personal computer.

Function	Description	Release version	Free trial version
Parameter list	Displays the parameter list and the initial value change list, and allows editing and setting of the parameters. Parameters can also be set by function in the "Settings by function" window.	○	○
Safety parameter setting	Displays the safety parameter list and the initial value change list, and allows editing and setting of the safety parameters.	○	○
Convert	Parameter settings of the conventional models can be copied to the 800 series parameter settings.	○	○
Diagnosis	Shows the fault history, serial number, life check, diagnosis result output, Ethernet status, and online status.	○	○
AI fault diagnosis	When a fault occurs and the fault indication is displayed, probable causes of the fault are determined using AI technology to suggest corrective actions.	○	×
Graph	Displays the values monitored by the high speed or monitor sampling and the USB trace file in a graph format.	○	×
Batch monitor	Displays the monitored items of the inverter in a batch.	○	×
I/O terminal monitor	Displays the I/O terminal status in a batch.	○	×
Test operation	"Test operation" allows the selected inverter's frequency to be displayed, operation mode to be switched and displayed, forward and reverse operation commands to be sent, setting frequency to be written, and other functions to be done.	○	○
Developer	Used for creating sequence programs and writing them to the inverter to enable the use of the PLC function of the inverter.	○	×
USB memory parameter copy file edit	Used for editing the parameter setting values (USB memory parameter copy file) read from the inverter to the USB memory.	○	×
Ethernet parameter setting	Used for setting parameters of the inverter for Ethernet communication.	○	○
iQSS backup file conversion	Used for converting a file in the backup/restore format generated by the Mitsubishi Electric GOT (Human Machine Interface). The file is converted into the format that can be used for editing the USB memory parameter copy file or in Developer.	○	○
Firmware update	The inverter firmware can be updated by using Firmware Update Tool.	○	○
Help	Displays contents of the inverter and software instruction manuals.	○	○

(○: Available, ×: Unavailable)

## NOTE

- If a file name or folder name is using Unicode, file writing or reading may not be performed correctly. Please use a file name and folder name without Unicode.
- The following functions are not compatible with this software.
  - Application starting with Windows® compatibility mode
  - Starting using "Run As..."
  - Fast User Switching
  - Remote Desktop
  - Large font size (Advanced setting of screen property)
  - DPI setting other than the normal size (Advanced setting of screen property)
  - Windows XP Mode
  - Windows Touch
  - Language setting other than Japanese in the [Format:] field of the "Region and Language" setting of the Control Panel
- A part of this software is using a function of Internet Explorer. This software may not operate properly depending on Internet Explorer setting.
- FR Configurator2 is not available when inverter is activated with FR-PU07BB Battery mode. FR Configurator2 may not operate properly.



## ◆ Related manuals

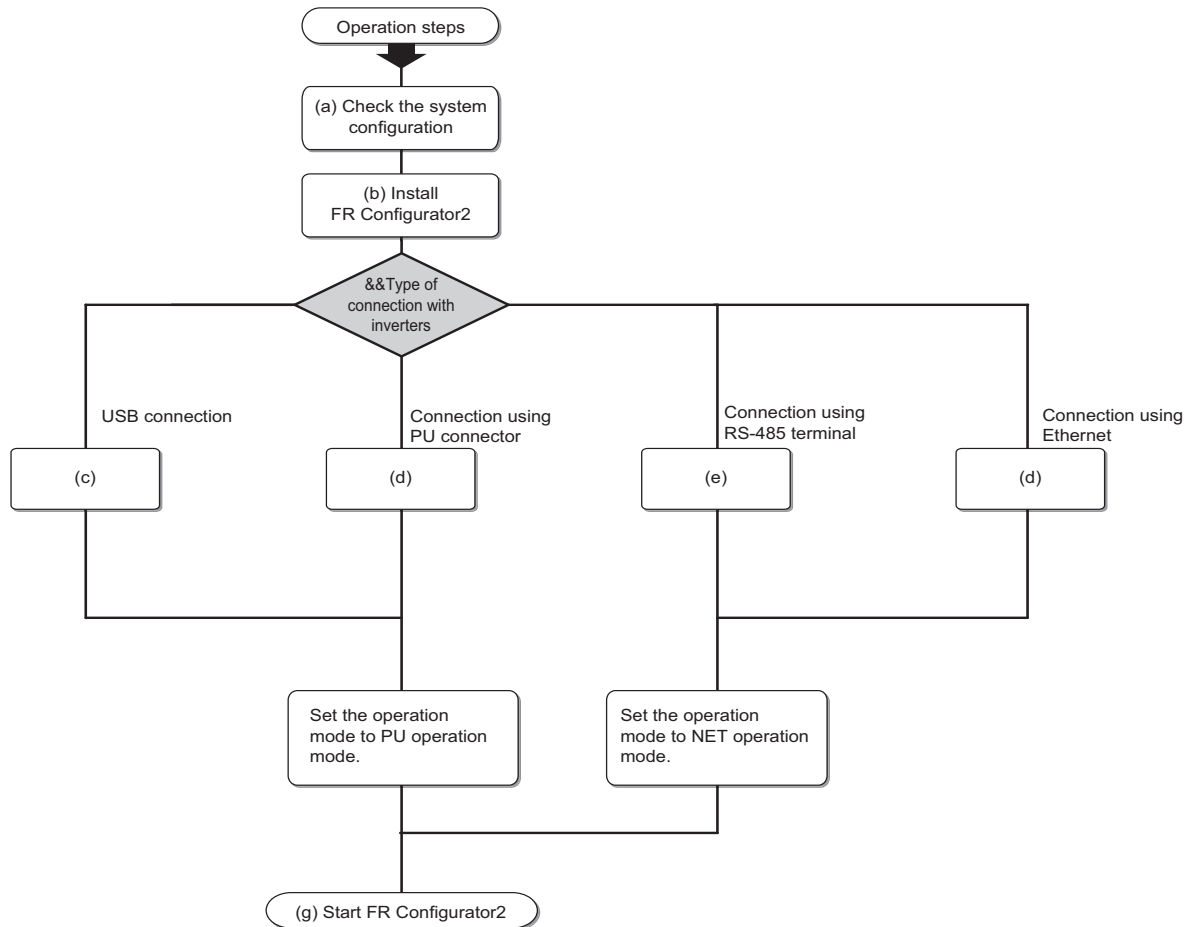
Manuals related to this product are shown in the following table. The download of the latest manuals is free at the Mitsubishi Electric FA Global Website. FR Configurator2 offers a link to the Mitsubishi Electric FA Global Website. For details, refer to [page 259](#).

Manual name	Manual number
FR-A800 Instruction Manual (Startup)	IB-0600493
FR-A800 Instruction Manual (Detailed)	IB-0600503ENG
FR-A802 (Separated Converter Type) Instruction Manual (Hardware)	IB-0600534ENG
FR-A806 (IP55/UL Type 12 Specifications) Instruction Manual (Hardware)	IB-0600531ENG
FR-A860 Instruction Manual (Detailed)	IB-0600563ENG
FR-A862 (Separated Converter Type) Instruction Manual (Hardware)	IB-0600571ENG
FR-A800-E Instruction Manual (Startup)	IB-0600626
FR-A802-E (Separated Converter Type) Instruction Manual (Hardware)	IB-0600631ENG
FR-A806-E (IP55/UL Type 12 Specifications) Instruction Manual (Hardware)	IB-0600634ENG
FR-A860-E Instruction Manual (Startup)	IB-0600638ENG-A
FR-A862-E (Separated Converter Type) Instruction Manual (Hardware)	IB-0600639ENG-A
FR-A870 (690 V Class Specification Inverter) Instruction Manual (Function)	IB-0600616ENG
FR-A870-E Instruction Manual (Hardware)	IB-0600803ENG
Ethernet Function Manual	IB-0600628ENG
&&CC-Link IE TSN Function Manual	IB-0600843ENG
FR-B, B3 Instruction Manual (Startup) (A800 Specifications)	IB-0600663
&&FR-B4 Instruction Manual (Startup) (A800 Specifications)	IB-0600774
FR-A800 Crane Function Manual	IB-0600581ENG
FR-A800-R2R Instruction Manual (Startup)	IB-0600605
FR-A802-R2R (Separated Converter Type) Instruction Manual (Hardware)	IB-0600607ENG
FR-A800-R2R Roll to Roll Function Manual	IB-0600622ENG
FR-A800-E-R2R Ethernet Function Manual	IB-0600813ENG
FR-A840-LC (Liquid Cooled Type) Instruction Manual (Hardware)	IB-0600683ENG
FR-A870-LC (Liquid Cooled Type) Instruction Manual (Hardware)	IB-0600613ENG
FR-F800 Instruction Manual (Startup)	IB-0600545
FR-F800 Instruction Manual (Detailed)	IB-0600547ENG
FR-F802 (Separated Converter Type) Instruction Manual (Hardware)	IB-0600550ENG
FR-F806 (IP55/UL Type 12 Specifications) Instruction Manual (Hardware)	IB-0600676ENG
FR-F860 Instruction Manual (Detailed)	IB-0600688ENG
FR-F862 (Separated Converter Type) Instruction Manual (Hardware)	IB-0600689ENG
FR-F800-E Instruction Manual (Startup)	IB-0600643
FR-F802-E (Separated Converter Type) Instruction Manual (Hardware)	IB-0600648ENG
FR-F806-E (IP55/UL Type 12 Specifications) Instruction Manual (Hardware)	IB-0600765ENG
FR-F862-E (Separated Converter Type) Instruction Manual (Hardware)	IB-0600692ENG
FR-E800 Instruction Manual (Function)	IB-0600868ENG
FR-E800 Instruction Manual (Communication)	IB-0600871ENG
FR-E800 Instruction Manual (Maintenance)	IB-0600874ENG
FREQROL-CS80 Instruction Manual (Detailed)	IB-0600721ENG
PLC Function Programming Manual	IB-0600492ENG
FR-A700 Instruction Manual (Basic)	IB-0600225ENG
FR-A700 Instruction Manual (Applied)	IB-0600226ENG
FR-B, B3 Instruction Manual (Basic) (A700 Specifications)	IB-0600271ENG
FR-B, B3 Instruction Manual (Applied) (A700 Specifications)	IB-0600272ENG
FR-D700 Instruction Manual (Basic)	IB-0600438ENG
FR-D700 Instruction Manual (Applied)	IB-0600366ENG
FR-D700-NA Instruction Manual (Applied)	IB-0600368ENG
FR-D700-EC Instruction Manual (Applied)	IB-0600352ENG
FR-F700 Instruction Manual (Basic)	IB-0600176ENG
FR-F700 Instruction Manual (Applied)	IB-0600177ENG
FR-F700P Instruction Manual (Basic)	IB-0600411ENG
FR-F700P Instruction Manual (Applied)	IB-0600412ENG
FR-E700 Instruction Manual (Basic)	IB-0600441ENG
FR-E700 Instruction Manual (Applied)	IB-0600277ENG
FR-E700-NA Instruction Manual (Applied)	IB-0600334ENG

Manual name	Manual number
FR-E700-EC Instruction Manual (Applied)	IB-0600336ENG
FR-E700-NE Instruction Manual (Basic)	IB-0600712ENG
FR-E700-NE Ethernet Function Manual	IB-0600724ENG
FR-E700-NNE Installation Guideline	IB-0600716ENG
FR-E700-ENE Installation Guideline	IB-0600718ENG
FR-E700EX Instruction Manual (Basic)	IB-0600506ENG
FR-E700EX Instruction Manual (Applied)	IB-0600507ENG
FR-D700-G Instruction Manual (Basic)	IB-0600477ENG
FR-D700-G Instruction Manual (Applied)	IB-0600478ENG
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG

## ◆ Setting check

Check the following settings before configuring the inverter with this software.



Symbol	Explanation of steps	Refer to page
(a)	Check the system configuration	15
(b)	Install FR Configurator2	18
(c)	Set <b>Pr.548 USB communication check time interval</b> = "9999".	37, 88
(d)	Initial parameter settings can be used. (Set <b>Pr.122 PU communication check time interval</b> ≠ "0" and <b>Pr.123 PU communication waiting time setting</b> = "9999".)	40, 91
(e)	Set the station number in <b>Pr.331 RS-485 communication station number</b> (used for connecting multiple inverters). Set <b>Pr.336 RS-485 communication check time interval</b> ≠ "0" and <b>Pr.337 RS-485 communication waiting time setting</b> = "9999".	42, 93
(f)	<ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E/FR-E800-(SC)E Set the station number in <b>Pr.1425 Ethernet communication station number</b> (used for connecting multiple inverters). Set <b>Pr.1432 Ethernet communication check time interval</b> = "9999".</li> <li>• FR-A800-E-R2R Set the station number in <b>Pr.1074 Ethernet communication station number</b> (used for connecting multiple inverters). Set <b>Pr.1432 Ethernet communication check time interval</b> = "9999".</li> <li>• FR-E700-NE Set the station number in <b>Pr.831 Ethernet communication station number</b> (used for connecting multiple inverters). Set <b>Pr.852 Ethernet communication check time interval</b> = "9999".</li> </ul>	45, 97
(g)	Start FR Configurator2	22

 **NOTE**

- The available connection methods differ depending on the inverter. For the details, refer to the Instruction Manual of the inverter.

## 1.1.1 Product confirmation

After unpacking, check that the following items are contained in the package:

Item	Quantity
DVD	1
Installation Manual	1
License certificate	1

## 1.2 System requirement

### 1.2.1 System requirement for FR Configurator2

#### ◆ System requirement for FR Configurator2

Component <sup>*1</sup>	Description	
Personal computer	IBM PC/AT compatible machine with DVD drive (for installation), USB port, serial port, or Ethernet port	
	Operating system <sup>*2</sup>	<ul style="list-style-type: none"> <li>Windows® 10 (Home, Pro, Enterprise, IoT Enterprise<sup>*3</sup>)</li> <li>Windows® 8.1<sup>*4</sup></li> <li>Windows® 7 SP1 or later (Professional, Enterprise)</li> </ul>
	Processor	Intel Core i3 or higher, or equivalent
	Memory	<ul style="list-style-type: none"> <li>4 GB or more: Windows® 10, Windows® 8.1, Windows® 7 (64-bit Edition)</li> <li>2 GB or more: Windows® 10, Windows® 8.1, Windows® 7 (32-bit Edition)</li> </ul>
	Disk space	Free area of 7 GB or more
Display	Applicable to display at resolution of 1024 × 768 (XGA) or higher, and 256 colors or more. Compatible with the above personal computer.	
Keyboard	Compatible with the above personal computer.	
Mouse	Compatible with the above personal computer.	
Printer	Compatible with the above personal computer.	

\*1 FR Configurator2 may not operate properly depending on the type of personal computer, peripheral devices, or software used.

\*2 Operation on an operating system not listed here is not guaranteed.

\*3 32-bit Edition is not supported.

\*4 The operating system to which Monthly Rollup released in April 2014 has been installed is supported.

#### ◆ System requirement for Firmware Update Tool

Component	Description	
Personal computer	IBM PC/AT compatible machine with USB port or Ethernet port	
	Operating system <sup>*5*6</sup>	Windows® 10 (Home, Pro, Enterprise, IoT Enterprise)
	Processor	Intel Core i3 or higher, or equivalent
	Memory	4 GB or more: Windows® 10
	Disk space	Free area of 7 GB or more
Display	Applicable to display at resolution of 1024 × 768 (XGA) or higher, and 256 colors or more. Compatible with the above personal computer.	

\*5 Operation on an operating system not listed here is not guaranteed.

\*6 32-bit Edition is not supported.

## 1.2.2 Compatible inverters

FR Configurator2 is compatible with the following inverters.

### ◆ 800 series

Series	Model	Capacity	Structure	Function	
FR-A800 series	FR-A820	00046(0.4K) to 04750(90K)	Standard model	Standard	
	FR-A840	00023(0.4K) to 06830(280K)			
	FR-A842	07700(315K) to 12120(500K)	Separated converter type		
	FR-A846	00023(0.4K) to 03610(132K)	IP55 compatible model		
	FR-A860	00027(0.75K) to 04420(220K)	Standard model		
	FR-A862	05450(280K) to 08500(450K)	Separated converter type		
	FR-A800 series	FR-A820-E	00046(0.4K) to 04750(90K)	Standard model	Standard (Ethernet model)
		FR-A840-E	00023(0.4K) to 06830(280K)		
		FR-A842-E	07700(315K) to 12120(500K)	Separated converter type	
		FR-A846-E	00023(0.4K) to 03610(132K)	IP55 compatible model	
		FR-A860-E	00027(0.75K) to 04420(220K)	Standard model	
		FR-A862-E	05450(280K) to 08500(450K)	Separated converter type	
		FR-A870-E	00550 to 02860	Standard model	
		FR-A872-E	5690 to 07150	Separated converter type	
FR-B series (A800 specifications)	FR-B (200V)	750 to 3700, 5.5K to 75K	Standard model	Pressure-resistant, explosion-proof motor driving inverter	
	FR-B (400V)	750 to 3700, 7.5K to 110K			
FR-B3 series (A800 specifications)	FR-B3-(N)	400 to 3700, 5.5K to 37K			Standard model
	FR-B3-(N)H				
FR-B4 series (A800 specifications)	FR-B4	1.5K to 18.5K	Standard model	Crane function	
	FR-B4D				
FR-A800 Plus series	FR-A820-CRN	00046(0.4K) to 04750(90K)			Separated converter type
	FR-A840-CRN	00023(0.4K) to 06830(280K)			
	FR-A842-CRN	07700(315K) to 12120(500K)			
	FR-A820-E-CRN	00046(0.4K) to 04750(90K)	Standard model	Crane function (Ethernet model)	
	FR-A840-E-CRN	00023(0.4K) to 06830(280K)			
	FR-A842-E-CRN	07700(315K) to 12120(500K)	Separated converter type		
	FR-A820-R2R	00046(0.4K) to 04750(90K)	Standard model	Roll to Roll function	
	FR-A840-R2R	00023(0.4K) to 06830(280K)			
	FR-A842-R2R	07700(315K) to 12120(500K)	Separated converter type		
	FR-A820-E-R2R	00046(0.4K) to 04750(90K)	Standard model	Roll to roll function (Ethernet model)	
	FR-A840-E-R2R	00023(0.4K) to 06830(280K)			
	FR-A842-E-R2R	07700(315K) to 12120(500K)	Separated converter type		
	FR-A840-LC	03250(110K) to 06830(280K)	Standard model	Liquid cooled type	
	FR-A870-LC	03590(280K) to 04560(355K)		Liquid cooled type (Ethernet model)	
	FR-A840-E-LC	03250(110K) to 06830(280K)		Liquid cooled type (Ethernet model)	
	FR-A870-E-LC	03590(280K) to 04560(355K)		Liquid cooled type (Ethernet model)	
FR-A840-ELV	00126(3.7K) to 00770(30K)		Elevator function		
FR-F800 series	FR-F820	00046(0.75K) to 04750(110K)	Standard model	Standard	
	FR-F840	00023(0.75K) to 06830(315K)			
	FR-F842	07700(355K) to 12120(560K)	Separated converter type		
	FR-F846	00023(0.75K) to 03610(160K)	IP55 compatible model		
	FR-F860	00680(45K) to 04420(250K)	Standard model		
	FR-F862	05450(315K) to 08500(500K)	Separated converter type		
	FR-F800 series	FR-F820-E	00046(0.75K) to 04750(110K)	Standard model	Standard (Ethernet model)
		FR-F840-E	00023(0.75K) to 06830(315K)		
		FR-F842-E	07700(355K) to 12120(560K)	Separated converter type	
		FR-F846-E	00023(0.75K) to 03610(160K)	IP55 compatible model	
		FR-F860-E	00027(1.5K) to 04420(250K)	Standard model	
		FR-F862-E	05450(315K) to 08500(500K)	Separated converter type	

Series	Model	Capacity	Structure	Function
FR-E800 series	FR-E820	0008(0.1K) to 0900(22K)	Standard model	Standard
	FR-E840	0016(0.4K) to 0440(22K)		
	FR-E860	0017(0.75K) to 0120(7.5K)		
	FR-E820S	0008(0.1K) to 0110(2.2K)		
	FR-E810W	0008(0.1K) to 0050(0.75K)		
	FR-E820-E	0008(0.1K) to 0900(22K)		
	FR-E840-E	0016(0.4K) to 0440(22K)		Standard (Ethernet model)*1
	FR-E860-E	0017(0.75K) to 0120(7.5K)		
	FR-E820S-E	0008(0.1K) to 0110(2.2K)		
	FR-E810W-E	0008(0.1K) to 0050(0.75K)		
	FR-E820-SCE	0008(0.1K) to 0900(22K)		Standard (Safety communication model)
	FR-E840-SCE	0016(0.4K) to 0440(22K)		
	FR-E860-SCE	0017(0.75K) to 0120(7.5K)		
	FR-E820S-SCE	0008(0.1K) to 0110(2.2K)		
FREQROL-CS80 series	FR-CS84	012 to 295	Standard model	Standard
	FR-CS82S	025 to 100		

\*1 A personal computer (FR Configurator2) and the FR-E800-EPC can be connected only via USB.

## ◆ 700 series / 500 series

Series	Model	Capacity			
		Japan	North America	Europe	China
A700 series	FR-A720	0.4K to 90K	00030 to 03460	—	—
	FR-A740	0.4K to 500K	00015 to 09620	00023 to 12120	0.4K to 500K
	FR-A760	—	00017 to 06630	—	—
FR-B (A700) series	FR-B (200V)	750 to 3700, 5.5K to 75K	—	—	—
	FR-B (400V)	750 to 3700, 7.5K to 110K	—	—	—
FR-B3 (A700) series	FR-B3-(N)	400 to 3700, 5.5K to 37K	—	—	—
	FR-B3-(N)H	—	—	—	—
FR-F700 series	FR-F720	0.75K to 110K	00046 to 04750	—	—
	FR-F740	0.75K to 560K	00023 to 12120	00023 to 12120	S75K to S630K - CHT, 0.75K to 55K - CHT1
FR-F700P series	FR-F720P	0.75K to 110K	—	—	—
	FR-F740P	0.75K to 560K	—	—	—
FR-E700 series	FR-E710W	0.1K to 0.75K	008 to 050	—	—
	FR-E720	0.1K(SC) to 15K(SC)	008(SC) to 600(SC)	—	—
	FR-E720S	0.1K(SC) to 2.2K(SC)	008 to 110	008(SC) to 110(SC)	0.1K to 2.2K
	FR-E740	0.4K(SC) to 15K(SC)	016(SC) to 300(SC)	016(SC) to 300(SC)	0.4K to 15K
	FR-E720-NE	0.1K to 15K	008-SC to 600-SC	—	—
	FR-E720S-NE	0.1K to 2.2K	—	008-SC to 110-SC	0.1K to 2.2K
	FR-E740-NE	0.4K to 15K	016-SC to 300-SC	016-SC to 300-SC	0.4K to 15K
FR-D700 series	FR-D710W	0.1K to 0.75K	008 to 042	—	—
	FR-D720	0.1K to 15K	008 to 318	—	—
	FR-D720S	0.1K to 2.2K	008 to 100	008(SC) to 100(SC)	0.1K to 2.2K
	FR-D740	0.4K to 15K	012 to 160	012(SC) to 160(SC)	0.4K to 7.5K
FR-E700EX series	FR-E720EX	0.1K to 3.7K	—	—	—
FR-D700-G series	FR-D720-G	0.2K to 3.7K	—	—	—
	FR-D740-G	0.4K to 3.7K	—	—	—
FR-E500 series	FR-E560	—	0.75K to 7.5K	—	—

# 1.3 Installation and uninstallation

## 1.3.1 Installation of FR Configurator2

To use FR Configurator2, the files included on the setup disk (DVD) or the downloaded file must be installed onto the personal computer.

Check the following points before the installation.

- Close any other applications that have already been running.
- For the installation, log on as an administrator (Administrator account) and start installation.
- If an inverter is connected by the USB cable, disconnect the USB cable.
- Installation files are compressed. Copying the files does not start FR Configurator2 yet. Install the software using the setup program.
- To install the software, follow the installation procedure in Windows screen.
- In an operation system with antivirus/security software, a warning may appear when installing FR Configurator2. If a warning appears, permit the installation of FR Configurator2 according to the setting procedure of your antivirus/security software.

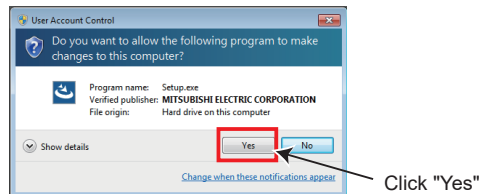
### ◆ Installation procedure

The following section describes the procedures of installing FR Configurator2.

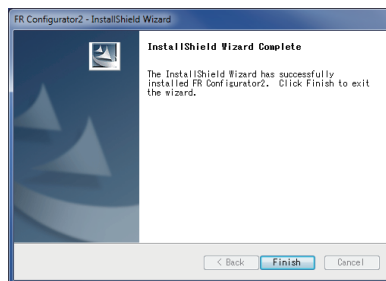
1. Insert the DVD to an available DVD drive. Installation starts automatically.

#### NOTE

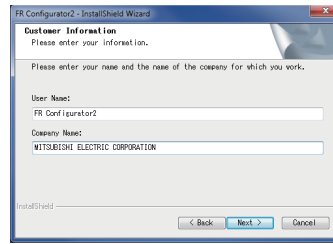
- Installation can be started by double-clicking the icon of DVD drive or the following procedure.
  - 1) Choose the [Run...] command from [Start] menu.
  - 2) "Run" window appears.
  - 3) Type "D:\SETUP" (with one-byte characters) in "Open" field and click [OK]. (When DVD drive is D drive.)
- The following dialog may appear during the installation. Click "Yes".



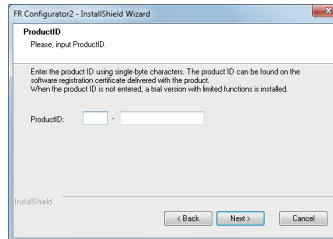
2. The following window will be displayed. Click [Next>].



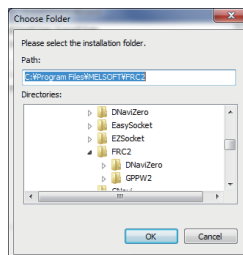
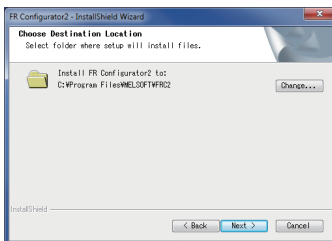
3. Enter user name and company name. Click [Next>] after entering.



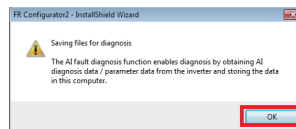
4. Enter the product ID using single-byte numeric characters. The product ID can be found on the license certificate delivered with the product. After entering the product ID, click [Next>].



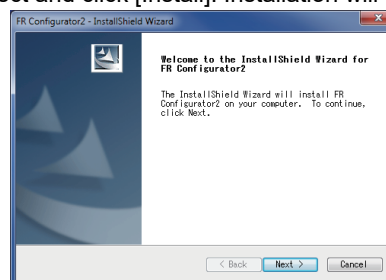
5. Check the installation folder and click [Next>]. To change the installation folder, click [Change...] and select an installation folder. A new folder "FRC2" is created at the selected installation folder. This software is installed there. (If the installation folder is not changed, the software is installed at "C:\Program Files\MELSOFT\FRC2")



6. The following window will be displayed. Diagnosis data are stored in the computer that contains the files for diagnosis. Click [OK].



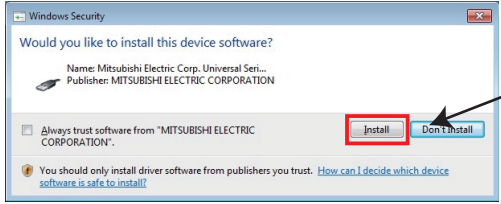
7. Check that the setting is correct and click [Install]. Installation will start. To change the setting, click [<Back].



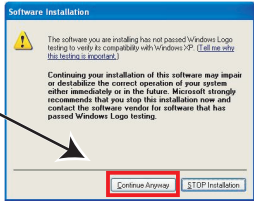


**NOTE**

- The following window may appear during the installation.



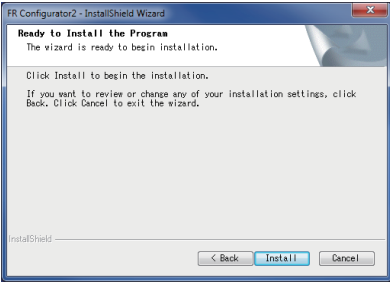
For Windows Vista® or Windows® 7



For Windows® XP

- Continue the installation by clicking [Install] for Windows® 7, Windows® 8.1, or Windows® 10.

**8.** Installation is completed. Click [Finish] to close the window. Restart the personal computer before using the software.

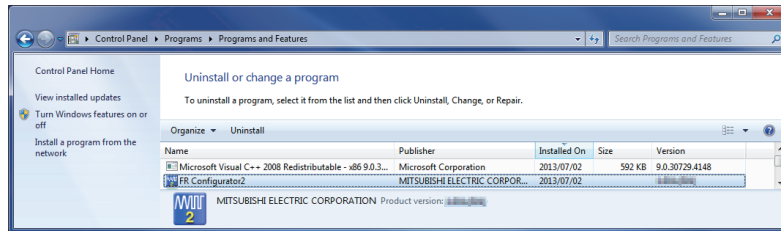


**NOTE**

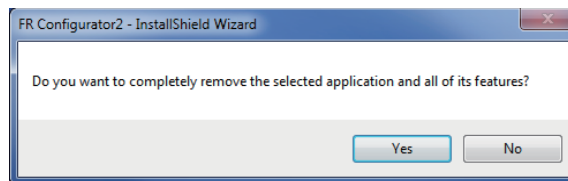
- The "Program Compatibility Assistant" dialog may appear when completing the installation. If the dialog appears, select "This program installed correctly".
- If the user is not an administrator (Administrator account), the installation cannot be performed. Log in as a user with administrator permission, and start the installation again.
- When .NET Framework (version 3.5, 3.0, or 2.0) is disabled, the installation is not completed. Enable .NET Framework (version 3.5, 3.0, or 2.0) and try the installation again.

## 1.3.2 Uninstallation of FR Configurator2

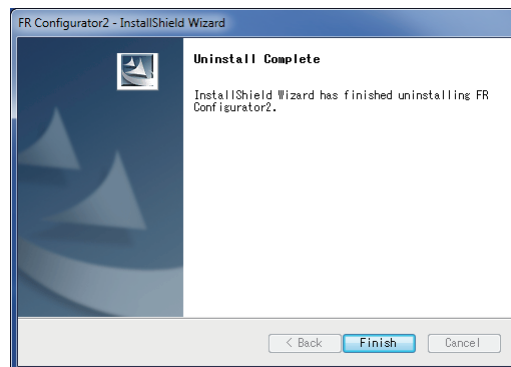
Open the [Start] menu of Windows, and then click [Control Panel]. Click [Programs] in the "Control Panel" window. When "Programs and Features" window is displayed, select "FR Configurator2" to start uninstallation.



When the uninstallation starts, the following confirmation dialog appears.



Click [Yes] to proceed the uninstallation. (Click [No] to cancel the uninstallation.) The following window is displayed when the program has been uninstalled. Click [Finish] to close the window.



### NOTE

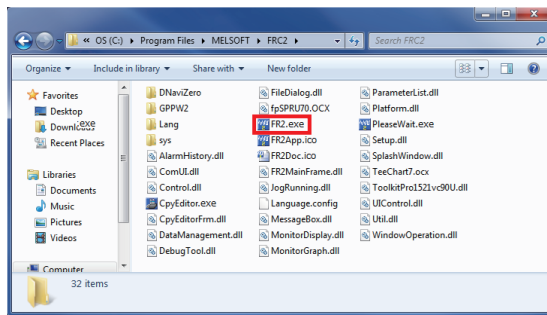
- The program cannot be uninstalled while it is running. Uninstall the program after closing the application.
- For Windows® 8.1, uninstall the software as follows.
  1. Select [Control Panel] from the All Apps list and display Uninstall or change a program.
  2. Select FR Configurator2 and click the [Delete] button.
- For Windows® 10, uninstall the software as follows.
  1. Right click the Start button to select [Apps & features], and display the setting window. Or click [Settings] -> [Apps] on the Start menu and select [Apps & features].
  2. Select FR Configurator2 and click the [Delete] button.

# 1.4 Start and close of FR Configurator2

## 1.4.1 Starting FR Configurator2

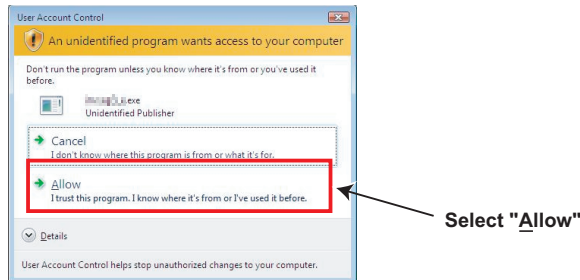
There are following ways to start FR Configurator2.

- Start from Start menu  
Select [All Programs] from the Start menu (show the All Apps list on Windows® 10 or the Apps view on Windows® 8.1), click [MELSOFT] -> [FR Configurator2], and select [FR Configurator2] in the sub menu to start FR Configurator2.
- Start from the project file (\*.frc2)  
(Refer to [page 118](#) for the project file (\*.frc2).)
  - Select the project file (\*.frc2) and execute it (or press the Enter key). The project file settings will be read and FR Configurator2 will be started.
  - Drag and drop the project file to the execution file (FR2.exe) or to the shortcut icon of FR Configurator2. FR Configurator2 will be started.
- Start from Windows Explorer  
Select the executable file of FR Configurator2 (FR2.exe) by using Windows Explorer, and double-click (or hit Enter key) to start FR Configurator2.



### NOTE

- The following window may appear at the start up of FR Configurator2. If the window appears, select "Allow".



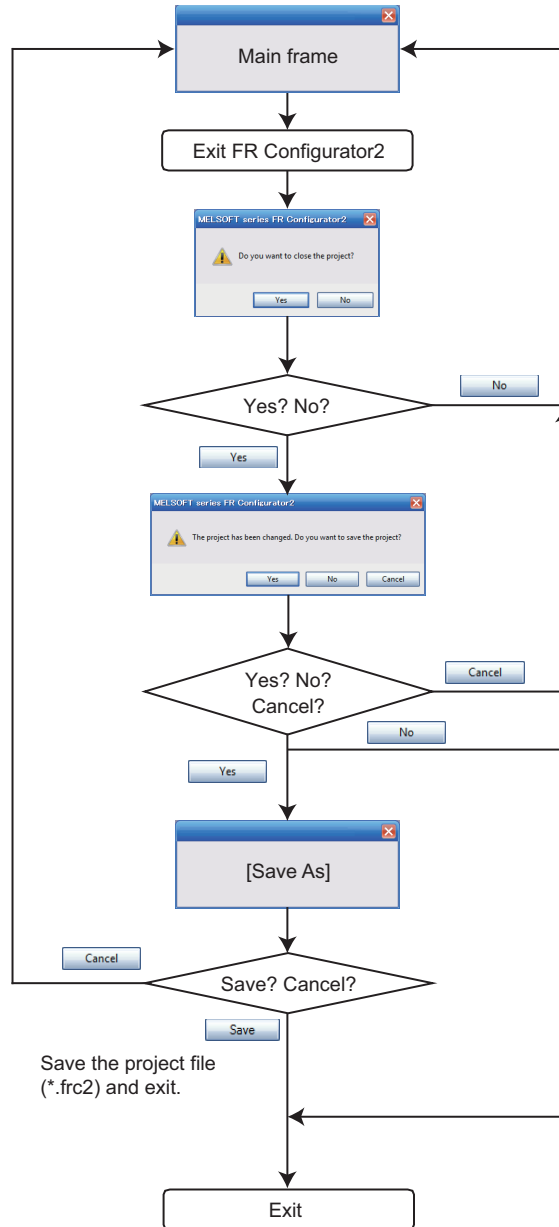
- In an operation system with antivirus/security software, a warning may appear at starting FR Configurator2. If a warning appears, permit FR Configurator2 according to the setting procedure of your antivirus/security software.
- If files shown in [Recent] of Windows® 7, Windows® 8.1, or Windows® 10 are stored in system folders (Program Files for example), the files may not be opened correctly.

## 1.4.2 Closing FR Configurator2

Select [Exit FR Configurator2] in [Project] menu to close FR Configurator2. (Alternatively, press Alt + P to open [Project] menu, and press the X key or Alt + F4 to close FR Configurator2.)

### NOTE

- If a project file (\*.frc2) is not saved yet when closing FR Configurator2, the dialog box is displayed to confirm the closing.



# MEMO

# CHAPTER 2 CONNECTION WITH DEVICES (800 SERIES)

- 2.1 Connection of FR Configurator2 and devices .....26
- 2.2 USB connection .....37
- 2.3 Connection using serial communication .....40
- 2.4 Connection using Ethernet .....45
- 2.5 Connection using CC-Link IE TSN communication (Ethernet connection).....52
- 2.6 Connection via a programmable controller .....59
- 2.7 Connection using CC-Link IE TSN communication (via a programmable controller) .....63
- 2.8 Connection through GOT.....68
- 2.9 Connection via a GOT and a programmable controller .....76
- 2.10 Setting of operation mode of the inverter.....80

# 2 CONNECTION WITH DEVICES (800 SERIES)

This chapter explains the connection with devices. Always read the instructions before using the software.

## 2.1 Connection of FR Configurator2 and devices

Refer to the following for connection.

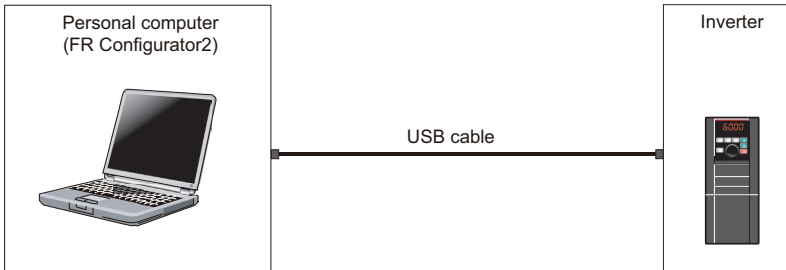
	Inverter communication specification	Single inverter	Multiple inverters	Connection procedure	
<p>The diagram shows 'FR Configurator2' on the left. A thick line branches to the right, connecting to several communication methods: USB, Serial communication, Ethernet connection, CC-Link IE Field Network Basic, and CC-Link IE TSN. Below this, a line connects to a 'Programmable controller', which then branches to Ethernet connection, CC-Link IE Field Network, and CC-Link IE TSN. Further down, lines connect to 'GOT1000' and 'GOT2000'. 'GOT1000' connects to Serial communication. 'GOT2000' connects to Serial communication, Ethernet connection, and another 'Programmable controller'. This second 'Programmable controller' connects to Ethernet connection and CC-Link IE Field Network.</p>	USB	page 27	—	page 37	
	Serial communication	page 27	page 28	page 40	
	Ethernet connection	page 28	page 28	page 45	
	CC-Link IE Field Network Basic	page 29	page 29		
	CC-Link IE TSN	page 30	page 30	page 52	
	Programmable controller	Ethernet connection	page 31	page 31	page 59
		CC-Link IE Field Network	page 31	page 32	
		CC-Link IE TSN	page 32	page 32	page 63
	GOT1000	Serial communication	page 33	page 33	page 68
	GOT2000	Serial communication	page 33	page 34	page 68
Ethernet connection		page 34	page 34		
Programmable controller		Ethernet connection	page 35	page 35	page 76
		CC-Link IE Field Network	page 35	page 36	

## 2.1.1 Connection configuration

For FR Configurator2, communication via a USB connector, a PU connector, the RS-485 terminal block, Ethernet, a GOT, or a programmable controller is available.

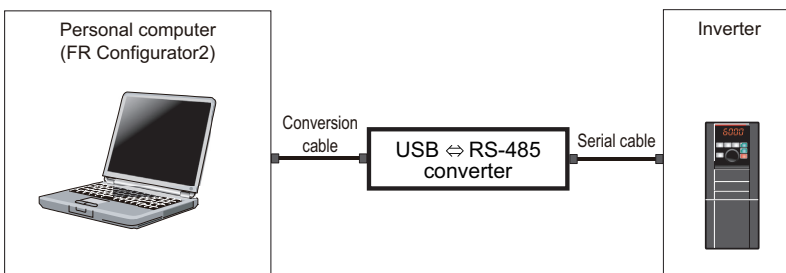
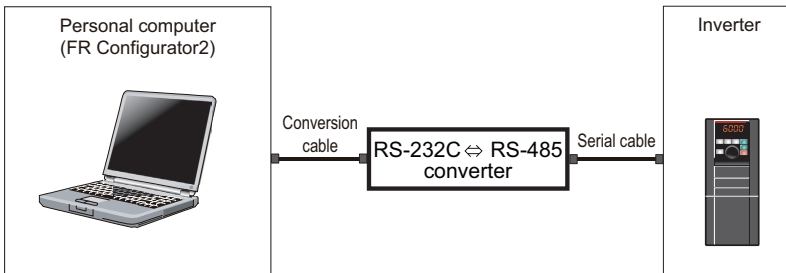
### ◆ Connection of the personal computer and the inverter (USB connection)

Connect a cable to the USB connector (mini B connector) of the inverter. 1:1 connection is supported. Connection using USB hub is not supported. (Refer to [page 37](#).)



### ◆ Connection of the personal computer and a single inverter (serial communication)

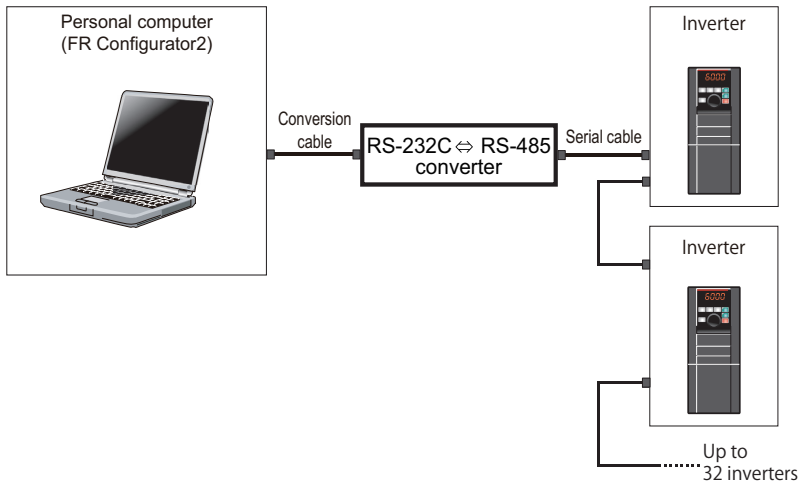
Connect a cable to the PU connector of the inverter. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required. (Refer to [page 40](#).)





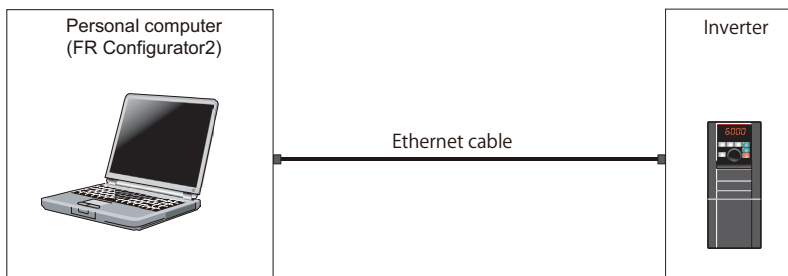
## ◆ Connection of the personal computer and multiple inverters (serial communication)

Connect a cable to the RS-485 terminal of the inverter. Up to 32 inverters can be connected. (Refer to [page 42.](#))



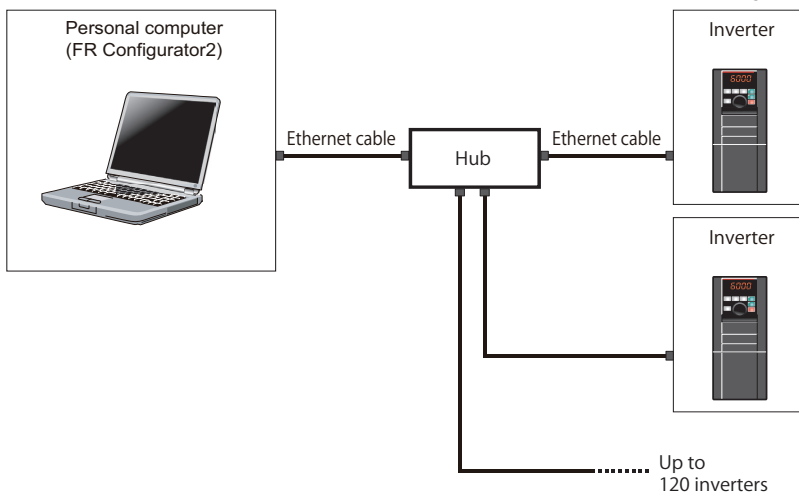
## ◆ Connection of the personal computer and a single inverter (Ethernet connection)

Connect a cable to the Ethernet connector of the inverter. (Refer to [page 45.](#))



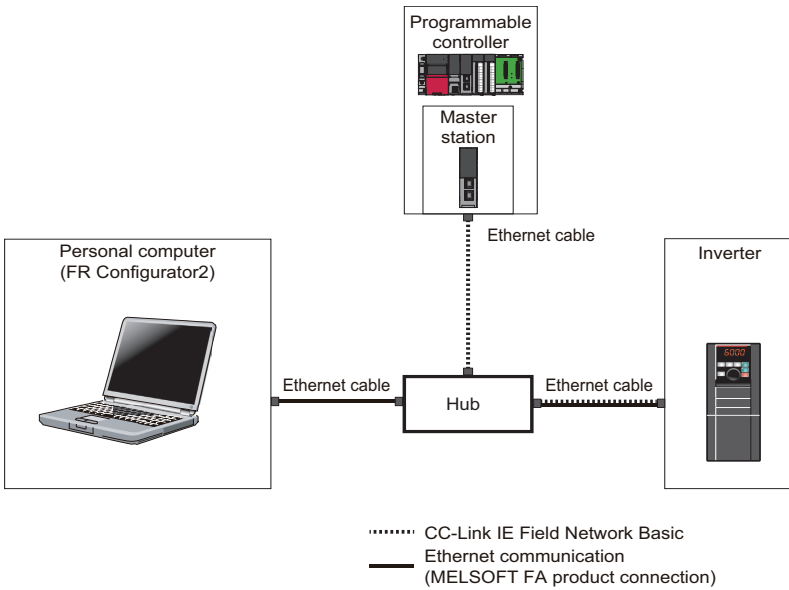
## ◆ Connection of the personal computer and multiple inverters (Ethernet connection)

Up to 120 inverters can be connected with the personal computer using a hub. (Refer to [page 45.](#))



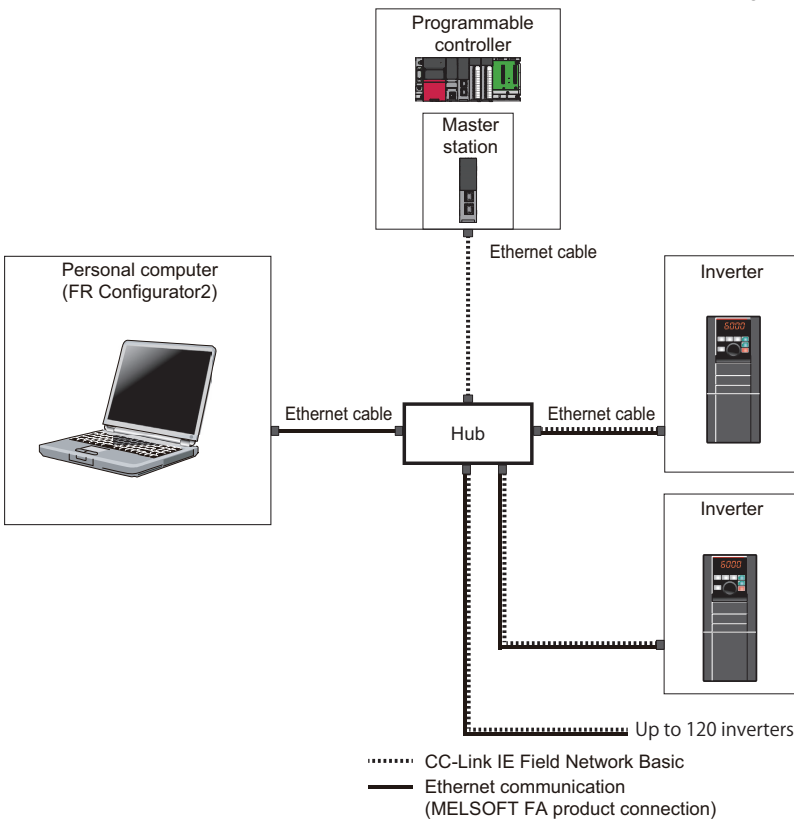
### ◆ Connection of the personal computer and a single inverter (Ethernet connection (CC-Link IE Field Network Basic))

Connect a cable to the Ethernet connector of the inverter. (Refer to [page 45.](#))



### ◆ Connection of the personal computer and multiple inverters (Ethernet connection (CC-Link IE Field Network Basic))

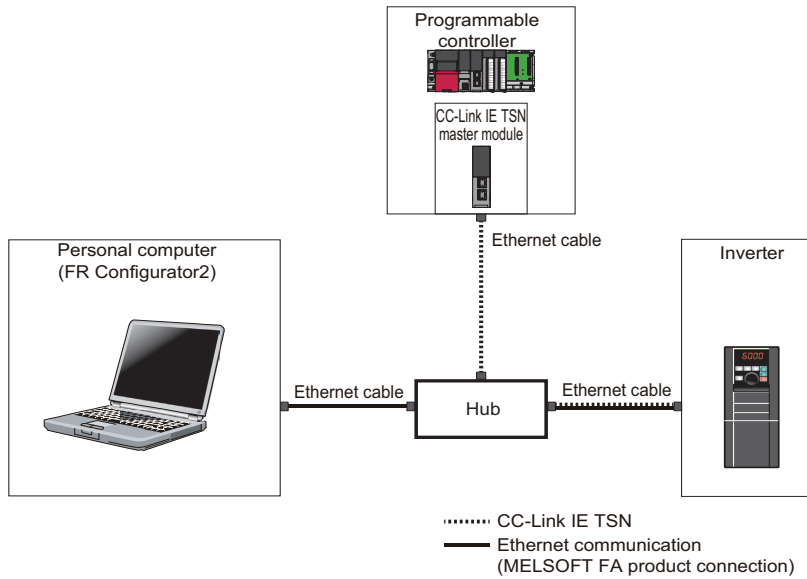
Up to 120 inverters can be connected with the personal computer using a hub. (Refer to [page 45.](#))



## ◆ Connection of the personal computer and a single inverter (Ethernet connection (CC-Link IE TSN))

The inverter can be connected to a personal computer via the Ethernet port of the inverter (FR-A800/FR-F800 with FR-A8NCG in it, FR-E800-(SC)EPA, or FR-E800-(SC)EPB). (Refer to [page 45](#).)

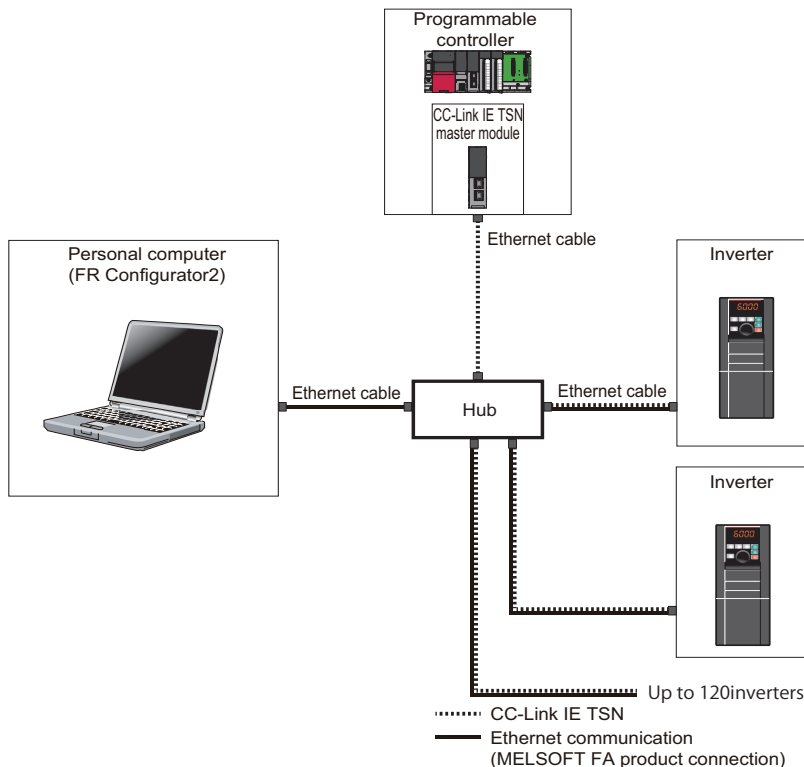
For the hub used for connection of the FR-A800/FR-F800 with FR-A8NCG in it, refer to the FR-A8NCG Instruction Manual. For the hub used for connection of the FR-E800-(SC)E, refer to the FR-E800 Instruction Manual (Communication).



## ◆ Connection of the personal computer and multiple inverters (Ethernet connection (CC-Link IE TSN))

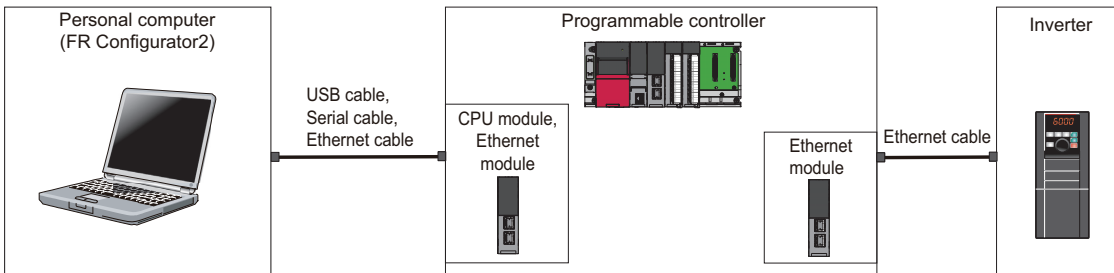
The inverter can be connected to a personal computer via the Ethernet port of the inverter (FR-A800/FR-F800 with FR-A8NCG in it, FR-E800-(SC)EPA, or FR-E800-(SC)EPB). (Refer to [page 45](#).)

For the hub used for connection of the FR-A800/FR-F800 with FR-A8NCG in it, refer to the FR-A8NCG Instruction Manual. For the hub used for connection of the FR-E800-(SC)E, refer to the FR-E800 Instruction Manual (Communication).



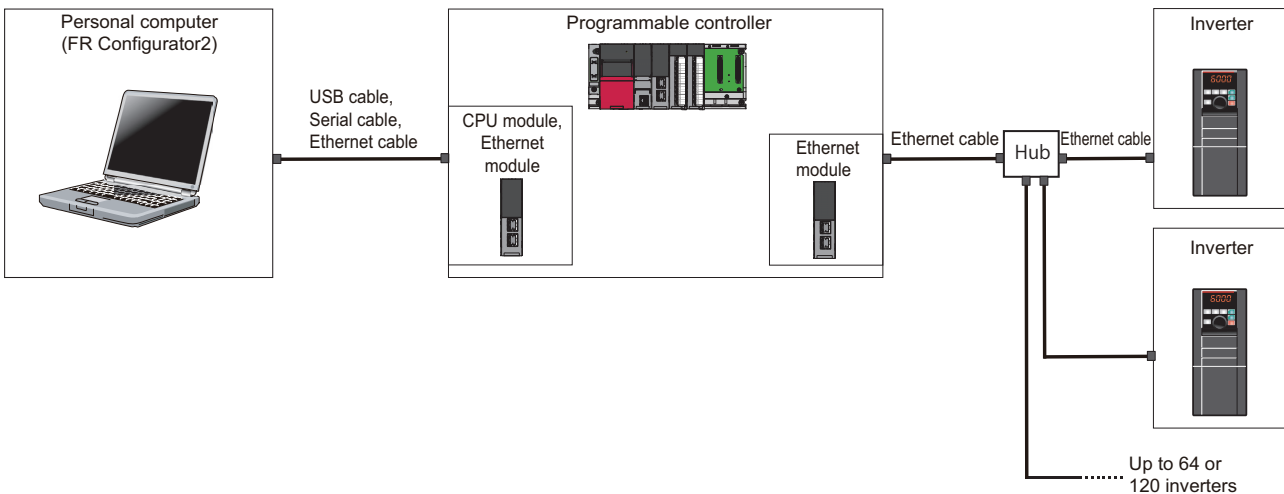
## ◆ Connection of the personal computer and a single inverter via a programmable controller (Ethernet connection)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 59.](#))



## ◆ Connection of the personal computer and multiple inverters via a programmable controller (Ethernet connection)

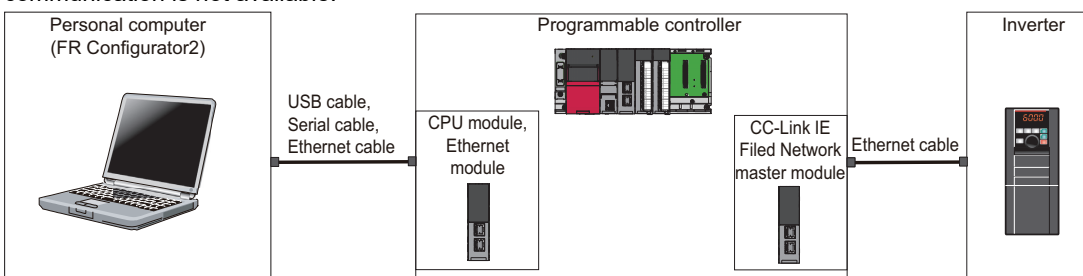
A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 59.](#))



## ◆ Connection of the personal computer and a single inverter via a programmable controller (CC-Link IE Field Network)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 59.](#))

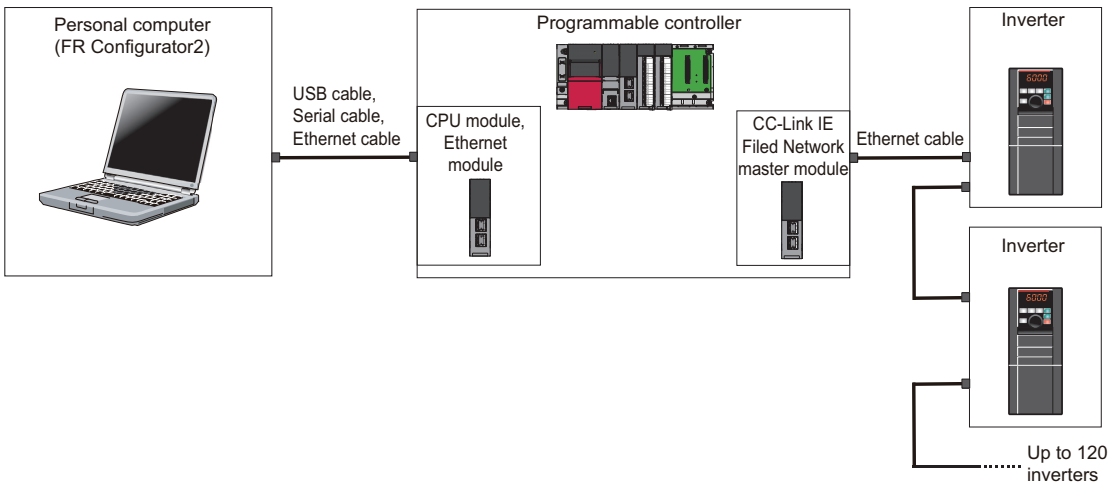
When the personal computer and the inverter are connected via a programmable controller, the CC-Link IE Field Network Basic communication is not available.



## ◆ Connection of the personal computer and multiple inverters via a programmable controller (CC-Link IE Field Network)

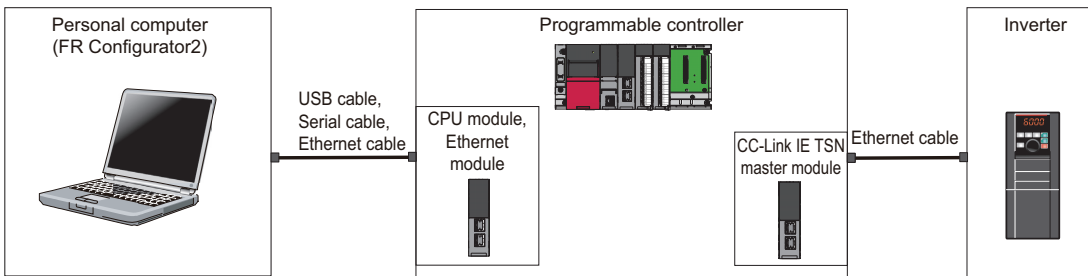
A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 59.](#))

When the personal computer and the inverter are connected via a programmable controller, the CC-Link IE Field Network Basic communication is not available.



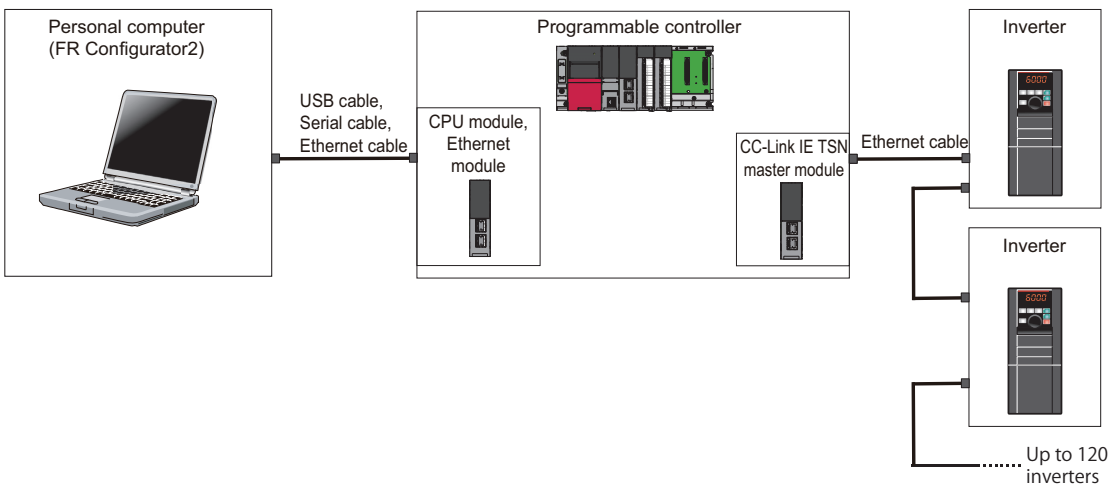
## ◆ Connection of the personal computer and a single inverter via a programmable controller (CC-Link IE TSN)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 63.](#))



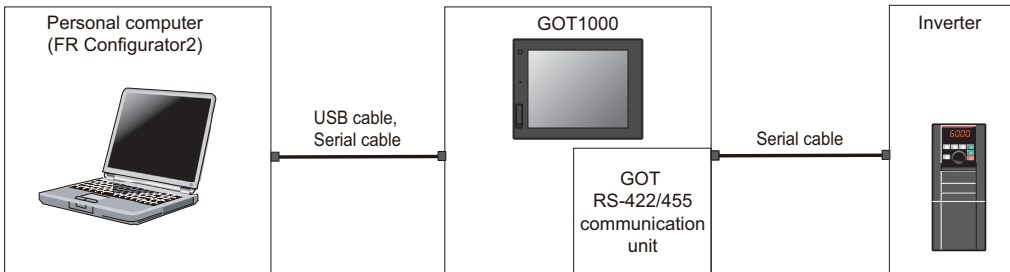
## ◆ Connection of the personal computer and multiple inverters via a programmable controller (CC-Link IE TSN)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 63.](#))



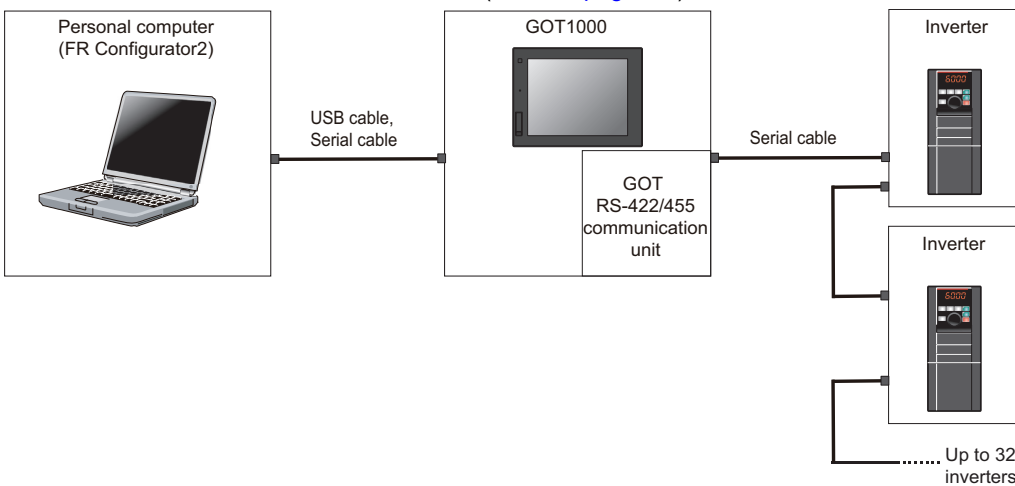
## ◆ Connection of the personal computer and a single inverter via a GOT1000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the GOT1000 series, an RS-422/485 serial communication unit is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 1000 Series Connection Manual. (Refer to [page 68.](#))



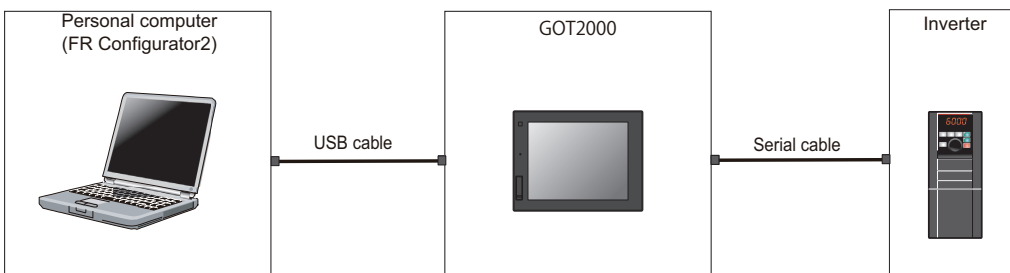
## ◆ Connection of the personal computer and multiple inverters via a GOT1000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the GOT1000 series, an RS-422 communication unit is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 1000 Series Connection Manual. (Refer to [page 68.](#))



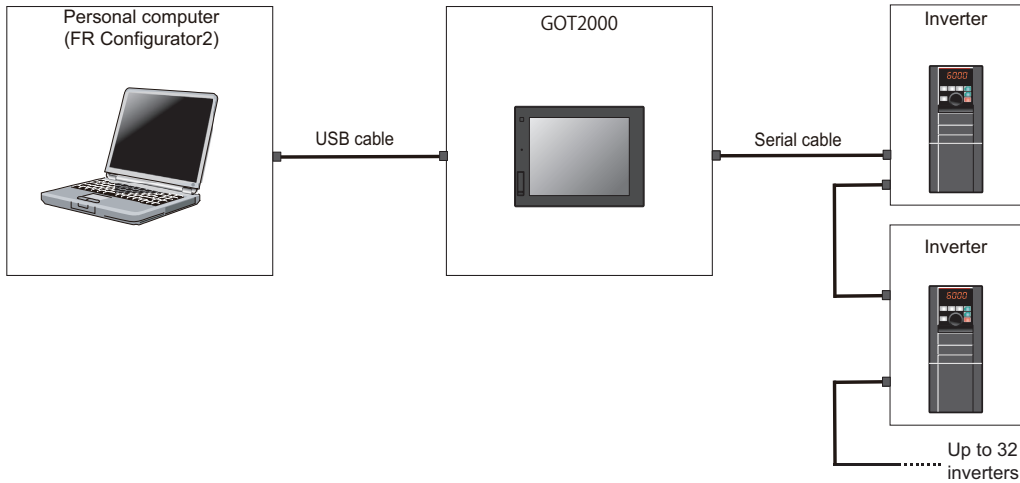
## ◆ Connection of the personal computer and a single inverter via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 68.](#))



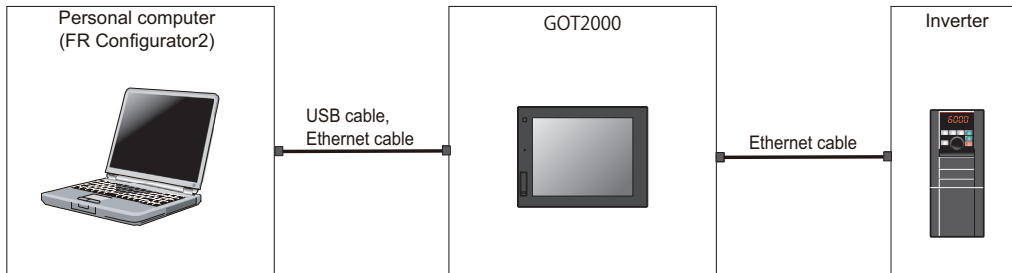
## ◆ Connection of the personal computer and multiple inverters via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 68](#).)



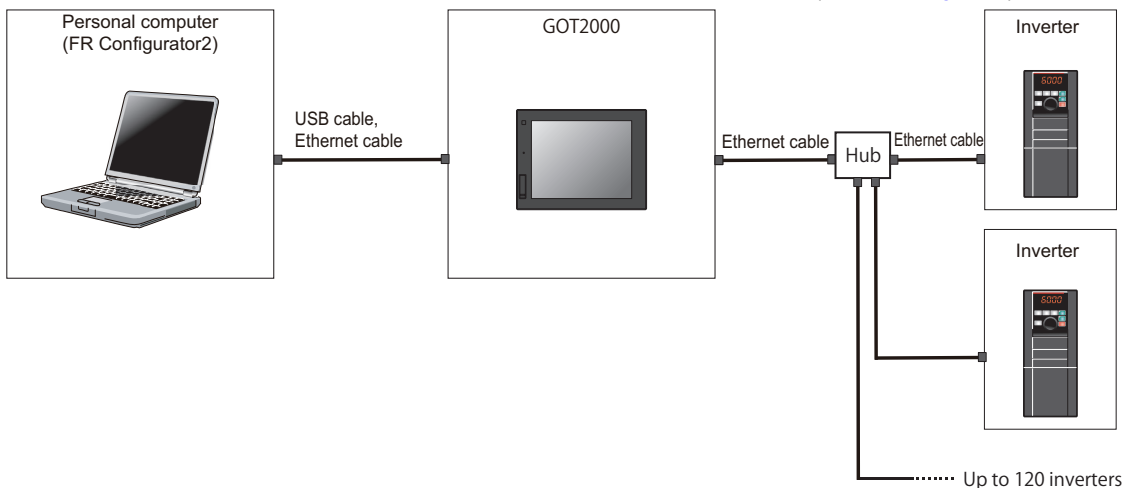
## ◆ Connection of the personal computer and a single inverter via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the inverter is available. For the compatible version of GOT or details of the connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 68](#).)



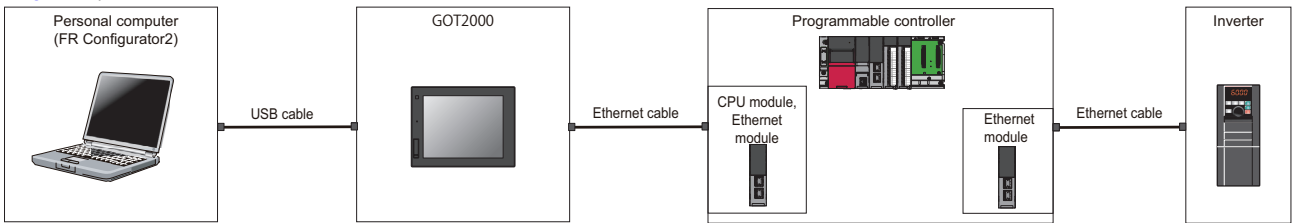
## ◆ Connection of the personal computer and multiple inverters via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the inverter is available. For the compatible version of GOT or details of the connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 68](#).)



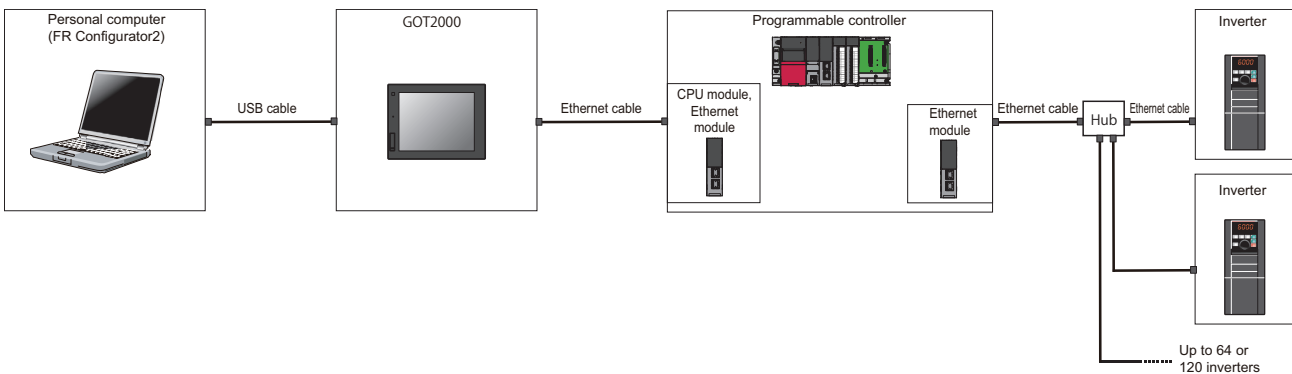
## ◆ Connection of the personal computer and a single inverter via a GOT2000 model and a programmable controller (Ethernet connection)

Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available. (Refer to [page 76.](#))



## ◆ Connection of the personal computer and multiple inverters via a GOT2000 model and a programmable controller (Ethernet connection)

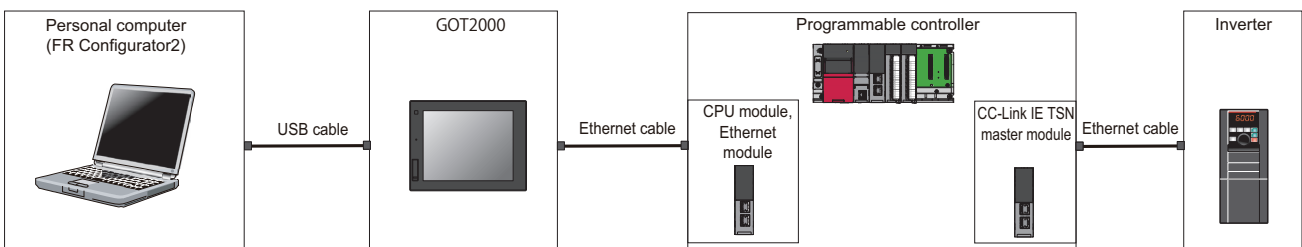
Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available. (Refer to [page 76.](#))



## ◆ Connection of the personal computer and a single inverter via a GOT2000 model and a programmable controller (CC-Link IE Field Network)

Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available. (Refer to [page 76.](#))

When the personal computer and the inverter are connected via a programmable controller, the CC-Link IE Field Network Basic communication is not available.

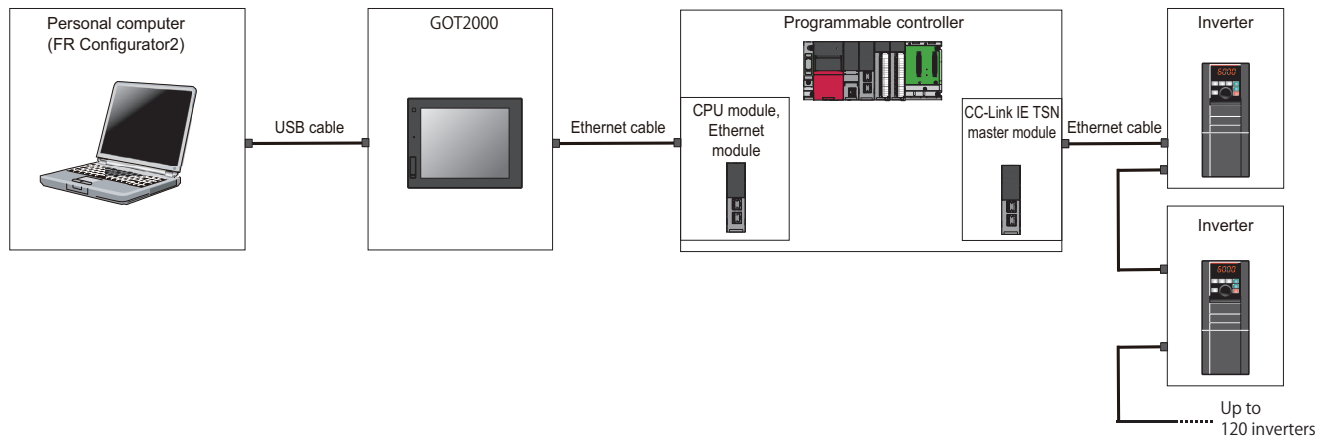




## ◆ Connection of the personal computer and multiple inverters via a GOT2000 model and a programmable controller (CC-Link IE Field Network)

Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available. (Refer to [page 76.](#))

When the personal computer and the inverter are connected via a programmable controller, the CC-Link IE Field Network Basic communication is not available.



## 2.2 USB connection

A personal computer and inverter can be easily connected with USB cable. 1:1 connection is supported. Connection using USB hub is not supported.

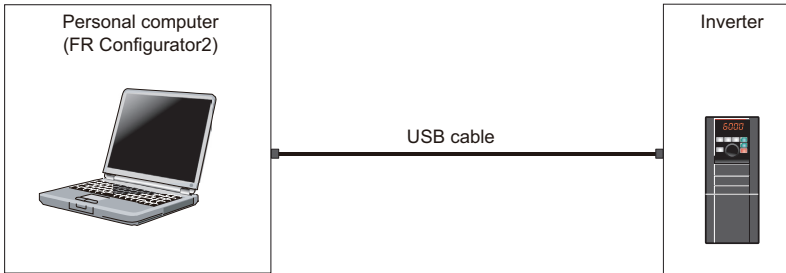
2

### 2.2.1 Procedure for USB connection

#### ◆ Supported model

FR-A800 series, FR-A800 Plus series, FR-B, B3 series, FR-F800 series, and FR-E800 series

#### ◆ Connection configuration



#### ◆ Connection cable

Prepare a cable referring to the following.

##### ■ USB communication specifications

Interface	Conforms to USB 1.1
Transmission speed	12 Mbps
Wiring length	Maximum 5 m
Connector	USB mini B connector (receptacle)

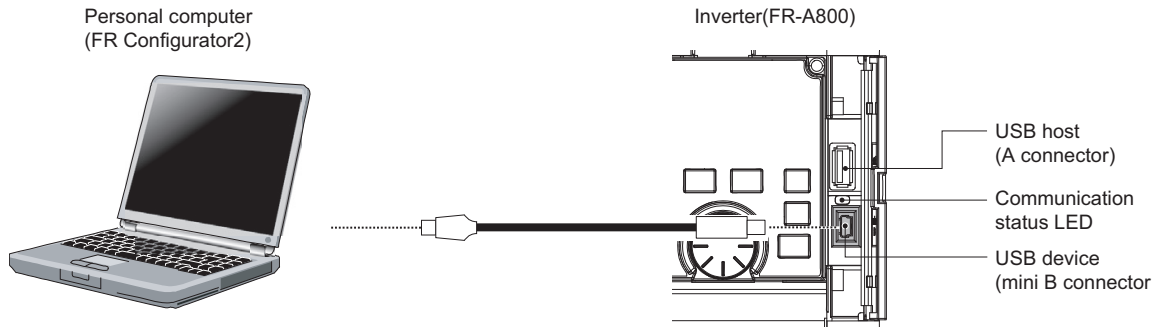
##### ■ USB cable

Recommended USB cable	MR-J3USBCBL3M (cable length 3 m)
-----------------------	----------------------------------

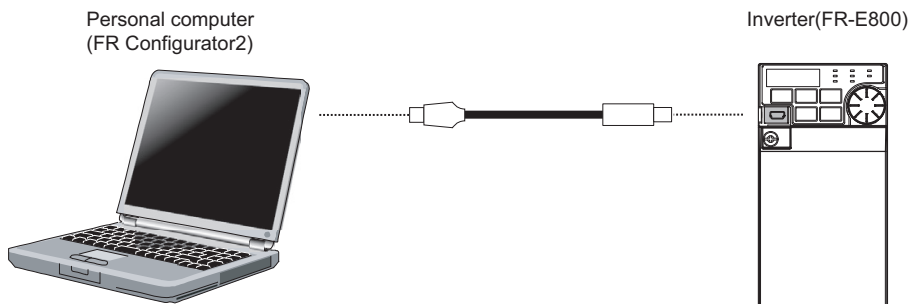
## ◆ Connection procedure

1. Connect the personal computer and the inverter using the USB cable. Connect the USB cable to the USB device (mini B connector) on the inverter.

- For FR-A800 or FR-F800 series



- For FR-E800 series



2. Check the inverter parameter settings.

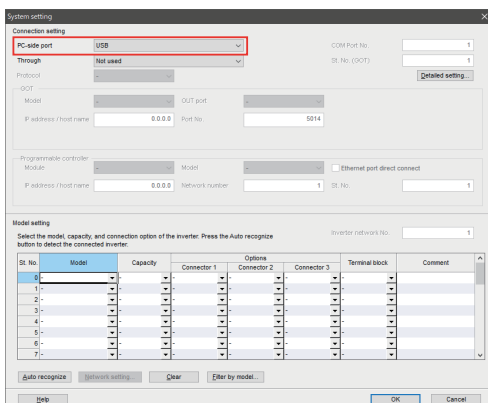
Set the following communication parameters for connection using the USB connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode to PU operation mode.

Parameter setting		Operation mode
Communication parameter	Command source parameter	
<b>Pr.548 USB communication check time interval = "9999"</b> (initial value)	<b>Pr.551 PU mode operation command source selection = "3 or 9999"</b> (initial value: "9999")	PU

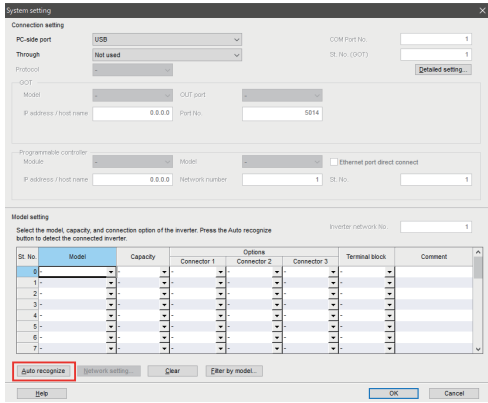
3. Start FR Configurator2.

4. Select [New...] from the [Project] menu bar.

5. In the "Connection setting" of the "System setting" window, select "USB" for the PC-side port.

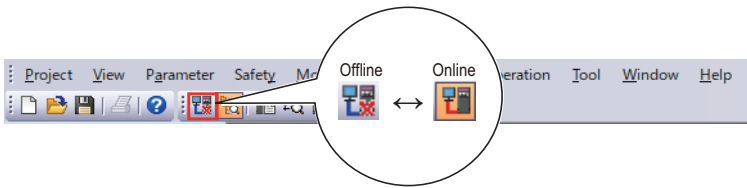


6. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



7. Click [OK].

8. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



**NOTE**

- Set a station number of each inverter in **Pr.547 USB communication station number**. Perform inverter reset after setting the parameter.

**◆ When connecting USB for the first time**

If a personal computer and inverter are connected via USB for the first time with the inverter power ON, "Found New Hardware Wizard" window is displayed.

**2.2.2 Related parameters for USB connection**

For details, refer to the Instruction Manual of the inverter.

Pr.	Name
547 N040	USB communication station number
548 N041	USB communication check time interval

Pr.	Name
551*1 D013	PU mode operation command source selection

\*1 Pr.551 can be always written regardless of the operation mode.

**NOTE**

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.

## 2.3 Connection using serial communication

PU connector is used for connecting with a computer. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required.

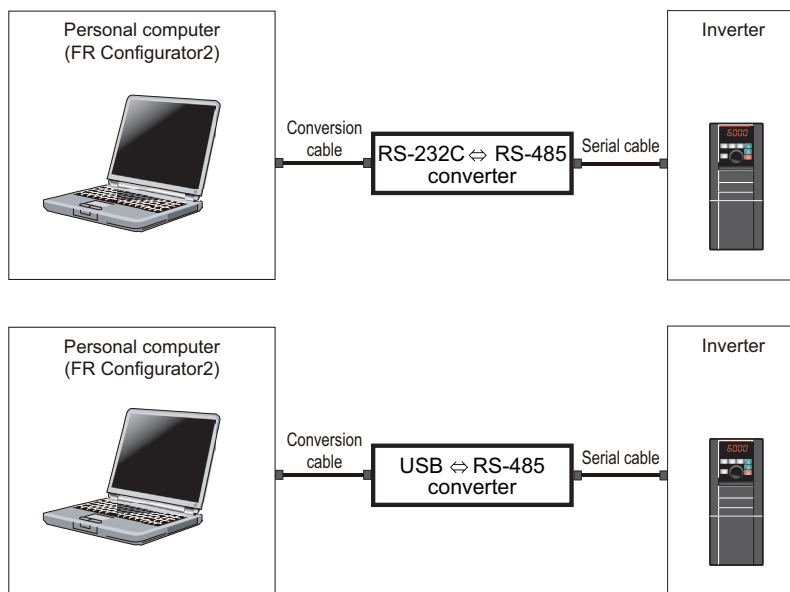
When inverters have RS-485 terminals, RS-485 terminals are used for connecting multiple inverters with a serial port of a computer. Up to 32 inverters can be connected. A serial/RS-485 converter is required.

### 2.3.1 Procedure for connecting a single inverter using serial communication

#### ◆ Supported model

FR-A800 series, FR-A800 Plus series, FR-B series, FR-B3 series, FR-F800 series, FR-E800, and FR-CS80

#### ◆ Connection configuration



#### ◆ Connection cable

Prepare a cable referring to the following.

##### ■ Conversion cable

Refer to the following table for the connection cable between the computer (FR Configurator2) and an inverter. Commercially available products (as of October 2020)

Product name	Model name	Manufacturer
Interface embedded cable + Connector conversion cable (RS-232C to RS-485 converter)	DAFXIH-CAB (D-SUB25P for personal computer) DAFXIH-CABV (D-SUB9P for personal computer) + DINV-485CAB (for inverter)	Diatrend Corp.
Interface embedded cable dedicated for inverter <sup>*1</sup> (RS-232C to RS-485 converter)	DINV-CABV	
Interface embedded cable dedicated for inverter <sup>*1</sup> (USB to RS-485 converter)	DINV-U4	

\*1 The conversion cable cannot connect multiple inverters. (The computer (FR Configurator2) and an inverter are connected in a 1:1 pair.) This is a converter-embedded conversion cable. No additional cable or connector is required. Contact a manufacturer for details of the product.

##### ■ Serial cable

For the serial cable between the converter and the inverter, refer to the Instruction Manual of each inverter.

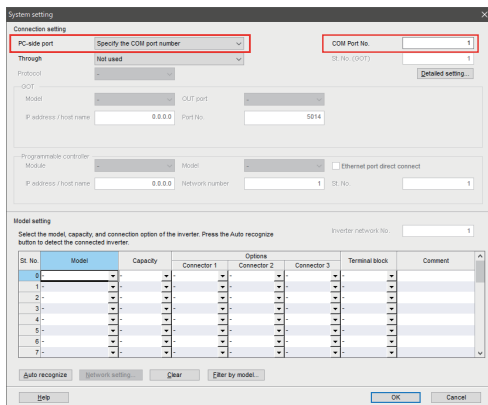
## ◆ Connection procedure

1. Connect the personal computer and the converter using the conversion cable.
2. Connect the converter and the inverter using the serial cable.
3. Check the inverter parameter settings.

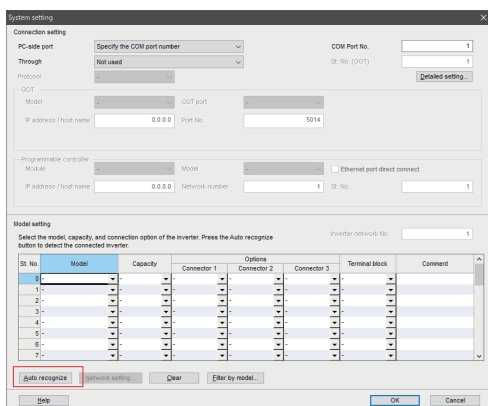
Set the following communication parameters for connection using the PU connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode to PU operation mode.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800(-E) FR-B FR-B3 FR-B4 FR-F800(-E)	<b>Pr.122 PU communication check time interval</b> = "9999" (initial value) <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2 or 9999" (initial value: "9999")
FR-E800	<b>Pr.122 PU communication check time interval</b> = "9999" (initial value: "0") <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	
FR-CS80	<b>Pr.122 PU communication check time interval</b> = "9999" (initial value) <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "9999")

4. Start FR Configurator2.
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select COM communication port for the PC-side port. Set the COM port number in [COM Port No.].

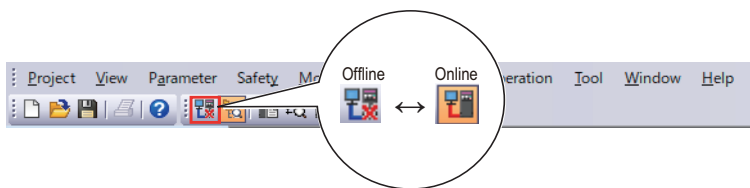


7. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



8. Click [OK].

- Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.

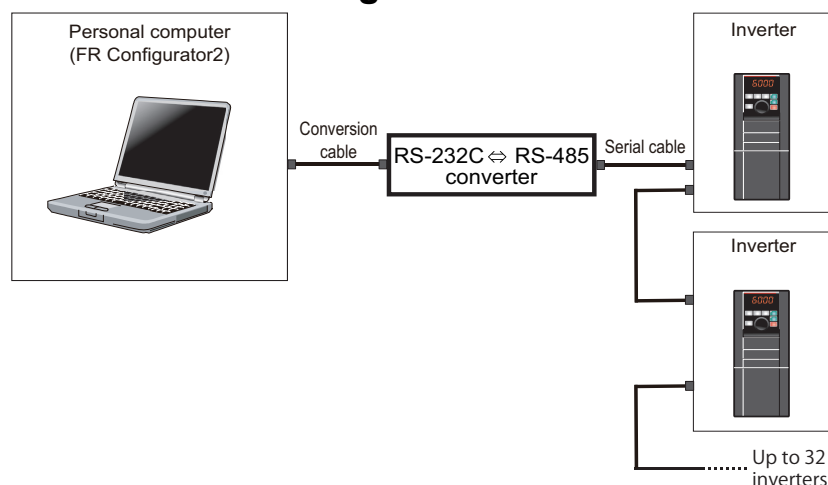


## 2.3.2 Procedure for connecting multiple inverters using serial communication

### ◆ Supported model

FR-A800 series, FR-A800 Plus series, FR-B series, FR-B3 series, FR-F800 series, FR-E800, and FR-CS80

### ◆ Connection configuration



### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ Conversion cable

Refer to the following table for the connection cable between the computer (FR Configurator2) and an inverter. Commercially available products (as of October 2020)

Product name	Model name	Manufacturer
Interface embedded cable + Connector conversion cable (RS-232C to RS-485 converter)	DAFXIH-CAB (D-SUB25P for personal computer) DAFXIH-CABV (D-SUB9P for personal computer) + DINV-485CAB (for inverter)	Diatrend Corp.
Interface embedded cable dedicated for inverter <sup>*1</sup> (RS-232C to RS-485 converter)	DINV-CABV	
Interface embedded cable dedicated for inverter <sup>*1</sup> (USB to RS-485 converter)	DINV-U4	

<sup>\*1</sup> The conversion cable cannot connect multiple inverters. (The computer (FR Configurator2) and an inverter are connected in a 1:1 pair.) This is a converter-embedded conversion cable. No additional cable or connector is required. Contact a manufacturer for details of the product.

#### ■ Serial cable

For the serial cable between the converter and the inverter, refer to the Instruction Manual of each inverter.

## ◆ Connection procedure

1. Connect the personal computer and the converter using the conversion cable.
2. Connect the converter and the inverter using the serial cable.
3. Check the inverter parameter settings.

Set the following communication parameters for connection using the inverter. To set parameters or input operation commands, set the command source parameters and the operation mode as shown in the following table.

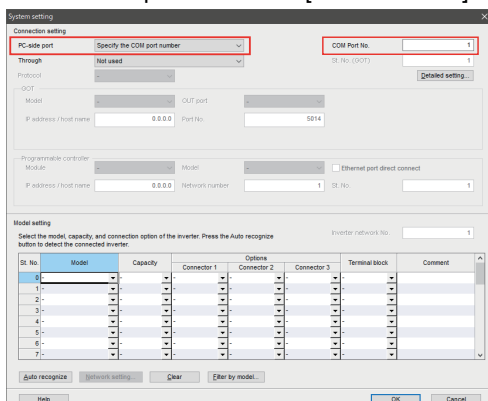
•When using the RS-485 terminals

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 FR-B FR-B3 FR-B4 FR-F800	Set a station number of each inverter in <b>Pr.331 RS-485 communication station number</b> (used for connecting multiple inverters). <b>Pr.336 RS-485 communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.337 RS-485 communication waiting time setting</b> = "9999" (initial value)	<b>Pr.550 NET mode operation command source selection</b> = "9999" (initial value: "9999")

•When using the PU connector

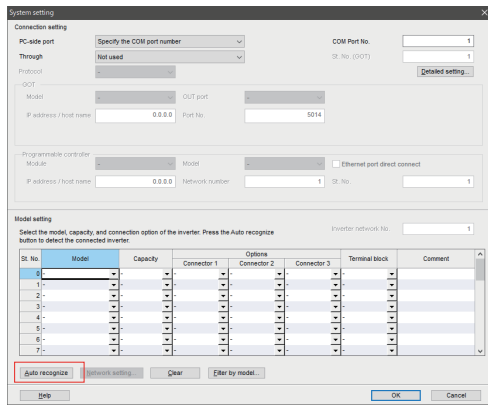
Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 FR-B FR-B3 FR-B4 FR-F800	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999") <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "9999")
FR-E800	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "9999")
FR-CS80	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999") <b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	

4. Start FR Configurator2.
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select COM communication port for the PC-side port. Set the COM port number in [COM Port No.].



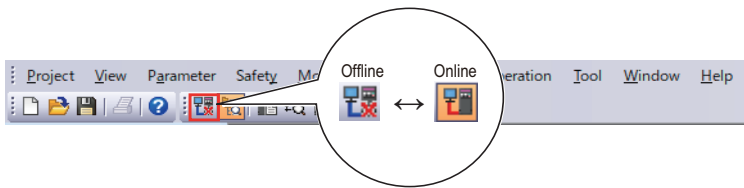


7. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



8. Click [OK].

9. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



**NOTE**

- For the details of wiring, refer to the Instruction Manual (Detailed) of the inverter.
- Set three seconds or more (or "9999") in **Pr.122 PU communication check time interval** and **Pr.336 RS-485 communication check time interval**.
- Set a station number of each inverter in **Pr.117 PU communication station number** and **Pr.331 RS-485 communication station number** for multiple connection. Perform inverter reset after setting the parameter.

## 2.3.3 Related parameters for serial communication

For details, refer to the Instruction Manual of the inverter.

### ◆ Parameters related to PU connector communication

Pr.	Name
117 N020	PU communication station number
118 N021	PU communication speed
N022	PU communication data length
N023	PU communication stop bit length
119	PU communication stop bit length / data length
120 N024	PU communication parity check

Pr.	Name
121 N025	PU communication retry count
122 N026	PU communication check time interval
123 N027	PU communication waiting time setting
549 N000	Protocol selection
550 D012	NET mode operation command source selection
551 D013	PU mode operation command source selection

# 2.4 Connection using Ethernet

- Use the Ethernet connector on the Ethernet model inverter's Ethernet board for connection with a personal computer.
- The personal computer can be connected to inverters by connecting the computer with an Ethernet cable to the CC-Link IE Field Network Basic network, in which the programmable controller and inverters are connected.

## 2.4.1 Procedure for Ethernet connection

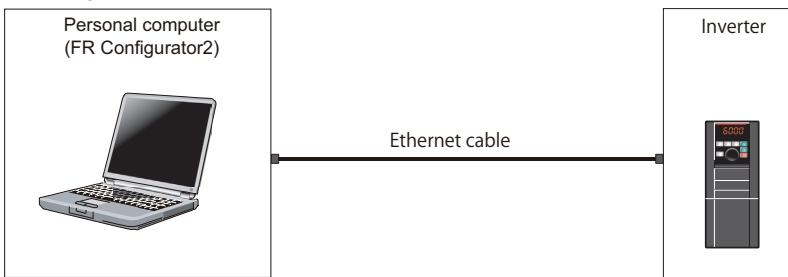
### ◆ Supported model

FR-A800-E, FR-A800-E-CRN, FR-A800-E-R2R, FR-A800-E-LC, FR-F800-E, and FR-E800-(SC)E

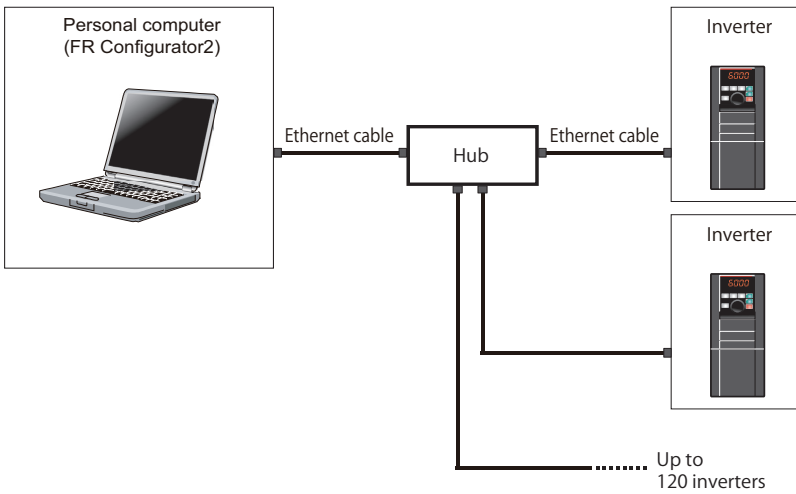
### ◆ Connection configuration

#### ■ Ethernet

- Single inverter

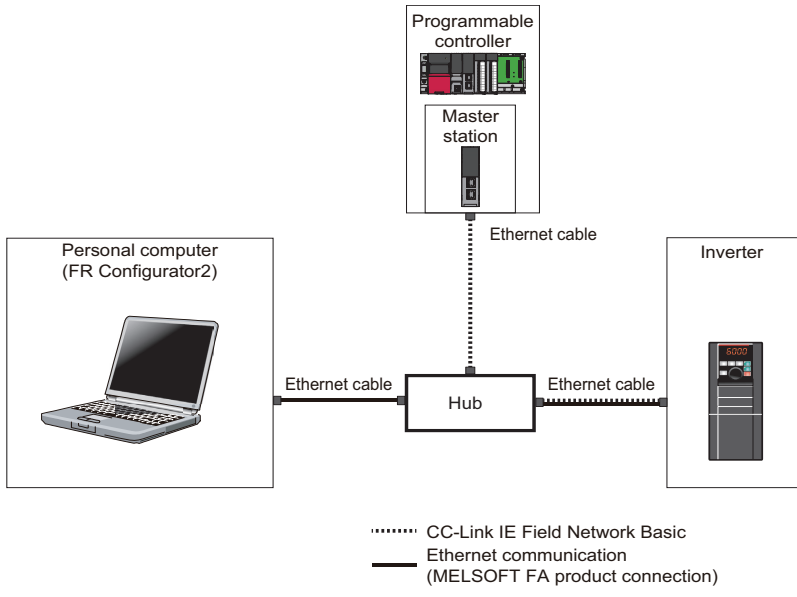


- Multiple inverters

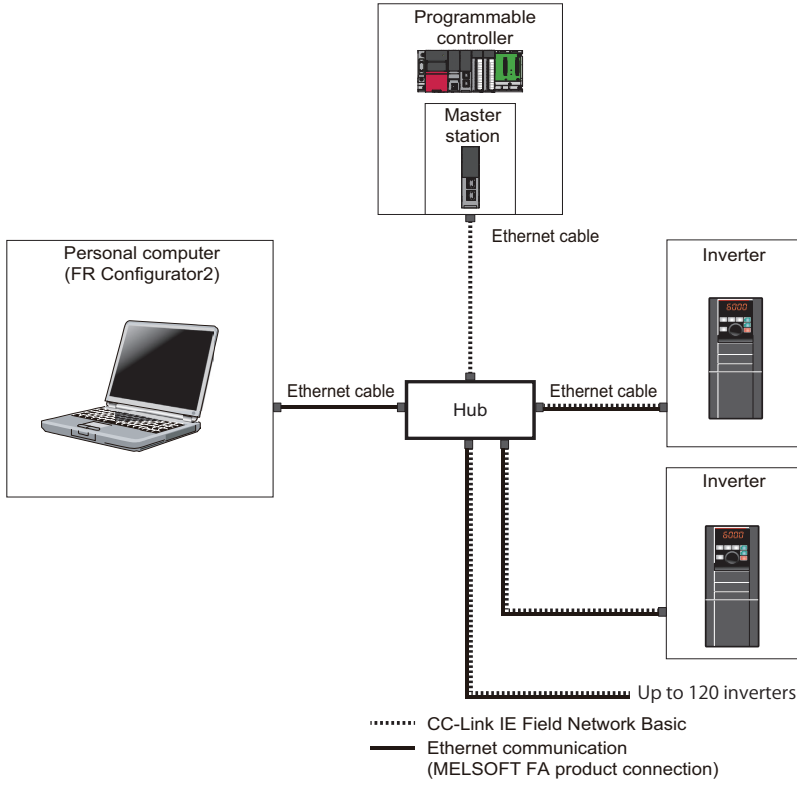


## ■ Ethernet connection (CC-Link IE Field Network Basic)

- Single inverter



- Multiple inverters



## ◆ Connection cable

Prepare a cable referring to the following.

## ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Topology	Line, star, or a combination of line and star
Interface	RJ-45
Number of interfaces available	2
IP version	IPv4

## ■ Connection cable

Use Ethernet cables compliant with the following standards.

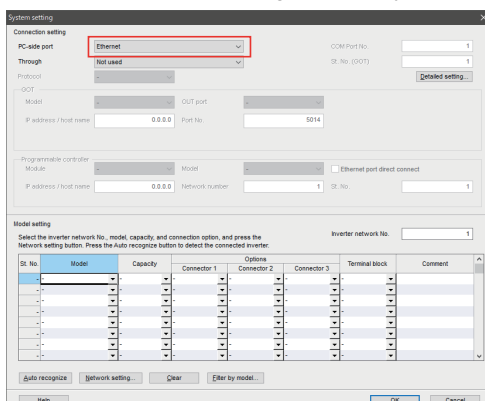
Ethernet cable	Connector	Standard
Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: <ul style="list-style-type: none"> <li>• IEEE 802.3 (100BASE-TX)</li> <li>• ANSI/TIA/EIA-568-B (Category 5)</li> </ul>

## ◆ Connection procedure

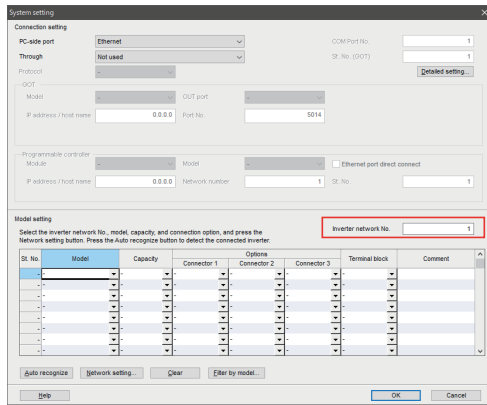
1. Connect the personal computer and the inverter using the Ethernet cable.
2. Check the inverter parameter settings.  
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode as shown in the following table.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800-E FR-A800-E-CRN FR-A800-E-LC FR-F800-E FR-E800-(SC)E	Set "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1430 Ethernet function selection 1 to 4.</b>	<b>Pr.550 NET mode operation command source selection = "5"</b> (initial value: "9999")
FR-A800-E-R2R	Set "5001" (or "5002") and "45237" in any two of <b>Pr.1076 to Pr.1078 Ethernet function selection 1 to 3.</b>	

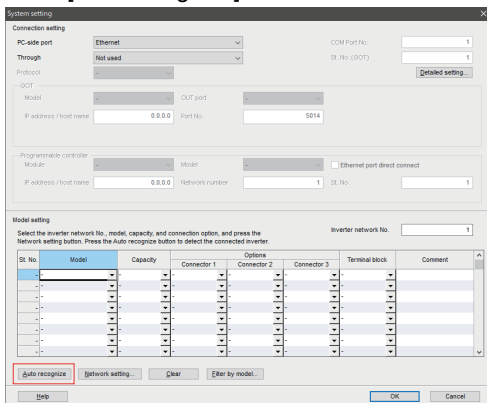
3. Start FR Configurator2.
4. Change the inverter parameter settings using the Ethernet parameter setting function. (For the setting procedure, refer to [page 236](#).)
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port.



7. Make the setting in "Inverter network No." consistent with the **Pr.1424 Ethernet communication network number** setting.

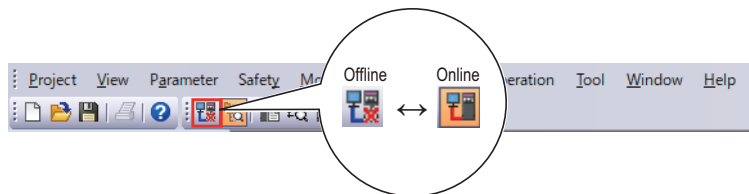


8. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



9. Click [OK].

10. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 2.4.2 Related parameters for Ethernet connection

For details, refer to the Instruction Manual of the inverter.

### ◆ FR-A800-E, FR-A800-E-CRN, FR-A800-E-R2R, FR-A800-E-LC, and FR-F800-E

Pr.	Name
550 D012	NET mode operation command source selection
1424 N650	Ethernet communication network number
1425 N651	Ethernet communication station number
1426 N641	Link speed and duplex mode selection
1427 N630	Ethernet function selection 1
1428 N631	Ethernet function selection 2
1429 N632	Ethernet function selection 3
1431 N643	Ethernet signal loss detection function selection
1432 N644	Ethernet communication check time interval
1434 N600	IP address 1 (Ethernet)
1435 N601	IP address 2 (Ethernet)
1436 N602	IP address 3 (Ethernet)
1437 N603	IP address 4 (Ethernet)
1438 N610	Subnet mask 1
1439 N611	Subnet mask 2
1440 N612	Subnet mask 3

Pr.	Name
1441 N613	Subnet mask 4
1442 N660	IP filter address 1 (Ethernet)
1443 N661	IP filter address 2 (Ethernet)
1444 N662	IP filter address 3 (Ethernet)
1445 N663	IP filter address 4 (Ethernet)
1446 N664	IP filter address 2 range specification (Ethernet)
1447 N665	IP filter address 3 range specification (Ethernet)
1448 N666	IP filter address 4 range specification (Ethernet)
1449 N670	Ethernet command source selection IP address 1
1450 N671	Ethernet command source selection IP address 2
1451 N672	Ethernet command source selection IP address 3
1452 N673	Ethernet command source selection IP address 4
1453 N674	Ethernet command source selection IP address 3 range specification
1454 N675	Ethernet command source selection IP address 4 range specification
1455 N642	Keepalive time

## ◆ Related parameters of the FR-A800-E-R2R

Pr.	Name
550 D012	NET mode operation command source selection
1073 N650	Ethernet communication network number
1074 N651	Ethernet communication station number
1075 N641	Link speed and duplex mode selection
1076 N630	Ethernet function selection 1
1077 N631	Ethernet function selection 2
1078 N631	Ethernet function selection 3
1431 N643	Ethernet signal loss detection function selection
1432 N644	Ethernet communication check time interval
1434 N600	IP address 1 (Ethernet)
1435 N601	IP address 2 (Ethernet)
1436 N602	IP address 3 (Ethernet)
1437 N603	IP address 4 (Ethernet)
1438 N610	Subnet mask 1
1439 N611	Subnet mask 2
1440 N612	Subnet mask 3

Pr.	Name
1441 N613	Subnet mask 4
1442 N660	IP filter address 1 (Ethernet)
1443 N661	IP filter address 2 (Ethernet)
1444 N662	IP filter address 3 (Ethernet)
1445 N663	IP filter address 4 (Ethernet)
1446 N664	IP filter address 2 range specification (Ethernet)
1447 N665	IP filter address 3 range specification (Ethernet)
1448 N666	IP filter address 4 range specification (Ethernet)
1449 N670	Ethernet command source selection IP address 1
1450 N671	Ethernet command source selection IP address 2
1451 N672	Ethernet command source selection IP address 3
1452 N673	Ethernet command source selection IP address 4
1453 N674	Ethernet command source selection IP address 3 range specification
1454 N675	Ethernet command source selection IP address 4 range specification
1455 N642	Keepalive time

## ◆ FR-E800-(SC)E (except for the FR-E800-EPC inverters)

Pr.	Name
550 D012	NET mode operation command source selection
1424 N650	Ethernet communication network number
1425 N651	Ethernet communication station number
1426 N641	Link speed and duplex mode selection
1427 N630	Ethernet function selection 1
1428 N631	Ethernet function selection 2
1429 N632	Ethernet function selection 3
1430 N633	Ethernet function selection 4
1431 N643	Ethernet signal loss detection function selection
1432 N644	Ethernet communication check time interval
1434 N600	IP address 1 (Ethernet)
1435 N601	IP address 2 (Ethernet)
1436 N602	IP address 3 (Ethernet)
1437 N603	IP address 4 (Ethernet)
1438 N610	Subnet mask 1
1439 N611	Subnet mask 2

Pr.	Name
1440 N612	Subnet mask 3
1441 N613	Subnet mask 4
1442 N660	IP filter address 1 (Ethernet)
1443 N661	IP filter address 2 (Ethernet)
1444 N662	IP filter address 3 (Ethernet)
1445 N663	IP filter address 4 (Ethernet)
1446 N664	IP filter address 2 range specification (Ethernet)
1447 N665	IP filter address 3 range specification (Ethernet)
1448 N666	IP filter address 4 range specification (Ethernet)
1449 N670	Ethernet command source selection IP address 1
1450 N671	Ethernet command source selection IP address 2
1451 N672	Ethernet command source selection IP address 3
1452 N673	Ethernet command source selection IP address 4
1453 N674	Ethernet command source selection IP address 3 range specification
1454 N675	Ethernet command source selection IP address 4 range specification
1455 N642	Keepalive time

### NOTE

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.



## 2.5 Connection using CC-Link IE TSN communication (Ethernet connection)

The inverter can be connected to a personal computer via the Ethernet port of the inverter (FR-A800/FR-F800 with FR-A8NCG in it, FR-E800-(SC)EPA, or FR-E800-(SC)EPB).

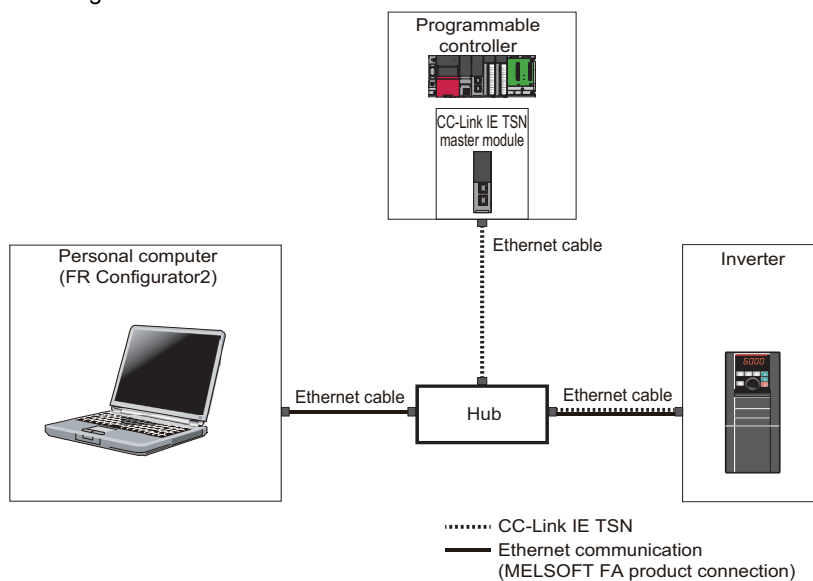
### 2.5.1 Procedure for connection using CC-Link IE TSN communication (Ethernet connection)

#### ◆ Supported model

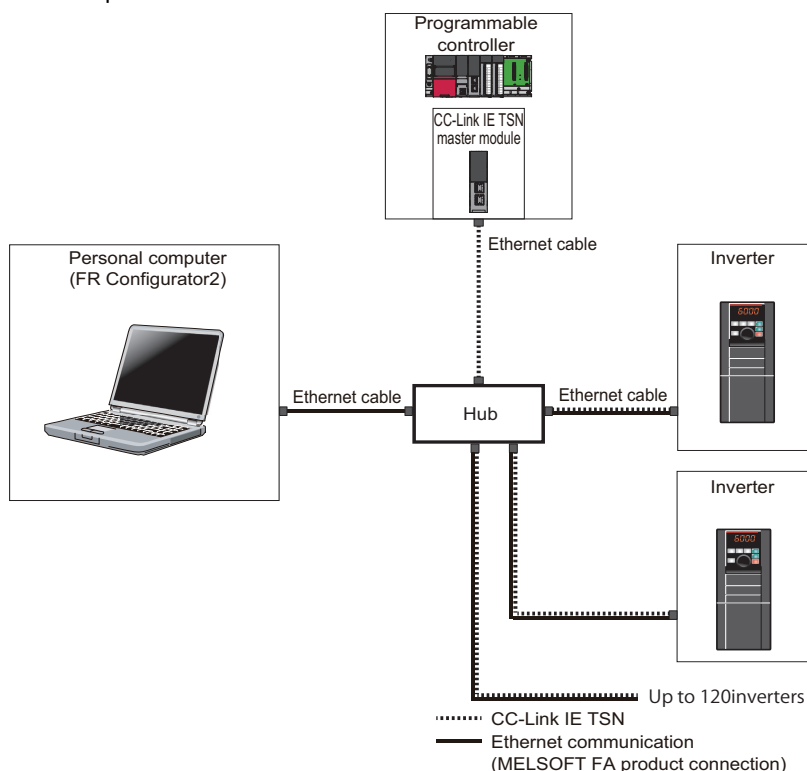
FR-A800 with FR-A8NCG, FR-F800 with FR-A8NCG, FR-E800-(SC)E

#### ◆ Connection configuration

- Single inverter



- Multiple inverters



## ◆ Connection cable

Prepare a cable referring to the following.

### ■ CC-Link IE TSN communication specifications

For details on the communication specifications, refer to the Instruction Manual of the inverter.

### ■ Ethernet cable

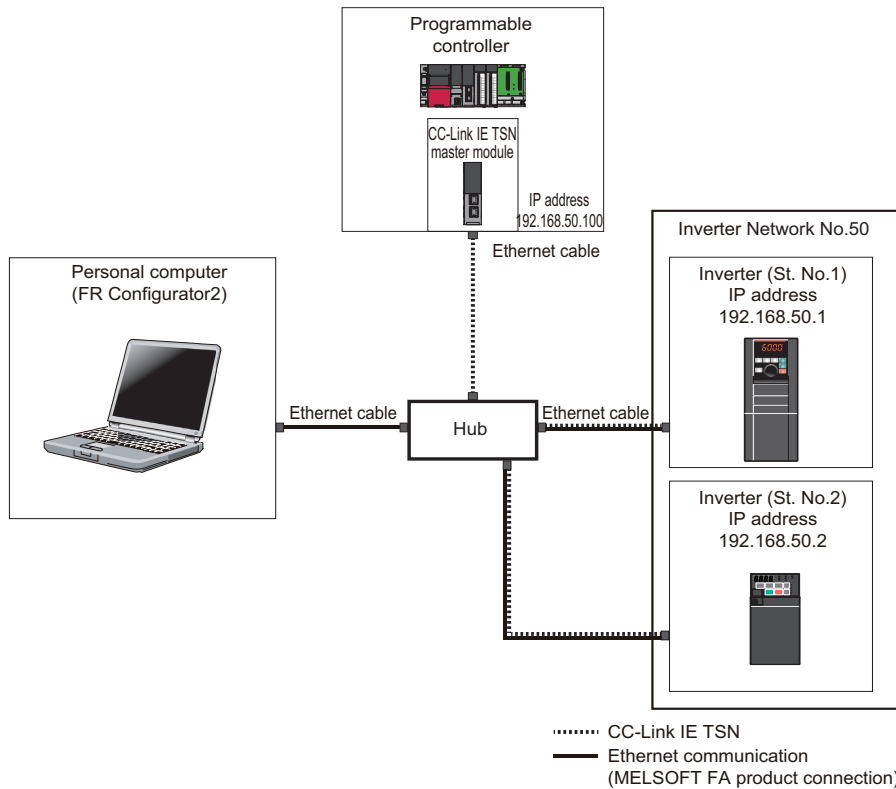
Use Ethernet cables compliant with the following standards.

Model	Ethernet cable	Connector	Standard
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Category 5e or higher straight cable (double shielded/STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)
FR-E800-(SC)E	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (100BASE-T) • ANSI/TIA/EIA-568-B (Category 5)

## ◆ Connection procedure

1. Start the engineering software (GX Works3).  
 In the "Navigation" window, select [Parameter] > [Module Information] then select the module name of the CC-Link IE TSN master module.  
 Select [Basic Settings] in the Setting Item List window. Go to [Network Configuration Settings] and configure the inverter settings.

•Example



•When using FR-A800 with FR-A8NCG (FR-A800GN) or FR-F800 with FR-A8NCG and setting the station number using the station number switches

The IP address set in [Network Configuration Settings] of GX Works3 is set in the first to third octets.

The third octet of the IP address set in [Network Configuration Settings] of GX Works3 is "Inverter network No.".

The value set by the station number switches is used as "St. No." and the fourth octet of the IP address.

Example) When the IP address is "192.168.50.1", the network No. is "50", and the station number is "1",  
[Network Configuration Settings] of GX Works3: "192.168.50.100"

Station number switch setting of the inverter: "01"

•When using FR-A800 with FR-A8NCG (FR-A800GN) or FR-F800 with FR-A8NCG and setting the IP address using parameters

Set the IP address in **Pr.434 to Pr.437 IP Address 1 to 4**.

The setting value in **Pr.436 IP Address 3** (the third octet of the IP address) is "Inverter network No.".

The setting value in **Pr.437 IP Address 4** (the fourth octet of the IP address) is used as "St. No.".

Example) When the IP address is "192.168.50.1", the network No. is "50", and the station number is "1",

**Pr.434 to Pr.437** setting of the inverter: "192.168.50.1"

Station number switch setting of the inverter: "00" or "FF"

•For FR-E800-(SC)E

Set the IP address in **Pr.1434 to Pr.1437 IP Address 1 to 4**.

Set "Inverter network No." in **Pr.1424**.

Set the station number in **Pr.1425**.

Example) When the IP address is "192.168.50.2", the network No. is "50", and the station number is "2",

**Pr.1434 to Pr.1437** setting of the inverter: "192.168.50.2"

**Pr.1424** = "50"

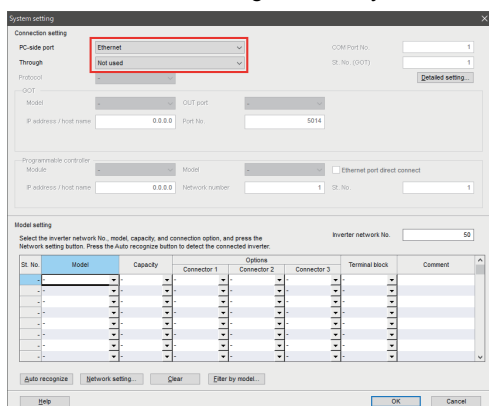
**Pr.1425** = "2"

**2.** Connect the personal computer and the inverter using the Ethernet cable.

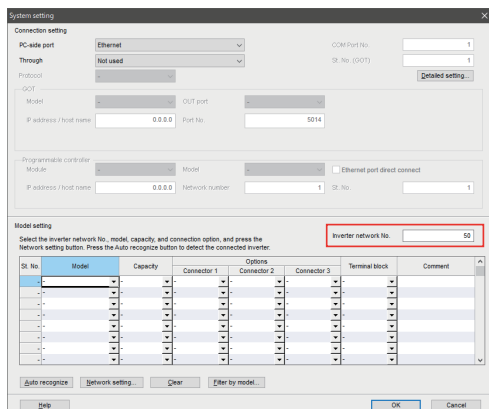
3. Check the inverter parameter settings.  
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode as shown in the following table. When connecting multiple inverters, be careful not to use the same station number or the like.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Setting not required	<b>Pr.550 NET mode operation command source selection = "1"</b> (initial value: "9999")
FR-E800-(SC)E	Set "5001" and "45238" in any two of <b>Pr.1427 to Pr.1430 Ethernet function selection 1 to 4.</b>	<b>Pr.550 NET mode operation command source selection = "5"</b> (initial value: "9999")

4. Start FR Configurator2.
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port.



7. Set the value for "Inverter network No." referring to the following tables.



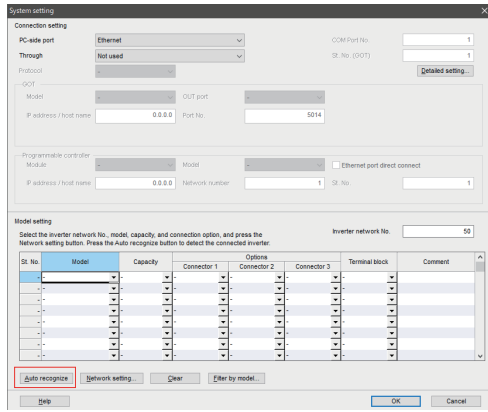
•For setting with the station number switches

Inverter	Input value
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Setting of the master module

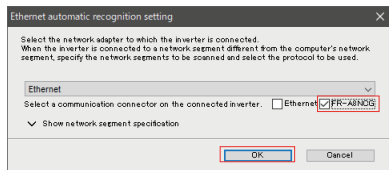
•For setting with the parameter

Inverter	Input value
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	<b>Pr.436 IP Address 3</b>
FR-E800-(SC)E	<b>Pr.1424 Ethernet communication network number</b>

8. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.

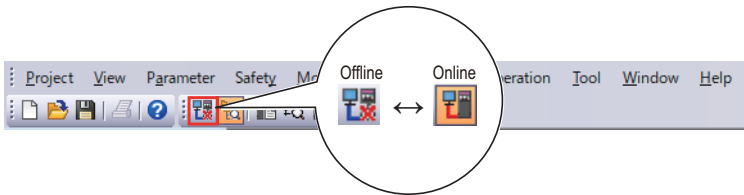


- 9.



10. Click [OK].

11. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 2.5.2 Related parameters for connection using CC-Link IE TSN communication (Ethernet connection)

### ◆ For FR-A800/FR-F800

For details on CC-Link IE TSN communication, refer to the FR-A8NCG Instruction Manual.

Pr.	Name
434 N700	IP address 1
435 N701	IP address 2
436 N702	IP address 3
437 N703	IP address 4
438 N710	Subnet mask 1
439 N711	Subnet mask 2
440 N712	Subnet mask 3
441 N713	Subnet mask 4

Pr.	Name
1442 N760	IP filter address 1 (Ethernet)
1443 N761	IP filter address 2 (Ethernet)
1444 N762	IP filter address 3 (Ethernet)
1445 N763	IP filter address 4 (Ethernet)
1446 N764	IP filter address 2 range specification (Ethernet)
1447 N765	IP filter address 3 range specification (Ethernet)
1448 N766	IP filter address 4 range specification (Ethernet)

## ◆ For FR-E800-(SC)E

- For details on CC-Link IE TSN communication, refer to the FR-E800 Instruction Manual (Communication).

Pr.	Name
544 N103	CC-Link extended setting
1425 N651	Ethernet communication station number
1426 N641	Link speed and duplex mode selection
1427 N630	Ethernet function selection 1
1428 N631	Ethernet function selection 2
1429 N632	Ethernet function selection 3
1430 N633	Ethernet function selection 4
1434 N600	IP address 1 (Ethernet)
1435 N601	IP address 2 (Ethernet)
1436 N602	IP address 3 (Ethernet)
1437 N603	IP address 4 (Ethernet)

Pr.	Name
1438 N610	Subnet mask 1
1439 N611	Subnet mask 2
1440 N612	Subnet mask 3
1441 N613	Subnet mask 4
1442 N660	IP filter address 1 (Ethernet)
1443 N661	IP filter address 2 (Ethernet)
1444 N662	IP filter address 3 (Ethernet)
1445 N663	IP filter address 4 (Ethernet)
1446 N664	IP filter address 2 range specification (Ethernet)
1447 N665	IP filter address 3 range specification (Ethernet)
1448 N666	IP filter address 4 range specification (Ethernet)

## 2.5.3 IP address setting

### ◆ For FR-A800/FR-F800 with FR-A8NCG

- For CC-Link IE TSN communication, the IP address of the inverter is set using the station number switches on the communication circuit board of the FR-A8NCG or inverter parameters. Note that the station number switch<sup>\*1</sup> setting has a higher priority than the parameter setting. (When the station number switches are not set to "0 or 255", the station number switch setting has a higher priority than the **Pr.437** setting.) For CC-Link IE TSN communication, the third octet of the inverter's IP address is used as the network No. and the fourth octet is used as the station number. (Enter the IP address assigned by the network administrator.)

\*1 For details on the station number switches, refer to the CC-Link IE TSN Function Manual or FR-A8NCG Instruction Manual.

#### ■ Setting the IP address with the station number switches

- Set a value other than "0 (H00)" or "255 (HFF)" to specify a station number using the station number switches. The setting range is from "1 (H01)" to "254 (HFE)". The setting is applied after an inverter reset or at the next power-ON.

IP address	Description
First octet	The settings of the master station are used. (The settings from <b>Pr.434 to Pr.436</b> are invalid.)
Second octet	
Third octet	
Fourth octet	The station number switch setting is enabled regardless of the setting in <b>Pr.437</b> .

#### ■ Setting the IP address with parameters (Pr.434 to Pr.437)

- Set the station number switches to "0 (H00)" or "255 (HFF)" to specify the IP address of the inverter using **Pr.434 to Pr.437**. The setting is applied after an inverter reset or at the next power-ON.

IP address	Description
First octet	<b>Pr.434</b>
Second octet	<b>Pr.435</b>
Third octet	<b>Pr.436</b>
Fourth octet	<b>Pr.437</b>

- Enter the inverter network number in **Pr.436 IP Address 3**.
- The setting range of **Pr.436** is "0 to 255", but its active range is "1 to 254". The values out of the active range are invalid because such values cannot be transmitted to the master station.

- Specify the inverter station number in **Pr.437 IP Address 4**.
- The setting range of **Pr.437** is "0 to 255", but its active range is "1 to 254". Out-of-range setting values are invalid because such values cannot be transmitted to the master station.

### ◆ For FR-E800-(SC)E

- Enter the IP address of the inverter in **Pr.1434 to Pr.1437**. (Enter the IP address assigned by the network administrator.) Enter the Ethernet communication network number in **Pr.1424**. Enter the Ethernet communication station number in **Pr.1425**.

# 2.6 Connection via a programmable controller

The inverter and FR Configurator2 can be communicated via a programmable controller (CPU module / Ethernet module). Use a serial port or the Ethernet connector on the personal computer for connection.

## 2.6.1 Procedure for connection via a programmable controller

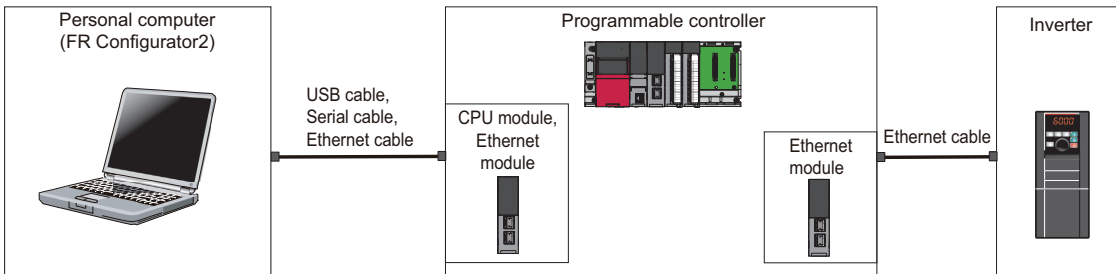
### ◆ Supported model

FR-A800-E, FR-F800-E, and FR-E800-(SC)E

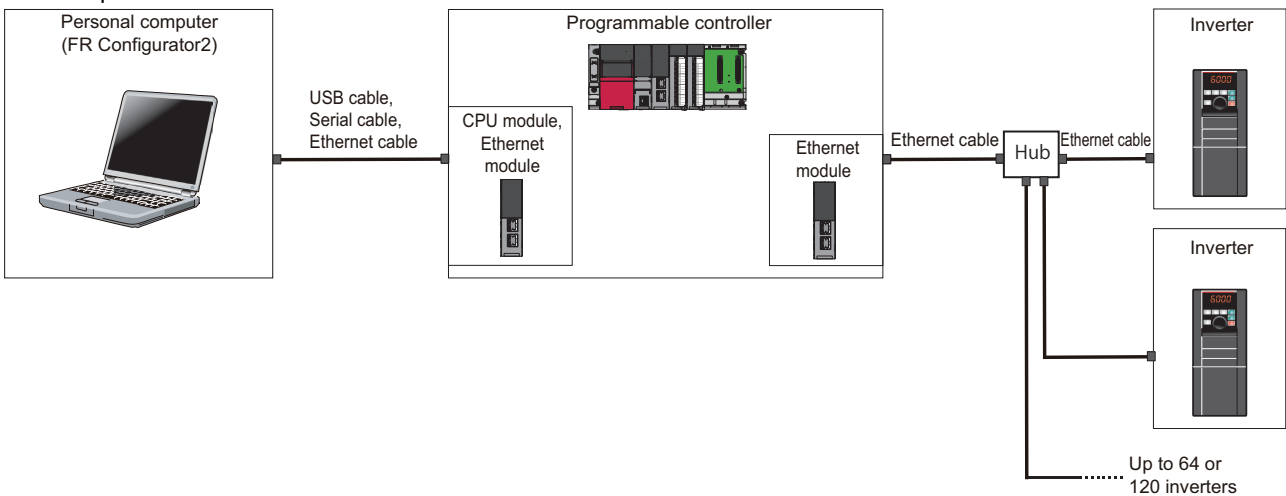
### ◆ Connection configuration

#### ■ Connection of the personal computer and the inverters via a programmable controller (Ethernet connection)

- Single inverter

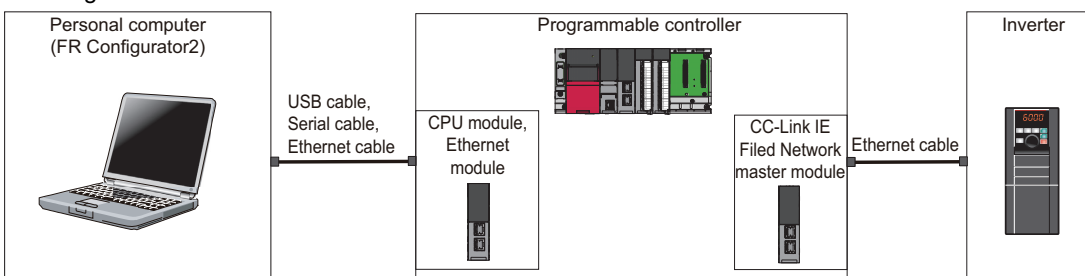


- Multiple inverters



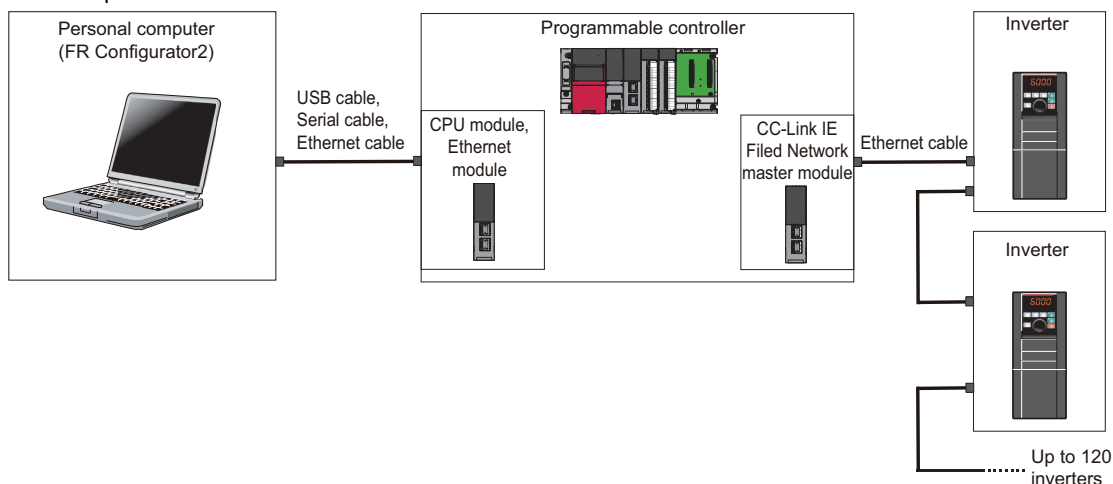
#### ■ Connection of the personal computer and the inverters via a programmable controller (CC-Link IE Field Network)

- Single inverter





• Multiple inverters



## ◆ Connection cable

Prepare a cable referring to the following.

### ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Topology	Line, star, or a combination of line and star
Interface	RJ-45
Number of interfaces available	2
IP version	IPv4

### ■ Connection cable

Use Ethernet cables compliant with the following standards.

Ethernet cable	Connector	Standard
Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)

## ◆ Connection procedure

1. Connect the personal computer and programmable controller (CPU or Ethernet module) using the USB cable, serial cable, or Ethernet cable.
2. Connect the programmable controller (Ethernet module) and the inverter with the Ethernet cable.
3. Set parameters for the programmable controller. For the setting procedure of the programmable controller, refer to MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) and the MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual.

#### 4. Check the inverter parameter settings.

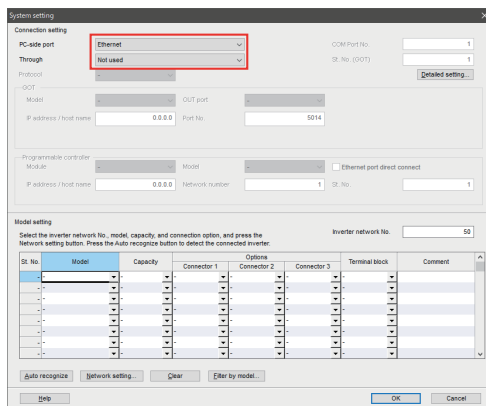
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following parameters and switch the operation mode as shown in the following table. When connecting multiple inverters, be careful not to use the same station number or the like.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800-E FR-F800-E FR-E800-(SC)E	Set "5001" in any of <b>Pr.1427 to Pr.1430 Ethernet function selection 1 to 4.</b>	<b>Pr.550 NET mode operation command source selection = "5" (initial value: "9999")</b>
FR-A800-E-R2R	Set "5001" in any of <b>Pr.1076 to Pr.1078 Ethernet function selection 1 to 3.</b>	

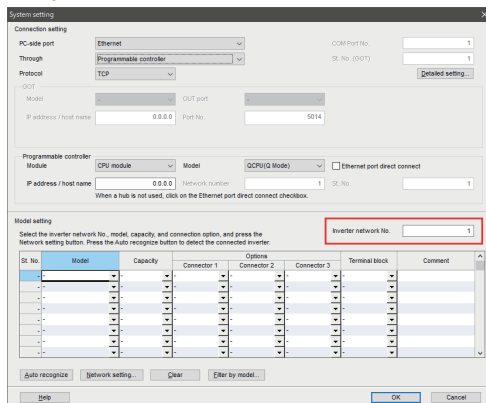
#### 5. Start FR Configurator2.

#### 6. Select [New...] from the [Project] menu bar.

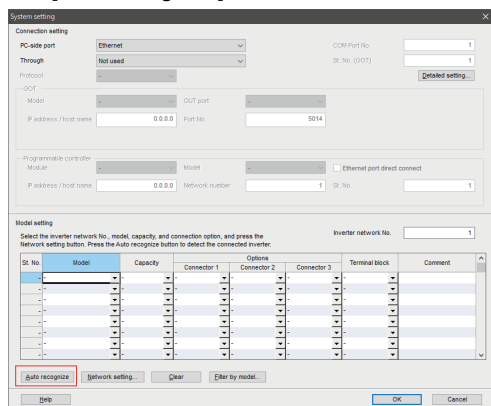
#### 7. In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port. Select "Programmable controller" for "Through".



#### 8. Make the setting in "Inverter network No." consistent with the **Pr.1424 Ethernet communication network number** setting.

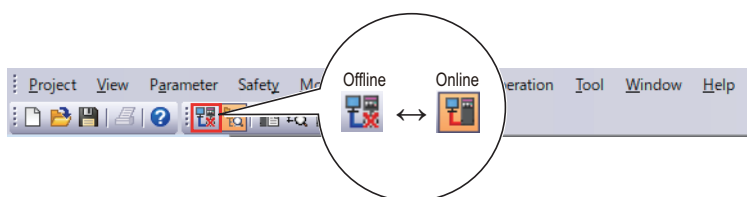


9. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



10. Click [OK].

11. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 2.6.2 Related parameters for connection via a programmable controller

For the related parameters, refer to [page 49](#).

## 2.7 Connection using CC-Link IE TSN communication (via a programmable controller)

The inverter and FR Configurator2 can be connected via a programmable controller (CPU or Ethernet module). Use a USB connector, serial port, or the Ethernet connector on the personal computer for connection.

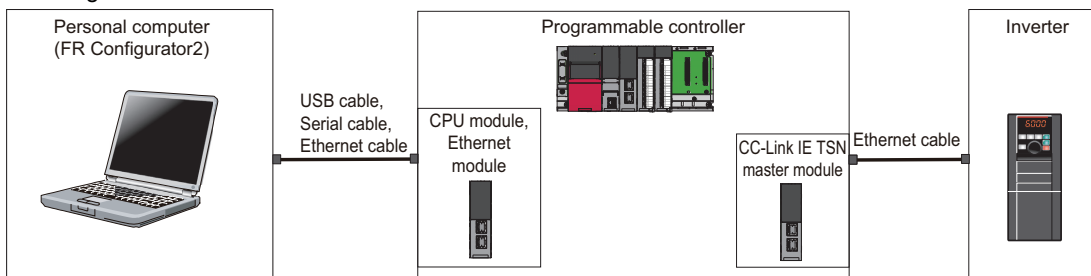
### 2.7.1 Procedure for connection using CC-Link IE TSN communication

#### ◆ Supported model

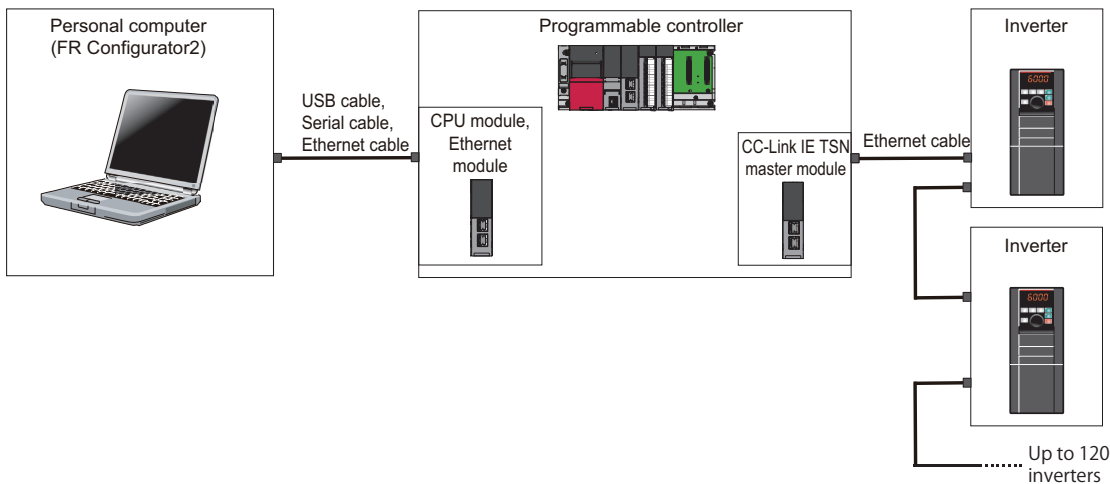
FR-A800 with FR-A8NCG, FR-F800 with FR-A8NCG, FR-E800-(SC)E

#### ◆ Connection configuration

- Single inverter



- Multiple inverters



#### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ CC-Link IE TSN communication specifications

For details on the communication specifications, refer to the Instruction Manual of the inverter.

## ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

Model	Ethernet cable	Connector	Standard
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Category 5e or higher straight cable (double shielded/STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)
FR-E800-(SC)E	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (100BASE-T) • ANSI/TIA/EIA-568-B (Category 5)

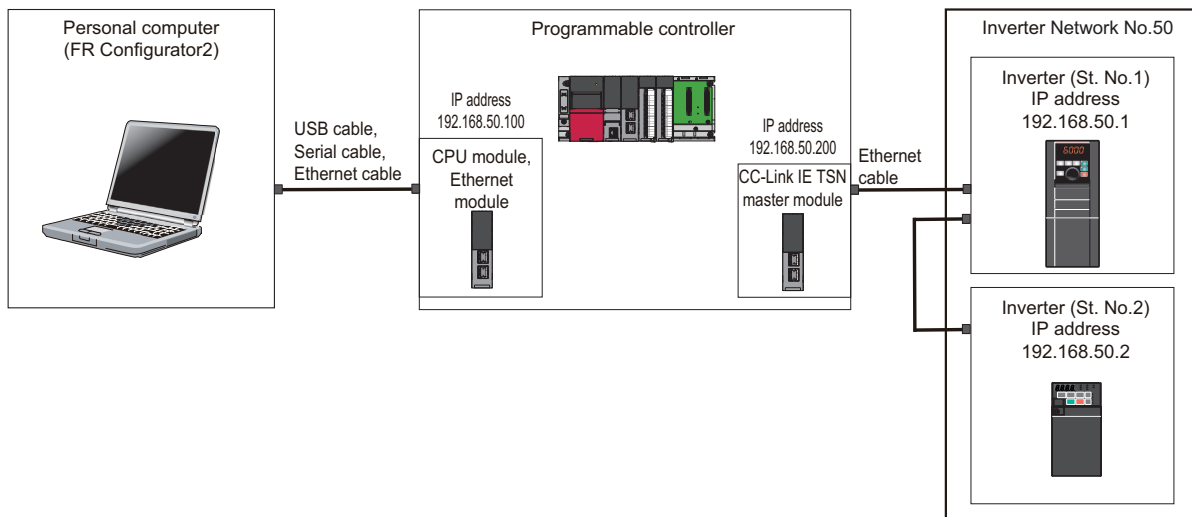
## ◆ Connection procedure

### 1. Start the engineering software (GX Works3).

In the "Navigation" window, select [Parameter] > [Module Information] then select the module name of the CC-Link IE TSN master module.

Select [Basic Settings] in the Setting Item List window. Go to [Network Configuration Settings] and configure the inverter settings.

#### •Example



•When using FR-A800 with FR-A8NCG (FR-A800GN) or FR-F800 with FR-A8NCG and setting the station number using the station number switches

The IP address set in [Network Configuration Settings] of GX Works3 is set in the first to third octets.

The third octet of the IP address set in [Network Configuration Settings] of GX Works3 is "Inverter network No.".

The value set by the station number switches is used as "St. No." and the fourth octet of the IP address.

Example) When the IP address is "192.168.50.1", the network No. is "50", and the station number is "1",

[Network Configuration Settings] of GX Works3: "192.168.50.100"

Station number switch setting of the inverter: "01"

•When using FR-A800 with FR-A8NCG (FR-A800GN) or FR-F800 with FR-A8NCG and setting the IP address using parameters

Set the IP address in **Pr.434 to Pr.437 IP Address 1 to 4**.

The setting value in **Pr.436 IP Address 3** (the third octet of the IP address) is "Inverter network No.".

The setting value in **Pr.437 IP Address 4** (the fourth octet of the IP address) is used as "St. No.".

Example) When the IP address is "192.168.50.1", the network No. is "50", and the station number is "1",

**Pr.434 to Pr.437** setting of the inverter: "192.168.50.1"

Station number switch setting of the inverter: "00" or "FF"

•For FR-E800-(SC)E

Set the IP address in **Pr.1434 to Pr.1437 IP Address 1 to 4**.

Set "Inverter network No." in **Pr.1424**.

Set the station number in **Pr.1425**.

Example) When the IP address is "192.168.50.2", the network No. is "50", and the station number is "2",

**Pr.1434 to Pr.1437** setting of the inverter: "192.168.50.2"

**Pr.1424** = "50"

**Pr.1425** = "2"

**2.** Connect the personal computer and programmable controller (CPU or Ethernet module) using the USB cable, serial cable, or Ethernet cable.

**3.** Set parameters for the programmable controller (CC-Link IE TSN master module).

**4.** Connect the programmable controller (CC-Link IE TSN master module) and the inverter with the Ethernet cable.

**5.** Check the inverter parameter settings.

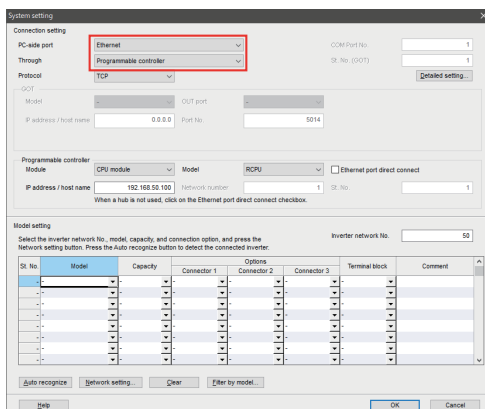
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode as shown in the following table. When connecting multiple inverters, be careful not to use the same station number or the like.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Setting not required	<b>Pr.550 NET mode operation command source selection = "1"</b> (initial value: "9999")
FR-E800-(SC)E	Set "5001" and "45238" in any two of <b>Pr.1427 to Pr.1430 Ethernet function selection 1 to 4</b> .	<b>Pr.550 NET mode operation command source selection = "5"</b> (initial value: "9999")

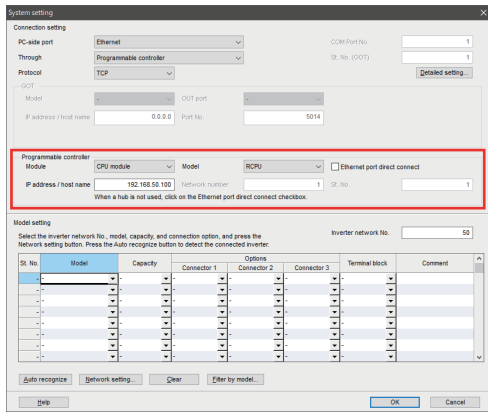
**6.** Start FR Configurator2.

**7.** Select [New...] from the [Project] menu bar.

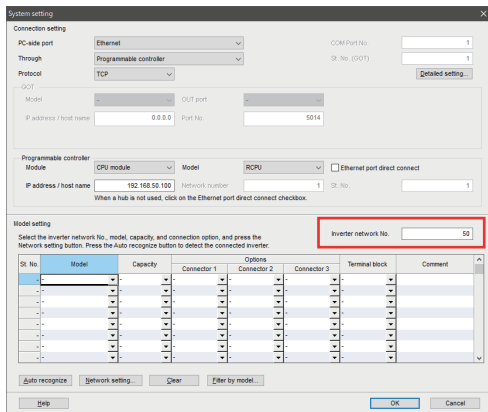
**8.** In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port. Select "Programmable controller" for "Through".



9.



10. Set the value for "Inverter network No." referring to the following tables.



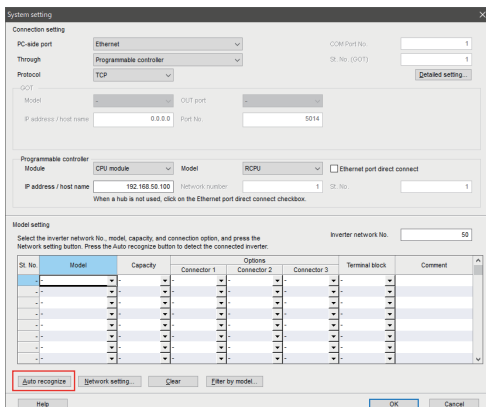
•For setting with the station number switches

Inverter	Input value
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Setting of the master module

•For setting with the parameter

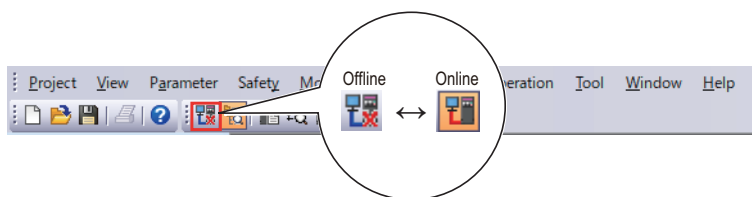
Inverter	Input value
FR-A800 with FR-A8NCG FR-F800 with FR-A8NCG	Pr.436 IP Address 3
FR-E800-(SC)E	Pr.1424 Ethernet communication network number

11. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



12. Click [OK].

- 13.** Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 2.7.2 Parameters related to CC-Link IE TSN communication

For the related parameters, refer to [page 56](#).

## 2.7.3 IP address setting

For details, refer to [page 57](#).



## 2.8 Connection through GOT

Using the FA transparent function of GOT1000/GOT2000 series, connecting an inverter to FR Configurator2 is available through a GOT. The FA transparent function enables reading, writing and monitoring of a programmable controller of Mitsubishi Electric Corporation through a GOT, while connecting the Mitsubishi Electric programmable controller and a personal computer. A serial port, USB, or Ethernet is used for connecting the personal computer and the GOT. RS-422/485 or Ethernet is used for connecting the GOT and the inverter.

### 2.8.1 Procedure for connection through GOT

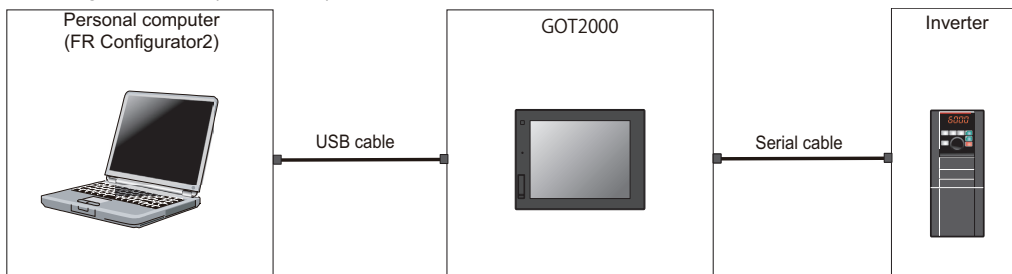
#### ◆ Supported model

FR-A800 series, FR-A800 Plus series, FR-F800 series, and FR-E800 series

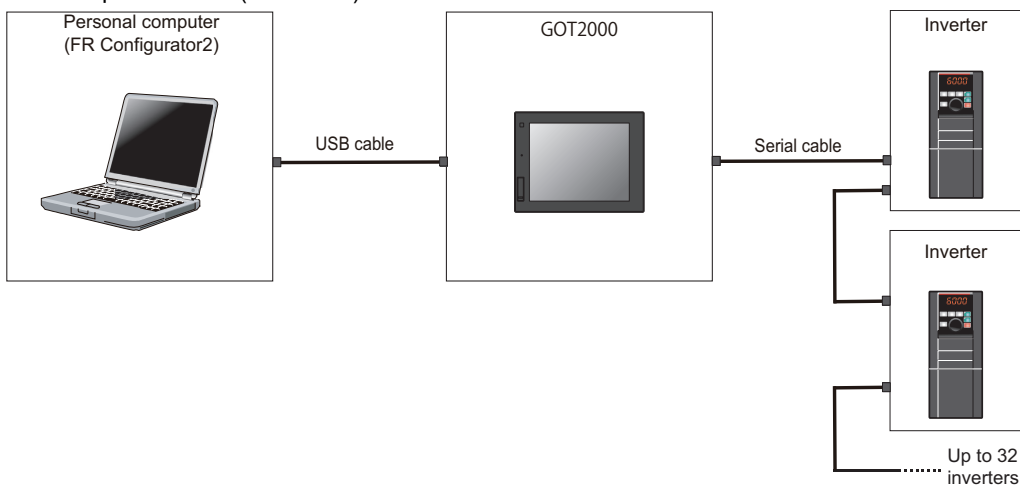
#### ◆ Connection configuration

##### ■ Connection example with inverters (using the RS-485 terminals)

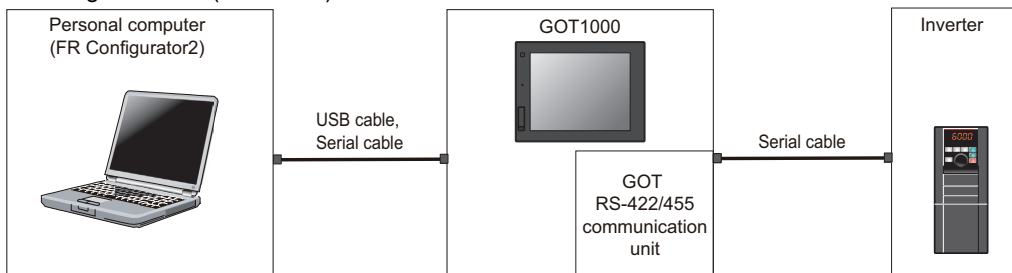
- Single inverter (GOT2000)



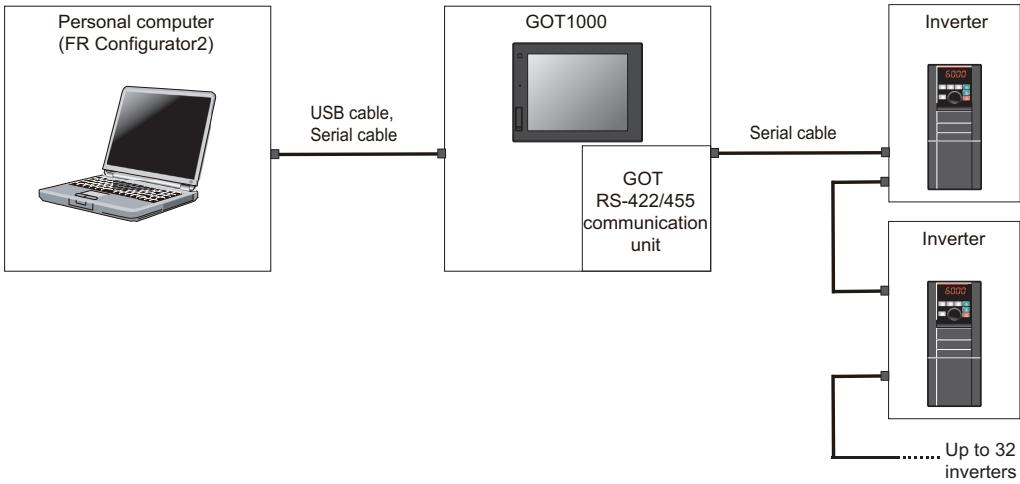
- Multiple inverters (GOT2000)



- Single inverter (GOT1000)

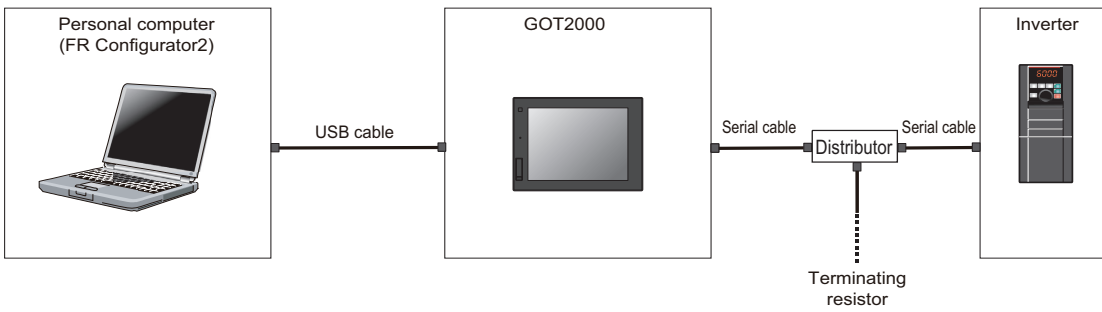


• Multiple inverters (GOT1000)

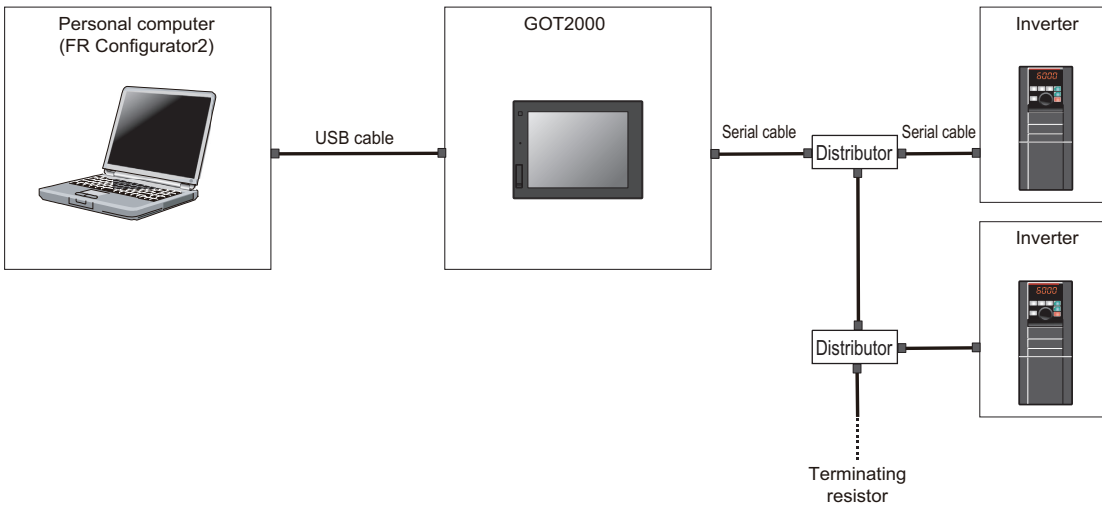


■ Connection example with inverters (using the PU connector)

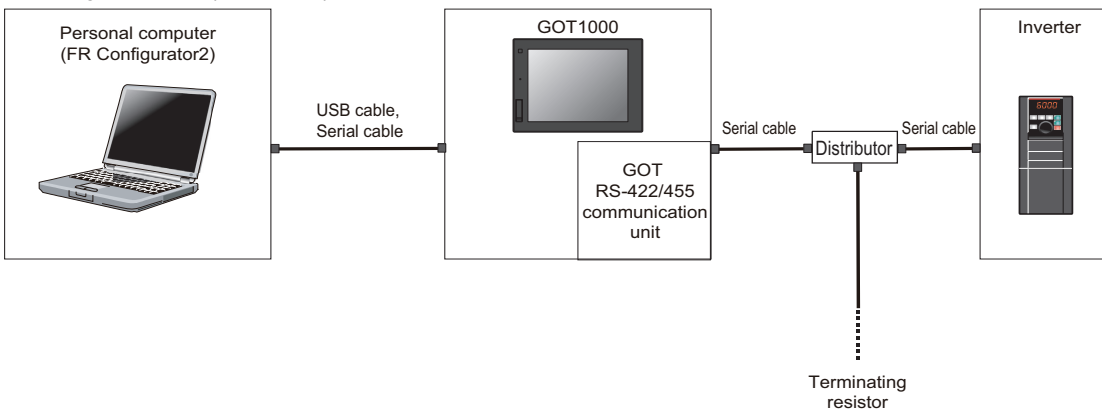
• Single inverter (GOT2000)



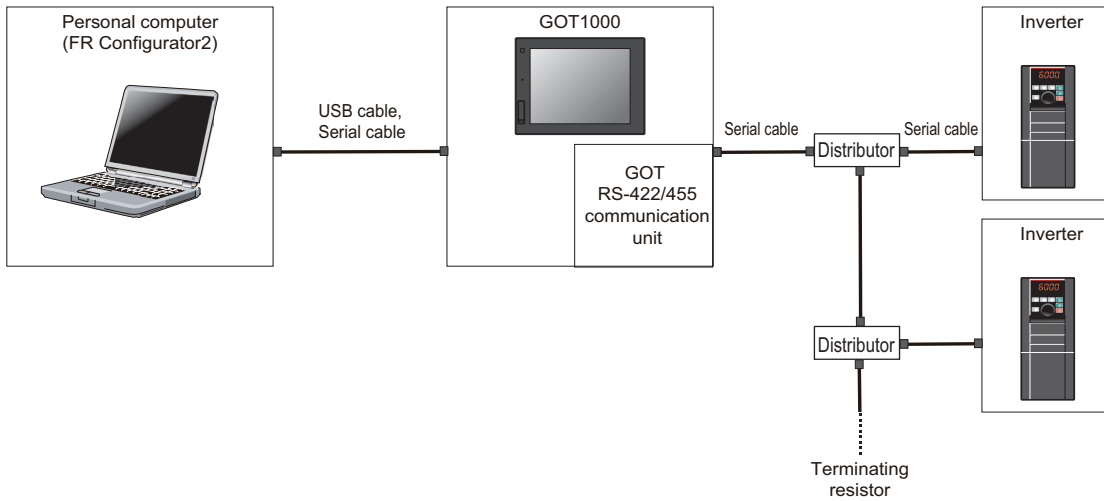
• Multiple inverters (GOT2000)



• Single inverter (GOT1000)

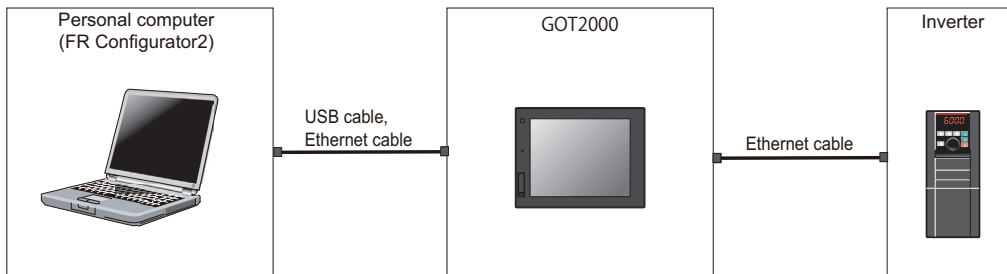


- Multiple inverters (GOT1000)

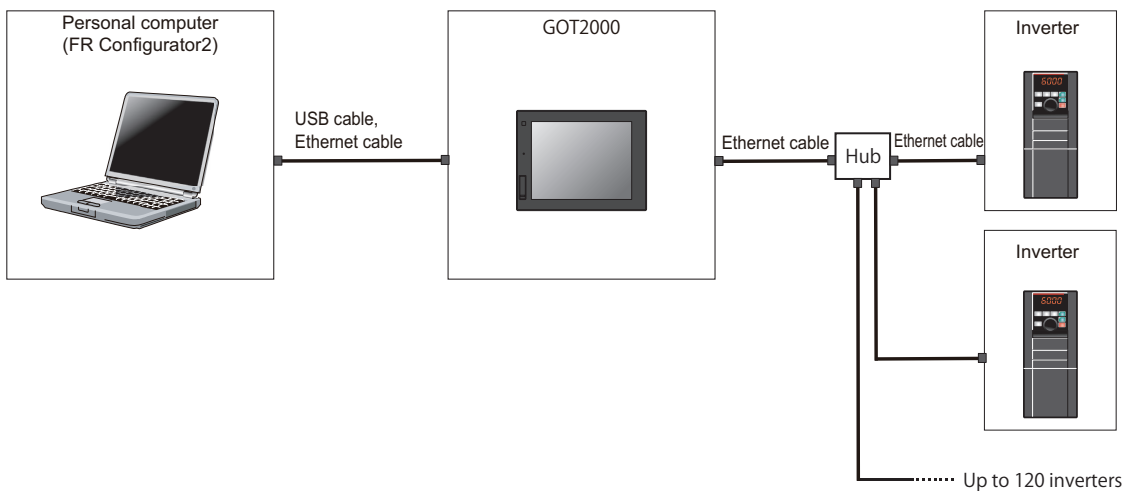


### ■ Connection example with inverters (using the Ethernet connector)

- Single inverter



- Multiple inverters



### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ Serial cable and distributor

Use serial cables for wiring. For details on the serial cable and distributor, refer to the GOT1000/GOT2000 Series Connection Manual.

## ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Topology	Line, star, or a combination of line and star
Interface	RJ-45
Number of interfaces available	2
IP version	IPv4

## ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

Ethernet cable	Connector	Standard
Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: <ul style="list-style-type: none"> <li>• IEEE 802.3 (100BASE-TX)</li> <li>• ANSI/TIA/EIA-568-B (Category 5)</li> </ul>

### NOTE

- For the GOT1000 series, an RS-422/485 serial communication unit (GT15-RS4-9S) is required. When using the USB for connecting a GOT, use a dedicated cable, GT09-C30USB-5P or GT09-C20USB-5P.
- For the compatible version of the GOT or details of the RS-422/485 connection, refer to the GOT1000/GOT2000 Series Connection Manual.

## ◆ Connection procedure

1. Connect the personal computer and GOT using the USB cable, serial cable, or Ethernet cable.
2. Configure settings for "Ethernet setting", "Controller setting", "Basic setting" of "GOT Setup", "Transparent mode" in the GOT. When the GOT and the inverter are connected using serial communication, the inverter parameters required for the GOT connection are automatically changed by setting the automatic recognition on the GOT2000 series side. For details, refer to [page 73](#).
3. Check the inverter parameter settings.  
Set the inverter parameters in accordance with the connection method as shown in the following tables.  
•When using the RS-485 terminals

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 FR-B FR-B3 FR-B4 FR-F800	Set a station number of each inverter in <b>Pr.331 RS-485 communication station number</b> (used for connecting multiple inverters). <b>Pr.336 RS-485 communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.337 RS-485 communication waiting time setting</b> = "0" (initial value: "9999")	<b>Pr.550 NET mode operation command source selection</b> = "9999" (initial value)

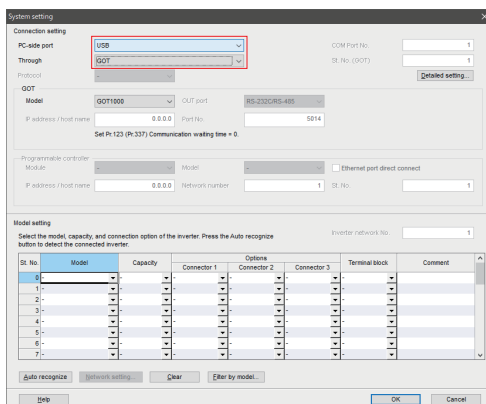
•When using the PU connector

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800 FR-B FR-B3 FR-B4 FR-F800	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999") <b>Pr.123 PU communication waiting time setting</b> = "0" (initial value: "9999")	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "9999")
FR-E800	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.123 PU communication waiting time setting</b> = "0" (initial value: "9999")	
FR-CS80	Set a station number of each inverter in <b>Pr.117 PU communication station number</b> (used for connecting multiple inverters). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999") <b>Pr.123 PU communication waiting time setting</b> = "0" (initial value: "9999")	

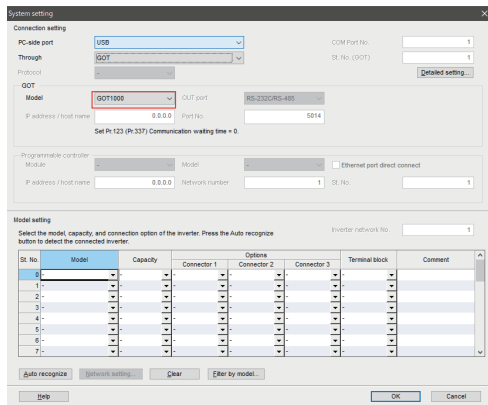
•When using the Ethernet connector

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800-E FR-A800-E-CRN FR-A800-E-LC FR-F800-E	Set "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1429 Ethernet function selection 1 to 3</b> .	<b>Pr.550 NET mode operation command source selection</b> = "5" (initial value: "9999")
FR-A800-E-R2R	Set "5001" (or "5002") and "45237" in any two of <b>Pr.1076 to Pr.1078 Ethernet function selection 1 to 3</b> .	
FR-E800-(SC)E	Set "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1430 Ethernet function selection 1 to 4</b> .	

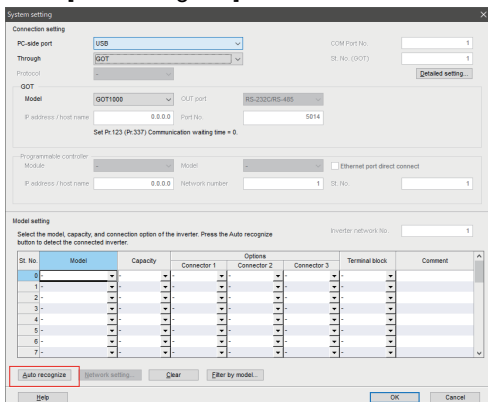
4. Start FR Configurator2.
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select the connection method for the PC-side port. Select "GOT" for "Through".



## 7. Set the model name of the GOT used.

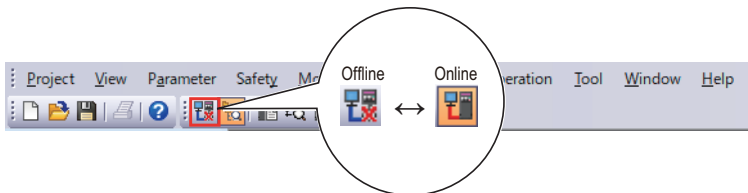


## 8. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



## 9. Click [OK].

## 10. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



### NOTE

- Do not perform the following operation while the FA transparent function is valid and FR Configurator2 is in online mode.
  - Online operation (project download, etc.) from GT Designer / GT Designer2 to GOT
  - Online operation to programmable controller CPU by using FA transparent function of GX Developer or GX Works2
- When using FA transparent communication, communication error (timeout) may occur when FR Configurator2 starts communication during timeout occurrence in a GOT (when a GOT is monitoring the inverter which is not connected). In that case, set the timeout time value more than the following. (Refer to [page 121.](#))
  - Timeout value of GOT [s] × (Retry count of GOT + 1)
  - If the value above is more than 30 [s], make adjustment to "Timeout value" [s] and "Retry count" of GOT to make the value above become less than 30 [s].

## ◆ GOT2000 series automatic recognition

- When a GOT2000 model is connected, the parameters required for the GOT connection are automatically changed by setting the automatic recognition in the GOT2000 model.
- Set the station number (**Pr.117** or **Pr.331**) of the inverter before the automatic recognition is performed.

- Connect all the stations of inverters with GOT before the automatic recognition is performed. The inverter newly added after automatic recognition will not be recognized automatically. (When an inverter is added, perform the initial setting in **Pr.999 Automatic parameter setting** or set the automatic recognition on the GOT side again.)

Automatic change item	Automatic change parameter setting		Setting value after change
	PU connector connection	RS-485 terminal connection	
Communication speed	<b>Pr.118</b>	<b>Pr.332</b>	Depending on the setting of the connected device in the GOT.
Data length/stop bit	<b>Pr.119</b>	<b>Pr.333</b>	
Parity	<b>Pr.120</b>	<b>Pr.334</b>	
Waiting time setting	<b>Pr.123</b>	<b>Pr.337</b>	
CR/LF selection	<b>Pr.124</b>	<b>Pr.341</b>	
Number of communication retries	<b>Pr.121</b>	<b>Pr.335</b>	9999 (fixed)
Communication check time interval	<b>Pr.122</b>	<b>Pr.336</b>	9999 (fixed)
Protocol selection	- ( <b>Pr.549</b> holds the value before the automatic recognition.)	<b>Pr.549</b>	0 (fixed to Mitsubishi inverter protocol)

#### NOTE

- If the automatic recognition cannot be performed, initial setting in **Pr.999** is required.
- For connecting a GOT2000 model to the RS-485 terminal block on the inverter, set **Pr.549 Protocol selection** = "0 (initial value) or 1".
- For connection to a device other than the GOT2000 series, initial setting in **Pr.999** is required.
- For details, refer to the GOT2000 Series Connection Manual (Mitsubishi Product).

## 2.8.2 Related parameters for connection through GOT

For details, refer to the Instruction Manual of the inverter.

### ◆ Parameters related to PU connector communication

Pr.	Name
117 N020	PU communication station number
118 N021	PU communication speed
N022	PU communication data length
N023	PU communication stop bit length
119	PU communication stop bit length / data length
120 N024	PU communication parity check
121 N025	PU communication retry count

Pr.	Name
122 N026	PU communication check time interval
123 N027	PU communication waiting time setting
124 N028	PU communication CR/LF selection
549 N000	Protocol selection
550 D012	NET mode operation command source selection
551 D013	PU mode operation command source selection
999 E431	Automatic parameter setting

### ◆ Parameters related to RS-485 terminal communication

Pr.	Name
331 N030	RS-485 communication station number
332 N031	RS-485 communication speed
N032	RS-485 communication data length
N033	RS-485 communication stop bit length
333	RS-485 communication stop bit length / data length
334 N034	RS-485 communication parity check selection
335 N035	RS-485 communication retry count

Pr.	Name
336 N036	RS-485 communication check time interval
337 N037	RS-485 communication waiting time setting
341 N038	RS-485 communication CR/LF selection
549 N000	Protocol selection
550 D012	NET mode operation command source selection
551 D013	PU mode operation command source selection
999 E431	Automatic parameter setting

### ◆ Parameters related to Ethernet connection

For the related parameters, refer to [page 49](#).

#### NOTE

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.



## 2.9 Connection via a GOT and a programmable controller

The inverter and FR Configurator2 can be communicated via a GOT2000 model and a programmable controller (CPU module / Ethernet module).

Use a USB cable for connection between the computer and a GOT2000 model. Use an Ethernet cable for connection between the GOT2000 model and a programmable controller and between the programmable controller and inverters.

### 2.9.1 Procedure for connection via a GOT and a programmable controller

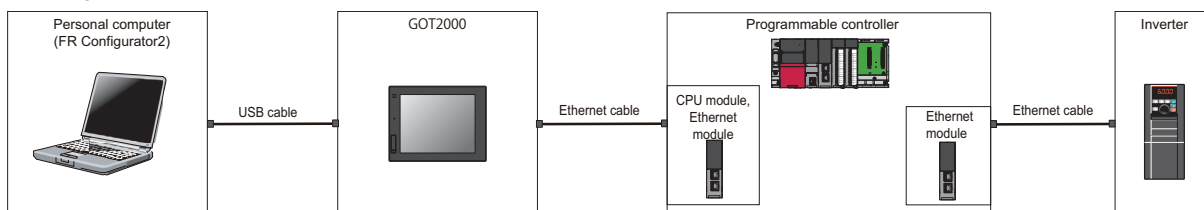
#### ◆ Supported model

FR-A800-E, FR-A800-E-CRN, FR-A800-E-R2R, FR-A800-E-LC, FR-F800-E, and FR-E800-(SC)E

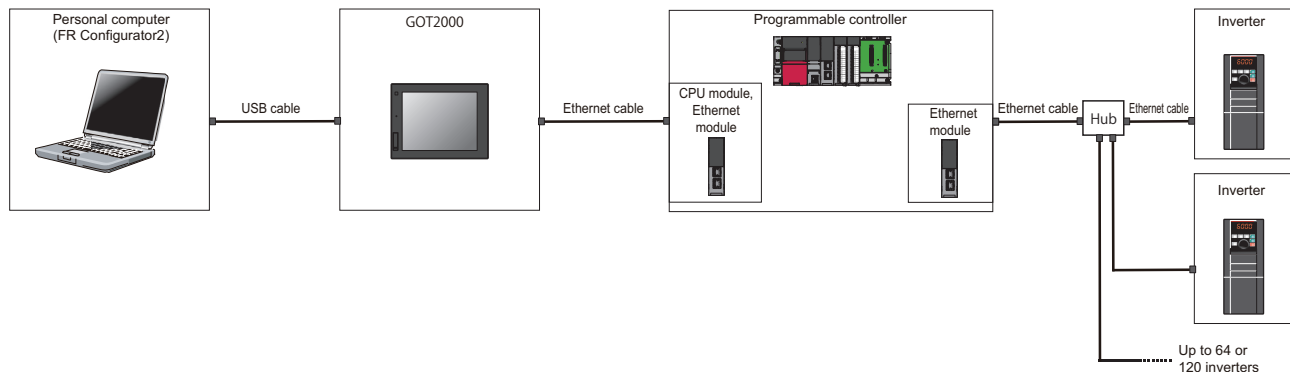
#### ◆ Connection configuration

##### ■ Communication through GOT2000 and programmable controller

- Single inverter

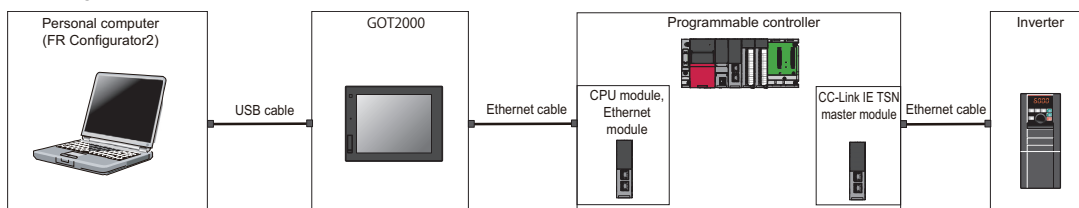


- Multiple inverters

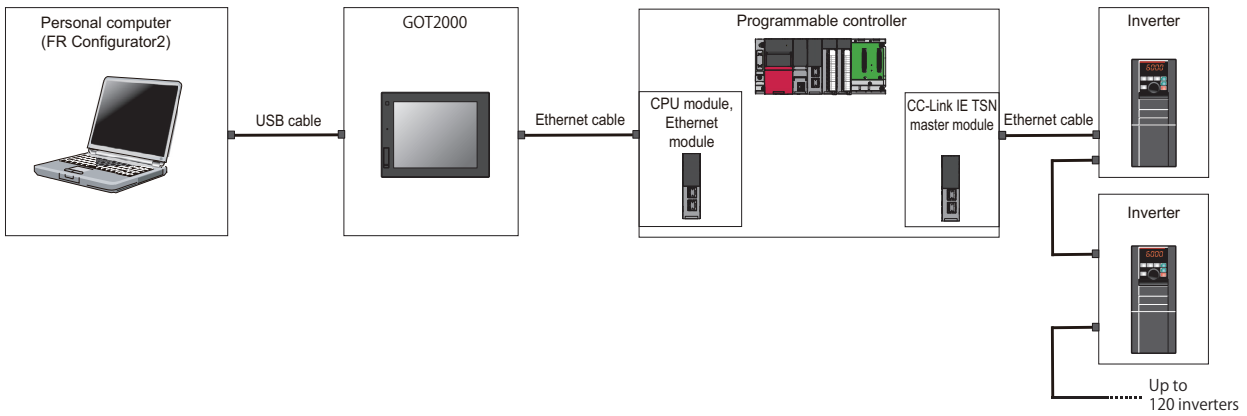


##### ■ Communication through GOT2000 and programmable controller (CC-Link IE Field Network)

- Single inverter



• Multiple inverters



### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ USB cable

Use a USB cable for wiring. For details on the USB cable, refer to the GOT1000/GOT2000 Series Connection Manual.

#### ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Topology	Line, star, or a combination of line and star
Interface	RJ-45
Number of interfaces available	2
IP version	IPv4

#### ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

Ethernet cable	Connector	Standard
Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • IEEE 802.3 (100BASE-TX) • ANSI/TIA/EIA-568-B (Category 5)

### ◆ Connection procedure

1. Connect the personal computer and the GOT using the USB cable.
2. Connect the GOT and programmable controller (CPU or Ethernet module) using the Ethernet cable.
3. Connect the programmable controller (Ethernet module or CC-Link IE Field Network master module) and the inverter with the Ethernet cable.
4. Configure settings for "Ethernet setting", "Controller setting", "Basic setting" of "GOT Setup", "Transparent mode" in the GOT.
5. Set parameters for the programmable controller. For the setting procedure of the programmable controller, refer to MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) and the MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual.

**6.** Check the inverter parameter settings.

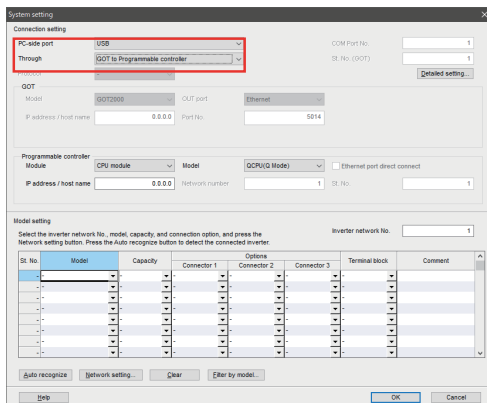
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameters and switch the operation mode as shown in the following table.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A800-E FR-A800-E-CRN FR-A800-E-LC FR-F800-E	Set "5001" in any of <b>Pr.1427 to Pr.1429</b> <b>Ethernet function selection 1 to 3.</b>	Pr.550 NET mode operation command source selection = "5" (initial value: "9999")
FR-A800-E-R2R	Set "5001" in any of <b>Pr.1076 to Pr.1078</b> <b>Ethernet function selection 1 to 3.</b>	
FR-E800-(SC)E	Set "5001" in any of <b>Pr.1427 to Pr.1430</b> <b>Ethernet function selection 1 to 4.</b>	

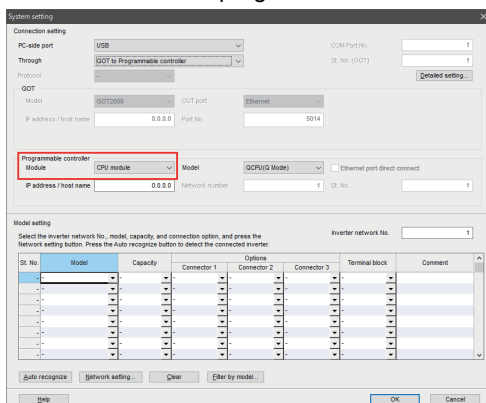
**7.** Start FR Configurator2.

**8.** Select [New...] from the [Project] menu bar.

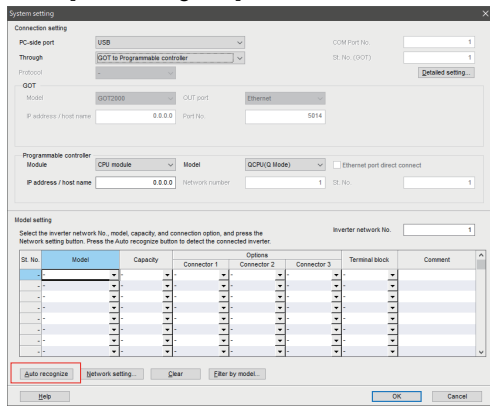
**9.** In the "Connection setting" of the "System setting" window, select "USB" for the PC-side port. Select "GOT to programmable controller" for "Through".



**10.** Set "module" of the programmable controller used.

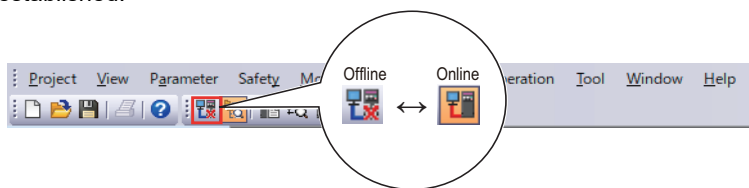


- 11.** Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



- 12.** Click [OK].

- 13.** Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 2.9.2 Related parameters for connection via a GOT and a programmable controller

For the related parameters, refer to [page 75](#).

## 2.10 Setting of operation mode of the inverter

- The inverter has three operation modes.

External operation mode: For giving a start command and a frequency command with an external potentiometer or switches which are connected to the control circuit terminal.

PU operation mode: For giving a start command and a frequency command from the operation panel, parameter unit, or RS-485 communication via the PU connector.

Network operation mode (NET operation mode): For giving a start command and a frequency command via the RS-485 terminals, a communication option, or the Ethernet connector.

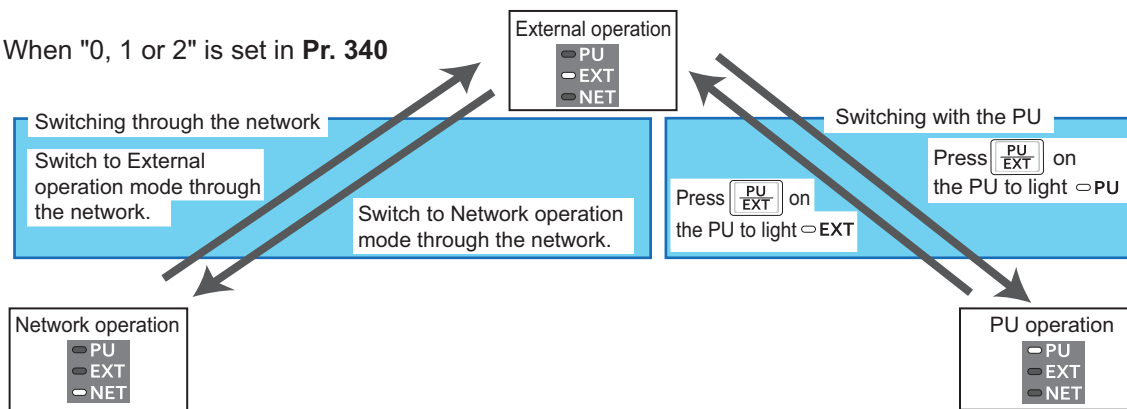
Pr.79*1 setting	Operation mode at power ON, at power restoration, or after a reset.	Operation mode switchover
0 (initial value)	External operation mode	Switching among the External, PU, and NET operation modes is enabled*2
1	PU operation mode	PU operation mode fixed.
2	External operation mode	Switching between the External and NET operation mode is enabled. Switching to PU operation mode is disabled.
3, 4	External/PU combined operation mode	Operation mode switching is disabled
6	External operation mode	Switching among the External, PU, and NET operation mode is enabled while running.
7	X12 (MRS) signal ON...External operation mode	Switching among the External, PU, and NET operation modes is enabled*2
	X12 (MRS) signal OFF...External operation mode	External operation mode fixed. (Forcibly switched to External operation mode.)

\*1 For the details of Pr.79, refer to the Instruction Manual of the inverter.

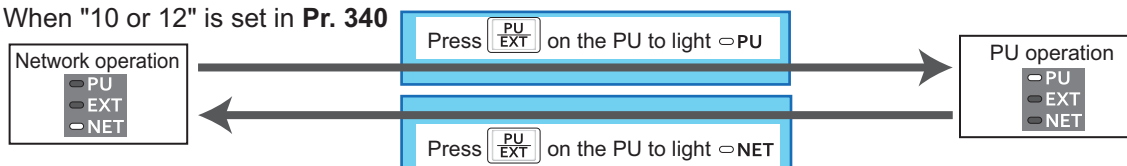
\*2 Operation mode cannot be directly changed between the PU operation mode and Network operation mode.

Example: FR-A800

When "0, 1 or 2" is set in Pr. 340



When "10 or 12" is set in Pr. 340



\*When using USB connection, operation mode changing is available from FR Configurator2.

For the details of the operation mode switchover, refer to the Instruction Manual of the inverter.

- Controllability through communication

For details, refer to the Instruction Manual of each inverter.

# CHAPTER 3 CONNECTION WITH DEVICES (700 SERIES)

3.1	Connection of FR Configurator2 and devices.....	82
3.2	USB connection.....	88
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3.8	Setting of operation mode of the inverter.....	115

# 3 CONNECTION WITH DEVICES (700 SERIES)

This chapter explains the connection of FR Configurator2 with devices (700 series). Always read the instructions before using the software.

## 3.1 Connection of FR Configurator2 and devices

Refer to the following for connection.

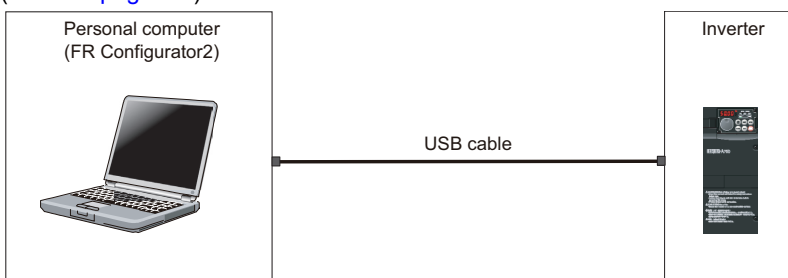
	Communication specifications	Single inverter	Multiple inverters	Connection procedure
	USB	page 82	—	page 88
	Serial communication	page 83	page 83	page 91
	Ethernet connection	page 83	page 84	page 97
	Ethernet connection	page 84	page 84	
	Serial communication	page 84	page 84	page 101
	Serial communication	page 85	page 85	page 105
	Ethernet connection	page 85	page 86	
	Ethernet connection	page 86	page 87	
	Ethernet connection	page 87	page 87	page 112

### 3.1.1 Connection configuration

For FR Configurator2, communication via a USB connector, a PU connector, the RS-485 terminal block, Ethernet, a GOT, or a programmable controller is available.

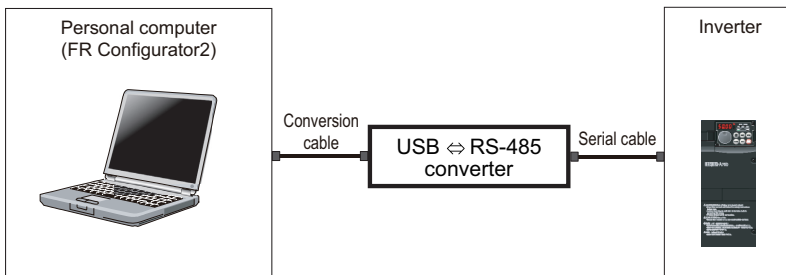
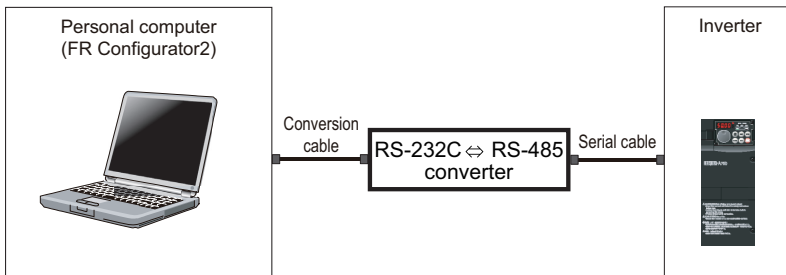
#### ◆ USB

Connect a cable to the USB connector of the inverter. 1:1 connection is supported. Connection using USB hub is not supported. (Refer to [page 88](#).)



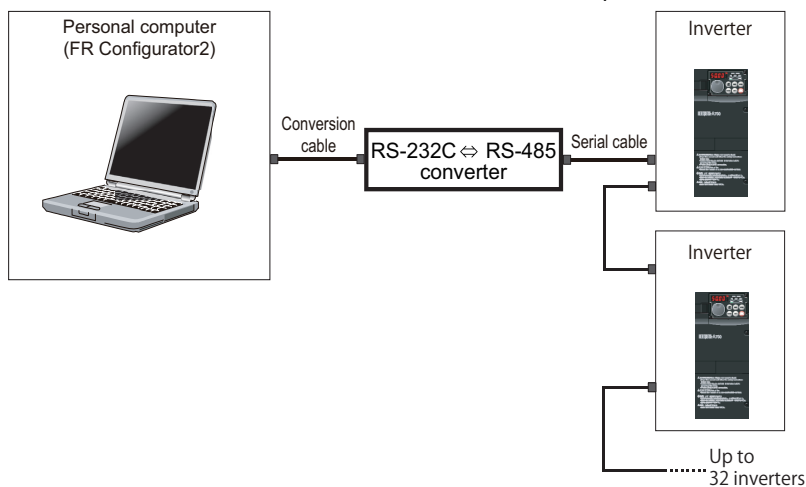
## ◆ Connection with a single inverter using serial communication (PU connector)

Connect a cable to the PU connector of the inverter. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required. (Refer to [page 91](#).)



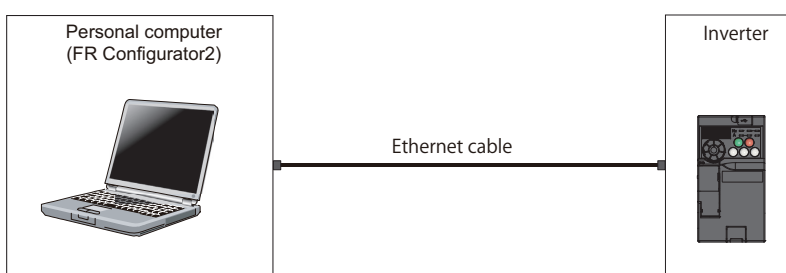
## ◆ Connection with multiple inverters using serial communication (terminal block)

Connect a cable to the RS-485 terminal of the inverter. Up to 32 inverters can be connected. (Refer to [page 93](#).)



## ◆ Connection with a single inverter using Ethernet communication

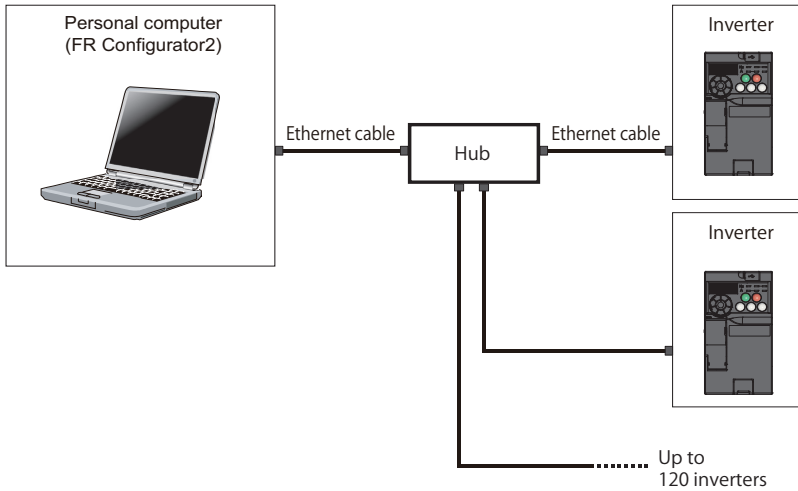
Connect a cable to the Ethernet connector of the inverter. (Refer to [page 97](#).)





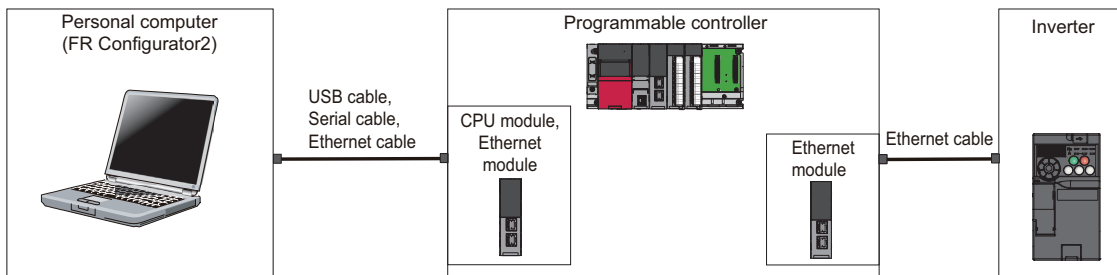
## ◆ Connection with multiple inverters using Ethernet communication

Up to 120 inverters can be connected with the personal computer using a hub. (Refer to [page 97](#).)



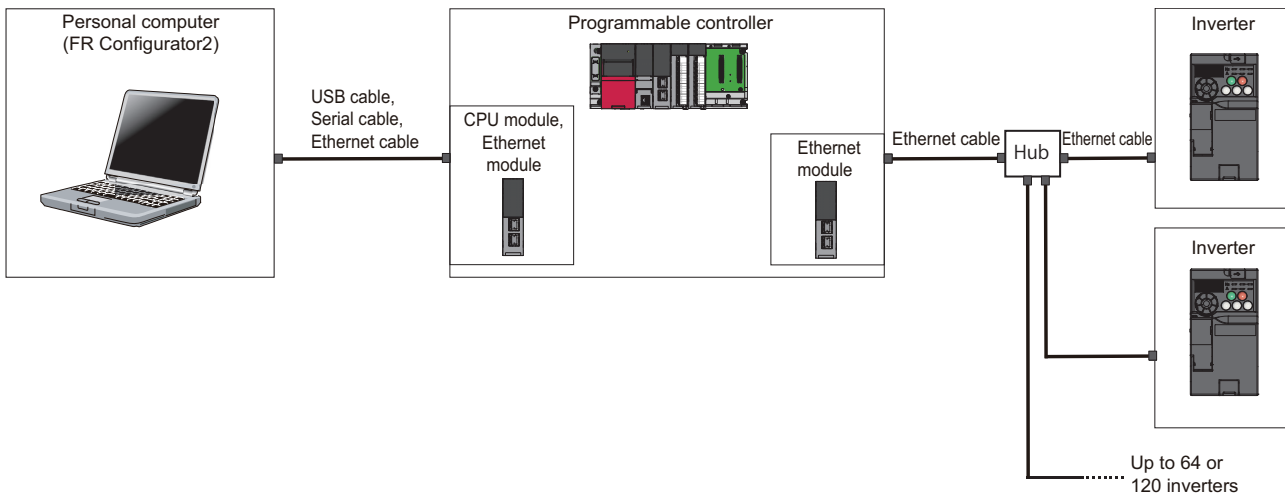
## ◆ Connection of the personal computer and a single inverter via a programmable controller (Ethernet connection)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 101](#).)



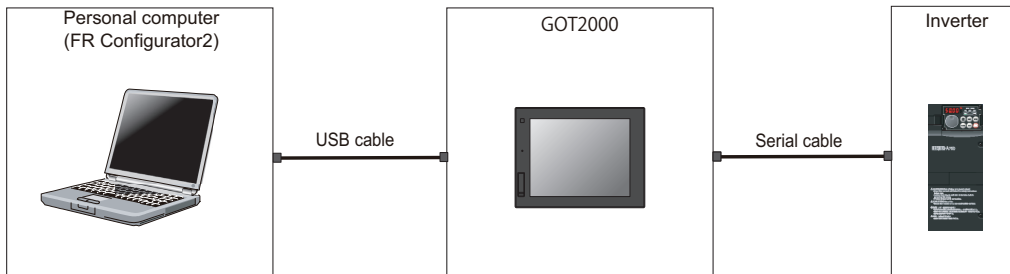
## ◆ Connection of the personal computer and multiple inverters via a programmable controller (Ethernet connection)

A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter. (Refer to [page 101](#).)



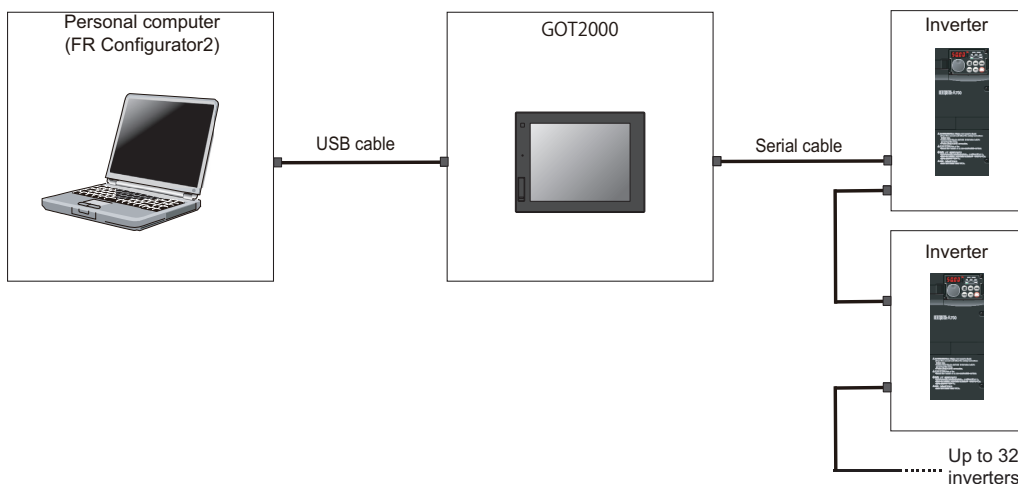
### ◆ Connection of the personal computer and a single inverter via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 105](#).)



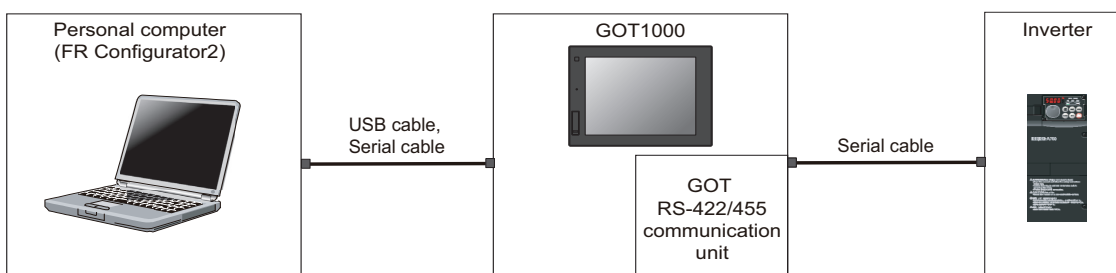
### ◆ Connection of the personal computer and multiple inverters via a GOT2000 model

Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 101](#).)



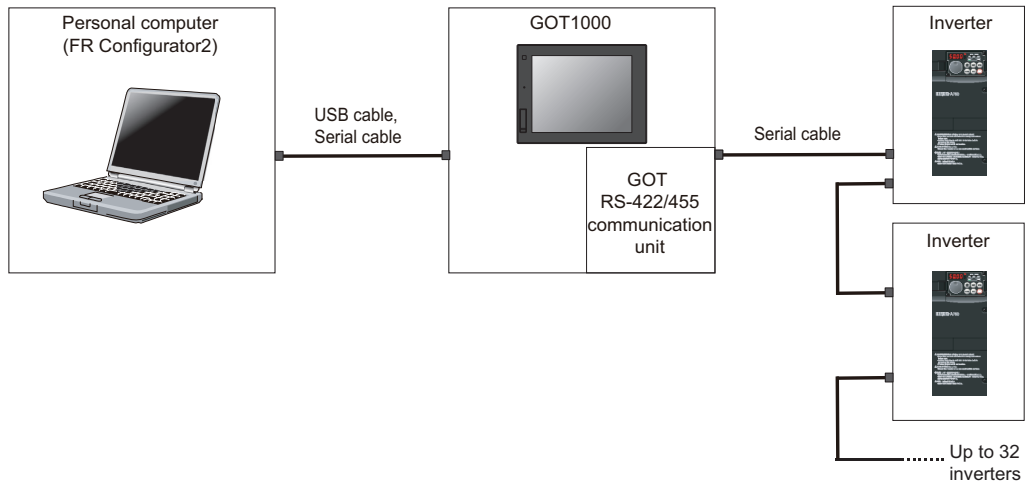
### ◆ Connection of the personal computer and a single inverter via a GOT1000 model

Through a GOT, connection to the RS-485 terminal block is available. For the GOT1000 series, an RS-422 communication unit is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 1000 Series Connection Manual. (Refer to [page 105](#).)



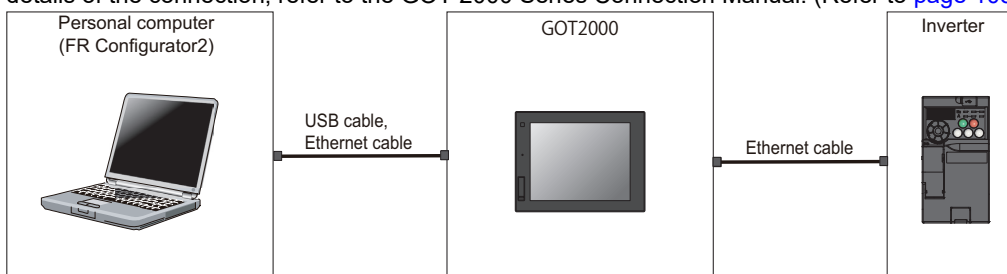
## ◆ Connection of the personal computer and multiple inverters via a GOT1000 model

Through a GOT, connection to the RS-485 terminal block is available. For the GOT1000 series, an RS-422 communication unit is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT 1000 Series Connection Manual. (Refer to [page 105.](#))



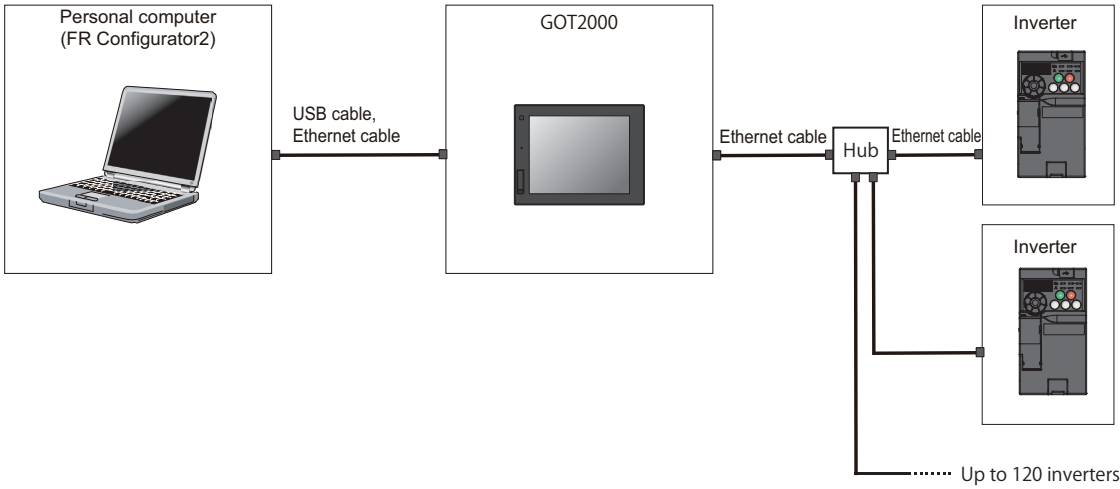
## ◆ Connection of the personal computer and a single inverter via a GOT2000 model (Ethernet connection)

Through a GOT (Human Machine Interface), connection to the inverter is available. For the compatible version of GOT or details of the connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 105.](#))



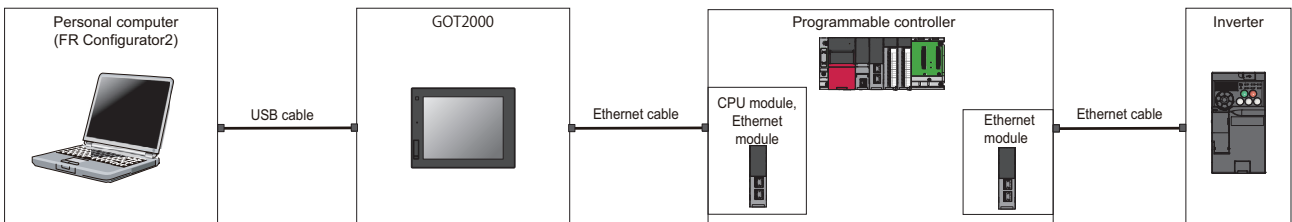
### ◆ Connection of the personal computer and multiple inverters via a GOT2000 model (Ethernet connection)

Through a GOT (Human Machine Interface), connection to the inverter is available. For the compatible version of GOT or details of the connection, refer to the GOT 2000 Series Connection Manual. (Refer to [page 105.](#))



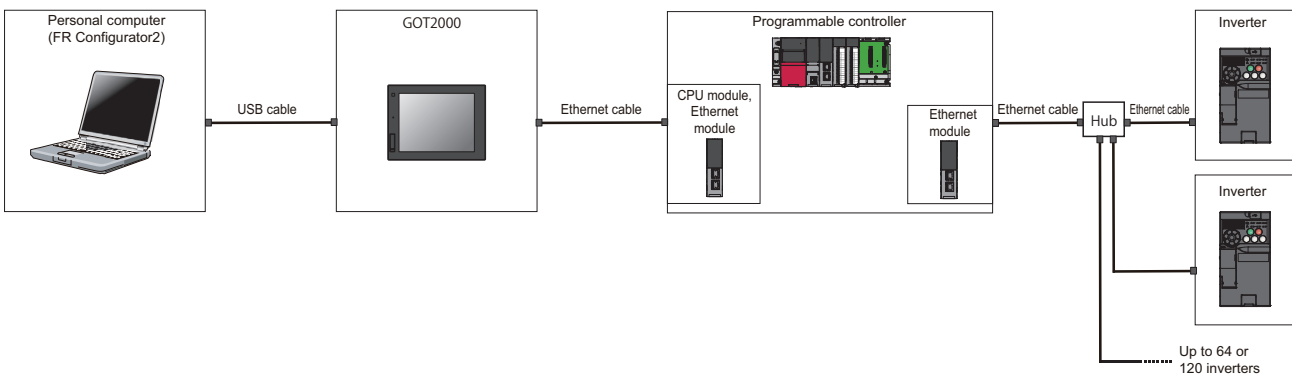
### ◆ Connection of the personal computer and a single inverter via a GOT2000 model and a programmable controller (Ethernet connection)

Through a GOT and a programmable controller, connection to the inverter is available. (Refer to [page 112.](#))



### ◆ Connection of the personal computer and multiple inverters via a GOT2000 model and a programmable controller (Ethernet connection)

Through a GOT and a programmable controller, connection to the inverter is available. (Refer to [page 112.](#))



## 3.2 USB connection

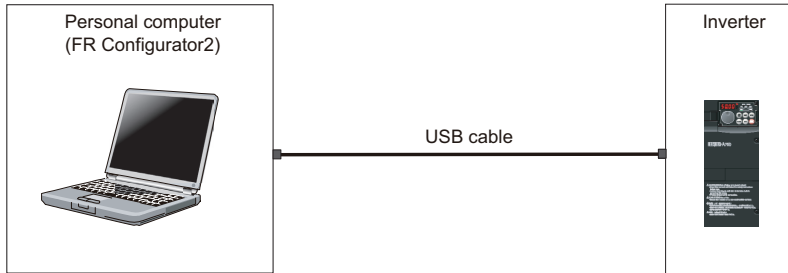
A personal computer and inverter can be easily connected with USB cable. 1:1 connection is supported. Connection using USB hub is not supported.

### 3.2.1 Procedure for USB connection

#### ◆ Supported model

FR-A700, FR-E700, FR-B (700), FR-B3 (700), and FR-E700EX

#### ◆ Connection configuration



#### ◆ Connection cable

Prepare a cable referring to the following.

##### ■ USB communication specifications

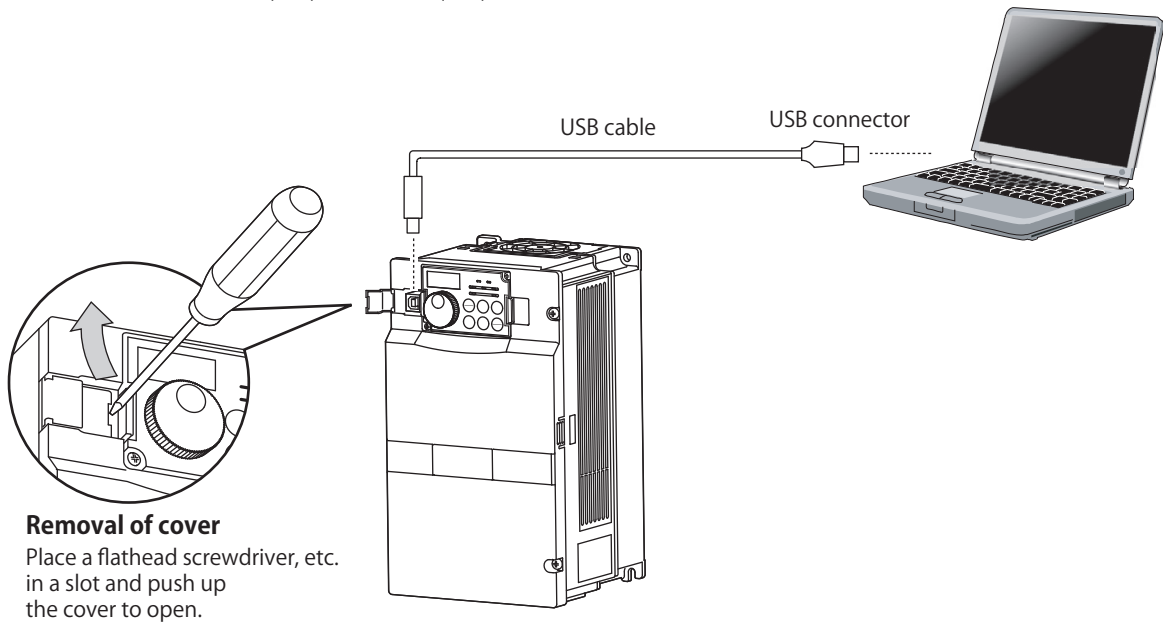
Interface	Conforms to USB 1.1	
Transmission speed	12 Mbps	
Wiring length	Maximum 5 m	
Connector	FR-E700, FR-E700EX	USB mini B connector (receptacle)
	FR-A700, FR-B (700), and FR-B3 (700)	USB B connector (B receptacle)

##### ■ USB cable

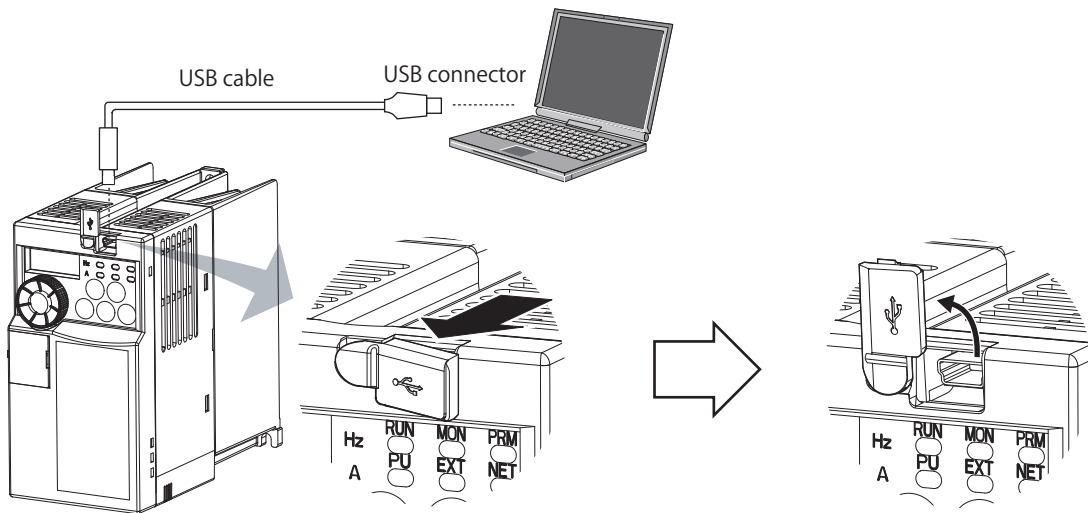
Recommended USB cable	MR-J3USBCBL3M (cable length 3 m)
-----------------------	----------------------------------

1. Connect the personal computer and the inverter using the USB cable. Connect the USB cable to the USB device on the inverter.

- For FR-A700, FR-B (700), and FR-B3 (700)



- For FR-E700 and FR-E700EX



**2.** Check the inverter parameter settings.

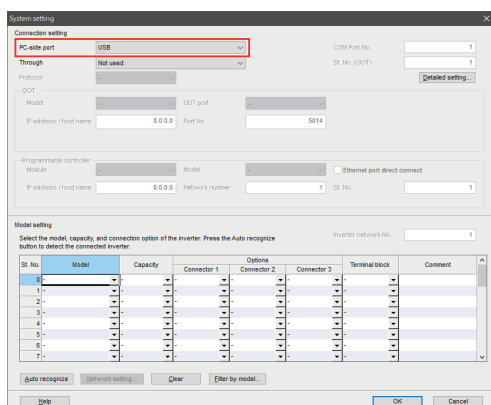
Set the following communication parameters for connection using the USB connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode to PU operation mode.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700 FR-E700(SC)(NC) FR-E700EX	<b>Pr.548 USB communication check time interval</b> ≠ "0" (initial value: "9999")	<b>Pr.551 PU mode operation command source selection</b> = "3 or 9999" (initial value: "9999")
FR-B (700) FR-B3 (700)		<b>Pr.551 PU mode operation command source selection</b> = "3" (initial value: "2")

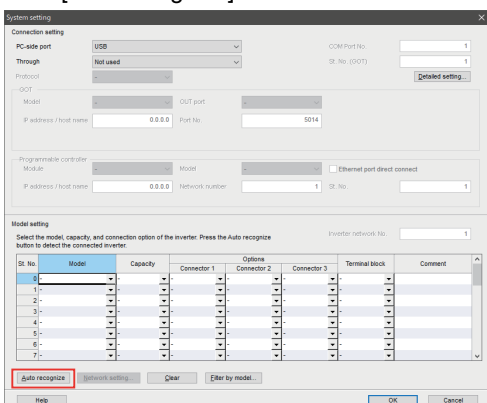
**3.** Start FR Configurator2.

**4.** Select [New...] from the [Project] menu bar.

- In the "Connection setting" of the "System setting" window, select "USB" for the PC-side port.



- Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



- Click [OK].

- Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.

## NOTE

- Set a station number of each inverter in **Pr.547 USB communication station number**. Perform inverter reset after setting the parameter.

## ◆ When connecting USB for the first time

If a personal computer and inverter are connected via USB for the first time with the inverter power ON, "Found New Hardware Wizard" window is displayed.

## 3.2.2 Related parameters for USB connection

For details, refer to the Instruction Manual of the inverter.

Pr.	Name
547	USB communication station number
548	USB communication check time interval

Pr.	Name
551	PU mode operation command source selection

## NOTE

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.

## 3.3 Connection using serial communication

PU connector is used for connecting with a computer. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required.

When inverters have RS-485 terminals, RS-485 terminals are used for connecting multiple inverters with a serial port of a computer. Up to 32 inverters can be connected. A serial/RS-485 converter is required.

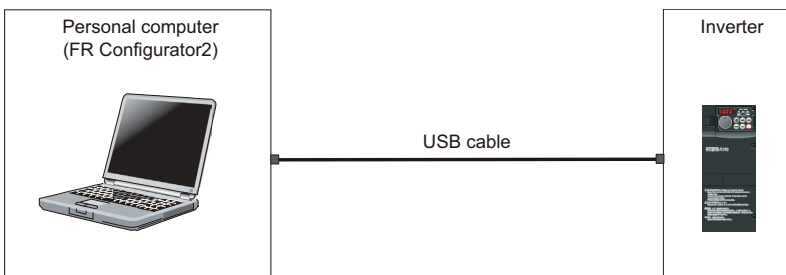
3

### 3.3.1 Procedure for connecting a single inverter using serial communication

#### ◆ Supported model

FR-A700, FR-B (700), FR-B3 (700), FR-E700, FR-F700, FR-F700P, FR-D700, FR-D700-G, and FR-E700EX

#### ◆ Connection configuration



#### ◆ Connection cable

Prepare a cable referring to the following.

##### ■ Conversion cable

Refer to the following table for the connection cable between the computer (FR Configurator2) and an inverter.

Commercially available products (as of October 2020)

Product name	Model name	Manufacturer
Interface embedded cable + Connector conversion cable (RS-232C to RS-485 converter) <sup>*1</sup>	DAFXIH-CAB (D-SUB25P for personal computer) DAFXIH-CABV (D-SUB9P for personal computer) + DINV-485CAB (for inverter)	Diatrend Corp.
Interface embedded cable dedicated for inverter <sup>*1</sup> (RS-232C to RS-485 converter)	DINV-CABV	
Interface embedded cable dedicated for inverter <sup>*1</sup> (USB to RS-485 converter)	DINV-U4	

<sup>\*1</sup> The conversion cable cannot connect multiple inverters. (The computer (FR Configurator2) and an inverter are connected in a 1:1 pair.) This is a converter-embedded conversion cable. No additional cable or connector is required. For the product details, contact the manufacturer.

##### ■ Serial cable

For the serial cable between the converter and the inverter, refer to the Instruction Manual of each inverter.

#### ◆ Connection procedure

1. Connect the personal computer and the converter using the conversion cable. Connect the converter and the inverter using the serial cable.



**2.** Check the inverter parameter settings.

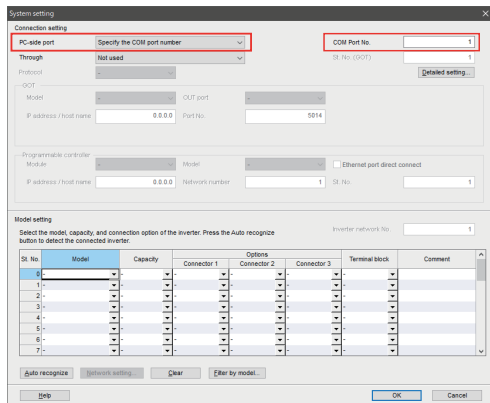
Set the following communication parameters for connection using the PU connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode to PU operation mode.

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700	<b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999")	<b>Pr.551 PU mode operation command source selection</b> = "2 or 9999" (initial value: "9999")
FR-B (700) FR-B3 (700) FR-F700 FR-F700P FR-E500	<b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "2")
FR-E700 FR-E700EX	<b>Pr.122 PU communication check time interval</b> ≠ "9999" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "9999")
FR-D700 FR-D700-G	<b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)	

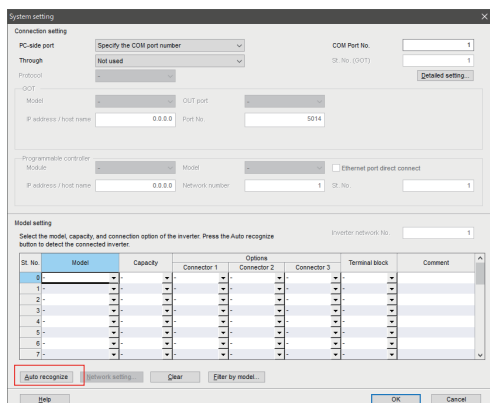
**3.** Start FR Configurator2.

**4.** Select [New...] from the [Project] menu bar.

**5.** In the "Connection setting" of the "System setting" window, select COM communication port for the PC-side port. Set the COM port number in [COM Port No.].

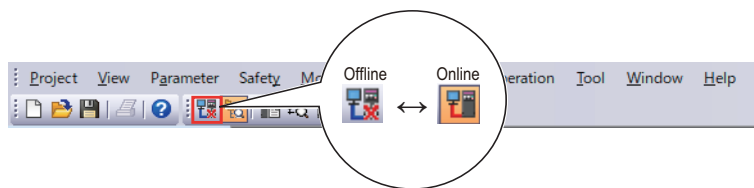


**6.** Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



**7.** Click [OK].

8. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.

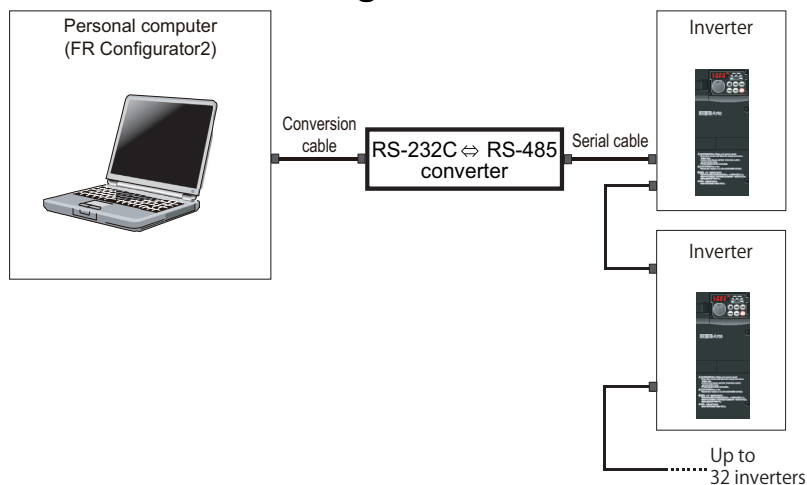


## 3.3.2 Procedure for connecting multiple inverters using serial communication

### ◆ Supported model

FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-E700EX, FR-D700, and FR-D700-G

### ◆ Connection configuration



### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ Conversion cable

Refer to the following table for the connection cable between the computer (FR Configurator2) and an inverter. Commercially available products (as of October 2020)

Product name	Model name	Manufacturer
Interface embedded cable + Connector conversion cable (RS-232C to RS-485 converter)	DAFXIH-CAB (D-SUB25P for personal computer) DAFXIH-CABV (D-SUB9P for personal computer) + DINV-485CAB (for inverter)	Diatrend Corp.
Interface embedded cable dedicated for inverter <sup>*1</sup> (RS-232C to RS-485 converter)	DINV-CABV	
Interface embedded cable dedicated for inverter <sup>*1</sup> (USB to RS-485 converter)	DINV-U4	

\*1 The conversion cable cannot connect multiple inverters. (The computer (FR Configurator2) and an inverter are connected in a 1:1 pair.) This is a converter-embedded conversion cable. No additional cable or connector is required. Contact a manufacturer for details of the product.

#### ■ Serial cable

For the serial cable between the converter and the inverter, refer to the Instruction Manual of each inverter.

## ◆ Connection procedure

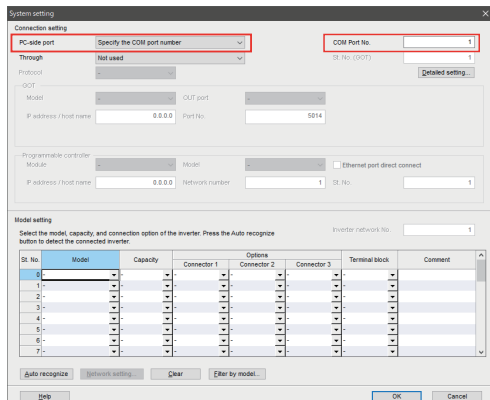
1. Connect the personal computer and the converter using the USB cable or serial cable. Connect the converter and the inverter using the serial cable.
2. Check the inverter parameter settings.  
Set the inverter parameters in accordance with the connection method as shown in the following tables.  
•When using the RS-485 terminals

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700 FR-B (700) FR-B3 (700) FR-F700 FR-F700P	Set a station number of each inverter in <b>Pr.331 RS-485 communication station number</b> (used for connecting multiple inverters). <b>Pr.336 RS-485 communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.337 RS-485 communication waiting time setting</b> = "9999" (initial value)	<b>Pr.550 NET mode operation command source selection</b> = "9999" (initial value: "9999")

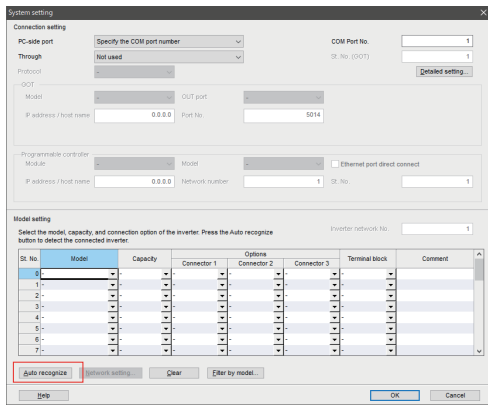
•When using the PU connector

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700	Set the station number of each inverter in <b>Pr.117 PU communication station number</b> (for multiple connection). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999")	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "9999")
FR-B (700) FR-B3 (700) FR-F700 FR-F700P	<b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)"	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "2")
FR-E700 FR-E700EX	Set the station number of each inverter in <b>Pr.117 PU communication station number</b> (for multiple connection). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "9999")
FR-D700 FR-D700-G	<b>Pr.123 PU communication waiting time setting</b> = "9999" (initial value)"	
FR-E560-NA	<b>Pr.122 Communication check time interval</b> = "9999" (initial value) <b>Pr.123 Communication waiting time setting</b> = "9999" (initial value)	

3. Start FR Configurator2.
4. Select [New...] from the [Project] menu bar.
5. In the "Connection setting" of the "System setting" window, select COM communication port for the PC-side port. Set the COM port number in [COM Port No.].

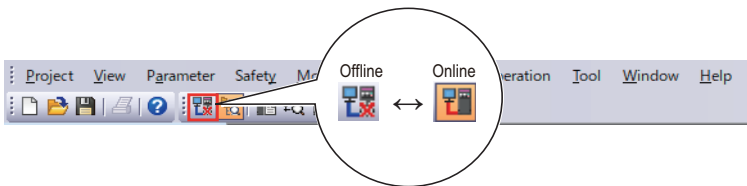


- Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



- Click [OK].

- Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



**NOTE**

- For the details of wiring, refer to the Instruction Manual (Detailed) of the inverter.
- Set three seconds or more (or "9999") in **Pr.122 PU communication check time interval** and **Pr.336 RS-485 communication check time interval**.
- Set a station number of each inverter in **Pr.117 PU communication station number** and **Pr.331 RS-485 communication station number** for multiple connection. Perform inverter reset after setting the parameter.

### 3.3.3 Related parameters for serial communication

For details, refer to the Instruction Manual of the inverter.

## ◆ Parameters related to PU connector communication

Pr.	Name
117	PU communication station number
118	PU communication speed
119	PU communication stop bit length / data length
120	PU communication parity check
121	PU communication retry count

Pr.	Name
122	PU communication check time interval
123	PU communication waiting time setting
549	Protocol selection
550	NET mode operation command source selection
551	PU mode operation command source selection

## ◆ Parameters related to RS-485 terminal communication

Pr.	Name
331	RS-485 communication station number
332	RS-485 communication speed
333	RS-485 communication stop bit length / data length
334	RS-485 communication parity check selection
335	RS-485 communication retry count

Pr.	Name
336	RS-485 communication check time interval
337	RS-485 communication waiting time setting
549	Protocol selection
550	NET mode operation command source selection
551	PU mode operation command source selection

### NOTE

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.
- To change an inverter parameter value, use the operation panel or parameter unit. Only one of the operation unit and FR Configurator2 (personal computer) can be connected to the PU connector.
- For details on each inverter communication parameter, refer to the Instruction Manual (Detailed) of the inverter.
- Parameter clear/All parameter clear by the operation panel or the parameter unit clears communication parameter settings and disables the communication with FR Configurator2.

# 3.4 Connection using Ethernet

Use the Ethernet connector on the Ethernet model inverter's Ethernet board for connection with a personal computer. Up to 120 inverters can be connected using a hub.

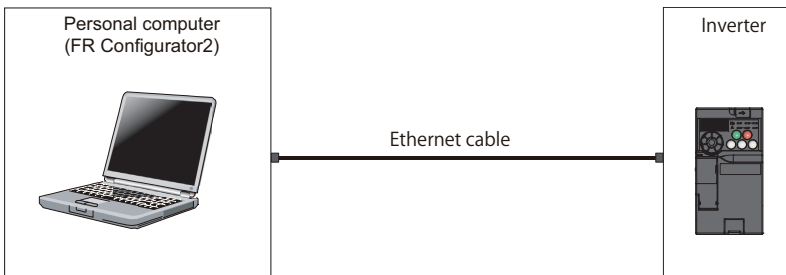
## 3.4.1 Procedure for Ethernet connection

### ◆ Supported model

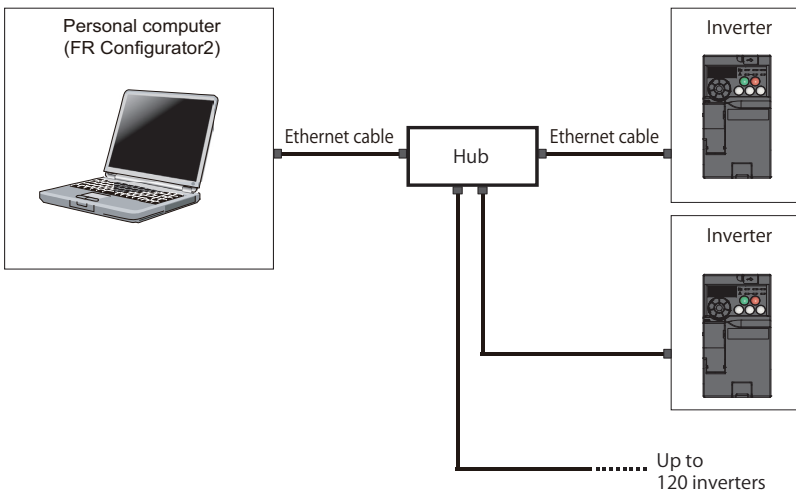
FR-E700-NE

### ◆ Connection configuration

- Single inverter



- Multiple inverters



### ◆ Connection cable

Prepare a cable referring to the following.

### ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category*1	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Interface	RJ-45
Number of interfaces available	1
IP version	IPv4

## ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

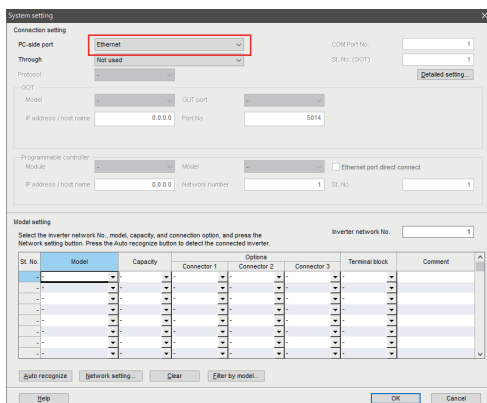
Communication speed	Ethernet cable	Connector	Standard
100 Mbps	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • 100BASE-TX
10 Mbps	Category 3 or higher straight cable (shielded / STP) Category 3 or higher straight cable (UTP)		The cables compliant with the following standards: • 10BASE-TX

## ◆ Connection procedure

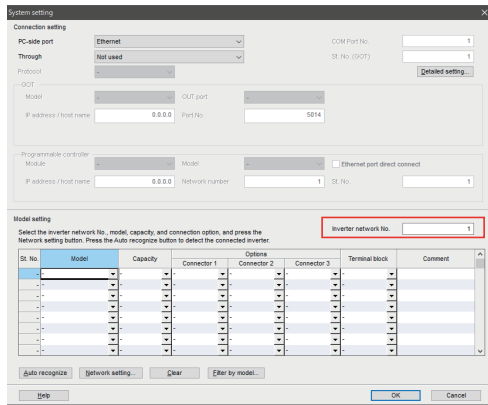
1. Connect the personal computer and the inverter using the Ethernet cable.
2. Check the inverter parameter settings.  
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode as shown in the following table.

Parameter setting	
Communication parameter	Command source parameter
Set "31" (or "32") and "20" in any two of <b>Pr.833 to Pr.835 Ethernet function selection 1 to 3.</b>	<b>Pr.550 NET mode operation command source selection = "0"</b> (initial value: "0")

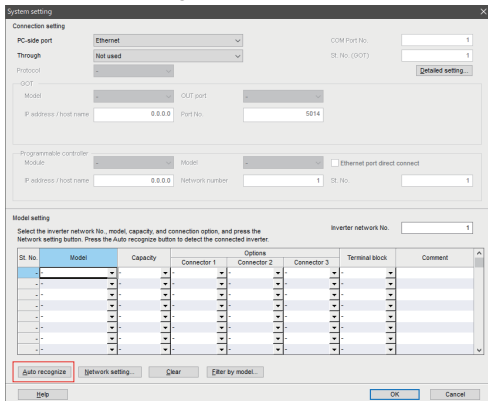
3. Start FR Configurator2.
4. Change the inverter parameter settings using the Ethernet parameter setting function. (For the setting procedure, refer to [page 236](#).)
5. Select [New...] from the [Project] menu bar.
6. In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port.



- Make the setting in "Inverter network No." consistent with the **Pr.830 Ethernet communication network number** setting.

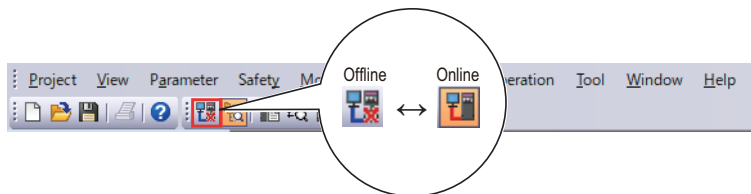


- Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



- Click [OK].

- Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.





## 3.4.2 Related parameters for Ethernet connection

For details, refer to the Instruction Manual of the inverter.

Pr.	Name
442	Default gateway address 1
443	Default gateway address 2
444	Default gateway address 3
445	Default gateway address 4
550	NET mode operation command source selection
805	Ethernet IP address 1
806	Ethernet IP address 2
807	Ethernet IP address 3
808	Ethernet IP address 4
809	Subnet mask 1
810	Subnet mask 2
811	Subnet mask 3
812	Subnet mask 4
830	Ethernet communication network number
831	Ethernet communication station number
832	Link speed and duplex mode selection
833	Ethernet function selection 1
834	Ethernet function selection 2

Pr.	Name
835	Ethernet function selection 3
837	Ethernet IP filter address 1
838	Ethernet IP filter address 2
839	Ethernet IP filter address 3
840	Ethernet IP filter address 4
841	Ethernet IP filter address 2 range specification
842	Ethernet IP filter address 3 range specification
843	Ethernet IP filter address 4 range specification
844	Ethernet command source selection IP address 1
845	Ethernet command source selection IP address 2
846	Ethernet command source selection IP address 3
847	Ethernet command source selection IP address 4
848	Ethernet command source selection IP address 3 range specification
849	Ethernet command source selection IP address 4 range specification
850	Ethernet TCP disconnection time coefficient
851	Ethernet signal loss detection function selection
852	Ethernet communication check time interval

### NOTE

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.
- Avoid simultaneous access from multiple devices. Otherwise, a communication error (error code: 0x80010003, 0x80010101, or 0x80010102) may occur.

# 3.5 Connection via a programmable controller

Use the Ethernet connector on the Ethernet model inverter's Ethernet board for connection with a personal computer. Up to 120 inverters can be connected using a hub.

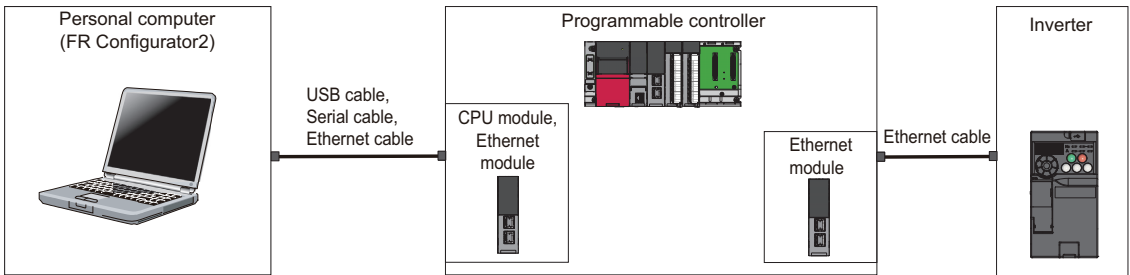
## 3.5.1 Procedure for connection via a programmable controller

### ◆ Supported model

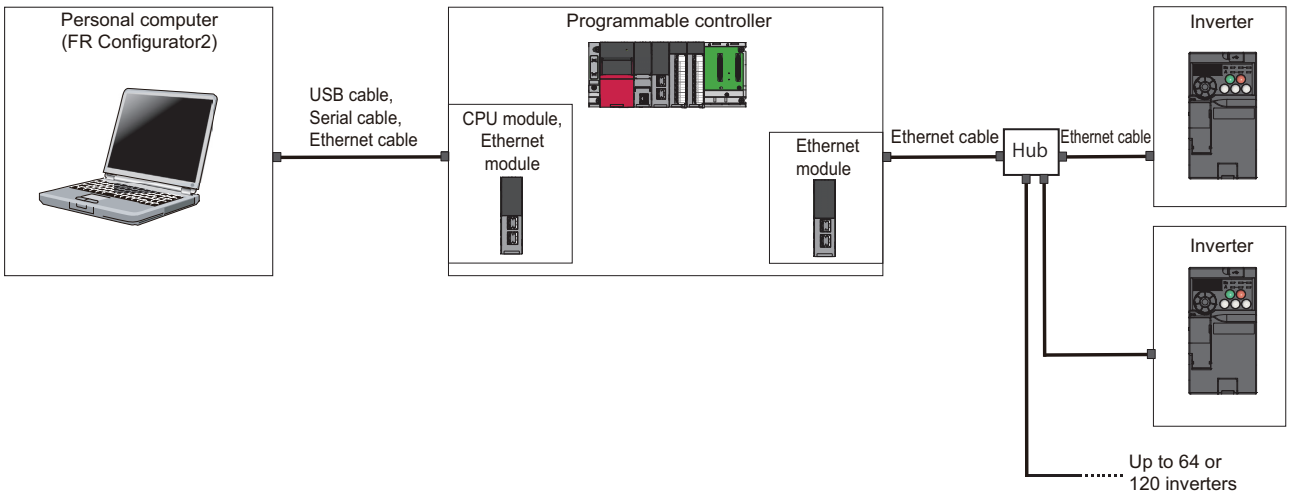
FR-E700-NE

### ◆ Connection configuration

- Single inverter



- Multiple inverters



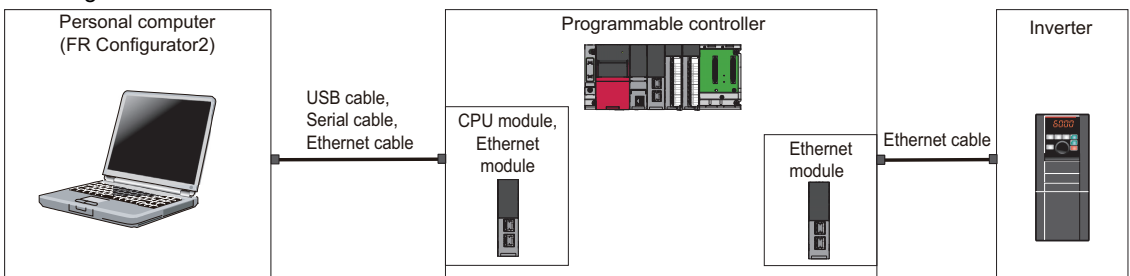
### ◆ Supported model

FR-E700-NE

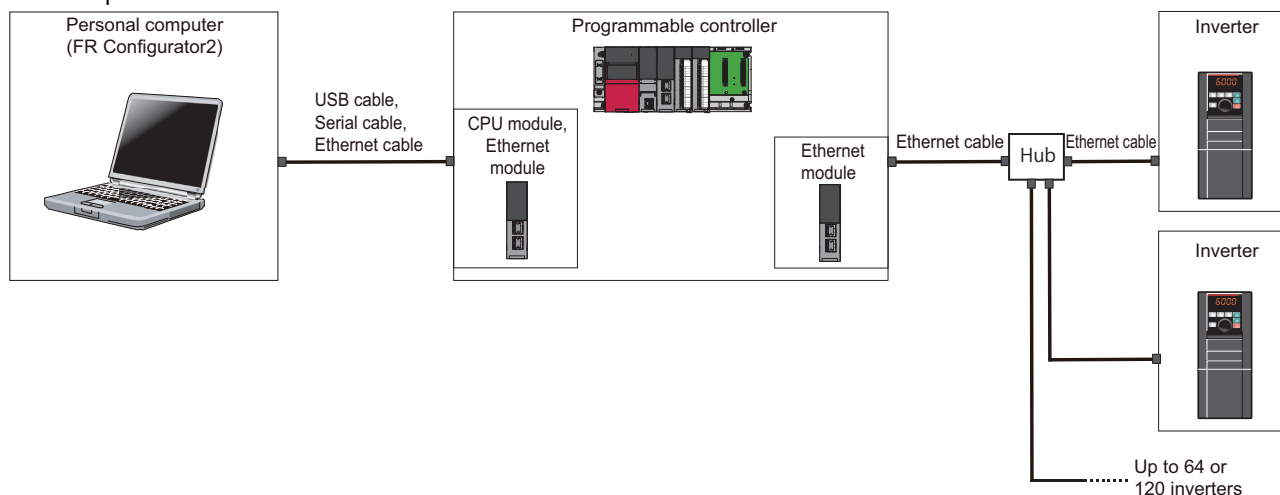
### ◆ Connection configuration

#### ■ Connection of the personal computer and the inverters via a programmable controller (Ethernet connection)

- Single inverter



• Multiple inverters



### ◆ Connection cable

Prepare a cable referring to the following.

#### ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Interface	RJ-45
Number of interfaces available	1
IP version	IPv4

#### ■ Connection cable

Use Ethernet cables compliant with the following standards.

Communication speed	Ethernet cable	Connector	Standard
100 Mbps	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • 100BASE-TX
10 Mbps	Category 3 or higher straight cable (shielded / STP) Category 3 or higher straight cable (UTP)		The cables compliant with the following standards: • 10BASE-TX

### ◆ Connection procedure

1. Connect the personal computer and programmable controller (CPU or Ethernet module) using the USB cable, serial cable, or Ethernet cable.
2. Connect the programmable controller (Ethernet module) and the inverter with the Ethernet cable.
3. Set parameters for the programmable controller. For the setting procedure of the programmable controller, refer to MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) and the MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual.

#### 4. Check the inverter parameter settings.

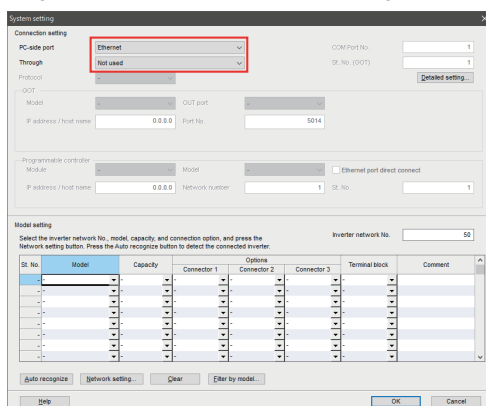
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following parameters and switch the operation mode as shown in the following table. When connecting multiple inverters, be careful not to use the same station number or the like.

Parameter setting	
Communication parameter	Command source parameter
Set "31" in any of Pr.833 to Pr.835 Ethernet function selection 1 to 3.	Pr.550 NET mode operation command source selection = "0" (initial value)

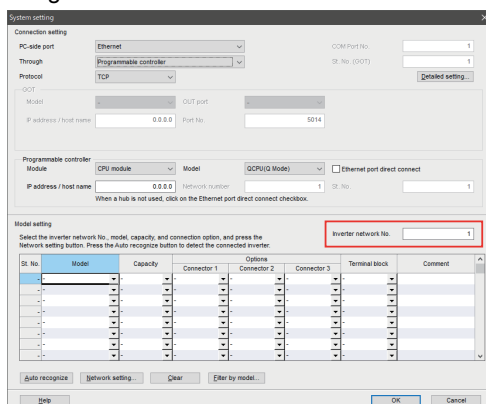
#### 5. Start FR Configurator2.

#### 6. Select [New...] from the [Project] menu bar.

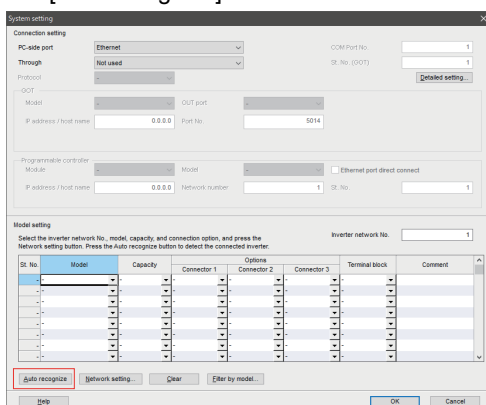
#### 7. In the "Connection setting" of the "System setting" window, select "Ethernet" for the PC-side port. Select "Programmable controller" for "Through".



#### 8. Make the setting in "Inverter network No." consistent with the Pr.830 Ethernet communication network number setting.

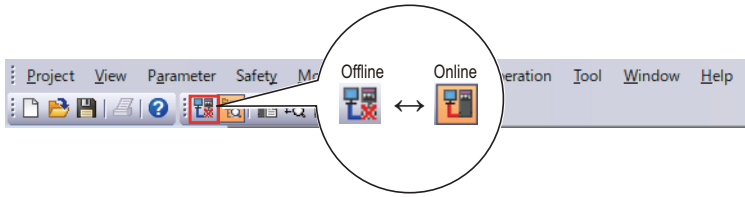


#### 9. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



#### 10. Click [OK].

- 11.** Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 3.5.2 Related parameters for connection via a programmable controller

For the related parameters, refer to [page 100](#).

# 3.6 Connection through GOT

Using the FA transparent function of GOT1000/GOT2000 series, connecting an inverter to FR Configurator2 is available through a GOT. The FA transparent function enables reading, writing and monitoring of a programmable controller of Mitsubishi Electric Corporation through a GOT, while connecting the Mitsubishi Electric programmable controller and a personal computer. A serial port, USB, or Ethernet is used for connecting the personal computer and the GOT. RS-422/485 or Ethernet is used for connecting the GOT and the inverter.

## 3.6.1 Procedure for connection through GOT

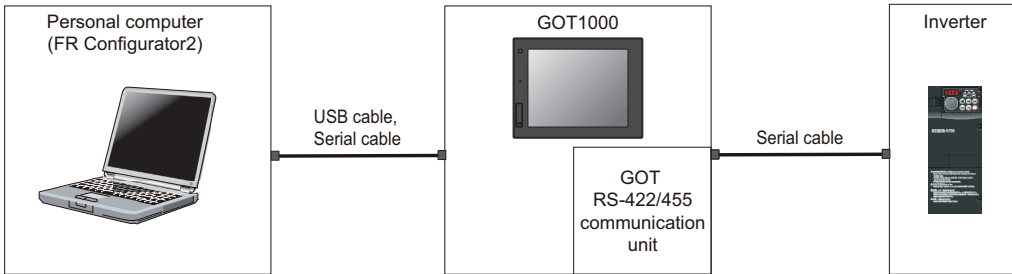
### ◆ Supported model

FR-A700, FR-F700, FR-F700P, FR-D700, FR-E700, FR-E700EX

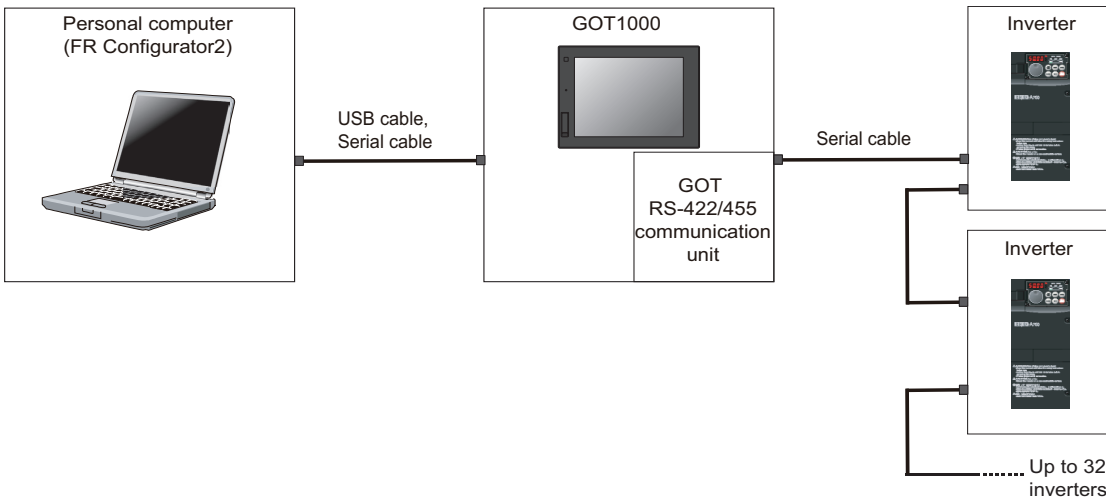
### ◆ Connection configuration

#### ■ Connection example with inverters (using the RS-485 terminals)

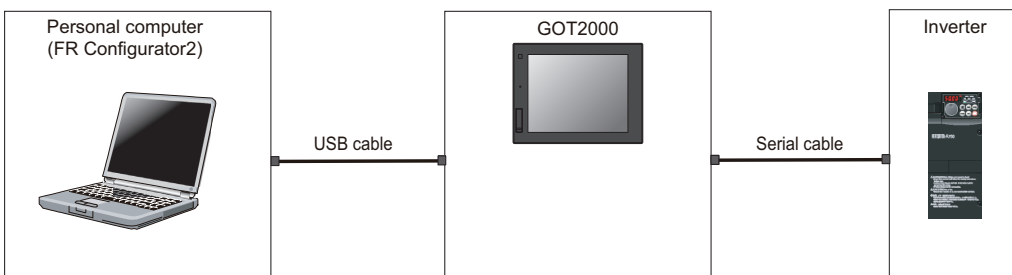
- Single inverter (GOT1000)



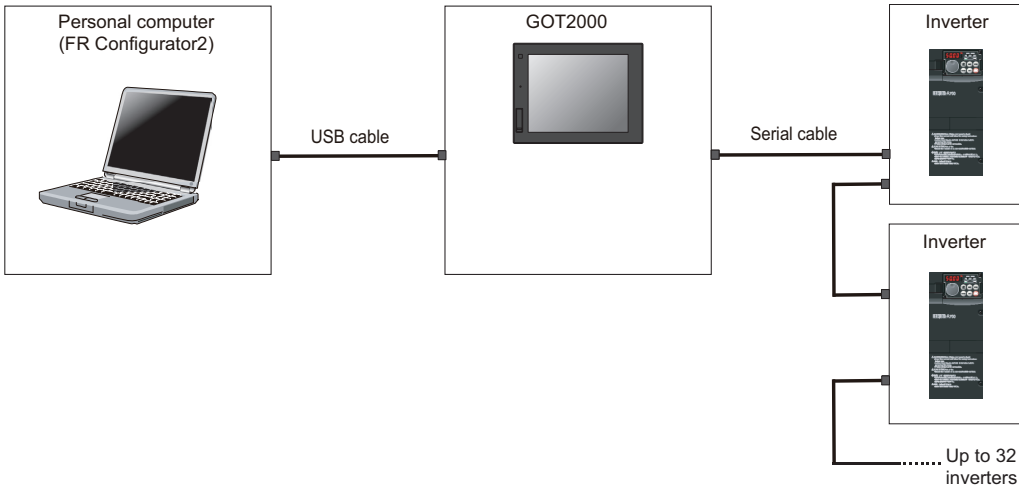
- Multiple inverters (GOT1000)



- Single inverter (GOT2000)

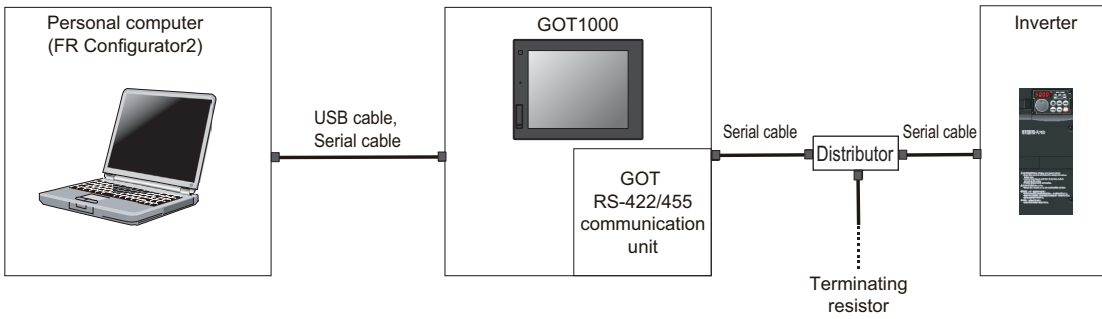


- Multiple inverters (GOT2000)

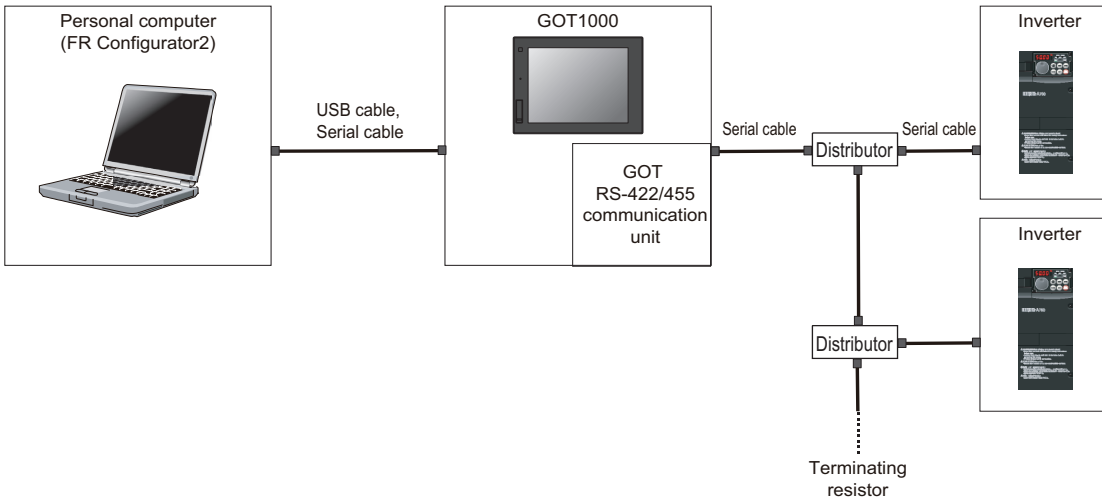


### ■ Connection example with inverters (using the PU connector)

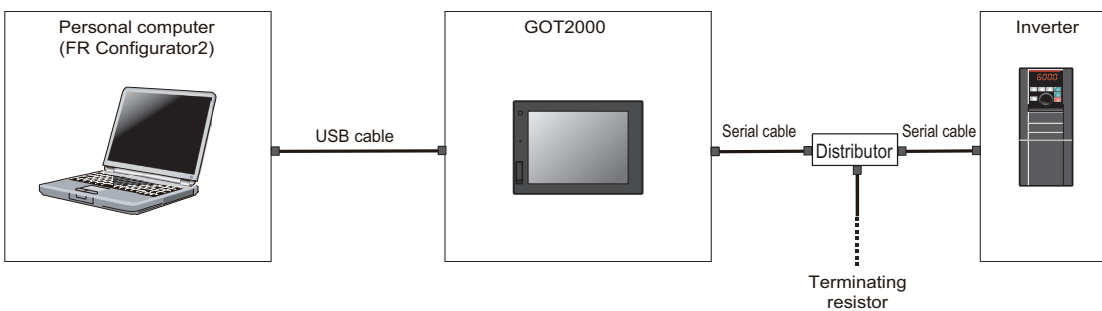
- Single inverter (GOT1000)



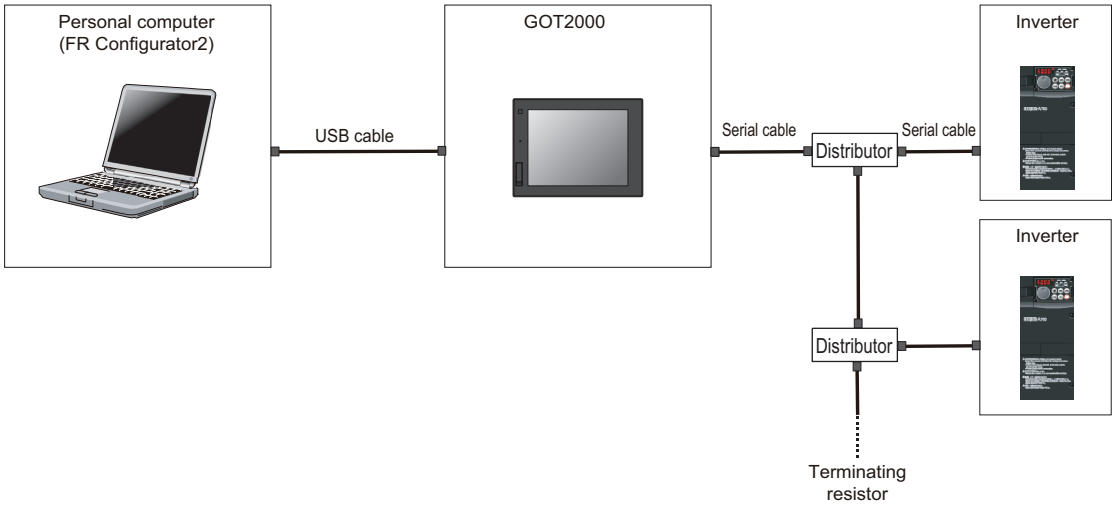
- Multiple inverters (GOT1000)



- Single inverter (GOT2000)

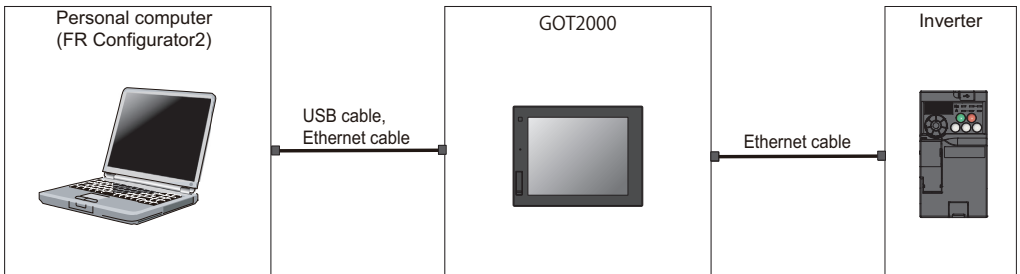


• Multiple inverters (GOT2000)

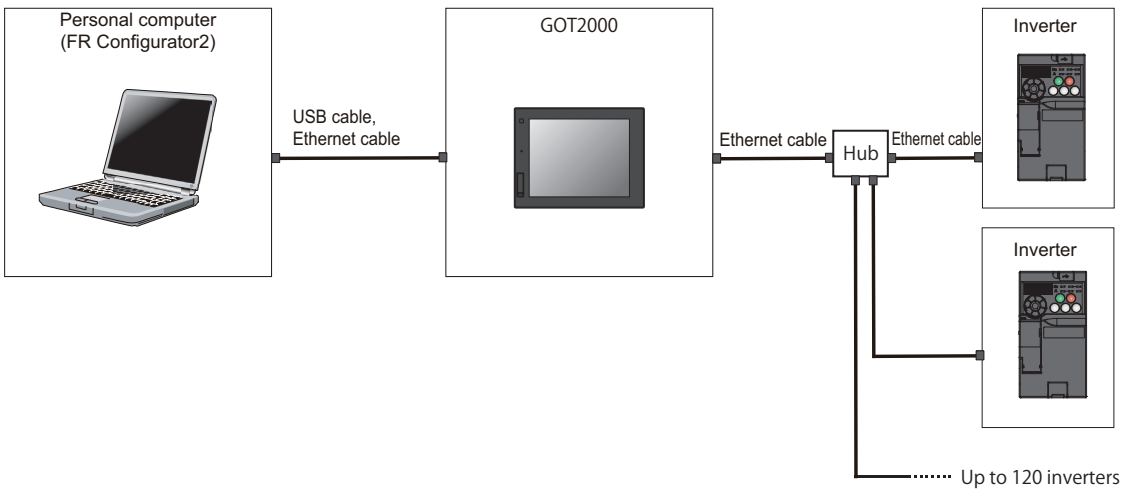


■ Connection example with inverters (using the Ethernet connector)

• Single inverter



• Multiple inverters



◆ Connection cable

Prepare a cable referring to the following.

■ Serial cable and distributor

Use a serial cable for wiring. For details on the serial cable and distributor, refer to the GOT1000/GOT2000 Series Connection Manual.



## ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Interface	RJ-45
Number of interfaces available	1
IP version	IPv4

## ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

Communication speed	Ethernet cable	Connector	Standard
100 Mbps	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • 100BASE-TX
10 Mbps	Category 3 or higher straight cable (shielded / STP) Category 3 or higher straight cable (UTP)		The cables compliant with the following standards: • 10BASE-TX

### NOTE

- For the GOT1000 series, an RS-422/485 serial communication unit (GT15-RS4-9S) is required. When using the USB for connecting a GOT, use a dedicated cable, GT09-C30USB-5P or GT09-C20USB-5P. For the compatible version of the GOT or details of the RS-422/485 connection, refer to the GOT1000/GOT2000 Series Connection Manual.

## ◆ Connection procedure

1. Connect the personal computer and GOT using the USB cable, serial cable, or Ethernet cable.
2. Configure settings for "Ethernet setting", "Controller setting", "Basic setting" of "GOT Setup", "Transparent mode" in the GOT. When the GOT and the inverter are connected using serial communication, the inverter parameters required for the GOT connection are automatically changed by setting the automatic recognition on the GOT2000 series side. For details, configure settings described on [page 105](#).
3. Check the inverter parameter settings.  
Set the inverter parameters in accordance with the connection method as shown in the following tables.  
•When using the RS-485 terminals

Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700 FR-B (700) FR-B3 (700) FR-F700 FR-F700P	Set a station number of each inverter in <b>Pr.331 RS-485 communication station number</b> (used for connecting multiple inverters). <b>Pr.336 RS-485 communication check time interval</b> ≠ "0" (initial value: "0") <b>Pr.337 RS-485 communication waiting time setting</b> = "0" (initial value:9999)	<b>Pr.550 NET mode operation command source selection</b> = "9999" (initial value: "9999")

•When using the PU connector

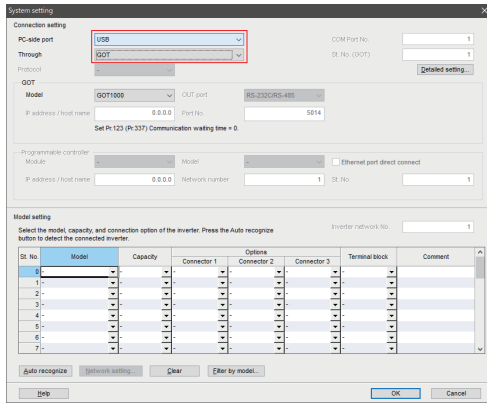
Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-A700	Set the station number of each inverter in <b>Pr.117 PU communication station number</b> (for multiple connection). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value: "9999")	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "9999")
FR-B (700) FR-B3 (700) FR-F700 FR-F700P	<b>Pr.123 PU communication waiting time setting</b> = "0" (initial value:9999)	<b>Pr.551 PU mode operation command source selection</b> = "1" (initial value: "2")
FR-E700 FR-E700EX	Set the station number of each inverter in <b>Pr.117 PU communication station number</b> (for multiple connection). <b>Pr.122 PU communication check time interval</b> ≠ "0" (initial value)	<b>Pr.551 PU mode operation command source selection</b> = "2" (initial value: "9999")
FR-D700 FR-D700-G	<b>Pr.123 PU communication waiting time setting</b> = "0" (initial value:9999)	
FR-E560-NA	<b>Pr.122 Communication check time interval</b> = "9999" (initial value) <b>Pr.123 Communication waiting time setting</b> = "0" (initial value:9999)	-

•When using the Ethernet connector

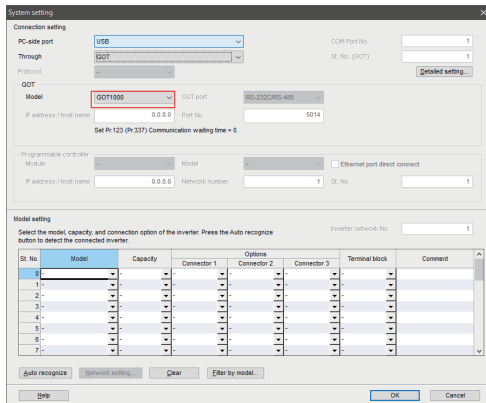
Inverter	Parameter setting	
	Communication parameter	Command source parameter
FR-E700-NE	Set "31" in any of <b>Pr.833 to Pr.835 Ethernet function selection 1 to 3</b> .	<b>Pr.550 NET mode operation command source selection</b> = "0" (initial value: "0")

4. Start FR Configurator2.
5. Select [New...] from the [Project] menu bar.

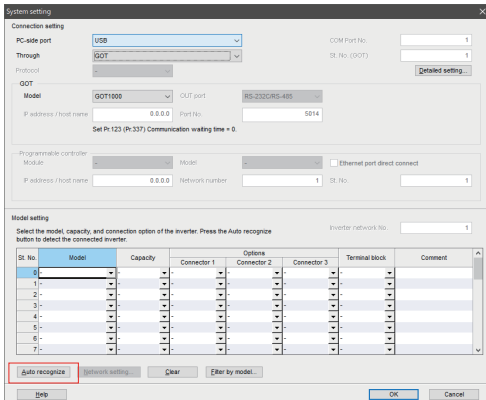
6. In the "Connection setting" of the "System setting" window, select the connection method for the PC-side port. Select "GOT" for "Through".



7. Set the model name of the GOT used.

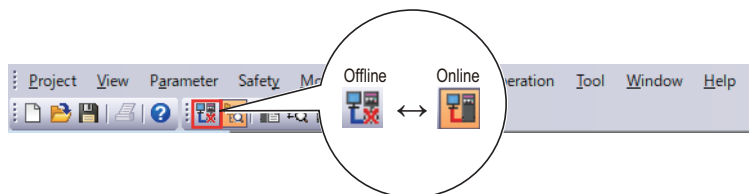


8. Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



9. Click [OK].

10. Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



**NOTE**

- Do not perform the following operation while the FA transparent function is valid and FR Configurator2 is in online mode.
  - Online operation (project download, etc.) from GT Designer / GT Designer2 to GOT
  - Online operation to programmable controller CPU by using FA transparent function of GX Developer or GX Works2
- When using FA transparent communication, communication error (timeout) may occur when FR Configurator2 starts communication during timeout occurrence in a GOT (when a GOT is monitoring the inverter which is not connected). In that case, set the timeout time value more than the following. (Refer to [page 121](#).)
  - Timeout value of GOT [s] × (Retry count of GOT + 1)
  - If the value above is more than 30 [s], make adjustment to "Timeout value" [s] and "Retry count" of GOT to make the value above become less than 30 [s].

## 3.6.2 Related parameters for connection through GOT

For details, refer to the Instruction Manual of the inverter.

### ◆ Parameters related to PU connector communication

Pr.	Name
117	PU communication station number
118	PU communication speed
119	PU communication stop bit length / data length
120	PU communication parity check
121	PU communication retry count
122	PU communication check time interval

Pr.	Name
123	PU communication waiting time setting
124	PU communication CR/LF selection
549	Protocol selection
550	NET mode operation command source selection
551	PU mode operation command source selection

### ◆ Parameters related to RS-485 terminal communication

Pr.	Name
331	RS-485 communication station number
332	RS-485 communication speed
333	RS-485 communication stop bit length / data length
334	RS-485 communication parity check selection
335	RS-485 communication retry count
336	RS-485 communication check time interval

Pr.	Name
337	RS-485 communication waiting time setting
341	RS-485 communication CR/LF selection
549	Protocol selection
550	NET mode operation command source selection
551	PU mode operation command source selection

### ◆ Parameters related to Ethernet connection

For the related parameters, refer to [page 100](#).

**NOTE**

- Always reset the inverter after making the initial settings of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.
- Avoid simultaneous access from multiple devices. Otherwise, a communication error (error code: 0x80010003, 0x80010101, or 0x80010102) may occur.

## 3.7 Connection via a GOT and a programmable controller

The inverter and FR Configurator2 can be communicated via a GOT2000 model and a programmable controller (CPU module / Ethernet module).

Use a USB cable for connection between the computer and a GOT2000 model. Use an Ethernet cable for connection between the GOT2000 model and a programmable controller and between the programmable controller and inverters.

### 3.7.1 Procedure for connection via a GOT and a programmable controller

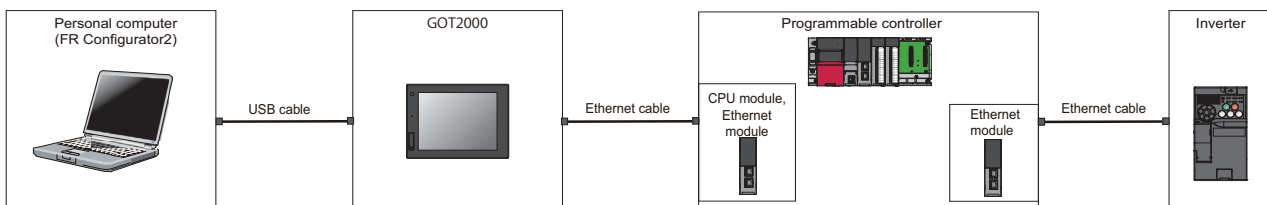
#### ◆ Supported model

FR-E700-NE

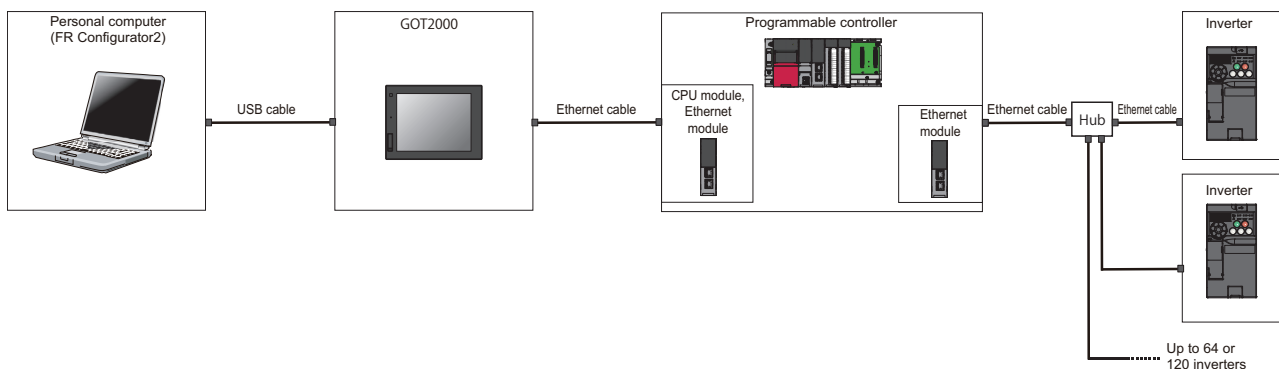
#### ◆ Connection configuration

##### ■ Communication through GOT2000 and programmable controller

- Single inverter



- Multiple inverters



#### ◆ Connection cable

Prepare a cable referring to the following.

##### ■ USB cable

Use a USB cable for wiring. For details on the USB cable, refer to the GOT1000/GOT2000 Series Connection Manual.

##### ■ Ethernet communication specifications

The communication specification varies depending on the specification of the master or the communication protocol.

Item	Description
Category	100BASE-TX/10BASE-T
Data transmission speed	100 Mbps (100BASE-TX) / 10 Mbps (10BASE-T)
Transmission method	Baseband
Maximum segment length	100 m between the hub and the inverter
Number of cascade connection stages	Up to 2 (100BASE-TX) / up to 4 (10BASE-T)
Interface	RJ-45
Number of interfaces available	1
IP version	IPv4

## ■ Ethernet cable

Use Ethernet cables compliant with the following standards.

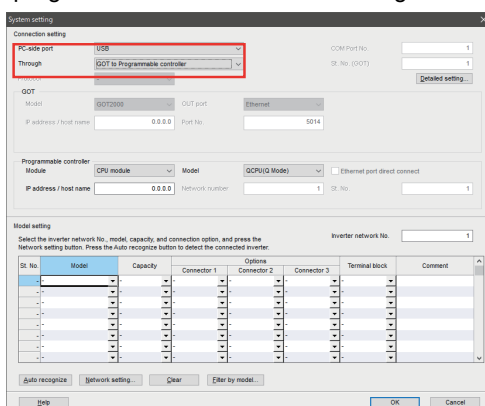
Communication speed	Ethernet cable	Connector	Standard
100 Mbps	Category 5 or higher straight cable (double shielded / STP)	RJ-45 connector	The cables compliant with the following standards: • 100BASE-TX
10 Mbps	Category 3 or higher straight cable (shielded / STP) Category 3 or higher straight cable (UTP)		The cables compliant with the following standards: • 10BASE-TX

## ◆ Connection procedure

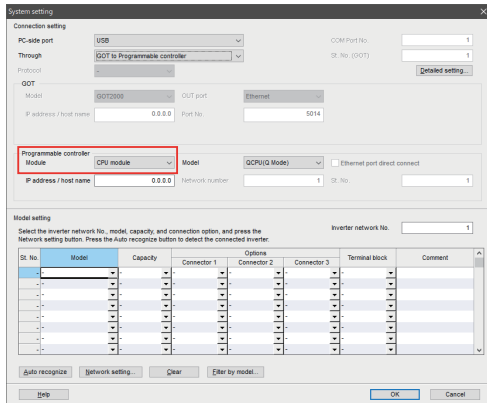
1. Connect the personal computer and the GOT using the USB cable.
2. Connect the GOT and programmable controller (CPU or Ethernet module) using the Ethernet cable.
3. Connect the programmable controller (Ethernet module or CC-Link IE Field Network master module) and the inverter with the Ethernet cable.
4. Configure settings for "Ethernet setting", "Controller setting", "Basic setting" of "GOT Setup", "Transparent mode" in the GOT.
5. Set parameters for the programmable controller. For the setting procedure of the programmable controller, refer to MELSEC iQ-R CC-Link IE Field Network User's Manual (Application) and the MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual.
6. Check the inverter parameter settings.  
Set the following communication parameters for connection using the Ethernet connector of the inverter. To set parameters or input operation commands, set the following command source parameter and switch the operation mode as shown in the following table.

Parameter setting	
Communication parameter	Command source parameter
Set "5001" in any of <b>Pr.833 to Pr.835 Ethernet function selection 1 to 3.</b>	<b>Pr.550 NET mode operation command source selection = "0"</b> (initial value)

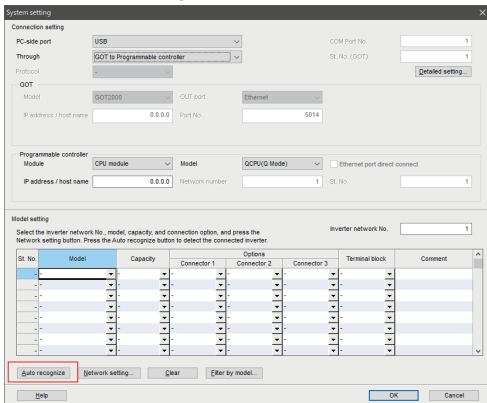
7. Start FR Configurator2.
8. Select [New...] from the [Project] menu bar.
9. In the "Connection setting" of the "System setting" window, select "USB" for the PC-side port. Select "GOT to programmable controller" for "Through".



**10.** Set "module" of the programmable controller used.

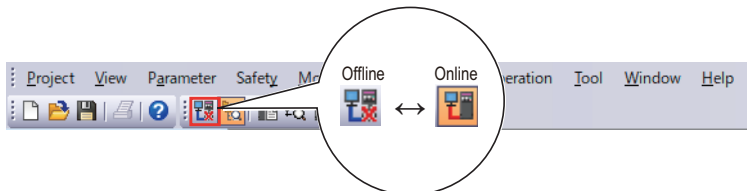


**11.** Click [Auto recognize]. The inverters connected with the personal computer are automatically detected.



**12.** Click [OK].

**13.** Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.



## 3.7.2 Related parameters for connection via a GOT and a programmable controller

For the related parameters, refer to [page 100](#).

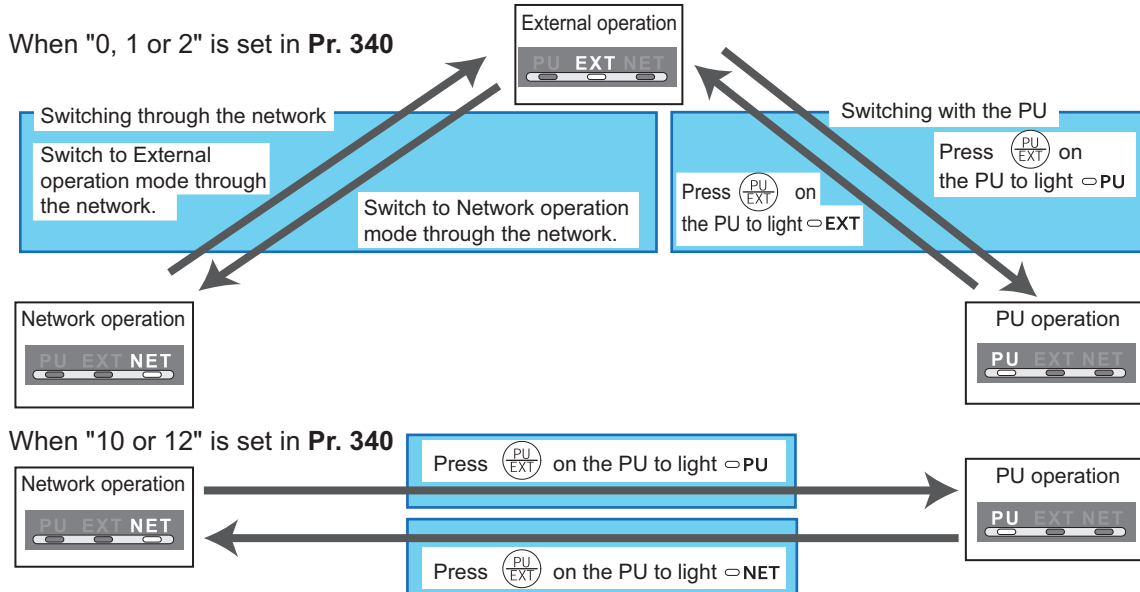
# 3.8 Setting of operation mode of the inverter

- The inverter has three operation modes.  
 External operation mode: For giving a start command and a frequency command with an external potentiometer or switches which are connected to the control circuit terminal.  
 PU operation mode: For giving a start command and a frequency command from the operation panel, parameter unit, or RS-485 communication via the PU connector.  
 Network operation mode (NET operation mode): For giving a start command and a frequency command via the RS-485 terminals, a communication option, or the Ethernet connector.

Pr.79 <sup>*1</sup> setting	Operation mode at power ON, at power restoration, or after a reset.	Operation mode switching
0 (initial value)	External operation mode	Switching among the External, PU, and NET operation modes is enabled <sup>*2</sup>
1	PU operation mode	PU operation mode fixed.
2	External operation mode	Switching between the External and NET operation mode is enabled. Switching to PU operation mode is disabled.
3, 4	External/PU combined operation mode	Operation mode switching is disabled
6	External operation mode	Switching among the External, PU, and NET operation mode is enabled while running.
7	X12 (MRS) signal ON...External operation mode	Switching among the External, PU, and NET operation modes is enabled <sup>*2</sup>
	X12 (MRS) signal OFF...External operation mode	External operation mode fixed. (Forcibly switched to External operation mode.)

\*1 For the details of Pr.79, refer to the Instruction Manual of the inverter.  
 \*2 Operation mode cannot be directly changed between the PU operation mode and Network operation mode.

Example: FR-A700



\*When using USB connection, operation mode changing is available from FR Configurator2.  
 For the details of the operation mode switchover, refer to the Instruction Manual of the inverter.

- Controllability through communication  
 For details, refer to the Instruction Manual of each inverter.



# MEMO

# CHAPTER 4 PROJECT CREATION

4.1	Project file operation .....	118
4.2	Explanation of the operating window of FR Configurator2 .....	127
4.3	File operation and print .....	139
4.4	Display setting .....	142

# 4 PROJECT CREATION

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This chapter explains the project creation for use of this product.  
Always read the instructions before using the equipment.

## 4.1 Project file operation

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### 4.1.1 Procedure to create a project

The following shows the procedure from creating project to operating the functions of FR Configurator2.

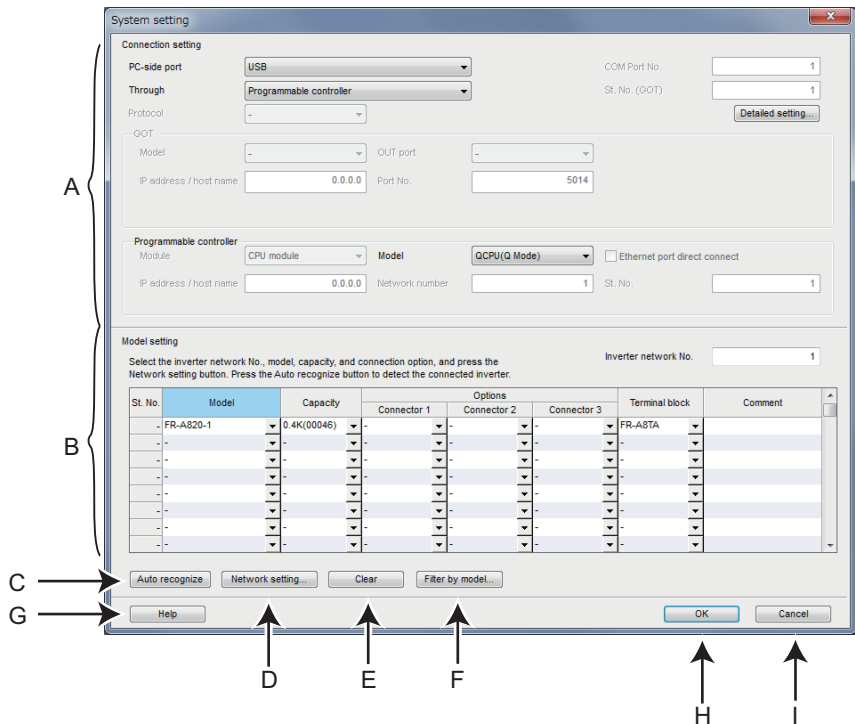
Operation	Function made available after performing the operation	Refer to page
Starting FR Configurator2	Convert	168
	Ethernet parameter setting function	233
	iQSS backup file conversion function	239
	Developer	218
	USB memory parameter copy file edit	230
	Help	257
System setting window	System setting window	118
New project	Parameter list	145
	Safety parameter setting	161
	Graph	185
	Batch monitor	200
	I/O terminal monitor	203
	Diagnostics	204
	Test operation	215

### 4.1.2 Creating a new project file

This function reads the information of each function window that is saved in a project file, such as inverter model information and parameter setting values, and reflects it to the windows.

Enter information required for creating a project file on the "System setting" window.

Select **[New]** from the **[Project]** menu bar or click on the  on the toolbar to display the "System setting" window.



Symbol	Name	Function/description
A	Connection setting	Select the connection type. Select an option or enter an applicable value in [PC-side port], [COM Port No.], [Through], [St. No. (GOT)], [Detailed setting], [Protocol], [GOT], and [Programmable controller] setting fields.
B	Model setting	Click the [Auto recognize] button to automatically set the information about the connected inverter. The model, capacity, and connection option of the inverter can also be selected from the list manually.
C	Inverter network No.	Enter the same value as set in <b>Ethernet communication network number</b> <sup>*1</sup> . (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to <b>Pr.1424</b> . For FR-A800-E-R2R, refer to <b>Pr.1073</b> . For FR-E700-NE, refer to <b>Pr.830</b> .)
D	Auto recognize	Information of the connected inverter can be recognized automatically. (Refer to <a href="#">page 120</a> .)
E	Network setting...	Specify the settings for network connection.
F	Clear	Clears the entries in the model setting field.
G	Filter by model...	Shows the window to filter the list of models used for the model selection.
H	Help	Displays the help window.
I	OK	Applies the setting to the project and closes the "System setting" window.
J	Cancel	Closes the "System setting" window without applying the setting to the project.

\*1 When the FR-A8NCG is installed, enter the same number as the network No.

**NOTE**

- To use a communication option for the FR-F700-EC/NA inverter equipped with only one option connector, select the communication option name from the Connector 2 pull-down list of the model setting field in the "System setting" window.
- When the automatic recognition is performed for the FR-F700-EC/NA inverter with a communication option connected to its option connector, the communication option name is displayed in the Connector 2 field.

## ◆ Setting the automatic recognition of the inverter and FR Configurator2 (Ethernet connection)

- To connect the inverter and FR Configurator2 via Ethernet, refer to the following table to check the settings of the relay device and parameters.

Model	Through	Pr.	Name	Setting	
FR-A800-E FR-F800-E	Not connected	1427	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.	
	Programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
			1428	Ethernet function selection 2	
			1429	Ethernet function selection 3	
			1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.
	GOT to programmable controller* <sup>1</sup>		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
			1428	Ethernet function selection 2	
			1429	Ethernet function selection 3	
			1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.
FR-A800-E-R2R	Not connected	1076	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.	
		1077	Ethernet function selection 2		
		1078	Ethernet function selection 3		
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.	
	Programmable controller		1076	Ethernet function selection 1	Set "5001" in any of the parameters.
			1077	Ethernet function selection 2	
			1078	Ethernet function selection 3	
			1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.
	GOT to programmable controller* <sup>1</sup>		1076	Ethernet function selection 1	Set "5001" in any of the parameters.
			1077	Ethernet function selection 2	
			1078	Ethernet function selection 3	
			1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.
FR-E800-(SC)E	Not used	1427	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
		1430	Ethernet function selection 4		
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.	
	Programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
			1428	Ethernet function selection 2	
			1429	Ethernet function selection 3	
			1430	Ethernet function selection 4	
	1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.		
	GOT to programmable controller* <sup>1</sup>		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
			1428	Ethernet function selection 2	
1429			Ethernet function selection 3		
1430			Ethernet function selection 4		
1442 to 1448			IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.	

Model	Through	Pr.	Name	Setting	
FR-E700-NE	Not connected	833	Ethernet function selection 1	Set a combination of "31" (or "32") and "20" in any two of the parameters.	
		834	Ethernet function selection 2		
		835	Ethernet function selection 3		
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the personal computer.	
	Programmable controller	833	833	Ethernet function selection 1	Set "31" in any of the parameters.
			834	Ethernet function selection 2	
			835	Ethernet function selection 3	
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the Ethernet module.	
	GOT to programmable controller <sup>*1</sup>	833	833	Ethernet function selection 1	Set "31" in any of the parameters.
			834	Ethernet function selection 2	
			835	Ethernet function selection 3	
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the Ethernet module.	

\*1 When the programmable controller is protected by a remote password, automatic recognition is disabled.

- The following shows automatic recognition condition.

PC-side port	Intermediate device	Automatic recognition		
		Direct connection	Hub connection	Router connection
Ethernet	Not connected	○	○	○
USB	GOT	×	×	×
Ethernet	GOT	○	○	○
USB	GOT to programmable controller	○	○	○
USB, RS-232C, Ethernet	Programmable controller	○	○	○

(○: Enabled, ×: Disabled)

- If the network device is protected by a remote password, the "Remote password input" dialog appears during the automatic recognition.

### 4.1.3 Connection setting

In the "Connection setting" of the "System setting" window, set the communication between the personal computer and inverter, etc.

For communication with the inverter using the USB port of personal computer, set "USB" in the box of "PC-side port".

For communication with the inverter using the serial port of personal computer, set "Specify the COM port number" in the box of "PC-side port".

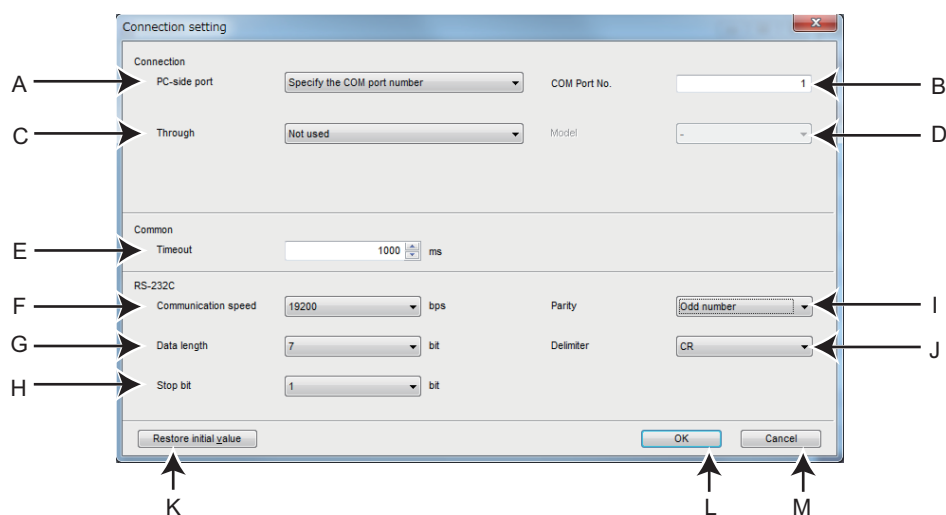
For communication with the inverter using the LAN port of personal computer, set "Ethernet" in the box of "PC-side port".

#### NOTE

- To use the USB/RS-485 conversion cable DINV-U4, select [COM\*: DTC DINV-U4 USB Serial Port (COM\*)] for the PC-side port.
- If it is not in the drop-down list although the DINV-U4 cable is connected, do the following:
  - Check the DINV-U4 cable for insecure connection to the personal computer.
  - Check if the DINV-U4 driver is already installed in the personal computer.

## ◆ Detailed setting

Select [Detailed setting] in the "System setting" window, or select [Connection setting] in the "Source" window of the convert function to open the "Detailed setting" window (the "Connection setting" window when the convert function is used). The items for the detailed setting are determined according to the PC-side port and relay device settings specified in the system setting window. Change the settings as required. The connection setting is in accordance with the initial value of the inverter.

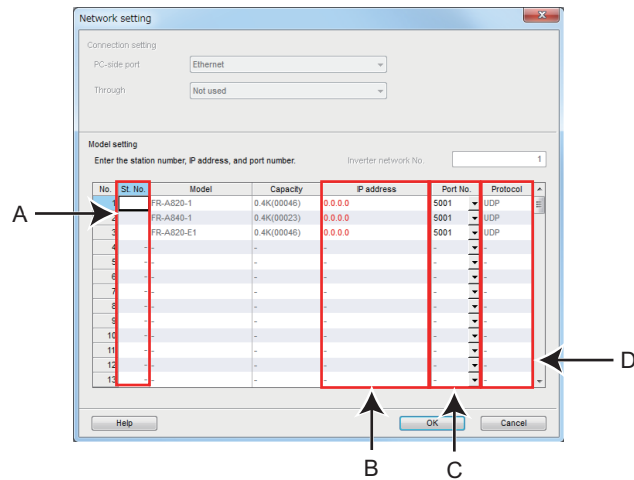


Symbol	Name	Initial value	Function/description
A	PC-side port	USB	Select a port for connection.
B	COM Port No.	1	Specify the port number when "Specify the COM port number" is selected for the PC-side port.*1
C	Through	Not used	Set a relay device.*1
D	Model	—	Set a GOT model.*1
E	Timeout	1000	Set the time after transmitting data from the personal computer to the inverter until the personal computer receives a response from the inverter. When no response comes after the set time elapsed, the error of "timeout occurs" is displayed.
F	Communication speed	19200	Set the communication speed. (Refer to <b>Pr.118</b> and <b>Pr.332</b> .)
G	Data length	8	Set the data bit length. (Refer to <b>Pr.119</b> and <b>Pr.333</b> .)
H	Stop bit	2	Set the stop bit length. (Refer to <b>Pr.119</b> and <b>Pr.333</b> .)
I	Parity	Even	Specify the parity bit. (Refer to <b>Pr.120</b> and <b>Pr.334</b> .)
J	Delimiter	CR	Specify the delimiter at the end of the data. (Refer to <b>Pr.124</b> and <b>Pr.341</b> .)
K	Restore initial value	—	A button to return the communication setting to the initial value of the inverter.
L	OK	—	When the window is opened from the "System setting" window, click [OK] to close the window and return to the "System setting" window. (Refer to <a href="#">page 118</a> .) When the window is opened from the "Source" window for the connection setting of the convert function, click [OK] to close the window and return to the "Source" window. (Refer to <a href="#">page 170</a> .)
M	Cancel	—	Clears the setting and closes the "Detailed setting" window.

\*1 Setting is available for connection setting using the convert function.

## ◆ Network setting

When "Ethernet" is selected for the PC-side port, or "GOT", "Programmable controller", or "GOT to programmable controller" is selected from the "Through" drop-down list, the "Network setting" window can be opened by clicking the [Network setting] button in the "System setting" window.



Symbol	Name	Function/description
A	St. No.	Set the station number. (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to <b>Pr.1425</b> . For FR-A800/FR-F800 inverter with FR-A8NCG in it, refer to <b>Pr.437<sup>*2*</sup></b> . For FR-A800-E-R2R, refer to <b>Pr.1074</b> . For FR-E700-NE, refer to <b>Pr.831</b> .)
B	IP address	Enter the IP address. (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to <b>Pr.1434 to Pr.1437</b> . For FR-A800/FR-F800 inverter with FR-A8NCG in it, refer to <b>Pr.434 to Pr.437<sup>*2*</sup></b> . For FR-E700-NE, refer to <b>Pr.805 to Pr.808</b> .) <sup>*1</sup>
C	Port No.	Set the port number set in the inverter. (For FR-A800-E, and FR-F800-E, refer to <b>Pr.1427 to Pr.1429</b> . For FR-A800-E-R2R, refer to <b>Pr.1076 to Pr.1078</b> .) For FR-E800-(SC)E, refer to <b>Pr.1427 to Pr.1430</b> . For FR-E700-NE, refer to <b>Pr.833 to Pr.835</b> .)
D	Protocol	The "UDP" or "TCP" protocol is displayed.

<sup>\*1</sup> Setting is available in the following conditions: "Not used" is selected from the "Through" drop-down list for the connection setting, or "GOT" is selected from the "Through" drop-down list and "Ethernet" from "OUT port".

<sup>\*2</sup> When the station number switches are set to a value other than "0 (H00)" or "255 (HFF)", the switch setting is enabled. (For details on the station number switches, refer to the CC-Link IE TSN Function Manual or FR-A8NCG Instruction Manual.)

<sup>\*3</sup> When the station number switches are set to "0 (H00)" or "255 (HFF)", the setting in the master station is enabled. (For details on the station number switches, refer to the CC-Link IE TSN Function Manual or FR-A8NCG Instruction Manual.)

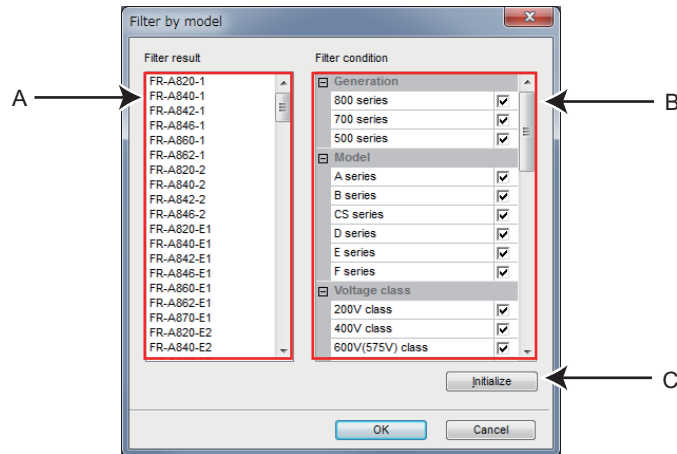
### NOTE

- When "Ethernet" is set for the PC-side port and "TCP" is set for the protocol, a timeout may occur before the set timeout time elapses. Since the TCP timeout on Windows is controlled by the operating system, a timeout occurs after the shorter timeout time set in FR Configurator2 or the operating system elapses. The standard timeout time is about 20 seconds on Windows.
- When the "St. No." or "IP address" setting value is used by other model, the value is shown in red.



## ◆ Filtering by model

Select [Filter by model] in the "System setting" window to open the "Filter by model" dialog. Filter the list by manual setting.

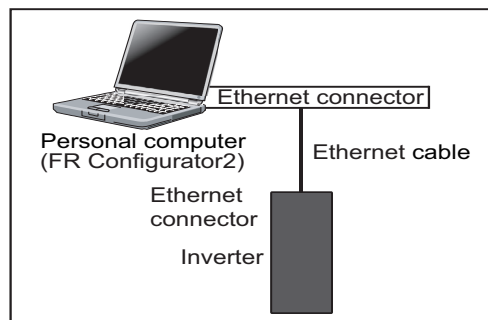


Symbol	Name	Function/description
A	Filter result	Selected inverters are displayed.
B	Filter condition	Click on the checkbox to change the filter condition.
C	Initialize	Reset the filter condition to check all.

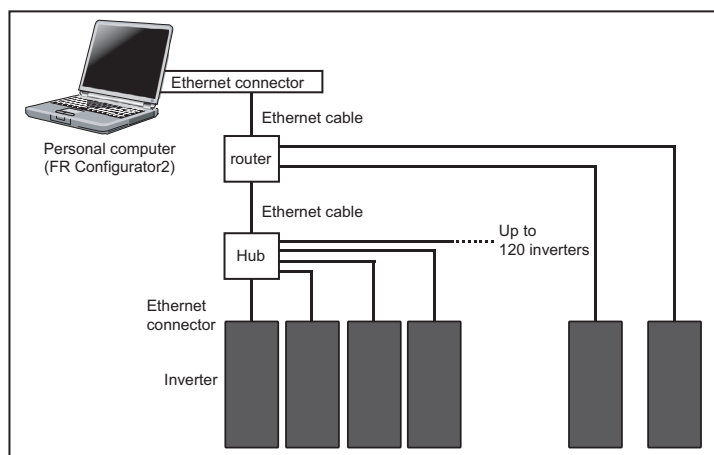
## ◆ Ethernet automatic recognition setting

When "Ethernet" is selected for the PC-side port and "Not used" is selected from the "Through" drop-down list, the "Ethernet automatic recognition setting" window appears by clicking the [Auto recognize] button in the "System setting" window. Automatic recognition of inverters is enabled by specifying Ethernet network segments.

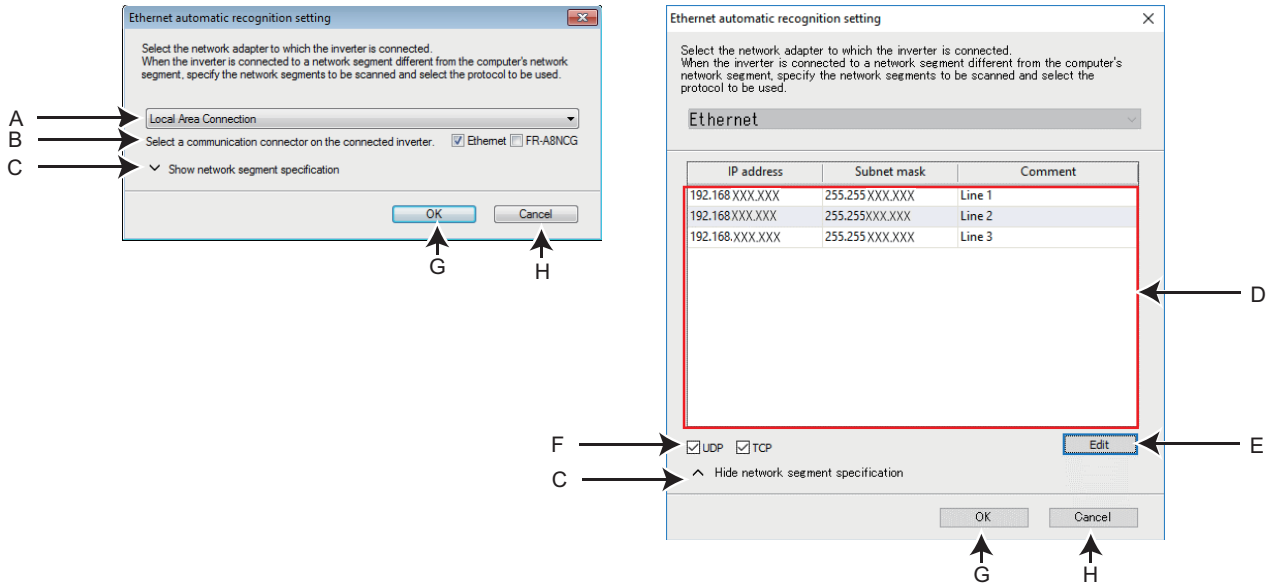
### ■ Example connection without a router



### ■ Example connection with a router

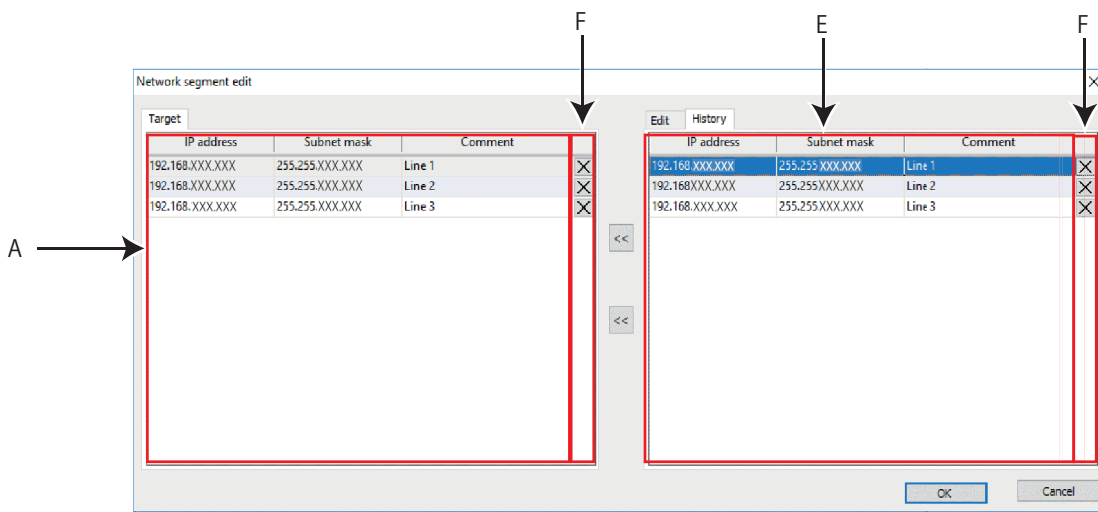
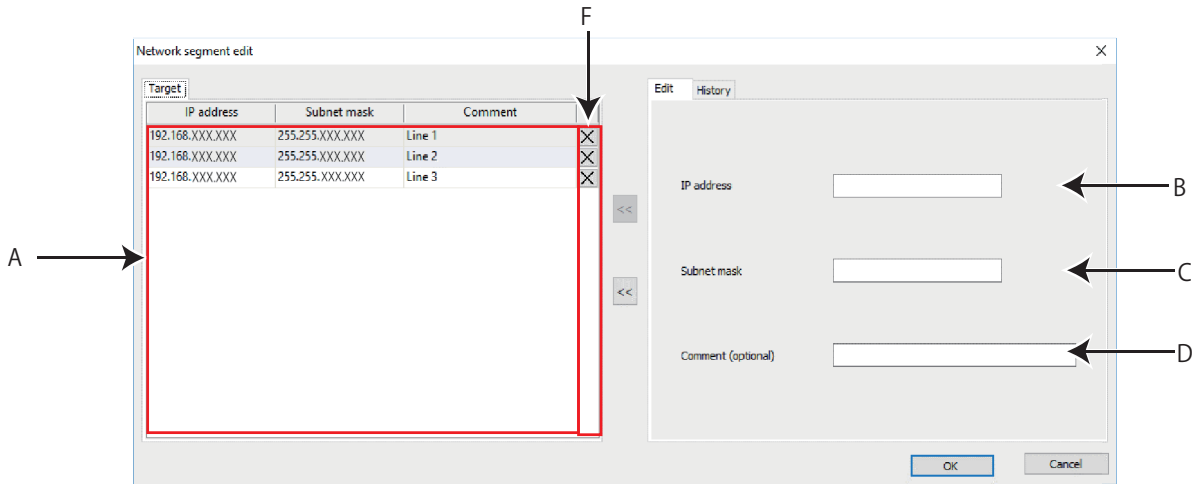


## ■ Ethernet automatic recognition setting window



Symbol	Name	Function/description
A	Network adapter selection	Select a network adapter for connection.
B	Selection of a communication connector on the connected inverter.	Click on the checkbox to enable automatic recognition of the connected inverters.
C	Show network segment specification	Shows or hides the network segment setting area.
D	Network segment setting area	Displays the data set in the "Network segment edit" window.
E	Edit	Displays the "Network segment edit" window.
F	Protocol selection	Click on the checkbox to enable the UDP/TCP protocol.
G	OK	Start automatic recognition through the specified network adapter.
H	Cancel	Closes the "Ethernet automatic recognition setting" window without starting automatic recognition.

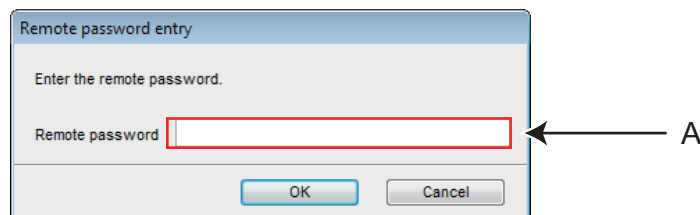
## ■ Network segment edit window



Symbol	Name	Function/description
A	Target area	Displays the data shown in the network setting area on the "Ethernet automatic recognition setting" window.
B	IP address	Enter the IP address of the network to be added.
C	Subnet mask	Enter the subnet mask of the network to be added.
D	Comment (optional)	Any character string can be saved as a comment.
E	History area	Displays the historical network data obtained by automatic recognition.
F	Cancel button	Deletes the selected line in the target/history area.
G	<<	Copy the selected line in the edit/history area to the target area.
H	>>	Copy the selected line in the target area to the edit/history area.

## ◆ Remote password entry

The following window appears when the Ethernet device protected by a remote password and the personal computer are connected to the same Ethernet network.



Symbol	Name	Function/description
A	Remote password	Enter the password. The password is masked with asterisks (*).

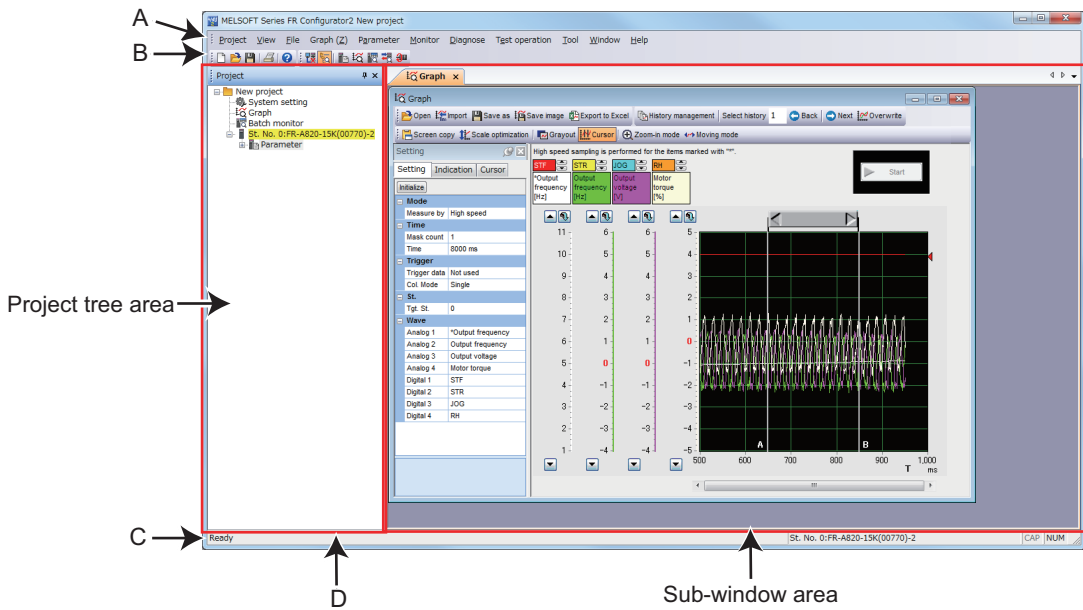
# 4.2 Explanation of the operating window of FR Configurator2

This section explains the screen configuration of FR Configurator2.

## 4.2.1 Main frame

The main frame (main screen) of FR Configurator2 consists of two areas.

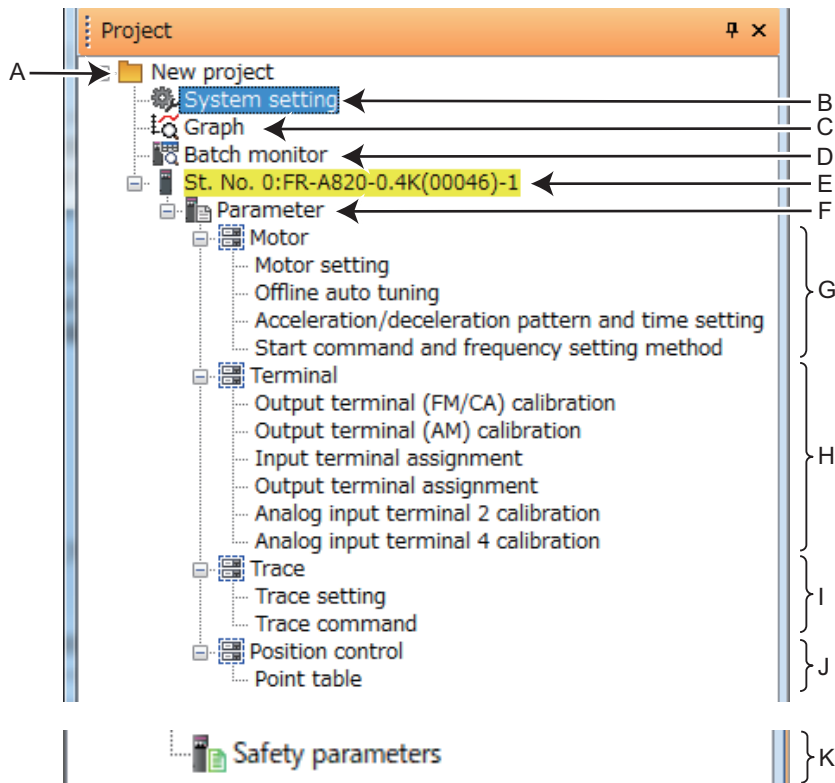
- Project tree area (Refer to [page 127.](#))  
An area for showing information of the registered inverter, or for making settings. "System setting", "Graph", and "Batch monitor" are available in this area.
- Sub-window area (Refer to [page 129.](#))  
An area for showing obtained monitor data of the inverter. "Parameter list", "Graph", "Batch monitor", and "Fault history" are available in this area.




Symbol	Name	Function/description	Refer to page
A	Menu bar	The window of each function is displayed from the menu bar.	131
B	Toolbar	The window of each function is displayed in the sub-window area by selecting an icon on the toolbar.	
C	Status bar	The model name, operating status, etc. are displayed.	138
D	Split line	Adjustment of the project tree area size and sub window area size is available. To resize the project tree area and sub window area to their original size, from [W]indow] of the menu bar, choose [R]eset window layout].	—

## 4.2.2 Project tree area

"Parameter list" and "Safety parameter setting" of the inverters registered in the project, "System setting", "Graph", and "Batch monitor" are listed in the project tree area. Select such an item to display the window in the sub-window area.

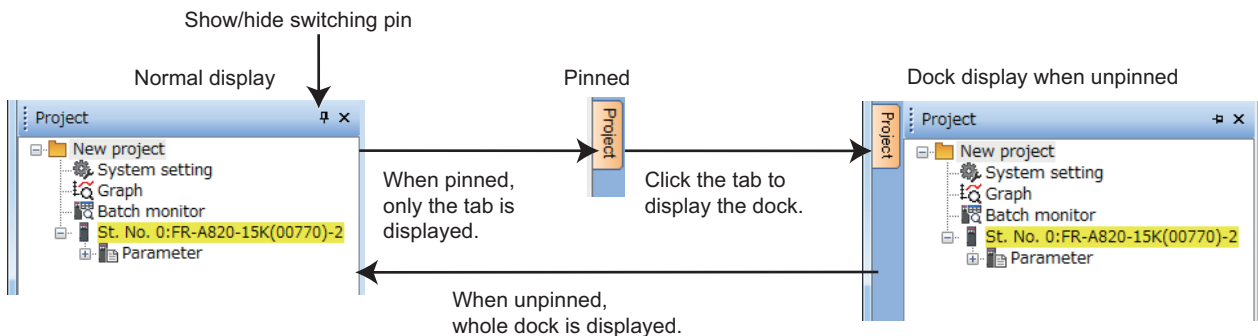


• Details of the project tree area

Symbol	Name	Function/description
A	Project name	Displays the project name.
B	System setting	Displays the system setting window in the sub-window area.
C	Graph	Displays the graph window in the sub-window area.
D	Batch monitor	Displays the batch monitor screen in the sub-window area.
E	Station number: inverter model	Displays the station number and the model of the inverter registered in the project. Click "Station number: inverter model" to select the corresponding station number. The selected "Station number: inverter model" is highlighted in yellow. (If the main frame is not selected, "Station number: inverter model" is displayed in gray.) Click  on the left of the icon to spread the tree view and display [Parameter].
F	Parameter	Click [Parameter] to display the "parameter list" in the sub window area.
G	Motor	Click [Motor] to select the window for motor setting, offline auto tuning, acceleration/deceleration pattern and time setting or start command and frequency setting method.
H	Terminal	Click [Terminal] to select the window for terminal calibration or function assignment.
I	Trace	Click [Trace] to select the window for trace function setting or trace command execution.
J	Position control	Click [Point table] to set point tables used for position control.
K	Safety parameter	Click [Safety parameter] to display the "Safety parameter setting" in the sub window area.

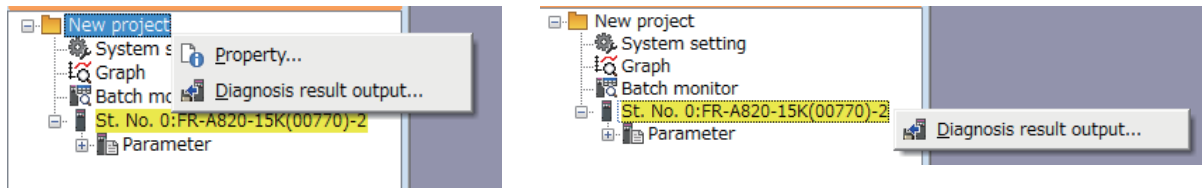
#### Display and switching of the project tree area

Select [Project window] from [Docking Window] in the [View] menu to switch the display of the project tree area among display, tab display, and hidden. The show/hide switching pin is used to show or hide the project tree area.



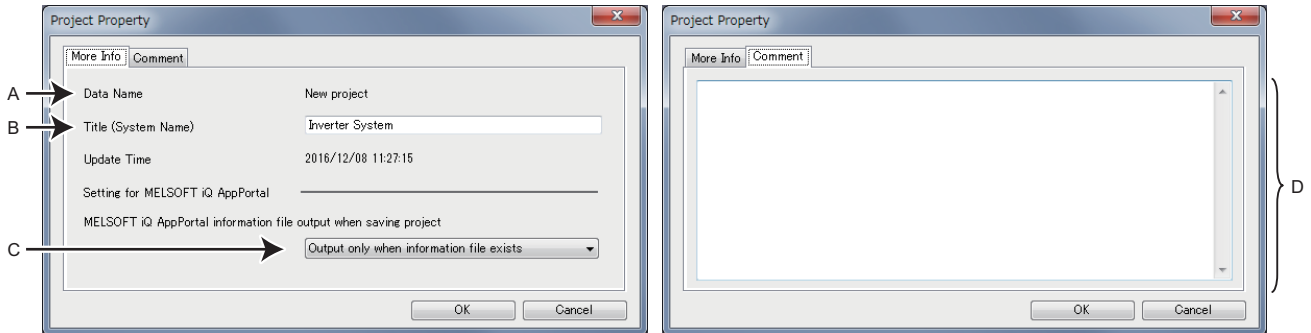
## 4.2.3 Pop-up menu

Right-click on the project name or the station number to display a pop-up menu.



### ◆ Project property

Click the pop-up menu to open the "Project Property" window. The data name, title (system name), or other information for the project can be checked or changed.



Symbol	Name	Function/description
A	Data Name	The project file (*.frc2) name is shown.
B	Title (System Name)	The project title can be changed.
C	MELSOFT iQ AppPortal information file output when saving project	Select whether to output the MELSOFT iQ AppPortal information file when saving the project. Select from among the following: "Always output", "Output only when information file exists", or "Not output (delete information file)".
D	Comment	A text field for description of the project.

### ◆ Diagnosis result output

Click on the menu option to obtain the diagnosis result data for all inverters or the selected inverter. The diagnosis result is output to a CSV text file.

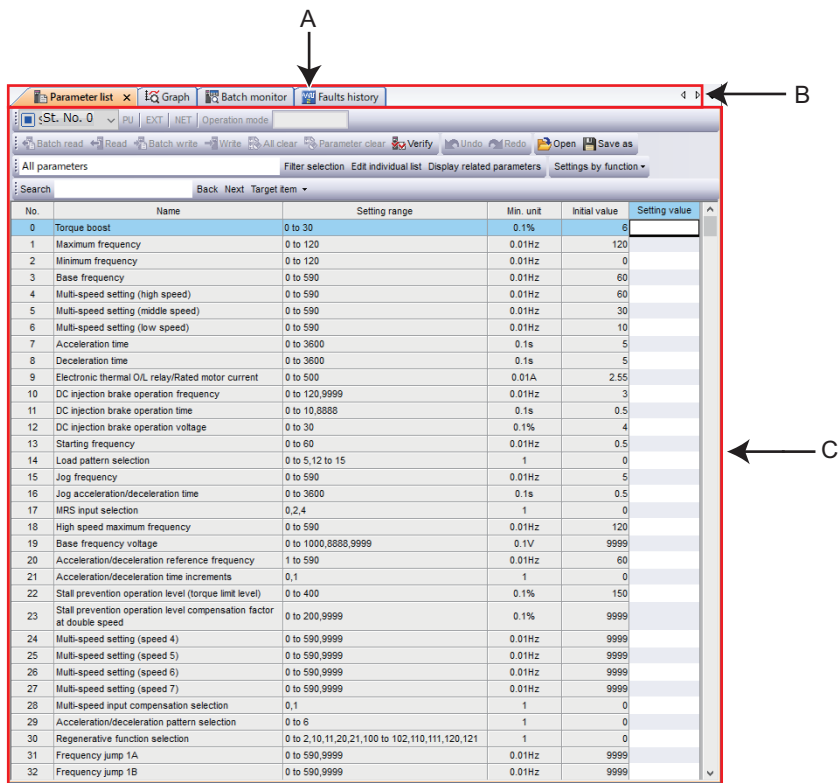
#### NOTE

- Data for all inverters are obtained by selecting the option on the pop-up menu displayed by clicking on the project name. Data for the selected inverter are obtained by selecting the option on the pop-up menu displayed by clicking on the station number.

## 4.2.4 Sub-window area

The sub-window area is for displaying, reading, and writing parameters, and for displaying the information read from the inverter.

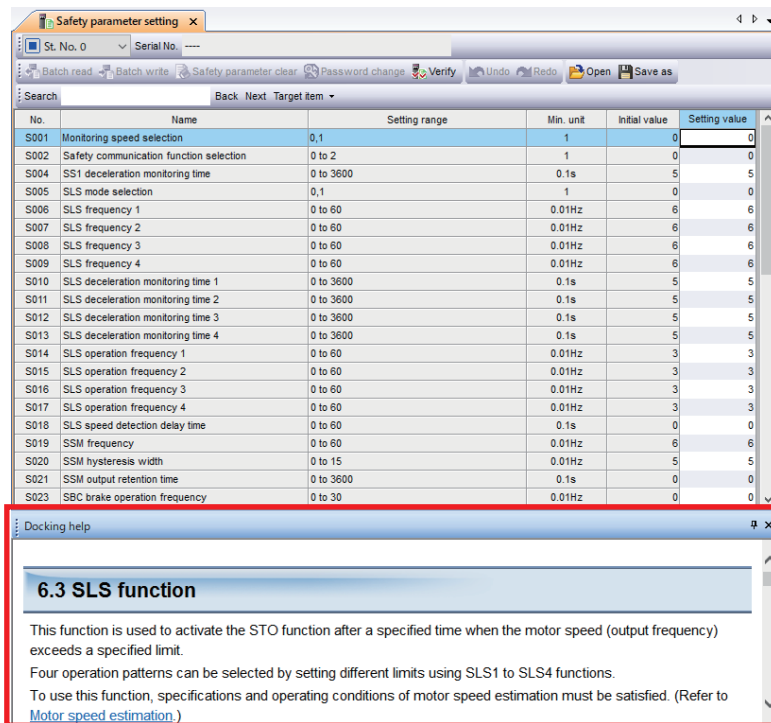
Select a function in the [Window] menu or click an icon on the toolbar to switch the windows in the sub-window area.



Symbol	Name	Function/description
A	Tab	Displays the names of functions in tab format. Click a tab to move the corresponding sub window to the front and operate it. Drag a tab to change the order of the sub windows. Click the × button on the tab to close the corresponding sub window. (When the window cannot display all the tabs, the tabs can be scrolled by the button.)
B	Sub-window selection button	Displays a list of the displayed sub windows. Select a sub window from the list to display it front.
C	Sub-window display area	Displays a function window of FR Configurator2.

## ◆ Docking help

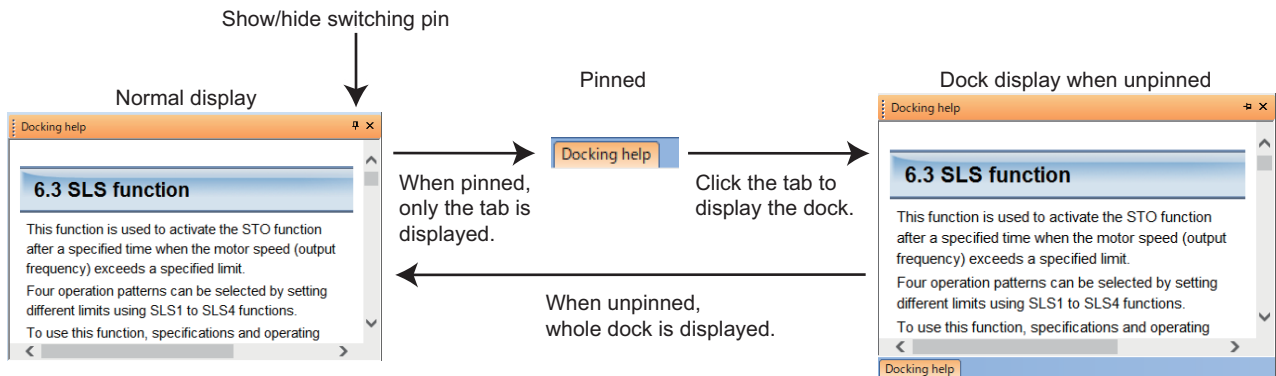
The Instruction Manual of the inverter can be displayed in the sub-window area only when the safety parameter setting function or the safety parameter verification function is selected.



Symbol	Name	Function/description
A	Docking help	Displays the Instruction Manual in the sub-window area.

Display and switching of the docking help

Select [Docking help] from [Docking Window] in the [View] menu to switch the display of the docking help among display, tab display, and hidden. The show/hide switching pin is used to show or hide the docking help.













## 4.2.5 Menu bar and toolbar













The window of a desired function can be displayed by selecting it from the menu or on the toolbar.





























## ◆ Menu/Toolbar list

The following functions are available on the menu.

Menu	Pull-down menu		Toolbar icon	Function/operation
Project	New...			Displays the system setting window.
	Open...			Opens a project file (*.frc2).
	Close...		—	Closes the project file (*.frc2).
	Save			Saves the project file (*.frc2). When the project file (*.frc2) has not been read or not created yet, the "Save As" window is displayed to save the project file.
	Save As...		—	Names the current setting and saves it as a project file (*.frc2).
	System setting		—	Used to check and change the system setting.
	Print preview		—	Used to check the print screen of the selected sub window.
	Print...			Prints the selected sub window.
	Exit FR Configurator2		—	Exits FR Configurator2.
View	System		—	Shows or hides the system toolbar.
	Call function		—	Shows or hides the call function toolbar.
	Status bar		—	Shows or hides the status bar.
	Docking Window	Project window		Shows or hides the project window.
		Docking help	—	Shows or hides the docking help used with the safety parameter setting window.
	Switch display language...		—	Displays the "Switch Display Language" window to switch the display language. This menu is not available for the Developer function.
File <sup>*1</sup>	Open...			Opens a file related to the function of the sub window that is displayed front.
	Import...			Imports files (*.gp4 or *.st1) when the graph window is open. Use this function to compare them with the previous waveform data by displaying them together.
	Save As...			Saves the data related to the function of the sub window that is displayed front as new data with a name.
	Save image in file...			Saves the graph window as graph data (*.jpg or *.emf) when the graph window is open.
	Export to Excel...			Divides the information displayed in the graph window into channels and saves it in Excel format when the graph window is open.
	Reread		—	Re-reads the data of the open file when the graph window is open.

Menu	Pull-down menu		Toolbar icon	Function/operation	
Parameter list (Z) <sup>*1</sup>	P <u>U</u>		—	Activates the PU operation mode.	
	E <u>XT</u>		—	Activates the External operation mode.	
	N <u>ET</u>		—	Activates the NET operation mode.	
	Batch r <u>e</u> ad			Reads all the set values of the parameters of the selected inverter.	
	R <u>e</u> ad			Reads the set value of the selected parameter of the selected inverter.	
	Batch w <u>r</u> ite			Writes all the parameter setting values entered in the setting field to the selected inverter.	
	W <u>r</u> ite			Writes the set value of the selected parameter to the selected inverter.	
	All c <u>l</u> ear			Returns all parameters which can be cleared including calibration parameters and terminal function selection parameters to their initial values.	
	P <u>a</u> rameter c <u>l</u> ear			Returns parameters excluding calibration parameters and terminal function selection parameters to their initial values.	
	V <u>e</u> rify			Verifies the parameter settings in FR Configurator2 against settings already written to the inverter.	
	F <u>i</u> lter selection		—	Used to select parameters shown in the parameter list.	
	E <u>d</u> it individual list		—	Displays the window for selecting items for the individual list used as a parameter filter.	
	D <u>i</u> splay of related p <u>a</u> rameters		—	Displays items related to selected parameters.	
	Settings by function	Motor	Motor setting	—	Displays the window for the motor and the control method setting.
			Offline auto tuning	—	Displays the window to perform offline auto tuning.
			Acceleration/deceleration pattern and time setting	—	Displays the window for the acceleration/deceleration and the time setting.
			Start command and frequency setting method	—	Displays the window for the start command and frequency setting.
		Terminal	Output terminal (FM/CA) calibration	—	Displays the window to calibrate terminal FM/CA.
			Output terminal (AM) calibration	—	Displays the window to calibrate terminal AM.
			Input terminal assignment	—	Displays the window to assign functions to input terminals.
			Output terminal assignment	—	Displays the window to assign functions to output terminals.
Analog input terminal 2 calibration			—	Displays the window to calibrate terminal 2.	
Analog input terminal 4 calibration			—	Displays the window to calibrate terminal 4.	
Trace		Trace setting	—	Displays the window for the trace-related setting.	
		Trace command	—	Displays the window to perform trace commands such as sampling start/end.	
Position control		Point table	—	Displays the window for the point table setting used for position control.	
Safety parameter setting (Z) <sup>*1</sup>		Batch r <u>e</u> ad			Reads all the safety parameter setting values of the selected inverter.
	Batch w <u>r</u> ite			Writes all the safety parameter setting values in the setting value column to the selected inverter.	
	Safety parameter c <u>l</u> ear			All safety parameters and passwords return to initial values.	
	V <u>e</u> rify			Verifies the safety parameter settings in FR Configurator2 against settings already written to the inverter.	
	P <u>a</u> ssword change			Changes the registered password.	
	CIP Safety	Read configuration signature	—	Displays the window to check the details of the Safety Configuration ID (SCID) and copy the ID.	
		Set I <u>U</u> NID and OCPUNID	—	Set the IP address and the safety network number for TUNID and OCPUNID.	

Menu	Pull-down menu	Toolbar icon	Function/operation	
Graph (Z) <sup>*1</sup>	Screen copy		Saves the entire sub window as image data (*.bmp) to the clipboard.	
	Scale optimization		Adjusts the scale of the vertical axis and the position of zero so that the entire waveform of the selection history can be displayed in the window.	
	Moving mode		Used to scroll the displayed waveform data.	
	Zoom-in mode		Used to zoom in the specified area of a waveform.	
	Cursor		Shows or hides the cursor on the screen.	
	Grayout		Switches the display color (color or gray scale) of the waveform and the graph on the screen.	
	Overwrite		Enables or disables overwriting for all the histories.	
	History management...		Shows or hides the waveform history screen.	
	Property window	Setting	—	Shows or hides the setting tab.
		Indication	—	Shows or hides the indication tab.
Cursor		—	Shows or hides the cursor tab.	
Batch monitor (Z) <sup>*1</sup>	Pause		Pauses the acquisition of the monitor data.	
	Resume		Resumes the acquisition of the monitor data.	
	Setting...		Sets the monitored item to be displayed.	
	Trend monitor...		Displays the window for selecting items to be monitored in the form of a graph.	
Trend monitor (Z) <sup>*1</sup>	Pause		Pauses the acquisition of the monitor data.	
	Resume		Resumes the acquisition of the monitor data.	
	Setting...		Sets the monitored item to be displayed.	
	Trend monitor...		Displays a graph for each of the selected monitored items.	
	All screen copy		Saves the screen displayed in all trend monitor windows to the clipboard.	
	Screen copy		Saves a screen displayed in the selected trend monitor window to the clipboard.	
	View	Toolbar	—	Shows or hides the trend monitor toolbar.
Status bar		—	Shows or hides the trend monitor status bar.	
I/O terminal monitor (Z) <sup>*1</sup>	Pause		Pause the acquisition of the I/O terminal monitor data.	
	Resume		Resumes the acquisition of the I/O terminal monitor data.	
Faults history (Z) <sup>*1</sup>	Faults history clear		Clears the fault history of the inverter.	
	Inverter reset		Resets the inverter.	
	AI fault diagnosis		Used to find probable causes of faults using AI technology.	
Life check (Z) <sup>*1</sup>	Update		Refreshes the life check result.	
	Main circuit capacitor life measuring		Starts life measuring of the main circuit capacitor.	
Online status (Z) <sup>*1</sup>	All online		Sets all the devices selected in the project to online.	
	Connection check LED all-OFF	—	Used to turn OFF the LED on all connected inverters.	
Operation mode (Z) <sup>*1</sup>	PU	—	Activates the PU operation mode.	
	EXT	—	Activates the External operation mode.	
	NET	—	Activates the NET operation mode.	

Menu	Pull-down menu	Toolbar icon	Function/operation
Parameter	Parameter list...		Displays the "Parameter list" window in the sub-window area.
	Convert...	—	Displays the "Convert" window in the sub-window area.
Safety	Safety parameter setting...		Displays the "Safety parameter setting" window in the sub-window area.
Monitor	Graph...		Displays the "Graph" window in the sub-window area.
	Batch monitor...		Displays the "Batch monitor" window in the sub-window area.
	I/O terminal monitor...		Displays the "I/O terminal monitor" window in the sub-window area.
Diagnose	Faults history...	—	Displays the "Faults history" window in the sub-window area.
	Serial number...	—	Displays the "Serial number" window in the sub-window area.
	Life check		Displays the "Life check" window in the sub-window area.
	Diagnosis result output...		Reads diagnosis data from the inverter and output the data to a file.
	Ethernet status...	—	Displays the "Ethernet status" window in the sub-window area.
	Online status...	—	Displays the "Online status" window in the sub-window area.
Test operation	Test operation...		Shows or hides the command sending section of "Test operation".
Tool	Developer...		Starts Developer.
	USB memory parameter copy file function edit		Starts the USB memory parameter copy file editor.
	Ethernet parameter setting		Starts the Ethernet parameter setting.
	iQSS backup file conversion	—	Starts the iQSS backup file conversion.
	Firmware Update Tool		Start Firmware Update Tool.
Window	Cascade	—	Cascades sub windows.
	Tile vertically	—	Tiles sub windows horizontally.
	Tile horizontally	—	Tiles sub windows vertically.
	Arrange icons	—	Arranges sub windows that are displayed as icons.
	Close all	—	Closes all the sub windows.
	Reset window layout	—	Resets the layout and the sizes of the toolbar, docking windows, and sub windows to each initial status.
	Opened sub window (Example) Parameter list 1	—	Select this item to display the opened sub window.
Help	FR Configurator2 help...		Starts e-Manual Viewer to display the Manual.
	Inverter 's Instruction Manual	—	Starts the help.
	Connection to Mitsubishi Electric FA Global Website...	—	Starts up the web browser to access Mitsubishi Electric FA Global Website.
	About...	—	Opens the "About" window.

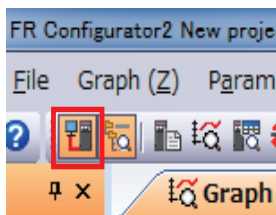
\*1 The function menu related to the front sub window is displayed. When no sub window is displayed in the sub-window area, these items are not displayed on the menu bar.

**NOTE**

- The layout of excel files can be changed by editing the template file "Charts.xlsx". (An editable file can be found in C:\FREQROL\FRC2\dat\com\ChartTemplate.)
- Do not delete objects in the template file "Charts.xlsx" or the file itself. Using a template file in which the original template has been deleted will cause the error message "Export to Excel failed" to be displayed. A template file used to export data to Excel when an error occurs can be found in the Configurator2 installation folder. (If the location of the installation folder has not been changed, it can be found in C:\ProgramFiles\MELSOFT\FRC2\sys\Function\ChartTemplate.) Do not overwrite the template file. Instead, copy the template file and use that file to make any changes.

## ◆ Communication manager

Online/offline can be switched for communication between FR Configurator2 and the inverter from the menu on the toolbar.



The online/offline condition of communication between FR Configurator2 and the inverter can be checked by the icon that is displayed.

Display	Status
	Offline
	Online

**NOTE**

- When no communication is made for the period of the timeout time at online while "Ethernet" is selected for "PC-side port", "TCP" for "Protocol", and "GOT" for "Through", a communication error occurs when communication is attempted next. After a communication error occurs, the connection status is switched from online to offline. Switch the connection status to online again to operate.

## ◆ Online/offline setting of the inverter and FR Configurator2 (Ethernet connection)

- To connect the inverter and FR Configurator2 via Ethernet, refer to the following table to check the settings of the relay device and parameters.

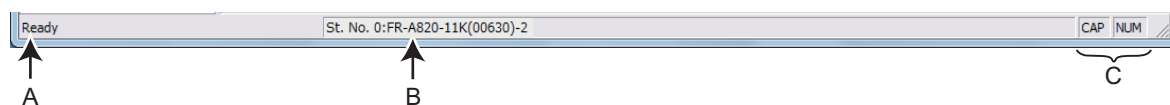
Model	Intermediate device	Pr.	Name	Setting	
FR-A800-E FR-F800-E	Not connected	1427	Ethernet function selection 1	Set "5001" or "5002" in any of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
		1442 to 1448	IP filter address (Ethernet)		Set the IP address to within the IP address range of the personal computer.
	GOT		1427	Ethernet function selection 1	Set "5000", "5001", "5006", or "5008" in any of the parameters.
			1428	Ethernet function selection 2	
			1429	Ethernet function selection 3	
	Programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
			1428	Ethernet function selection 2	
			1429	Ethernet function selection 3	Set the IP address to within the IP address range of the Ethernet module.
			1442 to 1448	IP filter address (Ethernet)	
	GOT to programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.
1428			Ethernet function selection 2		
1429			Ethernet function selection 3		
1442 to 1448			IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.	

Model	Intermediate device	Pr.	Name	Setting	
FR-A800-E-R2R	Not connected	1076	Ethernet function selection 1	Set "5001" or "5002" in any of the parameters.	
		1077	Ethernet function selection 2		
		1078	Ethernet function selection 3		
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.	
	GOT	1076	Ethernet function selection 1	Set "5000", "5001", "5006", or "5008" in any of the parameters.	
		1077	Ethernet function selection 2		
		1078	Ethernet function selection 3		
	Programmable controller	1076	Ethernet function selection 1	Set "5001" in any of the parameters.	
		1077	Ethernet function selection 2		
		1078	Ethernet function selection 3		
	GOT to programmable controller	1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.	
		1427	Ethernet function selection 1	Set "5001" in any of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
	FR-E800-(SC)E	Not used	1427	Ethernet function selection 1	Set "5001" or "5002" in any of the parameters.
			1428	Ethernet function selection 2	
1429			Ethernet function selection 3		
1430			Ethernet function selection 4		
1442 to 1448			IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.	
GOT		1427	Ethernet function selection 1	Set "5000", "5001", "5006", or "5008" in any of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
		1430	Ethernet function selection 4		
Programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.	
		1428	Ethernet function selection 2		
		1429	Ethernet function selection 3		
		1430	Ethernet function selection 4		
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.	
GOT to programmable controller		1427	Ethernet function selection 1	Set "5001" in any of the parameters.	
		1428	Ethernet function selection 2		
	1429	Ethernet function selection 3			
	1430	Ethernet function selection 4			
	1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the Ethernet module.		
FR-E700-NE	Not connected	833	Ethernet function selection 1	Set "31" or "32" in any of the parameters.	
		834	Ethernet function selection 2		
		835	Ethernet function selection 3		
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the personal computer.	
	GOT	833	Ethernet function selection 1	Set "31", "30", "36", or "38" in any of the parameters.	
		834	Ethernet function selection 2		
		835	Ethernet function selection 3		
	Programmable controller	833	Ethernet function selection 1	Set "31" in any of the parameters.	
		834	Ethernet function selection 2		
		835	Ethernet function selection 3		
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the Ethernet module.	
	GOT to programmable controller	833	Ethernet function selection 1	Set "31" in any of the parameters.	
		834	Ethernet function selection 2		
		835	Ethernet function selection 3		
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the Ethernet module.	

- When the communication status is switched to online while the connected device is protected by a remote password, the remote password dialog appears.
- When the remote password dialog is canceled, the device is kept offline.

## 4.2.6 Status bar

The status bar displays the operation mode of the inverter, the model information etc.



Symbol	Name	Function/description
A	Window status display	Displays the function description when the mouse cursor is on an item on the menu bar or an icon on the toolbar.
B	Station information	Displays the model information of the inverter that is selected in the project tree. The display format is "Station number: Inverter model".
C	Keyboard status	Displays the keyboard status.

- Keyboard status list

Item	Character color	
	Black	Gray
"CAP"	Caps Lock: ON	Caps Lock: OFF
"NUM"	Num Lock: ON	Num Lock: OFF

## 4.3 File operation and print


### 4.3.1 List of file types

Extension	Description	Corresponding window	Open	Save	Import	Refer to page
*.frc2	Manages the system setting, model information, parameter list, sampling data of graph, and data of the batch monitor with a single file.	All window	○	○	×	118
*.gp4	Holds the waveform data sampled by the graph function. The saved waveform data can be displayed again by opening the file with the graph function.	Graph	○	○	○	186
*.csv	Holds the waveform data sampled by the graph function in the text file format.		×	○	×	186
*.st1	Holds the operating status of the inverter in a USB memory tracing it.		○	×	○	186
*.jpg	Holds the waveform data of the displayed graph window as an image file.		×	○	×	186
*.emf			×	○	×	186
*.xlsx	Divides the information displayed in the graph window into channels and saves it in Excel format.		×	○	×	—
*.csv	Holds the acquired serial number of the inverter in the text file format.	Serial number	×	○	×	204
*.csv	Holds the acquired diagnosis data (inverter information, terminal information, etc.) in the text file format.	Diagnosis result output	×	○	×	206
*.pr4	Holds the parameter setting values set in FR Configurator2.	Parameter list	○	○	×	146
*.pr3	Holds the parameter setting values set in FR Configurator SW3.		○	×	×	146
*.prm	Holds the parameter setting values set in FR Configurator SW1.		○	×	×	146
*.xls	Holds the parameter list data in Microsoft Excel format.		×	○	×	146
*.ind	Holds the parameters set in the parameter individual list.		○	○	×	150
*.spr4	Holds the safety parameter setting values set in FR Configurator2.	Safety parameter setting	○	○	×	160
*.xls	Holds the safety parameter list data in Microsoft Excel format.		×	○	×	160
*.cp1	Holds the parameter setting that has been copied from the inverter to a USB memory device.	USB memory parameter copy file edit	○	○	×	230
*.bin	Executes inverter firmware update.	Firmware update	○	×	×	240


(○: Available, ×: Unavailable)

### 4.3.2 Open the file

#### ◆ Opening a project file

This function reads the information of each function window that is saved in a project file (\*.frc2), such as model information and parameter setting values, and reflects it to the windows. Select [Open] in the [Project] menu or click  on the toolbar to display the "Open the file" window. To read a saved file, select the target file, then press the [Open] button. Regardless whether each function window is shown or hidden, the information of the opened file is reflected to FR Configurator2.

#### ◆ Open the file of each function

The information of files having an extension \*.gp4, \*.pr4, \*.spr4, \*.pr3, \*.prm, or \*.cp1 can be imported and displayed on the screen by selecting [Open...] in the [File] menu or  on the tool menu of each function window while the corresponding function window is displayed.



**NOTE**

- Project files (\*.me3) created on FR Configurator SW3 cannot be opened.

### 4.3.3 Save the file

Select [Save As] in the [Project] menu or the [File] menu to display the "Save As" window. Check the save destination, name a file, and save it. Select [Save] in the [Project] menu to save the file with the same name. When saving a file for the first time, "Save As" window is displayed.


**NOTE**

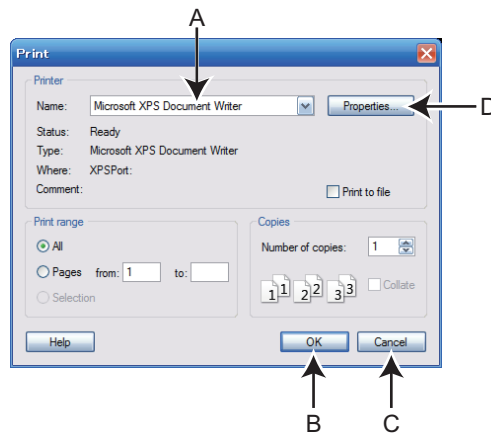
- If the project file (\*.frc2) needs to be shared with another user, place it in the folder that another user can access.

### 4.3.4 Import the data

By importing the saved data (\*.gp4) of the "Graph", the information of the data can be displayed on the "Graph" sub window. Select [Import] in the [File] menu to display a window for selecting the importing file.

### 4.3.5 Print

The window of "Parameter List", "Safety Parameter Setting", or "Graph" can be printed. Select [Print...] in the [Project] menu or click  on the toolbar.



Symbol	Name	Function/description
A	Name	Select a printer.
B	OK	Click to start printing.
C	Cancel	Cancel the printing, and closes the window.
D	Properties	Displays a printer property window of the selected printer.

The parameter list and safety parameter setting are printed in the following format.

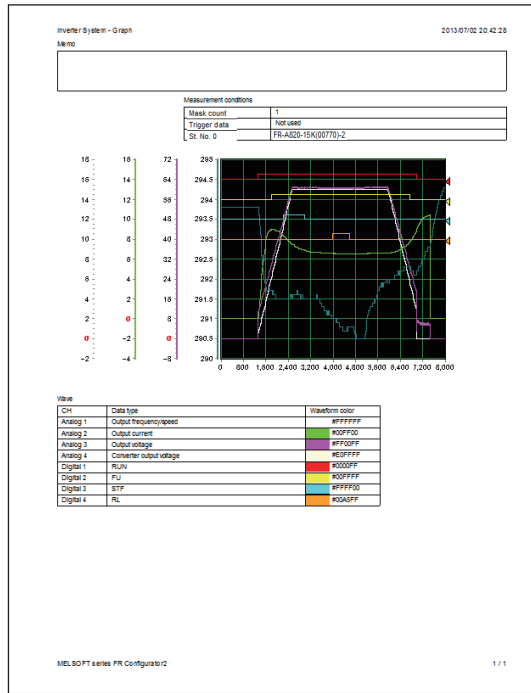
Printing example of a parameter list

Printing example of a verification list

**NOTE**

- The comments entered in the system setting window are printed in the comment field of the parameter list and safety parameter setting.

The Graph is printed in the following format.



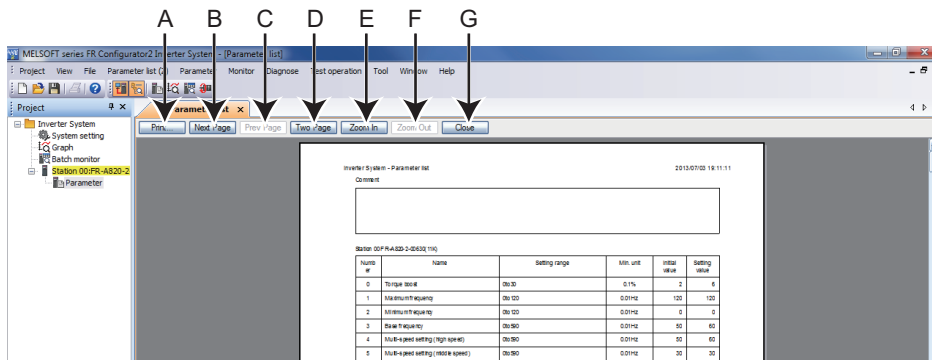
Example of the Graph print

**NOTE**

- The graph drawing area is printed in black. To print the area in white, turn ON the grayout setting before printing.
- The displayed position in the print preview may differ from the actual printed position on a print.

### 4.3.6 Print preview

The printing image of the "Parameter List" window, "Safety Parameter Setting" window, or "Graph" window can be displayed in the sub window before printing. Select [Print preview] in the [Project] menu.

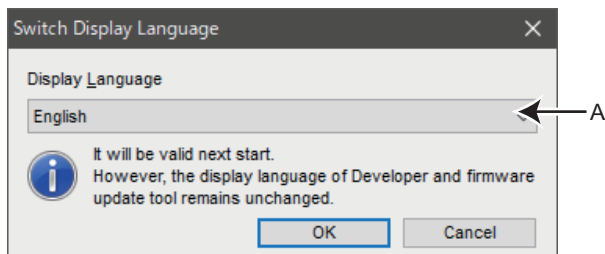


Symbol	Name	Function/description
A	<u>P</u> rint...	Click to start printing.
B	<u>N</u> ext Page	Displays the next page when the print target has two pages or more.
C	<u>P</u> revious Page	Displays the previous page when the print target has two pages or more.
D	<u>T</u> wo Page	Displays two pages on one window when the print target has two pages or more.
	<u>O</u> ne Page	Displays one page on one window when the print target has two pages or more.
E	<u>Z</u> oom <u>I</u> n	Enlarges the display of the print preview by three steps.
F	<u>Z</u> oom <u>O</u> ut	Reduces the display of the print preview by three steps.
G	<u>C</u> lose	Closes the print preview window.

## 4.4 Display setting

### 4.4.1 Switch the display language

You can switch the display language of FR Configurator2. Select [Switch Display Language] in [View] menu. The change will take effect after FR Configurator2 is restarted.



Symbol	Name	Function/description
A	Display Language	Select the display language.

#### NOTE

- The change is not applied to the Developer function and Firmware Update Tool.

# CHAPTER 5 FUNCTION

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# 5 FUNCTION

This chapter explains the functions of this product.

Always read the instructions before using the equipment.

## ◆ Connecting the USB power supply / 24 V external power supply

### ■ Applicable models

- FR-E800 series

### ■ Functions available during USB power delivery / 24 V external power supply operation

- Only the following functions operate normally when power is supplied to the FR-E800 inverter from the USB port or a 24 V external power supply.

Function		USB power delivery	24 V external power supply operation	
Parameter list function	Parameter list	○	○	
	Settings by function	Motor setting	○	○
		Analog input terminal calibration	○	○
		Output terminal calibration	○	○
		Trace setting	○	○
		Input terminal assignment	○	○
		Output terminal assignment	○	○
		Point table	○	○
Unit selection	○	○		
Safety parameter setting		○	○	
Convert		○	○	
Batch monitor function		○	○	
I/O terminal monitor		×	○	
Diagnostic function	Fault history function	×	○	
	Serial number function	○	○	
	Life check	○	○	
	Online status display	○	○	
PLC function		○	○	
USB memory parameter copy file edit		○	○	
Ethernet parameter setting function		○	○	
Help		○	○	

○: Available    ×: Not available

### ■ Precautions

- Option information cannot be recognized automatically by automatic recognition in the system setting window.
- The AI fault diagnosis and main circuit capacitor life diagnosis are not available.
- Serial numbers cannot be displayed using the serial number function.
- Diagnosis result output is not available for the I/O monitor function, faults history function, serial number function, and life check function.
- The inverter is reset when power source is changed from the main circuit power supply to the USB power supply, or from the USB power supply or the 24 V external power supply to the main circuit power supply. A timeout error may occur depending on the types of functions being activated.


### ■ Precautions only for USB power delivery

- Ethernet communication is not guaranteed.
- Note that Ethernet communication may be disabled in the FR-E800-(SC)E inverter when turning ON/OFF the main circuit power supply is repeated while Ethernet and USB connections are used at the same time. Disconnect the USB cable before turning ON/OFF the main circuit power supply.

# 5.1 Parameter list

The following functions can be performed using the "Parameter list".

- Parameter display
- Parameter setting value read, batch read
- Parameter setting value input, write, batch write
- Parameter clear / all parameter clear
- Parameter verify
- Parameter search

To display the "Parameter list", select [Parameter list...] in the [Parameter] menu, or the "Parameter list" can be displayed by clicking  on the toolbar. "Parameter list" cannot be displayed if no project file has been created, or if no project file is open. The available "Parameter list" functions are different at online and offline.

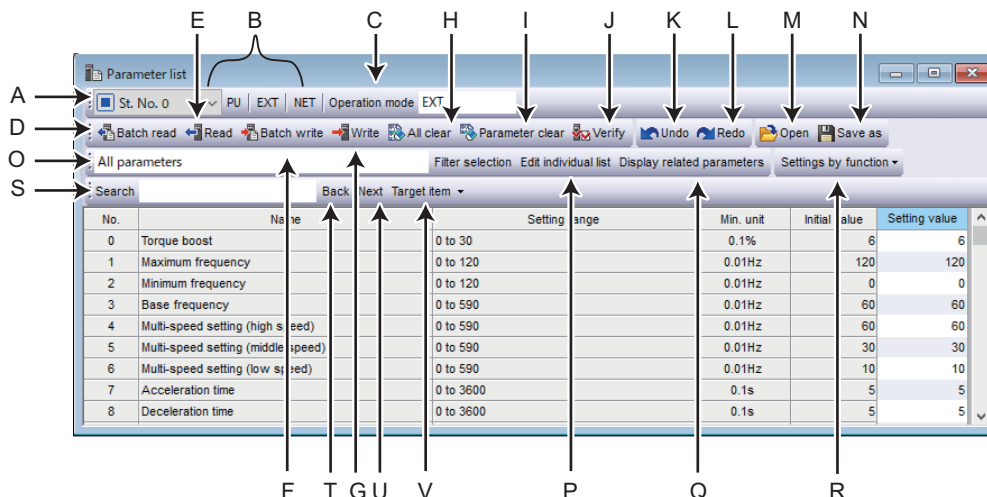
Function	Online	Offline
All parameter clear	○	×
Parameter clear	○	×
Batch read	○	×
Read	○	×
Batch write	○	×
Write	○	×
Verify	○	○
Parameter setting value input	○	○
Undo	○	○
Redo	○	○
Search	○	○

(○: operation available; ×: operation not available)

### NOTE

- FR Configurator2 parameter list supports the latest inverter at the time of FR Configurator2 upgrade. The setting range, initial value, number of parameters, etc., may be different with the inverter before upgrading (additional functions).
- Although the parameter name of the instruction manual and the parameter name of FR Configurator2 may be different, there is no difference in the parameter function.
- **Pr.296** and **Pr.297** do not appear in the parameter list. **Pr.296** and **Pr.297** will not change even if parameter settings of another inverter are read. Change **Pr.296** and **Pr.297** from the operation panel or the parameter unit.

## 5.1.1 Parameter list



Symbol	Name	Function/description
A	St. No. (Station number)	Select a station registered in the project.
B	Operation mode button	Switch between the operation modes of the inverter.
C	Operation mode indication	Displays the operation mode.
D	Batch read	Reads all the parameter setting values of the selected inverter.
E	Read	Reads the selected parameter setting values of the selected inverter.
F	Batch write	Writes all the selected parameter setting values in the setting value column to the selected inverter.
G	Write	Writes all selected parameter setting values to the selected inverter.
H	All clear	Returns all parameters which can be cleared including calibration parameters and terminal function selection parameters to their initial values.
I	Parameter clear	Returns parameters excluding calibration parameters and terminal function selection parameters to their initial values.
J	Verify	Verifies the parameter settings set in FR Configurator2 against initial values, settings in parameter files (*.pr4, *.pr3, *.prm), or settings in the inverter.
K	Undo	Returns the edited parameter setting value to the setting value before editing.
L	Redo	Redoes the setting value changed by "Undo" (up to 10 parameters).
M	Open	Displays the "Open" dialog box for a parameter file (*.pr4, *.pr3, and *.prm) to be opened.
N	Save as	Shows the "Save as" dialog box. Verifies the save location, and saves with the specified [File Name]. The extension for savable parameter information files is *.pr4. The parameter list data can also be saved in the Microsoft Excel file format (*.xls) by using "File Type" in the "Save as" dialog box.
O	Filter selection	Used to select parameters shown in the parameter list.
P	Edit Individual list	Used to set the individual list for filtering items.
Q	Display of related parameters	Used to display items related to the parameters selected in the parameter list.
R	Settings by function	Perform settings by function: motor, terminal, trace, and position control settings.
S	Search	Searches for the input character string from within the parameter list.
T	Back	Searches for the input character string in the downward direction.
U	Next	Searches for the input character string in the upward direction.
V	Target item	Specifies the column to search.

- Parameter list display item

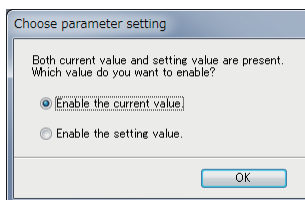
Item	Function/description
Number	Shows the parameter number. Calibration parameters ( <b>Pr.902, 903, 904, 905</b> , etc.) will be shown with ( ).
Name	Shows the parameter name.
Setting range	Shows the setting range of the parameter setting value.
Min. unit	Shows the minimum setting unit of the parameter setting value.
Initial value	Shows the factory default parameter setting values of the inverter.
Setting value	Inputs the value to be written to the inverter. The value different from the initial one is displayed in blue. Selecting [Write] or [Batch write] will write the setting value field data to the inverter.

**NOTE**

- To display the explanation about a parameter on the help window, double-click the parameter in the parameter list.

**◆ To open the parameter file created on FR Configurator SW3 or SW1**

- When the parameter file (\*.pr3 or \*.prm) created on FR Configurator SW3 or SW1 including both current values and setting values is opened, "Choose parameter setting" window appears.



## 5.1.2 Parameter clear / all parameter clear

Performing parameter clear or all parameter clear will return the parameters to the initial values.

Select [All clear] or [Parameter clear] from the [Parameter list (Z)] menu bar, or [All clear] or [Parameter clear] on the toolbar to perform parameter clear or all parameter clear. Refer to the Instruction Manual of the inverter for availability of parameter clear and all parameter clear for each parameter.

**NOTE**

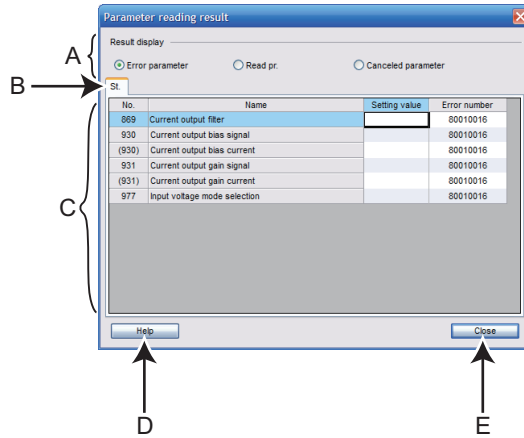
- When parameter clear or all parameter clear were performed from FR Configurator2, the communication parameters are not cleared. For the parameter details, refer to the Instruction Manual of the inverter or the Instruction Manual of the communication option.

## 5.1.3 Parameter read (batch read) and write (batch write)

Parameter read and write can be performed by accessing the inverter parameters. By selecting from among [Batch read], [Read], [Batch write], or [Write] from the [Parameter list (Z)] menu bar, or by selecting [Batch read], [Read], [Batch write], or [Write] on the toolbar, the confirmation dialog will be displayed, and batch read, read, batch write, or write will be performed.



The following window is shown when batch read, read, batch write, or write is finished and an error has occurred.



Symbol	Name	Function/description	
A	Result display	Error parameter	Shows only the parameters with read errors or write errors.
		Read successful parameter	Shows only the parameters successfully read.
		Write successful parameter	Shows only the parameters successfully written.
		Canceled parameter	Shows only the parameters with read or write canceled.
B	Station tag	Shows the read or write target station.	
C	Result list	Read	Shows parameter number, name, initial value, and error number of the reading error parameters.
		Write	Shows parameter number, name, data, and error number of the writing error parameters.
D	Help	Help appears.	
E	Close	Closes the operation window.	

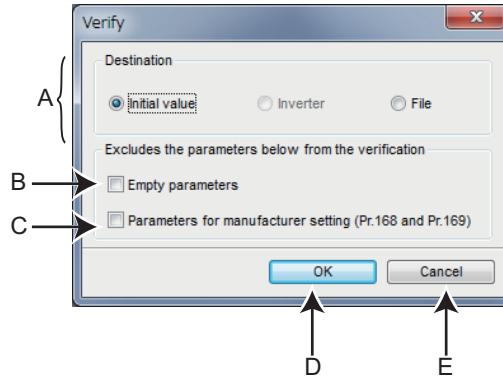
**NOTE**

- If the setting value of **Pr.342** is changed from "0" to "1" by batch writing, only the **Pr.77 Parameter write selection**, **Pr.122 PU communication check time interval**, and **Pr.336 RS-485 communication check time interval** setting values will be written to RAM only. (They will not be written to EEPROM.) To change the setting values for **Pr.77**, **Pr.122**, and **Pr.336**, write from the parameter unit or the operation panel.
- Due to the setting values of **Pr.77 Parameter write selection** and **Pr.79 Operation mode selection**, when batch writing parameters a write error will occur for **Pr.122 PU communication check time interval**, **Pr.336 RS-485 communication check time interval**, and **Pr.342 Communication EEPROM write selection**.
- For the FR-A820-55K (03160) or FR-A840-55K (01800), changing the **Pr.570 Multiple rating setting** to the SLD or LD rating (**Pr.570**="0" or "1") does not change the minimum increment and setting range displays of **Pr.90 to 94**, **Pr.458 to Pr.462**, **Pr.859**, and **Pr.860**. If a setting value is entered in accordance with the displayed minimum increment, the lower digits may be dropped when it is written to the inverter.  
Example with **Pr.90 Motor constant (R1)**: "0.001" is displayed on the parameter list, but the inverter's minimum setting increment is "0.01". If "12.567" is input in this condition, "12.56" is written to the inverter.
- When writing to **Pr.570 Multiple rating setting** fails during batch writing, writing to other parameters is also canceled.
- All parameter clear is performed when the **Pr.570** setting is changed. Therefore, when a password is set in **Pr.297 Password lock/unlock**, the password is unlocked.

## 5.1.4 Parameter verification

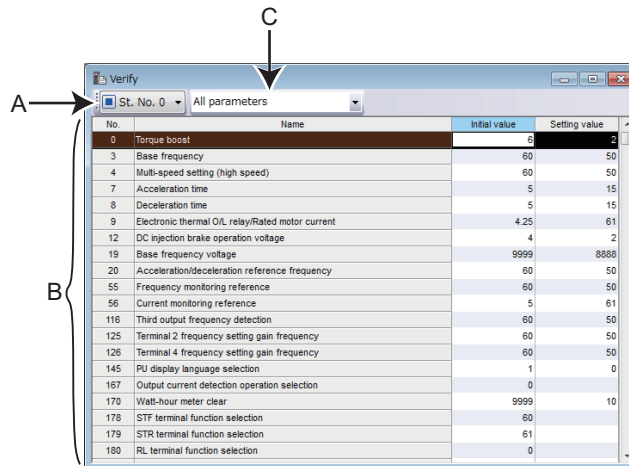
This function accesses the inverter parameters, and verifies the parameter setting values set by FR Configurator2 with the values selected in the verify destination window.

The "Select destination selection" window can be displayed by selecting [Verify...] from the [Parameter list (Z)] menu bar, or by selecting [Verify] on the toolbar.



Symbol	Name	Function/description	
A	Destination	Initial value	Verifies against the initial value.
		Inverter	Verifies against parameter setting values written to the inverter.
		File	Verifies against parameter list setting values saved to a file (*.pr4, *.pr3, and *.prm).
B	Excludes the parameters below from the verification	Empty parameters	Excludes the parameters from verification if they do not have a setting.
C	Excludes the parameters below from the verification	Parameters for manufacturer setting (Pr.168, Pr.169)	Excludes Pr.168 and Pr.169 (parameters for manufacturer setting) from verification.
D	OK	Shows the Verify window.	
E	Cancel	Closes the Verify destination selection window without performing verification.	

The Verify window appears after selecting the destination on the Verify destination window.

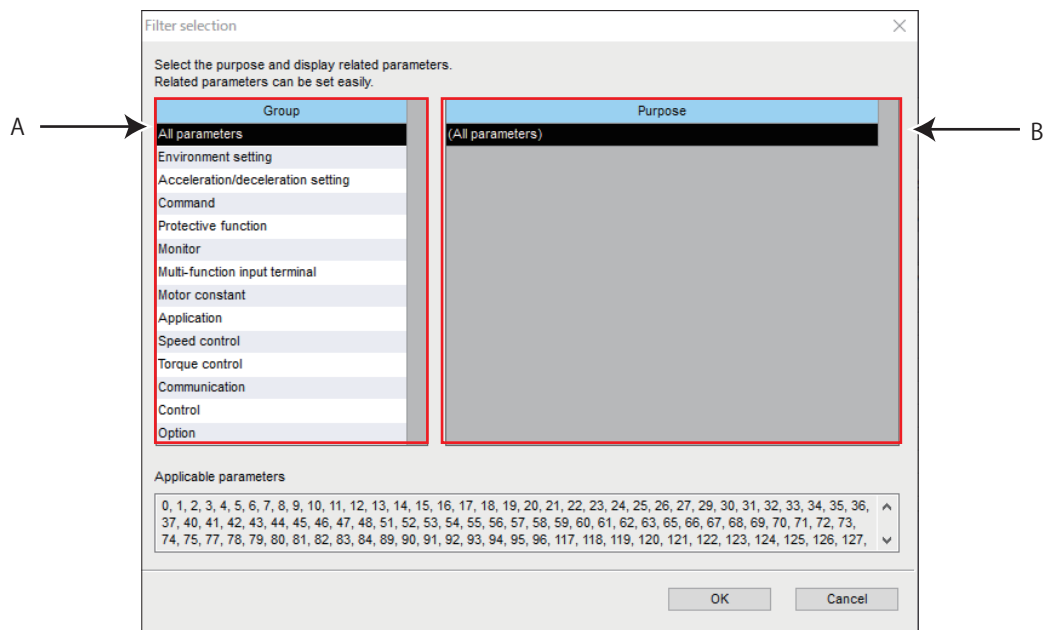


Symbol	Name	Function/description
A	St. No. (Station number)	Shows the verified station number.
B	Verify list	Shows parameters whose verified values are mismatched.
C	Filter	Select a filter for filtering the parameters in the verify list.

## 5.1.5 Filter selection

Set parameters to be shown in the parameter list.

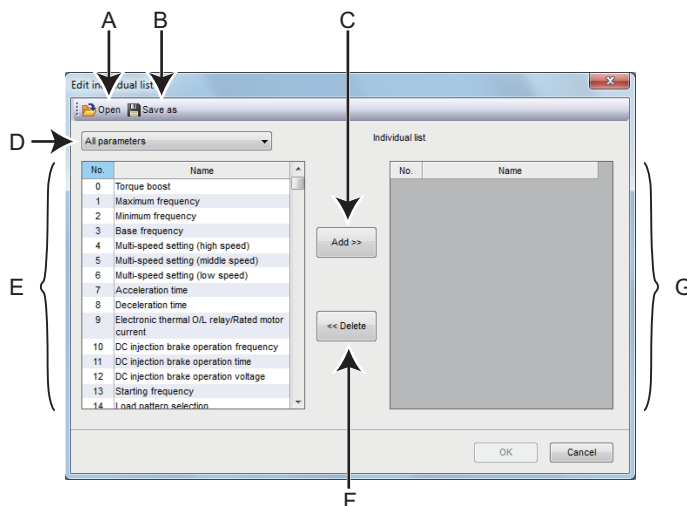
The "Filter selection" window can be displayed by selecting [Filter selection...] from the [Parameter list (Z)] menu bar, or by selecting [Filter selection] on the toolbar.



Symbol	Name	Function/description
A	Group	Function groups of parameters are shown. Select a group to show the function in the purpose field.
B	Purpose	The function of the selected group is shown. By selecting the function group, only the relevant parameters can be shown in the parameter list.

## 5.1.6 Editing the individual list

Set parameters to be shown when the [Individual list] filter is selected. Select [Edit individual list] from the [Parameter list (Z)] menu bar, or [Edit individual list] on the toolbar to display the "Edit individual list" window.



Symbol	Name	Function/description
A	Open	Reads the stored individual list.
B	Save As	Saves a completed individual list.
C	Add	Adds the selected parameters to the individual list.
D	Filter	Select a filter for filtering the parameters in the parameter list.
E	Parameter list	Displays the parameters.
F	Delete	Deletes the selected parameters in the individual list.
G	Individual list	Displays the selected parameters for the individual list.

## 5.1.7 Settings by function

Parameters related to each function can be set in the individual windows.

Select [Settings by function] - [Function name] from the [Parameter list (Z)] menu bar, [Settings by function] - [Function name] on the toolbar, or [Parameter] - [Function name] from the project tree to display the window by function.

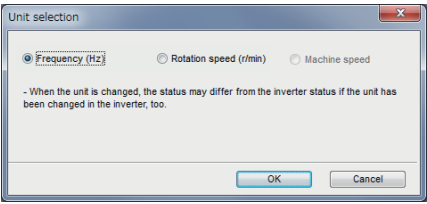
### NOTE

- Some of the settings by function are not available depending on the inverter model.

### ◆ Toolbar for settings by function

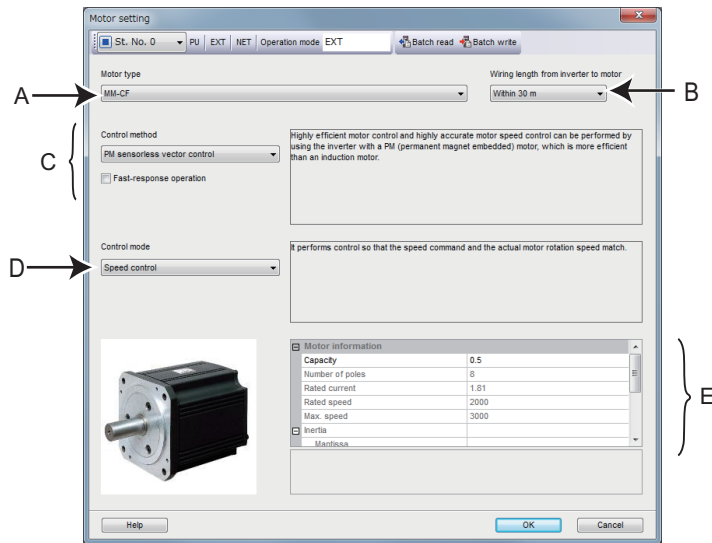
The toolbar for setting by function is described below.



Symbol	Name	Function/description	Corresponding window
A	Station number selection	Select a station number for function setting.	Common for all windows
B	Operation mode button	Switch between the operation modes of the inverter.	
C	Operation mode indication	Displays the operation mode.	
D	Batch read	Used to read the inverter parameter settings and reflect them in the window for settings by function.	Motor setting Acceleration/deceleration pattern and time setting Start command and frequency setting method Input terminal assignment Output terminal assignment Analog input terminal 2 calibration Analog input terminal 4 calibration Trace setting Point table
E	Batch write	Used to write the contents of the window for settings by function to the inverter parameters.	
F	Trace operation indicator	Displays the present trace operation status.	Trace setting
G	Trace setting	Displays the trace setting window.	Trace command
H	Unit selection	Click the [Unit selection] button to display the unit selection dialog.  In the "Unit selection" dialog, the frequency (Hz), rotation speed (r/min), or machine speed can be selected.	Point table
I	Undo	Click the [Undo] button to reset the settings of the edited parameters to the previous values.	
J	Redo	Click the [Redo] button to cancel the change by selecting the [Undo] button.	

## ◆ Motor setting

Set motor-related parameters.



Symbol	Name	Function/description
A	Motor type	Select the motor type.
B	Wiring length from inverter to motor	Select [Within 30 m] or [Longer than 30 m].
C	Control method	Select the control method.
D	Control mode	Select the control mode.
E	Motor information	Set the motor information.

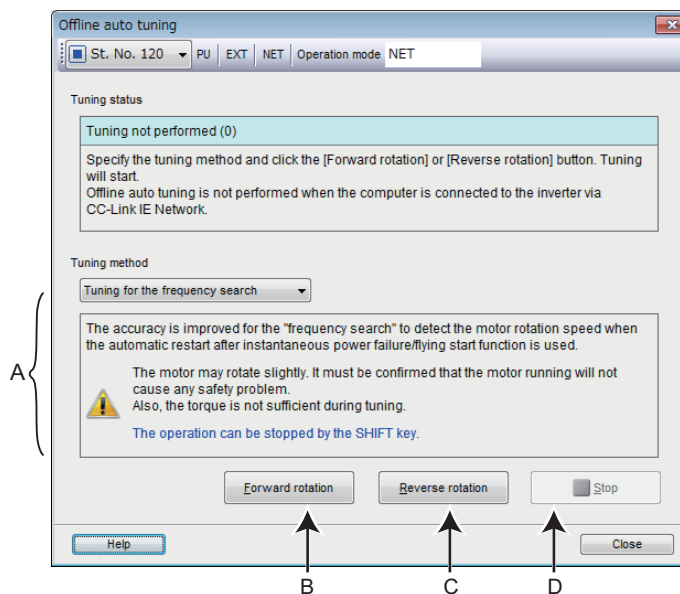
### ■ Encoder option selection (Pr.862 = "10 or 11")

When Pr.862 = "10 or 11", position control and PM motor vector control are disabled. The following functions are enabled instead.

Function disabled	Functions enabled instead
Vector control with encoder (induction motor, position control)	Vector control with encoder (induction motor, speed control)
Vector control with encoder (PM motor, speed control)	PM sensorless vector control (PM motor, speed control)
Vector control with encoder (PM motor, position control)	PM sensorless vector control (PM motor, speed control)

## ◆ Offline auto tuning

Perform offline auto tuning.



Symbol	Name	Function/description
A	Tuning method	Select the tuning method.
B	Forward rotation	The motor rotates in the forward direction.
C	Reverse rotation	The motor rotates in the reverse direction.
D	Stop	Stops the operation.

**NOTE**

- The [Forward rotation] and [Reverse rotation] buttons are disabled when the computer is connected with the inverter via CC-Link IE network communication.

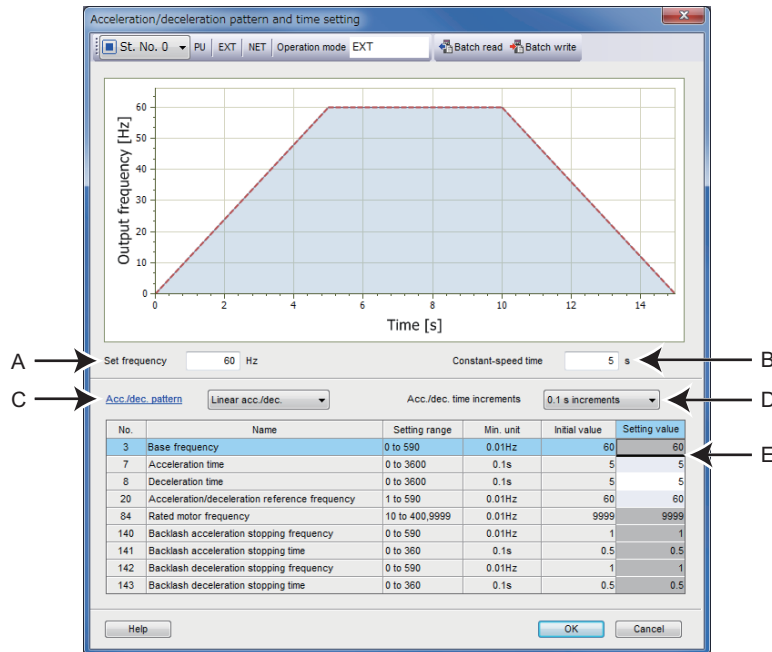
**Encoder option selection (Pr.862 = "10 or 11")**

When Pr.862 = "10 or 11", position control and PM motor vector control are disabled. The following functions are enabled instead.

Function disabled	Functions enabled instead
Vector control with encoder (induction motor, position control)	Vector control with encoder (induction motor, speed control)
Vector control with encoder (PM motor, speed control)	PM sensorless vector control (PM motor, speed control)
Vector control with encoder (PM motor, position control)	PM sensorless vector control (PM motor, speed control)

**Acceleration/deceleration pattern and time setting**

Set parameters related to acceleration/deceleration.



Symbol	Name	Function/description
A	Set frequency	Set an output frequency target value for the graph.
B	Constant-speed time	Set the constant-speed operation time for the graph.
C	Acceleration/deceleration pattern	Select the acceleration/deceleration pattern. Several patterns are available for selection depending on the inverter model. (Refer to Pr.29.)
D	Acceleration/deceleration time increments	Select the increment for the acceleration/deceleration time. (Refer to Pr.21.)
E	Parameter list	Change the setting (value) of the selected parameter.

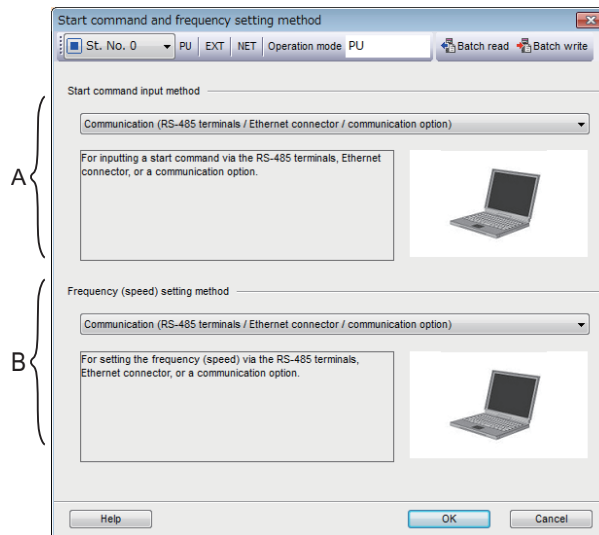
## Encoder option selection (Pr.862 = "10 or 11")

When Pr.862 = "10 or 11", position control and PM motor vector control are disabled. The following functions are enabled instead.

Function disabled	Functions enabled instead
Vector control with encoder (induction motor, position control)	Vector control with encoder (induction motor, speed control)
Vector control with encoder (PM motor, speed control)	PM sensorless vector control (PM motor, speed control)
Vector control with encoder (PM motor, position control)	PM sensorless vector control (PM motor, speed control)

## Start command and frequency setting method

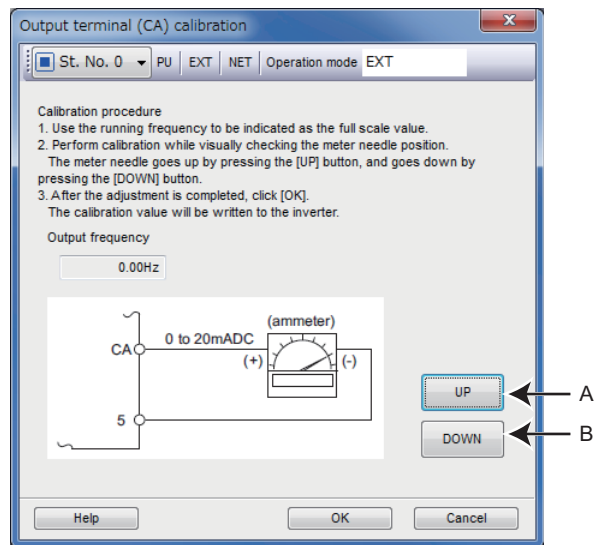
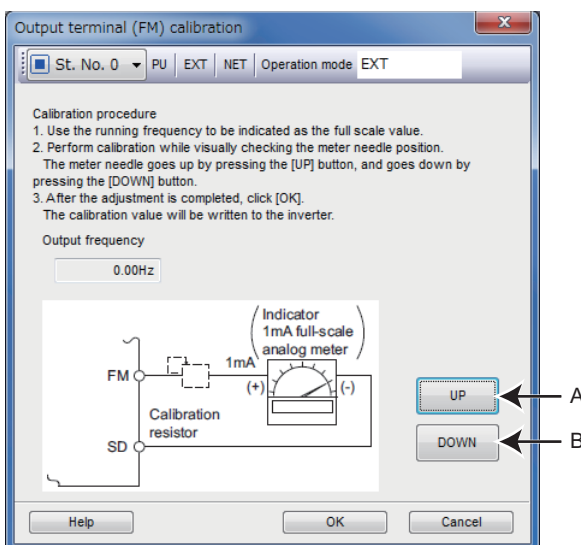
Set parameters related to the start command and frequency (speed) setting method.



Symbol	Name	Function/description
A	Start command input method	Select "External signal input (terminal STF/STR)", "PU (FWD/REV key)", or "Communication (RS-485 terminals / Ethernet connector / communication option)". (Refer to Pr.79, Pr.338, Pr.339, Pr.340.)
B	Frequency (speed) setting method	Select an option in the list, which is determined according to the start command input method.

## Output terminal (FM/CA) calibration

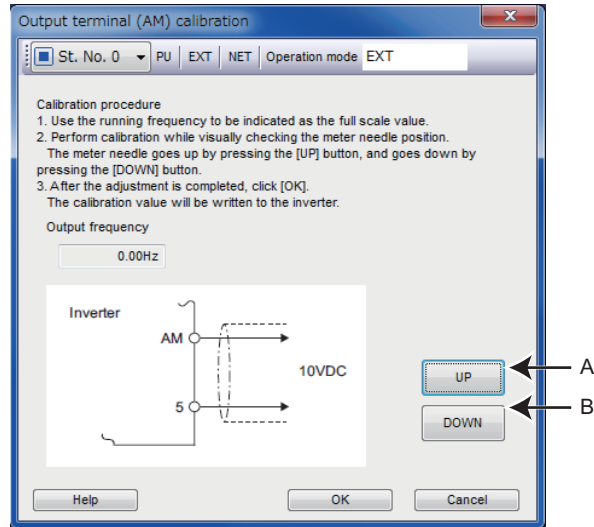
Set parameters related to the output terminal calibration.



Symbol	Name	Function/description
A	UP button	The meter needle goes up. (Refer to Pr.900.)
B	DOWN button	The meter needle goes down. (Refer to Pr.900.)

## ◆ Output terminal (AM) calibration

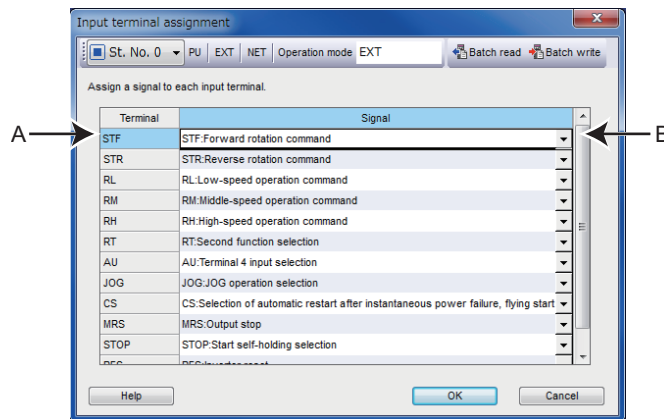
Set parameters related to the output terminal calibration.



Symbol	Name	Function/description
A	UP button	The meter needle goes up. (Refer to Pr.901.)
B	DOWN button	The meter needle goes down. (Refer to Pr.901.)

## ◆ Input terminal assignment

Set parameters related to the input terminal assignment.

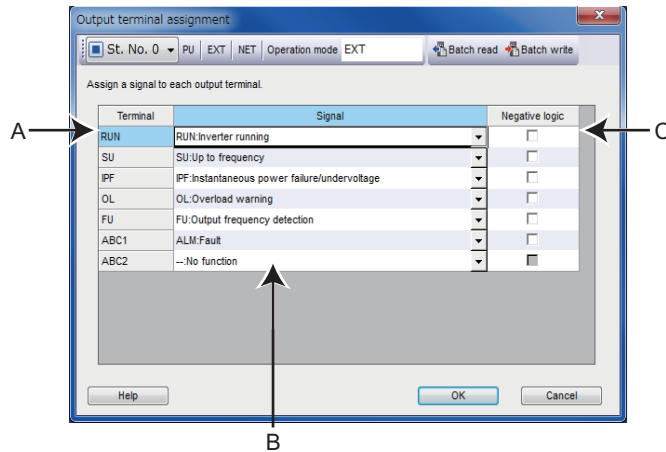


Symbol	Name	Function/description
A	Terminal	A terminal name is displayed in this section.
B	Signal	Select the signal to be assigned to the terminal.



## ◆ Output terminal assignment

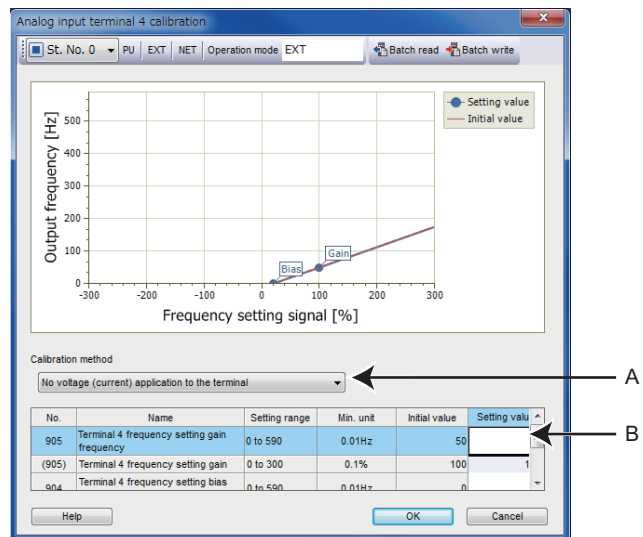
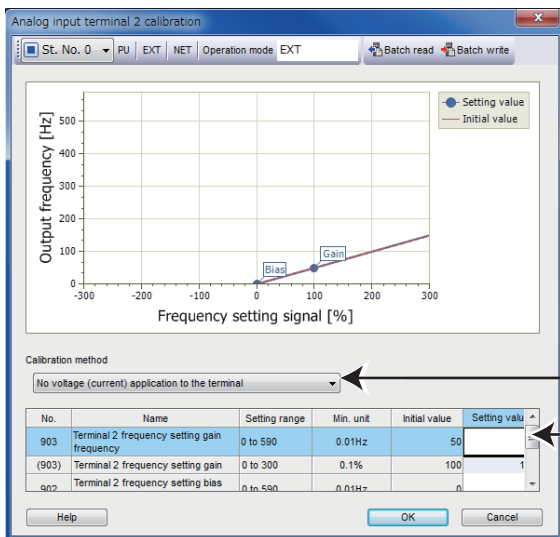
Set parameters related to the output terminal assignment.



Symbol	Name	Function/description
A	Terminal	A terminal name is displayed in this section.
B	Signal	Select the signal to be assigned to the terminal.
C	Negative logic	Select the checkbox to use negative logic.

## ◆ Analog input terminal calibration

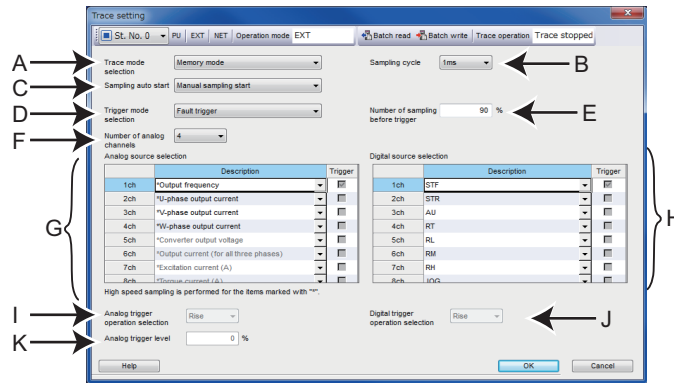
Set parameters related to the analog input terminal calibration.



Symbol	Name	Function/description
A	Calibration method	Select the calibration method. When the online connection with an inverter is established, "Bias frequency setting with application of a voltage (current) to the terminal" and "Gain frequency setting with application of a voltage (current) to the terminal" are added to the drop-down list.
B	Parameter list	Change the parameter setting in this field.

## ◆ Trace setting

Set parameters related to the trace setting.



Symbol	Name	Function/description
A	Trace mode selection	Select the trace mode.
B	Sampling cycle	Select the sampling cycle.
C	Sampling auto start	Select how to start sampling.
D	Trigger mode selection	Select the trigger type.
E	Number of sampling before trigger	Set the percentage of the number of data sampled before trigger occurs for the target sampling data.
F	Number of analog channels	Select the number of analog data channels for sampling.
G	Analog source selection	Select analog data to be sampled.
H	Digital source selection	Select digital data to be sampled.
I	Analog trigger operation selection	When "Analog trigger" is set in the trigger mode selection, select the analog signal trigger operation.
J	Digital trigger operation selection	When "Digital trigger" is set in the trigger mode selection, select the digital signal trigger operation.
K	Analog trigger level	Set the analog signal trigger level.

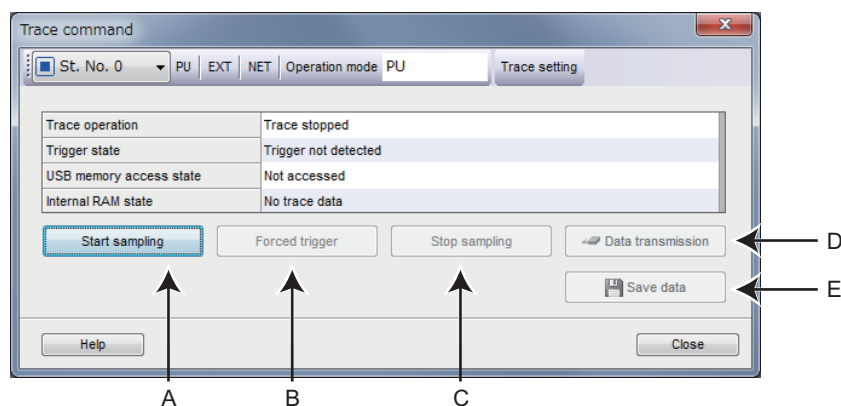
5

### NOTE

- The trace data stays at "0" for unsupported terminals (terminals S1, S2, and NET).

## ◆ Trace command

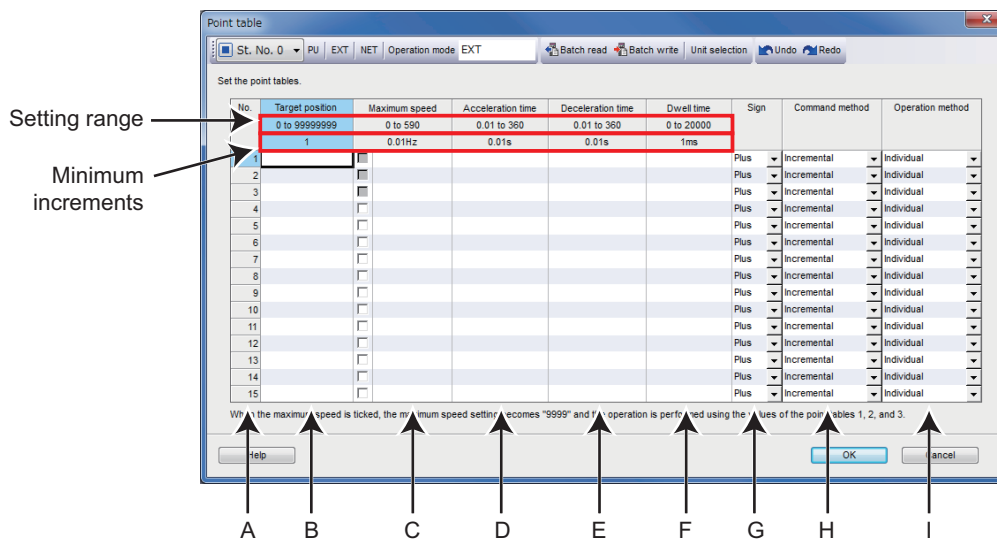
Set parameters related to the trace command.



Symbol	Name	Function/description
A	Start sampling	Starts sampling.
B	Forced trigger	Forcibly generates the trigger condition.
C	Stop sampling	Stops sampling.
D	Data transmission	Saves the trace data stored in the inverter to the USB memory device.
E	Save data	Saves the trace data stored in the inverter to the personal computer.

## ◆ Point table (FR-A800)

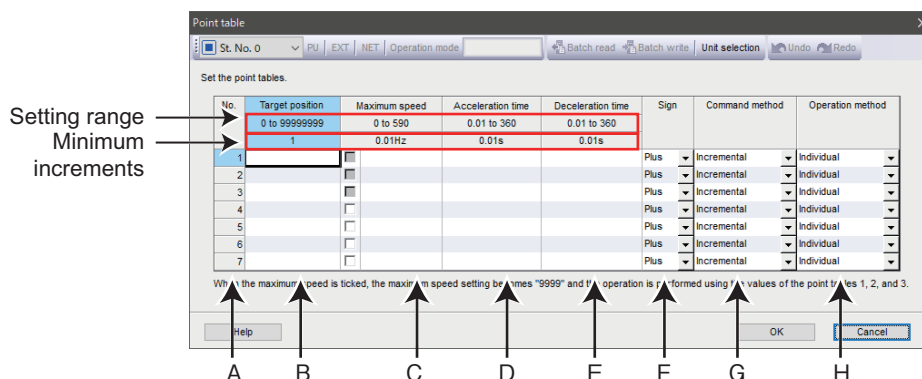
Set parameters related to point tables.



Symbol	Name	Function/description
A	No.	Point table number
B	Target position	Set the position feed length. (Refer to <b>Pr.465</b> to <b>Pr.494</b> .)
C	Maximum speed	Set the maximum speed for the target parameter of each point table. If a checkbox is selected, the maximum speed of the point table 1, 2, or 3 is applied ("9999" is set in the corresponding parameter ( <b>Pr.24</b> to <b>Pr.27</b> , and <b>Pr.232</b> to <b>Pr.239</b> )).
D	Acceleration time	Set the acceleration time for the target parameter of each point table.
E	Deceleration time	Set the deceleration time for the target parameter of each point table.
F	Dwell time	Set the waiting time before starting the position command of the next point table.
G	Sign	Select the polarity of position data.
H	Command method	Select the absolute or incremental position command.
I	Operation method	Select the individual, continuous, or repeat operation. When continuous operation is selected, next point table is executed after a command has been executed. For continuous operation, select "individual" in [Operation method] of the last point table. Individual operation executes the selected point table only. When repeat operation is selected, the selected positioning operation is repeated.

## ◆ Point table (FR-E800)

Set parameters related to point tables.



Symbol	Name	Function/description
A	No.	Point table number
B	Target position	Set the position feed length. (Refer to <b>Pr.465</b> to <b>Pr.478</b> .)
C	Maximum speed	Set the maximum speed for the target parameter of each point table. If a checkbox is selected, the maximum speed of the point table 1, 2, or 3 is applied ("9999" is set in the corresponding parameter ( <b>Pr.24</b> to <b>Pr.27</b> , and <b>Pr.232</b> to <b>Pr.239</b> )).
D	Acceleration time	Set the acceleration time for the target parameter of each point table.
E	Deceleration time	Set the deceleration time for the target parameter of each point table.
F	Sign	Select the polarity of position data.
G	Command method	Select the absolute or incremental position command.
H	Operation method	Select the individual or continuous operation. When continuous operation is selected, next point table is executed after a command has been executed. For continuous operation, select "individual" in [Operation method] of the last point table. Individual operation executes the selected point table only.

# 5.2 Safety parameter setting

The safety parameter setting function is available for the following models.

Model: FR-E800-SCE

The following functions can be performed using the "Safety parameter setting".

- Safety parameter display
- Safety parameter setting value batch read
- Safety parameter setting value batch write
- Safety parameter clear
- Safety parameter verification
- Safety parameter search

To display "Safety parameter setting", on the menu bar select [Safety] > [Safety parameter setting]. Safety parameters will be displayed. Safety parameters cannot be displayed if no project has been created, or if no project file is open. The available "Safety parameter setting" functions are different at online and offline.

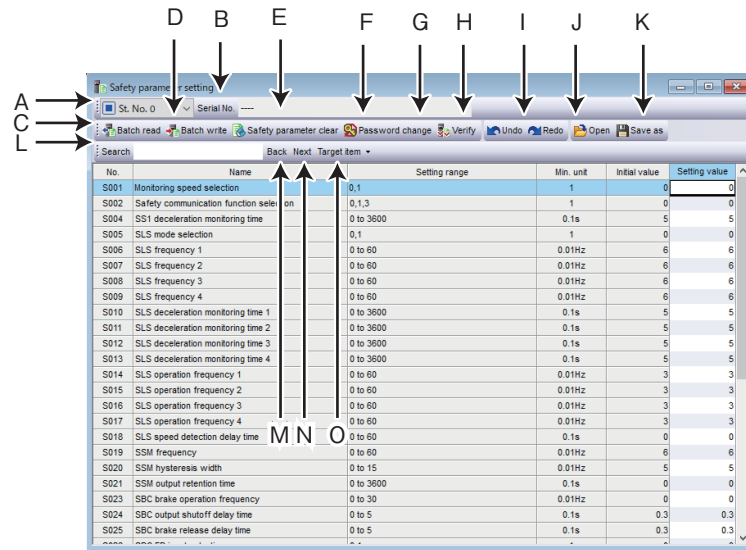
Function	Online	Offline
Safety parameter clear	○	×
Batch read	○	×
Batch write	○	×
Verify	○	○
Safety parameter setting value input	○	○
Undo	○	○
Redo	○	○
Search	○	○

(○: operation available; ×: operation not available)

### NOTE

- FR Configurator2 initially shows the parameters of the latest inverter at the time of the FR Configurator2 upgrade. Use the newest version of FR Configurator2 to perform the safety parameter batch read and batch write.
- The setting range, initial value, and number of safety parameters may be different with the inverter before upgrading (additional functions).
- Although the safety parameter name of the Instruction Manual and the safety parameter name of FR Configurator2 may be different, there is no difference in the safety parameter function.

## 5.2.1 Safety parameter setting



Symbol	Name	Function/description
A	St. No. (Station number)	Select a station registered in the project.
B	Safety parameter update record	Shows the serial number of the inverter and the date and time of the last update of the safety parameters.
C	Batch read	Reads all the safety parameter setting values of the selected inverter.
D	Batch write	Writes all the selected parameter setting values in the setting value column to the selected inverter.
E	Safety parameter clear	All safety parameters and passwords return to initial values.
F	Password change	Changes the registered password.
G	Verify	Verifies the safety parameter settings set in FR Configurator2 against initial values, settings in parameter files (*.spr4), or settings in the inverter.
H	Undo	Returns the edited parameter setting value to the setting value before editing.
I	Redo	Redoes the setting value changed by "Undo" (up to 10 parameters).
J	Open	Displays the "Open" dialog box for a safety parameter file (*.spr4) to be opened.
K	Save as	Shows the "Save as" dialog box. Verifies the save location, and saves with the specified [File Name]. The extension for savable safety parameter information files is *.spr4. The parameter list data can also be saved in the Microsoft Excel file format (*.xls) by using "File Type" in the "Save as" dialog box.
L	Search	Searches for the input character string from within the parameter list.
M	Back	Searches for the input character string in the downward direction.
N	Next	Searches for the input character string in the upward direction.
O	Target item	Specifies the column to search.

- Safety parameter list display item

Item	Function/description
Number	Shows the safety parameter number.
Name	Shows the safety parameter name.
Setting range	Shows the setting range of the safety parameter setting value.
Min. unit	Shows the minimum setting unit of the safety parameter setting value.
Initial value	Shows the factory default safety parameter setting values of the inverter.
Setting value	Inputs the value to be written to the inverter. The value different from the initial one is displayed in blue. The value out of the setting range is displayed in red. The pale red background color indicates that a fault has occurred in the inverter. Selecting [Batch write] will write the setting value field data to the inverter.

## 5.2.2 Safety parameter clear

Performing safety parameter clear will return the safety parameters and passwords to the initial values.

Select [Safety parameter clear] from the [Safety parameter setting (Z)] menu bar, or [Safety parameter clear] on the toolbar to perform safety parameter clear.

## 5.2.3 Safety parameter batch read and batch write

Safety parameter read and write can be performed by accessing the inverter safety parameters.

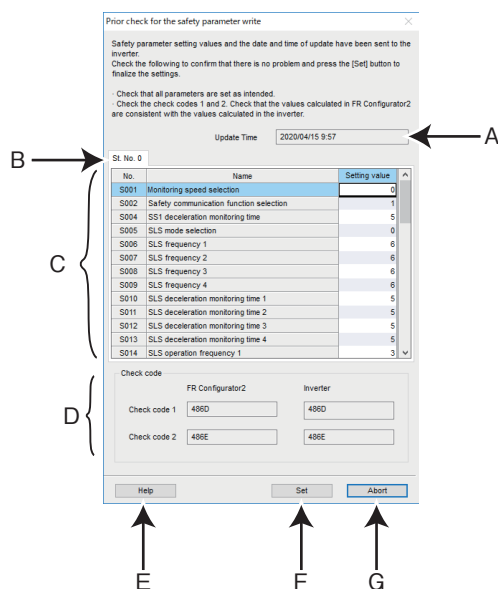
### ◆ Batch read

Select [Batch read] from the [Safety parameter setting (Z)] menu bar, or [Batch read] on the toolbar to display the confirmation window and perform batch read.

### ◆ Batch write

Select [Batch write] from the [Safety parameter setting (Z)] menu bar, or [Batch write] on the toolbar to display the batch write confirmation window.

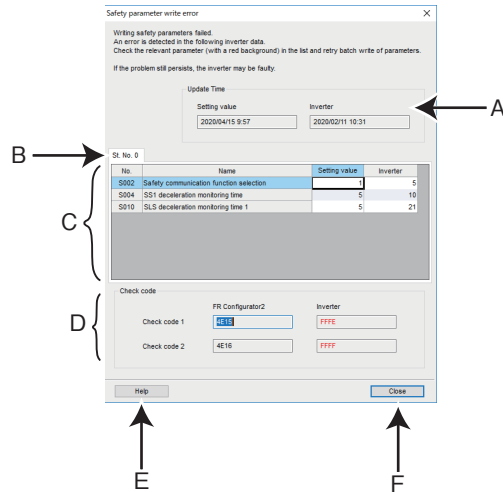
Check that the values in "Setting value" column and "Inverter" column are the same to confirm that batch write has been performed successfully.



Sym bol	Name	Function/description	
A	Date and time of update	Shows the date and time when the data is transmitted to the inverter.	
B	Station number	Shows the station numbers selected for batch write.	
C	No.	Shows the safety parameter number.	
	Name	Shows the safety parameter name.	
	Setting value	Shows the safety parameter setting value.	
D	Check code	Setting value	Shows the values calculated in FR Configurator2.
		Inverter	Shows the values calculated in the inverter.
E	Help	Help appears.	
F	Set	Writes all safety parameter setting values to the inverter.	
G	Cancel	Closes the batch write confirmation window without performing batch write.	

Password authentication is required for the first batch write operation. The authentication process is skipped from the second batch write onwards. (When the safety parameter setting window is closed, authentication will be required again.)

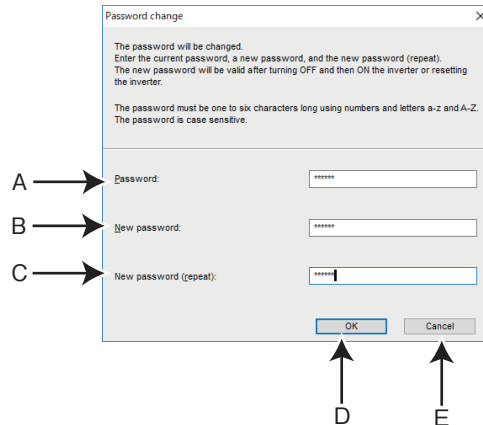
The following dialog is shown when batch write fails due to an error of the setting value or the date and time of update.



Sym bol	Name	Function/description	
A	Date and time of update	Shows the date and time when the parameters are batch-written to the inverter.	
B	Station number	Shows the station numbers selected for batch write.	
C	No.	Shows the safety parameter number.	
	Name	Shows the safety parameter name.	
	Setting value	Shows the safety parameter setting value.	
	Inverter	Shows the safety parameter setting values read from the inverter.	
D	Check code	Setting value	Shows the values calculated in FR Configurator2.
		Inverter	Shows the values calculated in the inverter.
E	Help	Help appears.	
F	Close	Closes the batch write confirmation window without performing batch write.	

## 5.2.4 Password change

The password registered in the inverter can be changed. Select [Password change] from the [Safety parameter setting (Z)] menu bar, or [Password change] on the toolbar to display the password change window. The initial password is "000000".



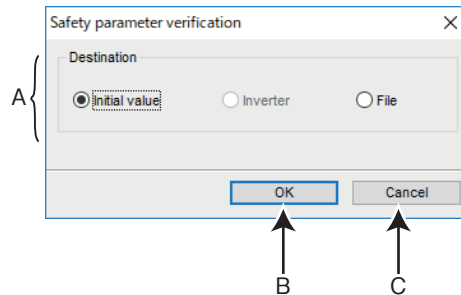
Sym bol	Name	Function/description
A	<u>P</u> assword	Enter the current password. The password is masked with asterisks (*).
B	<u>N</u> ew password	Enter the new password. The password is masked with asterisks (*).
C	New password ( <u>r</u> epeat)	Enter the new password again. The password is masked with asterisks (*).
D	OK	Applies the change. The password change window will close after the change is successfully applied.
E	Cancel	Closes the password change window without changing the password.



## 5.2.5 Safety parameter verification

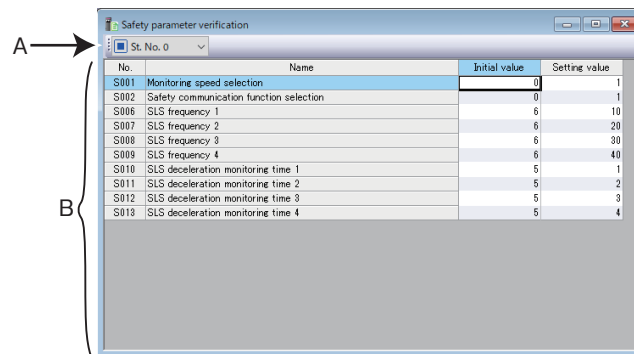
This function accesses the inverter safety parameters, and verifies the safety parameter setting values set by FR Configurator2 with the values selected in the verify destination window.

The "Select destination selection" window can be displayed by selecting [Verify...] from the [Safety parameter setting (Z)] menu bar, or by selecting [Verify] on the toolbar.



Symbol	Name	Function/description	
A	Destination	Initial value	Verifies against the initial value.
		Inverter	Verifies against parameter setting values written to the inverter.
		File	Verifies against parameter list setting values saved to a file (*.spr4).
B	OK	Shows the Verify window.	
C	Cancel	Closes the Verify destination selection window without performing verification.	

The Verify window appears after selecting the destination on the Verify destination window.



Symbol	Name	Function/description
A	St. No. (Station number)	Shows the verified station number.
B	Verify list	Shows parameters whose verified values are mismatched.

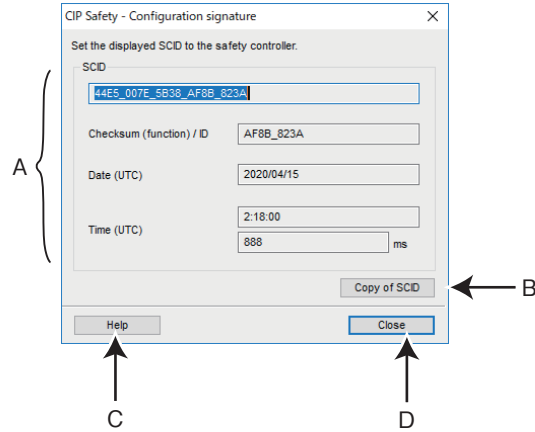
## 5.2.6 Configuration signature

The safety parameter setting function is available for the following models.

Model: CIP Safety model

The Safety Configuration ID (SCID) read from the inverter is displayed.

To display the window to show the SCID, select [CIP Safety] > [Read configuration signature] from the [Safety parameter setting (Z)] menu bar.



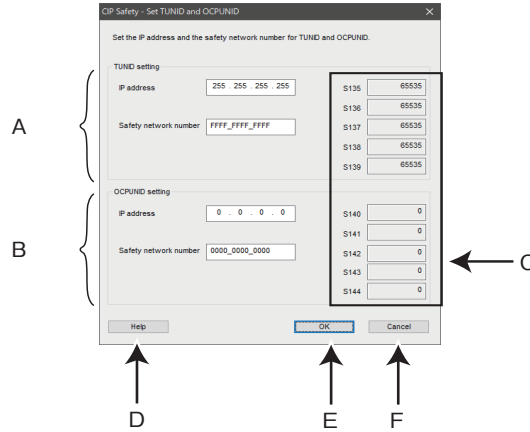
Symbol	Name	Function/description
A	SCID group	Shows the details of the Safety Configuration ID (SCID).
B	Time format switching button	Select "UTC" or "Local time" by configuring the setting in the Mitsubishi Electric safety controller setting tool (MELSEC Safety Designer).
C	Copy the SCID	Copies the SCID to the clipboard. Then use the copied SCID for "Add SCID" in the Mitsubishi Electric safety controller setting tool (MELSEC Safety Designer).
D	Help	Displays the help window.
E	Close	Closes the configuration signature window.

## 5.2.7 Set TUNID and OCPUNID

The safety parameter setting function is available for the following models.  
 Model: CIP Safety model

The input values are converted to decimal values and applied to **Pr.S135 to Pr.S144**.

To display the window to set the TUNID and OCPUNID, select [CIP Safety] > [Set TUNID and OCPUNID] from the [Safety parameter setting (Z)] menu.

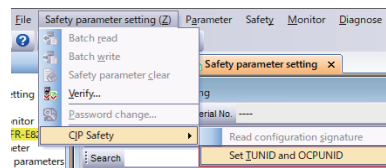


Symbol	Name	Function/description	
A	TUNID setting	IP address	Enter the IP address of the TUNID of the inverter set and displayed in the safety network configuration in Safety Network Configuration Tool.
		Safety network number	Enter the safety network number of the TUNID of the inverter set and displayed in the safety network configuration in Safety Network Configuration Tool.
B	OCPUNID setting	IP address	Enter the IP address of the OCPUNID of the master set and displayed in the safety network configuration in Safety Network Configuration Tool.
		Safety network number	Enter the safety network number of the OCPUNID of the master set and displayed in the safety network configuration in Safety Network Configuration Tool.
C	Safety parameter display	Shows the values set in the safety parameters <b>Pr.S135 to Pr.S144</b> .	
D	Help	Displays the help window.	
E	OK	Applies the settings.	
F	Cancel	Closes the set TUNID and OCPUNID window without applying the settings.	

### ◆ Setting procedure of TUNID and OCPUNID

Set the unique network identifier (Unique Node Identifier) determined by Safety Network Configuration Tool in the inverter.

1. Select [CIP Safety] > [Set TUNID and OCPUNID] from the [Safety parameter setting (Z)] menu.



**2.** Configure the TUNID setting. (Pr.S135 to Pr.S139)

Set the "IP address" and "safety network number" determined by Safety Network Configuration Tool in the unique network identifier (Unique Node Identifier) in the inverter.

Parameter	Value
S135	65535
S136	65535
S137	65535
S138	65535
S139	65535
S140	0
S141	0
S142	0
S143	0
S144	0

**3.** Configure the OCPUNID setting. (Pr.S140 to Pr.S144)

Set the "IP address" and "safety network number" determined by Safety Network Configuration Tool in the unique network identifier (Unique Node Identifier) in the master.

Parameter	Value
S135	65535
S136	65535
S137	65535
S138	65535
S139	65535
S140	0
S141	0
S142	0
S143	0
S144	0

**4.** Click the [OK] button.

Check that the settings are correct and click the [OK] button.

The confirmation window appears. Click the [OK] button to apply the settings to Pr.S135 to Pr.S144.

## 5.3 Convert

---

Parameter settings of the conventional models can be copied to the 800 series parameter settings in the "Convert" window. To display the "Convert" window, select [Convert...] in the [Parameter] menu.

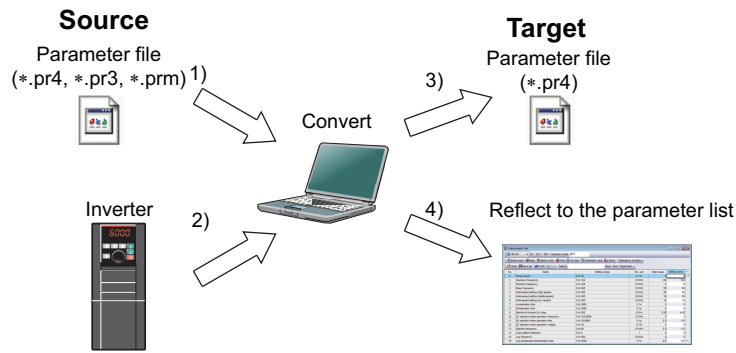
- Models compatible with the convert function

Source inverter	Target inverter
FR-A500(L)	FR-A800(-E)
FR-A700	FR-A800(-E)
FR-B(A700)	FR-B
FR-B3-(N)(H)(A700)	FR-B3-(N)(H)
FR-F700(P)	FR-F800(-E)
FR-E500	FR-E800(-E/-SCE)
FR-E700(-NE)	FR-E800(-E/-SCE)

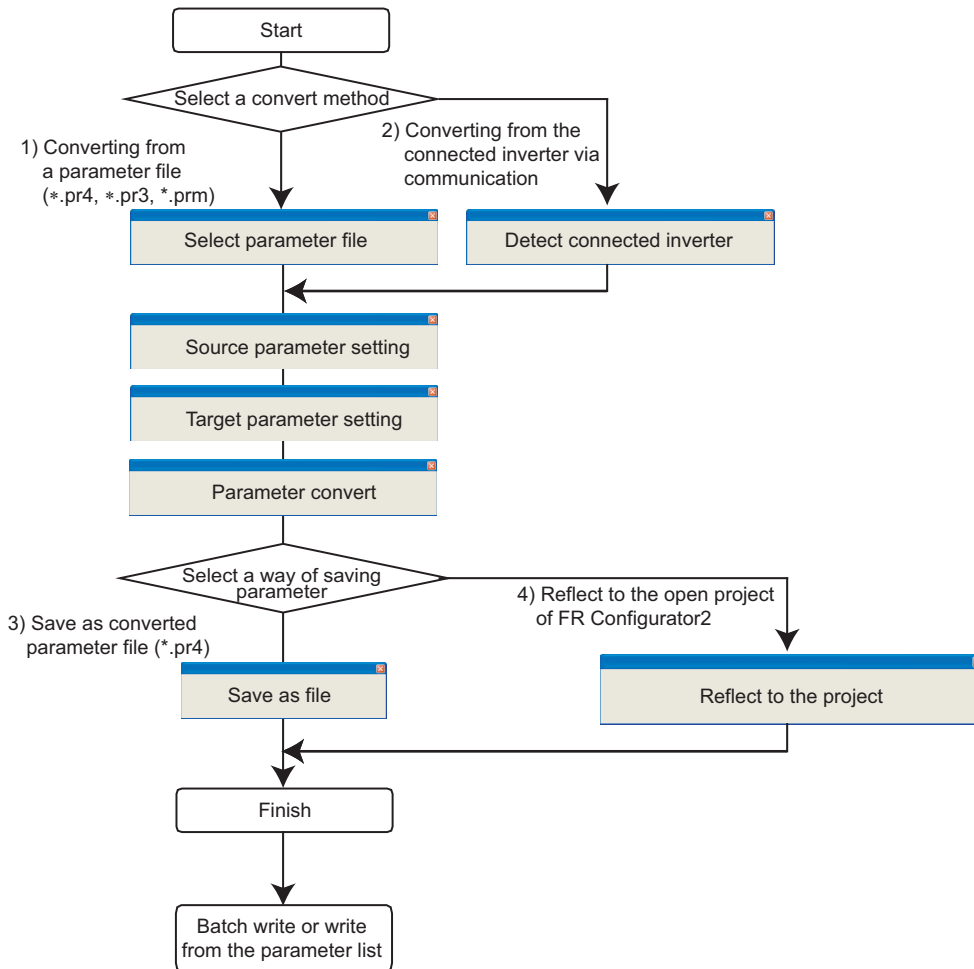
### NOTE

- Although the parameter name described in the Instruction Manual of the inverter and the parameter name used in FR Configurator2 may be different, there is no difference in the parameter function.
  - If an option non-compatible with the target inverter is connected to the source inverter, if a unit for setting a parameter is fixed by the option while **Pr.37 Speed display** and **Pr.144 Speed setting switchover** of the source inverter are set to change the unit, the setting of the source inverter is copied unchanged to the target inverter.
  - When the source inverter supports multiple ratings, the larger capacity inverter must be used as a target inverter depending on the multiple rating setting (**Pr.570**).
-

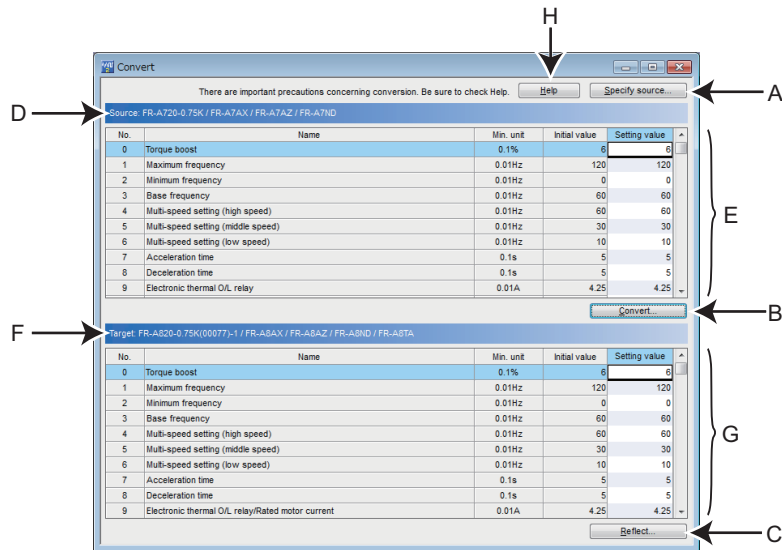
# 5.3.1 Schematic illustration of the convert function



- Setting flow chart



## 5.3.2 Convert window

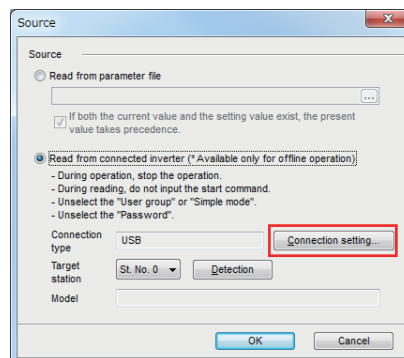


Symbol	Name	Function/description
A	<u>S</u> pecify source	Displays the "Source" window. Select the source parameter file (*.pr4, *.pr3, *.prm) or the source inverter model.
B	<u>C</u> onvert...	Displays the "Convert" sub window.
C	<u>R</u> eflect...	Displays the "Reflect" window. The converted setting of parameters will be reflected to the parameter list of the specified inverter. The setting can also be saved to a parameter file (*.pr4). (Select [Save in file] or [Reflect to project] after converting the parameters.)
D	Source inverter information	The model of the source inverter and the options connected to it are displayed.
E	Source parameter list	The list of the parameter settings read from the source is displayed.
F	Target inverter information	The model of the target inverter and the options connected to it are displayed.
G	Target parameter list	The list of the converted parameter settings is displayed.
H	<u>H</u> elp	Displays the help window.

## 5.3.3 Connection setting for the convert function

Select [Specify source] in the convert window to display the "Source" window.

To perform the convert function from the inverter connected via communication, select [Read from connected inverter] and click [Connection setting] to display the [Connection setting] window. For the "Connection setting" window, refer to [page 121](#).



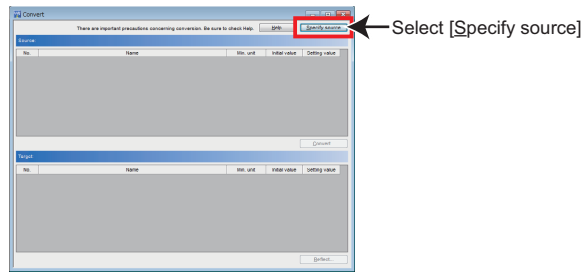
## 5.3.4 Convert procedures

### ◆ To convert from the directly connected inverter

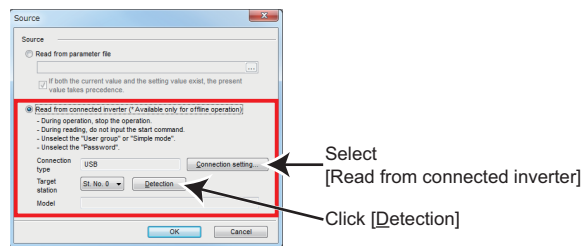
#### NOTE

- Perform this procedure while the inverter is stopped. Do not give a start command to the inverter.

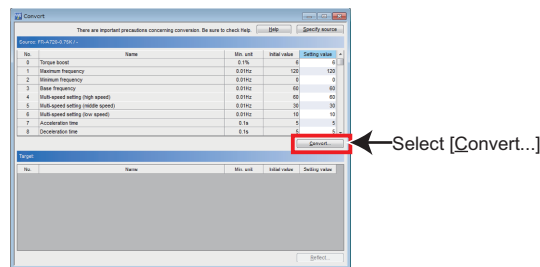
1. Select [Specify source] in the "Convert" window to display the "Source" window.



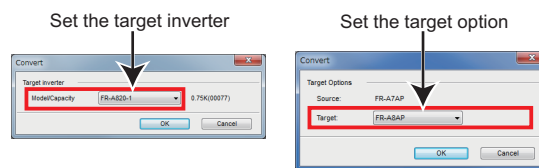
2. Select [Read from connected inverter]. Set the [Connection type], [Target station], and [Connection setting], and click [Detection]. (When multiple inverters are selectable as the source inverter, the "Source inverter" window appears. Specify the model of the [Source inverter]. After detection, confirm the inverter model in the [Model] field, and click [OK]. The parameters are converted and the "Source" window closes.



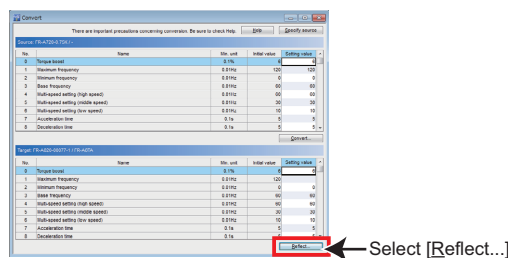
3. The setting can be changed for some parameters of the source inverter. To change the parameter setting value, enter the desired value in the setting value field. After the parameters of the source inverter are displayed in the list, the [Convert...] button in the "Convert" window will be active. Select [Convert...] to display the "Convert" sub window.



4. Specify the model of the [Target inverter] from the lists in the "Convert" sub window. Click [OK] to convert the parameters and close the "Convert" sub window. (When several options are selectable as a target, the "Target option" window appears. Select the target option.)

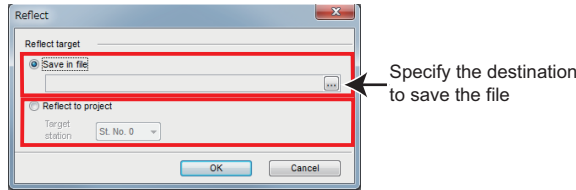


5. The converted parameter settings for the target inverter are displayed in the "Convert" window.




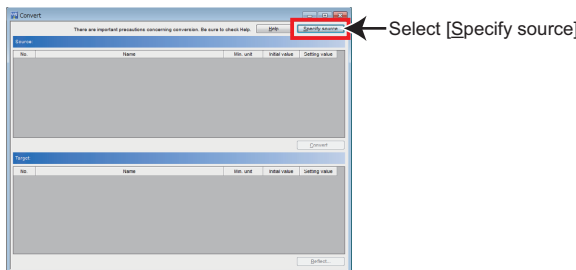


6. Select [Reflect...] in the "Convert" window to display the "Reflect" window.  
To save the setting to a file  
Select [Save in file]. Specify the destination to save the file and click [OK]. The converted parameter setting is saved in the parameter file (\*.pr4).  
To reflect the setting to the project  
Select [Reflect to project]. Specify the station to reflect the setting and click [OK]. The converted parameter setting is reflected to the project.

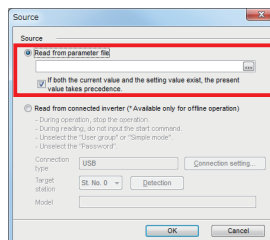


## ◆ To convert from a parameter file (\*.pr4, \*.pr3, \*.prm)

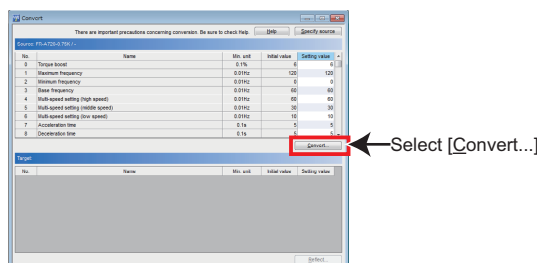
1. Check the online condition between FR Configurator2 and the inverter. (Click  on the menu bar to switch the condition to online.)
2. Select [Specify source] in the "Convert" window to display the "Source" window.



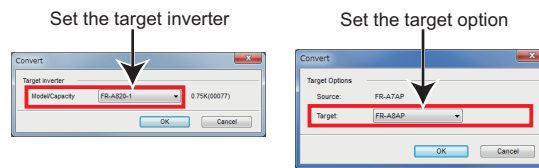
3. Specify the source parameter file (\*.pr4, \*.pr3, \*.prm). Click [OK] to reflect the parameter settings of the source file in the source parameter list in the convert window.



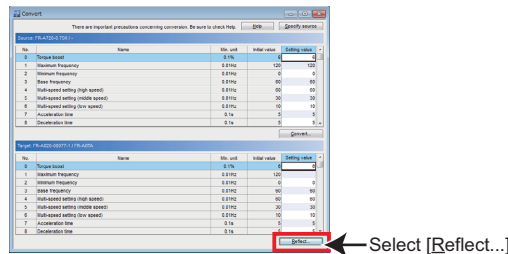
4. The setting can be changed for some parameters of the source inverter. To change the parameter setting value, enter the desired value in the setting value field. After the parameters of the source inverter are displayed in the list, the [Convert...] button in the "Convert" window will be active. Select [Convert...] to display the "Convert" sub window.



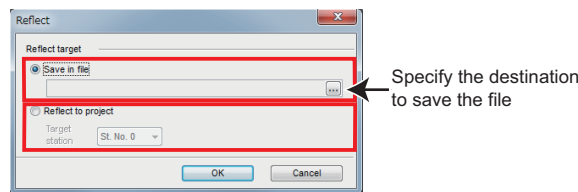
- Specify the model of the [Target inverter] from the lists in the "Convert" sub window. Click [OK] to convert the parameters and close the "Convert" sub window.  
(When several options are selectable as a target, the "Target option" window appears. Select the target option.)



- The converted parameter settings for the target inverter are displayed in the "Convert" window.



- Select [Reflect...] in the "Convert" window to display the "Reflect" window.  
To save the setting to a file  
Select [Save in file]. Specify the destination to save the file and click [OK]. The converted parameter setting is saved in the parameter file (\*.pr4).  
To reflect the setting to the project  
Select [Reflect to project]. Specify the station to reflect the setting and click [OK]. The converted parameter setting is reflected to the project.



## 5.3.5 Precautions for the convert function

Check the following items to use the convert function, and adjust the settings as required.  
For the parameter details, refer to the Instruction Manual of the inverter.

### ◆ To convert from FR-A700 inverters to FR-A800(-E) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.

**Pr.69 Retry count display erase**

**Pr.170 Watt-hour meter clear**

**Pr.171 Operation hour meter clear**

**Pr.172 to Pr.174 (User group selection)**

**Pr.259 Main circuit capacitor life measuring**

**Pr.498 PLC function flash memory clear**

**Pr.501 (Communication option parameter)**

**Pr.503, Pr.686, and Pr.688 (Maintenance timer)**

**Pr.805 Torque command value (RAM)**

**Pr.898 Power saving cumulative monitor clear**

**C29(Pr.925) Motor temperature detection calibration (analog input)<sup>\*1</sup>**

**Pr.991 PU contrast adjustment**

**Pr.1006 to Pr.1008 (Clock function)**

**Pr.1020 Trace operation selection**

\*1 Available when the plug-in option is connected.

- When parameter settings are converted from FR-A700 (FM type) inverters to FR-A800 (CA type) inverters or from FR-A700 (CA type) inverters to FR-A800 (FM type) inverters, set the following parameters as required in the "Parameter list" window because they are not converted.

**Pr.54 FM/CA terminal function selection**

**Pr.291 Pulse train I/O selection**

**Pr.869 Current output filter**

**C8 (Pr.930) to C11 (Pr.931) (Terminal CA calibration parameters)**

- It is recommended to adjust the setting of the following parameters again after conversion according to the mechanical system because they are used for adjustment.

**Pr.0 Torque boost**

**Pr.12 DC injection brake operation voltage**

**Pr.46 Second torque boost**

**Pr.112 Third torque boost**

**C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**

- Since the communication-related parameters (**Pr.117 to Pr.124**, **Pr.331 to Pr.337**, **Pr.341**, **Pr.547**, and **Pr.548**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. For example, when **Pr.122/Pr.336 RS-485 communication check time interval** = "0 (initial value)", a communication error (E.PUE, E.SER) occurs immediately after the operation mode with the command source is selected.

- The parameters for the FR-A7AL function (**Pr.413**, **Pr.432**, and **Pr.433**) are not converted because the FR-A800 series inverters have no corresponding parameters.

- If "63" is set in **Pr.184 AU terminal function selection** to enable the PTC thermal error detection (E.PTC) in the source FR-A700 inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-A800 inverter via terminals 2 and 10 are required. For the parameter details and terminal connection, refer to the Instruction Manual of the inverter.

## ◆ To convert from FR-A700 inverters to FR-A802(-E) inverters

When the parameter settings are converted to the separated converter type, check the following items in addition to the items mentioned in the previous page.

- After converting parameters, assign the X10 signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RDA signal of the FR-CC2.
- After converting parameters, assign the RES signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RSO signal of the FR-CC2.
- Set the following parameter as required in the "Parameter list" window because they are not converted depending on the setting of the source inverter.

**Pr.30 Regenerative function selection**

**Pr.52 Operation panel main monitor selection**

**Pr.54 FM/CA terminal function selection**

**Pr.158 AM terminal function selection**

**Pr.178 to Pr.189, Pr.190 to Pr.196 (I/O terminal function assignment)**

**Pr.306 Analog output signal selection<sup>\*1</sup>**

**Pr.310 Analog meter voltage output selection<sup>\*1</sup>**

**Pr.313 to Pr.322 (Output selection)<sup>\*1</sup>**

**Pr.599 X10 terminal input selection**

<sup>\*1</sup> Available when the plug-in option is connected.

- For the following parameters, set the FR-CC2 parameters as required.

**Pr.57 Restart coasting time**

**Pr.65, Pr.67, and Pr.68 (Retry selection)**

**Pr.256 Inrush current limit circuit life display**

**Pr.258 and Pr.259 (Life of main circuit capacitor)**

**Pr.872 Input phase loss protection selection**

## ◆ To convert from FR-F700(P) inverters to FR-F800(-E) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.

**Pr.69 Retry count display erase**

**Pr.170 Watt-hour meter clear**

**Pr.171 Operation hour meter clear**

**Pr.172 to Pr.174 (User group selection)**

**Pr.259 Main circuit capacitor life measuring**

**Pr.498 PLC function flash memory clear**

**Pr.501 (Communication option parameter)**

**Pr.503, Pr.686, and Pr.688 (Maintenance timer)**

**Pr.898 Power saving cumulative monitor clear**

**Pr.991 PU contrast adjustment**

**Pr.1006 to Pr.1008 (Clock function)**

**Pr.1020 Trace operation selection**

**Pr.1219 PID gain tuning start/status**

- When parameter settings are converted from FR-F700(P) (FM type) inverters to FR-F800 (CA type) inverters or from FR-F700(P) (CA type) inverters to FR-F800 (FM type) inverters, set the following parameters as required in the "Parameter list" window because they are not converted.

**Pr.54 FM/CA terminal function selection**

**Pr.869 Current output filter**

**C8 (Pr.930) to C11 (Pr.931) (Terminal CA calibration parameters)**

- It is recommended to adjust the setting of the following parameters again after conversion according to the mechanical system because they are used for adjustment.

**Pr.0 Torque boost**

**Pr.12 DC injection brake operation voltage**

**Pr.46 Second torque boost**

**C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**

- Since the communication-related parameters (**Pr.117 to Pr.124, Pr.331 to Pr.337, Pr.341, Pr.547, and Pr.548**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. For example, when **Pr.122/Pr.336 RS-485 communication check time interval** = "0 (initial value)", a communication error (E.PUE, E.SER) occurs immediately after the operation mode with the command source is selected.

- Set the following parameter as required in the "Parameter list" window because they are not converted depending on the setting of the source inverter.

**Pr.52 Operation panel main monitor selection**

**Pr.54 FM/CA terminal function selection**

**Pr.158 AM terminal function selection**

**Pr.190 to Pr.196 (I/O terminal function assignment)**

**Pr.306 Analog output signal selection<sup>\*1</sup>**

**Pr.310 Analog meter voltage output selection<sup>\*1</sup>**

**Pr.313 to Pr.322 (Output selection)<sup>\*1</sup>**

**Pr.774 to Pr.776 Operation panel monitor selection**

<sup>\*1</sup> Available when the plug-in option is connected.

- If "63" is set in **Pr.184 AU terminal function selection** to enable the PTC thermal error detection (E.PTC) in the source FR-F700 inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-F800 inverter via terminals 2 and 10 are required. For the parameter details and terminal connection, refer to the Instruction Manual of the inverter.

## ◆ To convert from FR-F700(P) inverters to FR-F802(-E) inverters

When the parameter settings are converted to the separated converter type, check the following items in addition to the items mentioned in the previous page.

- After converting parameters, assign the X10 signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RDA signal of the FR-CC2.
- After converting parameters, assign the RES signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RSO signal of the FR-CC2.
- Set the following parameter as required in the "Parameter list" window because they are not converted depending on the setting of the source inverter.
  - Pr.30 Regenerative function selection**
  - Pr.178 to Pr.189 (I/O terminal function assignment)**
  - Pr.599 X10 terminal input selection**
- For the following parameters, set the FR-CC2 parameters as required.
  - Pr.57 Restart coasting time**
  - Pr.65, Pr.67, and Pr.68 (Retry selection)**
  - Pr.256 Inrush current limit circuit life display**
  - Pr.258 and Pr.259 (Life of main circuit capacitor)**
  - Pr.872 Input phase loss protection selection**

## ◆ To convert from FR-E700 inverters to FR-E800 inverters

- After conversion, set the following parameters as required in the "Parameter list" window as they are not converted.
  - Pr.69 Retry count display erase**
  - Pr.170 Watt-hour meter clear**
  - Pr.171 Operation hour meter clear**
  - Pr.172 to Pr.174 (User group selection)**
  - Pr.259 Main circuit capacitor life measuring**
  - Pr.501 (Communication option parameter)**
  - Pr.503 Maintenance timer 1**
  - Pr.991 PU contrast adjustment**
  - Pr.1006 to Pr.1008 (Clock function)**
  - Pr.1200 AM output offset calibration**

- The following parameters are used for adjustment. It is recommended to adjust the setting of the parameters again after conversion according to the mechanical system.

**Pr.0 Torque boost**

**Pr.12 DC injection brake operation voltage**

**Pr.46 Second torque boost**

**Pr.323 AM0 0V adjustment**

**Pr.324 AM1 0mA adjustment**

**C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**

- Since the communication-related parameters are also converted, communication may be disabled depending on the setting after the setting is written to parameters.

**Pr.117 to Pr.124: PU connector communication**

**Pr.442 to Pr.445, Pr.1424 to Pr.1432, Pr.1434 to Pr.1455: Ethernet communication**

**Pr.547, Pr.548: USB communication**

- When the SF-PR motor is used, set "70 or 73" in **Pr.71 Applied motor** or **Pr.450 Second applied motor** after conversion.
- To disable the PWM carrier frequency automatic reduction function after conversion to avoid the change in the motor driving sound, set "0" in **Pr.260 PWM frequency automatic switchover**. To enable the PWM carrier frequency automatic reduction function, set "10".

- After conversion, initial values are set in the following parameters. The settings are equivalent to those in the FR-E700. Change the settings as required.

**Pr.639 Brake opening current selection**

**Pr.640 Brake operation frequency selection**

- When output shutoff is intended when the Ethernet board fails in the source inverter (FR-E700-NE), set "0" in **Pr.502 Stop mode selection at communication error** after conversion.
- The setting value of **Pr.850 Ethernet TCP disconnection time coefficient** in the source inverter (FR-E700-NE) will be converted to the setting value of **Pr.1455 Keepalive time** in the target inverter (FR-E800) after conversion. To use Ethernet TCP, check the **Pr.1455** setting.

- When "2" is set in **Pr.30** of the source inverter (FR-E700), check the **Pr.30** setting in the target inverter (FR-E800-SCE) after conversion.

- The following parameters are not converted because the FR-E800 series inverters have no corresponding parameters.

**Pr.146 Built-in potentiometer switching**

**Pr.922 Frequency setting voltage bias frequency (built-in potentiometer)**

**Pr.923 Frequency setting voltage gain frequency (built-in potentiometer)**

**Pr.387 Initial communication delay time<sup>\*1</sup>**

**Pr.388 Transmission interval during heartbeat<sup>\*1</sup>**

**Pr.389 Minimum transmission time during heartbeat<sup>\*1</sup>**

**Pr.391 Reception interval during heartbeat<sup>\*1</sup>**

**Pr.392 Event-driven detection width<sup>\*1</sup>**

<sup>\*1</sup> Available when the plug-in option is connected.

- After conversion, set the voltage/current input switch according to the **Pr.73 Analog input selection** and **Pr.267 Terminal 4 input selection** settings in the FR-E800 inverter.

- When "68" is set in **Pr.190 to Pr.192 (Output terminal function selection)** in the FR-E700 inverter, set initial values in **Pr.190 to Pr.192** after conversion in the FR-E800 inverter that does not support the FR-E8DS.
- The FR-E800-E or FR-E800-SCE inverter does not support some input signals. The unsupported signals cannot be set in **Pr.178 to Pr.184 (Input terminal function selection)**.  
When the following input signals are used in the source inverter, set the corresponding parameters as required in the "Parameter list" window because they are not converted.  
JOG signal: JOG operation selection  
OH signal: External thermal relay input  
X10 signal: Inverter run enable signal (FR-XC/FR-HC2/FR-CV connection)  
X12 signal: PU operation external interlock  
X16 signal: PU-External operation switchover  
STP (STOP) signal: Start self-holding selection  
RES signal: Inverter reset  
X65 signal: PU/NET operation switchover  
X66 signal: External/NET operation switchover  
X67 signal: Command source switchover
- When "60" is set in **Pr.505 Speed setting reference** in the FR-E800 inverter, the maximum value of the speed display is almost one-half of that in the FR-E700 inverter. Depending on the setting in the FR-E700 inverter, an out-of-range error (0x80010011) may occur for **Pr.1, Pr.18, Pr.37, or Pr.505**. If the error occurs, take the following corrective actions.  
When the value set in **Pr.1 or Pr.18** is too large, set a smaller value.  
If the out-of-range error persists after the **Pr.1 or Pr.18** setting is changed, check the **Pr.37** setting.

## ◆ To convert from FR-B (A700) inverters to FR-B (A800) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.  
**Pr.69 Retry count display erase**  
**Pr.170 Watt-hour meter clear**  
**Pr.171 Operation hour meter clear**  
**Pr.172 to Pr.174 (User group selection)**  
**Pr.259 Main circuit capacitor life measuring**  
**Pr.498 PLC function flash memory clear**  
**Pr.501 (Communication option parameter)**  
**Pr.610 PID measured value input selection**  
**Pr.503, Pr.686, and Pr.688 (Maintenance timer)**  
**Pr.805 Torque command value (RAM)**  
**Pr.898 Power saving cumulative monitor clear**  
**Pr.991 PU contrast adjustment**  
**Pr.1006 to Pr.1008 (Clock function)**  
**Pr.1020 Trace operation selection**
- It is recommended to adjust the setting of the following parameters again after conversion according to the mechanical system because they are used for adjustment.  
**C2 (Pr.902) to C7 (Pr.905)** (Frequency setting input calibration parameters)
- Since the communication-related parameters (**Pr.117 to Pr.124, Pr.331 to Pr.337, Pr.341, Pr.547, and Pr.548**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. For example, when **Pr.122/Pr.336 RS-485 communication check time interval** = "0 (initial value)", a communication error (E.PUE, E.SER) occurs immediately after the operation mode with the command source is selected.

- If "63" is set in **Pr.184 AU terminal function selection** to enable the PTC thermal error detection (E.PTC) in the source FR-B (A700) inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-B (A800) inverter via terminals 2 and 10 are required. For the parameter details and terminal connection, refer to the Instruction Manual of the inverter.

## ◆ To convert from FR-B3 (A700) inverters to FR-B3 (A800) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.
  - Pr.69 Retry count display erase**
  - Pr.170 Watt-hour meter clear**
  - Pr.171 Operation hour meter clear**
  - Pr.172 to Pr.174 (User group selection)**
  - Pr.259 Main circuit capacitor life measuring**
  - Pr.498 PLC function flash memory clear**
  - Pr.501 (Communication option parameter)**
  - Pr.503, Pr.686, and Pr.688 (Maintenance timer)**
  - Pr.610 PID measured value input selection**
  - Pr.805 Torque command value (RAM)**
  - Pr.898 Power saving cumulative monitor clear**
  - Pr.991 PU contrast adjustment**
  - Pr.1006 to Pr.1008 (Clock function)**
  - Pr.1020 Trace operation selection**
- It is recommended to adjust the setting of the following parameters again after conversion according to the mechanical system because they are used for adjustment.
  - Pr.12 DC injection brake operation voltage**
  - C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**
- Since the communication-related parameters (**Pr.117 to Pr.124, Pr.331 to Pr.337, Pr.341, Pr.547, and Pr.548**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. For example, when **Pr.122/Pr.336 RS-485 communication check time interval** = "0 (initial value)", a communication error (E.PUE, E.SER) occurs immediately after the operation mode with the command source is selected.
- If "63" is set in **Pr.184 AU terminal function selection** to enable the PTC thermal error detection (E.PTC) in the source FR-B3 (A700) inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-B3 (A800) inverter via terminals 2 and 10 are required. For the parameter details and terminal connection, refer to the Instruction Manual of the inverter.



## ◆ To convert from FR-A500(L) inverters to FR-A800(-E) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.
  - Pr.69 Retry count display erase**
  - Pr.96 Auto tuning setting/status**
  - Pr.133 PID action set point**
  - Pr.170 Watt-hour meter clear**
  - Pr.171 Operation hour meter clear**
  - Pr.172 to Pr.174 (User group selection)**
  - Pr.259 Main circuit capacitor life measuring**
  - Pr.463 Second motor auto tuning setting/status**
  - Pr.496 Remote output data 1**
  - Pr.497 Remote output data 2**
  - Pr.498 PLC function flash memory clear**
  - Pr.501 (Communication option parameter)**
  - Pr.503, Pr.686, and Pr.688 (Maintenance timer)**
  - Pr.805 Torque command value (RAM)**
  - Pr.898 Power saving cumulative monitor clear**
  - Pr.991 PU contrast adjustment**
  - Pr.1006 to Pr.1008 (Clock function)**
  - Pr.1020 Trace operation selection**
- When parameter settings are converted from FR-A500 inverters to FR-A800 (CA type) inverters, set the following parameters as required in the "Parameter list" window because they are not converted.
  - Pr.54 FM/CA terminal function selection**
  - Pr.291 Pulse train I/O selection**
  - Pr.869 Current output filter**
  - C8 (Pr.930) to C11 (Pr.931) (Terminal CA calibration parameters)**
- It is recommended to adjust the setting of the following parameters again after conversion according to the mechanical system because they are used for adjustment.
  - Pr.0 Torque boost**
  - Pr.12 DC injection brake operation voltage**
  - Pr.46 Second torque boost**
  - Pr.112 Third torque boost**
  - C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**
- Since the communication-related parameters (**Pr.117 to Pr.124, Pr.331 to Pr.337, and Pr.341**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. For example, when **Pr.122/Pr.336 RS-485 communication check time interval** = "0 (initial value)", a communication error (E.PUE, E.SER) occurs immediately after the operation mode with the command source is selected.
- Note the following when Advanced magnetic flux vector control or vector control is selected (**Pr.80 Motor capacity** is not "9999", **Pr.81 Number of motor poles** is not "9999").

Tuning and parameter setting of the target inverter are recommended, if offline auto tuning is performed (**Pr.71 Applied motor** = "3, 4, 7, 8, 13, 14, 17, 18, 23, 24") or motor constants is directly input (**Pr.71** = "5, 6, 15, 16") at the source inverter. When an SF-HR or SF-HRCA motor is used, set **Pr.71** = "40, 43, 44, 50, 53, or 54" after writing the converted parameter to the target inverter. (Conversion of **Pr.82, Pr.85, Pr.86, Pr.89, Pr.90 to Pr.94** is not necessary)

- The following wiring needs to be changed. Refer to the FR-A800 series Instruction Manual for details of wiring. When using pulse train input of the FR-A5AP, change the connection to JOG/pulse train input terminal of the inverter (JOG terminal is changed to pulse train input by Convert). Note that a resistance is necessary when connecting. When using a relay output terminal of the FR-A5NR, change the connection to terminal ABC2 of the inverter. When stop position command of orientation control was given from the FR-A5AX (**Pr.360** = "1") and **Pr.369 Number of encoder pulses** was "2048" or "4096", wire to the FR-A8AX as shown below.
  - Pr.369 Number of encoder pulses** = "2048"  
Change connection from X0 to X1.....from X11 to X12 (X0 is always open)
  - Pr.369 Number of encoder pulses** = "4096"  
Change connection from X0 to X2.....from X11 to X13 (X0 and X1 are always open)
- There is a change in the following functions. Refer to the FR-A800 series manual for details. When automatic restart after instantaneous power failure is performed with residual voltage detection system by TSEN50 (**Pr.162** = "11"), it is changed to automatic restart after instantaneous power failure with reduced voltage system. Fully check that there is no problem in automatic restart operation after instantaneous power failure. If there are any problem, consider changing to f search system, etc. Y29 (acceleration speed detection) signal is deleted, and major fault by E.OS occurs instead. When stop position command of orientation control was given from the FR-A5AX (**Pr.360** = "1"), orientation with **Pr.369 Number of encoder pulses** "1025 to 2047", or "2049 to 4095" is not supported by Convert. Since convert is performed using the full scale value of the motor torque as 200%, the full scale value of the load meter is converted as 200% (FR-A500 (L) series is 100%). Use **Pr.866** to change. In such a case, note that the full scale value of the motor torque also changes accordingly.
- The following functions are not converted, since they have been deleted from the FR-A800 series.
  - Pr.53 PU level display data selection**
  - Pr.199 User initial value**  
Setting value 3 of **Pr.200 to Pr.231** and **Pr.76**, setting value 5 of **Pr.79**, PRG signal (program operation)
  - Pr.371 Torque characteristic selection**
  - Pr.390 to Pr.396** Trace function of the FR-A500L series
  - Pr.450 to Pr.453** Motor constant adjustment function for vector control of the FR-A500L series and FR-A5AP (encoder 50)

## ◆ To convert from FR-A500(L) inverters to FR-A802(-E) inverters

When the parameter settings are converted to the separated converter type, check the following items in addition to the items mentioned in the previous page.

- After converting parameters, assign the X10 signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RDA signal of the FR-CC2.
- After converting parameters, assign the RES signal to an input terminal by setting of any of **Pr.178 to Pr.189**, and connect the signal to the RSO signal of the FR-CC2.
- Set the following parameter as required in the "Parameter list" window because they are not converted depending on the setting of the source inverter.
  - Pr.52 Operation panel main monitor selection**
  - Pr.54 FM/CA terminal function selection**
  - Pr.158 AM terminal function selection**
  - Pr.190 to Pr.196 (I/O terminal function assignment)**
  - Pr.306 Analog output signal selection**<sup>\*1</sup>
  - Pr.310 Analog meter voltage output selection**<sup>\*1</sup>
  - Pr.313 to Pr.322 (Output selection)**<sup>\*1</sup>
  - Pr.599 X10 terminal input selection**

\*1 Available when the plug-in option is connected.

- For the following parameters, set the FR-CC2 parameters as required.

**Pr.57 Restart coasting time**

**Pr.65, Pr.67, and Pr.68 (Retry selection)**

**Pr.256 Inrush current limit circuit life display**

**Pr.258 and Pr.259 (Life of main circuit capacitor)**

**Pr.872 Input phase loss protection selection**

## ◆ To convert from the FR-E500 series to the FR-E800 series

- After conversion, set the following parameters as required in the "Parameter list" window as they are not converted.

**Pr.69 Retry count display erase**

**Pr.133 PID action set point**

**Pr.160 User group read selection**

**Pr.170 Watt-hour meter clear**

**Pr.171 Operation hour meter clear**

**Pr.172 to Pr.174 (User group selection)**

**Pr.259 Main circuit capacitor life measuring**

**Pr.501 Communication error occurrence count display**

**Pr.503 Maintenance timer 1**

**Pr.900 and Pr.901 FM/AM terminal calibration**

**Pr.991 PU contrast adjustment**

**Pr.1006 to Pr.1008 (Clock function)**

**Pr.1200 AM output offset calibration**

- The following parameters are used for adjustment. It is recommended to adjust the setting of the parameters again after conversion according to the mechanical system.

**Pr.0 Torque boost**

**Pr.12 DC injection brake operation voltage**

**Pr.46 Second torque boost**

**Pr.245 Rated slip**

**Pr.246 Slip compensation time constant**

**C2 (Pr.902) to C7 (Pr.905) (Frequency setting input calibration parameters)**

- Since the communication-related parameters (**Pr.117 to Pr.124**) are also converted, communication may be disabled depending on the setting after the setting is written to parameters. When computer link communication is used for the FR-E500 inverter, use the FR-E800 inverter in NET mode.
- When the SF-PR motor is used, set "70 or 73" in **Pr.71 Applied motor** or **Pr.450 Second applied motor** after conversion.
- To disable the PWM carrier frequency automatic reduction function after conversion to avoid the change in the motor driving sound, set "0" in **Pr.260 PWM frequency automatic switchover**. To enable the PWM carrier frequency automatic reduction function, set "10".

- The following parameters are not converted because the FR-E800 series inverters have no corresponding parameters.

**Pr.146 Frequency setting command selection**

**Pr.175 User group 2 registration**

**Pr.176 User group 2 deletion**

**Pr.347 DeviceNet address startup data**

**Pr.348 DeviceNet baudrate startup data**

**Pr.922 Built-in frequency setting potentiometer bias**

**Pr.923 Built-in frequency setting potentiometer gain**

**Pr.387 Initial communication delay time<sup>\*1</sup>**

**Pr.388 Transmission interval during heartbeat<sup>\*1</sup>**

**Pr.389 Minimum transmission time during heartbeat<sup>\*1</sup>**

**Pr.391 Reception interval during heartbeat<sup>\*1</sup>**

**Pr.392 Event-driven detection width<sup>\*1</sup>**

<sup>\*1</sup> Available when the plug-in option is connected.

- Set appropriate values in **Pr.30 Regenerative function selection** and **Pr.70 Special regenerative brake duty** according to the combination of the inverter and regeneration unit used. For details, refer to the FR-E800 Instruction Manual (Function).
- When "100" or larger value is set in **Pr.71** and the RT signal is ON for the FR-E500 inverter, the settings are not applied to the FR-E800 inverter's parameters for the motor constant of the second motor or other settings (**Pr.450, Pr.451, Pr.453 to Pr.463, Pr.560, and Pr.860**). After conversion, set the appropriate values.
- When General-purpose magnetic flux vector control is selected (**Pr.80 Motor capacity** ≠ "9999") for the FR-E500 inverter, note the following points: The number of motor poles is converted to four (**Pr.81 Number of motor poles** = "4"). Set the number of poles of the motor used in **Pr.81**. When offline auto tuning is performed (**Pr.71 Applied motor** = "3, 13, 23, 103, 113, or 123") or motor constants are directly input (**Pr.71** = "5, 6, 15, 16, 105, 106, 115, or 116") for the source inverter, the setting method of CC-Link communication differs depending on the specification of the target inverter. Set the station number and baud rate in **Pr.542 and Pr.543** of the FR-E800 inverter (with FR-A8NC installed) according to the setting switches of the FR-E500-N inverter.
- The FR-E800-E or FR-E800-SCE inverter does not support some input signals. The unsupported signals cannot be set in **Pr.178 to Pr.184 (Input terminal function selection)**.  
When the following input signals are used in the source inverter, set the corresponding parameters as required in the "Parameter list" window because they are not converted.  
OH signal: External thermal relay input  
X16 signal: PU-External operation switchover  
STP (STOP) signal: Start self-holding selection
- When "60" is set in **Pr.505 Speed setting reference** in the FR-E800 inverter, the maximum value of the speed display is almost one-half of that in the FR-E700 inverter. Depending on the setting in the FR-E500 inverter, an out-of-range error (0x80010011) may occur for **Pr.1, Pr.18, Pr.37, or Pr.505**. If the error occurs, take the following corrective actions.  
When the value set in **Pr.1 or Pr.18** is too large, set a smaller value.  
If the out-of-range error persists after the **Pr.1 or Pr.18** setting is changed, check the **Pr.37** setting.

## 5.3.6 When "100" or larger value is set in Pr.119 for the FR-E500-EC inverter

1. Use the operation panel (FR-PA02-02) or the parameter unit (FR-PU04) to check the **Pr.338, Pr.339, and Pr.340** setting values of the FR-E500-EC. Record the values.


- 2.** Use the operation panel (FR-PA02-02) or the parameter unit (FR-PU04) to change the **Pr.119** setting value of the FR-E500-EC to the value obtained by subtracting 100 from the set value. After the setting has completed, turn OFF and then ON the power of the inverter or reset the inverter.
- 3.** Select [Specify source] in the "Convert" window of FR Configurator2 to display the "Source" window.
- 4.** Select [Read from connected inverter] and configure the setting. The source parameter list is displayed in the "Convert" window.
- 5.** In the source parameter list, set the values recorded in Step 1 in **Pr.338, Pr.339, and Pr.340**.
- 6.** After conversion, change the **Pr.119** setting value of the FR-E500-EC to the original value using the operation panel (FR-PA02-02) or the parameter unit (FR-PU04).

# 5.4 Graph

The graph function is not available for the following models.

Model: FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, and FR-E500

The inverter output frequency, current, and other data is sampled, and the result is displayed in a graph (waveform). Sampled data can be saved to a file (\*.jpg, \*.emf, \*.gp4, \*.xlsx, or \*.csv file), and sampling data saved to a file can be read (\*.gp4 file, or \*.st1 import) and displayed.

The [Graph] window can be displayed by selecting [Graph] from the [Monitor] menu, or by clicking  on the toolbar.

There are two types of sampling methods.

- High speed sampling**  
 Data is collected with the shortest sampling interval, approx. 0.125 [ms]. The target station of the sampling is only 1 station. The high speed sampling is available when the connection method is USB or Ethernet connection. The high speed sampling is not available when the computer is connected with the inverter via CC-Link IE TSN communication.  
 To perform high speed sampling for the FR-E700 or FR-E700-EX inverter, close all windows other than the "Graph" window.
- Monitor sampling**  
 The sampling interval varies depending on communication settings (communication speed, communication port) and the number of sampling items.

Setting item	Specifications
Sampling interval	High speed sampling: Set to between approx. 0.125 [ms] (mask count: 0) and approx. 20 [ms] (mask count: 30) Monitor sampling: Set to the range from 50 [ms] to 60000 [ms] (varies due to communication speed, communication port, and number of sampling items)
Sampling time [ms]	High speed sampling: Maximum = (mask count + 1) × 4000 Monitor sampling: Maximum = sampling interval × 4000
Analog data	Analog data for 4 channels can be sampled.
Digital data	Digital data for 4 channels can be sampled.

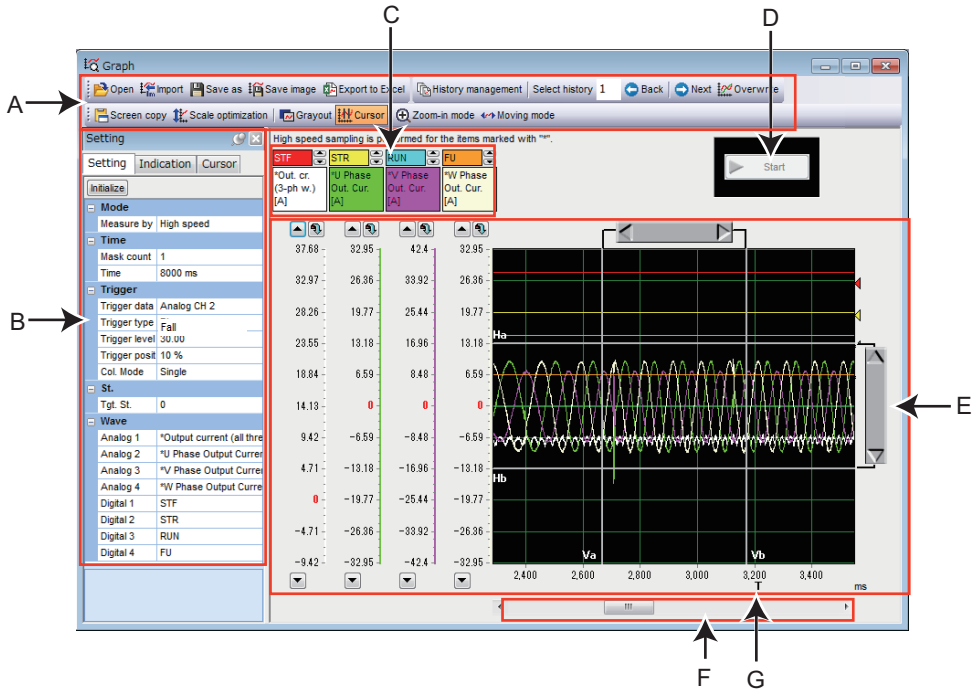
- Trace data display**  
 Trace data, stored in the USB memory device by the inverter, can be read or imported to be displayed in the graph window. For details of the trace function, refer to the Instruction Manual of the inverter.

Setting item	Specifications
Analog data	Analog data for 8 channels can be displayed in the graph window.
Digital data	Digital data for 8 channels can be displayed in the graph window.

 **NOTE**

- Running other applications during high speed sampling, or performing personal computer file operations during high speed sampling, etc., will cause communication errors (error code 0x80020007 or 0x80020008) or buffer overflow errors to occur, and data will not be able to be displayed correctly. In this case, execute such countermeasures as terminating the other applications, refraining from operation of FR Configurator2, and increasing the mask count setting of the sampling interval.
- The sampling interval varies depending on the inverter control method and presence/absence of plug-in options.

## 5.4.1 Graph window

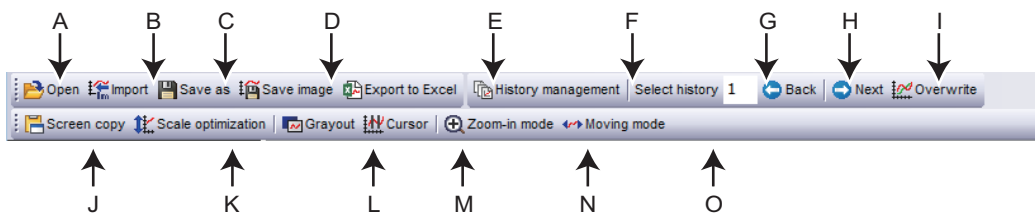


Symbol	Name	Function/description	
A	Tool bar	Allows operation of the file, history control, and graph display settings.	
B	Properties	Setting of the measurement conditions, display conditions, and cursor can be done in the properties.	
C	Sampling item column	Displays the contents of the analog CH and digital CH set by [Waveform] in the settings tab of the condition properties.	
D	Measurement start/stop button	Start	Starts sampling.
		Stop	Stops sampling. This button only appears when operating.
E	Graph display area	Displays the sampled data in a graph.	
F	Horizontal axis scroll bar	Allows scrolling of the displayed section in the graph display area.	
G	Trigger position	Shows the position in which the trigger completes. "T" on the graph horizontal axis denotes measuring time period.	

### NOTE

- If a normal communication with inverter is not maintained (communication error, etc.), the sampling stops.
- If a fault occurs during sampling, sampling continues.
- During sampling, other communication tasks such as parameter reading are unavailable.
- When parameter write is performed during measurement of graph, waveform data may be incorrect.
- When the negative output of monitor item is enabled/disabled during measurement of graph, the waveform data will be incorrect.

## 5.4.2 Graph window toolbar



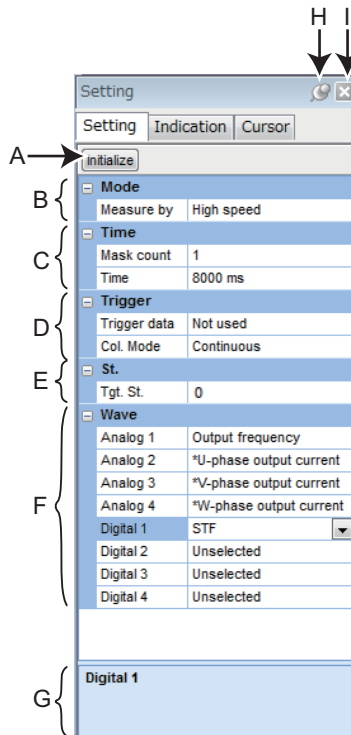
Symbol	Name	Function/description
A	Open	Opens a file (*.gp4, *.st1).
B	Import	Imports a file (*.gp4, *.st1). Use to overlay and compare with previously acquired waveform data.
C	Save as	Saves the file with a different name (*.gp4, *.csv).
D	Save image	Saves the graph screen as image data (*.jpg, *.emf).
E	Export to Excel	Divides the information displayed in the graph window into channels and saves it in Excel format.
F	History management	Switches between show/hide of the waveform history window.
G	Select history	Shows the history number of the displayed graph window.
H	Back	Changes the order of history numbers displayed in the graph window to ascending.
I	Next	Changes the order of history numbers displayed in the graph window to descending.
J	Overwrite	Switches overlaying of the entire history ON/OFF.
K	Screen copy	Saves the entire sub window to the clipboard as image data (*.bmp).
L	Scale optimization	In order to fit all of the waveform of the selected history within the window, the scale and 0-point position of the drawn waveform's vertical axis are automatically adjusted.
M	Grayout	Changes the display color of the waveform and the display area of the graph (color/gray).
N	Cursor	Switches between show/hide of the screen cursor.
O	Zoom-in mode	Specifies a range of the waveform, and zooms in.
P	Moving mode	Scrolls the waveform data being displayed.

### NOTE

- The trace data stays at "0" for unsupported terminals (terminals S1, S2, and NET) although the terminal names are displayed.
- The layout of excel files can be changed by editing the template file "Charts.xlsx".  
(An editable file can be found in C:\FREQROL\FRC2\dat\com\ChartTemplate.)
- Do not delete objects in the template file "Charts.xlsx" or the file itself. Using a template file in which the original template has been deleted will cause the error message "Export to Excel failed" to be displayed. appears.  
A template file used to export data to Excel when an error occurs can be found in the Configurator2 installation folder.  
(If the location of the installation folder has not been changed, it can be found in C:\ProgramFiles\MELSOFT\FRC2\sys\Function\ChartTemplate.) Do not overwrite the template file. Instead, copy the template file and use that file to make any changes.

## 5.4.3 Sampling settings

The sampling settings column can be shown by selecting the [Setting] tab in the property conditions. The time, trigger, station, and waveform of the analog CH can be set as analog data, and that of the digital CH can be set as digital data.





Symbol	Name	Function/description	
A	Initialize	Initialize sampling settings.	
B	Mode	Set the measurement mode for sampling.	
C	Time	Mask count	Set the interval for data sampling measurement.
		Measurement time (ms)	Displays the maximum time for data sampling measurement.
D	Trigger	Set the condition to start sampling measurement.	
E	St. (Station)	Selects the station to be set for sampling.	
F	Wave <sup>*1*2</sup>	Selects the items to be sampled. For analog data, 4 CHs (8 CHs of trace data) can be selected, and for digital data, 4 CHs (8 CHs of trace data) can be selected.	
G	Help area	Shows a description of the currently selected item.	
H	Show/hide switching pin	The show/hide switching pin is used to show or hide the property window.	
I	Close	Closes the currently-selected tab ([Setting], [Indication], or [Cursor]) of the property window. To open the closed tab again, from [Graph (Z)] of the menu bar, choose [Property window] and click the tab to open.	

\*1 For the position command, current position, and droop pulse, if either the parameter for the upper or lower digits is selected in the Wave section, "Unselected" is shown for the channel and the waveform is not displayed. Even when both upper and lower digit parameters are selected, "Unselected" is shown for the channel for the upper digit parameter. The upper digit value is connected to the lower digit value, and the monitor item name is shown for the channel for the lower digit parameter. The waveform is displayed for the channel for the lower digit parameter.

\*2 When the winding length (upper) and the winding length (lower) are monitored, if only the winding length (upper) is selected in the Wave section, "Unselected" is shown for the channel and the waveform is not displayed.

**NOTE**

- Virtual network terminals are displayed for the digital data when the high speed mode is selected.

## ◆ Setting range and setting unit of sampling interval and sampling time

- The setting range of the sampling interval and sampling time are different for high speed sampling and monitor sampling.
- High speed sampling (only for direct USB/Ethernet connections between inverters and the personal computer)  
The sampling interval can be about 0.125 [ms] (mask count 0) to about 20 [ms] (mask count 30). The sampling time can be up to "(mask count + 1) × 4000". The sampling interval varies depending on the control mode.
- Monitor sampling  
The sampling interval and the sampling time vary depending on communication settings. The minimum sampling interval is calculated by multiplying the number of sampling items by the lower limit value. The lower limit of the sampling interval is as shown in the following table.

Communication port	Communication speed [bps]	Sampling interval lower limit [ms]
Serial port	4800	250
	9600	150
	19200	100
	38400	100
	57600	50
	115200	50
USB	—	50
Ethernet	—	100

For the sampling interval and sampling time maximum values, minimum values, and setting units under actual measurement conditions, refer to the following table.

	Maximum value	Minimum value	Setting unit
Sampling interval [ms]	60000	Sampling interval lower limit (table above) × number of sampling items <sup>*1</sup>	1
Sampling time [ms]	Sampling interval × 4000	Sampling interval × 50 <sup>*2</sup>	1

\*1 If an alarm trigger is set, the alarm trigger is also counted as a sampling item.

\*2 Even if a sampling time shorter than 3000 [ms] is set, the minimum sampling time of 3000 [ms] applies.

Example: Connected to the serial port with a communication speed of 19200 bps, when monitoring three items of output frequency, output current, and output voltage as data items to be displayed in a graph.

Sampling interval lower limit = 100 [ms]

Sampling interval maximum value = 60000 [ms] (60 [s])

Sampling interval minimum value =  $100 \times 3 = 300$  [ms]

Sampling time maximum value =  $60000 \times 4000 = 240000000$  [ms] (approx. 66.67 [h])

Sampling time minimum value =  $300 \times 50 = 15000$  [ms] (15 [s])

## ◆ High speed mode sampling menu

- The following table shows the additional menu available when the high speed sampling is selected in the measurement mode selection. High speed sampling is applicable to the items whose name contains an asterisk (\*) at the beginning. For information about the list of items on each measurement mode and the details of each item, refer to the section about monitor items in the manuals of the inverter.

### ■ 800 series

Sampling item	Model				
	A800, A800-LC, A800-CRN, and A800-ELV	B and B3	A800-R2R and B4	F800	E800(-E/-SCE)
Winding length (upper + lower)	x	x	o	x	x
Winding length (lower)	x	x	o	x	x
Output frequency	o	o	o	o	o
*U-phase output current	o	o	o	o	o
*V-phase output current	o	o	o	o	o
*W-phase output current	o	o	o	o	o
*Converter output voltage	o	o	o	o	o
*Output current (for all three phases)	o	o	o	o	o
*Excitation current (A)	o	o	o	o	o
*Torque current (A)	o	o	o	o	o
Terminal 2	o	o	o	o	o
Terminal 4	o	o	o	o	o
Terminal 1	o	o	o	o	x
*Excitation current (%)	o	o	o	o	o
*Torque current (%)	o	o	o	o	o
Position command	o	o	x	x	o
Current position	o	o	x	x	o
Droop pulse	o	o	x	x	o
*Ideal speed command	x	x	x	x	o
*Output frequency (signed)	o	o	o	o	o
*Motor speed (signed)	o	o	o	o	o
*Speed command (signed)	o	o	o	o	o
*Torque command	o	o	o	x	o
*Motor torque	o	o	o	x	o
*Excitation current command	o	o	o	o	o
*Torque current command	o	o	o	o	o

## ■ 700 series

Sampling item	Model			
	E700 and E700-NE		E700EX	D700-G
	USB	Ethernet		
*Output frequency / *rotation speed	○	×	○	×
*U-phase output current	○	×	○	×
*V-phase output current	○	×	○	×
*W-phase output current	○	×	○	×
*Converter output voltage	○	×	○	×
*Output current (for all three phases)	○	×	○	×
*Excitation current (A)	○	×	○	×
*Torque current (A)	○	×	○	×
Terminal 2	○	×	○	×
Terminal 4	○	×	○	×
*Excitation current (%)	×	×	○	×
*Torque current (%)	×	×	○	×
*Position command (before the electronic gear)	×	×	○	×
*Current position (before the electronic gear)	×	×	○	×
*Droop pulse (after the electronic gear)	×	×	○	×
*Position within one revolution	×	×	○	×
*Ideal speed command	×	×	○	×
*Rotation speed (signed)	×	×	○	×
*Motor speed	×	×	○	×
*Speed command	×	×	○	×
*Excitation current command	×	×	○	×
*Torque current command	×	×	○	×

### NOTE

- When changing the sampling setting mode (monitor/high speed), change the sampling items before setting. Because the monitor contents change if the mode is changed, unshared sampling items are cleared. (Refer to [page 190](#).)
- When setting sampling items, set analog data (CH1 to CH4) sequentially from the analog data CH1, and digital data (CH1 to CH4) sequentially from the digital data CH1.
- When the position command, current position, or droop pulse is sampled, the upper and lower sets of data are combined to display a waveform, occupying two channels. For the latter of the two channels, "Unselected" is shown and another item cannot be selected to display a waveform.
- When sampling the voltage input of terminal 2, terminal 4, and terminal 1, **Pr.241 Analog input display unit switchover** will be set to "0" (% display), and the sampled data will be shown as 10 V = 100%.  
Example: If **Pr.73** = 1 (Terminal 2 input 0 to 5 V), **Pr.241** = 0 (% display)  
Sampling data of the graph will be shown at 50% even if 5 V is input to terminal 2.

## 5.4.4 Trigger settings


Setting a trigger allows sampling to start when an alarm occurs or sampling item conditions are met.

Trigger	
A →	Trigger data Analog CH 1
B →	Trigger type Rise
C →	Trigger level 0.00
D →	Trigger posit 10 %
E →	Col. Mode Single

Symbol	Name	Function/description
A	Trigger data	Selects the signal that triggers the start of sampling. The trigger signals are as follows. <ul style="list-style-type: none"> <li>• Not used</li> <li>• Analog CH, digital CH (sampling starts if the sampling items meet the conditions)</li> <li>• Fault (Sampling starts if a fault occurs.)</li> </ul>
B	Trigger type	Selects the conditions to determine trigger condition satisfaction from rise or fall. (Only appears when trigger data is set to analog CH or digital CH.) <ul style="list-style-type: none"> <li>• Rise Analog CH: When the value specified by the trigger level is exceeded Digital CH: When the signal changes from OFF to ON</li> <li>• Fall Analog CH: When the value drops to a level lower than the trigger level Digital CH: When the signal changes from ON to OFF</li> </ul>
C	Trigger level	Set the threshold to determine trigger condition satisfaction by the analog signal. (Only appears when the trigger data is set to Analog CH.)
D	Trigger position	Set the ratio of sampling data to collect before the trigger conditions are met. (Only appears when trigger data is set to analog CH, digital CH, or fault.)
E	Col. Mode (Collection mode)	Set whether the sampling should be continuously operated. <ul style="list-style-type: none"> <li>Single: Sampling is performed only once.</li> <li>Continuous: Sampling is performed continuously.</li> </ul>

### NOTE

- Activation of analog data

The trigger will not start if the trigger starting conditions have already been met when [  Start] is selected. If "Rise" is selected, the trigger occurs when the set value in "level" is exceeded, and with "Fall", the trigger occurs when the set value drops to a level lower than "level".

Example: If trigger start condition is "Rise" and the level is set to "3"

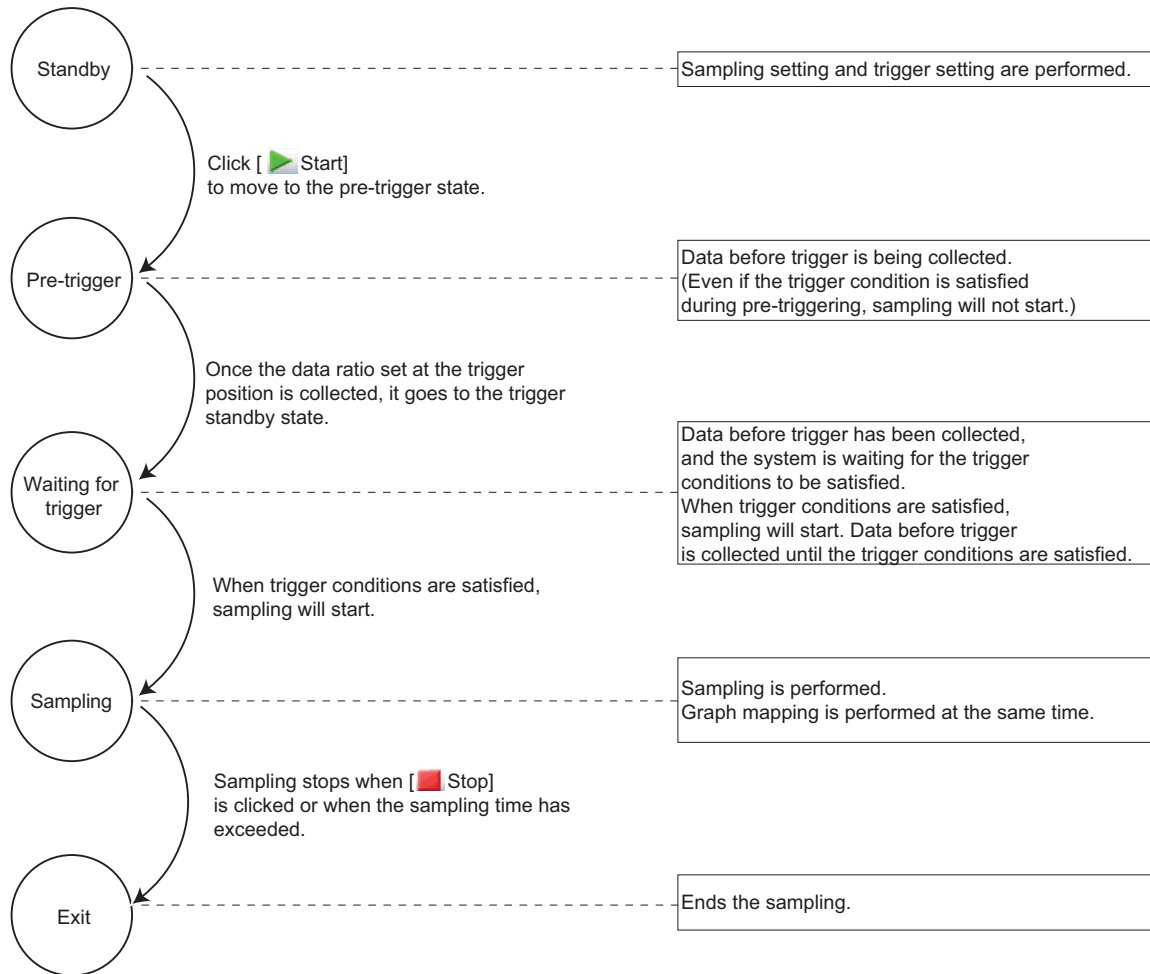
If the level is 4 when sampling starts, the trigger will not start. When changed from less than 3 to 3 or more, the trigger conditions are met and sampling will start.

- If the machine speed is displayed by setting **Pr.37 Speed display** to a value other than 0

To set the "Output frequency" or "Frequency" as the trigger data, enter the trigger activation machine speed as is to the "level" column.

For example, if **Pr.37 Speed display** is set to "1800" with "Output frequency" as the sampling item, and the trigger is to be activated at "900", input "900" as is to the "level" column.

- Trigger standby state

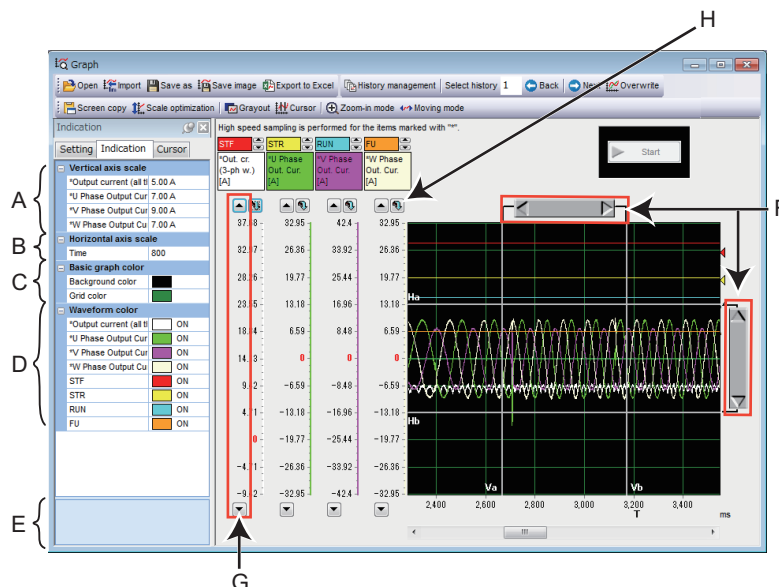


## 5.4.5 Changing scale and the graph display

The scale and waveform data display of the displayed graph can be changed. The graph's displayed portion can be divided into a grid of 10 vertical and 10 horizontal sections. The scale of the vertical axis and the horizontal axis can be changed by setting a numerical value for each 1 divided grid.

It is possible to slide and display the selected graph up and down by calibrating of the 0 position.

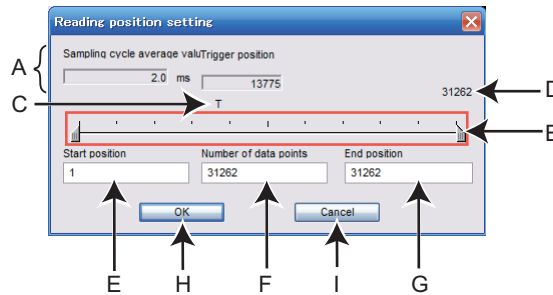
The scale value displayed on the vertical axis changes according to changes in the vertical axis scale.



Symbol	Name	Function/description
A	Vertical axis scale	Changes the vertical axis scale intervals for the analog CH set as sampling items.
B	Horizontal axis scale	Changes the horizontal axis scale interval based on the set operating time.
C	Basic graph color	Changes the background color of the graph and the color of the grid lines.
D	Waveform color	Changes the color of the measured waveform data.
E	Help area	Shows a description of the currently selected item.
F	Cursor bar	Adjusts the cursor position.
G	Scroll buttons for each analog channel	Moves up/down the graph waveform data for each analog channel.
H	Scroll destination setting button	Displays a dialog box to directly input a numerical value for the position of the travelling target of the waveform data.

• Reading position setting window

When displaying the trace data (\*.st1), which is saved in the recorder mode, on the graph window, the start position and end position of the waveform data can be specified. The reading area of waveform data can be specified by sliding pointers or entering numerical values into the start position and end position input boxes.



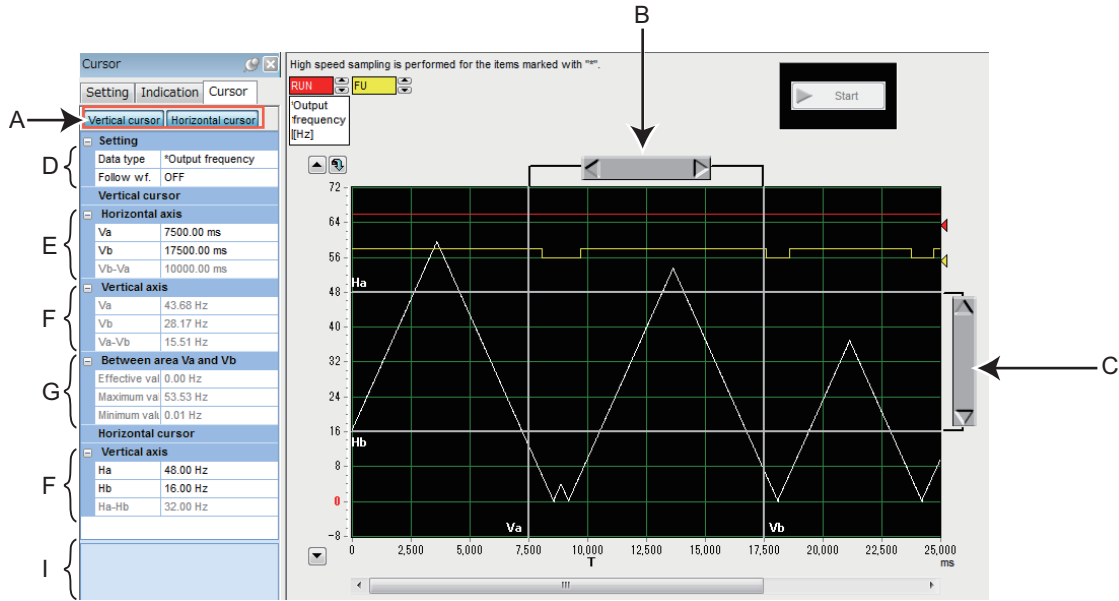
Symbol	Name	Function/description
A	Sampling cycle average value	Displays the sampling cycle.
B	Reading position setting slide bar	Set the reading start position, the number of reading data points, and the reading end position.
C	Trigger position	Displays the trigger position saved in the trace file.
D	Number of all points	Displays the number of points sampled and saved in the trace file.
E	Start position	Set the reading start position for the waveform data in sampling point number.
F	Number of points	Set the number of sampling points to display in the graph window.
G	End position	Set the reading end position for the waveform data in sampling point number.
H	OK	Applies the settings in the read position setting window and reads the trace data.
I	Cancel	Closes the window without applying the settings of the reading position setting window.

**NOTE**

- When opening the trace data (\*.st1) saved in the recorder mode using the graph function, reading of the file may take time.

## 5.4.6 Cursor function


Displays the numerical value, actual value between any two points, maximum value, and minimum value at the cursor on the waveform.

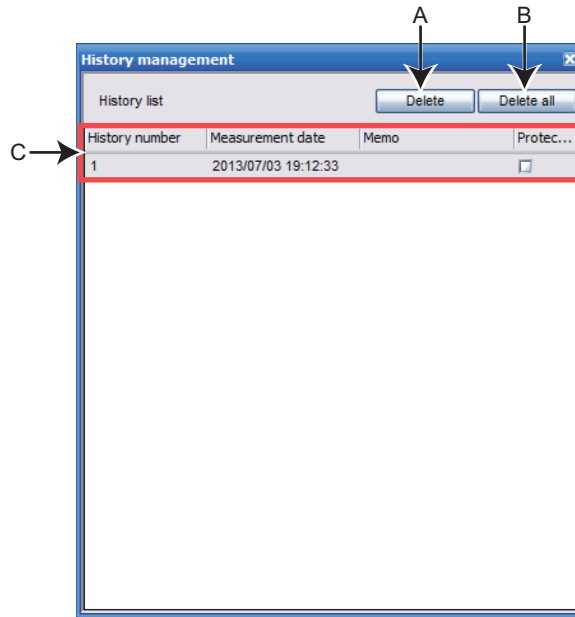


Symbol	Name	Function/description	
A	Vertical/horizontal cursor	Press the Vertical cursor or Horizontal cursor button to show/hide the cursor bar for cursors Va and Vb or the cursor bar for cursors Ha and Hb.	
B	Cursor bar (Horizontal axis)	Specifies the position between cursor Va and cursor Vb.	
C	Cursor bar (Vertical axis)	Specifies the position between cursor Ha and cursor Hb.	
D	Setting	Data type	Selects the analog CH subject to the cursor measurement.
		Follow wf. (Follow waveform)	ON: Moves the cursor so as not to change the value of the vertical axis or horizontal axis scale. OFF: Moves the cursor so as not to change the position of the graph display area.
E	Horizontal axis	Va	Shows the time (ms) at cursor point Va.
		Vb	Shows the time (ms) at cursor point Vb.
		Vb-Va	Shows the time (ms) between cursor points Va and Vb.
F	Vertical axis	Va	Shows the measured values at cursor point Va on the waveform.
		Vb	Shows the measured values at cursor point Vb on the waveform.
		Va-Vb	Shows the values between cursor points Va and Vb.
G	Between area Va and Vb	Effective value	Calculates and displays the effective value between cursor Va and cursor Vb.
		Maximum value	Shows the maximum value between cursor Va and cursor Vb.
		Minimum value	Shows the minimum value between cursor Va and cursor Vb.
H	Vertical axis	Ha	Shows the value at cursor point Ha.
		Hb	Shows the value at cursor point Hb.
		Ha-Hb	Shows the difference between the values at cursor points Ha and Hb.
I	Help area	Shows a description of the currently selected item.	

## 5.4.7 Displaying history

Data of the past 20 samplings (including the current data) can be saved and displayed. The graph data at the time of sampling is stopped is saved. When the number of records exceeds 20, the oldest set of data will be deleted for every new data sampled.

The "History management" window will be displayed by selecting [History management...] from the [Graph (Z)] menu while the graph window is displayed, or by clicking  on the toolbar.



Symbol	Name	Function/description	
A	Delete	Deletes the selected history.	
B	Delete all	Deletes all records. However, protected records will not be deleted.	
C	History list	History number	Records are displayed in ascending order by number from the newest to the oldest. Up to 20 records can be saved.
		Measurement date and time	Shows the date and time when sampling was executed.
		Memo	A field for comments.
		Protection	Prevents the checked records from being deleted by the delete button or by continuous sampling. Up to 10 records can be protected.

**NOTE**

- When continuously sampling, all acquired data will be added sequentially to the history, and the next sampling will be performed.
- When display is several graphs, cursor functions are available only for the currently displayed graph.
- The unit (unit symbol) used for the latest sampling is indicated as the unit of the sampling data. Take care when changing the unit.

## 5.4.8 Graph measurement procedure example (monitoring output frequency, terminal RUN, and terminal FU)

### ◆ Measurement without a trigger

1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".

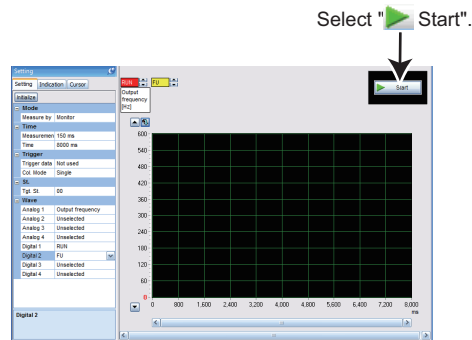




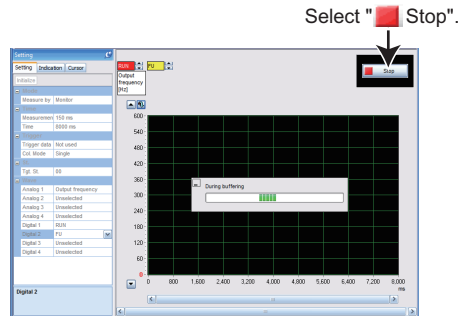
2. The sampling interval can be set for "measurement interval", and the sampling time can be set for "Time".



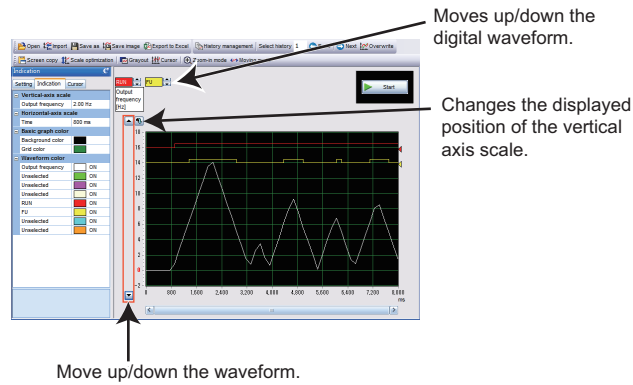
3. Measurement will start by clicking [  Start].



4. Measurement is finished by clicking [  Stop], or when the set sampling time is elapsed.



5. The graph display can be adjusted.

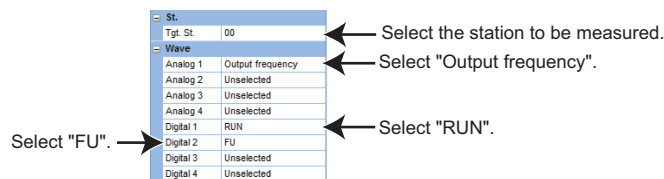


6. Data can be saved to a file by "Save as" (refer to [page 139](#)).

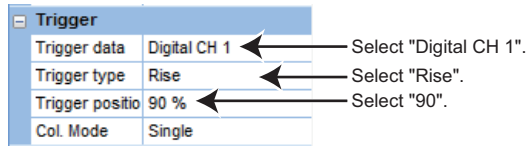
## ◆ Measurement with a trigger


### ■ Trigger data: Digital CH1

1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".

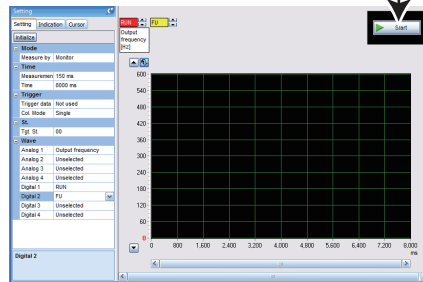


- Trigger setting:  
 Select "Digital CH1" for the "Trigger data" column.  
 Select "Rise" for the "Trigger type" column.  
 Select "90%" for the "Trigger position" column.



- Measurement will start by clicking [  Start ].

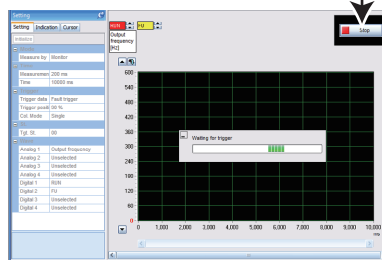
Select "  Start".



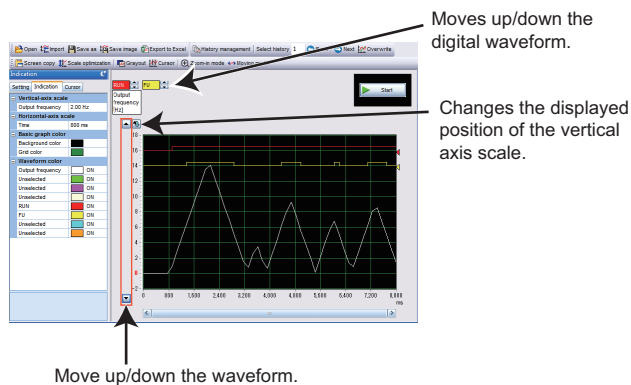
- Measurement automatically starts if the trigger conditions are met (rise of the terminal RUN signal).

- Measurement is finished by clicking [  Stop ], or when the set sampling time is elapsed.

Select "  Stop".




- The graph display can be adjusted.



- Data can be saved to a file by "Save as" (refer to [page 139](#)).

**NOTE**

- In this example, "Trigger position" is set to "90%". After clicking [  Start ], the rise of the terminal RUN signal will be ignored and measurement will not start until 90% of the sampling time elapses.

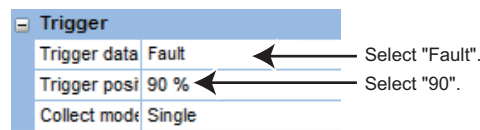
# ◆ Measurement with a trigger

## ■ Trigger data: Fault

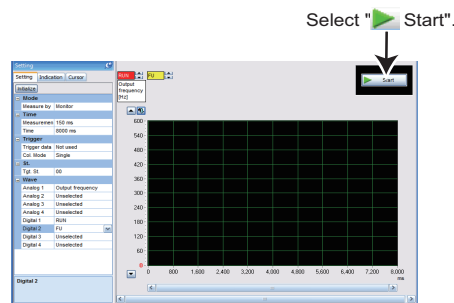
1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".



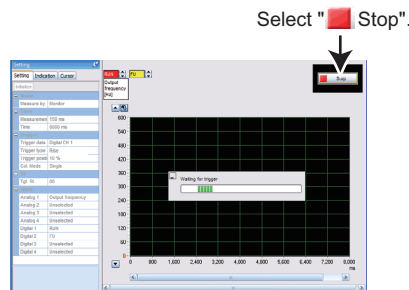
2. Trigger setting:  
Select "Fault" for the "Trigger data" column.  
Select "90%" for the "Trigger position" column.



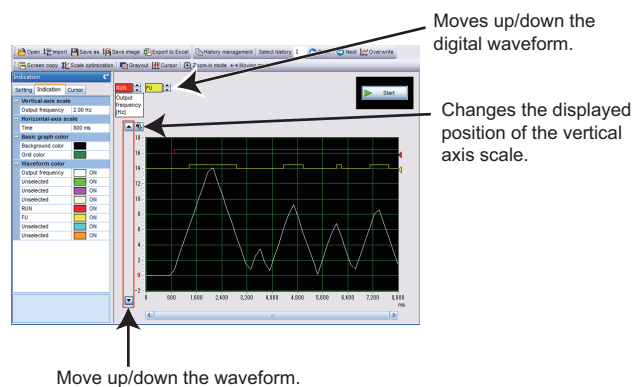
3. Measurement will start by clicking [ Start ].



4. Operation starts automatically if an inverter alarm occurs.
5. Measurement is finished by clicking [ Stop ], or when the set sampling time is elapsed.




6. The graph display can be adjusted.



7. Data can be saved to a file by "Save as" (refer to [page 139](#)).

 **NOTE**

- In this example, "Trigger position" is set to "90%". After clicking [ Start], the rise of the terminal RUN signal will be ignored and measurement will not start until 90% of the sampling time elapses.

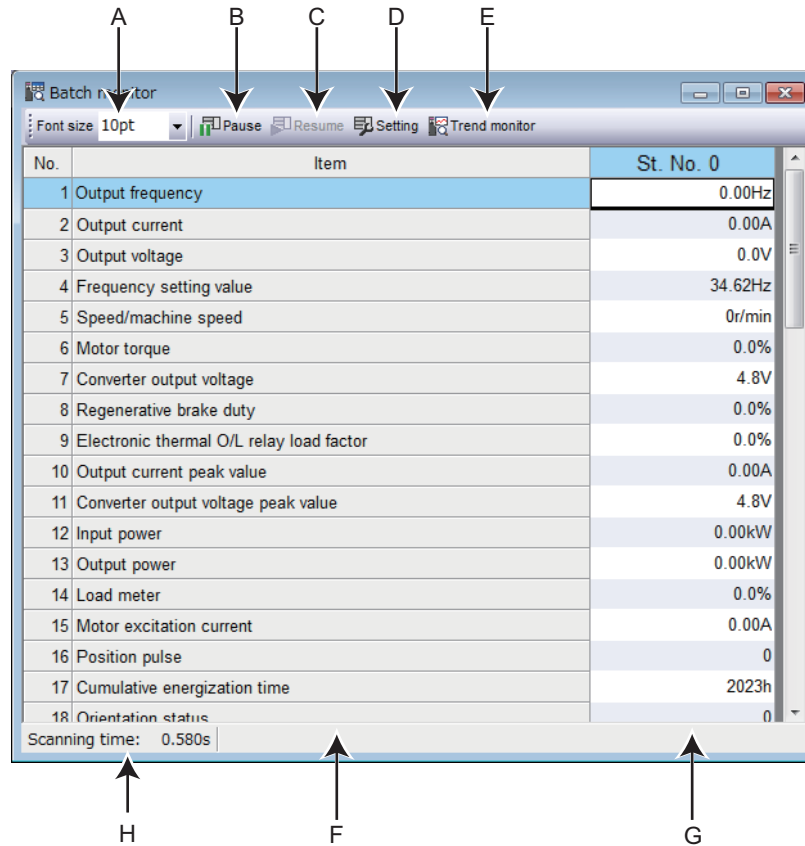
## 5.5 Batch monitor

The batch monitor function is not available for the following models.

Model: FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, and FR-E500

### ◆ Batch monitor window

"Batch monitor" monitors two or more items at a time. To show the "Batch monitor" window, select [Batch monitor] from the [Monitor] menu bar, or select [Batch monitor] from the project tree area.

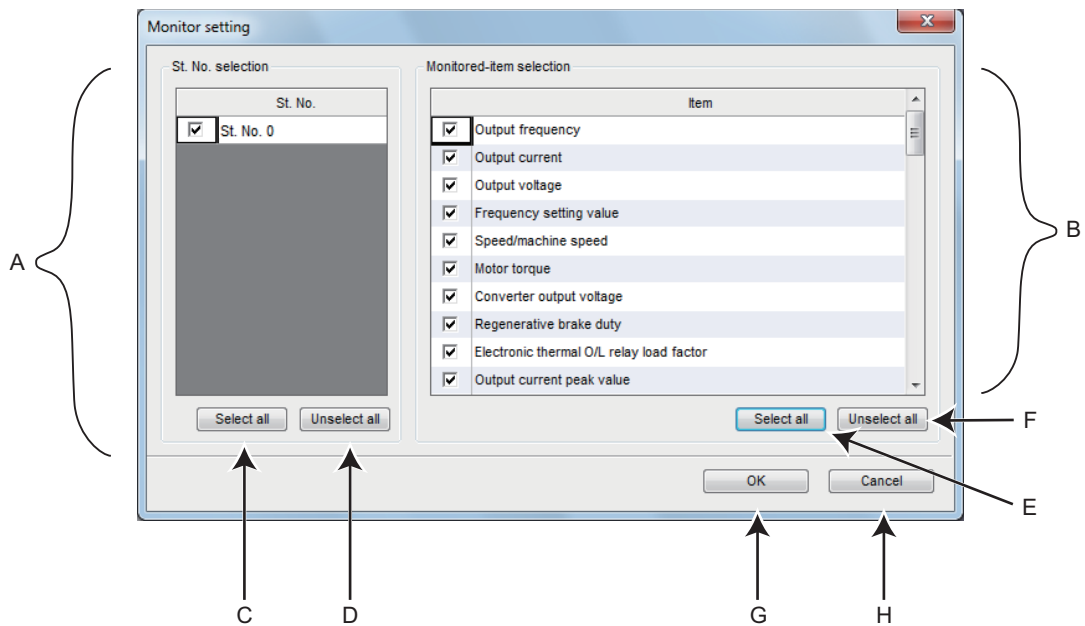


Symbol	Name	Function/description
A	Font size	Changes the size of monitor item characters.
B	Pause	Pauses acquisition of monitor data.*1
C	Resume	Resumes acquisition of monitor data.*1
D	Setting	Set monitor items to display. Refer to <a href="#">page 201</a> .
E	Trend monitor	Displays the window for selecting items to be monitored in a graph. Refer to <a href="#">page 201</a> .
F	Item	Shows the monitor item.
G	St. No. (Station number)	Shows the acquired data of the corresponding station.
H	Scanning time	Shows the elapsed time from the last update.

\*1 The [Pause] and [Resume] buttons are effective for the batch monitor window and all trend monitor windows.

## ◆ Monitor setting window

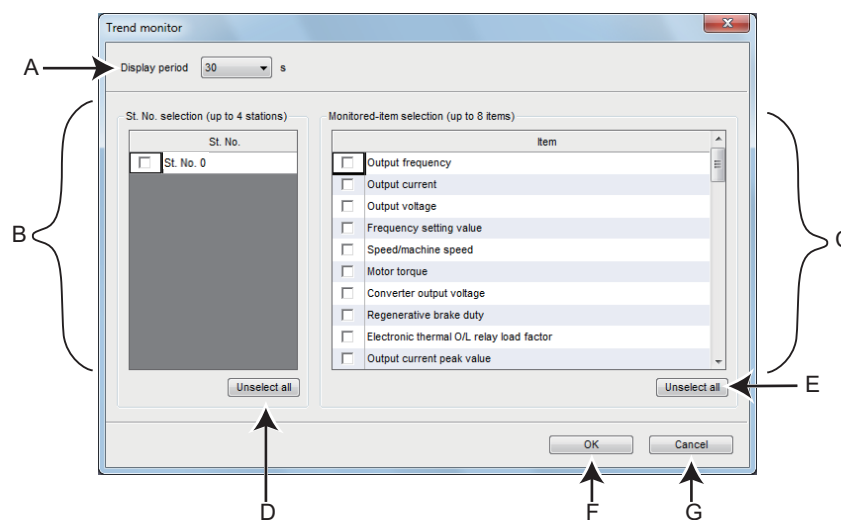
The station number and monitor item to be displayed in the batch monitor window can be set by the monitor setting window. Selecting a monitor item will add the item in the batch monitor window.



Symbol	Name	Function/description
A	St. No. selection (Station number selection)	Select station(s) for displaying the graph of monitor items.
B	Monitor item selection	Set monitor items to display.
C	Select all	Selects all station numbers.
D	Unselect all	Unselects all station numbers.
E	Select all	Selects all monitor items.
F	Unselect all	Unselects all monitor items.
G	OK	Applies all selected station numbers and monitor items to the batch monitor window.
H	Cancel	Discards the monitor settings, and closes the monitor setting window.

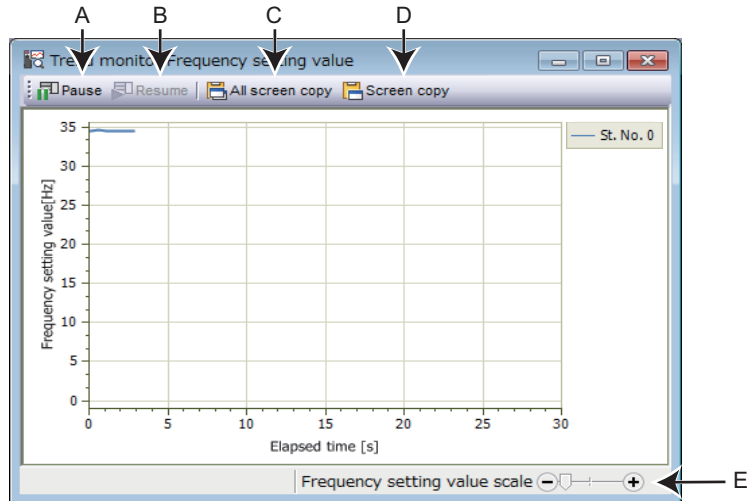
## ◆ Trend monitor window

Select the trend monitor in the "Batch Monitor" window to select items to be displayed in a graph. Select the checkbox to display the graph.



Symbol	Name	Function/description
A	Display period	Select the maximum point of the scale in seconds for the elapsed time axis of a graph in the trend monitor window.
B	Station number selection	Select station(s) for displaying the graph of monitor items.
C	Monitor item selection	Set monitor items to display.
D	Unselect all	Unselects all station numbers.
E	Unselect all	Unselects all monitor items.
F	OK	Applies the selection of the station and monitor items to the trend monitor window.
G	Cancel	Discards the monitor settings, and closes the monitor setting window.

After selecting the monitor items in the trend monitor setting window, the trend monitor window appears.



Symbol	Name	Function/description
A	Pause	Pauses acquisition of monitor data.*1
B	Resume	Resumes acquisition of monitor data.*1
C	All screen copy	Saves all of the displayed trend monitor windows to the clipboard.
D	Screen copy	Saves the trend monitor window to the clipboard. This button is effective for the window on which the button is placed.
E	Frequency setting value scale	Scales the vertical axis.

\*1 The [Pause] and [Resume] buttons are effective for the batch monitor window and all trend monitor windows.

## ◆ Monitor item

- For information about the list of items and the details of each item, refer to the section about monitor items in the manuals of the inverter.

### NOTE

- If a communication error occurs, batch monitoring will be stopped. To perform batch monitoring again, go offline once after correcting the cause of the communication error, and then go online again.
- If an inverter fault occurs during batch monitoring, the output frequency, output current, and output voltage monitors hold the monitored values at the time the fault.

# 5.6 I/O terminal monitor

The I/O monitor function is not available for the following models.


Model: FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, and FR-E500

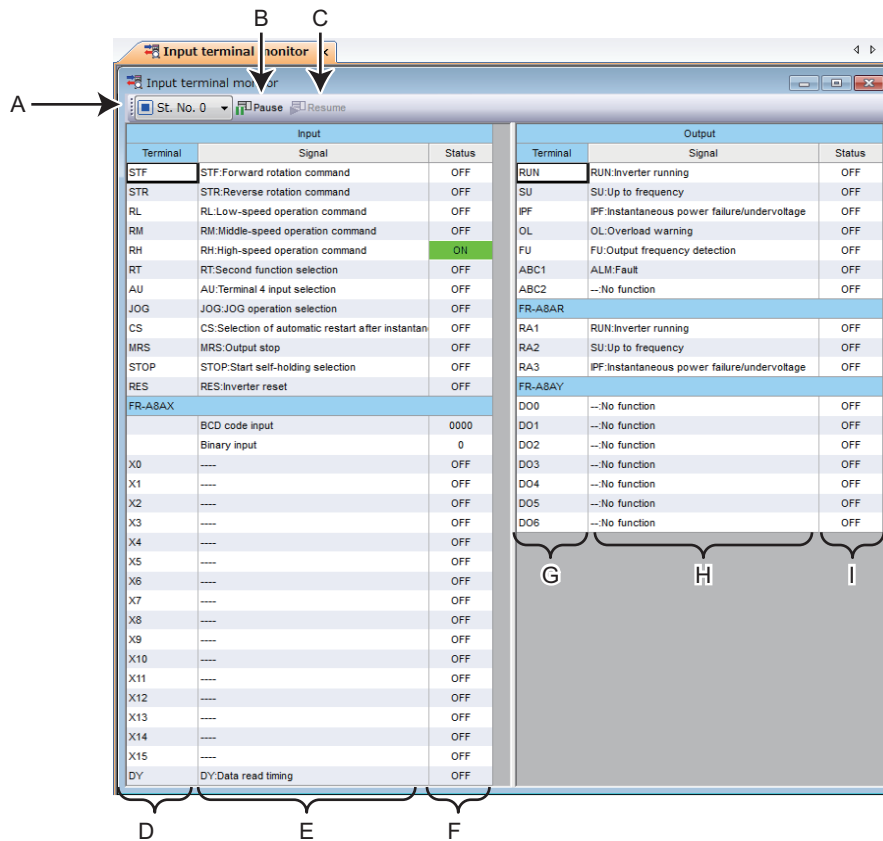
Setting "256" and larger values for output signals is available in FR-E800(-E/-SCE) inverters manufactured in August 2020 or later.

Check the SERIAL number indicated on the inverter rating plate or packaging. Alternatively, use the serial number function to check the number.

For how to read the SERIAL number, refer to each Instruction Manual of the inverter.

## ◆ I/O terminal monitor window

The "I/O terminal monitor" window shows the signals assigned to the I/O terminals of the control circuit and the ON/OFF status of the signals. To display the "I/O terminal monitor" window, select [I/O terminal monitor...] in the [Monitor] menu, or select  on the toolbar.



Symbol	Name	Function and Description
A	St. No. (Station number)	Select a station to display its I/O terminal monitor data.
B	Pause	Temporarily stop the acquisition of the I/O terminal monitor data.
C	Resume	Resumes the acquisition of the I/O terminal monitor data.
D	Input Terminal	All the input terminals are displayed.
E	Input Signal	Signal names assigned to the input terminals are displayed.
F	Input Status	Input terminal status are displayed.
G	Output Terminal	All the output terminals are displayed.
H	Output Signal	Signal names assigned to the output terminals are displayed.
I	Output Status	Output terminal status are displayed.

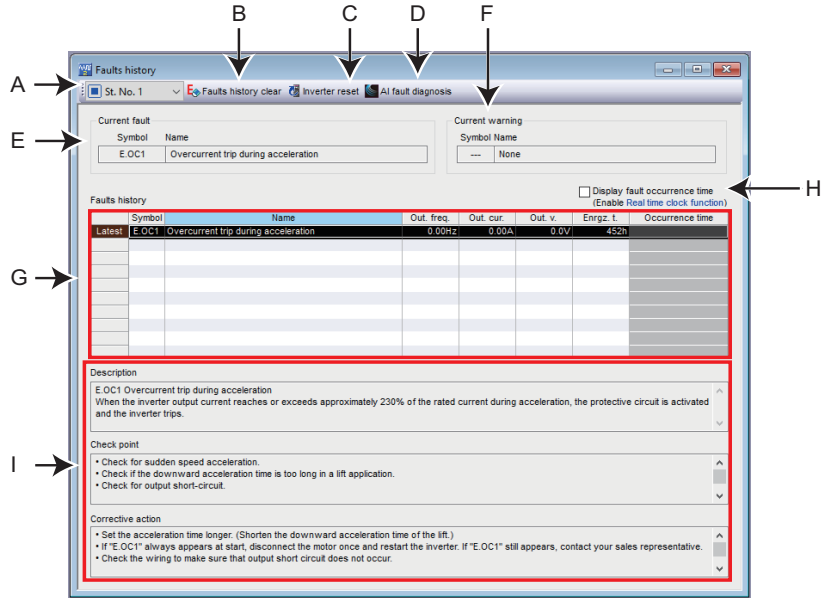


# 5.7 Diagnostics

"Diagnosis" displays fault information of the inverter.

## 5.7.1 Faults history function

Select [Faults history...] in the [Diagnosis] menu to display "faults history" in the sub-window.



Symbol	Name	Function/description
A	St. No. (Station number)	Selects a station of which fault history is to be displayed.
B	Faults history clear	Clears the selected station's fault history.
C	Inverter reset	Reset the selected station's inverter.
D	AI fault diagnosis	Used to find probable causes of faults using AI technology. (For details, refer to <a href="#">page 209</a> .)
E	Current fault	Shows the current fault. If E.SAF occurs in the FR-E800-SCE, the fault detail code is displayed. When the fault detail code cannot be obtained, "----" will be displayed. When the fault detail code is not defined, "Unknown code" will be displayed.
F	Current warning	Shows the current warning.
G	Faults history	Shows a list of fault records read from the inverter. The output frequency, output current, output voltage, and energization time at the time of fault occurrence are displayed by each fault record. The time of fault occurrence is also displayed when the "Display fault occurrence time" checkbox is checked.
H	Display fault occurrence time	Determines whether to display the time of fault occurrence. (Available for the product having the real time clock function.)
I	Fault details	Shows explanations of selected fault details, check points, and corrective actions.

### NOTE

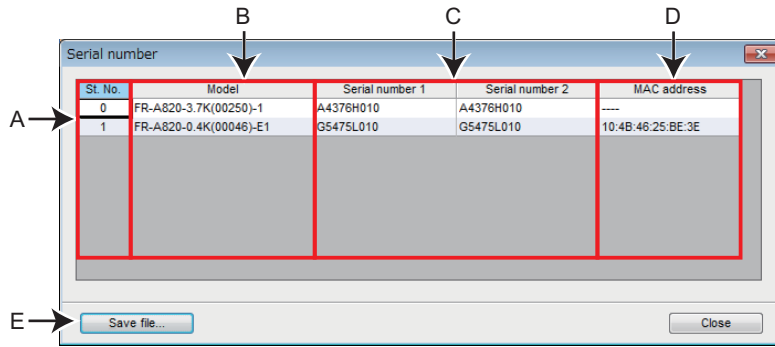
- When "Ethernet" is selected for "PC-side port", "TCP" for "Protocol", and "GOT" for "Through", clicking the [Inverter reset] button for any inverter switches all the connected inverters to offline. Switch the connection status to online to establish the communication with the inverter again.

## 5.7.2 Serial number function

The serial number function is not available for the following models.

Model: FR-CS80, FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-D700, FR-E700EX, FR-D700-G, and FR-E500

Select [Serial number...] in the [Diagnose] menu to display the "Serial number" window as a sub window.



Symbol	Name	Function and Description
A	Station number	All the stations set in the project are displayed.
B	Model	Models of the connected inverters are displayed.
C	Serial number	Serial numbers of the circuit boards of the connected inverters are displayed.
D	MAC address	MAC addresses of the connected inverters are displayed.
E	Save file...	Save the data as a file (*.csv) with a name.

**NOTE**

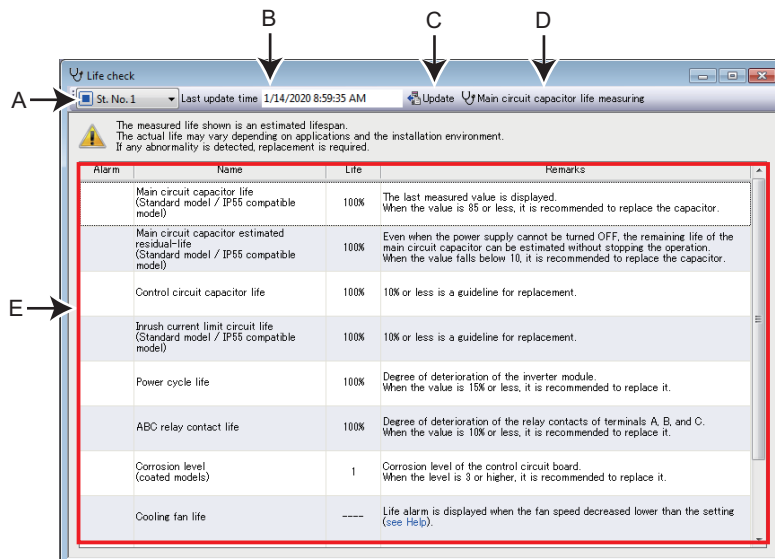
- When the inverter is repaired, its serial number or MAC address may be changed.
- If the serial number is not displayed, check the connection of FR Configurator2 and the inverter. If the serial number is not displayed although the connection is correct, contact your sales representative.


### 5.7.3 Life check

The life check function is not available for the following models.

Model: FR-CS80, FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, and FR-E500

Select [Life check...] in the [Diagnose] menu to display the "Life check" window as a sub window.



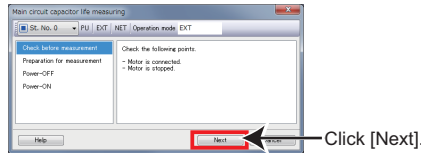
Symbol	Name	Function and Description
A	St. No. selection (Station number selection)	Select a station for the life check.
B	Last update time	Displays the last update time (system clock time of the personal computer).
C	Update	Updates the life information data.
D	Main circuit capacitor life measuring	Starts life measuring of the main circuit capacitor.
E	Parts life information	Displays parts life information read from the inverter.  mark is shown in the alarm field for the parts recommended to be replaced.

**NOTE**

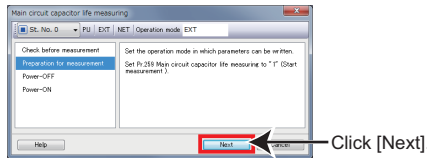
- For EtherCAT communication, the main circuit capacitor's life cannot be measured during control using the controlword. To measure the main circuit capacitor's life, disable the control using the controlword.

## ◆ Procedure of main circuit capacitor life measuring

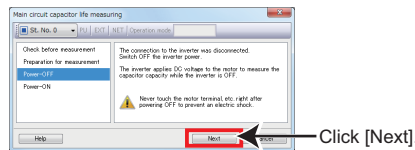
1. The "Check before measurement" instructions are shown. Check the following items, and click [Next].  
Motor is connected.  
Motor is stopped.



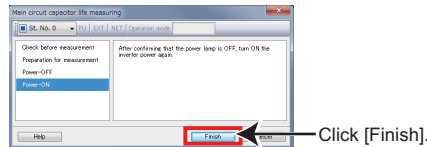
2. The "Preparation for measurement" instructions are shown. Set the operation mode in which parameters can be written and click [Next].  
Set **Pr.259 Main circuit capacitor life measuring** to "1".



3. The "Power-OFF" instructions are shown. Turn OFF the inverter power, and click [Next].



4. The "Power-ON" instructions are shown. After confirming that the power lamp is OFF, switch ON the inverter power again, and click [Finish].



## 5.7.4 Diagnosis result output

Select [D]iagnosis result output... in the [D]iagnose menu to output the diagnosis data of the selected station and save the data in a CSV text file.

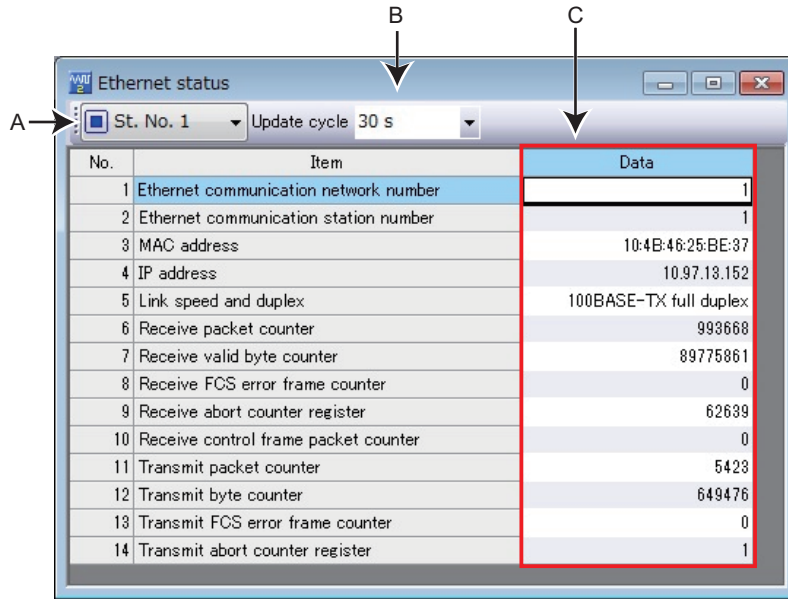
[Diagnosis result output...] is also available in the pop-up menu. (Refer to [page 129](#).)

## 5.7.5 Ethernet status

The Ethernet status check function is available for the following models.

Model: FR-A800-E, FR-F800-E, and FR-E700-NE

Select [Ethernet status...] in the [Diagnose] menu to display the "Ethernet status" window as a sub window.



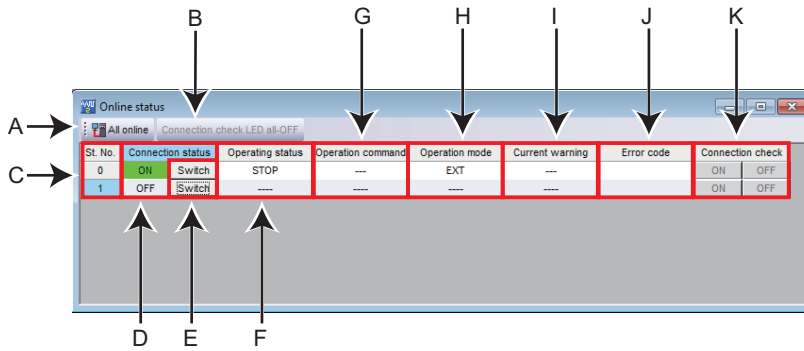
Symbol	Name	Function and Description
A	St. No. selection (Station number selection)	Select a station number to check the Ethernet status. The pull-down list shows station numbers of the Ethernet models only.
B	Update cycle	Set the data update interval.
C	Communication status	Displays the Ethernet communication status of the selected inverter. (The display shows "----" in the data field in the initial state, just after the station number changes, or when the setting is not available.)

**NOTE**

- Inverters connected via CC-Link IE network are not recognized properly.

## 5.7.6 Online status

Select [Online status...] in the [Diagnose] menu to display the "Online status" window as a sub window.



Symbol	Name	Function and Description
A	All online	Set all the devices selected in the project to online.
B	Connection check LED all-OFF	<ul style="list-style-type: none"> <li>FR-A800/FR-F800 inverter with FR-A8NCG in it Used to turn OFF the ACT LEDs on all successfully connected inverters.</li> <li>FR-E800-(SC)E Used to stop the blinking of the NET LEDs on all successfully connected inverters.</li> </ul>
C	St. No.	All the station numbers set in the project are displayed.
D	Connection status	Shows the connection status.
E	Switch online/offline	Switch from offline to online and from online to offline.
F	Operating status	Shows the operating status.*1
G	Operation command	Shows operation commands. Shows "----" if there is no start command.*1
H	Operation mode	Shows the operating mode.*1
I	Current warning	Shows the current warning. Shows "----" if there is no warning.*1
J	Error code	Shows if a connection error has occurred when the connection status is switched from offline to online.
K	Connection check	ON <ul style="list-style-type: none"> <li>FR-A800/FR-F800 inverter with FR-A8NCG in it Used to turn ON the ACT LEDs on successfully connected inverters or plug-in options (FR-A8NCG) to blink in the communication check of FR Configurator2. (The blinking LEDs will automatically turn OFF five minutes after the start of blinking.)</li> <li>FR-E800-(SC)E Used to turn ON the NET LEDs on successfully connected inverters to blink in the communication check of FR Configurator2. (The blinking LEDs will automatically turn OFF five minutes after the start of blinking.)</li> </ul>
		OFF <ul style="list-style-type: none"> <li>FR-A800/FR-F800 inverter with FR-A8NCG in it Used to turn OFF the ACT LEDs on successfully connected inverters or plug-in options (FR-A8NCG) in the communication check of FR Configurator2.</li> <li>FR-E800-(SC)E Used to stop the blinking of the NET LEDs on successfully connected inverters in the communication check of FR Configurator2.</li> </ul>

\*1 Shows "----" when a device is offline.

**NOTE**

- Inverters connected via CC-Link IE network are not recognized properly.
- The LED all-OFF setting and the connection check ON/OFF setting are available for direct connection of the FR-A800/FR-F800 with the FR-A8NCG in it or the FR-E800-E.
- Those settings are enabled when online communication is established between the inverter and FR Configurator2.
- LEDs may not blink depending on the Pr.1399 setting even when the connection check is enabled. Refer to the Instruction Manual of the inverter for the details.

**◆ For use of the connection check ON/OFF setting**

- Before using the connection check ON/OFF setting, check the setting of parameters in the following table.

Model	Intermediate device	Pr.	Name	Setting
FR-E800-(SC)E	Not connected	1427	Ethernet function selection 1	Set "45237" in any of the parameters.
		1428	Ethernet function selection 2	
		1429	Ethernet function selection 3	
		1430	Ethernet function selection 4	

## 5.8 AI fault diagnosis

The AI fault diagnosis function is available for the following models under the following conditions.

Applicable model	FR-E800(-E/-SCE)	
Condition	Control method	Any method
	Control mode	Speed control only
Applicable alarm	Overcurrent trip: E.OC1 to E.OC3, overvoltage trip: E.OV1 to E.OV3, inverter overload trip (electronic thermal relay function): E.THT, motor overload trip (electronic thermal relay function): E.THM	

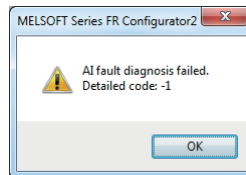
The AI fault diagnosis function is used to suggest probable causes of faults using AI technology.

Select [AI fault diagnosis] in the [Faults history (Z)] menu while the fault history window is displayed front, or select [AI fault diagnosis] on the toolbar to display the AI fault diagnosis window as a sub window.

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### NOTE

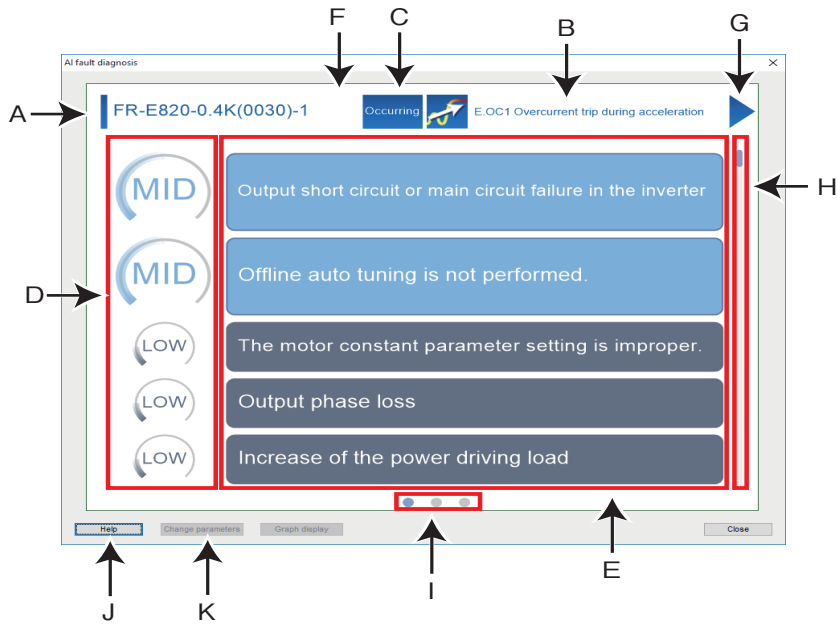
- When the following dialog box appears with the message "AI fault diagnosis failed. Detailed code: -1", update the operating system using Windows Update. After the update, install FR Configurator2 again.



- The AI fault diagnosis function can be used for up to three faults while a fault occurs, and up to two faults while no fault occurs.
- The AI fault diagnosis function is not available for faults initiated by setting **Pr.997**.
- To enable the AI fault diagnosis function, AI diagnosis data are stored in the computer that contains the files for diagnosis.
- The trace function is not available during AI fault diagnosis.
- The AI fault diagnosis function is not available for faults that occurred during emergency drive operation.

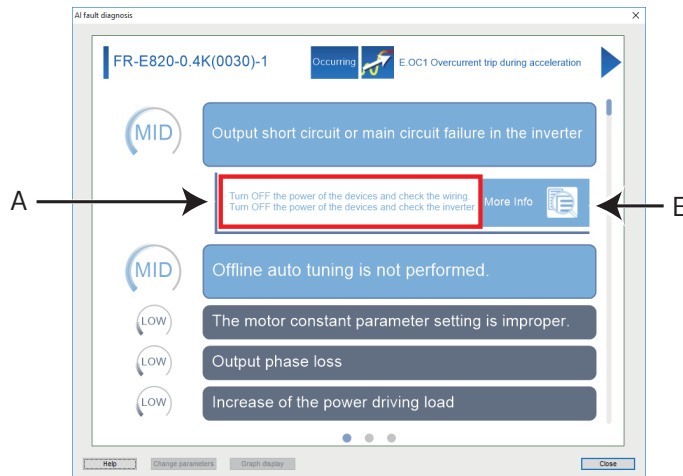
# 5.8.1 AI fault diagnosis details

## ◆ AI fault diagnosis result screen



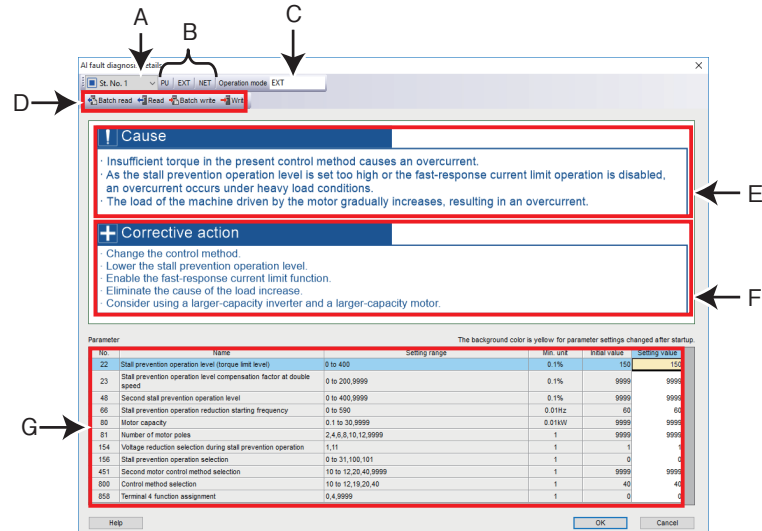
Symbol	Name	Function/description
A	Model	Shows the model of the inverter of the selected station number.
B	Fault name	Shows the name of fault.
C	Fault No.	Shows the fault record number.
D	Probability	Shows the probability (high, mid, and low) of each cause.
E	Cause	Shows probable causes of the fault. When a cause is selected, details of corrective action to be taken and the [Details] button appear. (Refer to <a href="#">page 210.</a> )
F	Next fault (left arrow key)	Shows probable causes of the subsequent fault. Not applicable when no subsequent fault exists.
G	Previous fault (right arrow key)	Shows probable causes of the previous fault. Not applicable when no previous fault exists.
H	Scroll bar (up/down key)	Used for scrolling up/down when there are many probable fault causes.
I	Page indicator	Shows the current page and the total number of pages.
J	Help	Displays the help window.
K	Change parameters	Shows parameters changed after the startup. (Refer to <a href="#">page 212.</a> )

## ◆ AI fault diagnosis result screen (cause selection)



Symbol	Name	Function/description
A	Action	Corrective actions are suggested.
B	Details (space key)	Shows a window for details of the parameters related to the cause. (Refer to <a href="#">page 211.</a> )

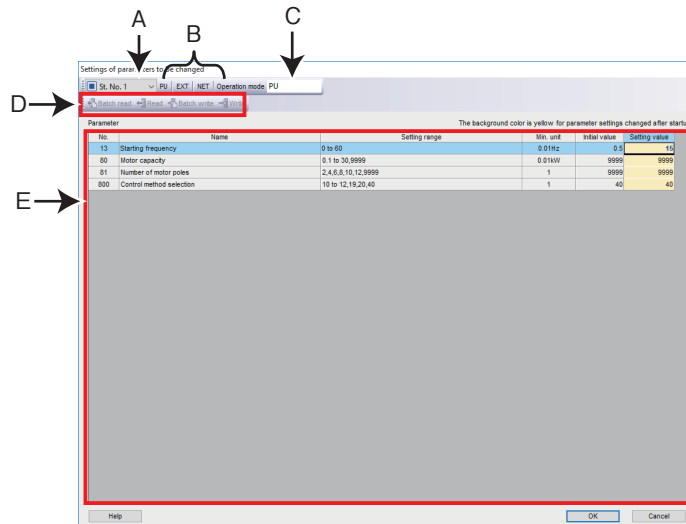
## ◆ AI fault diagnosis result screen (details of the AI fault diagnosis)



Symbol	Name	Function/description
A	St. No. (Station number)	Select a station registered in the project.
B	Operation mode button	Switch between the operation modes of the inverter.
C	Operation mode indication	Displays the operation mode.
D	Batch read	Reads all the parameter setting values of the selected inverter.
	Read	Reads the selected parameter setting values of the selected inverter.
	Batch write	Writes all the selected parameter setting values in the setting value column to the selected inverter.
	Write	Writes all selected parameter setting values to the selected inverter.
E	Cause	Shows probable causes of the fault.
F	Action	Corrective actions are suggested.
G	No.	Shows the parameter number.
	Name	Shows the parameter name.
	Setting range	Shows the setting range of the parameter setting value.
	Min. unit	Shows the minimum setting unit of the parameter setting value.
	Setting value	Inputs the value to be written to the inverter. The yellow background color shows that the value has been changed after the startup.



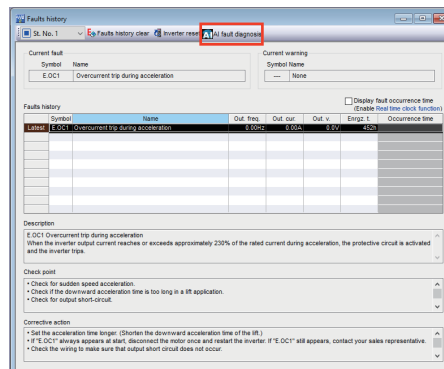
## ◆ AI fault diagnosis result screen (settings of parameters to be changed)



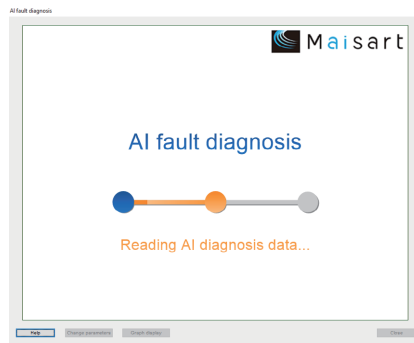
Symbol	Name	Function/description
A	St. No. (Station number)	Select a station registered in the project.
B	Operation mode button	Switch between the operation modes of the inverter.
C	Operation mode indication	Displays the operation mode.
D	Batch read	Reads all the parameter setting values of the selected inverter.
	Read	Reads the selected parameter setting values of the selected inverter.
	Batch write	Writes all the selected parameter setting values in the setting value column to the selected inverter.
	Write	Writes all selected parameter setting values to the selected inverter.
E	No.	Shows the parameter number.
	Name	Shows the parameter name.
	Setting range	Shows the setting range of the parameter setting value.
	Min. unit	Shows the minimum setting unit of the parameter setting value.
	Initial value	Shows the factory default parameter setting values of the inverter.
	Setting value	Inputs the value to be written to the inverter. The yellow background color shows that the value has been changed after the startup.

## 5.8.2 Procedure for finding probable causes by AI fault diagnosis

1. Select [Faults history...] in the [Diagnosis].
2. The fault history window is displayed.
3. Display the fault history window front and select [AI fault diagnosis] in the [Faults history (Z)] menu. Alternatively, select [AI fault diagnosis] on the taskbar in the fault history window.



- The AI fault diagnosis function is activated to find probable causes and display corrective actions for the fault in the fault history using AI technology.

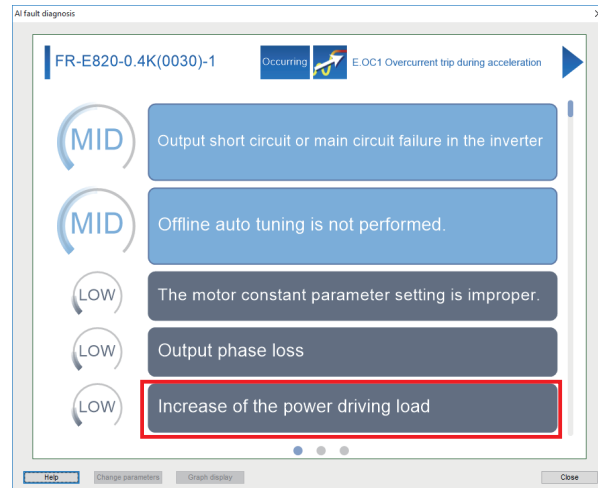


- Select one of the probable causes suggested in the result screen to check corrective actions to be taken.

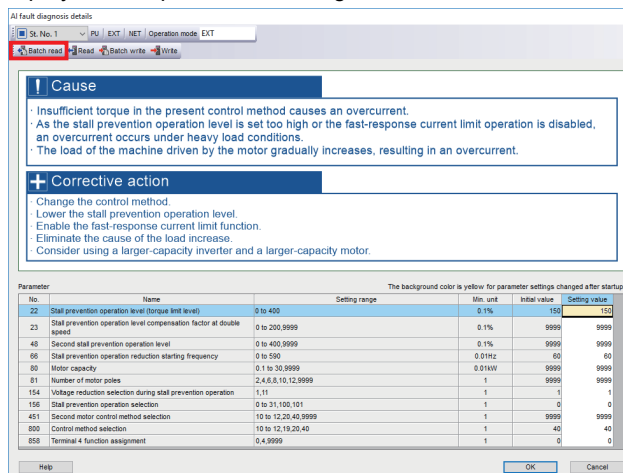


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- When the probable cause is related to parameter settings, click [Details].



- Click [Batch read] to display current parameter settings of the inverter.



8. Check the corrective actions and change parameter settings as required. After the change, click [Batch write] to write the setting values to the inverters.

The screenshot shows the 'AI fault diagnosis details' window. At the top, there are tabs for 'St. No. 1', 'PU', 'EXT', 'NET', and 'Operation mode: EXT'. Below the tabs are buttons for 'Batch read', 'Batch write', and 'Write'. The 'Batch write' button is highlighted with a red box. The main content area is divided into two sections: 'Cause' and 'Corrective action'. The 'Cause' section lists three items: 'Insufficient torque in the present control method causes an overcurrent.', 'As the stall prevention operation level is set too high or the fast-response current limit operation is disabled, an overcurrent occurs under heavy load conditions.', and 'The load of the machine driven by the motor gradually increases, resulting in an overcurrent.' The 'Corrective action' section lists four items: 'Change the control method.', 'Lower the stall prevention operation level.', 'Enable the fast-response current limit function.', and 'Eliminate the cause of the load increase. Consider using a larger-capacity inverter and a larger-capacity motor.' Below these sections is a table of parameters. The table has columns for 'No.', 'Name', 'Setting range', 'Max. unit', 'Initial value', and 'Setting value'. The 'Setting value' column is highlighted in yellow. The 'Batch write' button is also highlighted in red at the bottom right of the window.

No.	Name	Setting range	Max. unit	Initial value	Setting value
22	Stall prevention operation level (torque limit level) speed	0 to 400	0.1%	150	150
23	Stall prevention operation level compensation factor at double speed	0 to 200.9999	0.1%	9999	9999
40	Second stall prevention operation level	0 to 400.9999	0.1%	9999	9999
66	Stall prevention operation reduction starting frequency	0 to 580	0.01Hz	60	60
80	Motor capacity	0.1 to 30.9999	0.01kW	9999	9999
91	Number of motor poles	2,4,6,8,10,12,9999		1	9999
154	Voltage reduction selection during stall prevention operation	1,11		1	1
156	Stall prevention operation selection	0 to 31,100,101		1	0
451	Second motor control method selection	10 to 12,20,40,9999		1	9999
890	Control method selection	10 to 12,19,20,40		1	40
898	Terminal 4 function assignment	0,4,9999		1	0

# 5.9 Test operation

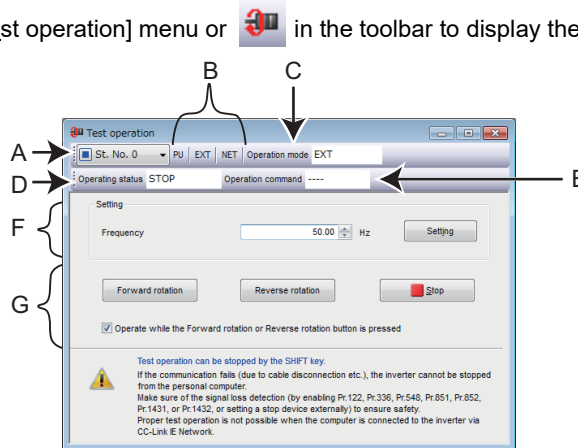
The test operation function is not available for the following models.

Model: FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-D700, FR-E700EX, FR-D700-G, and FR-E500

FR Configurator2 gives a start command to the inverter to start test operation. "Test operation" allows the selected inverter's frequency to be displayed, operation mode to be switched and displayed, forward and reverse operation commands to be sent, setting frequency to be written, and other functions to be done.

## 5.9.1 Test operation window

Select [Test operation...] in the [Test operation] menu or  in the toolbar to display the test operation window.

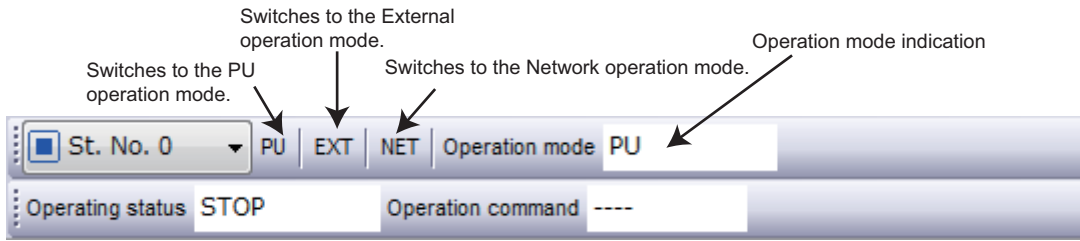


Symbol	Name	Function/description	
A	St. No. (Station number)	Selects a station to perform test operation with.	
B	Operation mode switch	Switches over the inverter's operation mode.	
C	Operation mode	PU	PU operation mode
		EXT	External operation mode
		NET	NET operation mode
		PU + EXT	External/PU combined operation mode
		----	Indicates that the operation mode information was not acquired properly.
		No display	Nothing is displayed when offline.
D	Operating status	FWD	Rotating forward
		REV	Rotating reversely
		STOP	Stopped
		ALARM	Being stopped by the fault
		----	Appears when operating status information acquisition fails.
		No display	Nothing is displayed when offline.
E	Operation command	STF	During forward rotation command
		STR	During reverse rotation command
		----	Appears when operating status information acquisition fails.
		No display	Nothing is displayed when offline.
F	Frequency setting	Set the running frequency.	
G	Run/Stop command buttons	Sends the run/stop commands.	

## 5.9.2 Displaying and switching the operation mode

To switch the operation mode, select the [PU], [EXT], or [NET] button, or select [PU(P)], [EXT(E)], or [NET(N)] from the [Operation mode (Z)] menu bar.

The connected inverter's operation mode can be verified in the operation mode indicator.

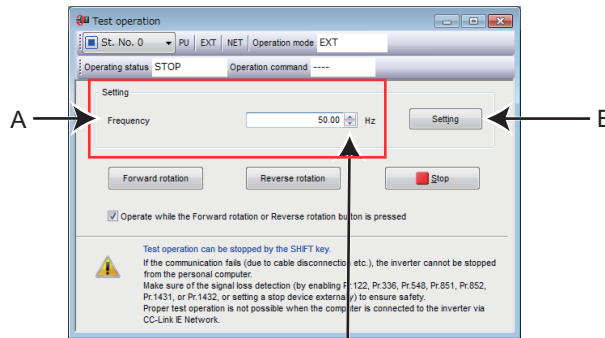


**NOTE**

- Some operation modes cannot be switched according to the present operation mode and parameter settings. For example, the initial setting does not allow switching between the PU operation mode and the Network operation mode. (For the details, refer to the Instruction Manual of the inverter.)

### 5.9.3 Specifying the running frequency (rotation speed, machine speed)

Input a desired frequency (rotation speed, machine speed) to the frequency (speed) input section and press the [Setting] button to write the set frequency to the inverter. To increase or decrease a read setting frequency in minimum setting increments, use the buttons at the right side of the input section.

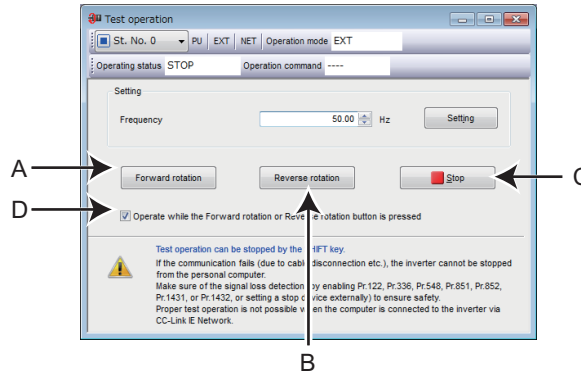


Increase/decrease the frequency (rotation speed, machine speed) in minimum increments.

Symbol	Name	Function/description	
A	Frequency setting	Frequency/ rotation speed/ machine speed	Appears in the following situations. <ul style="list-style-type: none"> <li>When offline</li> <li>When the selected station's set frequency unit is other than the frequency, rotation speed, and machine speed.</li> <li>When the set frequency information acquisition fails.</li> </ul>
		Frequency	Appears when the frequency (Hz) has been set as the set frequency unit for the selected station.
		Rotation speed	Appears when the rotation speed (r/min) has been set as the set frequency unit for the selected station.
		Machine speed	Appears when the machine speed has been set as the set frequency unit for the selected station.
B	Setting	Set the set frequency.	

## 5.9.4 Running the inverter in test operation (forward rotation, reverse rotation, and stop commands)

Press the [Forward rotation] or [Reverse rotation] button to execute test operation. Press the STOP button to stop operation. Selecting "Operate while the Forward rotation or Reverse rotation button is pressed" will execute test operation only while the [Forward rotation] or [Reverse rotation] button is held down. Simply pressing the [Forward rotation] or [Reverse rotation] button will write the input frequency value to the inverter. After the value is written to the inverter, the test operation will start. Release the [Forward rotation] or [Reverse rotation] button to stop the operation.



Symbol	Name	Function/description
A	Forward rotation	Rotates the motor forward.
B	Reverse rotation	Rotates the motor reversely.
C	Stop	Stops the operation.
D	Operation option	Click on the checkbox to enable test operation only while the [Forward rotation] or [Reverse rotation] button is held down.

### NOTE

- Open the batch monitor window (on [page 200](#)) to check the output frequency during test operation.
- If FR Configurator2 had to be terminated, stop the operation by sending an operation stop command to the inverter.
- Do not press an individual operation button, such as [Forward rotation] or [Reverse rotation], repeatedly. Doing so may make the FR Configurator2 operation unstable. If operation continues unintentionally, press [Stop] to stop operation.
- Operation may continue without the [Forward rotation] or [Reverse rotation] button being held down by dragging the mouse cursor off the button while holding down the [Stop] button. Press the [Stop] button to stop operation.
- The [Forward rotation] and [Reverse rotation] buttons are disabled when the computer is connected with the inverter via CC-Link IE network communication.

### Caution

- If communication fails (due to, for example, cable disconnection), the inverter cannot be stopped from the personal computer.  
Ensure safety by, for example, enabling signal loss detection (**Pr.122, Pr.336, Pr.548, Pr.851, Pr.852, Pr.1431, or Pr.1432**) or externally setting a stop device.
- Test operation is not properly performed when the computer is connected to the inverter via CC-Link IE Field Network communication.

# 5.10 Using the Developer function

The Developer function is not available for the following models.

Model: FR-CS80, FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-D700, FR-E700EX, FR-D700-G, and FR-E500

The Developer function becomes available when devices shown in the following table are connected.

PC-side port	Intermediate device	GOT		Programmable controller module
		Model	OUT port	
USB	No device	—	—	—
	GOT	GOT2000/GOT1000	RS-232C/RS-485	—
	Programmable controller	—	—	CPU module
Ethernet	Not connected	—	—	—
	Programmable controller	—	—	CPU module / Ethernet module
COM port	Not connected	—	—	—
	GOT	GOT1000	RS-232C/RS-485	—
	Programmable controller	—	—	CPU module (other than RCPU module)

Developer is used for creating sequence programs and writing them to the inverter to enable the use of the PLC function of the inverter. PLC function is used for customizing inverter operation to meet the machine specifications. PLC function operates the inverter according the input signals, or outputs signals and monitored values according to inverter operation. For details of inverter settings related to the PLC function, refer to the PLC Function Programming Manual.

## 5.10.1 Before using Developer

When using Developer, enable the PLC function of the inverter (**Pr.414 PLC function operation selection** ≠ 0).

For details, refer to the Instruction Manual of the inverter used.

Pr.	Name	Initial value	Setting range	Description
414	PLC function operation selection	0	0	PLC function disabled
			1, 11	PLC function enabled
			2, 12	

### ◆ Outline of PLC function

- A800/F800

To enable the PLC function, set a value other than "0" in **Pr.414**. When **Pr.414** = "2 or 12", the sequence start (SQ) signal from the external input terminal is valid regardless of the setting in **Pr.338 Communication operation command source**. (The change of **Pr.414** setting is applied after an inverter reset.)

- E800

To enable the PLC function, set a value other than "0" in **Pr.414**. (The change of **Pr.414** setting is applied after an inverter reset.)

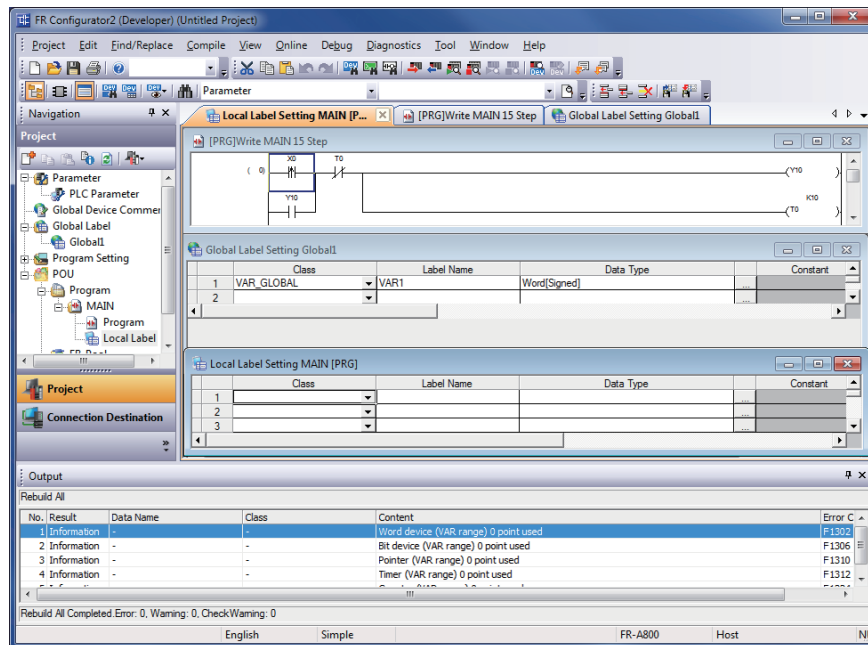
Switch the execution key (RUN/STOP) of the sequence program by turning the SQ signal ON/OFF. The sequence program can be executed by turning the SQ signal ON. To input the SQ signal, set "50" in any parameter from **Pr.178 to Pr.189 (Input terminal function selection)** to assign the function to a terminal.

**NOTE**

- Developer cannot be used when a communication speed of 4800 bps or less is selected for PU connector communication (**Pr.118**) or RS-485 terminal communication (**Pr.332**). To use Developer, set a communication speed of 9600 bps or more.
- Developer cannot be used when the 7-bit data length is selected for PU connector communication (**Pr.119**) or RS-485 terminal communication (**Pr.333**). To use Developer, select the 8-bit data.

## 5.10.2 Starting the Developer function

Select [Developer] in the [Tool] menu to start Developer.

**NOTE**





- Use the help function of Developer to refer to the contents of the manuals relevant to Developer. Refer to the contents of the manuals from [Help] (on [page 257](#)) in the Developer menu.
- To use the USB/RS-485 conversion cable DINV-U4, set RS-232C (initial setting) in the PC side I/F in the Developer Connection Destination setting window.
- A file created by GX Developer or GX Works2 cannot be used by Developer of FR Configurator2. Conversely, a file created by Developer of FR Configurator2 cannot be used for GX Developer or GX Works2.




## 5.10.3 Basic menu

The following table shows the basic menus of Developer. The basic menus can be operated in the same way under any window condition. For details on each function, refer to manuals of GX Works2.















Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon	
Project	New...	—	—		
	Open...	—	—		
	Close	—	—	—	
	Save	—	—		
	Save As...	—	—	—	
	Delete...	—	—	—	
	Verify	—	—	—	
	Change Project Type	—	—	—	
	Object	New...	—	—	
		Rename	—	—	—
		Delete	—	—	—
		Copy	—	—	
		Paste	—	—	
		Set as Default Connection	—	—	—
		Property...	—	—	
	Print (J)...	—	—		
	Print Preview (B)...	—	—	—	
	Print Window...	—	—	—	
	Print Window Preview	—	—	—	
Printer Setup...	—	—	—		
Recently used Developer project path 1 to 4	—	—	—		
Exit (Q)	—	—	—		
Edit	Undo	—	—		
	Redo	—	—		
	Cut	—	—		
	Copy	—	—		
	Paste	—	—		
Find/Replace	Cross Reference	—	—	—	
	Device List	—	—	—	
	Find Device	—	—		
	Find Instruction	—	—		
	Find Contact or Coil	—	—		
	Find String	—	—	—	
	Replace Device	—	—	—	
	Replace Instruction	—	—	—	
	Replace String	—	—	—	
	Change Open/Close Contact	—	—	—	
	Device Batch Replace	—	—	—	
	Register to Device Batch Replace	—	—	—	
Compile	Build	—	—		
	Rebuild All	—	—		





















Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon	
View	Toolbar	Standard	—	—	
		Program Common	—	—	
		Docking Window/Switch Project Data	—	—	
		Display All	—	—	
	Status bar	—	—	—	
	Colors and Font...	—	—	—	
	Docking Window	Navigation	—		
		Element Selection	—		
		Output	—		
		Cross Reference	—		
		Device Use List	—		
		Watch 1 to 4 (1) to (4)	—	—	
		Find/Replace	—		
Online	Read from PLC...	—	—		
	Write to PLC...	—	—		
	Verify with PLC...	—	—	—	
	Remote Operation(S)...	—	—	—	
	Password/Keyword	New...	—	—	—
		Delete...	—	—	—
		Disable...	—	—	—
	Set Clock...	—	—	—	
	Monitor	Start Monitoring (All Windows)	—	—	
		Stop Monitoring (All Windows)	—	—	
		Start Monitoring	—	—	
		Stop Monitoring	—	—	
		Change Value Format (Decimal)	—	—	—
		Change Value Format (Hexadecimal)	—	—	—
		Device / Batch Monitor	—	—	
		Monitor Condition Setting...	—	—	—
		Monitor Stop Condition Setting...	—	—	—
		Change Instance (Function Block)...	—	—	—
	Watch	Start Watching	—	—	—
		Stop Watching	—	—	—
		Display Format of Bit Device	Number Display	—	—
			ON/OFF Display	—	—
			Symbol Display	—	—
Register Watch	—	—	—		
Debug	Modify Value...	—	—		
Diagnostics	PLC Diagnostics...	—	—	—	

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon	
Tool	IC Memory Card	Read IC Memory Card...	—	—	
		Write IC Memory Card...	—	—	
	Check Program...	—	—	—	
	Check Parameter...	—	—	—	
	Clear All Parameters (E)...	—	—	—	
	Device/Label Automatic-Assign Setting...	—	—	—	
	Block Password...	—	—	—	
	Merge Data...	—	—	—	
	Language Selection...	—	—	—	
Options	—	—	—		
Window	Cascade	—	—	—	
	Tile Vertically	—	—	—	
	Tile Horizontally	—	—	—	
	Arrange Icons	—	—	—	
	Close All	—	—	—	
	Other Window...	—	—	—	
Help	FR-A800/F800/E800 Programming Manual	—	—	—	
	GX Works2 Help...	—	—		
	Operating Manual	GX Works2 Beginner's Manual (Simple Project) (1)	—	—	—
		GX Works2 Beginner's Manual (Structured Project)(2)	—	—	—
		Operating Manual Common(3)	—	—	—
		Operating Manual (Simple Project)(4)	—	—	—
		Operating Manual (Structured Project)(5)	—	—	—
		Operating Manual Intelligent Function Module (6)	—	—	—
Operating Manual Simple Project, Function Block (7)	—	—	—		

## 5.10.4 Ladder edit menu

The following menus can be used for ladder editing by Developer. The following menus include SFC-Zoom. For details on each function, refer to manuals of GX Works2.
























Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon	
Edit	Continuous Paste (Q)...	—	—	—	
	De <u>l</u> ete...	—	—	—	
	Restore After Ladder Conversion	—	—	—	
	Insert Row	—	—	—	
	De <u>l</u> ete Row	—	—	—	
	I <u>n</u> sert Column	—	—	—	
	De <u>l</u> ete Col <u>u</u> mn	—	—	—	
	NPO Batch I <u>n</u> sert...	—	—	—	
	NPO Batch De <u>l</u> ete	—	—	—	
	Edit L <u>i</u> ne	—	—	—	
	De <u>l</u> ete Line	—	—	—	
	Change TC Setting...	—	—	—	—
	Ladder Edit Mode (Z)	Re <u>u</u> d Mode	—	—	
		W <u>r</u> ite Mode	—	—	
	Ladder Symbol	Open Contact...	—	—	
		Close Contact...	—	—	
		Open Branch...	—	—	
		Close Branch...	—	—	
		Co <u>l</u> l...	—	—	
		Applic <u>a</u> tion I <u>n</u> struction...	—	—	
		Ve <u>r</u> tical Line...	—	—	
		Ho <u>r</u> izontal Line...	—	—	
		De <u>l</u> ete Vertical Line...	—	—	
		De <u>l</u> ete Ho <u>r</u> izontal Line...	—	—	











Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon
Edit	Ladder Symbol	Pulse Contact Symbol	Rising Pulse...	 SF7
			Falling Pulse...	 SF8
			Rising Pulse Branch...	 aF7
			Falling Pulse Branch...	 aF8
			Rising Pulse Close...	 saF5
			Falling Pulse Close...	 saF6
			Rising Pulse Close Branch...	 saF7
			Falling Pulse Close Branch...	 saF8
		Invert Operation Results...	—	 caF10
		Operation Result Rising Pulse...	—	 aF5
	Operation Result Falling Pulse...	—	 caF5	
	Inline Structured Text	Insert Inline Structured Text Box	—	
			Display Template	
			Mark Template (Left)	
			Mark Template (Right) (J)	
	Edit FB Instance...	—	—	—
	Documentation	Device Comment	—	
			Statement	
			Note	
			Statement/Note Batch Edit...	—
	Easy Edit	Connect Line to Right-Side Symbol	—	—
			Connect Line to Left-Side Symbol	—
			Enter/Delete HLine Rightward	—
			Enter/Delete HLine Leftward	—
			Enter/Delete VLine Downward	—
			Enter/Delete VLine Upward	—
			Switch Open/Close Contact	—
			Switch Statement/Note Type	—
			Instruction Partial Edit	—
			Edit List for Ladder Block...	—
	Read from CSV File (J)...	—	—	
	Write to CSV File (K)...	—	—	

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon	
Eind/Replace	Change M <sub>o</sub> dule I/O No....	—	—	—	
	S <u>w</u> itch Statement/Note Type...	—	—	—	
	L <u>ine</u> Statement List...	—	—		
	J <u>ump</u> ...	—	—	—	
	J <u>ump</u> to Next Ladder B <u>l</u> ock Start...	—	—	—	
	J <u>ump</u> to Previous Ladder Block Start...	—	—	—	
	N <u>ext</u> Device	—	—	—	
	N <u>ext</u> Contact ( <u>Y</u> )	—	—	—	
	N <u>ext</u> Coil ( <u>Z</u> )	—	—	—	
	B <u>ack</u>	—	—	—	
View	C <u>o</u> mment	—	—	—	
	S <u>t</u> atement	—	—	—	
	N <u>o</u> te	—	—	—	
	Display Lines of Monitored Current Value ( <u>W</u> )...	—	—	—	
	Display Format for Device Comment ( <u>Q</u> )...	—	—	—	
	D <u>i</u> splay Ladder Block	H <u>i</u> de Ladder Block	—	—	—
		D <u>i</u> splay L <u>a</u> dder Block	—	—	—
		H <u>i</u> de All Ladder Block	—	—	—
		D <u>i</u> splay All Ladder Block	—	—	—
	D <u>e</u> vice Display	D <u>e</u> vice Display	—	—	
		B <u>a</u> tch Device Display	—	—	—
		C <u>a</u> ncel All Device Display	—	—	—
	D <u>i</u> splay Compile Result...	—	—	—	
	Z <u>o</u> om...	—	—		
	T <u>e</u> xt Size	B <u>i</u> gger	—	—	—
		S <u>m</u> aller	—	—	—
	O <u>pe</u> n O <u>th</u> er Windows	O <u>pe</u> n R <u>e</u> ference Window	—	—	—
		U <u>p</u> date Reference Window	—	—	—
		O <u>pe</u> n Reference Source Window	—	—	—
		T <u>i</u> le FB H <u>o</u> rizontally	—	—	—
O <u>pe</u> n H <u>e</u> ader		—	—	—	
O <u>pe</u> n I <u>n</u> str <u>u</u> ction Help	—	—	—		

## 5.10.5 Structured ladder edit menu

The following menus can be used for structured ladder edit by Developer. For details on each function, refer to manuals of GX Works2.

Menu	Pull-down menu	Sub-menu	Icon	
Edit	Delete...	—	—	
	Select Mode	—		
	Interconnect Mode	—		
	Guided Mode	Guided Mode	Guided Editing	
			Overwrite Mode	—
			Insert Mode	—
			Line Mode	—
			Auto Comment	
	Auto Connect	—		
	Recalculate Line	—	—	
	Insert Row	—		
	Insert Column	—		
	New Ladder Block List	New Ladder Block List	Top	—
			Before	
			After	
			Bottom	—
	Input Instruction	—		
	Ladder Symbol	Ladder Symbol	Open Contact	
			Close Contact	
			Coil	
			Jump	
			Return	
			Open Branch	
			Close Branch	
			Input Label	
			Output Label	
			Horizontal Line Segment	
			Vertical Line Segment	
			Rising Pulse	
			Falling Pulse	

Menu	Pull-down menu	Sub-menu	Icon
Edit	Ladder Symbol	Rising Pulse Close	
		Falling Pulse Close	
		Ladder Comment...	
		Ladder Block Label...	
		Left Power Rail	
	List Operands...	—	
	Number of Pins	Increment	
		Delete...	
	Ladder Block List...	—	—
	Signal Configuration	Configure...	—
Toggle		—	
Find/Replace	Jump...	—	—
View	View Mode	Label	—
		Device	—
		Address	—
		Comment	—
		Change Label-Device-Address Mode	—
		Change Label-Comment Mode	—
	All Device Display	—	—
	Cancel All Device Display	—	—
	Grid	—	—
	Print Wrap Position	—	—
	Display Compile Result...	—	—
	Zoom	Set Zoom Factor...	—
		Increase Zoom	
		Decrease Zoom	
	Zoom Header/Body	Header	—
Body		—	
Open Header	—	—	



## 5.10.6 Label edit menu

The following menus can be used for label (global labels, local labels, tasks, and structures) edit by Developer. For details on each function, refer to manuals of GX Works2.

Menu	Pull-down menu	Sub-menu	Icon	
Edit	Delete...	—	—	
	Select <u>A</u> ll	—	—	
	<u>N</u> ew Declaration (Before)	—		
	New <u>D</u> eclaration (After)	—		
	D <u>e</u> lete Row	—		
	Read from CSV File( <u>J</u> )...	—		
	Write to CSV File( <u>K</u> )...	—		
	<u>S</u> ort	<u>C</u> lass	—	—
		<u>L</u> abel Name	—	—
		<u>D</u> ata Type	—	—
		<u>C</u> onstant	—	—
		<u>D</u> evice	—	—
		<u>C</u> omment	—	—
	<u>R</u> emark	—	—	
Unused label list ( <u>J</u> )	—	—	—	

## 5.10.7 Device comment edit menu






The following menus can be used for device comment editing by Developer. For details on each function, refer to manuals of GX Works2.

Menu	Pull-down menu	Sub-menu	Icon
Edit	Delete...	—	—
	Select <u>A</u> ll	—	—
	<u>I</u> mport from Sample Comment	<u>S</u> pecial Relay/Special Register	
	<u>C</u> lear All	—	—
	<u>C</u> lear All (All Devices)	—	—
	Read from CSV File( <u>J</u> )...	—	
	Write to CSV File( <u>K</u> )...	—	
	<u>H</u> ide Bit Specification Information	—	—
	<u>S</u> how Bit Specification Information	—	—
	<u>C</u> ut The Range including Hidden Bit Specification Information	—	—
	<u>C</u> opy The Range including Hidden Bit Specification Information	—	—
	<u>P</u> aste The Range including Hidden <u>B</u> it Specification Information	—	—

## 5.10.8 Verification result menu

The following menus can be used for showing verification results by Developer. Verification is performed between the project of Developer and other project data, or the data (program, parameter, etc.) in the programmable controller CPU. For details on each function, refer to manuals of GX Works2.

Menu	Pull-down menu	Icon
Edit	Write to CSV File( <u>K</u> )...	

Menu	Pull-down menu	Icon
Find/Replace	Next Unmatch	
	Previous Unmatch	
View	Return to Result List	
	Close Detail Result	
	Close Detail Result	

# 5.11 USB memory parameter copy file edit function

The function for editing parameter files copied to USB memory is not available for the following models.

Model: FR-E800(-E/-SCE), FR-CS80, FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-D700, FR-E700EX, FR-D700-G, and FR-E500

The USB memory parameter copy file editor is dedicated software for editing the setting values of USB memory parameter copy files of the FR Configurator2 compatible models.

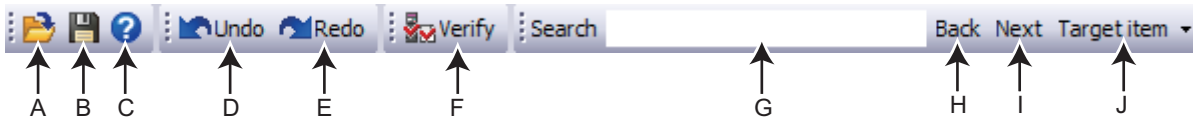
To start the USB memory parameter copy file editor, choose [USB memory parameter copy file edit] in the [Tool] menu.

## 5.11.1 USB parameter copy file editor menu and toolbar

The following functions can be accessed from the menu.

Menu	Pull-down menu	Toolbar icon	Function/operation
File	Open...		Shows the "Open" dialog box, and opens the USB memory parameter copy file (*.cp1).
	Close...	—	Closes the Open file edit window.
	Save		Saves the USB memory parameter copy file (*.cp1).
	Save As...	—	Shows the "Save as" dialog box. Verifies the save location, and saves with the specified [File Name]. The extension for savable parameter information files is *.cp1.
	Exit	—	Exits the USB parameter file editor.
View	System	—	Switches between show/hide of the system toolbar.
	Edit	—	Switches between show/hide of the edit toolbar.
	Verify	—	Switches between show/hide of the verify toolbar.
	Search	—	Switches between show/hide of the search toolbar.
Tool	Verify...		Shows the Verify file selection window.
Window	Cascade	—	Shows the open windows in an overlapping and slightly shifted state.
	Tile Vertically	—	Shows the open windows side-by-side.
	Tile Horizontally	—	Shows the open windows with one on top of the other.
	Arrange icons	—	Arranges icons which represent different windows.
	Close All	—	Closes all open windows.
Help	USB parameter copy file editor help...		Help appears.

The following functions can be accessed from the toolbar.

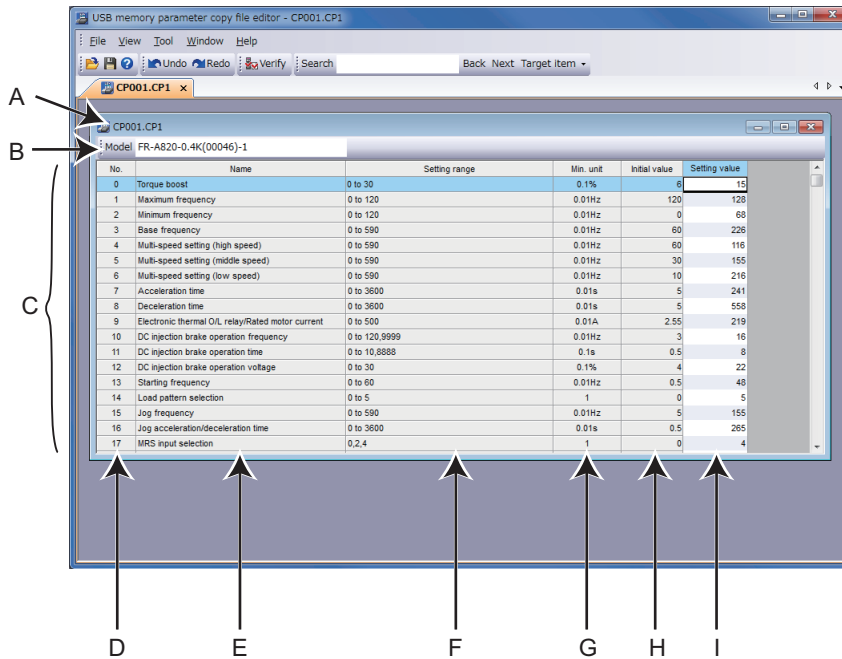


Symbol	Name	Function/operation
A	Open	Shows the "Open" dialog box, and opens the USB memory parameter copy file (*.cp1).
B	Save	Saves the USB memory parameter copy file (*.cp1).
C	Help	Help appears.
D	Undo	Returns the edited parameter setting value to the setting value before editing.
E	Redo	Redoes the setting value changed by "Undo".
F	Verify	Verifies the setting value in the USB memory parameter copy file (*.cp1) with the initial value or setting values in other USB memory parameter copy files (*.cp1).
G	Search	Inputs the character string, and searches for a matching character string from within the parameter list.
H	Back	Locations that contain the matching character string will be selected from the selected parameter list search column from the bottom.
I	Next	Locations that contain the matching character string will be selected from the selected parameter list search column from the top.

Symbol	Name	Function/operation
J	Target item	Specifies the column to search.

## 5.11.2 Editing parameter setting values

The listed setting values can be edited from the file edit window. The file edit window can be shown by opening the USB memory parameter copy file.




Symbol	Name	Function/description
A	Title bar	Shows the file name of the open file.
B	Model	Shows the model set by the file.
C	Parameter list	Shows the parameters of the USB memory parameter copy file.
D	No.	Shows the parameter number.
E	Name	Shows the parameter name.
F	Setting range	Shows the setting range of the parameter setting value.
G	Min. unit	Shows the minimum setting unit of the parameter setting value.
H	Initial value	Shows the factory default parameter setting values of the inverter.
I	Setting value	Shows the parameter setting values saved to the USB memory parameter copy file, and inputs the setting values to be written to the inverter. Setting values cannot be set as blank.

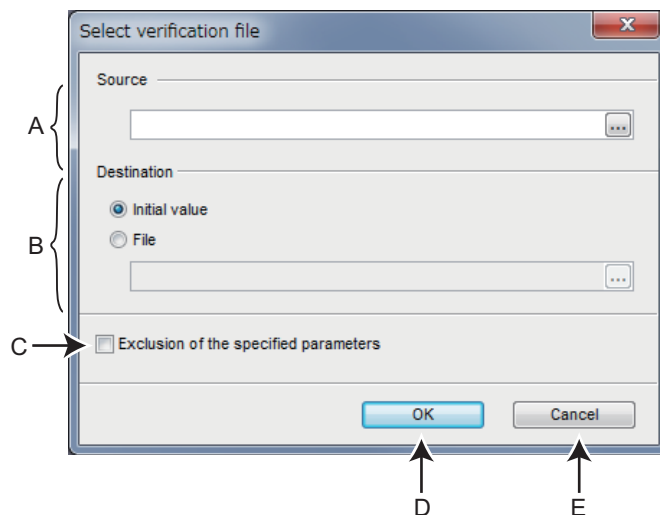
### NOTE


- Edited setting values are not checked when saving the USB memory parameter copy file or when writing to the inverter. Therefore, even values that cannot normally be set to the inverter (setting range, write-limited values) are written to the inverter. In this case, because operation of the inverter cannot be guaranteed, change setting values with extreme caution.
- To display the explanation about a parameter on the help window, double-click the parameter in the parameter list.
- Changing a parameter by FR Configurator2 may affect other parameter settings.
- When using the FR-A820-03160(55K) or FR-A840-01800(55K), do not change **Pr.570 Multiple rating setting**.
- Do not change the **Pr.71 Applied motor** and **Pr.450 Second applied motor** settings from an induction motor to a PM motor or vice versa.
- Calibration parameters cannot be set.
- If the parameter name field is blank, do not change the setting.

## 5.11.3 Verifying parameters

A list of differences between the USB memory parameter copy file to verify (\*.cp1) and the parameter initial values or the parameter setting values of the verify destination file (\*.cp1) can be displayed.

The "Verify file selection" window can be displayed by selecting [Verify] in the [Tool] menu, or by selecting  from the toolbar.



Symbol	Name	Function/description
A	Source	Specifies the verify source file. The method for specifying the file is as follows. <ul style="list-style-type: none"> <li>Input the path of the file to verify (*.cp1) in the verify source text box.</li> <li>Select  in the verify source text box, and specify the file by opening the "Open file" dialog.</li> <li>With the file edit window open, open the "Verify file selection" window, and the path of the selected edit window file (*.cp1) will appear in the text box.</li> </ul>
B	Destination	When the option button for "Initial value" is selected, parameter verification will be performed against the initial parameter settings of the verify source inverter model. When the option button for "File" is selected, parameter verification is performed against the parameter settings of the inverter model specified by a file (*.cp1). Set a file.
C	Exclusion of the specified parameters	Check the box to exclude the parameters for the monitoring and for the manufacturer setting from verification.
D	OK	Verification of the verify source parameter values with the verify destination parameter values starts.
E	Cancel	Closes the verify file selection window without performing verification.

Verify result window

No.	Name	Setting range	Min. unit	Initial value	Source	Destination
0	Torque boost	0to30	0.1%	2	6	10
1	Maximum frequency	0to120	0.01Hz	120	120	100
3	Base frequency	0to590	0.01Hz	50	60	66
4	Multi-speed setting (high speed)	0to590	0.01Hz	50	60	50
5	Multi-speed setting (middle speed)	0to590	0.01Hz	30	30	40
6	Multi-speed setting (low speed)	0to590	0.01Hz	10	10	20
7	Acceleration time	0to3600	0.01s	15	5	1000
8	Deceleration time	0to3600	0.01s	15	5	1500
9	Electronic thermal O/L relay	0to500	0.01A	46	4.25	425
10	DC injection brake operation frequency	0to120,9999	0.01Hz	3	3	50
11	DC injection brake operation time	0to10,8888	0.1s	0.5	0.5	5
12	DC injection brake operation voltage	0to30	0.1%	2	4	20
13	Starting frequency	0to60	0.01Hz	0.5	0.5	10

Symbol	Name	Function/description
E	Title bar	Shows the verify source file name and the verify destination file name. If the initial value is specified as the verify destination, "[Initial value]" is displayed.
F	Source	Shows the parameter setting value of the file (*.cp1) specified by verify source in the "Verify file selection" window.
G	Destination	If the verify destination is the initial value Shows the initial value as the verify destination. If the verify destination is a file Shows the parameter setting value of the file (*.cp1) specified by verify destination in the "Verify file selection" window.

**NOTE**

- Parameter setting values cannot be input to the verify source and verify destination cells.

## 5.12 Ethernet parameter setting function

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The Ethernet parameter setting function is not available for the following models.

Model: All models except for Ethernet models

The Ethernet parameter setting function is a dedicated software for setting the minimum necessary inverter parameters via Ethernet to perform Ethernet communication.

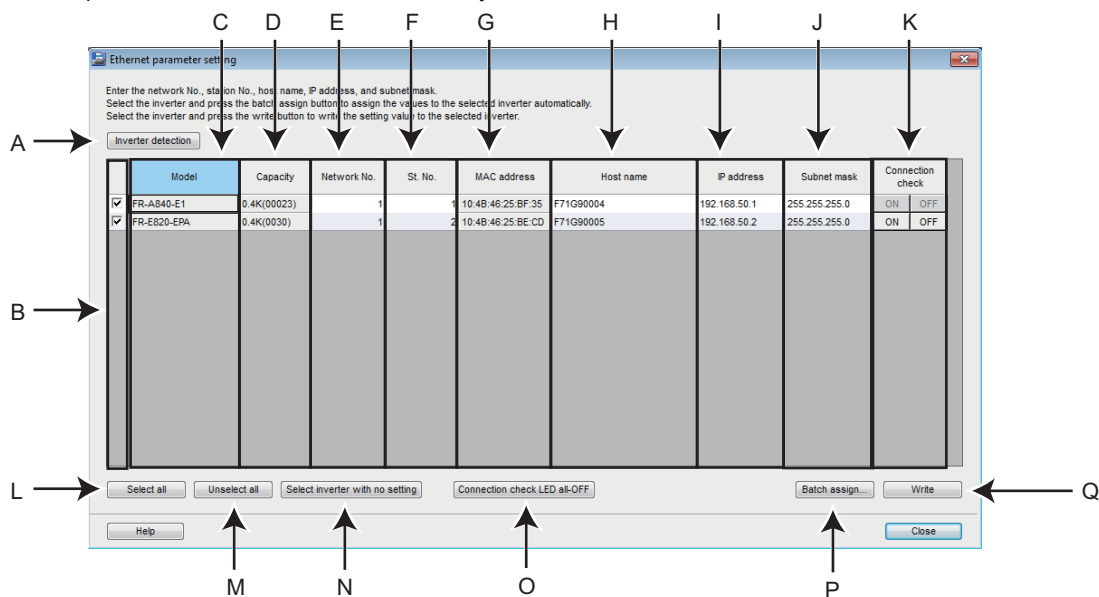
The setting function is not available for parameters of the inverter connected via CC-Link IE TSN.

To start the Ethernet parameter setting, choose [Ethernet parameter setting] in the [Tool] menu.

### 5.12.1 Ethernet parameter setting

In the "Ethernet parameter setting" window, the network number, station number, host name, IP address, and subnet mask can be set.

At the initial startup, inverters are detected automatically.



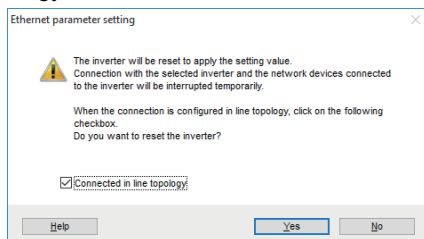
Symbol	Name	Function/description	
A	Inverter detection	Detects the inverter(s) connected via Ethernet to read and indicate the parameters.	
B	Target inverter checkbox	Select the target inverter(s) to perform [Batch assign] or [Write].	
C	Model	Shows the model of the connected inverter.	
D	Capacity	Shows the capacity of the connected inverter.	
E	Network No.	Set the inverter network number. (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to <b>Pr.1424</b> . For FR-A800-E-R2R, refer to <b>Pr.1073</b> . For FR-E700-NE, refer to <b>Pr.830</b> .)	
F	St. No.	Set the inverter station number to be written to the inverter. (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to <b>Pr.1425</b> . For FR-A800-E-R2R, refer to <b>Pr.1074</b> . For FR-E700-NE, refer to <b>Pr.831</b> .)	
G	MAC address	Shows the MAC address of the connected inverter.	
H	Host Name	Set the host name to be written to the inverter. Up to 16 characters can be entered. Single-byte letters and numbers, hyphens (-), periods (.), colons (:), and underscores (_) can be entered.	
I	IP address	Enter the IP address to be written to the inverter.	
J	Subnet mask	Enter the Subnet mask to be written to the inverter.	
K	Connection check	ON	Used to turn ON the NET LEDs on successfully connected inverters to blink in the communication check of FR Configurator2. (The blinking of LEDs will automatically stop five minutes after the start of blinking.)
		OFF	Used to stop the blinking of the NET LEDs on successfully connected inverters in the communication check of FR Configurator2.
L	Select all	Selects all inverters in the list.	
M	Unselect all	Clears selection of all inverters in the list.	
N	Select inverter with no setting	Selects inverters for which the series name is indicated in the model field.	
O	Connection check LED all-OFF	Used to stop the blinking of the NET LEDs on all successfully connected inverters.	
P	Batch assign...	Shows the batch assignment dialog.	
Q	Write	Writes the network number, station number, host name, IP address, and subnet mask to the inverters with a check in the checkbox.	

**NOTE**

- For using the Ethernet parameter setting, connect the inverter and the personal computer directly via Ethernet or using a hub.
- The inverter and the personal computer must have the same IP address. If they have different IP addresses, the network number and the station number cannot be set.
- The LED all-OFF setting and the connection check ON/OFF setting are available for FR-E800-E inverters connected directly by Ethernet.
- Those settings are enabled when online communication is established between the inverter and FR Configurator2.
- LEDs may not blink depending on the **Pr.1399** setting even when the connection check is enabled. Refer to the Instruction Manual of the inverter for the details.
- When FR-E800-E inverters are connected in line topology, writing to two or more inverters at the same time may cause a communication error.

## ◆ Precautions for writing Ethernet parameters

To apply written setting values, perform inverter reset. When inverter reset is attempted, the following window appears. When multiple inverters are connected in line topology, click on the checkbox. Otherwise, the inverter is not reset properly.



- When inverters are connected in line topology, perform inverter reset for each inverter one by one. The time required to complete the operation differs depending on the number of connected inverters. Total time = Number of inverters × 5 s
- When it takes a long time, it is alternatively possible to reset the inverters by turning OFF and ON the power of each inverter.

## ◆ Ethernet parameter settings in the inverter and FR Configurator2

- Before using the Ethernet parameter setting, check the setting of parameters in the following table.

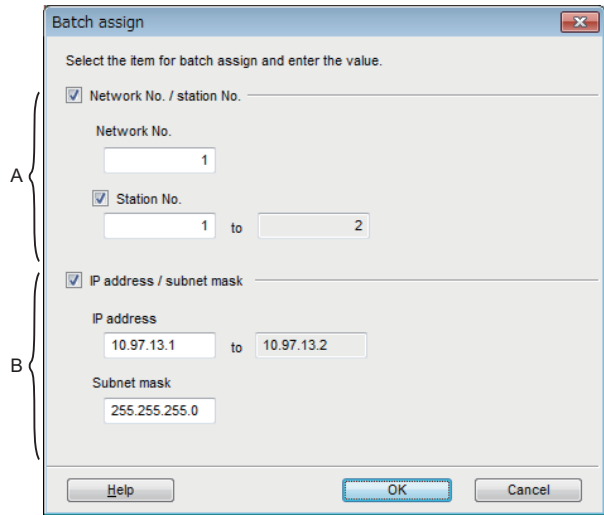
Model	Intermediate device	Pr.	Name	Setting
FR-A800-E FR-F800-E	Not connected	1427	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.
		1428	Ethernet function selection 2	
		1429	Ethernet function selection 3	
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.
FR-A800-E- R2R	Not connected	1076	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.
		1077	Ethernet function selection 2	
		1078	Ethernet function selection 3	
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.
FR-E800- (SC)E	Not connected	1427	Ethernet function selection 1	Set a combination of "5001" (or "5002") and "45237" in any two of the parameters.
		1428	Ethernet function selection 2	
		1429	Ethernet function selection 3	
		1430	Ethernet function selection 4	
		1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.
FR-E700-NE	Not connected	833	Ethernet function selection 1	Set a combination of "31" and "20" in any two of the parameters.
		834	Ethernet function selection 2	
		835	Ethernet function selection 3	
		837 to 843	Ethernet IP filter address	Set the IP address to within the IP address range of the personal computer.

### 5.12.2 Batch assignment dialog

Batch assignment can be performed to assign the network number, station number, IP address, and subnet mask automatically.



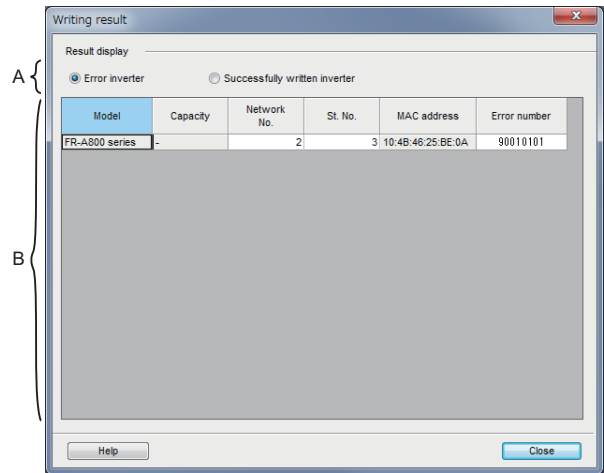
The target inverters are the inverters with a check in the checkbox in the Ethernet parameter setting window.



Symbol	Name	Function/description
A	Network No./station No.	<ul style="list-style-type: none"> <li>• Check the box to assign the network number and the station number. Set the network number to be assigned.</li> <li>• Check the box to assign the station number. Set the station number to be assigned.</li> </ul>
B	IP address/subnet mask	Check the box to assign the IP address and the subnet mask. Set the IP address and the subnet mask to be assigned.

### 5.12.3 Writing result

Click the [Write] button on the Ethernet parameter setting window to write the data to the inverters with a check in the checkbox. After the writing, the following dialog appears to show the inverters to which the writing failed if any.



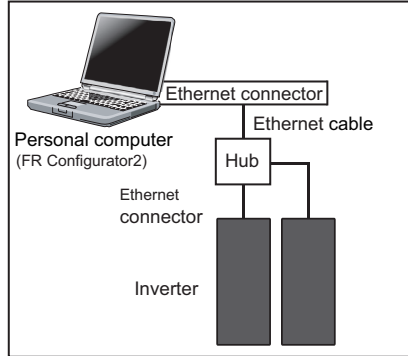
Symbol	Name	Function/description	
A	Result display	Error inverter	Shows the inverters to which the writing failed.
		Successfully written inverter	Shows the inverters to which the writing succeeded.
B	Result list	Error inverter	Shows the model, capacity, network number, station number, MAC address, and error number of the inverters to which the writing failed.
		Successfully written inverter	Shows the model, capacity, network number, station number, MAC address, and error number (00000000) of the inverters to which the writing succeeded.

# 5.12.4 Procedure for connecting inverters via Ethernet

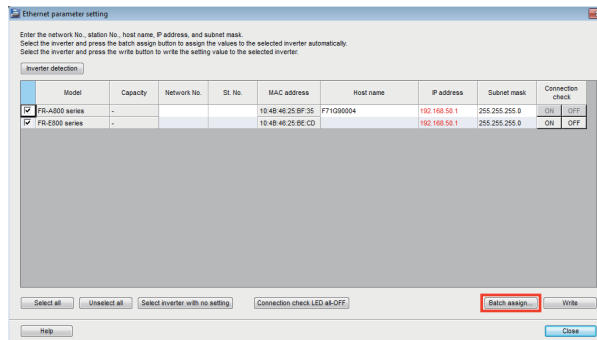
Start from step 7 for connecting inverters via the CC-Link IE Field Network.

## ◆ Example

The following diagram shows the example of connection with two inverters. Inverter parameters are set to initial values. The IP address of the personal computer is "192.168.50.100".



1. Start FR Configurator2.
2. Select [Ethernet parameter setting] from the [Tool] menu bar. The inverters connected on the network are automatically detected.
3. Check that the inverters have been detected. Select [Batch assign] for network setting.



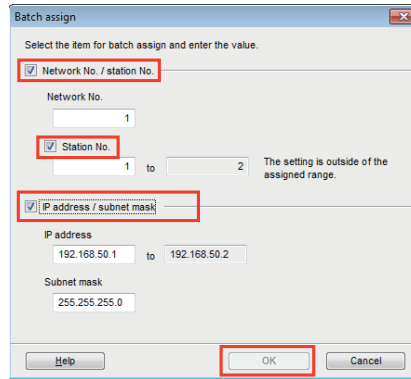
**NOTE**

- If the inverters have not been detected, probable causes include the following.
  - The Ethernet cable is disconnected.
  - The inverter power is turned OFF.
  - Inverters are not found in the same segment (there is a router in between).
  - Inverter parameter settings are not set to initial values.

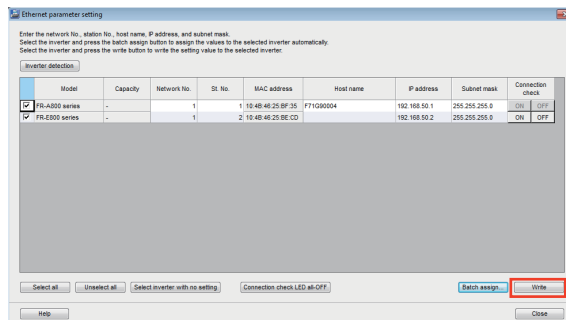
Model	Pr.	Name	Initial value
FR-A800-E	1427	Ethernet function selection 1	5001
FR-F800-E		Ethernet function selection 2	45237
FR-E800-(SC)E		Ethernet function selection 2	45237
FR-A800-E-R2R	1076	Ethernet function selection 1	5001
	1077	Ethernet function selection 2	45237
FR-E700-NE	833	Ethernet function selection 1	31
	834	Ethernet function selection 2	20

- Each inverter has its own MAC address and host name.

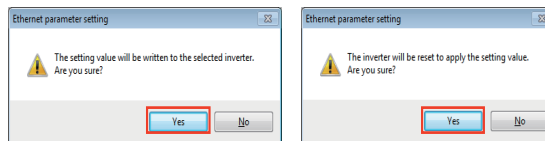
- Select both the "Network No./station No." and "IP address/subnet mask" checkboxes. Set the network number, station number, IP address, or subnet mask as required, and click [OK].



- Click [Write] to write the setting values to the inverters.



- Click [Yes] to reflect the settings.



- Select [New...] from the [Project] menu bar. In the "System setting" window, select "Ethernet" for the PC-side port and start automatic recognition.

#### NOTE

- Automatic recognition is not enabled if the setting in "Inverter network No." in the "System setting" window is not consistent with the "Network No." of the inverter in the "Ethernet parameter setting" window.

- Automatically-recognized inverters are displayed. Click [OK] and reflect the system setting.
- Click the [Online/offline] button to switch to online. The procedure is complete when the online connection is established.

# 5.13 iQSS backup file conversion function

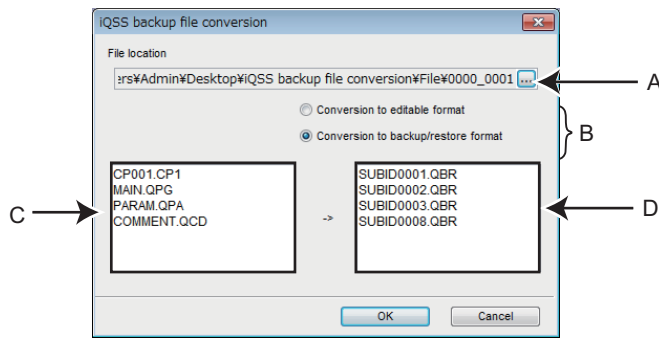
The iQSS backup file conversion function is not available for the following models.

Model: FR-E800(-E/-SCE), FR-CS80, FR-A700, FR-B (700), FR-B3 (700), FR-F700, FR-F700P, FR-E700, FR-D700, FR-E700EX, FR-D700-G, and FR-E500

This is a function to convert a file in the backup/restore format generated by the GOT. The file is converted into the format of the USB memory parameter copy file or the format that can be opened for the Developer function. To start the iQSS backup file conversion, choose [iQSS backup file conversion] in the [Tool] menu.

## 5.13.1 iQSS backup file conversion

In the iQSS backup file conversion dialog, the file format can be converted to the editable file format or the backup/restore format.



Symbol	Name	Function/description
A	File location	Specify the folder in which the file to be converted is stored.
B	Format after the conversion	Select "Conversion to editable format" or "Conversion to the backup/restore format". Conversion to the editable format: The file is converted into the format that can be used for the USB memory parameter copy or the Developer function. Conversion to the backup/restore format: The file converted for the edit functions is reconverted to the backup/restore format.
C	Source file	The files stored in the selected file location are shown. If any file is missing, the file name is displayed in gray.
D	Target file	The files after the conversion are shown. If any file has the same name as the saved file, the file name is displayed in red.

# 5.14 Firmware update

Firmware Update Tool is used to update the inverter firmware.

Select [Firmware Update Tool] in the [Tool] menu to start Firmware Update Tool.

The firmware file (\*.bin) can be downloaded from the Mitsubishi Electric FA Global Website.

## 5.14.1 Applicable inverter

Firmware Update Tool can update the firmware of the following inverters. The following table also shows interface options for connection between inverters and a personal computer (Firmware Update Tool).

Series	Model	Interface		Country of origin indication	Supported inverter's SERIAL
		USB	Ethernet		
FR-A800 series	FR-A800	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
	FR-A800-E	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
FR-B series (A800 specifications)	FR-B	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
FR-B3 series (A800 specifications)	FR-B3	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
FR-A800 Plus series	FR-A800-CRN	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
	FR-A800-E-CRN	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
	FR-A800-LC	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
	FR-A800-E-LC	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
FR-F800 series	FR-F800	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
	FR-F800-E	○	×	MADE in Japan	□11○○○○○ or later
				MADE in China	□12○○○○○ or later
FR-E800 series	FR-E800	○	×	MADE in Japan	□□211○○○○○ or later
				MADE in China	□□212○○○○○ or later
	FR-E800-E <sup>*1</sup>	○	○	MADE in Japan	□□211○○○○○ or later <sup>*2</sup>
				MADE in China	□□212○○○○○ or later <sup>*2</sup>
	FR-E800-SCE	○	○	MADE in Japan	□□211○○○○○ or later
				MADE in China	□□212○○○○○ or later

○: Available    ×: Not available

\*1 A personal computer (Firmware Update Tool) and the FR-E800-EPC can be connected only via USB.

\*2 The SERIAL of the supported FR-E800-EPC inverters is □□215○○○○○ or later.

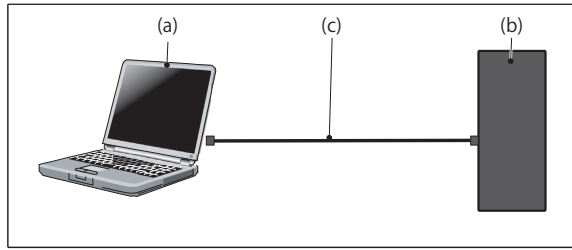
## 5.14.2 Connection and parameter setting

The inverter firmware can be updated using Firmware Update Tool in the personal computer connected to the inverter via a USB connector or Ethernet.

### ◆ USB connection

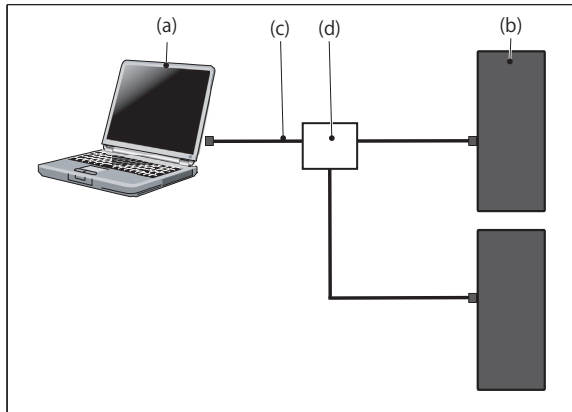
Connect a cable to the USB connector (mini B connector) of the inverter. The firmware of up to two inverters can be updated at the same time.

- For one inverter



(a)	Personal computer (FR Configurator2)
(b)	Inverter
(c)	USB cable

- For multiple inverters

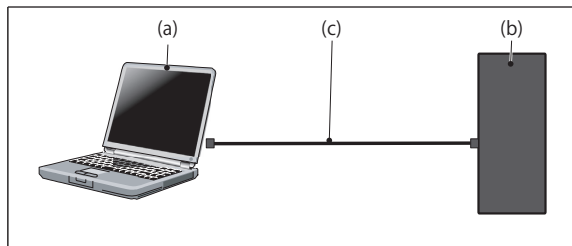


(a)	Personal computer (FR Configurator2)
(b)	Inverter
(c)	USB cable
(d)	Hub

## ◆ Ethernet connection

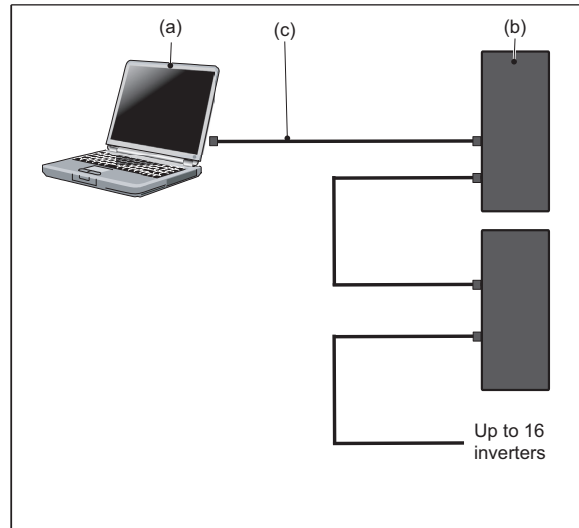
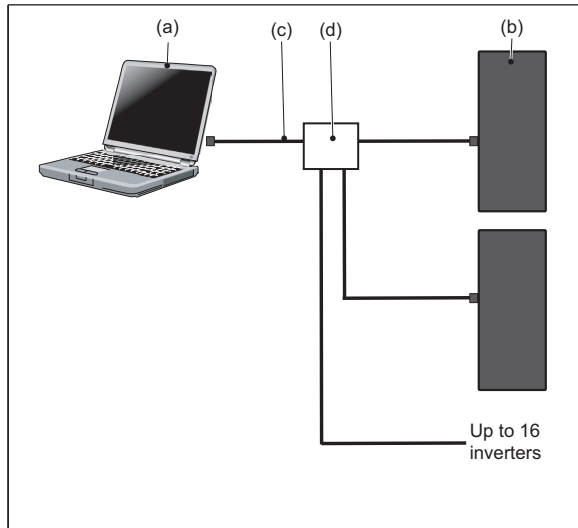
Connect a cable to the Ethernet connector of the inverter. The firmware of up to 16 inverters connected in star or line topology can be updated at the same time.

- For one inverter



(a)	Personal computer (FR Configurator2)
(b)	Inverter
(c)	Ethernet cable

- For multiple inverters



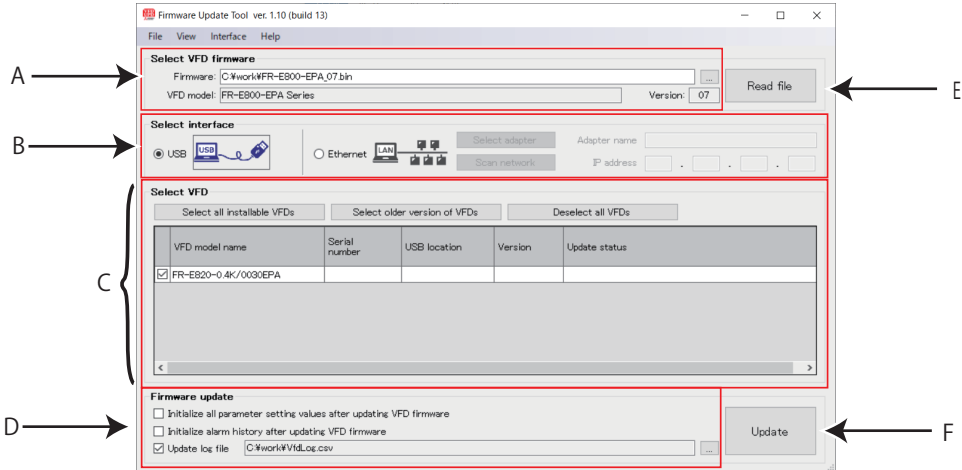
(a)	Personal computer (FR Configurator2)
(b)	Inverter
(c)	Ethernet cable
(d)	Hub

### ■ Parameter setting

Set the following communication parameters for connection using the Ethernet connector.

Pr.	Name	Setting
1427	Ethernet function selection 1	Set a combination of "5001" and "45237" in any two of the parameters.
1428	Ethernet function selection 2	
1429	Ethernet function selection 3	
1430	Ethernet function selection 4	
1434 to 1437	IP address (Ethernet)	Set the IP address to within the IP address range of the personal computer.
1442 to 1448	IP filter address (Ethernet)	Set the IP address to within the IP address range of the personal computer.
1432	Ethernet communication check time interval	Set "9999".

## 5.14.3 Firmware Update Tool



Symbol	Name	Function/description
A	Select VFD firmware	Select the firmware file (*.bin) to show the information of the file to be updated.
B	Select interface	Select the connection method of the personal computer and the inverters. USB is initially selected.
C	Select VFD	Shows the detected inverters that are connected by the selected method.
D	Firmware update	Select the operations to be performed after the firmware update.
E	Read file	Reads the firmware file.
F	Update	Updates the firmware of the selected inverters.

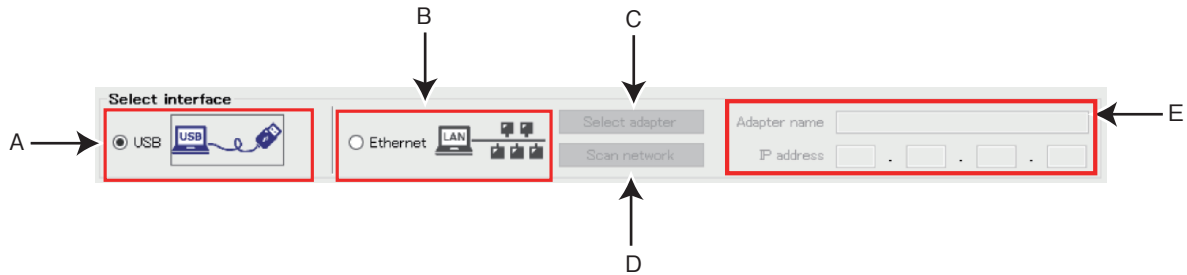
### ◆ Selecting inverter firmware



Symbol	Name	Function/description
A	Firmware	Select the file (*.bin) to be read.
B	Read file	Reads the selected file.
C	VFD model	Shows the file contents.



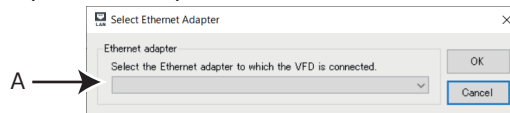
## ◆ Selecting interface



Symbol	Name	Function/description
A	USB	Detects the inverters connected to the personal computer using the USB connector. This interface is initially selected.
B	Ethernet	Detects the inverters connected to the personal computer using the Ethernet connector.
C	Select adapter	Enabled when Ethernet is selected. "Select Ethernet Adapter" window appears.
D	Scan network	Enabled when Ethernet is selected. "Scan Network" window appears.
E	Network information	Enabled when Ethernet is selected. Shows the settings set in "Select Ethernet Adapter" and "Scan Network" windows.

### ■ Select Ethernet Adapter window

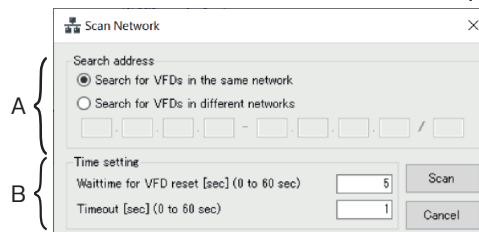
Select the network adapter to which the personal computer and inverter are connected.



Symbol	Name	Function/description
A	Select Ethernet Adapter	Only the adapters connected to the network are displayed.

### ■ Scan Network window

- The inverters connected to the personal computer are detected in the IP address range specified in the "Scan Network" window.
- The inverter reset time and communication check time interval after firmware update can be set.

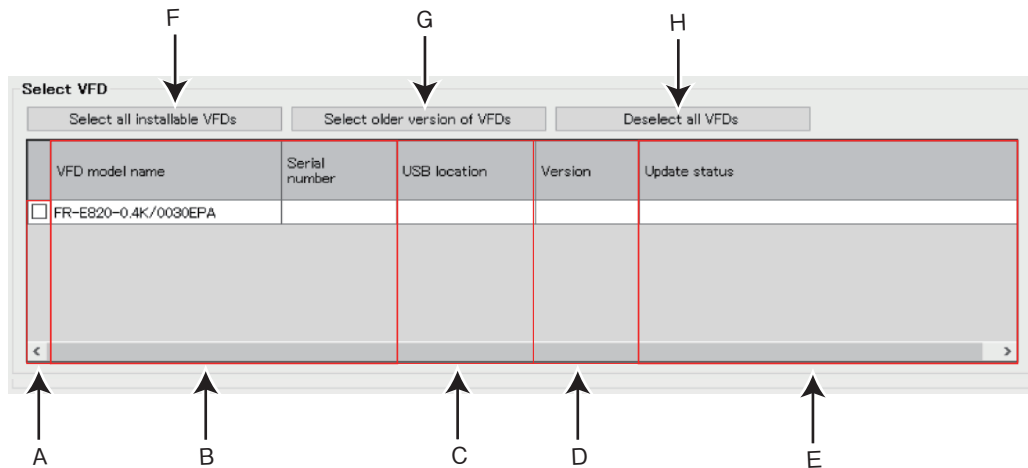


Symbol	Name	Function/description
A	Search address	<ul style="list-style-type: none"> <li>• Search for VFDs in the same network The inverters are searched in the IP address range of the personal computer.</li> <li>• Search for VFDs in different networks The inverters are searched in the specified IP address range.</li> </ul>
B	Time setting	<ul style="list-style-type: none"> <li>• Waittime for VFD reset Set the delay time from when the firmware update is complete until inverter reset is performed.</li> <li>• Timeout Set the communication check time interval for communication with the inverters.</li> </ul>

#### NOTE

- To update the firmware of inverters having addresses in different networks, set the default gateway address of the personal computer and **Pr.442 to Pr.445 Default gateway address** of the FR-E800 inverters.
- To search the inverters in different networks, configure networks using a router. Up to 512 inverters can be searched.

## ◆ Selecting inverters



Symbol	Name	Function/description
A	Checkbox	Select the inverters whose firmware are to be updated.
B	Inverter information	Model names and serial numbers of the connected inverters are displayed.
C	Connection information	<ul style="list-style-type: none"> <li>• USB connection: Connection information of the USB port is displayed.</li> <li>• Ethernet connection: IP addresses are displayed.</li> </ul>
D	Version information	Firmware versions of detected inverters are displayed.
E	Status	Status for firmware update is displayed. <ul style="list-style-type: none"> <li>• Update state</li> <li>• Error message</li> <li>• Update complete message and elapsed time</li> </ul>
F	Select all installable VFDs	Select all the connected inverters whose firmware are to be updated.
G	Select older version of VFDs	Select the inverters with firmware older than the firmware file among the connected inverters whose firmware are to be updated.
H	Deselect all VFDs	Clears the checkboxes for the selected inverters.

### NOTE

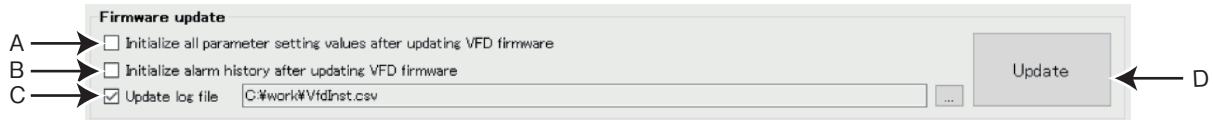
- When selecting a title (VFD Model name, Serial Number, USB location, IP address, or Version) in the "Select VFD" section, the detected inverters can be sorted in ascending or descending order by column.

## ◆ Background colors for selecting inverters

	VFD model name	Serial number	IP address	Version	Update status
A →	<input type="checkbox"/> FR-E820-0.4K/0030EPA				
B →	<input type="checkbox"/> FR-E820-0.4K/0030EPA				
C →	<input type="checkbox"/> FR-E820-0.4K/0030EPA				
D →	<input type="checkbox"/> FR-E820-0.4K/0030EPA				

Symbol	Color	Description
A	Gray	<ul style="list-style-type: none"> <li>• The firmware file has not been read.</li> <li>• Firmware update is not available for the detected inverter.</li> <li>• The IP address is overlapping with that of another inverter on the network or the personal computer to execute firmware update.</li> </ul>
B	Red	Fault state due to abnormal operation.
C	Yellow	Firmware is being updated.
D	Blue	Firmware update is complete.

## ◆ Firmware update



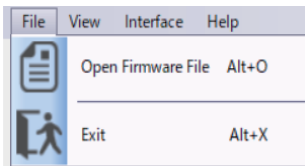
Symbol	Name	Function/description
A	Initialize all parameter setting values after updating VFD firmware	Performs All parameter clear after update.
B	Initialize alarm history after updating VFD firmware	Clears the faults history.
C	Update log file	Stores the log file of firmware update in the specified storage.
D	Update	Updates the firmware.

## 5.14.4 Menu list for Firmware Update Tool

The following functions are available on the menu.

Menu	Pull-down menu	Function/operation
File	Open Firmware File	Select the firmware file (*.bin) to show the information of the file to be updated.
	Exit	Close Firmware Update Tool.
View	Switch Display Language	Displays the "Switch Display Language" window to switch the display language.
Interface	USB	Detects the inverters connected to the personal computer using the USB connector.
	Ethernet	Detects the inverters connected to the personal computer using the Ethernet connector.
	Select Ethernet Adapter	Select the network adapter to which the personal computer and inverter are connected.
	Scan Network	Detects the inverters with IP addresses included in the specified range on the network.
Help	Firmware Update Tool Help	Starts e-Manual Viewer to display the Manual.
	About...	Opens the "About" window.

### ◆ "File" menu



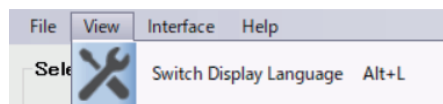
#### ■ Open Firmware File

Select the firmware file (\*.bin) to show the information of the file to be updated.

#### ■ Exit

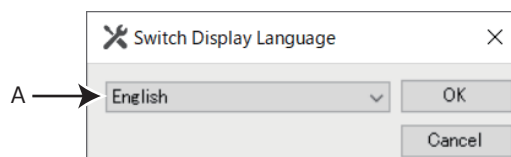
Close Firmware Update Tool.

### ◆ "View" menu



#### ■ Switch Display Language

The display language of Firmware Update Tool can be switched.

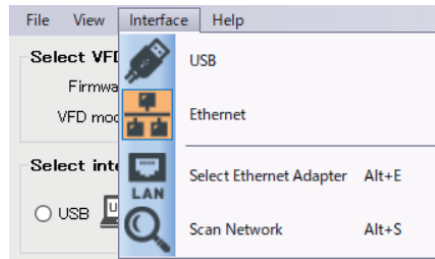


Symbol	Name	Function/description
A	Switch Display Language	Select the display language.

**NOTE**

- Only the display language of Firmware Update Tool is changed.

◆ "Interface" menu



■ USB

Detect the inverters connected to the personal computer using the USB connector.

■ Ethernet

Detect the inverters connected to the personal computer using the Ethernet connector.

■ Select Ethernet Adapter

This menu is enabled when Ethernet is selected. "Select Ethernet Adapter" window appears.

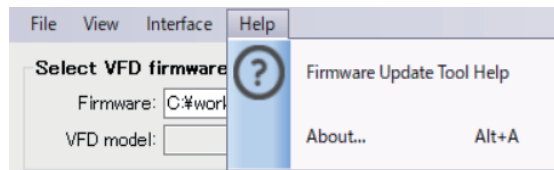
For details on the window, refer to [page 243](#).

■ Scan network

This menu is enabled when Ethernet is selected. "Scan Network" window appears.

For details on the window, refer to [page 243](#).

◆ "Help" menu



■ Firmware Update Tool Help

Software and inverter Instruction Manuals can be viewed in e-Manual Viewer.

■ About...

The information about firmware update such as firmware version can be checked.

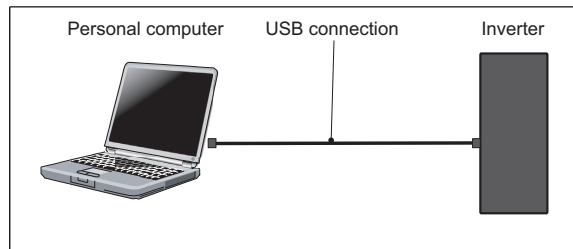


Symbol	Name	Function/description
A	Version information	The version of Firmware Update Tool is displayed.
B	OK	Exits the version information window.
C	Close button	

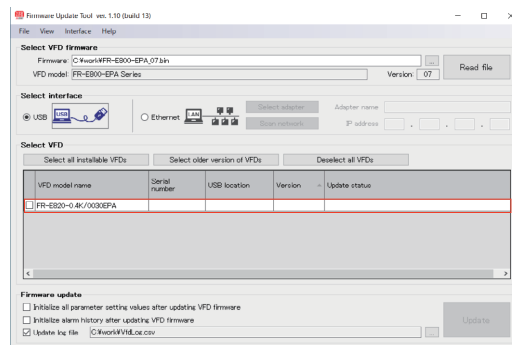
## 5.14.5 Firmware update procedure

### ◆ USB connection

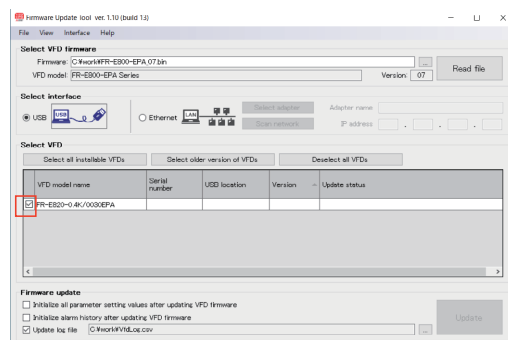
The following procedure is for the connection with one inverter. Inverter parameters are set to initial values. Before update, download the firmware file from the Mitsubishi Electric FA Global Website.



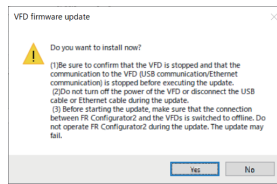
1. Start FR Configurator2. (Record the parameter setting values before firmware update by performing parameter batch read or other functions when the same setting values are to be used after the update.)
2. Select [Firmware Update Tool] in the [Tool] menu.
3. In the "Firmware Update Tool" window, select [ ... ] in [Select VFD firmware] to select the firmware file (\*.bin). Click the "Read file" button to read model information.
4. In the "Firmware Update Tool" window, select [USB] in [Select interface]. The inverters connected to the personal computer using the USB connector are detected.



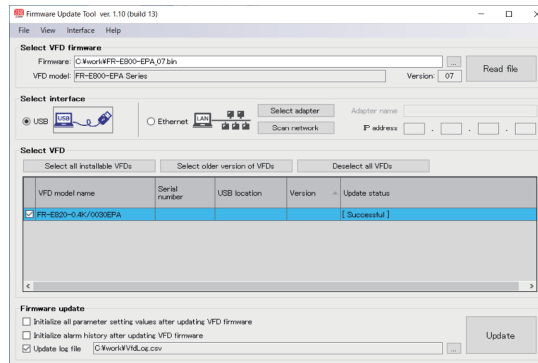
5. Select the inverters whose firmware are to be updated from among the detected inverters. Click the "Update" button.



6. The following warning window will be displayed. Read the description and select [Yes].  
Be sure to confirm that the VFD is stopped and that the communication to the VFD (USB communication/Ethernet communication) is stopped before executing the update.  
Do not turn off the power of the VFD or disconnect the USB cable or Ethernet cable during the update. Before starting the update, make sure that the connection between FR Configurator2 and the VFDs is switched to offline. Do not operate FR Configurator2 during the update. The update may fail.



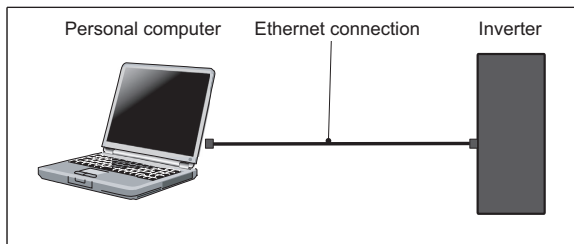
7. The update complete message appears in the status field for the inverter whose firmware is updated.



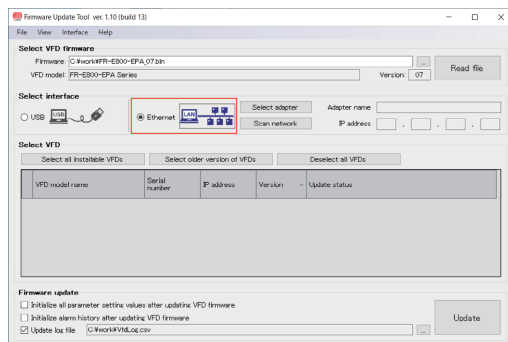
8. Perform All parameter clear. (To apply the parameter setting values recorded before the update, perform All parameter clear and then write the setting values by performing parameter batch write or other functions.)

## ◆ Ethernet connection (for inverters in the same network)

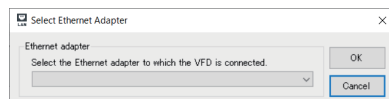
The following procedure is for the connection with one inverter. Inverter parameters are set to initial values. The IP address of the personal computer is "192.168.50.100". Before update, download the firmware file from the Mitsubishi Electric FA Global Website.



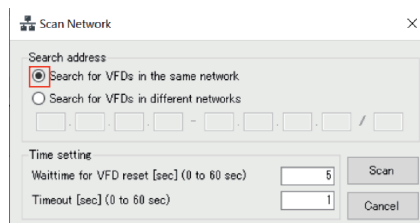
1. Start FR Configurator2. (Record the parameter setting values before firmware update by performing parameter batch read or other functions when the same setting values are to be used after the update.)
2. Select [Firmware Update Tool] in the [Tool] menu.
3. In the "Firmware Update Tool" window, select [ ... ] in [Select VFD firmware] to select the firmware file (\*.bin). Click the "Read file" button to read model information.
4. In the "Firmware Update Tool" window, select [Ethernet] in [Select interface].



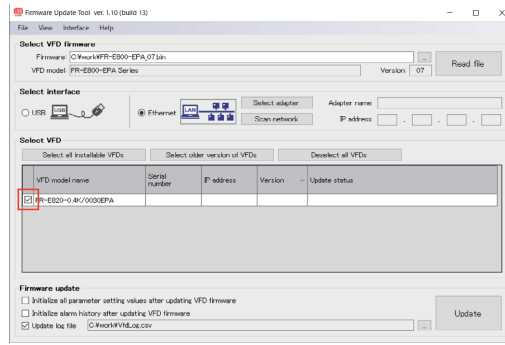
5. Click the "Select adapter" button. In the "Select Ethernet Adapter" window, select the network adapter to which the personal computer and inverter are connected. Then click the "OK" button.



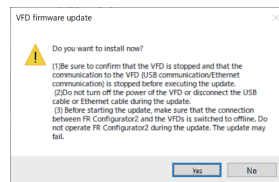
6. Click the "Scan network" button. In the "Scan Network" window, select [Search for VFDs in the same network]. Then click the "Scan" button. Change the "Time setting" settings according to the number of connected inverters or the interface.



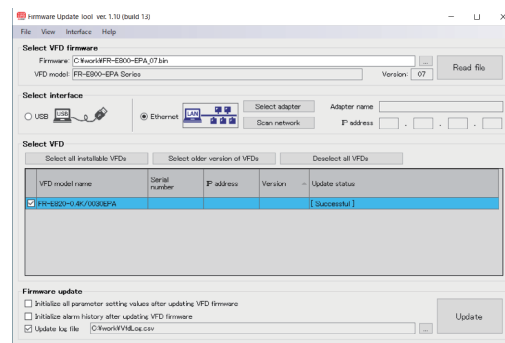
- Click on the checkboxes for the inverters whose firmware are to be updated. Click the "Update" button.



- The following warning window will be displayed. Read the description and select [Yes].  
Be sure to confirm that the VFD is stopped and that the communication to the VFD (USB communication/Ethernet communication) is stopped before executing the update.  
Do not turn off the power of the VFD or disconnect the USB cable or Ethernet cable during the update. Before starting the update, make sure that the connection between FR Configurator2 and the VFDs is switched to offline.  
Do not operate FR Configurator2 during the update. The update may fail.



- The update complete message appears in the status field for the inverter whose firmware is updated.

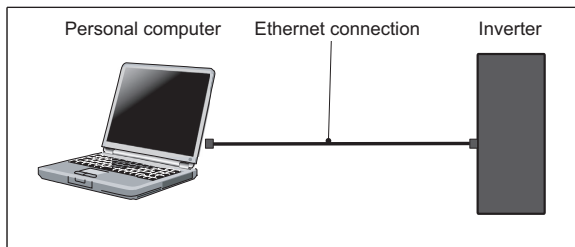


- Perform All parameter clear. (To apply the parameter setting values recorded before the update, perform All parameter clear and then write the setting values by performing parameter batch write or other functions.)

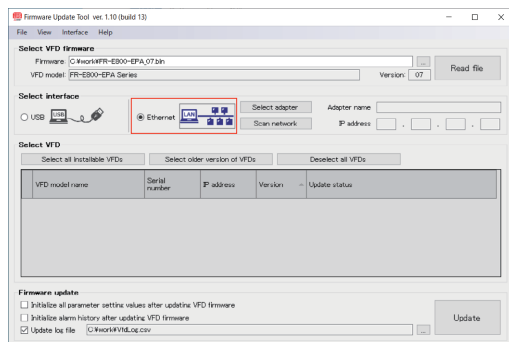


## ◆ Ethernet connection (for inverters in different networks)

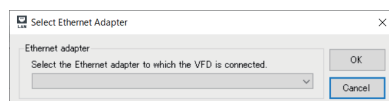
The following procedure is for the connection with one inverter. Inverter parameters are set to initial values. Before update, download the firmware file from the Mitsubishi Electric FA Global Website. Set the default gateway address of the personal computer and **Pr.442 to Pr.445 Default gateway address 1 to 4** of the FR-E800 inverters.



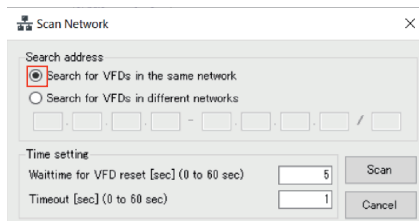
1. Start FR Configurator2. (Record the parameter setting values before firmware update by performing parameter batch read or other functions when the same setting values are to be used after the update.)
2. Select [Firmware Update Tool] in the [Tool] menu.
3. In the "Firmware Update Tool" window, select [ ... ] in [Select VFD firmware] to select the firmware file (\*.bin). Click the "Read file" button to read model information.
4. In the "Firmware Update Tool" window, select [Ethernet] in [Select interface].



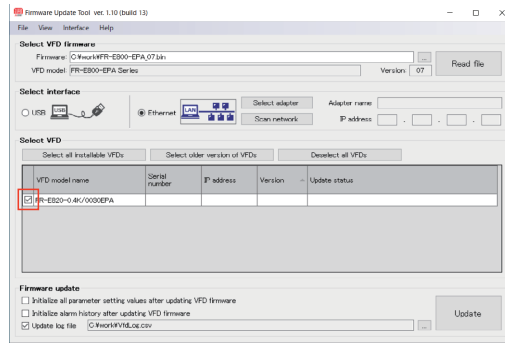
5. Click the "Select adapter" button. In the "Select Ethernet Adapter" window, select the network adapter to which the personal computer and inverter are connected. Then click the "OK" button.



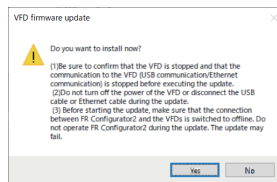
6. Click the "Scan network" button. In the "Scan Network" window, select [Search for VFDs in different networks]. Set **Pr.1434 to Pr.1437 IP address (Ethernet)** in the inverters. Then click the "Scan" button. Change the "Time setting" settings according to the number of connected inverters or the interface.



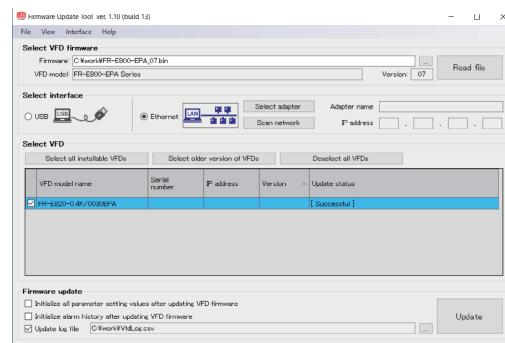
- Click on the checkboxes for the inverters whose firmware are to be updated. Click the "Update" button.



- The following warning window will be displayed. Read the description and select [Yes].  
Be sure to confirm that the VFD is stopped and that the communication to the VFD (USB communication/Ethernet communication) is stopped before executing the update.  
Do not turn off the power of the VFD or disconnect the USB cable or Ethernet cable during the update. Before starting the update, make sure that the connection between FR Configurator2 and the VFDs is switched to offline.  
Do not operate FR Configurator2 during the update. The update may fail.



- The update complete message appears in the status field for the inverter whose firmware is updated.



- Perform All parameter clear. (To apply the parameter setting values recorded before the update, perform All parameter clear and then write the setting values by performing parameter batch write or other functions.)

## 5.14.6 Precautions for firmware update

The following precautions apply to firmware update.

### ◆ Conditions to disable firmware update

- The operating system does not support firmware update. (Refer to [page 15](#).)
- The firmware is updated via a GOT or a programmable controller.
- "5001" (UDP) and "45237" (iQSS) are not set in **Pr.1427 to Pr.1430 Ethernet function selection** when firmware is to be updated via Ethernet.
- The file name or data for the update file is changed.
- The firmware is updated while the FR-E800 series inverter is in battery supply PU mode or the power source is the USB power supply or the 24 V external power supply.
- The inverter does not support firmware update.
- The firmware is updated for the inverter which does not match the information in the firmware file.
- The inverter has been converted to the high power factor converter using the FR-A8AVP.

### ◆ Precautions for firmware update

- Operation is not guaranteed when the inverter firmware is downgraded.
- To perform firmware update successfully, make sure that the connection between FR Configurator2 and the inverters is switched to offline, do not operate FR Configurator2 during the update, and disconnect a system other than Firmware Update Tool connected on the network.
- Before the update, make sure that the inverter operates properly.
- Update the firmware while the inverter is stopped (output is shutoff).
- When a sequence program has been written to the inverter, write the sequence program that can be used for the inverter with the updated firmware version after the update. The sequence program written before the update may not operate properly.
- When the firmware is updated, **Pr.547 USB communication station number**, **Pr.1424 Ethernet communication network number**, and **Pr.1425 Ethernet communication station number** are disabled.
- Update the firmware of the FR-E800 series inverter while only the main circuit power supply is ON. Do not perform firmware update while other power source (USB port or a 24 V external power supply, or the FR-PU07BB) is ON.

## 5.14.7 Troubleshooting

Condition	Possible cause	Corrective action
The inverter is not detected by the "Scan Network" function.	The IP address of the inverter is not specified.	Check the IP address of the inverter.
	The IP address of the personal computer is not specified.	Check the IP address of the personal computer.
	The Ethernet cable is not connected or broken.	Connect or replace the Ethernet cable.
"Ethernet" cannot be selected in "Select Ethernet Adapter" window.	The same IP address is used for the personal computer and the inverter.	Check the IP address of the inverter.
	The Ethernet cable is not connected or broken.	Connect or replace the Ethernet cable.
An error occurs when the network is scanned.	When Ethernet is selected for the network adapter, the Ethernet cable is not connected or the network is scanned while the cable is broken.	Set a network adapter again.
	Too many inverters are to be scanned.	Scan 512 or less inverters connected via Ethernet.
An error occurs during firmware update (inverter reset) via Ethernet when multiple inverters are connected in line topology.	The relay station is reset during firmware update and the communication with the subsequent inverters is disconnected.	Set the reset time longer to reset all the connected inverters simultaneously.
An error occurs during firmware update via Ethernet when multiple inverters are connected.	For firmware update when multiple inverters are connected, a communication delay occurs due to relay delays.	Set the timeout time longer.
Firmware update fails.	The inverter power is OFF.	Update the firmware again.
	USB or Ethernet connection is improper.	
After firmware update of the FR-E800 series inverter failed, the firmware cannot be updated again.	Power is supplied to the inverter from the USB port or a 24 V external power supply, or the FR-PU07BB.	Remove all the power sources and turn ON the main circuit power supply, then update the firmware again (after connecting the USB cable for the update via a USB connector).

## 5.14.8 Error codes for Firmware Update Tool

Error code	Error message	Countermeasure
1000	[Invalid Windows version] This application works on computers with Windows 10 or later.	Use computers with Windows 10 or later.
1001	[Invalid .Net Framework version] Please install .Net Framework v4.5 or later.	Install .Net Framework v4.5 or later.
1003	[Error] The required file is not found.	The required file is not found. Reinstall FR Configurator2.
1004	[Invalid file name] The VFD firmware was not found.	Check that the firmware file is in the folder specified in "Select VFD firmware" section.
1005	[Error] The application cannot start up on a 32-bit operating system.	Use a 64-bit operating system.
2000 to 2800	[Invalid VFD firmware] The VFD firmware cannot be read correctly.	The firmware file may be damaged. Download the firmware file from the Mitsubishi Electric FA Global Website again.
3000	[No Ethernet adapter] The Ethernet adapter was not found.	Check that the inverters are connected via Ethernet and the power of the inverters are ON. Scan the network after selecting the adapter.
4000	[Network scan] The VFD was not found on the network.	Check that the power of the inverters are ON. Check that the inverters are connected via Ethernet. Check that "5001" and "45237" are set in any two parameters from <b>Pr.1427 to Pr.1430 Ethernet function selection</b> .
5000	[Invalid target] The target VFD is not selected.	Select the inverters whose firmware are to be updated, and perform firmware update.
7000	This VFD is not supported.	Firmware Update Tool is not available for a selected inverter. When "Err" is displayed on the operation panel or an inverter does not start up properly, turn OFF and then ON the power.
8000 to 8A01	Failed to update.	An error occurred during the update. Check the following points and perform the update again. · Check if the inverter's power is OFF. · Check for a break in the USB/Ethernet cable. · When the firmware of inverters having addresses in different networks are to be updated, check that the settings of <b>Pr.442 to Pr.445 Default gateway address</b> are correct. · Download the firmware file again as it may be damaged.
9000	Failed to clear the alarm history.	An error occurred while clearing the fault history after the firmware update. Clear the fault history in the inverter manually.
9001	Failed to clear all parameter settings.	An error occurred during All parameter clear after the firmware update. Perform All parameter clear in the inverter manually.


# 5.15 Help

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## 5.15.1 FR Configurator2 help menu

Software and inverter Instruction Manuals can be viewed in e-Manual Viewer.

Use one of the following methods to start e Manual Viewer:

- Select [FR Configurator2 Help...F1] in [Help] menu.
- Click  on the toolbar.
- Press the F1 key.

### **Point**

- e-Manual refers to the Mitsubishi FA electronic book manuals that can be browsed using a dedicated tool. e-Manual has the following features:
- Required information can be cross-searched in multiple manuals.
- Pages that users often browse can be bookmarked.

5

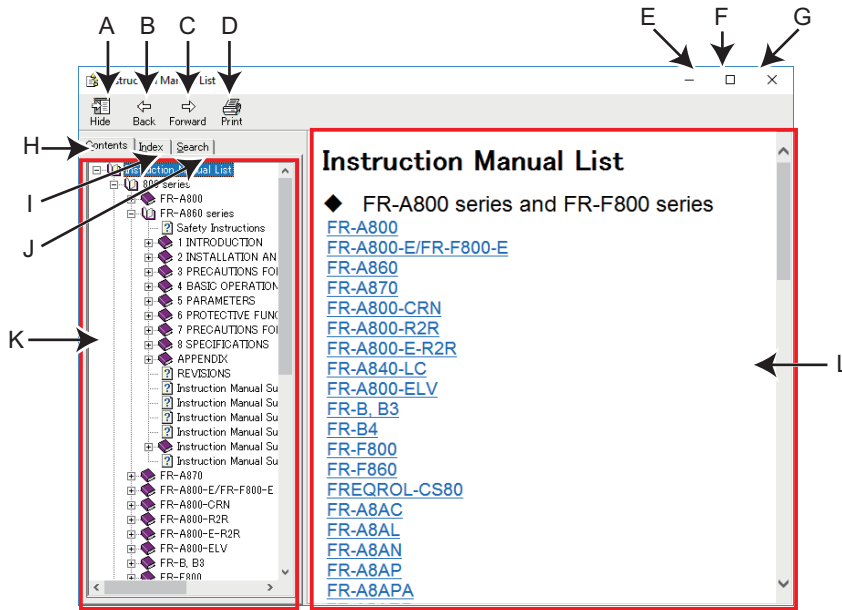
## 5.15.2 [Instruction Manual of the inverter] menu




The Help window shows the contents of the software and inverter's Instruction Manuals.

There are following ways of displaying Help.

- Select [Inverter 's Instruction Manual] in [Help] menu.

- Double clicking a parameter on the parameter list will show the explanation of the selected parameter.



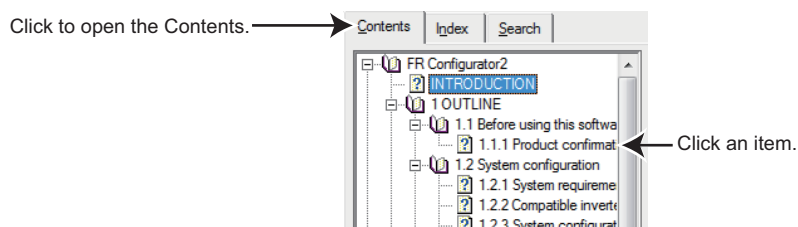
Symbol	Name	Function/description
A	Hide	Hides the navigation panel, [C]ontents, [I]ndex, and [S]earch tabs. While hiding the navigation panel and the tabs, the button changes to  . Click  to display the navigation panel and the tabs again.
B	Back	Returns to the previous help description.
C	Forward	Click this to read forward the help description again after using  .
D	Print	Prints help description.
E	Minimize button	Minimizes the help window.
F	Maximize button	Maximizes the help window.
G	Close button	Exits the help window.
H	<u>C</u> ontents	Click this to check the contents. Contents will be displayed in the navigation panel.
I	<u>I</u> ndex	Click this to use the index. Index will be displayed in the navigation panel.
J	<u>S</u> earch	Click this to use the search function. Search will be displayed in the navigation panel.
K	Navigation	Display the Contents, Index, or Search.
L	Contents	Shows help description.

## ◆ HTML format and link

Help description is displayed in the contents panel. Help description is displayed in HTML format. Hyperlink is available to jump to the related help description. Hyperlink in description is shown in blue and underline.

## ◆ Contents

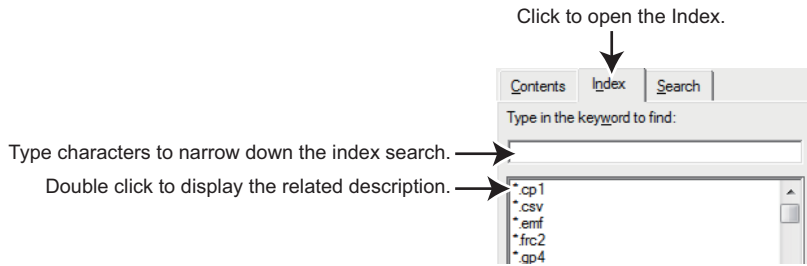
Click [C]ontents to display a list of contents. Click a desired item to show the help description.



## ◆ Index

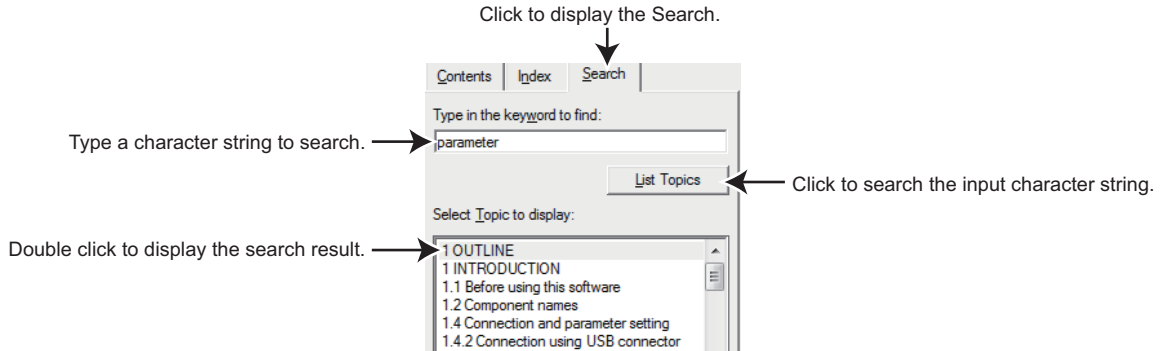
Click [I]ndex to display the index of keywords contained in the Help.

Type characters to narrow down the index search. Click a desired item to show the help description.



## ◆ Search

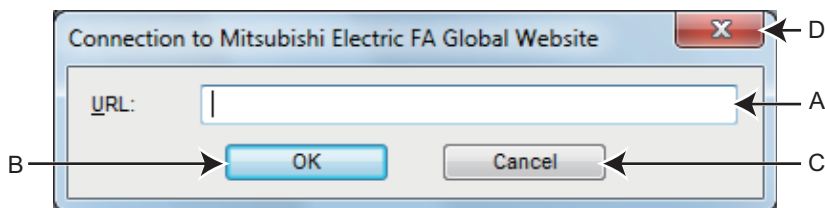
Click [Search] to display the search panel. Type a character string and click [List Topics] to perform full-text search with the character string in the Help. Click a desired topic in the search result to show the help description.



## 5.15.3 Connection to Mitsubishi Electric FA Global Website

Mitsubishi Electric FA Global Website provides technical information and information on training schools and contacts. An update for FR Configurator2 is available on this Mitsubishi Electric FA Global Website.

Select [Connect Mitsubishi Electric FA Global Website...] in the [Help] menu to display the "Connection Mitsubishi Electric FA Global Website" dialog. The Mitsubishi Electric FA Global Website URL is initially set to the [URL]. Use this dialog to start up the web browser and access to Mitsubishi Electric FA Global Website.



Symbol	Name	Function/description
A	<u>U</u> RL	Displays the Mitsubishi Electric FA Global Website URL.
B	OK	Starts up the web browser to access to Mitsubishi Electric FA Global Website.
C	Cancel	Close the [Connect Mitsubishi Electric FA Global Website] window.
D	Close button	

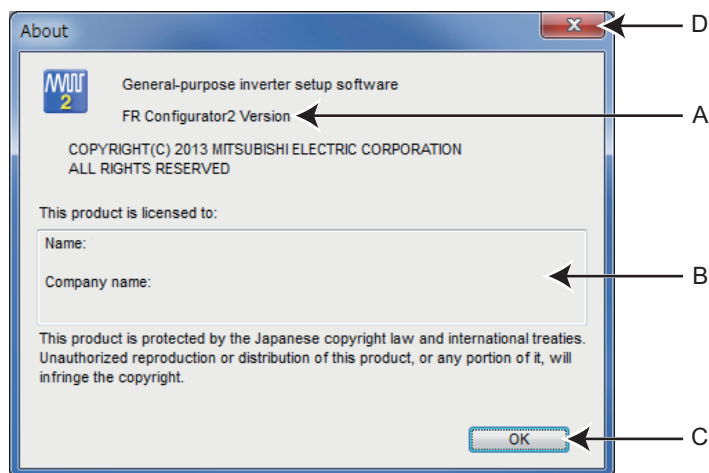
### NOTE

- Internet connection is required to connect to the Mitsubishi Electric FA Global Website.
- When [OK] is clicked while the URL field is blank, the web browser starts up to access Mitsubishi Electric FA Global Website. When [Connect Mitsubishi Electric FA Global Website...] is selected next time, the URL of the Mitsubishi Electric FA Global Website is set in the field.



## 5.15.4 Version information

Go to [Help] and select [About...] to show the software version of the FR Configurator2.



Symbol	Name	Function/description
A	Version information	Shows the version information of the FR Configurator2.
B	Registration	Shows the information registered during installation.
C	OK	Exits the version information window.
D	Close button	

# CHAPTER 6 TROUBLE INDICATION

6.1 Error code .....262

# 6 TROUBLE INDICATION

This chapter explains the trouble indications of this product.

Always read the instructions before using the equipment.

For the troubleshooting for firmware update, refer to [page 254](#).

## 6.1 Error code

If an error occurs, the following error codes and error messages appear.

### 6.1.1 Communication error with the inverter

#### NOTE

- If a timeout error occurs, set the FR Configurator2 to the offline mode. Check the connection of the communication cable, etc., and remove any error causing condition, then set it to online.
- The parameter list of FR Configurator2 shows the parameters of the latest inverter at the time of the FR Configurator2 upgrade. (For the upgrade timing of FR Configurator2, refer to [page 275](#).) The parameters' setting range, initial value, and numbers may be different before and after a version upgrade (with functions added).

Error code (HEX)	Error message	Possible cause	Countermeasure
0x010A4171	A remote password is set.	A remote password is set for the intermediate CPU or Ethernet module.	Delete the remote password set for the CPU or Ethernet module.
0x010AC201			
0x01801006	The specified module does not exist.	An incorrect module is specified.	Check the module type and model of the programmable controller in the system setting window.
0x01808201	A data transmission error occurred.	Transmission error.	Check the communication environment.

Error code (HEX)	Error message	Possible cause	Countermeasure	
0x01808301	An error occurred when receiving data.	<ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1429 Ethernet function selection.</b></li> <li>• FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in <b>Pr.1076 to Pr.1078 Ethernet function selection.</b></li> <li>• FR-E800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1430 Ethernet function selection.</b></li> <li>• FR-E700-NE The function to communicate with FR Configurator2 is not set in <b>Pr.833 to Pr.835 Ethernet function selection.</b></li> </ul>	<p>"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set the combination of "5001" (or "5002") and "45237" in any two parameters from <b>Pr.1427 to Pr.1429.</b></li> <li>• FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two parameters from <b>Pr.1076 to Pr.1078.</b></li> <li>• FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1430.</b></li> <li>• FR-E700-NE Set the combination of "31" (or "32") and "20" in any two parameters from <b>Pr.833 to Pr.835.</b></li> </ul> <p>"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1429.</b></li> <li>• FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1076 to Pr.1078.</b></li> <li>• FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1430.</b></li> <li>• FR-E700-NE Set "31", "30", "36", or "38" in any parameter from <b>Pr.833 to Pr.835.</b></li> </ul> <p>"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001" in any parameter from <b>Pr.1427 to Pr.1429.</b></li> <li>• FR-A800-E-R2R Set "5001" in any parameter from <b>Pr.1076 to Pr.1078.</b></li> <li>• FR-E800-E Set "5001" in any of <b>Pr.1427 to Pr.1430.</b></li> <li>• FR-E700-NE Set "31" in any parameter from <b>Pr.833 to Pr.835.</b></li> </ul>	
0x01808401	The communication line cannot be opened.	Control error.	Check the communication environment.	
0x01808402		Signal cable control error.		
0x01808403		Incorrect signal cable setting.		
0x0180840F		Failed to obtain the signal cable status information.		
0x01808410		CD signal cable offline.		
0x01808405		Communication parameter setting error.		Check the communication settings.
0x01808406		Incorrect baud rate setting.		
0x01808407		Incorrect data length setting.		
0x01808408		Incorrect parity setting.		
0x01808409		Incorrect stop bit setting.		
0x0180840A	Communication setting error.			

Error code (HEX)	Error message	Possible cause	Countermeasure
0x0180840B	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>• Electromagnetic interference.</li> <li>• Cable is damaged or broken.</li> <li>• The personal computer port is set invalid or the port is broken.</li> <li>• The value in the network part of the IP address is not the same between the inverter and the personal computer. (Ethernet parameter setting)</li> <li>• The communication driver failed to open.</li> <li>• FR-A800-E/FR-F800-E/FR-E800-E The value set in <b>Pr.1432 Ethernet communication check time interval</b> is too small.</li> <li>• FR-E700-NE The value set in <b>Pr.852 Ethernet communication check time interval</b> is too small.</li> </ul>	<ul style="list-style-type: none"> <li>• Reconnect or replace the cable.</li> <li>• Activate the port using Device Manager, or replace the port.</li> <li>• Use the same value in the network part of the IP address between the inverter and the personal computer. (Ethernet parameter setting)</li> <li>• Establish the online connection.</li> <li>• FR-A800-E/FR-F800-E/FR-E800-E Set a larger value or "9999" in <b>Pr.1432 Ethernet communication check time interval</b>.</li> <li>• FR-E700-NE Set a larger value or "9999" in <b>Pr.852 Ethernet communication check time interval</b>.</li> </ul>
		<ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1429 Ethernet function selection</b>.</li> <li>• FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in <b>Pr.1076 to Pr.1078 Ethernet function selection</b>.</li> <li>• FR-E800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1430 Ethernet function selection</b>.</li> <li>• FR-E700-NE The function to communicate with FR Configurator2 is not set in <b>Pr.833 to Pr.835 Ethernet function selection</b>.</li> </ul>	<p>"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set the combination of "5001" (or "5002") and "45237" in any two parameters from <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two parameters from <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set the combination of "31" (or "32") and "20" in any two parameters from <b>Pr.833 to Pr.835</b>.</li> </ul> <p>"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set "31", "30", "36", or "38" in any parameter from <b>Pr.833 to Pr.835</b>.</li> </ul> <p>"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001" in any parameter from <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set "5001" in any parameter from <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set "5001" in any of <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set "31" in any parameter from <b>Pr.833 to Pr.835</b>.</li> </ul>

Error code (HEX)	Error message	Possible cause	Countermeasure
0x01808008	The communication line cannot be opened.	Invalid Ethernet port number or IP address.	Check the communication settings.
0x01808009		Invalid communication port.	
0x0180800C		Invalid communication settings.	
0x0180800D		Invalid timeout value.	
0x01808501	USB communication was interrupted.	USB driver loading failed.	Establish the online connection again.
0x01808502		The USB driver failed to open.	
0x01808506		USB driver initialization failed.	
0x80A00101	The communication line cannot be opened.	<ul style="list-style-type: none"> <li>Communication setting is not set for the USB while connecting via USB.</li> <li>No communication port exists on the personal computer, or it is not recognized.</li> </ul>	<ul style="list-style-type: none"> <li>Check the connection type on the [System setting] window. (Refer to <a href="#">page 118.</a>)</li> <li>Check that a communication ports exists on the personal computer.</li> </ul>
0x80A00104 0x80A00107 0x80A0010A	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x80010000	The transmission data from the computer was containing errors for the permissible number of retries or more.	<ul style="list-style-type: none"> <li>The <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>
0x80010001	The content does not match with the specified parity.	<ul style="list-style-type: none"> <li>The <b>Pr.120 PU communication parity check</b> and <b>Pr.334 RS-485 communication parity check selection</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.120 PU communication parity check</b> and <b>Pr.334 RS-485 communication parity check selection</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>
0x80010002	The sum check code of the computer is different from the sum check code of the data received by the inverter.	<ul style="list-style-type: none"> <li>The communication setting is different between the inverter and the software.</li> <li>Data is corrupted due to electromagnetic noise, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Make the same communication setting.</li> <li>Check for electromagnetic noise and wiring.</li> </ul>
0x80010003	The data received by the inverter contains a syntax error. Or the inverter was not able to receive the data within the specified time.	<ul style="list-style-type: none"> <li>The <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>
0x80010004	The stop bit length is different from the initial value.	<ul style="list-style-type: none"> <li>The <b>Pr.119 PU communication stop bit length / data length</b> and <b>Pr.333 RS-485 communication stop bit length / data length</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.119 PU communication stop bit length / data length</b> and <b>Pr.333 RS-485 communication stop bit length / data length</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>

Error code (HEX)	Error message	Possible cause	Countermeasure
0x80010005	Because of incorrect wiring, data was transmitted before completing a data reception.	<ul style="list-style-type: none"> <li>The settings of <b>Pr.123 PU communication waiting time setting</b> and <b>Pr.337 RS-485 communication waiting time setting</b> are too small.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Set a larger value or "9999" in <b>Pr.123 PU communication waiting time setting</b> and <b>Pr.337 RS-485 communication waiting time setting</b>.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>
0x80010007	The inverter received an unusable character (other than 0 to 9, A to F, or control codes).	<ul style="list-style-type: none"> <li>The <b>Pr.119 PU communication stop bit length / data length</b> and <b>Pr.333 RS-485 communication stop bit length / data length</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.119 PU communication stop bit length / data length</b> and <b>Pr.333 RS-485 communication stop bit length / data length</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Replace the cable.</li> </ul>
0x8001000A	A mode error occurred.	A test operation was attempted without setting FR Configurator2 as the operation (start) command source, for example in the External operation mode (EXT).	<ul style="list-style-type: none"> <li>Change the operation mode to the PU operation mode (or NET).</li> <li>Check the setting values of <b>Pr.338 Communication operation command source</b>, <b>Pr.550 NET mode operation command source selection</b>, and <b>Pr.551 PU mode operation command source selection</b>.</li> </ul>
0x8001000C	Any value outside the setting range cannot be written.	An out-of-range value or operation frequency was written to the parameter.	Set a value within the setting range, and enter the setting. If a writing error occurs even if a value within the setting range is written, check for the writing requirements for each parameter. For the details on the writing requirements, refer to the Instruction Manual of the inverter.
0x80010011	The parameter outside the setting range cannot be written.	An out-of-range value was written to the parameter.	Set a value within the setting range, and enter the setting. If a writing error occurs even if a value within the setting range is written, check for the writing requirements for each parameter. For the details on the writing requirements, refer to the Instruction Manual of the inverter.
0x80010012	A mode error occurred.	<ul style="list-style-type: none"> <li><b>Pr.79 Operation mode selection</b> is not set for PU/NET (RS-485).</li> <li>A parameter or frequency setting was attempted without setting FR Configurator2 as such command source, for example in the External operation mode (EXT).</li> </ul>	<ul style="list-style-type: none"> <li>Click [PU] button of Test Operation. Change the setting of <b>Pr.79</b> for PU/NET (RS-485).</li> <li>Change the operation mode to the PU operation mode (or NET).</li> <li>Check the setting values of <b>Pr.339 Communication speed command source</b>, <b>Pr.550 NET mode operation command source selection</b>, and <b>Pr.551 PU mode operation command source selection</b>.</li> </ul>
0x80010013	No parameter can be written during inverter running.	Parameter writing was attempted during inverter operation.	Perform parameter writing after the inverter is stopped.
0x80010014	The setting value cannot be written to the parameters to which writing is prohibited.	<ul style="list-style-type: none"> <li>Writing is disabled by <b>Pr.77 Parameter write selection</b>. (Pr.77 = "1 (write disabled)")</li> <li>Password lock is activated.</li> </ul>	<ul style="list-style-type: none"> <li>Set <b>Pr.77 Parameter write selection</b> to other than "1".</li> <li>Enter the password in <b>Pr.297</b> to unlock password protection.</li> </ul> <p>If an error occurs while Ethernet parameters are set, change the setting of the above parameter on the operation panel.</p>

Error code (HEX)	Error message	Possible cause	Countermeasure
0x80010016	Non-existed parameters cannot be read or written.	<ul style="list-style-type: none"> <li>The version of the parameter file in the setup software is different from the inverter version.</li> <li>Simple mode is set by <b>Pr.160 User group read selection</b>.</li> <li>Password lock is activated.</li> <li>Parameter writing has been attempted to <b>Pr.77 Parameter write selection</b> or <b>Pr.79 Operation mode selection</b> in the NET mode.</li> <li>The user attempted to read from a read-protected parameter, or write to a write-protected parameter.</li> <li>The user attempted to perform batch write to a set of parameters that includes <b>Pr.77</b>.</li> </ul>	<ul style="list-style-type: none"> <li>Reinstall the software.</li> <li>Change the setting of <b>Pr.160</b> to choose a mode other than the simple mode.</li> <li>Enter the password in <b>Pr.297</b> to unlock the password lock.</li> <li>Change the setting of <b>Pr.77</b> or <b>Pr.79</b> on the operation panel.</li> <li>The user attempted to read from a read-protected parameter, or write to a write-protected parameter.</li> <li>The user attempted to perform batch write to a set of parameters that includes <b>Pr.77</b>.</li> </ul>
0x80010017	The set option is not connected to the inverter.	Reading of option parameter was attempted while the option is not installed.	Install the option to the inverter.
0x80010018	The bias and gain settings for an analog value are too close.	There is only small difference between the gain and bias settings for an analog value.	Widen the gap between the gain and bias settings for an analog value.
0x8001001A	An unsupported model is connected.	Please contact your sales representative.	
0x80010021	The mode cannot be switched during inverter running.	Change the operation mode after the inverter stops.	<ul style="list-style-type: none"> <li>Set <b>Pr.77 Parameter write selection</b> to "2".</li> <li>Stop the inverter.</li> </ul>
0x80010022	While the forward rotation command (STF) is ON, the operation mode cannot be switched to the External operation mode.	Switching to the External mode was attempted while the forward rotation signal (STF) is ON.	Change the operation mode after switching STF to OFF.
0x80010023	While the reverse rotation command (STR) is ON, the operation mode cannot be switched to the External operation mode.	Switching to the External mode was attempted while the reverse rotation signal (STR) is ON.	Change the operation mode after switching STR to OFF.
0x80010024	The mode cannot be switched during the present operation mode.	The operation mode was attempted to be switched to the mode other than the one selected by <b>Pr.79 Operation mode selection</b> .	Change the setting of <b>Pr.79 Operation mode selection</b> .
0x80010025	The inverter cannot be reset with the present setting.	Reset is disabled by <b>Pr.75 Reset selection/disconnected PU detection/PU stop selection</b> .	Change the setting of <b>Pr.75 Reset selection/disconnected PU detection/PU stop selection</b> .
0x80010026	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x80010027	The remote password contains invalid characters.	Invalid characters were entered in the remote password.	Eliminate the invalid characters.
0x80010028	The remote password protection is still active.	A remote password is set for a device connected via Ethernet, but the password has not been entered.	Enter the correct password.
0x80010029	The remote password is not correct.	A remote password is set for a device connected via Ethernet, but a different password was entered.	Enter the correct password again.
0x8001002A	Enter the password again after 1 minutes.		Enter the correct password at the specified intervals.
0x8001002B	Enter the password again after 5 minutes.		
0x8001002C	Enter the password again after 15 minutes.		
0x8001002D	Enter the password again after 60 minutes.		
0x8001002E	Enter the password again after a while.	The remote password was entered before the specified interval has passed.	Enter the remote password at the specified intervals.



Error code (HEX)	Error message	Possible cause	Countermeasure
0x80010101	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>The setting values in <b>Pr.122 PU communication check time interval</b>, <b>Pr.336 RS-485 communication check time interval</b>, <b>Pr.548 USB communication check time interval</b>, and <b>Pr.1432 Ethernet communication check time interval (Pr.852 for FR-E700-NE)</b> are too small.</li> <li>Electromagnetic interference.</li> <li>Cable breakage/damage.</li> <li>The personal computer port is set invalid or the port is broken.</li> <li>Power source was changed from the USB power supply or the 24 V external power supply to the main circuit power supply.</li> </ul>	<ul style="list-style-type: none"> <li>Set a larger value or "9999" in <b>Pr.122 PU communication check time interval</b>, <b>Pr.336 RS-485 communication check time interval</b>, <b>Pr.548 USB communication check time interval</b>, and <b>Pr.1432 Ethernet communication check time interval (Pr.852 for FR-E700-NE)</b>.</li> <li>Set a larger value for the timeout setting of the software.</li> <li>Connect or replace the cable.</li> <li>Activate the port using Device Manager, or replace the port.</li> <li>Check the status of the inverter.</li> </ul>
0x80010102	The data received by the computer contains incorrect data.	<ul style="list-style-type: none"> <li>The <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings are different with the software settings.</li> <li>Electromagnetic interference.</li> <li>Inverter reset (or power-OFF)</li> <li>Cable breakage.</li> </ul>	<ul style="list-style-type: none"> <li>Match the <b>Pr.124 PU communication CR/LF selection</b> and <b>Pr.341 RS-485 communication CR/LF selection</b> settings with the software settings.</li> <li>Set a larger value in <b>Pr.121 PU communication retry count</b> and <b>Pr.335 RS-485 communication retry count</b>.</li> <li>Do not reset the inverter or turn OFF the inverter power during communication.</li> <li>Replace the cable.</li> </ul>
0x8001101B	Not specified as the command source.	Appears if parameter writing or operation mode change is attempted through the unspecified command interface.	Check the command source.
0x80011026	Access is disabled by exclusion control.	More than one device is trying to access the inverter.	Avoid device access conflict.
0x80020001	The communication line cannot be opened.	Invalid communication data type.	Check the communication settings.
0x80020002	The parameter outside the setting range cannot be written.	An out-of-range value was written to the parameter.	Set a value within the setting range, and enter the setting. If a writing error occurs even if a value within the setting range is written, check for the writing requirements for each parameter. For the details on the writing requirements, refer to the Instruction Manual of the inverter.
0x80020003 0x80020004	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x80020005 0x80020006 0x80020007 0x80020008	The reception data could not be acquired.	The sampling data could not be obtained by the high speed sampling.	<ul style="list-style-type: none"> <li>Close other applications.</li> <li>Set a larger value for the mask count.</li> <li>Decrease the number of sampling channels.</li> </ul>
0x80020009	The time cannot be set if the difference with the inverter time is 10 years or more.	Real time clock setting error	Set appropriate time in <b>Pr.1006 to Pr.1008</b> of the inverter.
0x80030001	The specification of the communication port is incorrect.	The communication port is set disabled. Another application is already using the port.	<ul style="list-style-type: none"> <li>Activate the port using Device Manager.</li> <li>Close other applications, and establish the online connection.</li> </ul>
0x80030002 0x80030003 0x80030004 0x80030005 0x80030006 0x80030007 0x80030008 0x80030009	An unexpected error occurred in S/W.	Please contact your sales representative.	

Error code (HEX)	Error message	Possible cause	Countermeasure
0x8003000A	USB communication was interrupted.	Invalid USB communication settings.	Check the system settings.
0x8003000B	The communication line cannot be opened.	Incorrect USB type	
0x8003000C	Duplication was detected in station number of the USB communication.	Please contact your sales representative.	
0x8003000D	An unexpected error occurred in S/W.		
0x8003000E	The driver is not installed or broken.	The driver is not installed or is broken.	Reinstall the software.
0x8003000F 0x80030010 0x80030011 0x80030012 0x80030013	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x9000C05C	An unexpected error occurred in S/W.	<ul style="list-style-type: none"> <li>• Electromagnetic interference</li> <li>• Cable breakage/damage</li> </ul>	<ul style="list-style-type: none"> <li>• Try again.</li> <li>• Check for cable connection.</li> <li>• Replace any faulty cable.</li> </ul>

Error code (HEX)	Error message	Possible cause	Countermeasure
0x90010101	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>• Electromagnetic interference.</li> <li>• Cable is damaged or broken.</li> <li>• The personal computer port is set invalid or the port is broken.</li> <li>• The value in the network part of the IP address is not the same between the inverter and the personal computer. (Ethernet parameter setting)</li> <li>• The communication driver failed to open.</li> <li>• FR-A800-E/FR-F800-E/FR-E800-E The value set in <b>Pr.1432 Ethernet communication check time interval</b> is too small.</li> <li>• FR-E700-NE The value set in <b>Pr.852 Ethernet communication check time interval</b> is too small.</li> </ul>	<ul style="list-style-type: none"> <li>• Reconnect or replace the cable.</li> <li>• Activate the port using Device Manager, or replace the port.</li> <li>• Use the same value in the network part of the IP address between the inverter and the personal computer. (Ethernet parameter setting)</li> <li>• Establish the online connection.</li> <li>• FR-A800-E/FR-F800-E/FR-E800-E Set a larger value or "9999" in <b>Pr.1432 Ethernet communication check time interval</b>.</li> <li>• FR-E700-NE Set a larger value or "9999" in <b>Pr.852 Ethernet communication check time interval</b>.</li> </ul>
		<ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1429 Ethernet function selection</b>.</li> <li>• FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in <b>Pr.1076 to Pr.1078 Ethernet function selection</b>.</li> <li>• FR-E800-E The function to communicate with FR Configurator2 is not set in <b>Pr.1427 to Pr.1430 Ethernet function selection</b>.</li> <li>• FR-E700-NE The function to communicate with FR Configurator2 is not set in <b>Pr.833 to Pr.835 Ethernet function selection</b>.</li> </ul>	<p>"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set the combination of "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two of <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set the combination of "31" (or "32") and "20" in any two of <b>Pr.833 to Pr.835</b>.</li> </ul> <p>"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set "31", "30", "36", or "38" in any parameter from <b>Pr.833 to Pr.835</b>.</li> </ul> <p>"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list.</p> <ul style="list-style-type: none"> <li>• FR-A800-E/FR-F800-E Set "5001" in any of <b>Pr.1427 to Pr.1429</b>.</li> <li>• FR-A800-E-R2R Set "5001" in any of <b>Pr.1076 to Pr.1078</b>.</li> <li>• FR-E800-E Set "5001" in any of <b>Pr.1427 to Pr.1430</b>.</li> <li>• FR-E700-NE Set "31" in any of <b>Pr.833 to Pr.835</b>.</li> </ul>

Error code (HEX)	Error message	Possible cause	Countermeasure
0x90010101	Communication was not established with the inverter within the timeout time.	PROFINET is selected in any of <b>Pr.1427 to Pr.1430 Ethernet function selection.</b>	Do not set "34962" in any of <b>Pr.1427 to Pr.1430 Ethernet function selection.</b>
0x90A00101	The communication line cannot be opened.	The IP address is used by another inverter.	Set a unique IP address.
0x90A00102		The personal computer is disconnected from the network or the network setting is changed after the inverter detection.	<ul style="list-style-type: none"> <li>Restart the procedure from the inverter detection again.</li> <li>Check the network connection and setting of the computer.</li> </ul>
0x90F00001	The communication settings cannot be written.	The inverter series name is unknown.	<ul style="list-style-type: none"> <li>Upgrade FR Configurator2 to the latest version.</li> <li>Write the communication settings from the operation panel. For information on the communication settings, refer to the Instruction Manual of the inverter.</li> </ul>
0x90F00002		The inverter model is unknown.	

## 6.1.2 Communication error with the GOT

### NOTE

- If a timeout error occurs, set the FR Configurator2 to the offline mode. Check the connection of the communication cable, etc., and remove any error causing condition, then set it to online.
- The parameter list of FR Configurator2 shows the parameters of the latest inverter at the time of the FR Configurator2 upgrade. (For the upgrade timing of FR Configurator2, refer to [page 275](#).) The parameters' setting range, initial value, and numbers may be different before and after a version upgrade (with functions added).
- Refer to [page 262](#) for information on communication errors with the GOT (error codes: 0x01808301 and 0x0180840B).

Error code (HEX)	Error message	Possible cause	Solution
0x80110001	An unexpected error occurred in S/W.	GOT type error.	Check for the GOT type.
0x80110002 0x80110003	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x80110004	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>Communication protocol of the inverter and the GOT are not the same.</li> <li>Setting of <b>Pr.122 PU communication check time interval, Pr.336 RS-485 communication check time interval, Pr.548 USB communication check time interval</b> is other than "0".</li> <li>Electromagnetic interference</li> <li>Cable breakage/damage</li> </ul>	<ul style="list-style-type: none"> <li>Set the same communication protocol for the inverter and the GOT.</li> <li>Set a value other than "0" in <b>Pr.122 PU communication check time interval, Pr.336 RS-485 communication check time interval, Pr.548 USB communication check time interval</b>.</li> <li>Set a larger value for the timeout setting of the software.</li> <li>Cable connection/replacement. Check for communication cable and power supply of devices.</li> </ul>
0x80110005	Communication was not established with the inverter within the timeout time.	GX drawing software was started when FR Configurator2 was starting.	After closing GX drawing software, try communication again.
0x80110006	Communication was not established with the inverter within the timeout time.	GX drawing software was started when FR Configurator2 was starting.	After closing GX drawing software, try communication again.
0x80110007	An unexpected error occurred in S/W.	Communication line quality error	Set lower baud rate and make a communication.
0x80110008	An unexpected error occurred in S/W.	Baud rate not supported by connected device	Check for the baud rate supported by connected devices.
0x80110009	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>Electromagnetic interference</li> <li>Cable breakage/damage</li> </ul>	<ul style="list-style-type: none"> <li>Set a larger value for the timeout setting of the software.</li> <li>Cable connection/replacement. Check for the connection.</li> </ul>

Error code (HEX)	Error message	Possible cause	Solution
0x8011000A	Communication was not established with the inverter within the timeout time.	Other process is ongoing in the GOT and line is BUSY. (retry is performed in the EZSocket) A station not connected is being monitored.	<ul style="list-style-type: none"> <li>Set a larger value for the timeout setting of the software.</li> <li>Monitor only the station which the GOT is connected.</li> <li>Check that the GOT is operating correctly and try again.</li> </ul>
0x8011000B	An unexpected error occurred in S/W.	Protocol type error	Check for protocol type.
0x8011000C	An unexpected error occurred in S/W.	Host name error	Check for the host name of the connected GOT.
0x8011000D	An unexpected error occurred in S/W.	Socket port number error	Check for the port number.
0x80111001 0x80111002 0x80111003 0x80111004 0x80111005 0x80111101 0x80111102 0x80111103 0x80111104 0x80111105 0x80111106 0x80111107 0x801111FF	Communication was not established with the inverter within the timeout time.	Electromagnetic interference, etc. are propagated when receiving GOT software.	Set a larger value for timeout setting of the software and try again.
0x80112001	The specification of the communication port is incorrect.	Serial line open error	Check for the communication port setting.
0x80112002	An unexpected error occurred in S/W.	Serial line closed error	Try again.
0x80112003	An unexpected error occurred in S/W.	Serial line setting error	Try again.
0x80112004	An unexpected error occurred in S/W.	Serial line baud rate error	Try again.
0x80112005	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>Occurred before starting the FR Configurator2 or during communication.</li> <li>Serial cable between the GOT and the personal computer is disconnected.</li> </ul>	Connect the cable.
0x80112201	An unexpected error occurred in S/W.	EZSocket GOT is installed, but the file is broken.	Install software again.
0x80112202	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>A cable between the GOT and the personal computer disconnected before starting FR Configurator2.</li> <li>The GOT power turned OFF before starting FR Configurator2.</li> </ul>	<ul style="list-style-type: none"> <li>Connect the cable.</li> <li>Power ON the GOT.</li> </ul>
0x80112203	Communication was not established with the inverter within the timeout time.	Electromagnetic interference, etc. are affecting between the personal computer and the GOT.	Set a larger value for timeout setting of the software and try again.
0x80112204	An unexpected error occurred in S/W.	USB line error (at the GOT device error communication ending)	Try again.
0x80112205	An unexpected error occurred in S/W.	USB line error (sending function is invalid)	Try again.
0x80112206	An unexpected error occurred in S/W.	USB line error (receiving function is invalid)	Try again.
0x80112207	An unexpected error occurred in S/W.	USB line error (cable disconnection registration failure)	After reconnecting with the GOT, try again.
0x80112208	Communication was not established with the inverter within the timeout time.	<ul style="list-style-type: none"> <li>USB line error (cable was disconnected halfway)</li> <li>When a cable between the GOT and the personal computer was disconnected during communication.</li> <li>When the GOT power turned OFF during communication</li> </ul>	<ul style="list-style-type: none"> <li>Check for cable connection.</li> <li>Power ON the GOT.</li> </ul>
0x80112401	An unexpected error occurred in S/W.	The GOT was not found on the network.	Check that the GOT is connected to the network.

Error code (HEX)	Error message	Possible cause	Solution
0x80112402	An unexpected error occurred in S/W.	Socket line open error (socket generation failed)	Check that specified port number is correct and the IP address of the GOT is specified.
0x80112403 0x80112404	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x80112405	An unexpected error occurred in S/W.	Network error	Check that the GOT is connected to the network.
0x80112406	An unexpected error occurred in S/W.	Connected socket forced disconnection	Check that the GOT is not making a communication in other connection method.

### 6.1.3 List of errors related to functional safety

**NOTE**

- If a timeout error occurs, set the FR Configurator2 to the offline mode. Check the connection of the communication cable, etc., and remove any error causing condition, then set it to online.
- FR Configurator2 shows the safety parameters of the latest inverter at the time of the FR Configurator2 upgrade. (For the upgrade timing of FR Configurator2, refer to [page 275](#).) The parameters' setting range, initial value, and numbers may be different before and after a version upgrade (with functions added).

Error code (HEX)	Error message	Countermeasure
0x01A0000B	Parameters of the inverter used are not supported by the existing version of FR Configurator2.	Upgrade FR configurator2 to the latest version.
0x01A00117 0x01A00217 0x01A00417 0x01A00301 0x01A00303	Safety parameter settings are corrupt.	<ul style="list-style-type: none"> <li>• Retry the operation interrupted by the fault.</li> <li>• Perform safety parameter clear.</li> </ul> If the problem still persists after taking the above measure, contact your sales representative.
0xA001**01* <sup>1</sup> 0xA002**01* <sup>1</sup> 0xA001**02* <sup>1</sup> 0xA002**02* <sup>1</sup> 0xA001**03* <sup>1</sup> 0xA002**03* <sup>1</sup>	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA001**04* <sup>1</sup> 0xA002**04* <sup>1</sup>	A communication error occurred.	Check the noise and wiring.
0xA001**05* <sup>1</sup> 0xA002**05* <sup>1</sup>	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA001**10* <sup>1</sup> 0xA002**10* <sup>1</sup>	A safety parameter reading error occurred.	<ul style="list-style-type: none"> <li>• Retry the operation interrupted by the fault.</li> <li>• Perform safety parameter clear.</li> </ul>
0xA001**11* <sup>1</sup> 0xA002**11* <sup>1</sup>	A safety parameter writing error occurred.	If the problem still persists after taking the above measure, contact your sales representative.
0xA001**12* <sup>1</sup> 0xA002**12* <sup>1</sup> 0xA001**13* <sup>1</sup> 0xA002**13* <sup>1</sup> 0xA001**14* <sup>1</sup> 0xA002**14* <sup>1</sup>	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA001**15* <sup>1</sup> 0xA002**15* <sup>1</sup>	Any value out of the setting range cannot be written.	Write a value within the setting range.

Error code (HEX)	Error message	Countermeasure
0xA001**16* <sup>1</sup>	Safety parameter settings are corrupt.	<ul style="list-style-type: none"> <li>• Retry the operation interrupted by the fault.</li> <li>• Perform safety parameter clear.</li> </ul> If the problem still persists after taking the above measure, contact your sales representative.
0xA002**16* <sup>1</sup>		
0xA001**17* <sup>1</sup>		
0xA002**17* <sup>1</sup>		
0xA001**18* <sup>1</sup>	A safety parameter clearing error occurred.	
0xA002**18* <sup>1</sup>		
0xA001**20* <sup>1</sup>	The password protection is still active.	<ul style="list-style-type: none"> <li>• Enter the correct password.</li> <li>• If you forget the password, perform safety parameter clear to reset the password to the initial value, then enter the password again.</li> </ul> If the problem still persists after taking the above measure, contact your sales representative.
0xA002**20* <sup>1</sup>		
0xA001**21* <sup>1</sup>	A password writing error occurred.	<ul style="list-style-type: none"> <li>• Retry the operation interrupted by the fault.</li> <li>• Perform safety parameter clear.</li> </ul> If the problem still persists after taking the above measure, contact your sales representative.
0xA002**21* <sup>1</sup>		
0xA00E**04* <sup>1</sup>	A communication error occurred.	Check the noise and wiring.
0xA00F**04* <sup>1</sup>		

\*1 The value displayed in \*\* position depends on the applicable error.

# REVISIONS

\*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Revision
Jul. 2013	IB(NA)-0600516ENG-A	First edition (Ver. 1.00 supported)
Jun. 2013	IB(NA)-0600516ENG-B	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-A802</li> </ul> (Ver. 1.03D supported)
Mar. 2015	IB(NA)-0600516ENG-C	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-F800</li> <li>Settings by function</li> <li>I/O terminal monitor</li> <li>Serial number reading</li> </ul> (Ver. 1.07H supported)
Mar. 2015	IB(NA)-0600516ENG-D	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-F800</li> <li>Settings by function</li> <li>I/O terminal monitor</li> <li>Serial number reading</li> </ul> Edited <ul style="list-style-type: none"> <li>Settings by function (trace setting)</li> <li>Convert function</li> </ul> (Ver. 1.08J supported)
May 2016	IB(NA)-0600516ENG-E	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-A800-E</li> <li>Settings by function (start command and frequency setting method)</li> <li>Compatibility with Windows 10</li> <li>Backup/restore file conversion</li> </ul> (Ver. 1.09K supported)
Dec. 2016	IB(NA)-0600516ENG-F	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-B, B3 and FR-F800-E</li> </ul> (Ver. 1.10L supported)
Jun. 2017	IB(NA)-0600516ENG-G	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-A846, A846-E, F860 and F860-E</li> <li>Compatibility with the 700 series (FR-A700, B, B3, F700 and F700P)</li> <li>Diagnostics (Life check, Diagnosis result output, Ethernet status)</li> </ul> (Ver. 1.11M supported)
Oct. 2017	IB(NA)-0600516ENG-H	Added <ul style="list-style-type: none"> <li>Compatibility with the FREQROL-CS80</li> <li>Compatibility with the 700 series (FR-E700-NE)</li> </ul> (Ver. 1.12N supported)
Jan. 2018	IB(NA)-0600516ENG-J	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-A800-E-CRN and FR-F806 series inverters, as well as the FREQROL-CS80 series single-phase 200 V class inverters.</li> <li>Graph function (Export to Excel)</li> <li>Diagnose function (Online status)</li> </ul> (Ver. 1.13P supported)
Mar. 2018	IB(NA)-0600516ENG-K	Added <ul style="list-style-type: none"> <li>Compatibility with the FR-A870, A840-LC, A870-LC, A800-ELV, E700EX and E560</li> </ul> (Ver. 1.14Q supported)
Jul. 2018	IB(NA)-0600516ENG-L	Added <ul style="list-style-type: none"> <li>GOT transparent function</li> <li>Compatibility with the 700 series (FR-E700)</li> </ul> (Ver. 1.15R supported)
Nov. 2018	IB(NA)-0600516ENG-M	Added <ul style="list-style-type: none"> <li>GOT transparent function (applicable Intermediate paths added)</li> <li>Compatibility with the 800 series (FR-A800-E-R2R)</li> <li>Compatibility with 700 series (FR-D700)</li> </ul> (Ver. 1.16S supported)
Apr. 2019	IB(NA)-0600516ENG-N	Added <ul style="list-style-type: none"> <li>Compatibility with CC-Link IE TSN</li> <li>Life check (main circuit capacitor residual-life estimation)</li> </ul> (Ver. 1.17T supported)



Revision date	*Manual number	Revision
Dec. 2019	IB(NA)-0600516ENG-P	Added <ul style="list-style-type: none"> <li>Compatibility with the 800 series (FR-E800, A872, and B4)</li> <li>Compatibility with the 700 series (FR-D700-G)</li> </ul> (Ver. 1.19V supported)
Jan. 2020	IB(NA)-0600516ENG-Q	Added <ul style="list-style-type: none"> <li>AI fault diagnosis</li> </ul> (Ver. 1.20W supported)
Feb. 2020	IB(NA)-0600516ENG-R	Edited <ul style="list-style-type: none"> <li>AI fault diagnosis</li> </ul> (Ver. 1.21X supported)
Apr. 2020	IB(NA)-0600516ENG-S	Added <ul style="list-style-type: none"> <li>Compatibility with the 800 series (FR-E820S and FR-E800-SCE)</li> <li>Safety parameter setting</li> </ul> (Ver. 1.22Y supported)
Jul. 2020	IB(NA)-0600516ENG-T	Added <ul style="list-style-type: none"> <li>Design precautions</li> <li>Description for using the FR-A8NCG</li> </ul> (Ver. 1.23Z supported)
Dec. 2020	IB(NA)-0600516ENG-U	Added <ul style="list-style-type: none"> <li>Compatibility with the 800 series (FR-E800-11K to 22K)</li> </ul> (Ver. 1.24A supported)
Apr. 2021	IB(NA)-0600516ENG-V	Added <ul style="list-style-type: none"> <li>Compatibility with the 800 series (FR-E800-EPC)</li> <li>Convert function (FR-E800)</li> </ul> (Ver. 1.25B supported)
Aug. 2021	IB(NA)-0600516ENG-W	Added <ul style="list-style-type: none"> <li>AI fault diagnosis (inverter overload trip (electronic thermal relay function) and motor overload trip (electronic thermal relay function))</li> </ul> (Ver. 1.26C supported)
Jan. 2022	IB(NA)-0600516ENG-X	Added <ul style="list-style-type: none"> <li>Firmware Update Tool</li> </ul> (Ver. 1.27D supported)
Apr. 2022	IB(NA)-0600516ENG-Y	Added <ul style="list-style-type: none"> <li>Safety parameter setting (Set TUNID and OCPUNID)</li> <li>Convert function (FR-E500 to FR-E800)</li> </ul> Edited <ul style="list-style-type: none"> <li>Connection and parameter setting</li> </ul> (Ver. 1.28E supported)
Sep. 2022	IB(NA)-0600516ENG-Z	Added <ul style="list-style-type: none"> <li>Compatibility with the 800 series (FR-E810W)</li> </ul> (Ver. 1.29F supported)

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