MITSUBISHI ELECTRIC

MELSOFT
FR Configurator2
INSTRUCTION MANUAL

INVERTER SETUP SOFTWARE

SW1DND-FRC2-E

CONTENTS

INTRODUCTION

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

- 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

- To maintain the security (confidentiality, integrity, and availability) of the inverter and the system against unauthorized access, DoS[*1] 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

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.	○	○
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

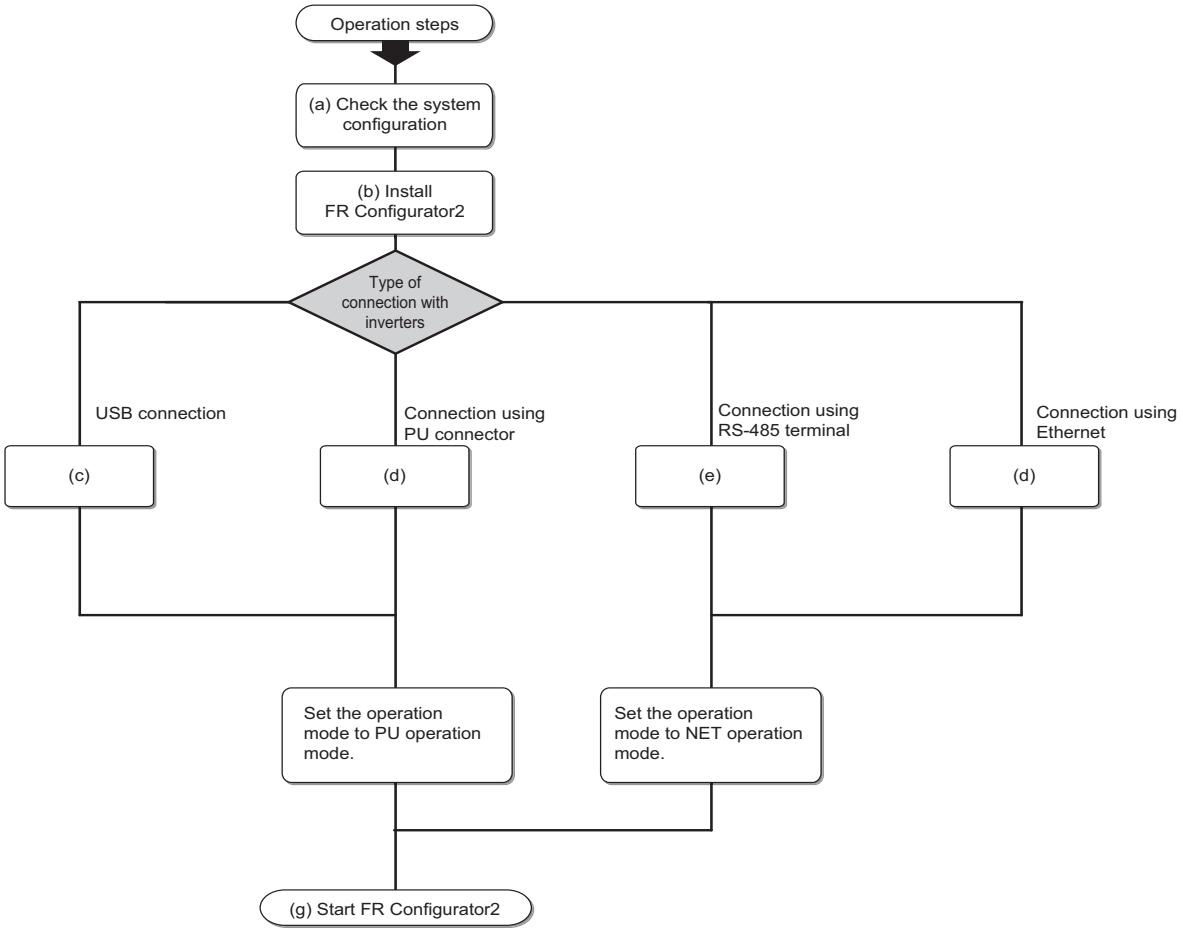
page 187.

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
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

Name	Manual number
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. For the details of communication parameters, refer to page 28.



Symbol	Explanation of steps	Refer to page
(a)	Check the system configuration	15
(b)	Install FR Configurator2	24
(c)	Set **Pr.548 USB communication check time interval** = "9999".	32
(d)	Initial parameter settings can be used. (Set **Pr.122 PU communication check time interval** ≠ "0" and **Pr.123 PU communication waiting time setting** = "9999".)	36
(e)	Set the station number in **Pr.331 RS-485 communication station number** (used for connecting multiple inverters). Set **Pr.336 RS-485 communication check time interval** ≠ "0" and **Pr.337 RS-485 communication waiting time setting** = "9999".	48
(f)	• FR-A800-E/F800-E/E800-(SC)E Set the station number in **Pr.1425 Ethernet communication station number** (used for connecting multiple inverters). Set **Pr.1432 Ethernet communication check time interval** = "9999". • FR-E700-NE Set the station number in **Pr.831 Ethernet communication station number** (used for connecting multiple inverters). Set **Pr.852 Ethernet communication check time interval** = "9999".	41
(g)	Start FR Configurator2	67

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 configuration

1.2.1 System requirement for FR Configurator2

Component[*1]	Description	
Personal computer	IBM PC/AT compatible machine with DVD drive (for installation), USB port or serial port	
	Operating system[*2]	• Windows® 10 (Home, Pro, Enterprise, IoT Enterprise[*3]) • Windows® 8.1[*4] • Windows® 7 SP1 or later (Professional, Enterprise)
	Processor	Intel Core i3 or higher, or equivalent
	Memory	• 4 GB or more: Windows® 10, Windows® 8.1, Windows® 7 (64-bit Edition) • 2 GB or more: Windows® 10, Windows® 8.1, Windows® 7 (32-bit Edition)
	Disk space	Free area of 7 GB or more
Software	Internet Explorer® 5.0 or later	
Display	Applicable to display at resolution of 1024 × 768 or more, 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.

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-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	02300 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		
	FR-B3-(N)H			
FR-B4 series (A800 specifications)	FR-B4	1.5K to 18.5K		
	FR-B4D			
FR-A800 Plus series	FR-A820-CRN	00046(0.4K) to 04750(90K)	Standard model	Crane function
	FR-A840-CRN	00023(0.4K) to 06830(280K)		
	FR-A842-CRN	07700(315K) to 12120(500K)	Separated converter type	
	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)		
	FR-A840-E-LC	03250(110K) to 06830(280K)		Liquid cooled type (Ethernet model)
	FR-A870-E-LC	03590(280K) to 04560(355K)		
	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-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-E820-E	0008(0.1K) to 0900(22K)		Standard (Ethernet model)
	FR-E840-E	0016(0.4K) to 0440(22K)		
	FR-E860-E	0017(0.75K) to 0120(7.5K)		
	FR-E820S-E	0008(0.1K) to 0110(2.2K)		
	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		

◆700 series / 500 series

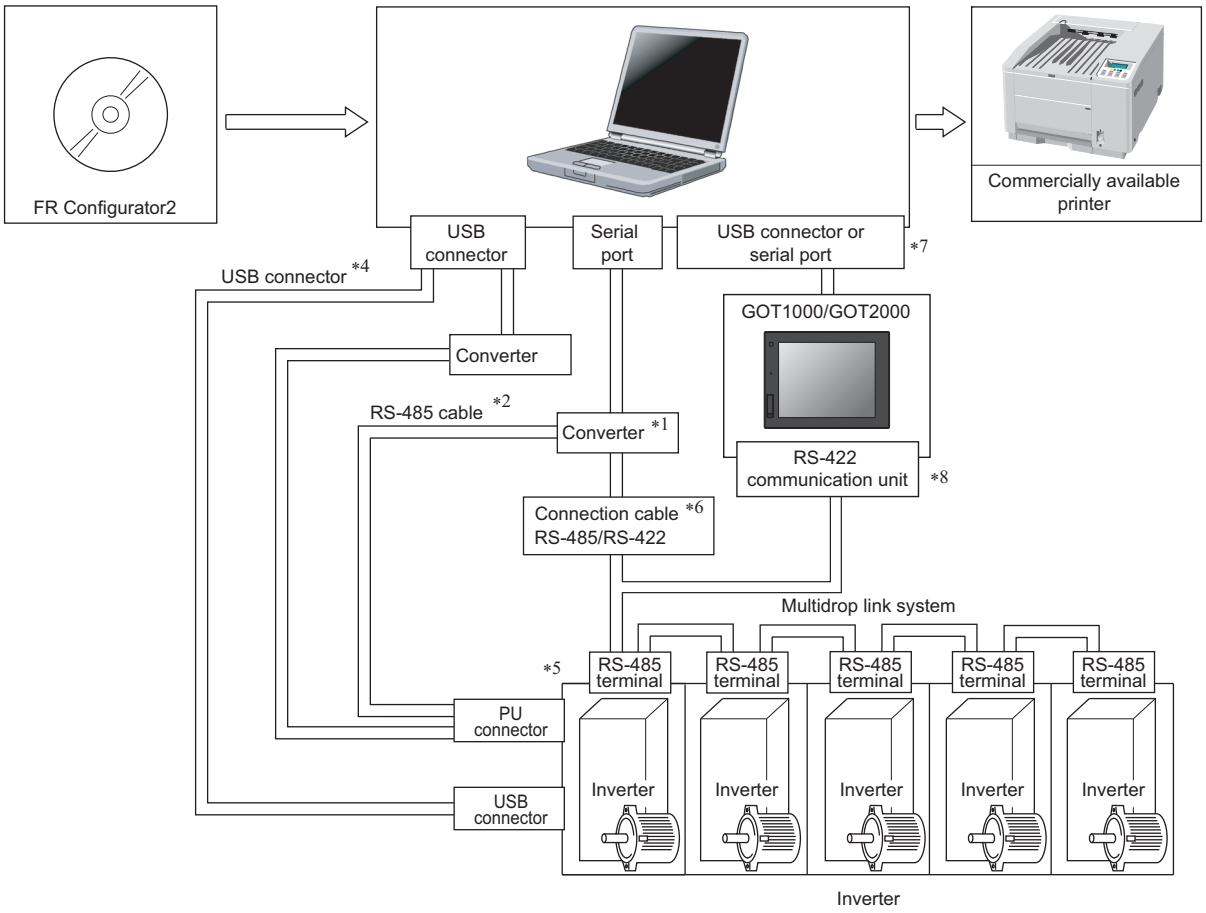
Series	Model	Capacity			
		Japan	North America	Europe	China
A700 series	FR-A720	0.4K to 90K	00030 to 03460	—	—
	FR-A740	0.4K to 500K	00015 to 09620	00023 to 12120	0.4K to 500K
	FR-A760	—	00017 to 06630	—	—
FR-B (A700) series	FR-B (200V)	750 to 3700, 5.5K to 75K	—	—	—
	FR-B (400V)	750 to 3700, 7.5K to 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	—	—

1.2.3 System configuration

The following devices are required to use FR Configurator2. Set up the system in accordance with the Instruction Manual of each device.

◆ Example (USB communication / serial communication)

Refer to Connection options on page 19 to configure the system.



*1 When using a serial port of a personal computer, a commercially available converter is required.
Examples of product available on the market (as of April 2019)
Model: DINV-CABV (with connectors and cable)
Diatrend Corp.
The converter cable cannot connect two or more inverters (the computer and inverter are connected on a 1:1 basis). This is an RS232C-to-RS485 converter-embedded conversion cable. No additional cable or connector is required. Contact a manufacturer for details of the product.

*2 Connection cable
Connector: RJ-45 connector
Cable: Cable in compliance with EIA568 (such as 10BASE-T cable)

*3 USB/RS-485 convert cable
Examples of product available on the market (as of April 2019)
Model: DINV-U4
Diatrend Corp.
Refer to page 73 for the communication setting with DINV-U4.
When using USB/RS-485 convert cable, use the newest driver software.
For a product details or the newest driver software, contact the cable manufacturer.

*4 Recommended USB cable for computer-inverter connection
MR-J3USBCBL3M (cable length: 3 m)

*5 Communication is available via the PU connector, RS-485 terminals, or USB connector.

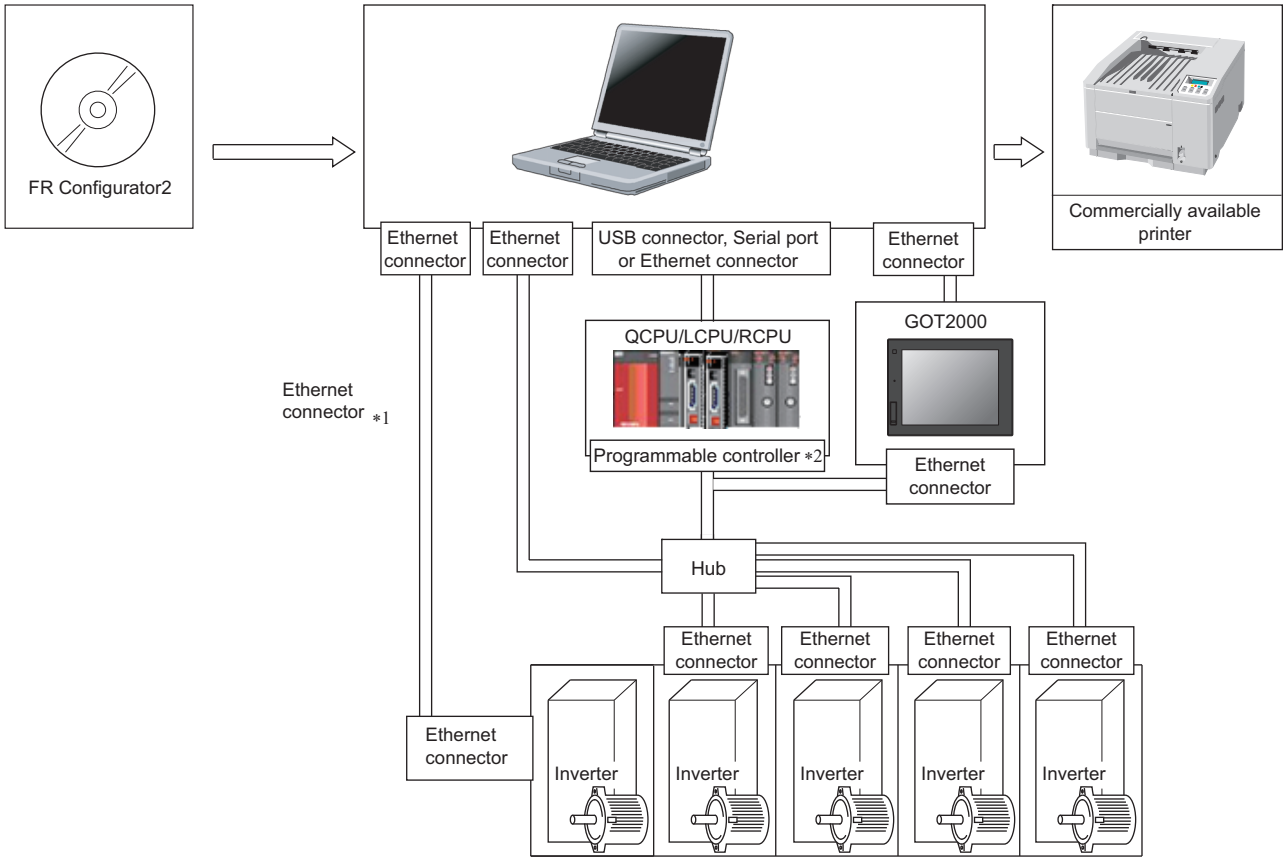
*6 Maximum overall length of connection cable: 500 m

*7 Select a USB connector or a serial port (one of the ports 1 to 63) on the communication setting window of FR Configurator2. (Multiple ports cannot be used at the same time.) One personal computer is connected to one GOT. When using the USB for connecting a GOT, use a dedicated cable, GT09-C30USB-5P or GT09-C20USB-5P. The GOT2000 series and a personal computer can be connected only via USB or Ethernet.

*8 For the GOT1000 series, an RS-422 communication unit (GT15-RS4-9S) is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT1000/GOT2000 Series Connection Manual.

◆ Example (Ethernet communication)

Refer to Connection options on page 19 to configure the system.



*1 When an Ethernet port is used on the computer, use a 1000BASE-T compliant Ethernet cable.

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

*2 For the connection with the inverter using a programmable controller, refer to the Operating Manual of GX Works with the version applicable to the programmable controller CPU.

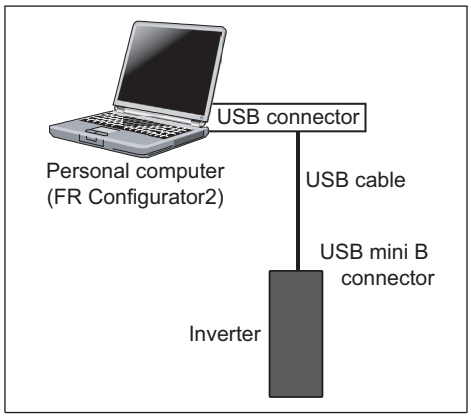
◆ Connection options

The following table shows connection options. Refer to the following schematic diagrams for connection examples.

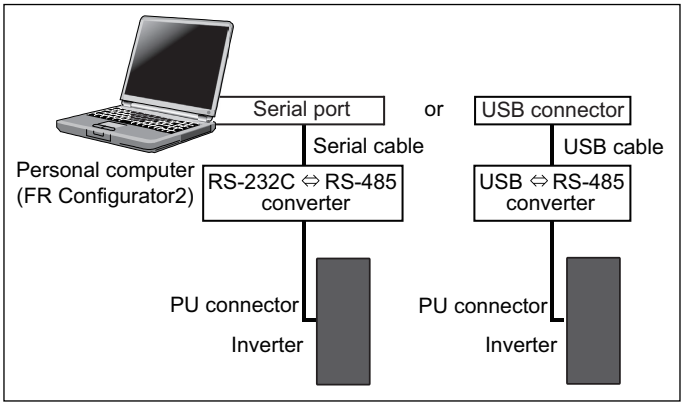
Number of connectable inverters	PC-side port	Intermediate device	Communication	Refer to page
One	USB	Not connected	USB	20, 32
	Serial	Not connected	Serial	20, 36
	Ethernet	Not connected	Ethernet or CC-Link IE Field Network Basic	20, 41
Two or more	Serial	Not connected	Serial	20, 48
	Ethernet	Not connected	Ethernet or CC-Link IE Field Network Basic	21, 41
			CC-Link IE TSN communication	21, 46
One, or two or more	USB or serial	GOT1000	Serial	21, 51
	USB or Ethernet	GOT2000	Serial or Ethernet	22, 51
	USB, serial, or Ethernet	Programmable controller	Ethernet or CC-Link IE Field Network Basic	22, 58
			CC-Link IE Field Network	22, 58
			CC-Link IE TSN communication	23, 59
	USB	GOT2000 to programmable controller	Ethernet	23, 58
			CC-Link IE Field Network	23, 58

Refer to page 28 for details of connection between a personal computer (FR Configurator2) and inverters.

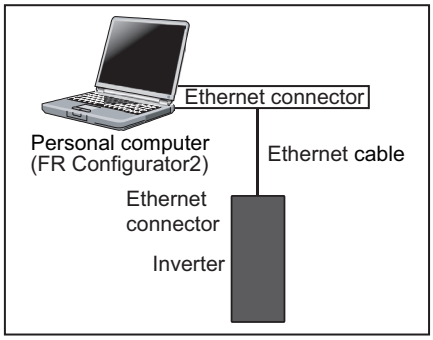
■ Direct connection of FR Configurator2 and an inverter (USB communication)



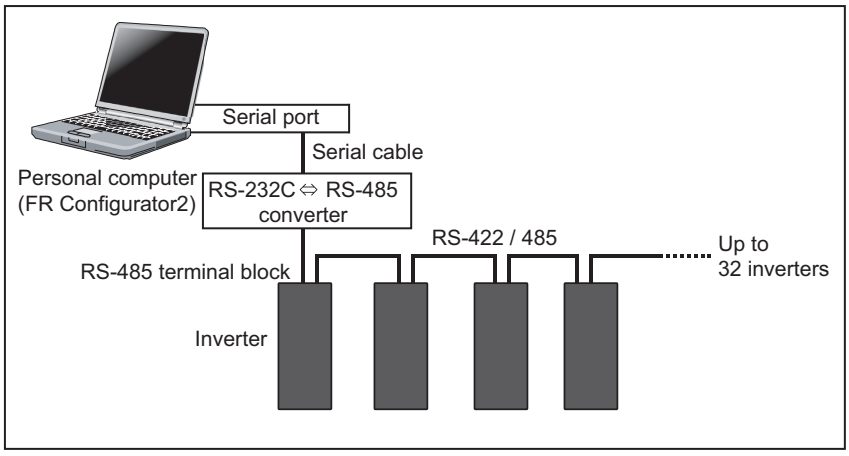
■ Direct connection of FR Configurator2 and an inverter (serial communication)



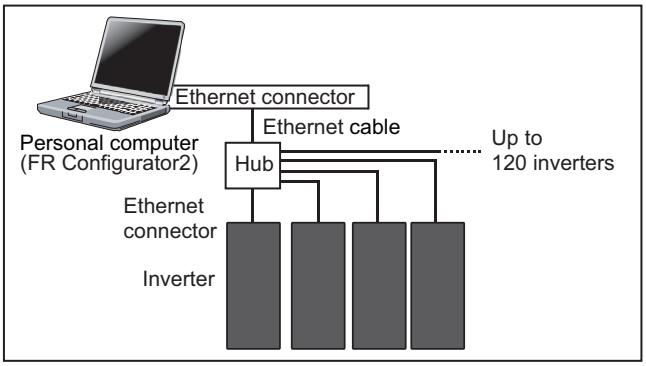
■ Direct connection of FR Configurator2 and an inverter (Ethernet communication)



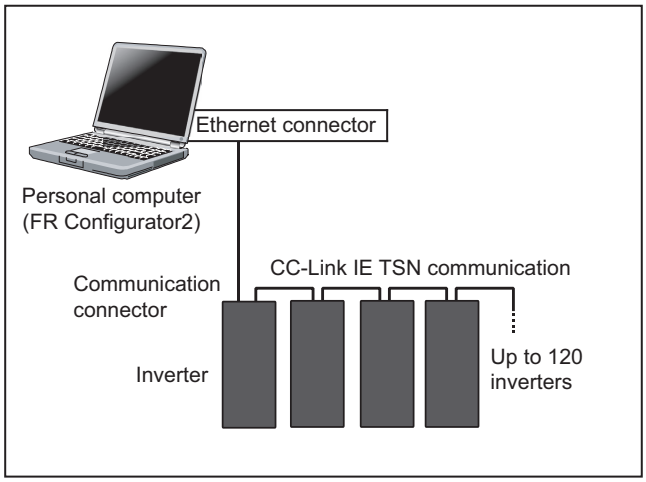
■ Connection of FR Configurator2 and inverters (serial communication)



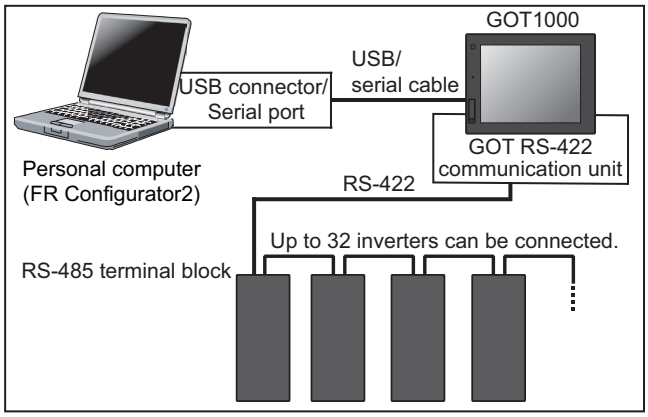
■ **Connection of FR Configurator2 and inverters (Ethernet communication / CC-Link IE Field Network Basic)**



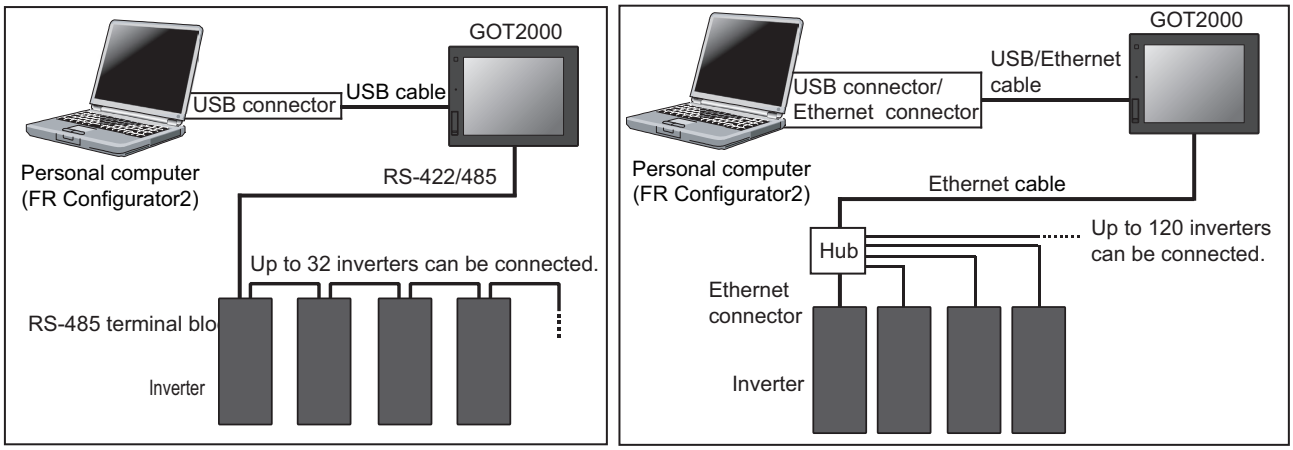
■ **Connection of FR Configurator2 and inverters (CC-Link IE TSN communication)**



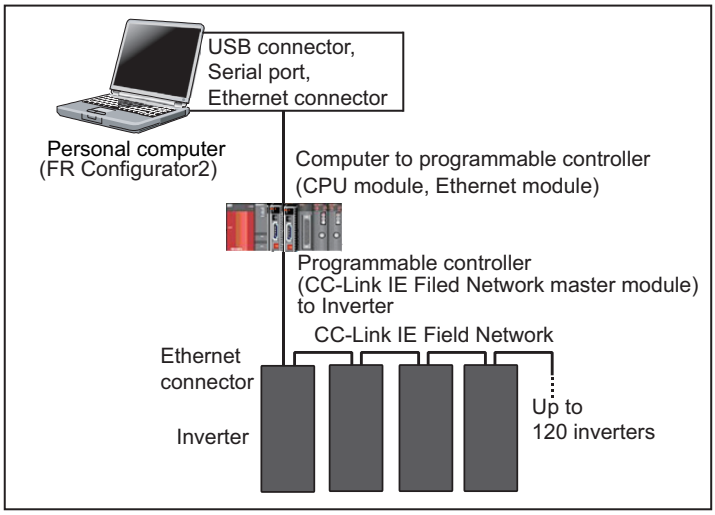
■ **Connection of FR Configurator2 and inverters via a GOT1000 model**



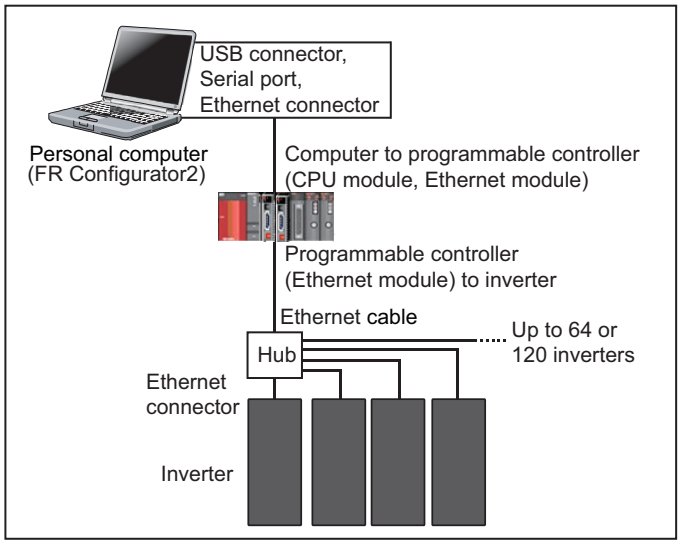
■ Connection of FR Configurator2 and inverters via a GOT2000 model



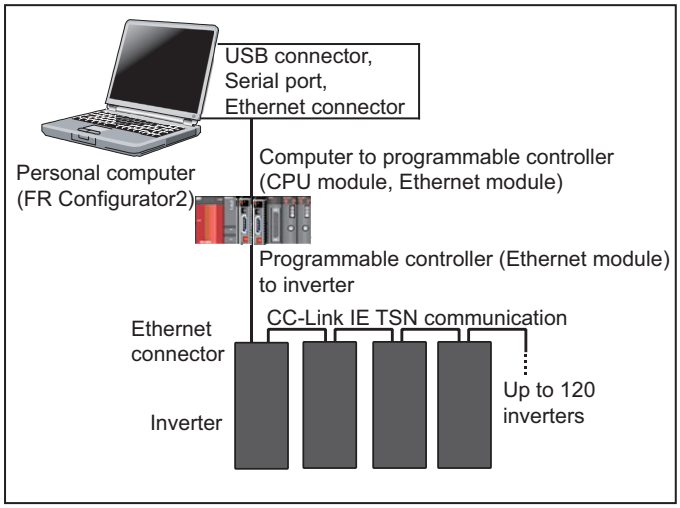
■ Connection of FR Configurator2 and inverters via a programmable controller



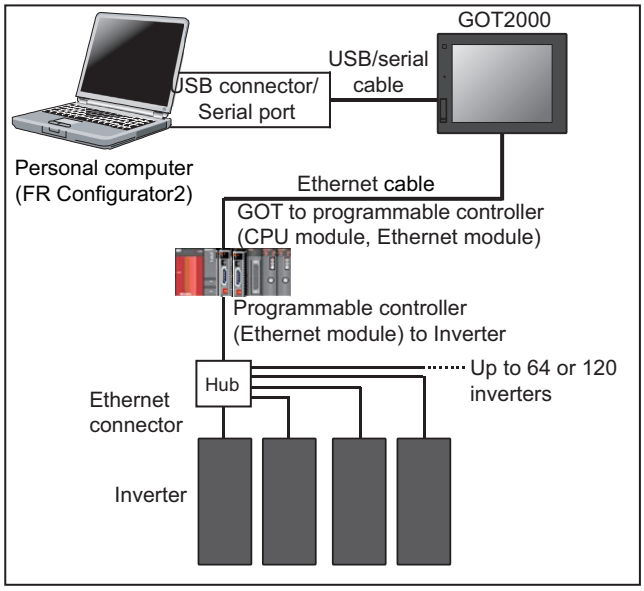
■ Connection of FR Configurator2 and inverters via a programmable controller (CC-Link IE Field Network)



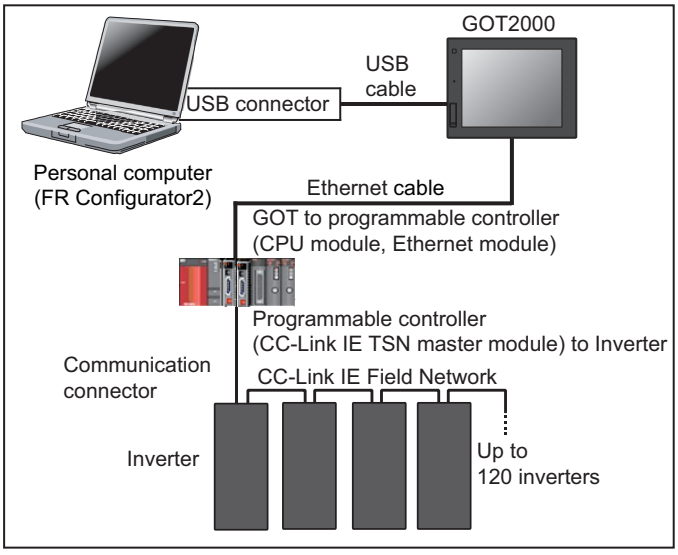
■ Connection of FR Configurator2 and inverters via a programmable controller (CC-Link IE TSN communication)



■ Connection of FR Configurator2 and inverters via a GOT2000 model and a programmable controller



■ Connection of FR Configurator2 and inverters via a GOT2000 model and a programmable controller (CC-Link IE Field Network)



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.

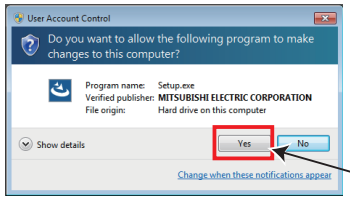
◆Installation procedure

The following section describes the procedures of installing FR Configurator2.

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

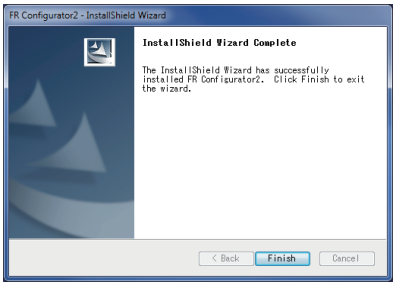
NOTE

- 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".

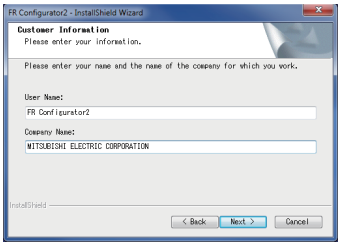


Click "Yes"

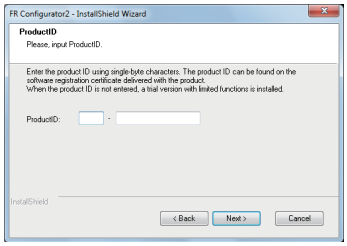
2. The following window will be displayed. Click [Next>].



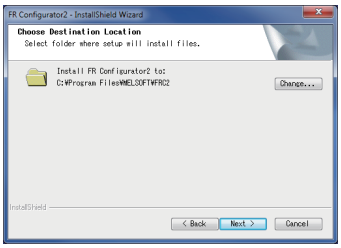
3. Enter user name and company name. Click [Next>] after entering.

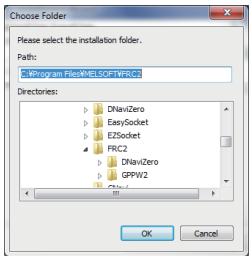


4. Enter the product ID using single-byte numeric characters. The product ID can be found on the license certificate delivered with the product. After entering the product ID, click [Next>].

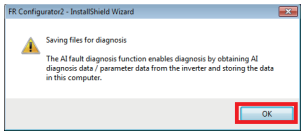


5. Check the installation folder and click [Next>]. To change the installation folder, click [Change...] and select an installation folder. A new folder "FRC2" is created at the selected installation folder. This software is installed there. (If the installation folder is not changed, the software is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

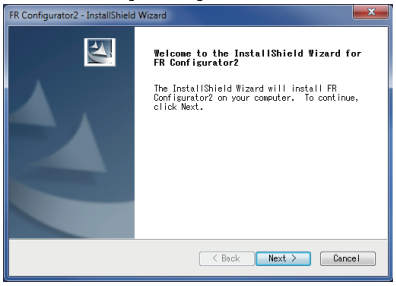




6. The following window will be displayed. Diagnosis data are stored in the computer that contains the files for diagnosis. Click [OK].

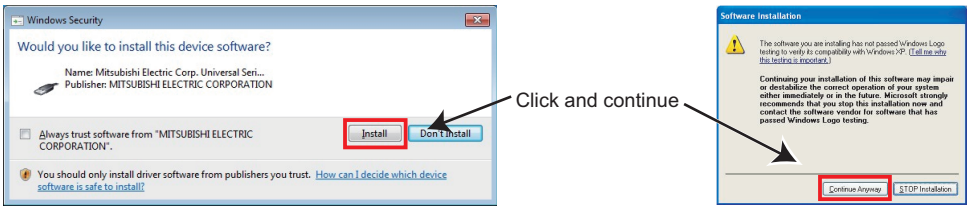


7. Check that the setting is correct and click [Install]. Installation will start. To change the setting, click [<Back].



NOTE

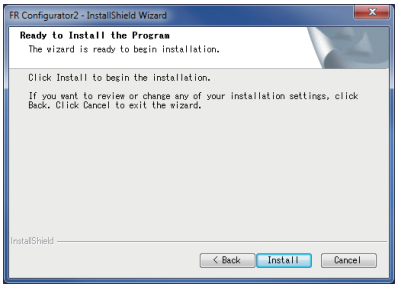
- The following window may appear during the installation.



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.

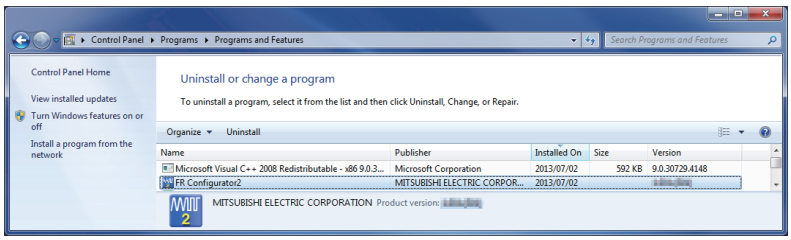


NOTE

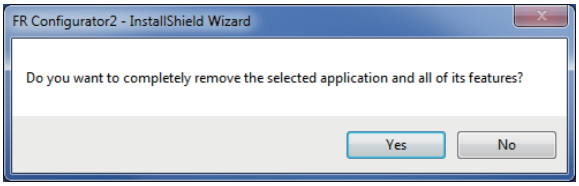
- The "Program Compatibility Assistant" dialog may appear when completing the installation. If the dialog appears, select "This program installed correctly".
- If the user is not an administrator (Administrator account), the installation cannot be performed. Log in as a user with administrator permission, 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

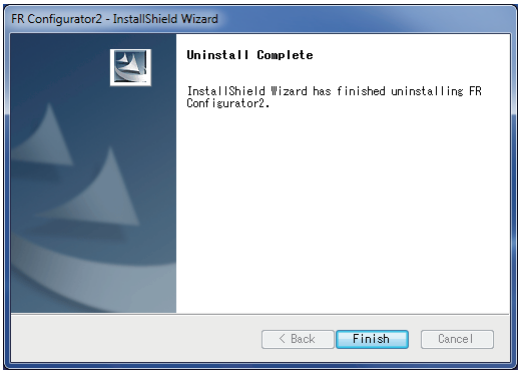
Open the [Start] menu of Windows, and then click [Control Panel]. Click [Programs] in the "Control Panel" window.
When "Programs and Features" window is displayed, select "FR Configurator2" to start uninstallation.



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

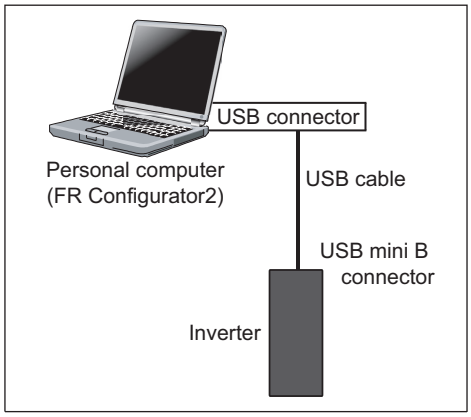
- The program cannot be uninstalled while it is running. Uninstall the program after closing the application.
- For Windows® 8.1, uninstall the software as follows.
  1. Select [Control Panel] from the All Apps list and display Uninstall or change a program.
  2. Select FR Configurator2 and click the [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 Connection and parameter setting

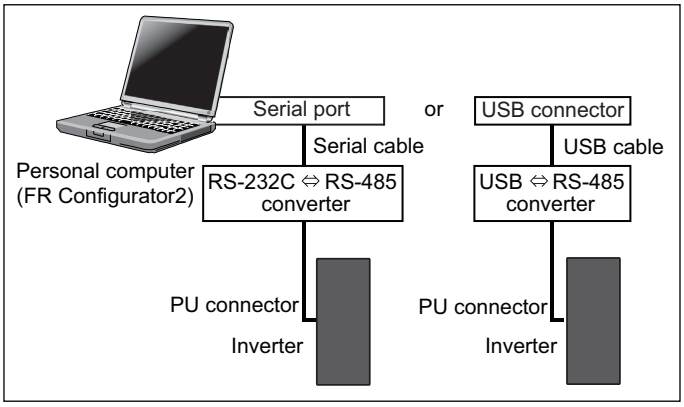
1.4.1 Connection method

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 connection is initially selected.

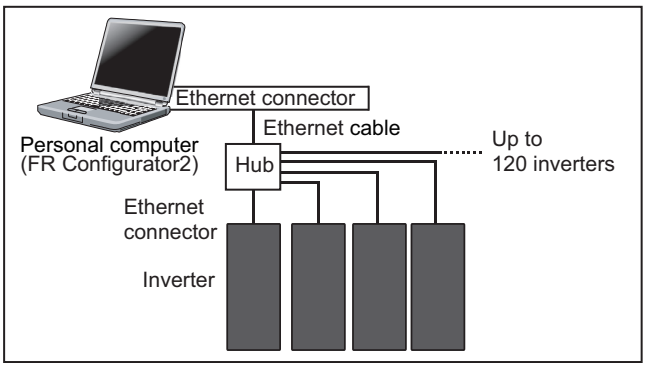
- USB connection (Refer to page 32.)
  Connect to USB connector (mini B connector) of the inverter. 1:1 connection is supported. Connection using USB hub is not supported.



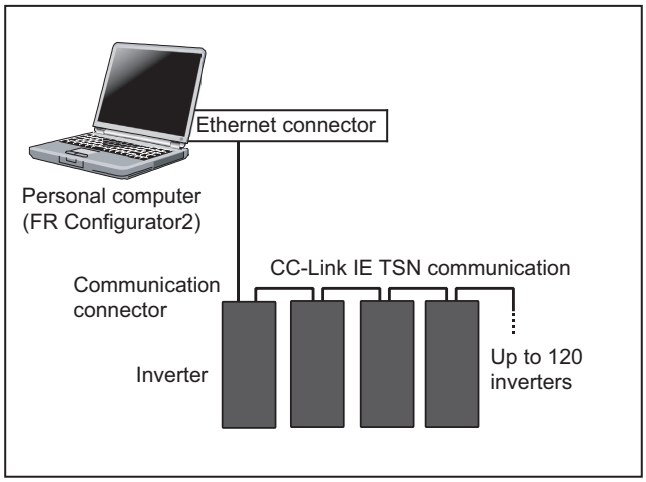
- Serial communication (PU connector) (Refer to page 36.)
  Connect to PU connector of the inverter. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required.



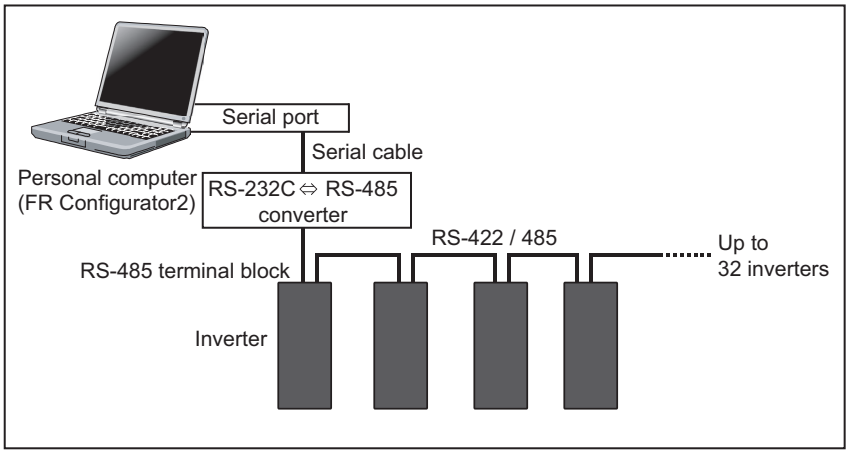
- Ethernet connection (Ethernet connector / CC-Link IE Field Network Basic) (Refer to page 41.)
  Connection to the Ethernet connector of the inverter. Up to 120 inverters can be connected using a hub.



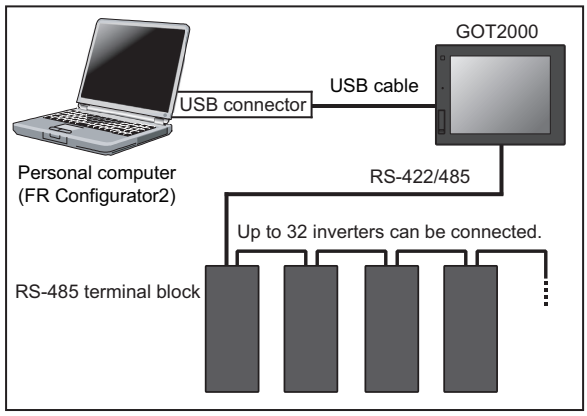
- Ethernet connection (CC-Link IE TSN communication) (Refer to page 59.)
  Connection to the Ethernet connector of the inverter. Up to 120 inverters can be connected using two Ethernet ports on each inverter.



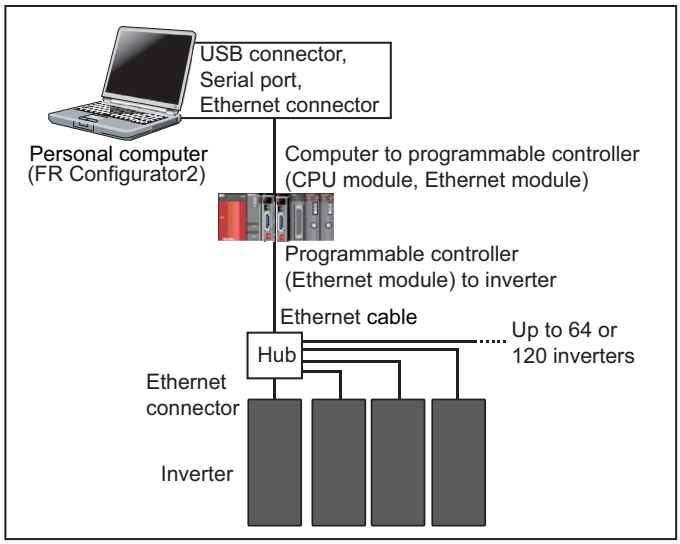
- Serial communication (RS-485 terminal) (Refer to page 48.)
  Connect to RS-485 terminal of the inverter. Up to 32 inverters can be connected.



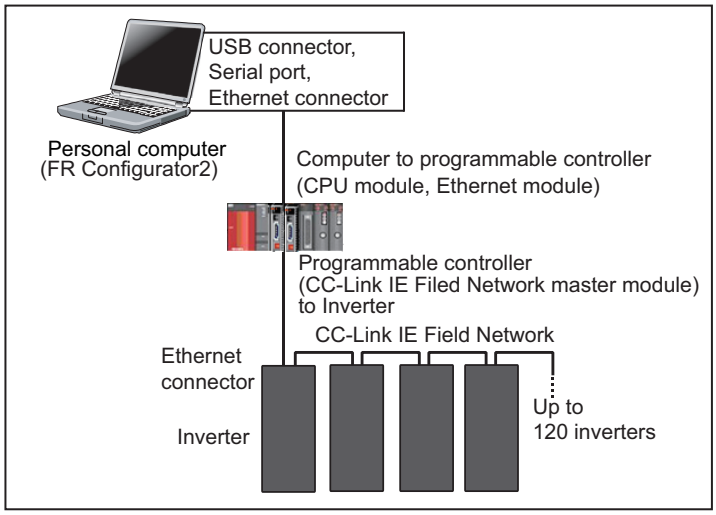
- Communication through GOT (USB / Serial communication) (Refer to page 51.)
  Through a GOT (Human Machine Interface), connection to the RS-485 terminal block is available. For the GOT1000 series, an RS-422 communication unit is required. For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT1000/GOT2000 Series Connection Manual.



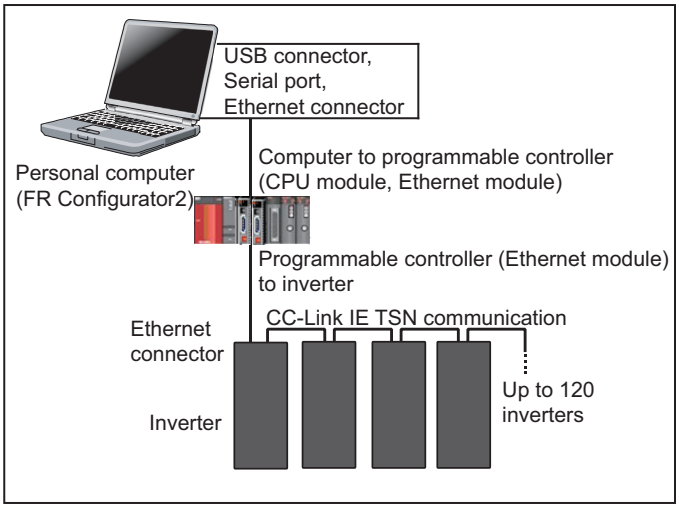
- Communication through programmable controller (Ethernet communication / CC-Link IE Field Network Basic) (Refer to page 58.)
  A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter.



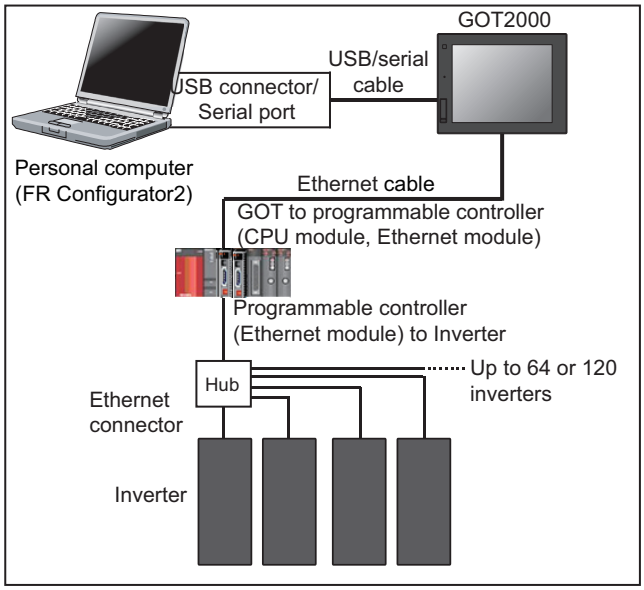
- Communication through programmable controller (CC-Link IE Field Network) (Refer to page 58.)
  A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter.



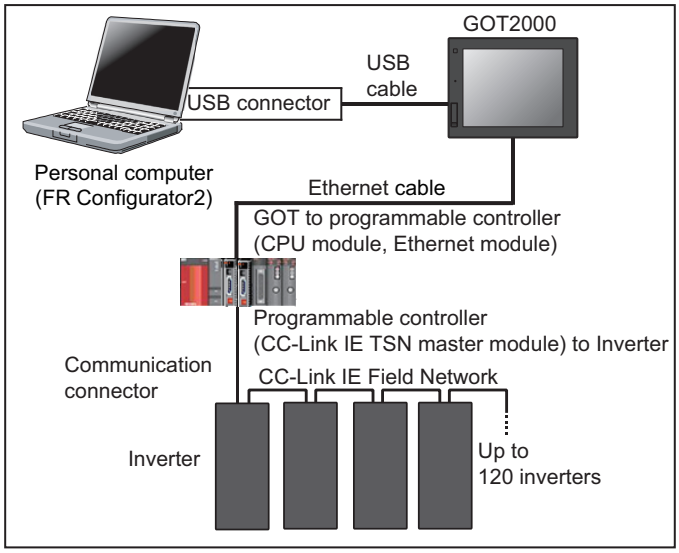
- Communication using programmable controller (CC-Link IE TSN communication) (Refer to page 59.)
  A programmable controller (CPU module / Ethernet module) can be used for connecting the inverter.



- Communication through GOT and programmable controller (Ethernet communication) (Refer to page 58.)
  Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available.



- Communication through GOT and programmable controller (CC-Link IE Field Network) (Refer to page 58.)
  Through a GOT (Human Machine Interface) and a programmable controller, connection to the inverter is available.

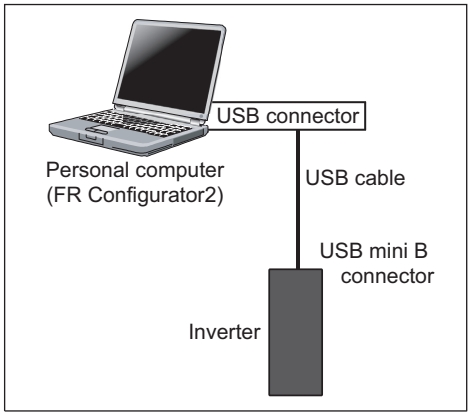


NOTE

- Inserting or pulling out a USB cable during FR Configurator2 operation may cause the inverter to be unrecognized.
  Insert and pull out the USB cable for several times, or reset the inverter with the USB cable connected to the personal computer.
- If **Pr.999 Automatic parameter setting** is changed to "10 or 11" using the operation panel, parameter unit, etc. during FR Configurator2 operation, the inverter communication parameters will be changed, and such setting may disable the communication with FR Configurator2. (For **Pr.999**, refer to the Instruction Manual (Detailed) of the inverter.)
- Only the USB connection is available for connecting a GOT2000 model to a personal computer.
- The USB driver must be installed for USB communication with the programmable controller CPU. For installing the driver, refer to the Operating Manual of GX Works with the version applicable to the programmable controller CPU.
- The available connection methods differ depending on the inverter. For the details, refer to the Instruction Manual of the inverter.

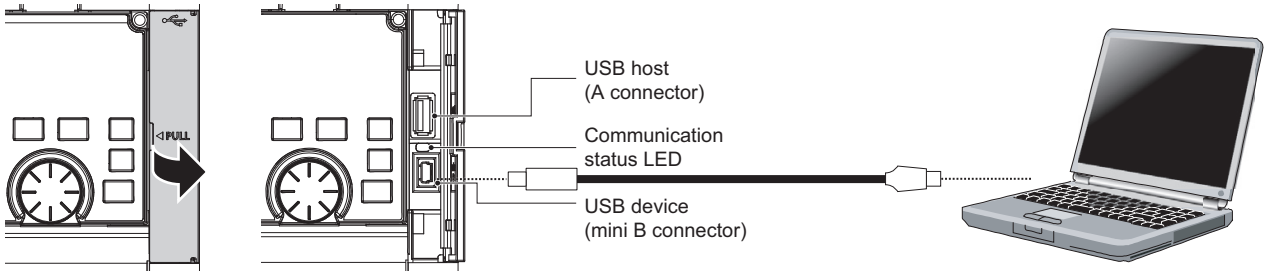
1.4.2 Connection using USB connector

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

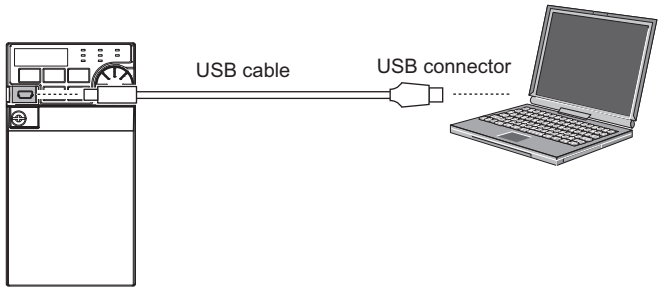


■ FR-A800/FR-F800 series inverter

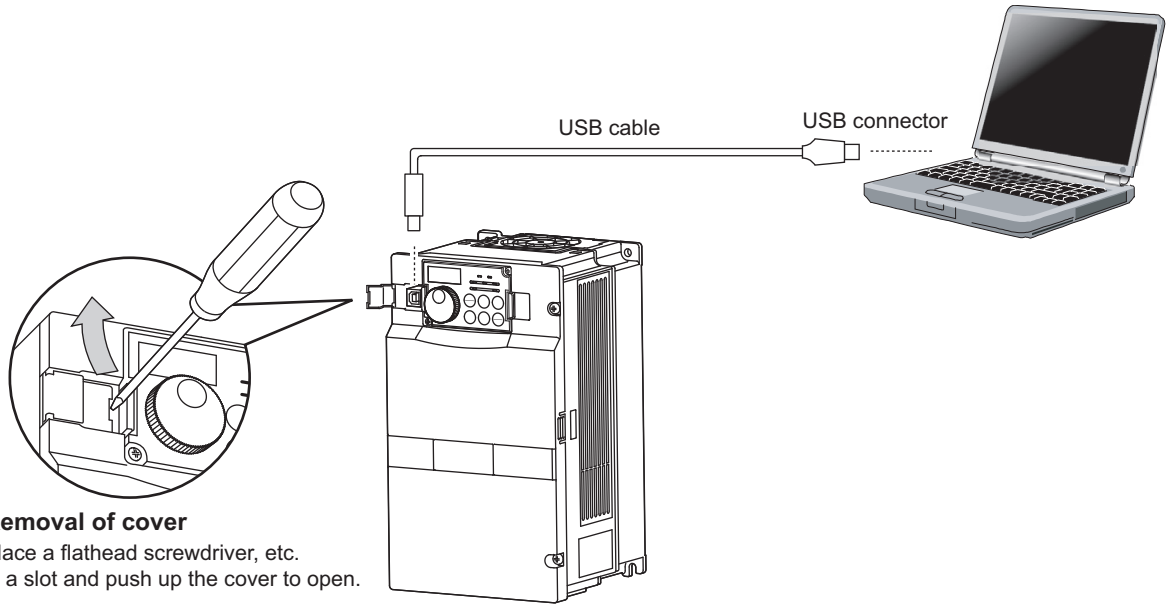
Connect the USB cable to the USB device (mini B connector) on the inverter.



■ FR-E800 series inverter



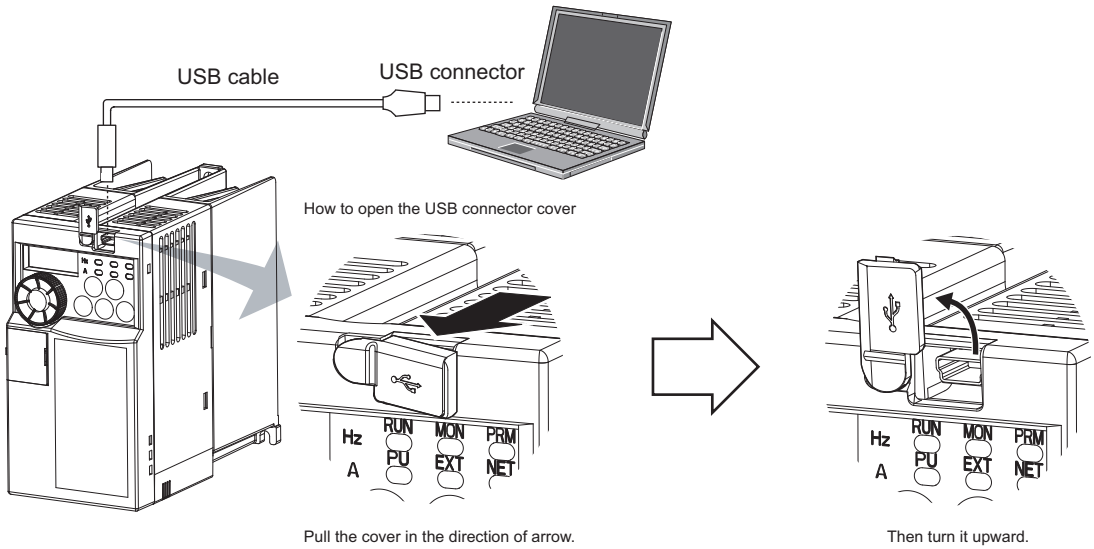
■ FR-A700, FR-B (700), and FR-B3 (700)



Removal of cover

Place a flathead screwdriver, etc.
in a slot and push up the cover to open.

■ FR-E700 and FR-E700EX



- Applicable cable

Interface		Conforms to USB 1.1
Transmission speed		12 Mbps
Wiring length		Maximum 5 m
Connector	800 series, FR-E700, and FR-E700EX	USB mini B connector (receptacle)
	FR-A700, FR-B (700), and FR-B3 (700)	USB B connector (B receptacle)
Recommended USB cable		MR-J3USBCBL3M (cable length 3 m)

◆ Related parameters for USB connection

Set the following communication parameter when connecting the USB connector of the inverter. When performing parameter writing or run command input, set the following command source parameters, and switch the operation mode to PU operation mode.

Inverter	Parameter setting		Operation mode
	Communication parameter	Command source parameter	
FR-A800(-E) FR-B FR-B3 FR-B4 FR-F800(-E) FR-E800(-E/-SCE)	**Pr.548 USB communication check time interval** = "9999" (initial value)	**Pr.551 PU mode operation command source selection** = "3 or 9999" (initial value: "9999")	PU
FR-A700 FR-E700(SC)(NC) FR-E700EX	**Pr.548 USB communication check time interval** ≠ "0" (initial value: "9999")	**Pr.551 PU mode operation command source selection** = "3 or 9999" (initial value: "9999")	
FR-B (700) FR-B3 (700)		**Pr.551 PU mode operation command source selection** = "3" (initial value: "2")	

NOTE

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

■ Related parameter list

- 800 series

Pr.	Name	Initial value	Setting range	Description
547[*1] **N040**	**USB communication station number**	0	0 to 31	Inverter station number specification.
548[*1] **N041**	**USB communication check time interval**	9999	0	USB communication is available, but the inverter output is shut off (E.USB) when the mode changes to the PU operation mode.
			0.1 to 999.8 s	Set the communication check time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off (E.USB).
			9999	No communication check
551[*2*3] **D013**	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.
			2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			5	The Ethernet connector is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.

*1 Changed settings are enabled at the next power-ON or inverter reset.
*2 **Pr.551** can be always written regardless of the operation mode.
*3 The setting range depends on the inverter. For the details, refer to the Instruction Manual of the inverter.

- 700 series

Pr.	Name	Initial value	Setting range	Description
547[*1]	**USB communication station number**	0	0 to 31	Inverter station number specification.
548[*1]	**USB communication check time interval**	9999	0	USB communication is possible. Trips in the PU operation mode (E.USB)
			0.1 to 999.8 s	Set the communication check time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off (E.USB).
			9999	No communication check
551[*2*3]	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.
			2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			4	The operation panel is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command source.

*1 Changed settings are enabled at the next power-ON or inverter reset.
*2 **Pr.551** can be always written regardless of the operation mode.
*3 The initial value and the setting range differ depending on the inverter. For the details, refer to the Instruction Manual of the inverter.

NOTE

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

◆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.

◆Models that support the USB power supply

- FR-E800 series

FR-E800 inverters have the USB bus power function to enable communication with FR Configurator2 while the main circuit power supply is OFF. The USB power supply enables communication with FR Configurator2 only.

◆Functions enabled by USB power delivery

- Only the following functions operate normally when power is supplied to the FR-E800 series inverter from the USB port.

Function	
Parameter list function	Parameter list
	Settings by function (motor setting, analog input terminal calibration, trace setting, input terminal assignment, and output terminal assignment)
Safety parameter setting	
Batch monitor function	
Diagnostic function	Fault history function (except for the AI alarm diagnosis)
	Serial number function
	Life diagnosis (except for the main circuit capacitor residual-life diagnosis)
	Online status display
PLC function	
Ethernet parameter setting function	

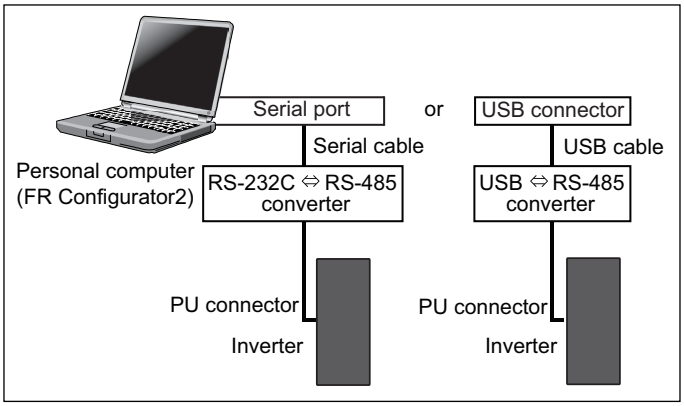
◆Precautions for USB power supply

- Option information cannot be recognized automatically by automatic recognition in the system setting window.
- Ethernet communication is not guaranteed.

- The inverter is reset when power source is changed from the USB power supply to the main circuit power supply or vice versa. A timeout error may occur depending on the types of functions being activated.
- 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.

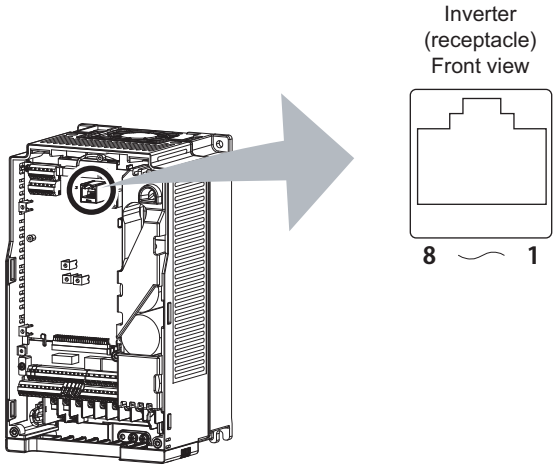
1.4.3 Connection using PU connector

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

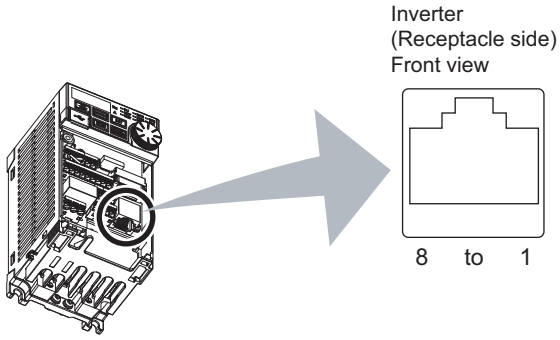


◆PU connector pin layout

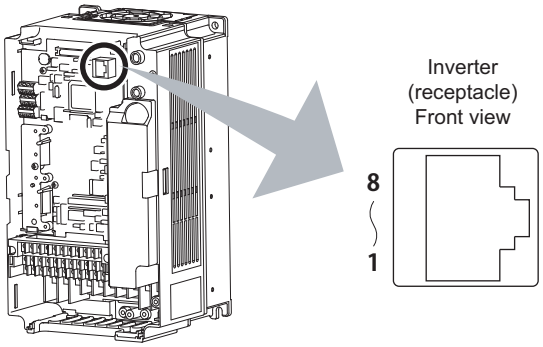
■FR-A800/FR-F800 series inverter



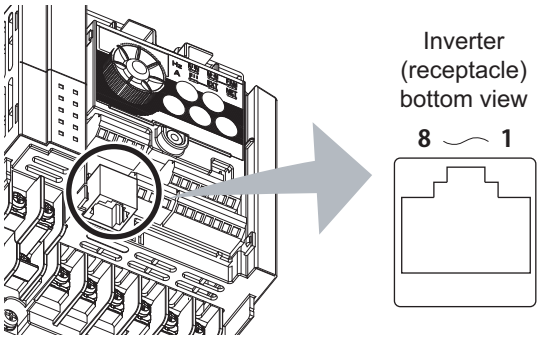
■ FR-E800 (standard model) inverter



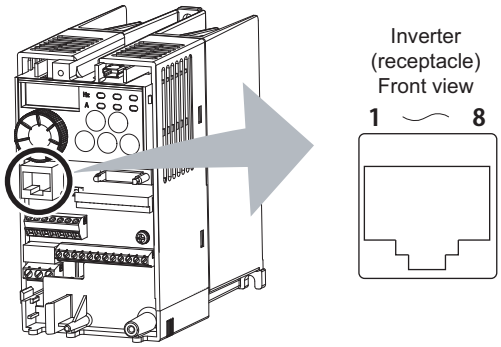
■ FR-A700, FR-B (700), FR-B3 (700), FR-F700, and FR-F700P



■ FR-D700 and FR-D700-G



■ FR-E700 and FR-E700EX



Pin number	Name	Description
1	SG	Earth (ground) (connected to terminal 5)
2	—	Operation panel power supply
3	RDA	Inverter receive+
4	SDB	Inverter send-
5	SDA	Inverter send+
6	RDB	Inverter receive-
7	SG	Earth (ground) (connected to terminal 5)
8	—	Operation panel power supply

NOTE

- Check the following when fabricating the cable on the user side.

Product name	Remarks
10BASE-T cable	Cable compliant with EIA-568 (such as 10BASE-T cable)
RJ-45 connector	—

- A distributor is necessary for multiple connection.
  Refer to the relevant Instruction Manual for multiple connection.
- Pins No. 2 and 8 provide power to the operation panel or parameter unit. Do not use these pins for RS-485 communication. (Refer to the inverter Instruction Manual for details.)
- Do not connect the PU connector to the computer's LAN board, FAX modem socket or telephone modular connector. The product could be damaged due to differences in electrical specifications.

◆Related parameters for connection using PU connector

Set the following communication parameter when connecting PU connector of the inverter.

To set parameters or input operation commands, use the following parameters to set the following operation modes.

Inverter	Communication option	Parameter setting		Operation mode
		Communication parameter	Command source parameter	
FR-A800(-E) FR-B FR-B3 FR-B4 FR-F800(-E) FR-E800 FR-CS80 FR-A700	—	**Pr.122 PU communication check time interval** = "9999 (initial value)" **Pr.123 PU communication waiting time setting** = "9999 (initial value)"	**Pr.551 PU mode operation command source selection** = "2 or 9999" (initial value: 9999)	PU
FR-B (700) FR-B3 (700) FR-F700 FR-F700P FR-E500	—		Unchanged from the initial value.	PU
FR-E700 FR-E700EX	Not connected		Unchanged from the initial value.	NET
	Connected		**Pr.551 PU mode operation command source selection** = "2" (initial value: "9999")	PU
FR-D700 FR-D700-G	—		Unchanged from the initial value.	NET

NOTE

- Set "9999" in **Pr.122 PU communication check time interval**.
- Set a station number of each inverter in **Pr.117 PU communication station number** for multiple connection. Perform inverter reset after setting the parameter.

■ Related parameter list

- 800 series

Pr.	Name	Initial value	Setting range	Description	
117 **N020**	**PU communication station number**	0	0 to 31	Inverter station number specification. Set the inverter station numbers when two or more inverters are connected to one personal computer.	
118 **N021**	**PU communication speed**	192	48, 96, 192, 384, 576, 768, 1152	Set the communication speed. The setting value × 100 equals the communication speed. For example, if 192 is set, the communication speed is 19200 bps.	
N022	**PU communication data length**	0	0	Data length 8 bits	
			1	Data length 7 bits	
N023	**PU communication stop bit length**	1	0	Stop bit length 1 bit	
			1	Stop bit length 2 bits	
119	**PU communication stop bit length / data length**	1	0	Stop bit length 1 bit	Data length 8 bits
			1	Stop bit length 2 bits	
			10	Stop bit length 1 bit	Data length 7 bits
			11	Stop bit length 2 bits	
120 **N024**	**PU communication parity check**	2	0	Without parity check	
			1	With parity check at odd numbers	
			2	With parity check at even numbers	
122 **N026**	**PU communication check time interval**	9999	0	PU connector communication is disabled.	
			0.1 to 999.8 s	Set the communication check time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)	
			9999	No communication check (signal loss detection)	
123 **N027**	**PU communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.	
			9999	Set with communication data.	
551[*1*2] **D013**	**PU mode operation command source selection**	9999	1	RS-485 terminals are the command interface enabled in the PU operation mode.	
			2	The PU connector is the command interface enabled in the PU operation mode.	
			3	The USB connector is the command interface enabled in the PU operation mode.	
			4	The operation panel is the command interface enabled in the PU operation mode.	
			5	The Ethernet connector is the command interface enabled in the PU operation mode.	
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.	

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

*2 The setting range depends on the inverter. For the details, refer to the Instruction Manual of the inverter.

• 700 series

Pr.	Name	Initial value	Setting range	Description	
117	**PU communication station number**	0	0 to 31	Inverter station number specification. Set the inverter station numbers when two or more inverters are connected to one personal computer.	
118	**PU communication speed**	192	48, 96, 192, 384	Set the communication speed. The setting value × 100 equals the communication speed. For example, if 192 is set, the communication speed is 19200 bps.	
119	**PU communication stop bit length / data length**	1	0	Stop bit length 1 bit	Data length 8 bits
			1	Stop bit length 2 bits	
			10	Stop bit length 1 bit	Data length 7 bits
			11	Stop bit length 2 bits	
120	**PU communication parity check**	2	0	Without parity check	
			1	With parity check at odd numbers	
			2	With parity check at even numbers	
122	**PU communication check time interval**	9999	0	PU connector communication is disabled.	
			0.1 to 999.8 s	Set the communication check time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)	
			9999	No communication check (signal loss detection)	
123	**PU communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.	
			9999	Set with communication data.	
551[*1*2]	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.	
			2	The PU connector is the command interface enabled in the PU operation mode.	
			3	The USB connector is the command interface enabled in the PU operation mode.	
			4	The operation panel is the command interface enabled in the PU operation mode.	
			5	The Ethernet connector is the command interface enabled in the PU operation mode.	
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.	

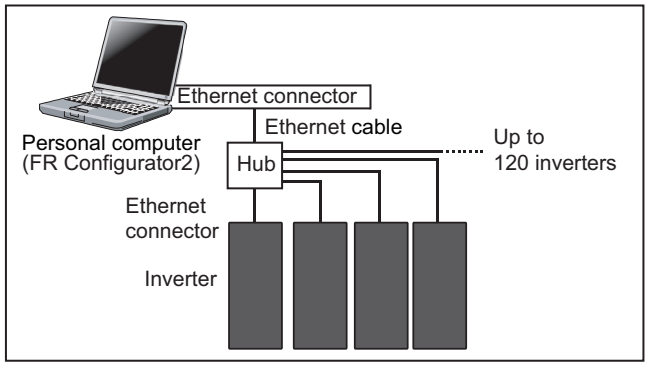
*1 **Pr.551** can be always written regardless of the operation mode.
*2 The setting range depends on the inverter. For the details, refer to the Instruction Manual of the inverter.

NOTE

- Always reset the inverter after making the setting 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.

1.4.4 Connection of inverter via 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. An example of the connection procedure is shown on page 182.



◆ Related parameters for connection using Ethernet connector

Set the following communication parameters for connection using the inverter's Ethernet connector. To set parameters or input operation commands, use the following parameters to set the following operation modes.

Inverter	Communication option	Parameter setting		Operation mode
		Communication parameter	Command source parameter	
FR-A800-E FR-F800-E FR-E800-(SC)E	Not connected	Set the station number of each inverter in **Pr.1425 Ethernet communication station number** (for multiple connection). **Pr.1432 Ethernet communication check time interval** = "9999 (initial value)"	**Pr.550 NET mode operation command source selection**= "5" (initial value: "9999")	NET
	Connected		**Pr.551 PU mode operation command source selection**= "5" (initial value: "9999")	PU
FR-A800-E-R2R	Not connected	Set the station number of each inverter in **Pr.1074 Ethernet communication station number** (for multiple connection). **Pr.1432 Ethernet communication check time interval** = "9999 (initial value)"	**Pr.550 NET mode operation command source selection** = "5" (initial value: "9999")	NET
	Connected		**Pr.551 PU mode operation command source selection** = "5" (initial value: "9999")	PU
FR-E700-NE	—	Set the station number of each inverter in **Pr.831 Ethernet communication station number** (for multiple connection) **Pr.852 Ethernet communication check time interval** = "9999"	**Pr.550 NET mode operation command source selection** = "0" (initial value: "0")	NET

■ List of related parameters

Availability, initial values, and setting ranges of parameters differ depending on the inverter. For details, refer to the Instruction Manual of the relevant model.

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

Pr.	Name	Initial value	Setting range	Description
550 **D012**	**NET mode operation command source selection**	9999	0	The communication option is the command interface enabled in the NET operation mode.
			5	The Ethernet connector is the command interface enabled in the NET operation mode.
			9999	Communication option is recognized automatically. Basically, the RS-485 terminals are the command interface. When the communication option is installed, the communication option is the command interface.

Pr.	Name	Initial value	Setting range	Description	
551 D013	**PU mode operation command source selection**	9999	2	The PU connector is the command interface enabled in the PU operation mode.	
			3	The USB connector is the command interface enabled in the PU operation mode.	
			4	The operation panel is the command interface enabled in the PU operation mode.	
			5	The Ethernet connector is the command interface enabled in the PU operation mode.	
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.	
1434 N600	**IP address 1 (Ethernet)**	192	0 to 255	Enter the IP address of the inverter to be connected to Ethernet.	
1435 N601	**IP address 2 (Ethernet)**	168	0 to 255		
1436 N602	**IP address 3 (Ethernet)**	50	0 to 255		
1437 N603	**IP address 4 (Ethernet)**	1	0 to 255		
1438 N610	**Subnet mask 1**	255	0 to 255	Enter the subnet mask of the network to which the inverter belongs.	
1439 N611	**Subnet mask 2**	255	0 to 255		
1440 N612	**Subnet mask 3**	255	0 to 255		
1441 N613	**Subnet mask 4**	0	0 to 255		
1427 N630	**Ethernet function selection 1**	5001	502, 5000 to 5002, 5006 to 5008, 5010 to 5013, 9999, 34962, 44818, 45237, 45238, 47808, 61450	Set the application, protocol, and so on.	
1428 N631	**Ethernet function selection 2**	45237			
1429 N632	**Ethernet function selection 3**	9999			
1430 N633	**Ethernet function selection 4**	9999			
1426 N641	**Link speed and duplex mode selection**	0	0 to 4	Set the communication speed and the communication mode (full-duplex/half-duplex).	
1455 N642	**Keepalive time**	3600 s	1 to 7200 s	When no response is returned for an alive check message (Keep Alive ACK) for the time (s) set in **Pr.1455** multiplied by 4 elapsed, the connection will be forced to be closed.	
1431 N643	**Ethernet signal loss detection function selection**	0	0	Signal loss detection disabled	Set the availability of the signal loss detection and select the action when Ethernet communication is interrupted by physical factors.
			1	A warning (EHR) is output for a signal loss.	
			2	A warning (EHR) and the Alarm (LF) signal are output for a signal loss	
			3	A protective function (E.EHR) is activated for a signal loss.	
1432 N644	**Ethernet communication check time interval**	9999	0	Ethernet communication is available, but the inverter output is shut off in the NET operation mode.	
			0.1 to 999.8 s	Set the interval of the communication check (signal loss detection) time for all devices with IP addresses in the range specified for Ethernet command source selection (**Pr.1449 to Pr.1454**). If a no-communication state persists for the permissible time or longer, the inverter output is shut off.	
			9999	No communication check (signal loss detection)	
1424 N650	**Ethernet communication network number**	1	1 to 239	Enter the network number.	

Pr.	Name	Initial value	Setting range	Description
1425 N651	**Ethernet communication station number**	1	120	Set the station number from 1 to 120.
1442 N660	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443 N661	**IP filter address 2 (Ethernet)**	0	0 to 255	
1444 N662	**IP filter address 3 (Ethernet)**	0	0 to 255	
1445 N663	**IP filter address 4 (Ethernet)**	0	0 to 255	
1446 N664	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447 N665	**IP filter address 3 range specification (Ethernet)**	9999	0 to 255, 9999	
1448 N666	**IP filter address 4 range specification (Ethernet)**	9999	0 to 255, 9999	
1449 N670	**Ethernet command source selection IP address 1**	0	0 to 255	Set the range of IP addresses to limit the network devices that can be used as a command source during Ethernet communication (with MODBUS/TCP protocol). When **Pr.1449 to Pr.1452** = "0 (initial value)", no IP address is specified for command source selection via Ethernet. In this case, operation commands cannot be sent via Ethernet with MODBUS/TCP protocol. When four or more clients attempt a connection to the inverter during MODBUS/TCP protocol communication, the connection attempted from outside of the IP address range set for Ethernet command source selection may be forced to be closed.
1450 N671	**Ethernet command source selection IP address 2**	0	0 to 255	
1451 N672	**Ethernet command source selection IP address 3**	0	0 to 255	
1452 N673	**Ethernet command source selection IP address 4**	0	0 to 255	
1453 N674	**Ethernet command source selection IP address 3 range specification**	9999	0 to 255, 9999	
1454 N675	**Ethernet command source selection IP address 4 range specification**	9999	0 to 255, 9999	

NOTE

- Always reset the inverter after making the setting of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.
- Set "5001" in any parameter from **Pr.1427 to Pr.1429** to enable automatic recognition or switching to online connection during communication through "CPU module" or "Ethernet module". When the initial settings are used, there is no need to change. (Refer to page 70.)

- FR-A800-E-R2R

Pr.	Name	Initial value	Setting range	Description
550 D012	**NET mode operation command source selection**	9999	0	The communication option is the command interface enabled in the NET operation mode.
			5	The Ethernet connector is the command interface enabled in the NET operation mode.
			9999	Communication option is recognized automatically. Basically, the RS-485 terminals are the command interface. When the communication option is installed, the communication option is the command interface.
551 D013	**PU mode operation command source selection**	9999	2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			5	The Ethernet connector is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.

Pr.	Name	Initial value	Setting range	Description	
1434 N600	**IP address 1 (Ethernet)**	192	0 to 255	Enter the IP address of the inverter to be connected to Ethernet.	
1435 N601	**IP address 2 (Ethernet)**	168	0 to 255		
1436 N602	**IP address 3 (Ethernet)**	50	0 to 255		
1437 N603	**IP address 4 (Ethernet)**	1	0 to 255		
1438 N610	**Subnet mask 1**	255	0 to 255	Enter the subnet mask of the network to which the inverter belongs.	
1439 N611	**Subnet mask 2**	255	0 to 255		
1440 N612	**Subnet mask 3**	255	0 to 255		
1441 N613	**Subnet mask 4**	0	0 to 255		
1076 N630	**Ethernet function selection 1**	5001	502, 5000 to 5002, 5006 to 5008, 5010 to 5013, 9999, 45237, 61450	Set the application, protocol, etc.	
1077 N631	**Ethernet function selection 2**	45237	502, 5000 to 5002, 5006 to 5008, 5010 to 5013, 9999, 45237, 61450		
1078 N632	**Ethernet function selection 3**	9999	502, 5000 to 5002, 5006 to 5008, 5010 to 5013, 9999, 45237, 61450		
1075 N641	**Link speed and duplex mode selection**	0	0 to 4	Set the communication speed and the communication mode (full-duplex/half-duplex).	
1455 N642	**Keepalive time**	3600 s	1 to 7200 s	When no response is returned for an alive check message (Keep Alive ACK) for the time (s) set in **Pr.1455** multiplied by 4 elapsed, the connection will be forced to be closed.	
1431 N643	**Ethernet signal loss detection function selection**	0	0	Signal loss detection disabled	Set the availability of the signal loss detection and select the action when Ethernet communication is interrupted by physical factors.
			1	A warning (EHR) is output for a signal loss.	
			2	A warning (EHR) and the Alarm (LF) signal are output for a signal loss	
			3	A protective function (E.EHR) is activated for a signal loss.	
1432 N644	**Ethernet communication check time interval**	9999	0	Ethernet communication is available, but the inverter output is shut off in the NET operation mode.	
			0.1 to 999.8 s	Set the interval of the communication check (signal loss detection) time for all devices with IP addresses in the range specified for Ethernet command source selection (**Pr.1449 to Pr.1454**). If a no-communication state persists for the permissible time or longer, the inverter output is shut off.	
			9999	No communication check (signal loss detection)	
1073 N650	**Ethernet communication network number**	1	1 to 239	Enter the network number.	
1074 N651	**Ethernet communication station number**	1	120	Set the station number from 1 to 120.	

Pr.	Name	Initial value	Setting range	Description
1442 N660	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443 N661	**IP filter address 2 (Ethernet)**	0	0 to 255	
1444 N662	**IP filter address 3 (Ethernet)**	0	0 to 255	
1445 N663	**IP filter address 4 (Ethernet)**	0	0 to 255	
1446 N664	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447 N665	**IP filter address 3 range specification (Ethernet)**	9999	0 to 255, 9999	
1448 N666	**IP filter address 4 range specification (Ethernet)**	9999	0 to 255, 9999	
1449 N670	**Ethernet command source selection IP address 1**	0	0 to 255	Set the range of IP addresses to limit the network devices that can be used as a command source during Ethernet communication (with MODBUS/TCP protocol). When **Pr.1449 to Pr.1452** = "0 (initial value)", no IP address is specified for command source selection via Ethernet. In this case, operation commands cannot be sent via Ethernet with MODBUS/TCP protocol. When four or more clients attempt a connection to the inverter during MODBUS/TCP protocol communication, the connection attempted from outside of the IP address range set for Ethernet command source selection may be forced to be closed.
1450 N671	**Ethernet command source selection IP address 2**	0	0 to 255	
1451 N672	**Ethernet command source selection IP address 3**	0	0 to 255	
1452 N673	**Ethernet command source selection IP address 4**	0	0 to 255	
1453 N674	**Ethernet command source selection IP address 3 range specification**	9999	0 to 255, 9999	
1454 N675	**Ethernet command source selection IP address 4 range specification**	9999	0 to 255, 9999	

NOTE

- Always reset the inverter after making the setting of the parameters. After changing the communication-related parameters, communication cannot be made until the inverter is reset.
- Set "5001" in any parameter from **Pr.1076 to Pr.1078** to enable automatic recognition or switching to online connection during communication through "CPU module" or "Ethernet module". When the initial settings are used, there is no need to change. (Refer to page 70.)

- FR-E700-NE

Pr.	Name	Initial value	Setting range	Description
442	**Default gateway address 1**	0	0 to 255	Enter the IP address of the default gateway, which is a device connecting the different networks, to establish a communication between the inverter and the devices outside the inverter network.
443	**Default gateway address 2**	0	0 to 255	
444	**Default gateway address 3**	0	0 to 255	
445	**Default gateway address 4**	0	0 to 255	
550	**NET mode operation command source selection**	0	0	The Ethernet connector is the command interface enabled in the NET operation mode.
			2	The PU connector is the command interface enabled in the NET operation mode.
805	**Ethernet IP address 1**	192	0 to 255	Enter the IP address of the inverter to be connected to Ethernet.
806	**Ethernet IP address 2**	168	0 to 255	
807	**Ethernet IP address 3**	50	0 to 255	
808	**Ethernet IP address 4**	1	0 to 255	
809	**Subnet mask 1**	255	0 to 255	Enter the subnet mask of the network to which the inverter belongs.
810	**Subnet mask 2**	255	0 to 255	
811	**Subnet mask 3**	255	0 to 255	
812	**Subnet mask 4**	0	0 to 255	
830	**Ethernet communication network number**	1	1 to 239	Enter the network number.
831	**Ethernet communication station number**	1	1 to 120	Enter the station number.
832	**Link speed and duplex mode selection**	0	0 to 4	Set the communication speed and the communication mode (full-duplex/half-duplex).

Pr.	Name	Initial value	Setting range	Description
833	**Ethernet function selection 1**	31	0, 10, 20, 30 to 32, 36 to 38, 9999	Set the application, protocol, etc.
834	**Ethernet function selection 2**	20		
835	**Ethernet function selection 3**	9999		
837	**Ethernet IP filter address 1**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.837 to Pr.840** = "0 (initial value)", the function is disabled.)
838	**Ethernet IP filter address 2**	0	0 to 255	
839	**Ethernet IP filter address 3**	0	0 to 255	
840	**Ethernet IP filter address 4**	0	0 to 255	
841	**Ethernet IP filter address 2 range specification**	9999	0 to 255, 9999	
842	**Ethernet IP filter address 3 range specification**	9999	0 to 255, 9999	
843	**Ethernet IP filter address 4 range specification**	9999	0 to 255, 9999	
844	**Ethernet command source selection IP address 1**	0	0 to 255	To limit the network devices that send the operation or speed command through the Ethernet network (MODBUS/TCP or CC-Link IE Field Network Basic), set the range of IP addresses of the devices. When **Pr.844 to Pr.847** = "0 (initial value)", no IP address is specified for sending commands through the Ethernet network. In this case, operation through the Ethernet network (MODBUS/TCP or CC-Link IE Field Network Basic) is not available. When four or more clients attempt a connection to the inverter during MODBUS/TCP communication, the connection attempted from outside of the IP address range set for Ethernet command source selection may be forcibly closed.
845	**Ethernet command source selection IP address 2**	0	0 to 255	
846	**Ethernet command source selection IP address 3**	0	0 to 255	
847	**Ethernet command source selection IP address 4**	0	0 to 255	
848	**Ethernet command source selection IP address 3 range specification**	9999	0 to 255, 9999	
849	**Ethernet command source selection IP address 4 range specification**	9999	0 to 255, 9999	
850	**Ethernet TCP disconnection time coefficient**	3600	1 to 7200	When the inverter does not receive a packet within the time calculated by multiplying the Pr.850 setting by 8 in seconds from the devices with the TCP connection established, the connection will be forcibly closed.
851	**Ethernet signal loss detection function selection**	3	0	Signal loss detection disabled / Set the availability of the signal loss detection and select the action when Ethernet communication is interrupted by physical factors.
			2	The alarm (LF) signal is output for a signal loss.
			3	A protective function (E.OP1) is activated for a signal loss.
852	**Ethernet communication check time interval**	1.5 s	0	Ethernet communication is available, but the inverter output is shut off in the NET operation mode.
			0.1 to 999.8 s	Set the interval of the communication check (signal loss detection) time for all devices with IP addresses in the range specified for Ethernet command source selection (**Pr.844 to Pr.849**). If a no-communication state persists for the permissible time or longer, the inverter output is shut off.
			9999	No communication check (signal loss detection)

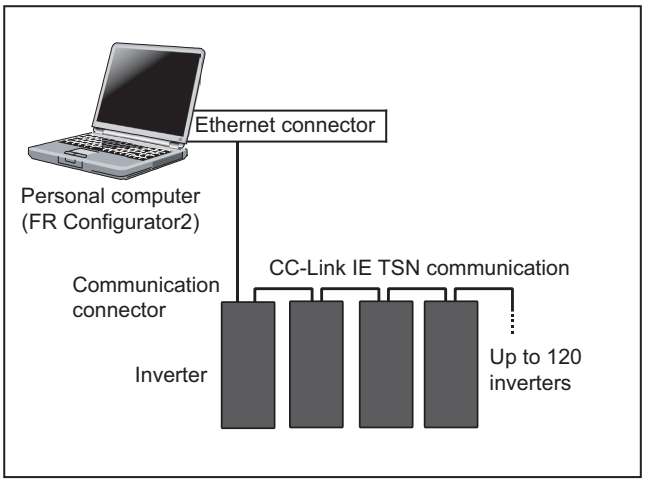
NOTE

- Always reset the inverter after making the setting 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.

1.4.5 Connection of inverter via Ethernet (CC-Link IE TSN communication)

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

Up to 120 inverters can be connected in line topology.



◆ Related parameters for connection using CC-Link IE TSN

- FR-A800

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

Pr.	Name	Initial value	Setting range	Description
434[*1*2] **N700**	**IP address 1**	0 (192[*3])	0 to 255	The IP address of the inverter can be set in **Pr.434** to **Pr.437**.
435[*1*2] **N701**	**IP address 2**	0 (168[*3])	0 to 255	
436[*1*2] **N702**	**IP address 3**	0 (50[*3])	0 to 255	
437[*1*2] **N703**	**IP address 4**	0 (2[*3])	0 to 255	
438[*1*2] **N710**	**Subnet mask 1**	0 (255[*3])	0 to 255	The subnet mask of the network to which the inverter belongs can be set in **Pr.438** to **Pr.441**.
439[*1*2] **N711**	**Subnet mask 2**	0 (255[*3])	0 to 255	
440 **N712**	**Subnet mask 3**	0 (255[*3])	0 to 255	
441[*1*2] **N713**	**Subnet mask 4**	0	0 to 255	
1442[*1*2] **N760**	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443[*1*2] **N761**	**IP filter address 2 (Ethernet)**	0	0 to 255	
1444[*1*2] **N762**	**IP filter address 3 (Ethernet)**	0	0 to 255	
1445[*1*2] **N763**	**IP filter address 4 (Ethernet)**	0	0 to 255	
1446[*1*2] **N764**	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447[*1*2] **N765**	**IP filter address 3 range specification (Ethernet)**	9999	0 to 255, 9999	
1448[*1*2] **N766**	**IP filter address 4 range specification (Ethernet)**	9999	0 to 255, 9999	

Pr.	Name	Initial value	Setting range	Description
1459[*1*2] **N746**	**Clock source selection**	0	0 to 2	The internal clocks of connected devices on the CC-Link IE TSN Network can be synchronized (real time clock function).

*1 The setting is applied after an inverter reset or power-ON.
*2 Parameters which can be displayed when this plug-in option (FR-A8NCG) is installed.
*3 The initial value after All parameter clear with the FR-A8NCG installed.

- FR-E800-(SC)E

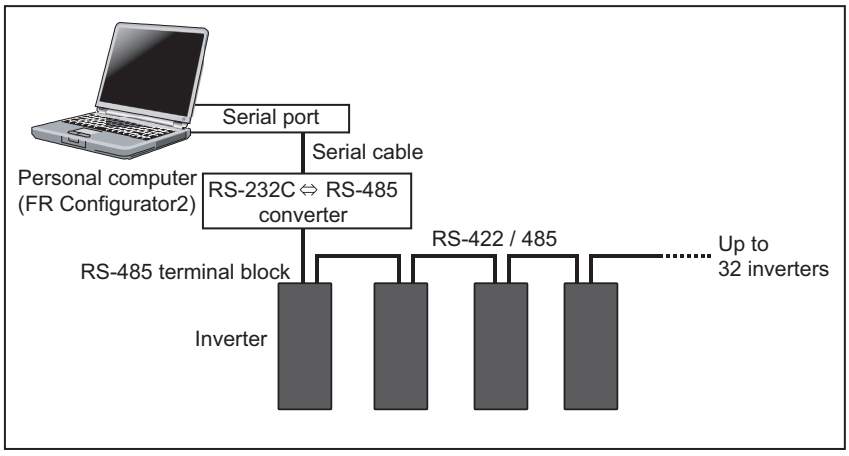
  For details on CC-Link IE TSN communication, refer to the FR-E800 Instruction Manual (Communication).

Pr.	Name	Initial value	Setting range	Description
541 **N100**	**Frequency command sign selection**	0	0	Signed frequency command value
			1	Unsigned frequency command value
544 **N103**[*1]	**CC-Link extended setting**	0	0, 1, 12, 14, 18, 100, 112, 114, 118	Use this parameter to extend the function of the remote registers for the CC-Link IE TSN.
1426 **N641**[*1]	**Link speed and duplex mode selection**	0	0 to 4	Set the communication mode (full-duplex/half-duplex).
1442 **N660**[*1]	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443 **N661**[*1]	**IP filter address 2 (Ethernet)**	0		
1444 **N662**[*1]	**IP filter address 3 (Ethernet)**	0		
1445 **N663**[*1]	**IP filter address 4 (Ethernet)**	0		
1446 **N664**[*1]	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447 **N665**[*1]	**IP filter address 3 range specification (Ethernet)**	9999		
1448 **N666**[*1]	**IP filter address 4 range specification (Ethernet)**	9999		
804 **D400**	**Torque command source selection**	0	0, 1, 3 to 6	In the torque control mode, the torque command source can be selected.
810 **H700**	**Torque limit input method selection**	0	0 to 2	The torque limit input method can be selected.

*1 The setting is applied after an inverter reset or next power-ON.

1.4.6 Connection of multiple inverters using RS-485 terminals

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. Serial/RS-485 converter (on page 36) is required.



◆ Related parameters for multiple connection using RS-485 terminals or PU connector

Set the following communication parameters for connection using RS-485 terminals or PU connector of the inverter.

When performing parameter writing or run command input, set the following command source parameters, and switch the operation mode to the following operation mode.

Inverter	Communication option	Parameter setting		Operation mode
		Communication parameter	Command source parameter	
FR-A800 FR-B FR-B3 FR-B4 FR-F800 FR-A700 FR-B (700) FR-B3 (700) FR-F700 FR-F700P	Not connected	Set the station number of each inverter in **Pr.331 RS-485 communication station number** (for multiple connection) **Pr.336 RS-485 communication check time interval** ≠ "0" (initial value: "0") **Pr.337 RS-485 communication waiting time setting** = "9999" (initial value)	**Pr.550 NET mode operation command source selection**= "9999" (initial value: "9999")	NET
	Connected		**Pr.551 PU mode operation command source selection** = "1" (initial value: "9999")	PU
FR-E700 FR-E800 FR-E700EX	Not connected	Set the station number of each inverter in **Pr.117 PU communication station number** (for multiple connection). **Pr.122 PU communication check time interval** ≠ "0" (initial value: "0") **Pr.123 PU communication waiting time setting** = "9999 (initial value)"	Unchanged from the initial value.	NET
	Connected		**Pr.551 PU mode operation command source selection** = "2" (initial value: "9999")	PU

NOTE

- For the details of wiring, refer to the Instruction Manual (Detailed) of the inverter.
- Set 3 s or more (or 9999) in **Pr.122 PU communication check time interval**, **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.

■ Related parameter list

Availability, initial values, and setting ranges of parameters differ depending on the inverter. For details, refer to the Instruction Manual of the relevant model.

- 800 series

Pr.	Name	Initial value	Setting range	Description
117	**PU communication station number**	0	0 to 31 (0 to 247)*1*2	Set the inverter station number. Set the inverter station numbers when two or more inverters are connected to one personal computer.
122	**PU communication check time interval**	0	0	RS-485 communication can be made. Note that a communication fault (E.PUE) occurs as soon as the drive unit is switched to the operation mode with command source.
			0.1 to 999.8 s	Communication check (signal loss detection) time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)
			9999	No communication check (signal loss detection).
123	**PU communication waiting time setting**	9999	0 to 150 ms	Set the waiting time between data transmission to the inverter and the response.
			9999	Set with communication data.
331 **N030**	**RS-485 communication station number**	0	0 to 31	Set the inverter station number. Set the inverter station numbers when two or more inverters are connected to one personal computer.

Pr.	Name	Initial value	Setting range	Description
336 **N036**	**RS-485 communication check time interval**	0 s	0	RS-485 communication is enabled. However, the inverter output is shut off if operation is changed to NET operation mode.
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off.
			9999	No communication check (signal loss detection)
337 **N037**	**RS-485 communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.
			9999	Set with communication data.
549 **N000**	**Protocol selection**	0	0[*3]	Mitsubishi inverter protocol (computer link)
			1	MODBUS RTU protocol
			2[*4]	BACnet MS / TP protocol
550 **D012**	**NET mode operation command source selection**	9999	0	The communication option is the command interface enabled in the NET operation mode.
			1	The RS-485 terminals are the command interface enabled in the NET operation mode.
			9999	Communication option is recognized automatically. Basically, the RS-485 terminals are the command interface. When the communication option is installed, the communication option is the command interface.
551[*5] **D013**	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.
			2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.

*1 When "1" (MODBUS RTU protocol) is set in **Pr.549**, the setting range within parentheses is applied.
*2 When a value outside the setting range is set, the inverter operates at the initial value.
*3 **Pr.549** = "0" (Mitsubishi inverter (Computer link) protocol).
*4 The setting is available only for the FR-F800 series.
*5 **Pr.551** can be always written regardless of the operation mode.

- 700 series

Pr.	Name	Initial value	Setting range	Description
117	**PU communication station number**	0	0 to 31 (0 to 247)[*1*2]	Set the inverter station number. Set the inverter station numbers when two or more inverters are connected to one personal computer.
122	**PU communication check time interval**	0	0	RS-485 communication can be made. Note that a communication fault (E.PUE) occurs as soon as the drive unit is switched to the operation mode with command source.
			0.1 to 999.8 s	Communication check (signal loss detection) time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)
			9999	No communication check (signal loss detection).
123	**PU communication waiting time setting**	9999	0 to 150 ms	Set the waiting time between data transmission to the inverter and the response.
			9999	Set with communication data.
331	**RS-485 communication station number**	0	0 to 31	Set the inverter station number. Set the inverter station numbers when two or more inverters are connected to one personal computer.

Pr.	Name	Initial value	Setting range	Description
336	**RS-485 communication check time interval**	0 s	0	RS-485 communication is enabled. However, the inverter output is shut off if operation is changed to NET operation mode.
			0.1 to 999.8 s	Set the interval of communication check (signal loss detection) time. If a no-communication state persists for the permissible time or longer, the inverter output is shut off.
			9999	No communication check (signal loss detection)
337	**RS-485 communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.
			9999	Set with communication data.
549	**Protocol selection**	0	0*3	Mitsubishi inverter protocol (computer link)
			1	MODBUS RTU protocol
550	**NET mode operation command source selection**	9999	0	The communication option is the command interface enabled in the NET operation mode.
			1	The RS-485 terminals are the command interface enabled in the NET operation mode.
			9999	Communication option is recognized automatically. Basically, the RS-485 terminals are the command interface. When the communication option is installed, the communication option is the command interface.
551[*4]	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.
			2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.

*1 When "1" (MODBUS RTU protocol) is set in **Pr.549**, the setting range within parentheses is applied.
*2 When a value outside the setting range is set, the inverter operates at the initial value.
*3 **Pr.549** = "0" (Mitsubishi inverter (Computer link) protocol).
*4 **Pr.551** can be always written regardless of the operation mode.

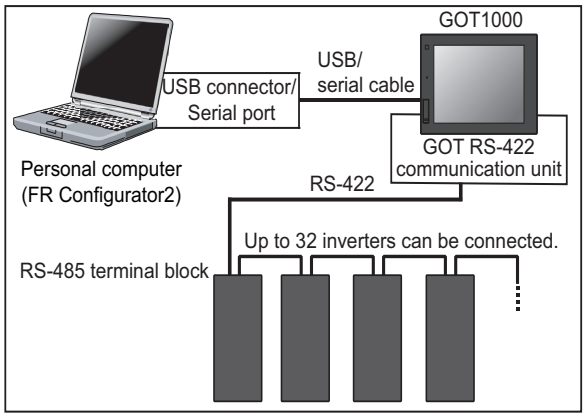
NOTE

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

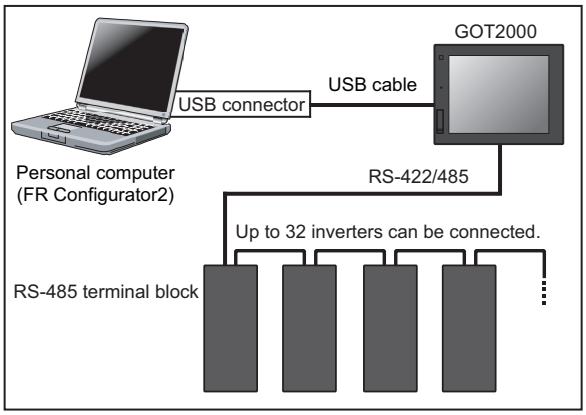
1.4.7 Connection through GOT (FA transparent function)

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 or USB is used for connecting the personal computer and the GOT. RS422/485 is used for connecting the GOT and the inverter. In this configuration, operation with the FR-E700 inverter is not guaranteed.

■ Example of connection to RS-485 terminals

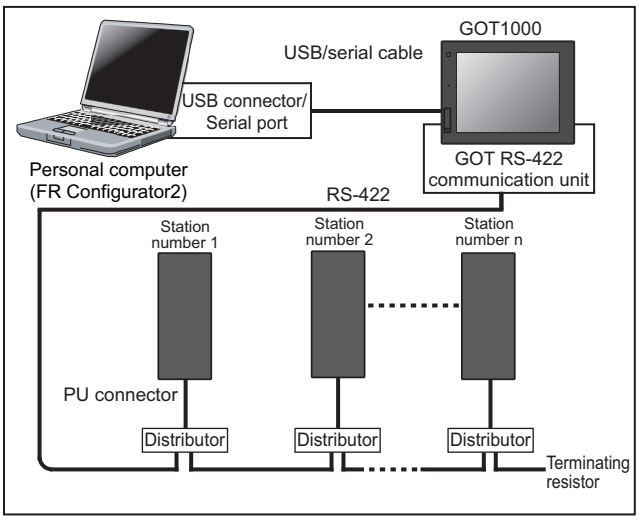


GOT1000 connection example

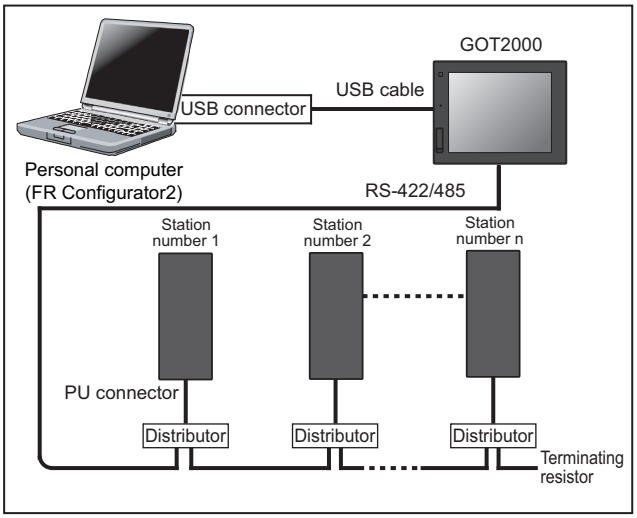


GOT2000 connection example

■ Example of connection to the PU connector

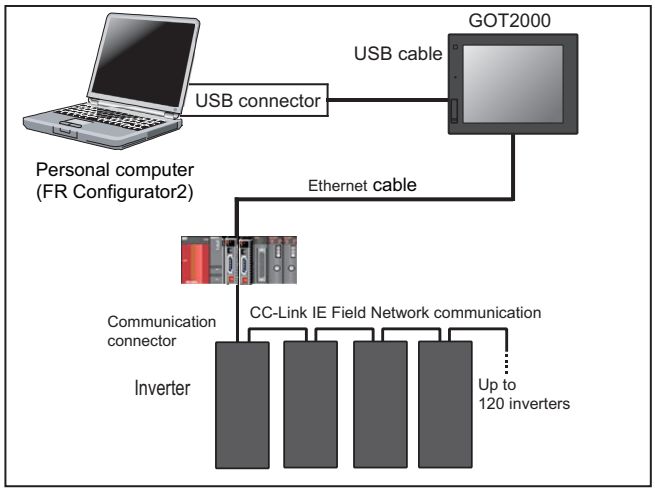


GOT1000 connection example



GOT2000 connection example

■ Example of connection to the Ethernet connector (Ethernet model)



GOT2000 connection example

For the GOT1000 series, an RS-422 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.

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 73.)
  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	**Pr.118**	**Pr.332**	Depending on the setting of the connected device in the GOT.
Data length/stop bit	**Pr.119**	**Pr.333**	
Parity	**Pr.120**	**Pr.334**	
Waiting time setting	**Pr.123**	**Pr.337**	
CR/LF selection	**Pr.124**	**Pr.341**	
Number of communication retries	**Pr.121**	**Pr.335**	9999 (fixed)
Communication check time interval	**Pr.122**	**Pr.336**	9999 (fixed)
Protocol selection	- (**Pr.549** holds the value before the automatic recognition.)	**Pr.549**	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).

◆Related parameters for connection through GOT

Set communication-related parameters automatically as follows. For connection through GOT, set **Pr.123 PU communication waiting time setting** = "0", **Pr.337 RS-485 communication waiting time setting** = "0". For connection to the PU connector, set **Pr.999 Automatic parameter setting** = "12". For connection to the RS-485 terminals, set **Pr.999** = "13". Refer to page 41 for Ethernet-related parameters.

■List of related parameters

Availability, initial values, and setting ranges of parameters differ depending on the inverter. For details, refer to the Instruction Manual of the relevant model.

- 800 series

Pr.	Name	Initial value	Setting range	Description
117 **N020**	**PU communication station number**	0	0 to 31	Inverter station number specification. Set the inverter station numbers when two or more inverters are connected to one personal computer.

Pr.	Name	Initial value	Setting range	Description	
118 **N021**	**PU communication speed**	192	48, 96, 192, 384, 576, 768, 1152	Set the communication speed. The setting value × 100 equals the communication speed. For example, if 192 is set, the communication speed is 19200 bps.	
N022	**PU communication data length**	0	0	Data length 8 bits	
			1	Data length 7 bits	
N023	**PU communication stop bit length**	1	0	Stop bit length 1 bit	
			1	Stop bit length 2 bits	
119	**PU communication stop bit length / data length**	1	0	Stop bit length 1 bit	Data length 8 bits
			1	Stop bit length 2 bits	
			10	Stop bit length 1 bit	Data length 7 bits
			11	Stop bit length 2 bits	
120 **N024**	**PU communication parity check**	2	0	Without parity check	
			1	With parity check at odd numbers	
			2	With parity check at even numbers	
121 **N025**	**PU communication retry count**	1	0 to 10	Set the permissible number of retries for unsuccessful data reception. If the number of consecutive errors exceeds the permissible value, the inverter output is shut off.	
			9999	Even if a communication error occurs, the inverter will not trip.	
122 **N026**	**PU communication check time interval**	9999	0	PU connector communication is disabled.	
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)	
			9999	No communication check (signal loss detection)	
123 **N027**	**PU communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.	
			9999	Set with communication data.	
124 **N028**	**PU communication CR/LF selection**	1	0	Without CR/LF	
			1	With CR	
			2	With CR/LF	
331 **N030**	**RS-485 communication station number**	0	0 to 31 (0 to 247)	Set the inverter station number. (Same specifications as **Pr.117**)	
332 **N031**	**RS-485 communication speed**	96	3, 6, 12, 24, 48, 96, 192, 384, 576, 768, 1152	Select the communication speed. (Same specifications as **Pr.118**)	
N032	**RS-485 communication data length**	0	0, 1	Select the data length. (Same specifications as **P.E022**)	
N033	**RS-485 communication stop bit length**	1	0, 1	Select the stop bit length. (Same specifications as **P.E023**)	
333	**RS-485 communication stop bit length / data length**	1	0, 1, 10, 11	Select the stop bit length and data length. (Same specifications as **Pr.119**)	
334 **N034**	**RS-485 communication parity check selection**	2	0, 1, 2	Select the parity check specifications. (Same specifications as **Pr.120**)	
335 **N035**	**RS-485 communication retry count**	1	0 to 10, 9999	Set the permissible number of retries for unsuccessful data reception. (Same specifications as **Pr.121**)	
336 **N036**	**RS-485 communication check time interval**	0 s	0	RS-485 communication is enabled. However, the inverter output is shut off if operation is changed to NET operation mode.	
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. (Same specifications as **Pr.122**)	
			9999	No communication check (signal loss detection).	
337 **N037**	**RS-485 communication waiting time setting**	9999	0 to 150 ms, 9999	Set the delay between data transmission to the inverter and response. (Same specifications as **Pr.123**)	
341 **N038**	**RS-485 communication CR/LF selection**	1	0, 1, 2	Select the presence/absence of CR/LF. (Same specifications as **Pr.124**)	

Pr.	Name	Initial value	Setting range	Description	
549 **N000**	**Protocol selection**	0	0[*1]	Mitsubishi inverter protocol (computer link)	
			1	MODBUS RTU protocol	
			2[*2]	BACnet MS / TP protocol	
551[*3] **D013**	**PU mode operation command source selection**	9999	1	The RS-485 terminals are the command interface enabled in the PU operation mode.	
			2	The PU connector is the command interface enabled in the PU operation mode.	
			3	The USB connector is the command interface enabled in the PU operation mode.	
			4	The operation panel is the command interface enabled in the PU operation mode.	
			5	The Ethernet connector is the command interface enabled in the PU operation mode.	
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.	
999 **E431**	**Automatic parameter setting**	9999[*4]	1	Standard PID setting	
			2	Extended PID setting	
			10	GOT initial setting (PU connector)	GOT side model selection: FR 500/700/800, sensorless servo
			11	GOT initial setting (RS-485 terminals)	
			12	GOT initial setting (PU connector)	GOT side model selection: FR 800
			13	GOT initial setting Automatic setting (RS-485 terminals)	
			20	50 Hz rated frequency	
			21	60 Hz rated frequency	
			9999	No action	

*1 Set **Pr.549** = "0" (Mitsubishi inverter (Computer link) protocol).
*2 The setting is available only for the FR-F800 series.
*3 **Pr.551** can be always written regardless of the operation mode.
*4 The read value is always "9999".

- 700 series

Pr.	Name	Initial value	Setting range	Description	
117	**PU communication station number**	0	0 to 31	Inverter station number specification. Set the inverter station numbers when two or more inverters are connected to one personal computer.	
118	**PU communication speed**	192	48, 96, 192, 384, 576, 768, 1152	Set the communication speed. The setting value × 100 equals the communication speed. For example, if 192 is set, the communication speed is 19200 bps.	
119	**PU communication stop bit length / data length**	1	0	Stop bit length 1 bit	Data length 8 bits
			1	Stop bit length 2 bits	
			10	Stop bit length 1 bit	Data length 7 bits
			11	Stop bit length 2 bits	
120	**PU communication parity check**	2	0	Without parity check	
			1	With parity check at odd numbers	
			2	With parity check at even numbers	
121	**PU communication retry count**	1	0 to 10	Set the permissible number of retries for unsuccessful data reception. If the number of consecutive errors exceeds the permissible value, the inverter output is shut off.	
			9999	Even if a communication error occurs, the inverter will not trip.	

Pr.	Name	Initial value	Setting range	Description
122	**PU communication check time interval**	9999	0	PU connector communication is disabled.
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. If a no-communication state persists for the permissible time or longer, the inverter output is shut off. (The operation depends on the **Pr.502** setting.)
			9999	No communication check (signal loss detection)
123	**PU communication waiting time setting**	9999	0 to 150 ms	Set the delay between data transmission to the inverter and response.
			9999	Set with communication data.
124	**PU communication CR/LF selection**	1	0	Without CR/LF
			1	With CR
			2	With CR/LF
331	**RS-485 communication station number**	0	0 to 31 (0 to 247)	Set the inverter station number. (Same specifications as **Pr.117**)
332	**RS-485 communication speed**	96	3, 6, 12, 24, 48, 96, 192, 384, 576, 768, 1152	Select the communication speed. (Same specifications as **Pr.118**)
333	**RS-485 communication stop bit length / data length**	1	0, 1, 10, 11	Select the stop bit length and data length. (Same specifications as **Pr.119**)
334	**RS-485 communication parity check selection**	2	0, 1, 2	Select the parity check specifications. (Same specifications as **Pr.120**)
335	**RS-485 communication retry count**	1	0 to 10, 9999	Set the permissible number of retries for unsuccessful data reception. (Same specifications as **Pr.121**)
336	**RS-485 communication check time interval**	0 s	0	RS-485 communication is enabled. However, the inverter output is shut off if operation is changed to NET operation mode.
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. (Same specifications as **Pr.122**)
			9999	No communication check (signal loss detection)
337	**RS-485 communication waiting time setting**	9999	0 to 150 ms, 9999	Set the delay between data transmission to the inverter and response. (Same specifications as **Pr.123**)
341	**RS-485 communication CR/LF selection**	1	0, 1, 2	Select the presence/absence of CR/LF. (Same specifications as **Pr.124**)
549	**Protocol selection**	0	0[*1]	Mitsubishi inverter protocol (computer link)
			1	MODBUS RTU protocol
551[*2]	**PU mode operation command source selection**	9999	1	RS-485 terminals are the command interface enabled in the PU operation mode.
			2	The PU connector is the command interface enabled in the PU operation mode.
			3	The USB connector is the command interface enabled in the PU operation mode.
			4	The operation panel is the command interface enabled in the PU operation mode.
			5	The Ethernet connector is the command interface enabled in the PU operation mode.
			9999	USB automatic recognition Basically, the operation panel (PU connector) is the command interface. When the USB connector is used, it is the command interface.

Pr.	Name	Initial value	Setting range	Description	
999	Automatic parameter setting	9999*3	1	Standard PID setting	
			2	Extended PID setting	
			10	GOT initial setting (PU connector)	GOT side model selection: FR 500/700/800, sensorless servo
			11	GOT initial setting (RS-485 terminals)	
			12	GOT initial setting (PU connector)	GOT side model selection: FR 800
			13	GOT initial setting Automatic setting (RS-485 terminals)	
			20	50 Hz rated frequency	
			21	60 Hz rated frequency	
			9999	No action	

*1 Set **Pr.549** = "0" (Mitsubishi inverter (Computer link) protocol).
*2 **Pr.551** can be always written regardless of the operation mode.
*3 The read value is always "9999".

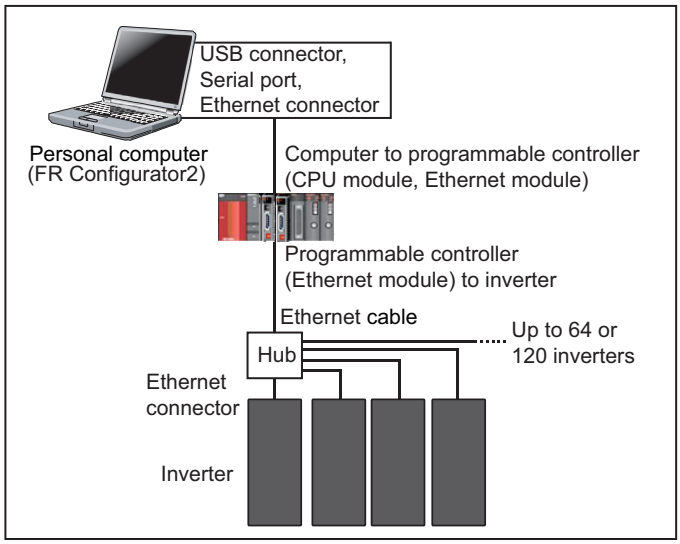
NOTE

- 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.

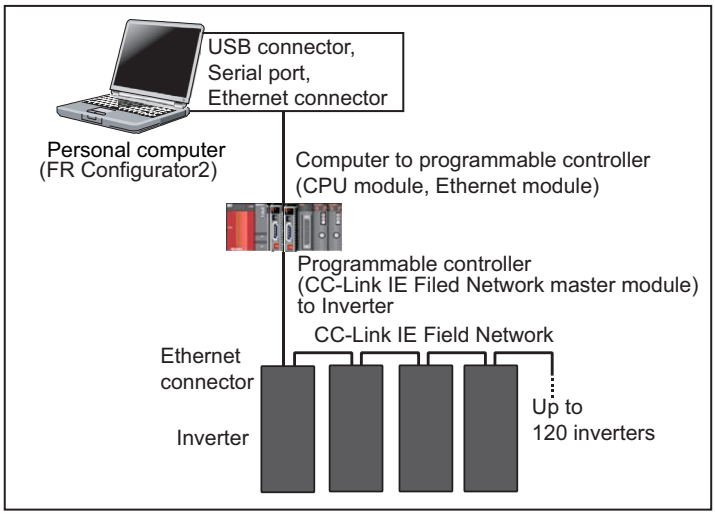
1.4.8 Connection with programmable controller

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. Refer to page 41 for Ethernet-related parameters.

■ Connection via a programmable controller



■ Connection via a programmable controller (CC-Link IE Field Network)

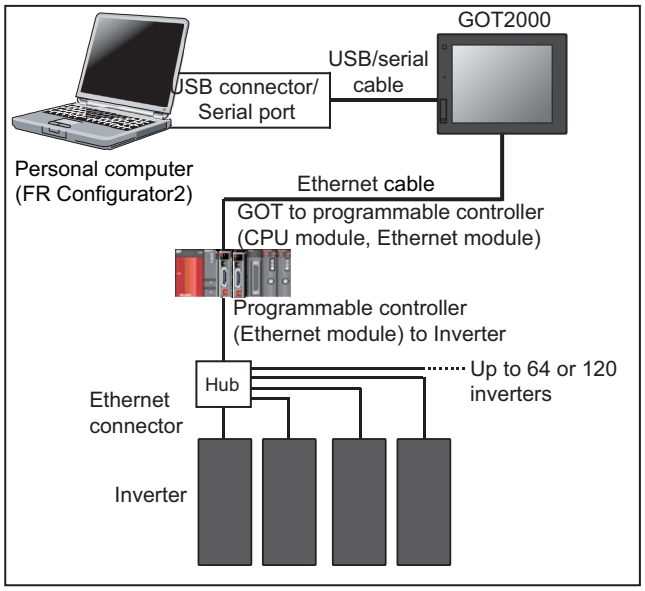


1.4.9 Connection via a GOT2000 model and a programmable controller

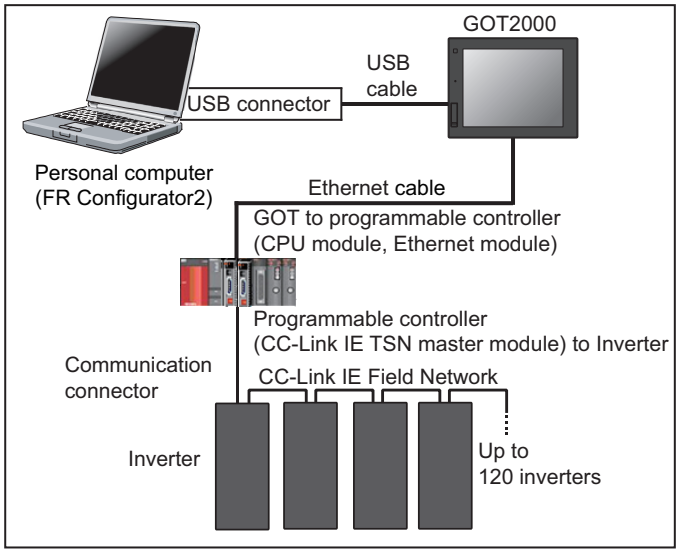
The inverter and FR Configurator2 can be communicated via a GOT2000 model and a programmable controller (CPU module / Ethernet module). In this configuration, operation with the FR-E700 inverter is not guaranteed.

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. Refer to page 51 for GOT-related parameters. Refer to page 41 for Ethernet-related parameters.

■ **Communication through GOT2000 and programmable controller**



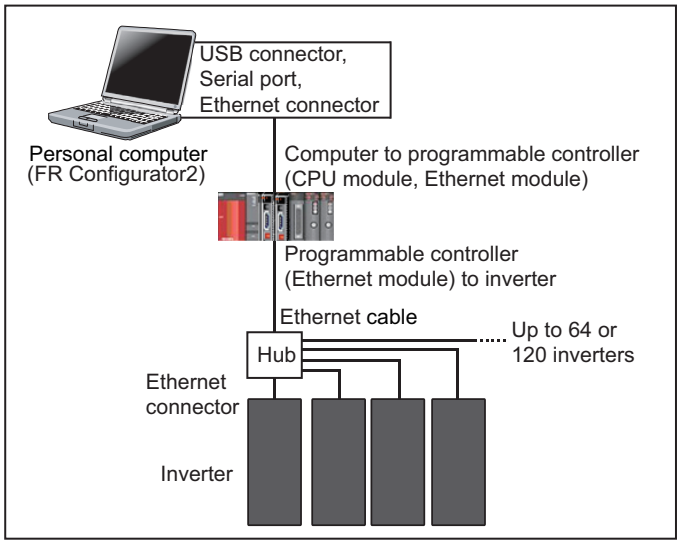
■ **Communication through GOT2000 and programmable controller (CC-Link IE Field Network)**



1.4.10 Connection using CC-Link IE TSN

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

Use a USB connector, serial port, or the Ethernet connector on the personal computer for connection.



◆ Related parameters for connection using CC-Link IE TSN (for FR-A800/ FR-F800 inverter with FR-A8NCG in it)

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

Pr.	Name	Initial value	Setting range	Description
434[*1*2] **N700**	**IP address 1**	0 (192[*3])	0 to 255	Enter the IP address of the inverter to be connected to CC-Link IE TSN.
435[*1*2] **N701**	**IP address 2**	0 (168[*3])	0 to 255	
436[*1*2] **N702**	**IP address 3**	0 (50[*3])	0 to 255	
437[*1*2] **N703**	**IP address 4**	0 (2[*3])	0 to 255	
438[*1*2] **N710**	**Subnet mask 1**	0 (255[*3])	0 to 255	Enter the subnet mask of the network to which the inverter belongs.
439[*1*2] **N711**	**Subnet mask 2**	0 (255[*3])	0 to 255	
440 **N712**	**Subnet mask 3**	0 (255[*3])	0 to 255	
441[*1*2] **N713**	**Subnet mask 4**	0	0 to 255	
1442[*1*2] **N760**	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443[*1*2] **N761**	**IP filter address 2 (Ethernet)**	0	0 to 255	
1444[*1*2] **N762**	**IP filter address 3 (Ethernet)**	0	0 to 255	
1445[*1*2] **N763**	**IP filter address 4 (Ethernet)**	0	0 to 255	
1446[*1*2] **N764**	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447[*1*2] **N765**	**IP filter address 3 range specification (Ethernet)**	9999	0 to 255, 9999	
1448[*1*2] **N766**	**IP filter address 4 range specification (Ethernet)**	9999	0 to 255, 9999	
1459[*1*2] **N746**	**Clock source selection**	0	0 to 2	The internal clocks of connected devices on the CC-Link IE TSN Network can be synchronized (real time clock function).

*1 The setting is applied after an inverter reset or power-ON.

*2 Parameters which can be displayed when this plug-in option (FR-A8NCG) is installed.
*3 The initial value after All parameter clear with the FR-A8NCG installed.

■ IP address setting

- 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*1 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 **Pr.434 to Pr.436** are invalid.)
Second octet	
Third octet	
Fourth octet	The station number switch setting is enabled regardless of the setting in **Pr.437**.

■ 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	**Pr.434**
Second octet	**Pr.435**
Third octet	**Pr.436**
Fourth octet	**Pr.437**

- 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.

◆ Related parameters for connection using CC-Link IE TSN (for FR-E800-(SC)E inverter)

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

Pr.	Name	Initial value	Setting range	Description
541 **N100**	**Frequency command sign selection**	0	0	Signed frequency command value
			1	Unsigned frequency command value
544 **N103***1	**CC-Link extended setting**	0	0, 1, 12, 14, 18, 38, 100, 112, 114, 118, 138	Use this parameter to extend the function of the remote registers for the CC-Link IE TSN.
1424 **N650***1	**Ethernet communication network number**	1	1 to 239	Enter the network number.
1425 **N651***1	**Ethernet communication station number**	1	1 to 120	Enter the station number.
1426 **N641***1	**Link speed and duplex mode selection**	0	0 to 4	Set the communication mode (full-duplex/half-duplex).

Pr.	Name	Initial value	Setting range	Description
1427 N630[*1]	**Ethernet function selection 1**	5001	502, 5000 to 5002, 5006 to 5008, 5010 to 5013, 9999, 34962[*3], 44818[*2], 45237, 45238, 47808[*2], 61450	Set the application, protocol, and so on.
1428 N631[*1]	**Ethernet function selection 2**	45237		
1429 N632[*1]	**Ethernet function selection 3**	45238		
1430 N633[*1]	**Ethernet function selection 4**	9999		
1434 N600[*1]	**IP address 1 (Ethernet)**	192	0 to 255	Enter the IP address of the inverter to be connected to Ethernet.
1435 N601[*1]	**IP address 2 (Ethernet)**	168		
1436 N602[*1]	**IP address 3 (Ethernet)**	50		
1437 N603[*1]	**IP address 4 (Ethernet)**	1		
1438 N610[*1]	**Subnet mask 1**	255	0 to 255	Enter the subnet mask of the network to which the inverter belongs.
1439 N611[*1]	**Subnet mask 2**	255		
1440 N612[*1]	**Subnet mask 3**	255		
1441 N613[*1]	**Subnet mask 4**	0		
1442 N660[*1]	**IP filter address 1 (Ethernet)**	0	0 to 255	Set the range of connectable IP addresses for the network devices. (When **Pr.1442 to Pr.1445** = "0 (initial value)", the function is invalid.)
1443 N661[*1]	**IP filter address 2 (Ethernet)**	0		
1444 N662[*1]	**IP filter address 3 (Ethernet)**	0		
1445 N663[*1]	**IP filter address 4 (Ethernet)**	0		
1446 N664[*1]	**IP filter address 2 range specification (Ethernet)**	9999	0 to 255, 9999	
1447 N665[*1]	**IP filter address 3 range specification (Ethernet)**	9999		
1448 N666[*1]	**IP filter address 4 range specification (Ethernet)**	9999		
1320 to 1329 N810 to N819[*1]	**Periodic communication input data selection 1 to 10**	9999	5[*3], 100[*3], 12288 to 13787, 20488, 20489	Set the index number for inverter parameters and inverter control parameters. Functions can be assigned to remote registers RWwn+4 to RWwn+17 when **Pr.544** = "38".
			9999	Function disabled
1330 to 1343 N850 to N863[*1]	**Periodic communication output data selection 1 to 14**	9999	6[*3], 101[*3], 12288 to 13787, 16384 to 16483, 20488, 20489, 20981 to 20990	Set the index number for inverter parameters, monitor data, and inverter control parameters. Functions can be assigned to remote registers RWrn+4 to RWrn+1F when **Pr.544** = "38".
			9999	Function disabled
804 D400	**Torque command source selection**	0	0, 1, 3 to 6	In the torque control mode, the torque command source can be selected.
810 H700	**Torque limit input method selection**	0	0 to 2	The torque limit input method can be selected.

*1 The setting is applied after an inverter reset or next power-ON.
*2 The setting is available only for the FR-E800-EPA and the FR-E800-SCEPA.
*3 The setting is available only for the FR-E800-EPB and the FR-E800-SCEPB.

■ Setting the IP address with parameters (Pr.1427 to Pr.1430)

- To use the CC-Link IE TSN, set "5001" in any of **Pr.1427** to **Pr.1430**. "5001" is initially set in **Pr.1427**.

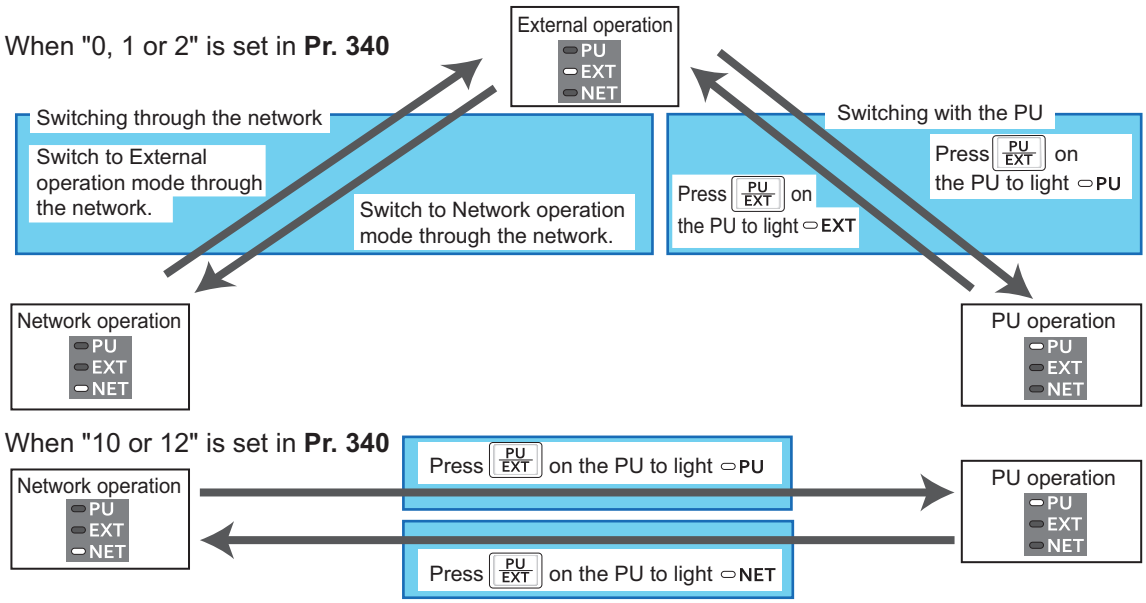
1.5 Setting of operation mode of the inverter

- 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 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
  Refer to the following table to select the appropriate operation mode for the connection. Switching of the operation mode is available using "test operation" (on page 160) or "parameter list" (on page 96) on the sub window. Refer to the Instruction Manual (Detailed) of the inverter for details of each parameter.
  Monitoring and parameter read can be performed from any operation regardless of the operation mode.

- FR-A800

Operation location	Conditions (Pr.551 setting)	Item	Controllability in each operation mode						
			PU operation	External operation	External/ PU combined operation mode 1 (Pr.79 = 3)	External/ PU combined operation mode 2 (Pr.79 = 4)	NET operation (when RS-485 terminals is used)*6	NET operation (when the Ethernet connector is used)*7	NET operation (when a communication option is used)*8
PU connector through RS-485 communication	2 (PU connector) 9999 (automatic recognition, without USB connection)	Run command (start)	○	×	×	○	×		
		Run command (stop)	○	Δ*3	Δ*3	○	Δ*3		
		Running frequency setting	○	×	○	×	×		
		Monitor	○	○	○	○	×		
		Parameter write	○*4	×*5	○*4	○*4	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
	Other than the above	Run command (start)	×	×	×	×	×		
		Run command (stop)	Δ*3	Δ*3	Δ*3	Δ*3	Δ*3		
		Running frequency setting	×	×	×	×	×		
		Monitor	○	○	○	○	○		
		Parameter write	×*5	×*5	×*5	×*5	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
RS-485 terminals through communication	1 (RS-485 terminals)	Run command (start, stop)	○	×	×	○	×		
		Running frequency setting	○	×	○	×	×		
		Monitor	○	○	○	○	○		
		Parameter write	○*4	×*5	○*4	○*4	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
	Other than the above	Run command (start, stop)	×	×	×	×	○*1	×	×
		Running frequency setting	×	×	×	×	○*1	×	×
		Monitor	○	○	○	○	○	○	○
		Parameter write	×*5	×*5	×*5	×*5	○*4	×*5	×*5
		Parameter read	○	○	○	○	○	○	○
		Inverter reset	×	×	×	×	○*2	×	×

Operation location	Conditions (Pr.551 setting)	Item	Controllability in each operation mode						
			PU operation	External operation	External/ PU combined operation mode 1 (Pr.79 = 3)	External/ PU combined operation mode 2 (Pr.79 = 4)	NET operation (when RS-485 terminals is used)*6	NET operation (when the Ethernet connector is used)*7	NET operation (when a communication option is used)*8
USB connector	3 (USB connector) 9999 (automatic recognition, with USB connection)	Run command (start, stop)	○	×	×	○	×		
		Running frequency setting	○	×	○	×	×		
		Monitor	○	○	○	○	○		
		Parameter write	○*4	×*5	×*5	×*5	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
	Other than the above	Run command (start, stop)	×	×	×	×	×		
		Running frequency setting	×	×	×	×	×		
		Monitor	○	○	○	○	○		
		Parameter write	×*5	×*5	×*5	×*5	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
Ethernet board	5 (Ethernet board)	Run command (start, stop)	○	×	×	○	×		
		Running frequency setting	○	×	○	×	×		
		Monitor	○	○	○	○	○		
		Parameter write	○*4	×*5	○*4	○*4	×*5		
		Parameter read	○	○	○	○	○		
		Inverter reset	○	○	○	○	○		
	Other than the above or when the CC-Link IE Field Network Basic is selected	Run command (start, stop)	×	×	×	×	×	○*1	×
		Running frequency setting	×	×	×	×	○	○*1	×
		Monitor	○	○	○	○	○	○	○
		Parameter write	×*5	×*5	×*5	×*5	×*5	○*4	×*5
		Parameter read	○	○	○	○	○	○	○
		Inverter reset	×	×	×	×	×	○*2	×
Communication option	—	Run command (start, stop)	×	×	×	×	×	×	○*1
		Running frequency setting	×	×	×	×	×	×	○*1
		Monitor	○	○	○	○	○	○	○
		Parameter write	×*5	×*5	×*5	×*5	×*5	×*5	○*4
		Parameter read	○	○	○	○	○	○	○
		Inverter reset	×	×	×	×	×	×	○*2
External terminal at the control circuit	—	Inverter reset	○	○	○	○	○		
		Run command (start, stop)	×	○	○	×	×*1		
		Running frequency setting	×	○	×	×	×*1		

○: Enabled, ×: Disabled, Δ: Some are enabled

*1 As set in **Pr.338 Communication operation command source**, **Pr.339 Communication speed command source**.

*2 If an error occurs in the RS-485 communication or Ethernet communication, the inverter cannot be reset from the computer.

*3 Enabled only when stopped by the PU. At a PU stop, PS is displayed on the operation panel. The operation is as set in **Pr.75 Reset selection/ disconnected PU detection/PU stop selection**.

*4 Some parameters may be write-disabled according to the **Pr.77 Parameter write selection** setting and operating status.

*5 Some parameters are write-enabled regardless of the operation mode or the command source. When **Pr.77** = "2", write is enabled. Parameter clear is unavailable.

*6 When **Pr.550 NET mode operation command source selection** = "1" (RS-485 terminals valid) or **Pr.550 NET mode operation command source selection** = "9999" and the communication option is not mounted.

*7 Applicable when **Pr.550 NET mode operation command source selection** = "5" (Ethernet connector enabled), or **Pr.550 NET mode operation command source selection** = "9999" with no communication option connected.

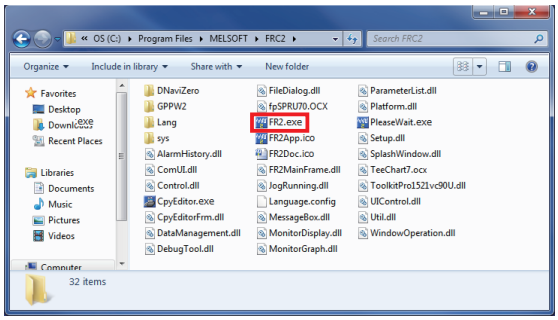
*8 When **Pr.550 NET mode operation command source selection** = "0" (communication option enabled), or **Pr.550 NET mode operation command source selection** = "9999" with communication option connected.

1.6 Start and close of FR Configurator2

1.6.1 Starting FR Configurator2

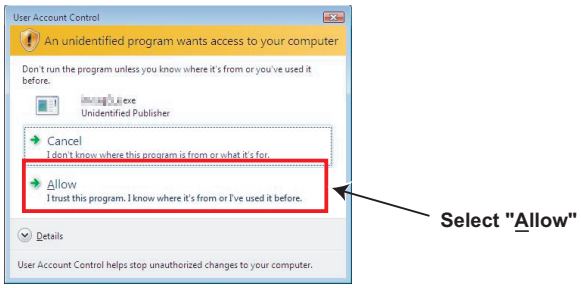
There are the following ways to start FR Configurator2.

- 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 70 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".



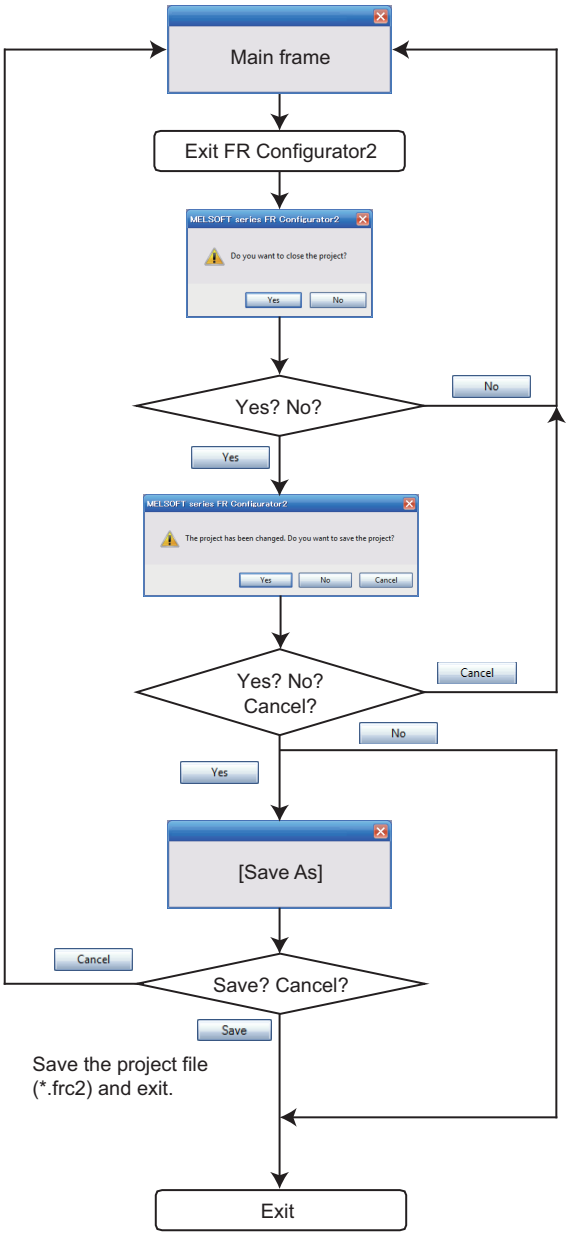
- In an operation system with antivirus/security software, a warning may appear at starting FR Configurator2. If a warning appears, permit FR Configurator2 according to the setting procedure of your antivirus/security software.
- If files shown in [Recent] of Windows® 7, Windows® 8.1, or Windows® 10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

1.6.2 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.



CHAPTER 2 PROJECT CREATION

2 PROJECT CREATION

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

2.1 Project file operation

2.1.1 Procedure to create a project

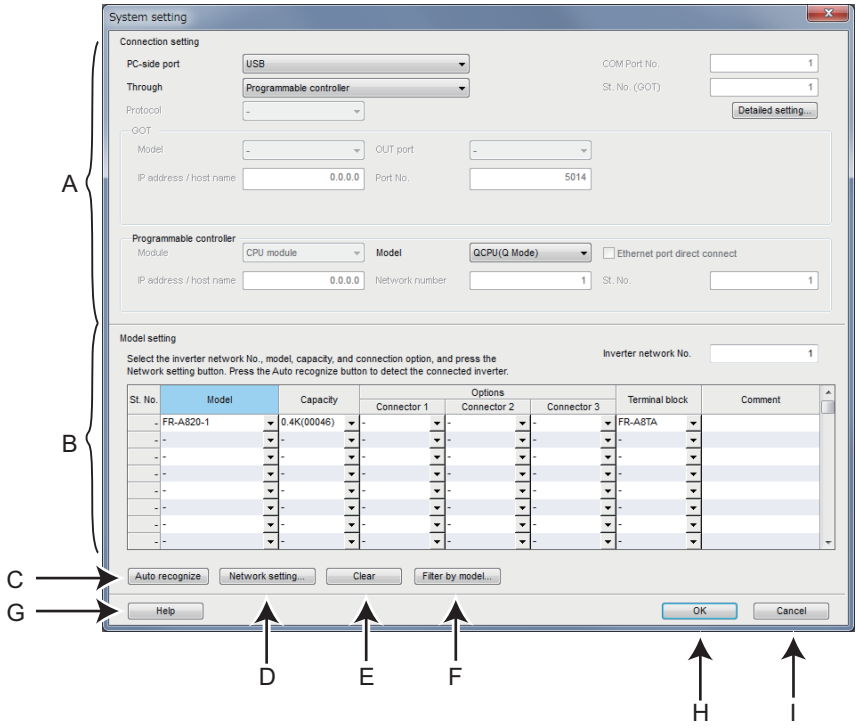
The following shows the procedure from creating project to operating the functions of FR Configurator2.

Operation	Function made available after performing the operation	Refer to page
Starting FR Configurator2	Convert	117
	Ethernet parameter setting function	178
	iQSS backup file conversion function	184
	Developer	163
	USB memory parameter copy file edit	175
	Help	185
System setting window	System setting window	70
New project	Parameter list	96
	Safety parameter setting	112
	Graph	130
	Batch monitor	145
	I/O terminal monitor	148
	Diagnostics	149
	Test operation	160

2.1.2 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. Enter the same inverter network number as set in **Ethernet communication network number**[*1*2].
C	Auto recognize	Information of the connected inverter can be recognized automatically. (Refer to page 72.)
D	Network setting...	Specify the settings for network connection.
E	Clear	Clears the entries in the model setting field.
F	Filter by model...	Shows the window to filter the list of models used for the model selection.
G	Help	Displays the help window.
H	OK	Applies the setting to the project and closes the "System setting" window.
I	Cancel	Closes the "System setting" window without applying the setting to the project.

*1 The parameter number differs by the model. Refer to the Instruction Manual of the inverter for more information of the parameter numbers.

*2 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[*1]	**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[*1]	**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[*1]	**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**	**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*1	**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.

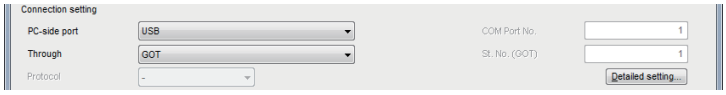
2.1.3 Connection setting

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".

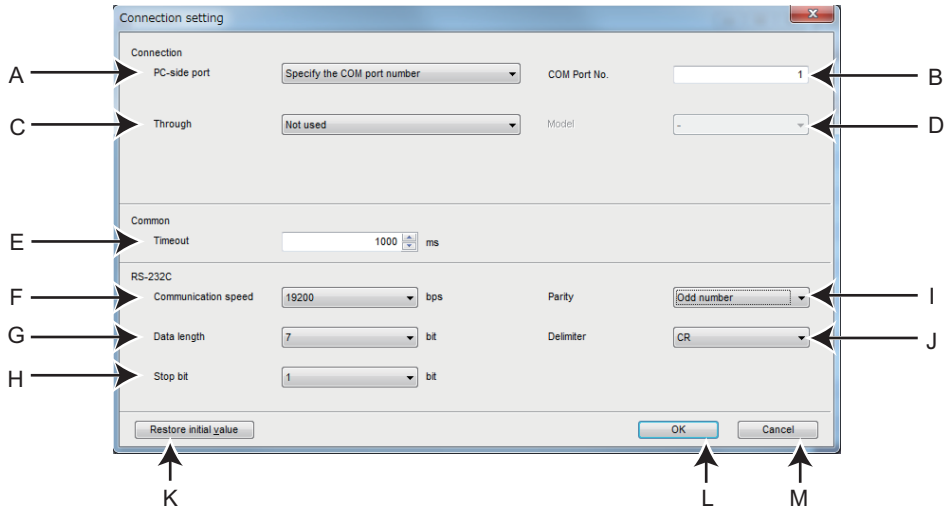


NOTE

- 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.

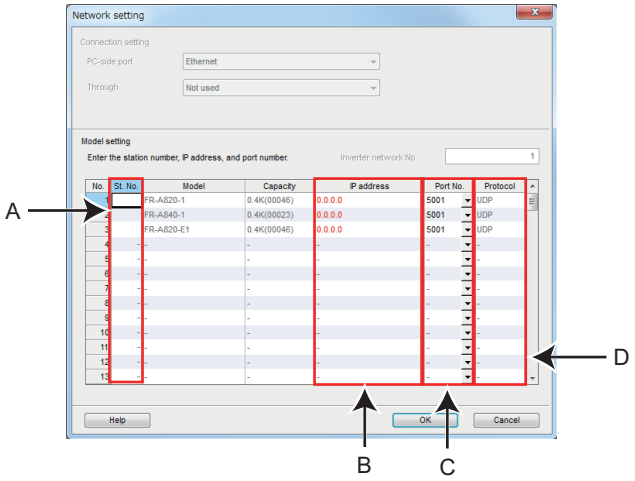


Symbol	Name	Initial value	Function/description
A	PC-side port	USB	Select a port for connection.
B	COM Port No.	1	Specify the port number when "Specify the COM port number" is selected for the PC-side port.*1
C	Through	Not used	Set a relay device.*1
D	Model	—	Set a GOT model.*1
E	Timeout	1000	Set the 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 **Pr.118 and Pr.332**.)
G	Data length	8	Set the data bit length. (Refer to **Pr.119 and Pr.333**.)
H	Stop bit	2	Set the stop bit length. (Refer to **Pr.119 and Pr.333**.)
I	Parity	Even	Specify the parity bit. (Refer to **Pr.120 and Pr.334**.)
J	Delimiter	CR	Specify the delimiter at the end of the data. (Refer to **Pr.124 and Pr.341**.)
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 page 70.) 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 page 119.)
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 **Pr.1425**. For FR-A800/FR-F800 inverter with FR-A8NCG in it, refer to **Pr.437**[*2*3]. For FR-A800-E-R2R, refer to **Pr.1074**. For FR-E700-NE, refer to **Pr.831**.)
B	IP address	Enter the IP address. (For FR-A800-E, FR-F800-E, and FR-E800-(SC)E, refer to **Pr.1434 to Pr.1437**. For FR-A800/FR-F800 inverter with FR-A8NCG in it, refer to **Pr.434 to Pr.437**[*2*3]. For FR-E700-NE, refer to **Pr.805 to Pr.808**.)[*1]
C	Port No.	Set the port number set in the inverter. (For FR-A800-E and FR-F800-E, refer to **Pr.1427 to Pr.1429**. For FR-A800-E-R2R, refer to **Pr.1076 to Pr.1078**.) For FR-E800-(SC)E, refer to **Pr.1427 to Pr.1430**. For FR-E700-NE, refer to **Pr.833 to Pr.835**.)
D	Protocol	The "UDP" or "TCP" protocol is displayed.

*1 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".

*2 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.)

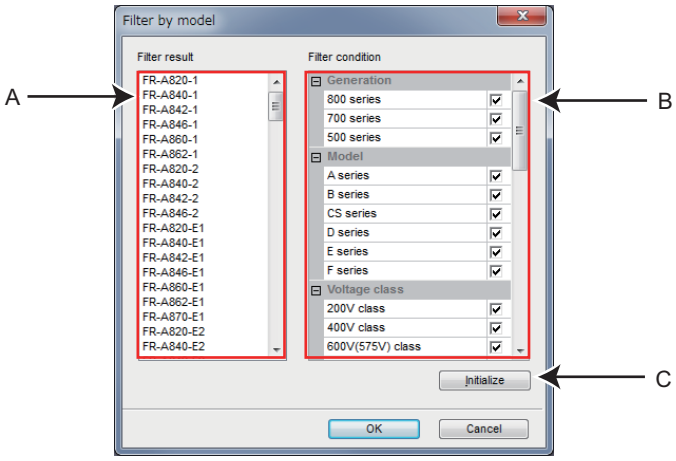
*3 When the station number switches are set to "0 (H00)" or "255 (HFF)", the setting in the master station is enabled. (For details on the station number switches, refer to the CC-Link IE TSN Function Manual or FR-A8NCG Instruction Manual.)

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.

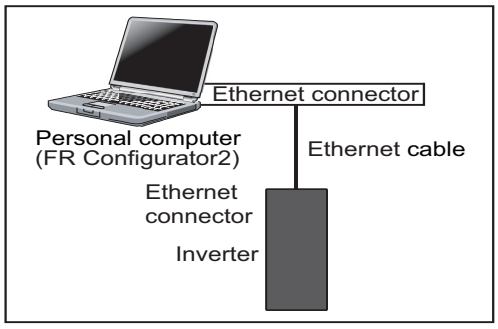


Symbol	Name	Function/description
A	Filter result	Selected inverters are displayed.
B	Filter condition	Click on the checkbox to change the filter condition.
C	Initialize	Reset the filter condition to check all.

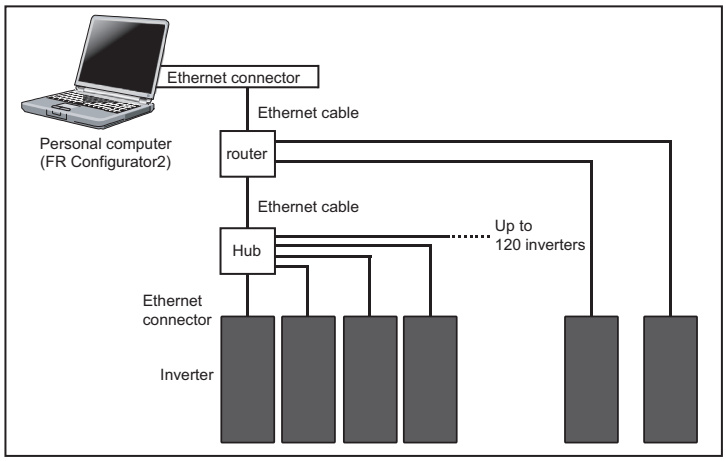
◆Ethernet automatic recognition setting

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.

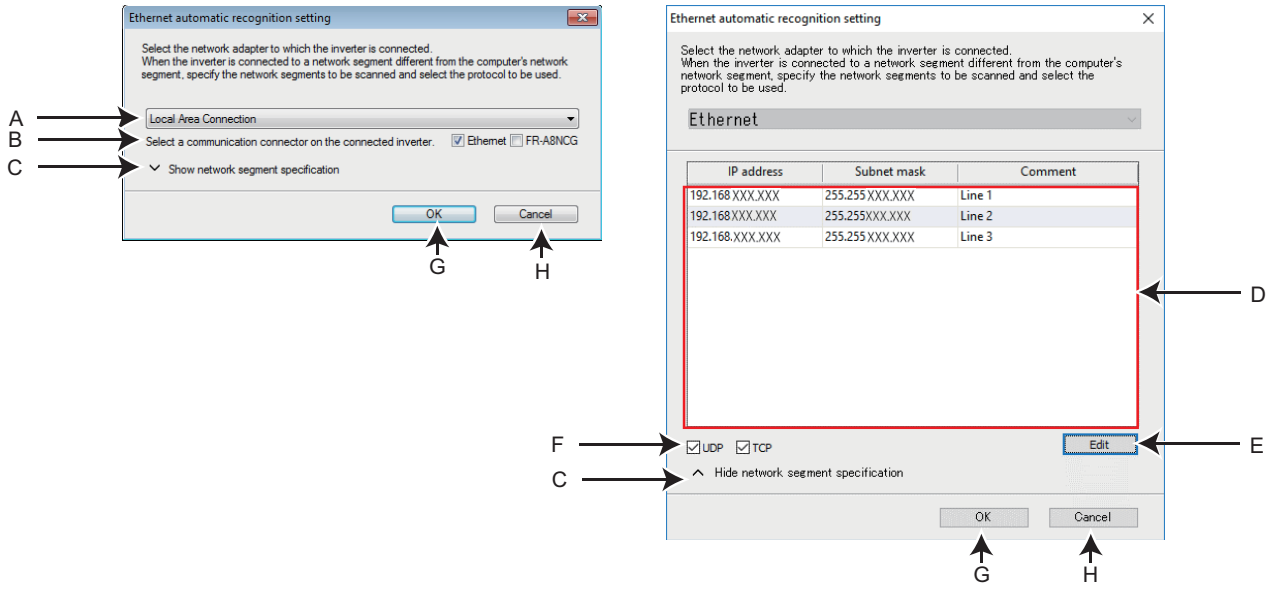
■Example connection without a router



■Example connection with a router

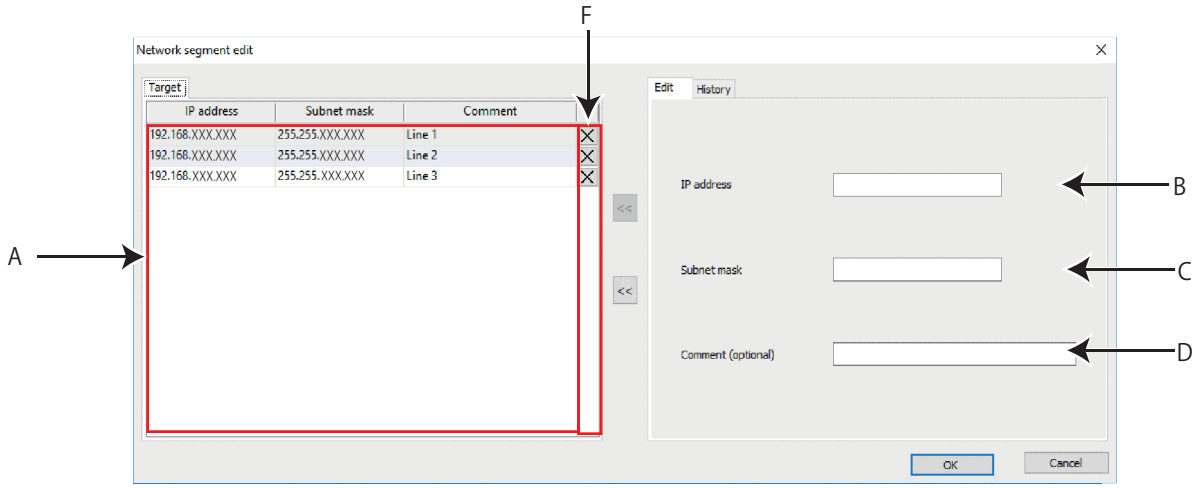


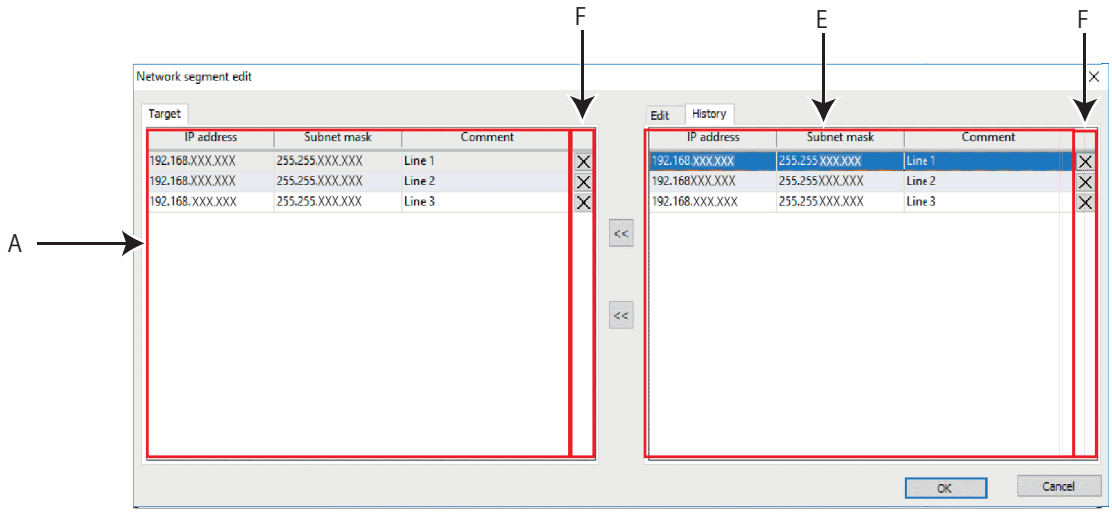
■ Ethernet automatic recognition setting window



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

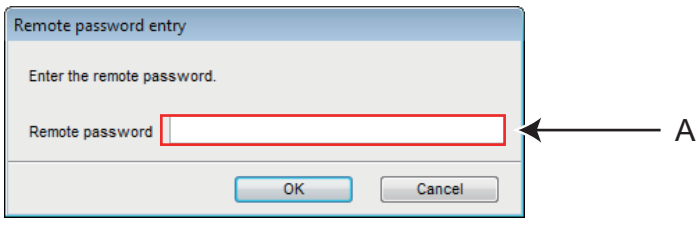




Symbol	Name	Function/description
A	Target area	Displays the data shown in the network setting area on the "Ethernet automatic recognition setting" window.
B	IP address	Enter the IP address of the network to be added.
C	Subnet mask	Enter the subnet mask of the network to be added.
D	Comment (optional)	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 (*).

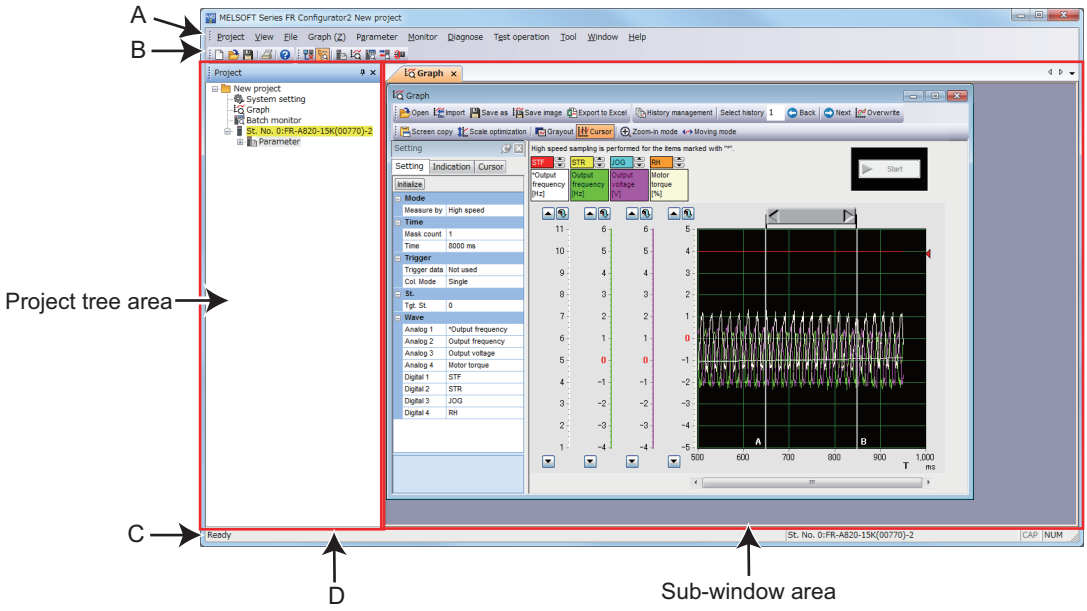
2.2 Explanation of the operating window of FR Configurator2

This section explains the screen configuration of FR Configurator2.

2.2.1 Main frame

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

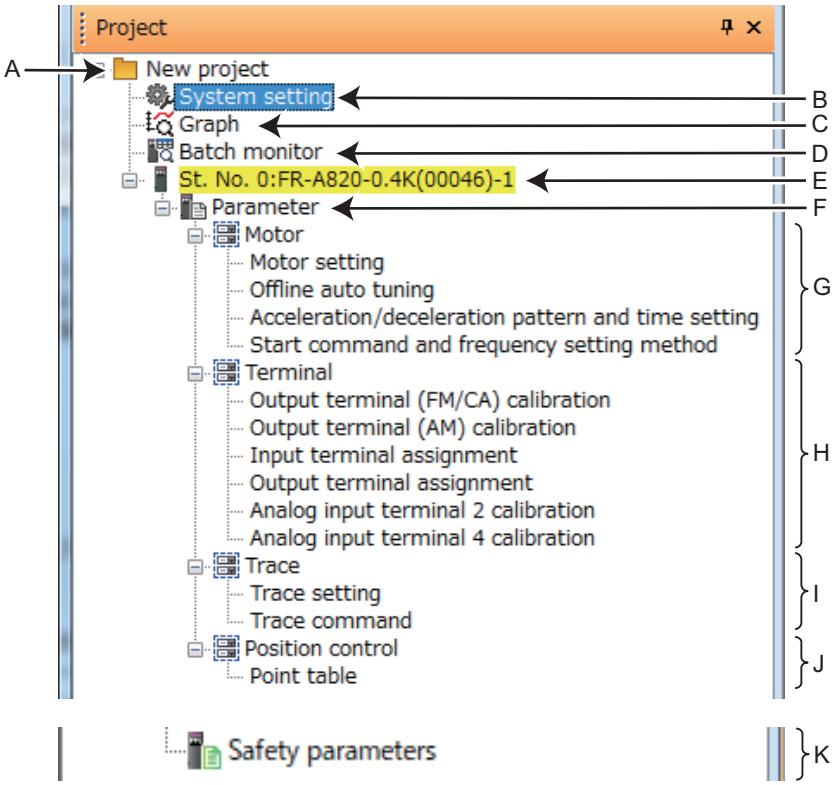
- Project tree area (Refer to page 79.)
  An area for showing information of the registered inverter, or for making settings. "System setting", "Graph", and "Batch monitor" are available in this area.
- Sub-window area (Refer to page 81.)
  An area for showing obtained monitor data of the inverter. "Parameter 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.	83
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.	90
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 [Window] of the menu bar, choose [Reset window layout].	—

2.2.2 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.

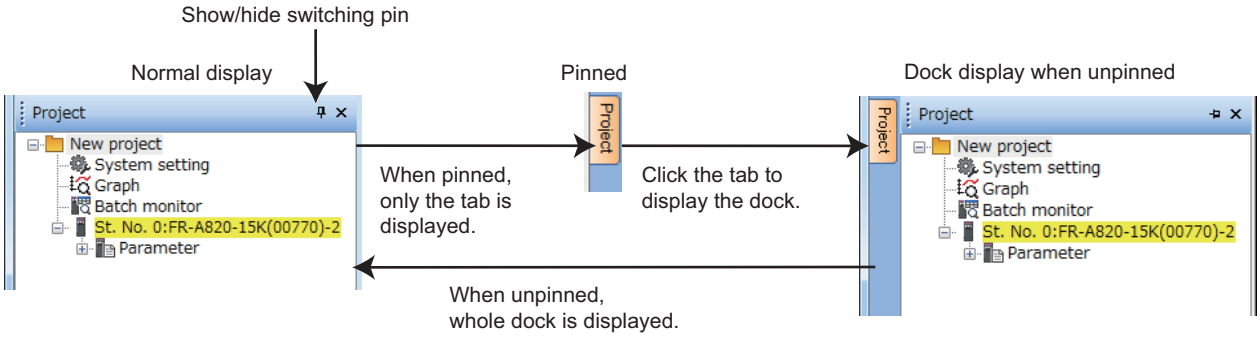


- Details of the project tree area

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.

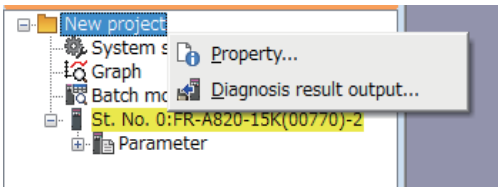
Display and switching of the project tree area

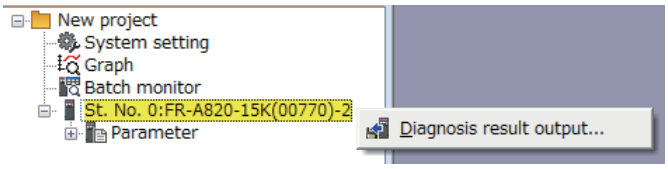
Select [Project window] from [Docking Window] in the [View] menu to switch the display of the project tree area among display, tab display, and hidden. The show/hide switching pin is used to show or hide the project tree area.



2.2.3 Pop-up menu

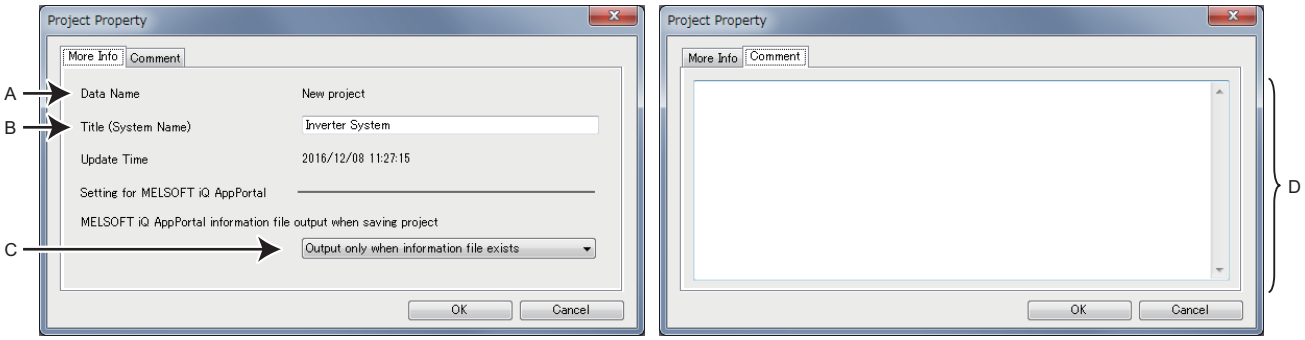
Right-click on the project name or the station number to display a pop-up menu.





◆ 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.

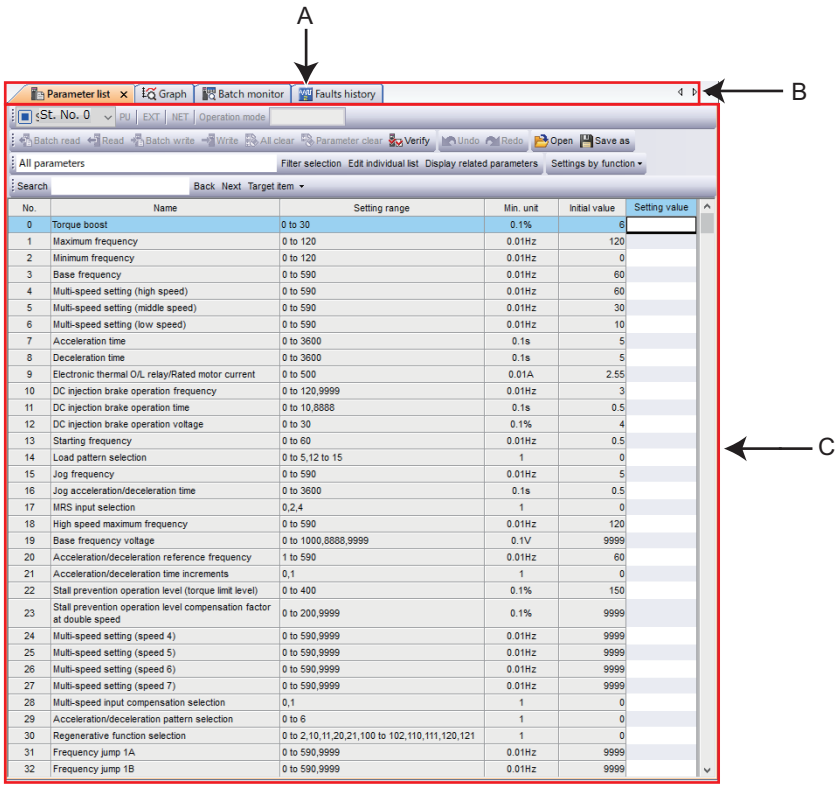
NOTE

- 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.

2.2.4 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.

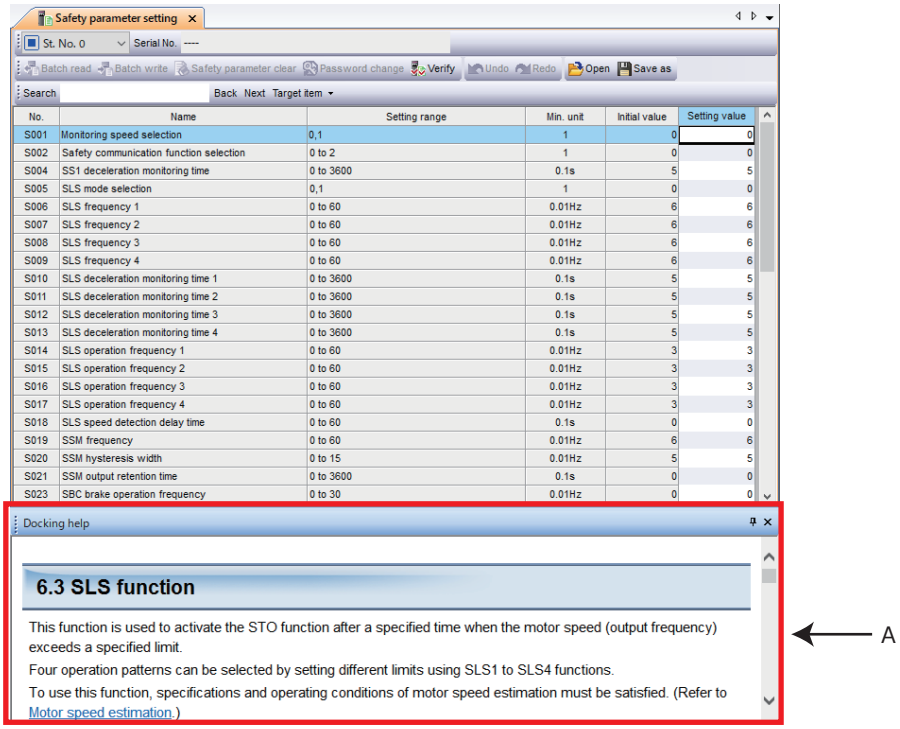


No.	Name	Setting range	Min. unit	Initial value	Setting value
0	Torque boost	0 to 30	0.1%	6	
1	Maximum frequency	0 to 120	0.01Hz	120	
2	Minimum frequency	0 to 120	0.01Hz	0	
3	Base frequency	0 to 590	0.01Hz	60	
4	Multi-speed setting (high speed)	0 to 590	0.01Hz	60	
5	Multi-speed setting (middle speed)	0 to 590	0.01Hz	30	
6	Multi-speed setting (low speed)	0 to 590	0.01Hz	10	
7	Acceleration time	0 to 3600	0.1s	5	
8	Deceleration time	0 to 3600	0.1s	5	
9	Electronic thermal O/L relay/Rated motor current	0 to 500	0.01A	2.55	
10	DC injection brake operation frequency	0 to 120,9999	0.01Hz	3	
11	DC injection brake operation time	0 to 10,8888	0.1s	0.5	
12	DC injection brake operation voltage	0 to 30	0.1%	4	
13	Starting frequency	0 to 60	0.01Hz	0.5	
14	Load pattern selection	0 to 5,12 to 15	1	0	
15	Jog frequency	0 to 590	0.01Hz	5	
16	Jog acceleration/deceleration time	0 to 3600	0.1s	0.5	
17	MRS input selection	0,2,4	1	0	
18	High speed maximum frequency	0 to 590	0.01Hz	120	
19	Base frequency voltage	0 to 1000,8888,9999	0.1V	9999	
20	Acceleration/deceleration reference frequency	1 to 590	0.01Hz	60	
21	Acceleration/deceleration time increments	0,1	1	0	
22	Stall prevention operation level (torque limit level)	0 to 400	0.1%	150	
23	Stall prevention operation level compensation factor at double speed	0 to 200,9999	0.1%	9999	
24	Multi-speed setting (speed 4)	0 to 590,9999	0.01Hz	9999	
25	Multi-speed setting (speed 5)	0 to 590,9999	0.01Hz	9999	
26	Multi-speed setting (speed 6)	0 to 590,9999	0.01Hz	9999	
27	Multi-speed setting (speed 7)	0 to 590,9999	0.01Hz	9999	
28	Multi-speed input compensation selection	0,1	1	0	
29	Acceleration/deceleration pattern selection	0 to 6	1	0	
30	Regenerative function selection	0 to 2,10,11,20,21,100 to 102,110,111,120,121	1	0	
31	Frequency jump 1A	0 to 590,9999	0.01Hz	9999	
32	Frequency jump 1B	0 to 590,9999	0.01Hz	9999	

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

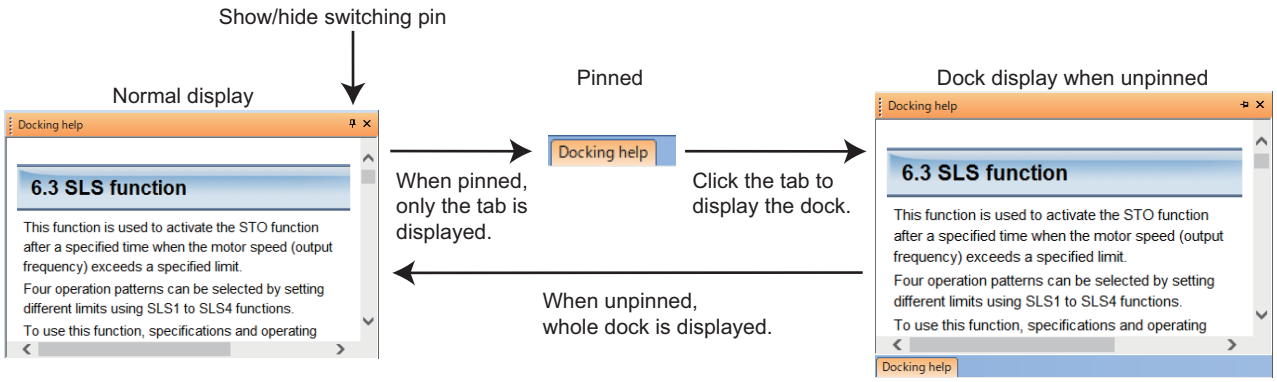
The Instruction Manual of the inverter can be displayed in the sub-window area only when the safety parameter setting function or the safety parameter verification function is selected.



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.



2.2.5 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[*1]	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)[*1]	PU			—	Activates the PU operation mode.
	EXT			—	Activates the External operation mode.
	NET			—	Activates the NET operation mode.
	Batch read				Reads all the set values of the parameters of the selected inverter.
	Read				Reads the set value of the selected parameter of the selected inverter.
	Batch write				Writes all the parameter setting values entered in the setting field to the selected inverter.
	Write				Writes the set value of the selected parameter to the selected inverter.
	All clear				Returns all parameters which can be cleared including calibration parameters and terminal function selection parameters to their initial values.
	Parameter clear				Returns parameters excluding calibration parameters and terminal function selection parameters to their initial values.
	Verify				Verifies the parameter settings in FR Configurator2 against settings already written to the inverter.
	Filter selection			—	Used to select parameters shown in the parameter list.
	Edit individual list			—	Displays the window for selecting items for the individual list used as a parameter filter.
	Display of related parameters			—	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)[*1]	Batch read				Reads all the safety parameter setting values of the selected inverter.
	Batch write				Writes all the safety parameter setting values in the setting value column to the selected inverter.
	Safety parameter clear				All safety parameters and passwords return to initial values.
	Verify				Verifies the safety parameter settings in FR Configurator2 against settings already written to the inverter.
	Password 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.

Menu	Pull-down menu		Toolbar icon	Function/operation
Graph (Z)[*1]	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)[*1]	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)[*1]	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)[*1]	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)[*1]	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)[*1]	Update			Refreshes the life check result.
	Main circuit capacitor life measuring			Starts life measuring of the main circuit capacitor.
Online status (Z)[*1]	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)[*1]	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.
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.

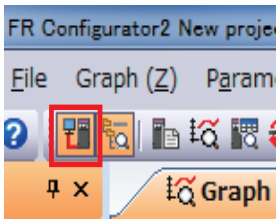
*1 The function menu related to the front sub window is displayed. When no sub window is displayed in the sub-window area, these items are not displayed on the menu bar.

NOTE

- The layout of excel files can be changed by editing the template file "Charts.xltx".
  (An editable file can be found in C:\FREQROL\FRC2\dat\com\ChartTemplate.)
- Do not delete objects in the template file "Charts.xltx" 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.

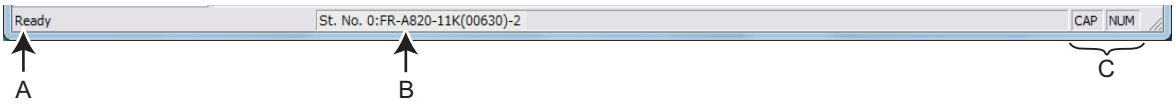
Model	Intermediate device	Pr.	Name	Setting
FR-A800-E FR-F800-E	Not connected	**1427**	**Ethernet function selection 1**	Set "5001" or "5002" in any of the parameters.
		1428	**Ethernet function selection 2**	
		1429	**Ethernet function selection 3**	
		1442 to 1448	**IP filter address (Ethernet)**	Set 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**	
		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**	
		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**	
		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**	
		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 "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.

2.2.6 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

2.3 File operation and print

2.3.1 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	○	○	×	70
*.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	○	○	○	131
*.csv	Holds the waveform data sampled by the graph function in the text file format.		×	○	×	131
*.st1	Holds the operating status of the inverter in a USB memory tracing it.		○	×	○	131
*.jpg	Holds the waveform data of the displayed graph window as an image file.		×	○	×	131
*.emf			×	○	×	131
*.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	×	○	×	149
*.csv	Holds the acquired diagnosis data (inverter information, terminal information, etc.) in the text file format.	Diagnosis result output	×	○	×	151
*.pr4	Holds the parameter setting values set in FR Configurator2.	Parameter list	○	○	×	97
*.pr3	Holds the parameter setting values set in FR Configurator SW3.		○	×	×	97
*.prm	Holds the parameter setting values set in FR Configurator SW1.		○	×	×	97
*.xls	Holds the parameter list data in Microsoft Excel format.		×	○	×	97
*.ind	Holds the parameters set in the parameter individual list.		○	○	×	101
*.spr4	Holds the safety parameter setting values set in FR Configurator2.	Safety parameter setting	○	○	×	111
*.xls	Holds the safety parameter list data in Microsoft Excel format.		×	○	×	111
*.cp1	Holds the parameter setting that has been copied from the inverter to a USB memory device.	USB memory parameter copy file edit	○	○	×	175

(○: Available, ×: Unavailable)

2.3.2 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.

2.3.3 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

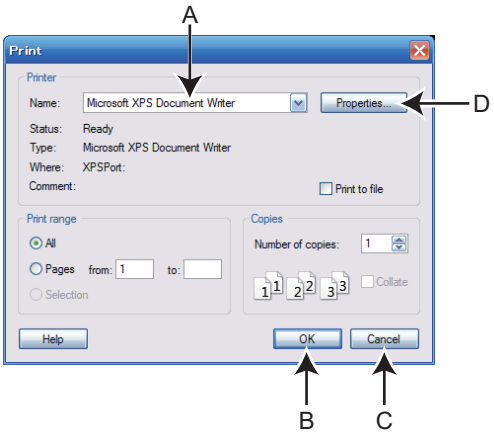
- If the project file (*.frc2) needs to be shared with another user, place it in the folder that another user can access.

2.3.4 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.

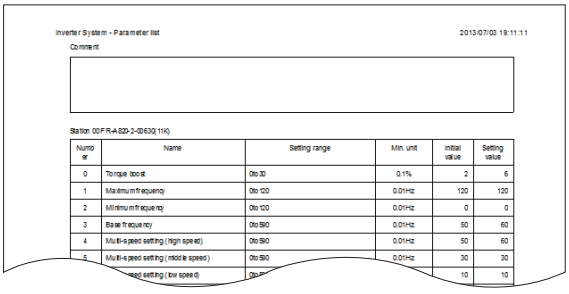
2.3.5 Print

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

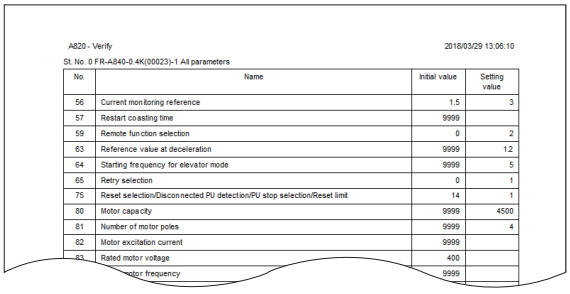


Symbol	Name	Function/description
A	Name	Select a printer.
B	OK	Click to start printing.
C	Cancel	Cancels the printing, and closes the window.
D	Properties	Displays a printer property window of the selected printer.

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



Printing example of a parameter list

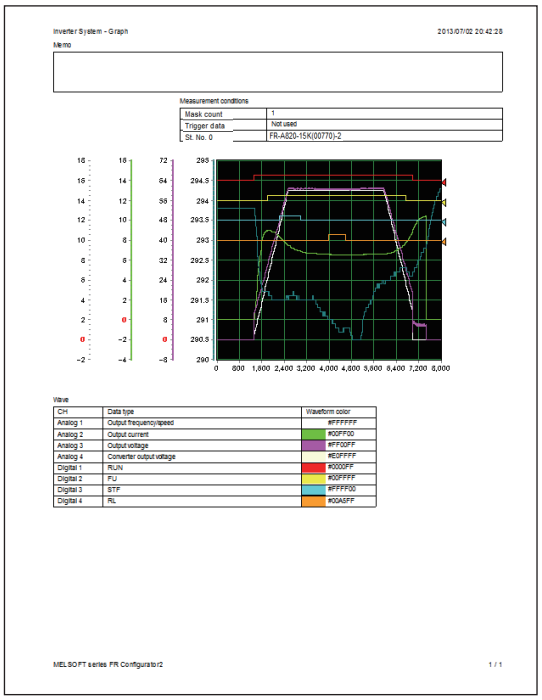


Printing example of a verification list

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.



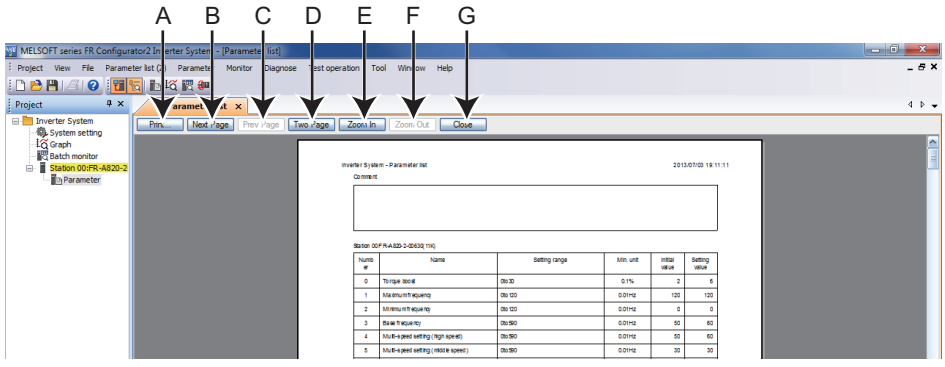
Example of the Graph print

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.

2.3.6 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.

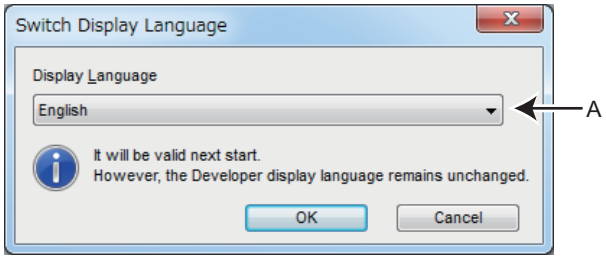


Symbol	Name	Function/description
A	Print...	Click to start printing.
B	Next Page	Displays the next page when the print target has two pages or more.
C	Prev Page	Displays the previous page when the print target has two pages or more.
D	Two Page	Displays two pages on one window when the print target has two pages or more.
	One Page	Displays one page on one window when the print target has two pages or more.
E	Zoom In	Enlarges the display of the print preview by three steps.
F	Zoom Out	Reduces the display of the print preview by three steps.
G	Close	Closes the print preview window.

2.4 Display setting

2.4.1 Switch the display language

You can switch the display language of FR Configurator2. Select [Switch Display Language] in [View] menu.



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

NOTE

- The change will take effect after FR Configurator2 is restarted.
- The change is not applied to the Developer function.

CHAPTER 3 FUNCTION

3 FUNCTION

This chapter explains the functions of this product.
Always read the instructions before using the equipment.

3.1 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.

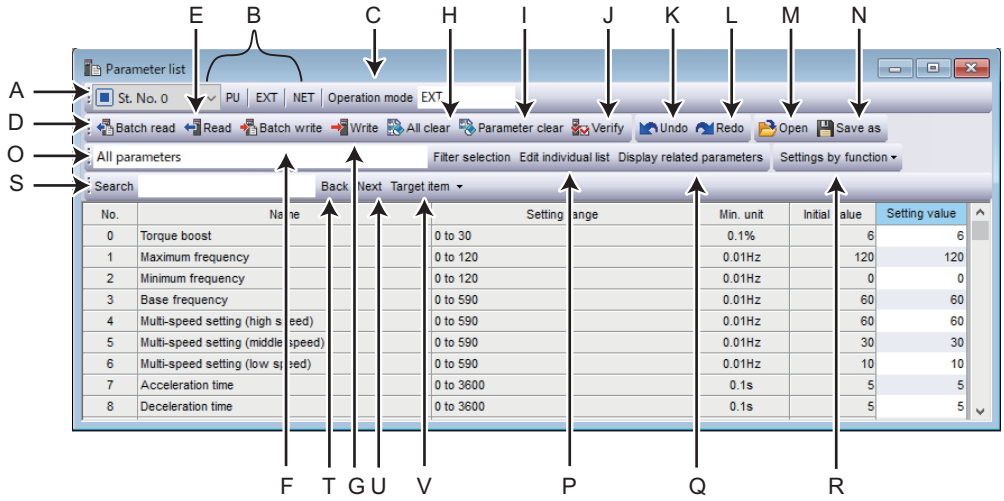
Function	Online	Offline
All parameter clear	○	×
Parameter clear	○	×
Batch read	○	×
Read	○	×
Batch write	○	×
Write	○	×
Verify	○	○
Parameter setting value input	○	○
Undo	○	○
Redo	○	○
Search	○	○

(○: 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.

3.1.1 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

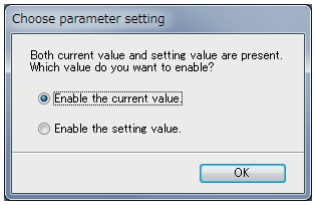
Item	Function/description
Number	Shows the parameter number. Calibration parameters (**Pr.902**, **903**, **904**, **905**, etc.) will be shown with ( ).
Name	Shows the parameter name.
Setting range	Shows the setting range of the parameter setting value.
Min. unit	Shows the minimum setting unit of the 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.



3.1.2 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.

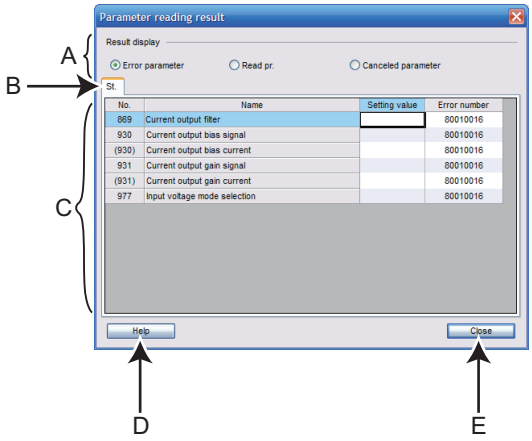
NOTE

- 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.

3.1.3 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.	

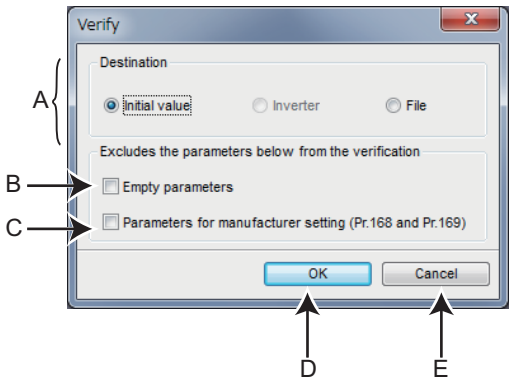
NOTE

- 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.

3.1.4 Parameter verification

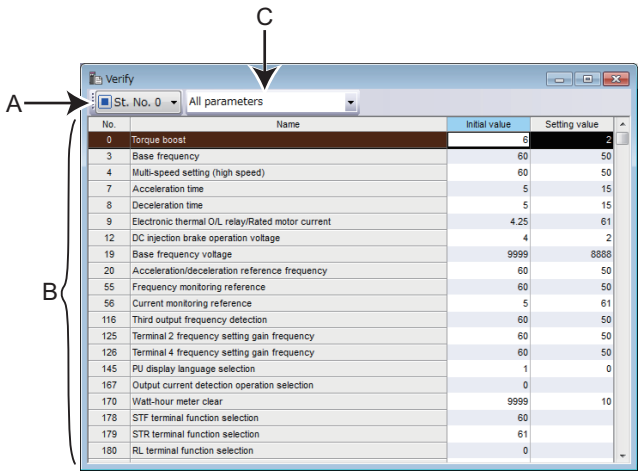
This function accesses the inverter parameters, and verifies the parameter setting values set by FR Configurator2 with the values selected in the verify destination window.

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		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.

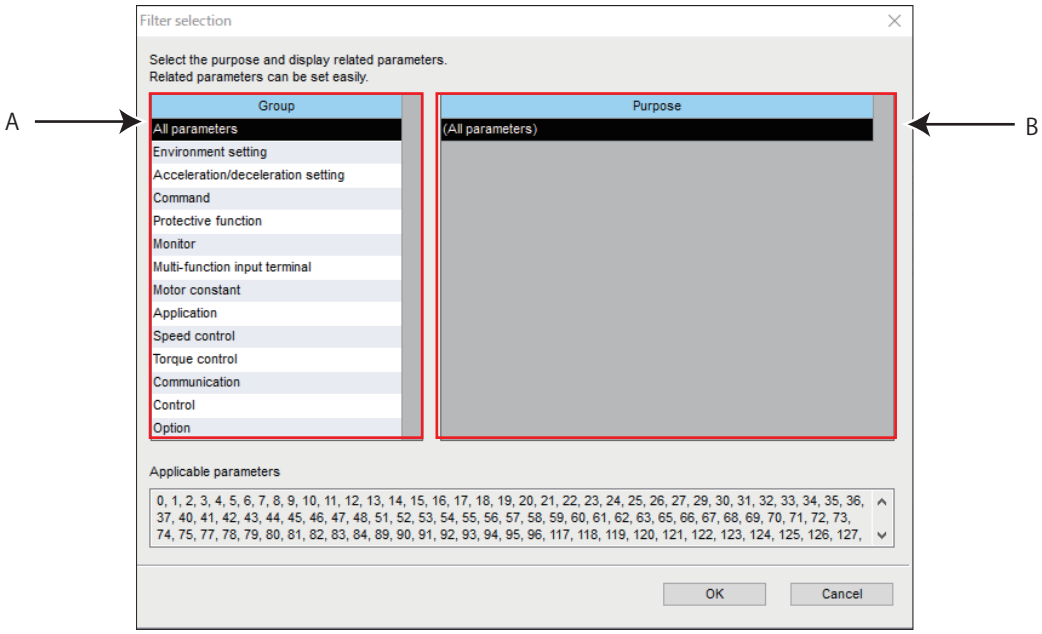


Symbol	Name	Function/description
A	St. No. (Station number)	Shows the verified station number.
B	Verify list	Shows parameters whose verified values are mismatched.
C	Filter	Select a filter for filtering the parameters in the verify list.

3.1.5 Filter selection

Set parameters to be shown in the parameter list.

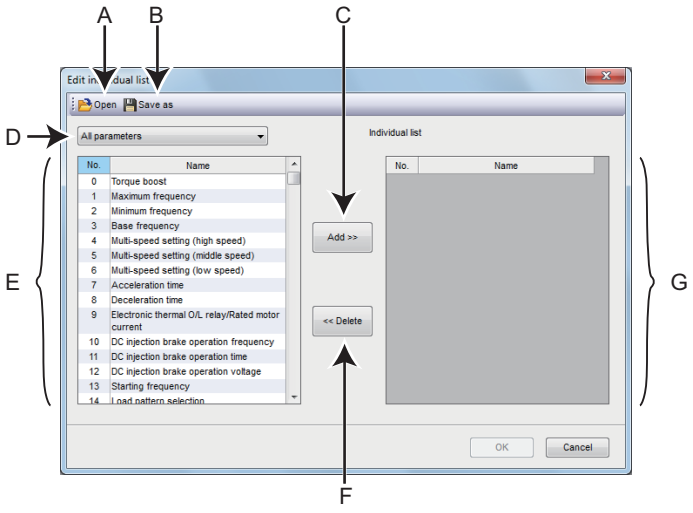
The "Filter selection" window can be displayed by selecting [Filter selection...] from the [Parameter list (Z)] menu bar, or by selecting [Filter selection] on the toolbar.



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.

3.1.6 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.

3.1.7 Settings by function

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

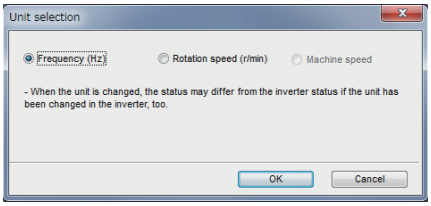
Select [Settings by function] - [Function name] from the [Parameter list (Z)] menu bar, [Settings by function] - [Function name] on the toolbar, or [Parameter] - [Function name] from the project tree to display the window by function.

NOTE

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

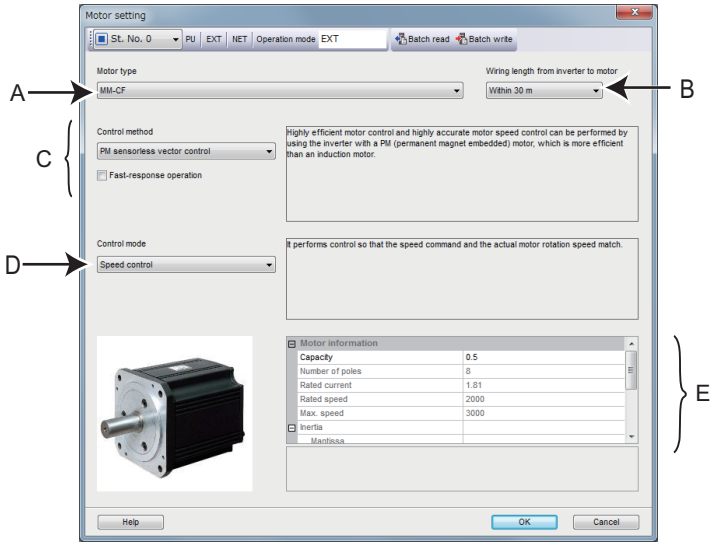
◆ Toolbar for settings by function

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

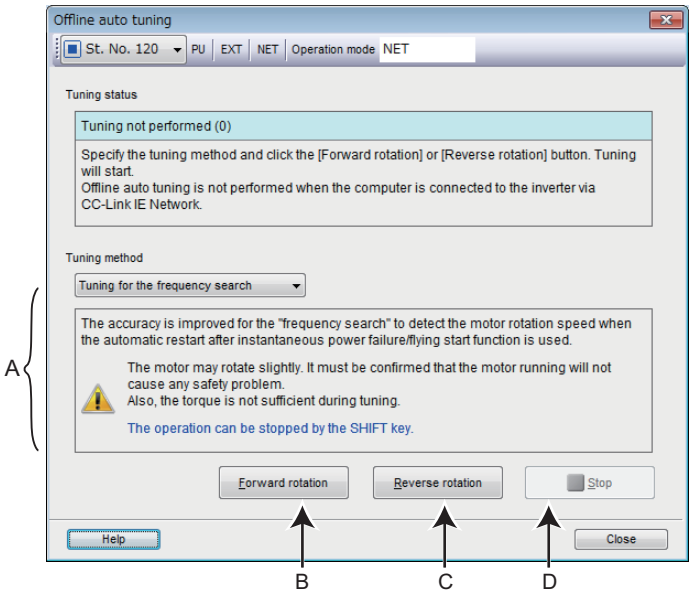
Set motor-related parameters.



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.

◆ Offline auto tuning

Perform offline auto tuning.



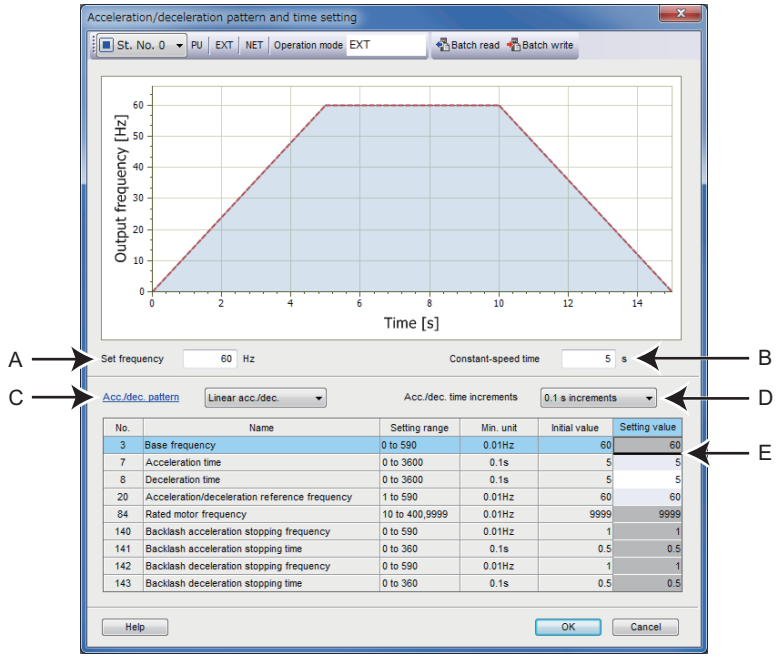
Symbol	Name	Function/description
A	Tuning method	Select the tuning method.
B	Forward rotation	The motor rotates in the forward direction.
C	Reverse rotation	The motor rotates in the reverse direction.
D	Stop	Stops the operation.

NOTE

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

◆Acceleration/deceleration pattern and time setting

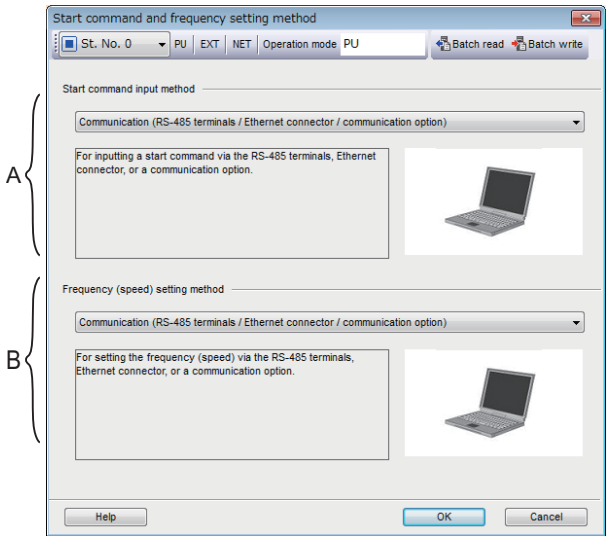
Set parameters related to acceleration/deceleration.



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.

◆Start command and frequency setting method

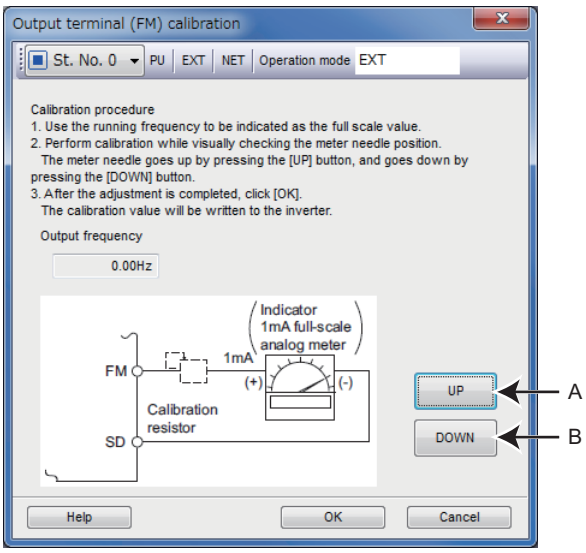
Set parameters related to the start command and frequency (speed) setting method.

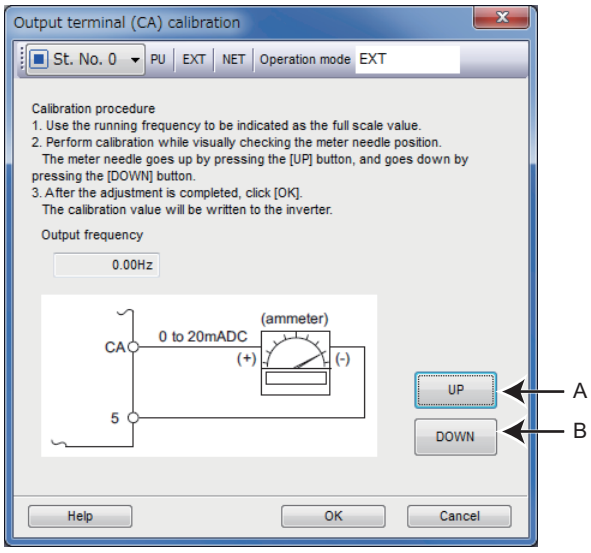


Symbol	Name	Function/description
A	Start command input method	Select "External signal input (terminal STF/STR)", "PU (FWD/REV key)", or "Communication (RS-485 terminals / Ethernet connector / communication option)". (Refer to **Pr.79**, **Pr.338**, **Pr.339**, **Pr.340**.)
B	Frequency (speed) setting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

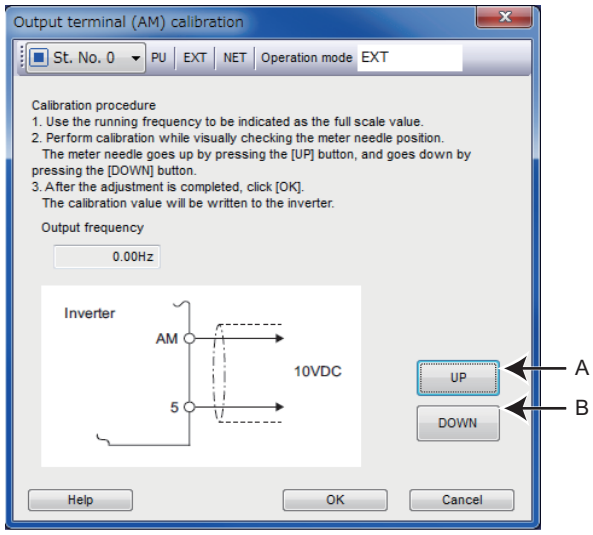




Symbol	Name	Function/description
A	UP button	The meter needle goes up. (Refer to **Pr.900**.)
B	DOWN button	The meter needle goes down. (Refer to **Pr.900**.)

◆ Output terminal (AM) calibration

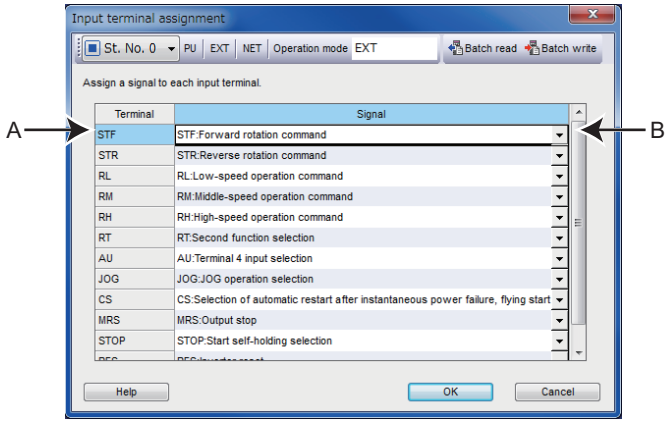
Set parameters related to the output terminal calibration.



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

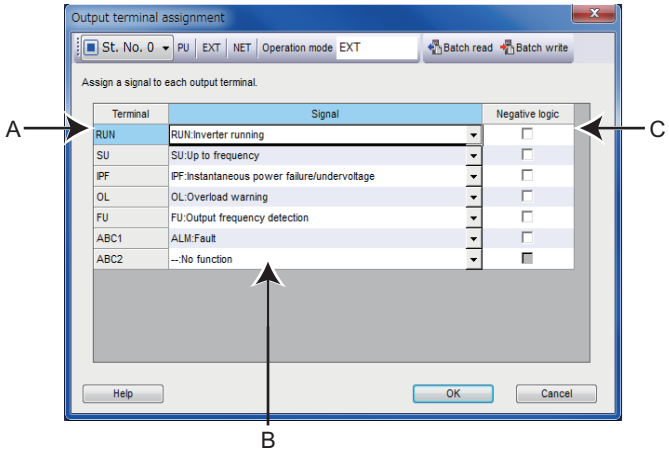
Set parameters related to the input terminal assignment.



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

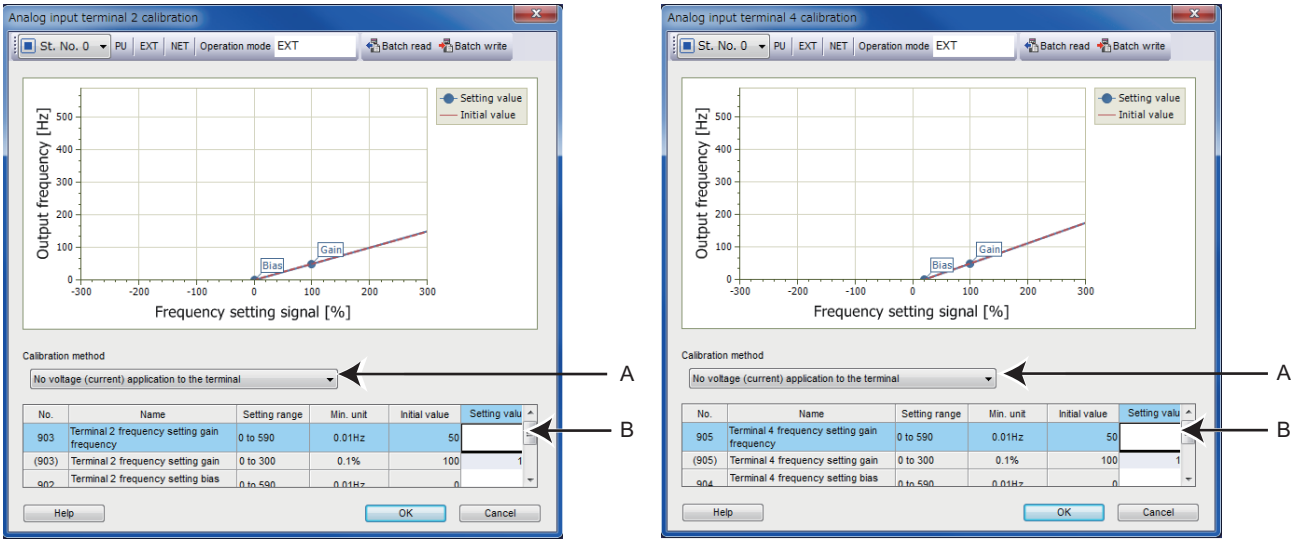
Set parameters related to the output terminal assignment.



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

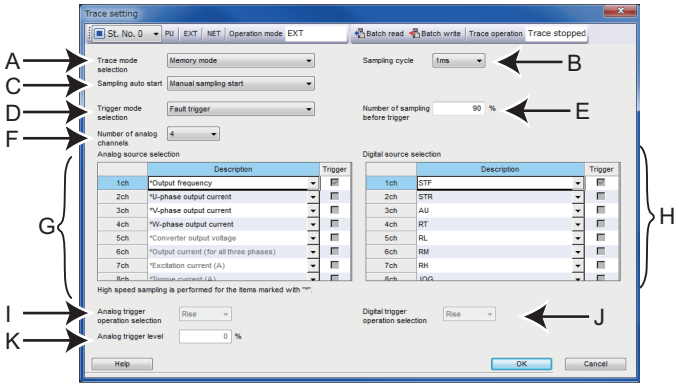
Set parameters related to the analog input terminal calibration.



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.



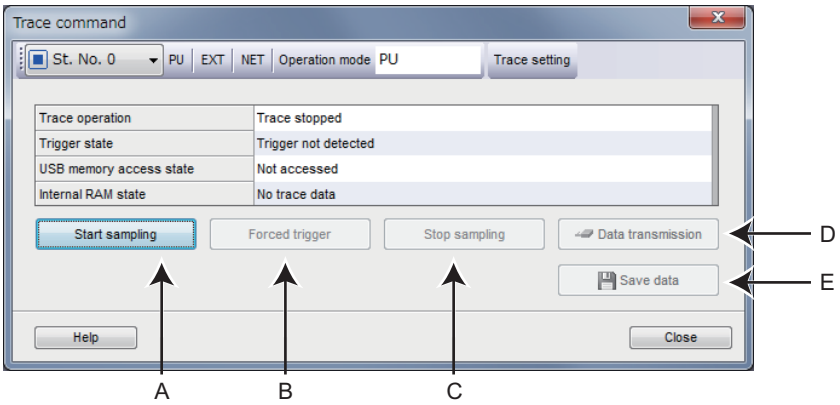
Symbol	Name	Function/description
A	Trace mode selection	Select the trace mode.
B	Sampling cycle	Select the sampling cycle.
C	Sampling auto start	Select how to start sampling.
D	Trigger mode selection	Select the trigger type.
E	Number of sampling before trigger	Set the percentage of the number of data 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.

NOTE

- The trace data stays at "0" for unsupported virtual network terminals.

◆Trace command

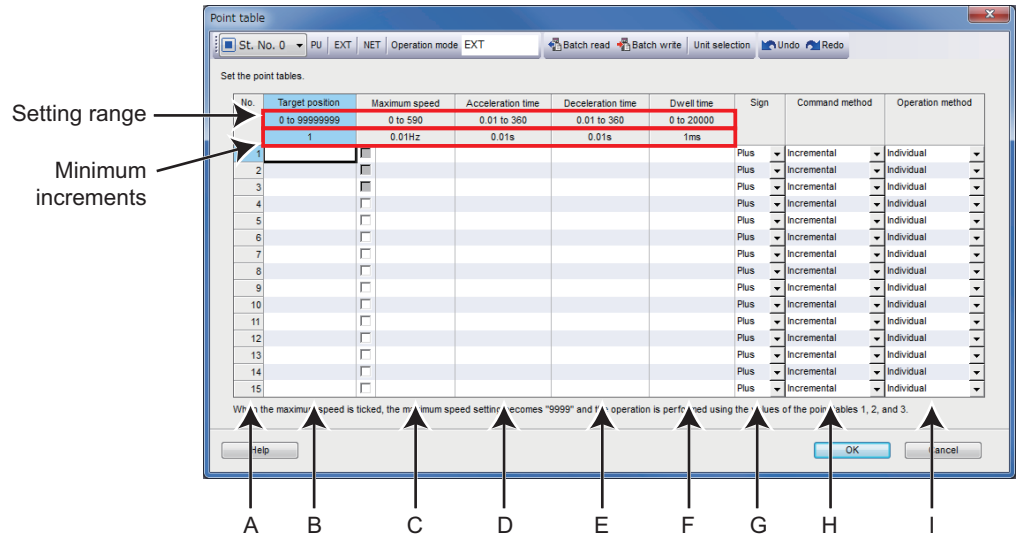
Set parameters related to the trace command.



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)

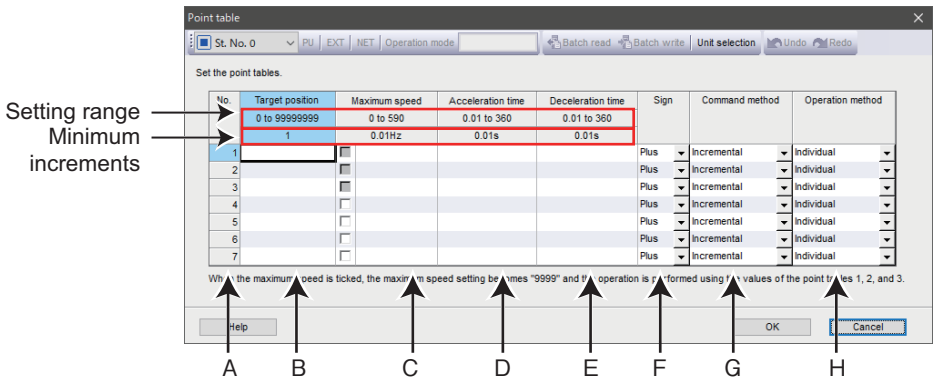
Set parameters related to point tables.



Symbol	Name	Function/description
A	No.	Point table number
B	Target position	Set the position feed length. (Refer to **Pr.465** to **Pr.494**.)
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 (**Pr.24** to **Pr.27**, and **Pr.232** to **Pr.239**)).
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 **Pr.465** to **Pr.478**.)
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 (**Pr.24** to **Pr.27**, and **Pr.232** to **Pr.239**)).
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.

3.2 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.

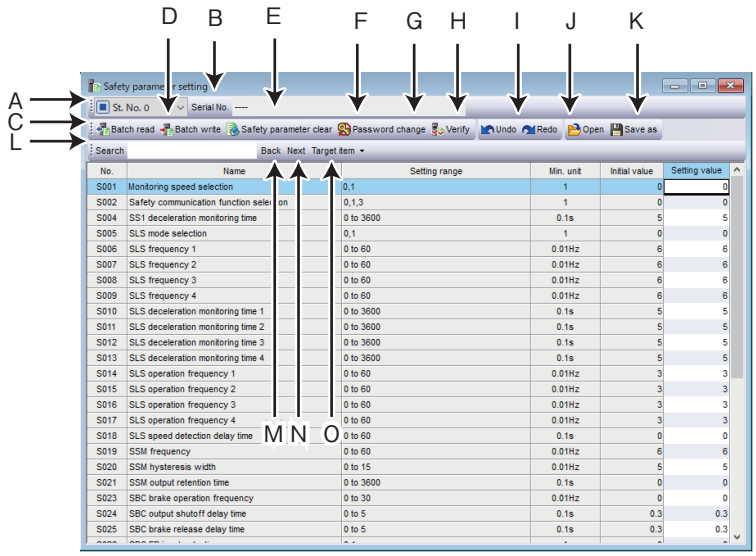
Function	Online	Offline
Safety parameter clear	○	×
Batch read	○	×
Batch write	○	×
Verify	○	○
Safety parameter setting value input	○	○
Undo	○	○
Redo	○	○
Search	○	○

(○: 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.

3.2.1 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.

3.2.2 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.

3.2.3 Safety parameter batch read and batch write

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

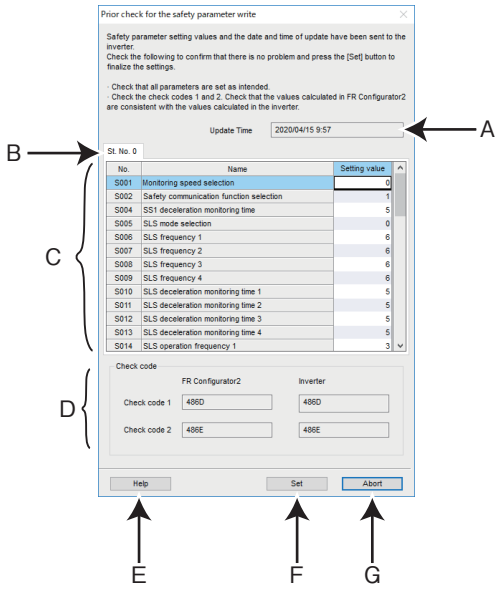
◆ Batch read

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.

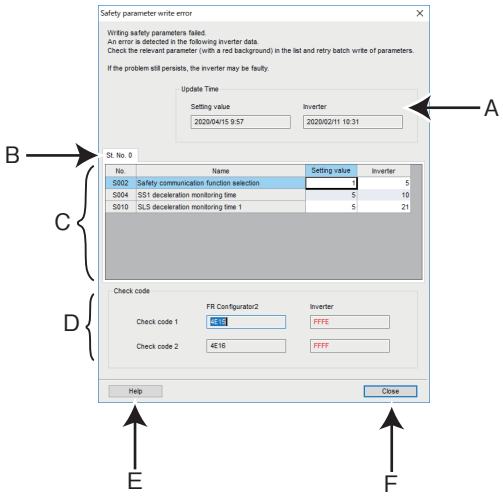
Check that the values in "Setting value" column and "Inverter" column are the same to confirm that batch write has been performed successfully.



Symbol	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.)

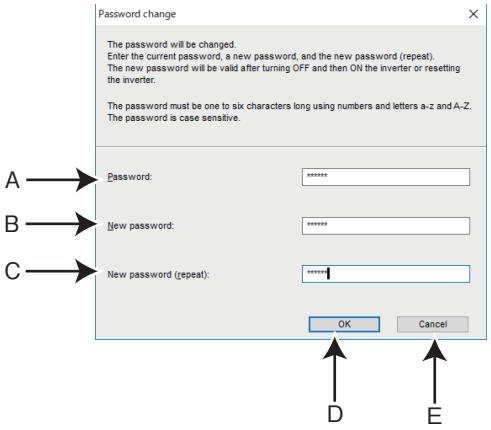
The following dialog is shown when batch write fails due to an error of the setting value or the date and time of update.



Symbol	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.	

3.2.4 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".

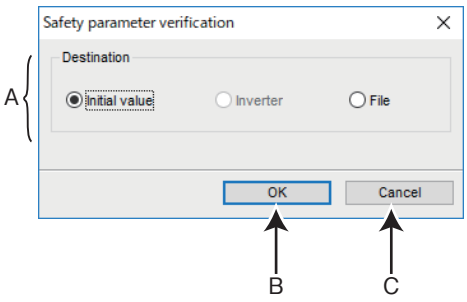


Symbol	Name	Function/description
A	Password	Enter the current password. The password is masked with asterisks (*).
B	New password	Enter the new password. The password is masked with asterisks (*).
C	New password (repeat)	Enter the new password again. The password is masked with asterisks (*).
D	OK	Applies 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.

3.2.5 Safety parameter verification

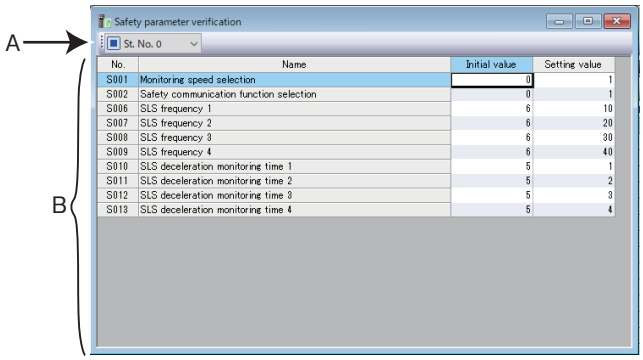
This function accesses the inverter safety parameters, and verifies the safety parameter setting values set by FR Configurator2 with the values selected in the verify destination window.

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.

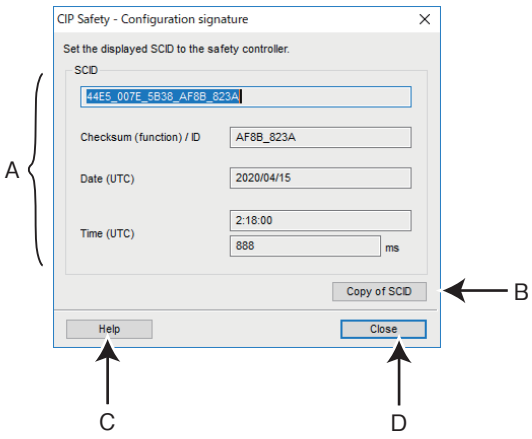
3.2.6 Configuration signature

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	Copy the SCID	Copies the SCID to use it in the Mitsubishi Electric safety controller setting tool (MELSEC Safety Designer).
C	Help	Displays the help window.
D	Close	Closes the configuration signature window.

3.3 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.

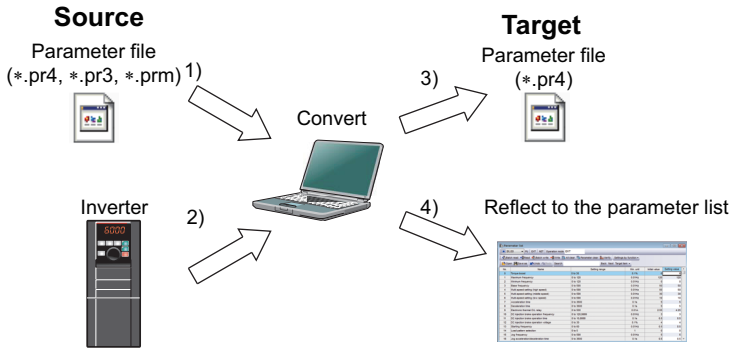
- Models compatible with the convert function

Source inverter	Target inverter
FR-A500(L)	FR-A800(-E)
FR-A700	FR-A800(-E)
FR-B (700)	FR-B
FR-B3-(N)(H) (700)	FR-B3-(N)(H)
FR-F700(P)	FR-F800(-E)

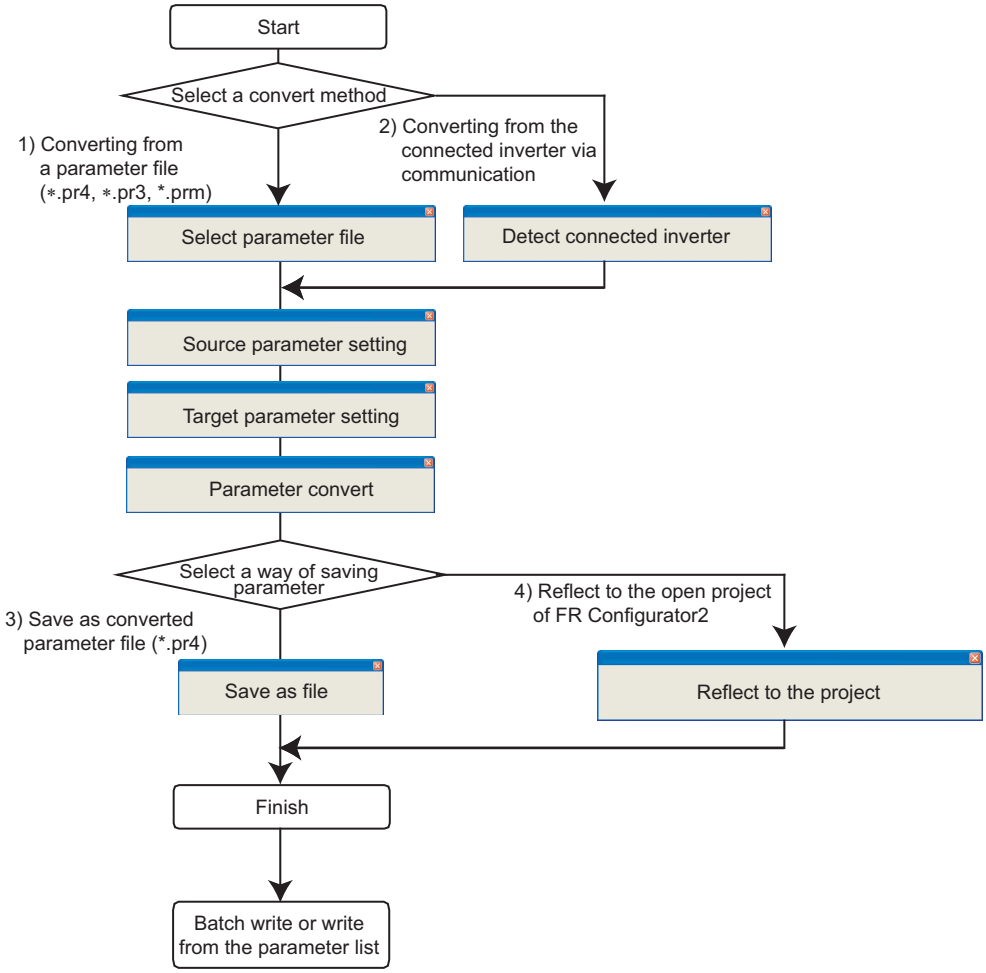
NOTE

- 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**).

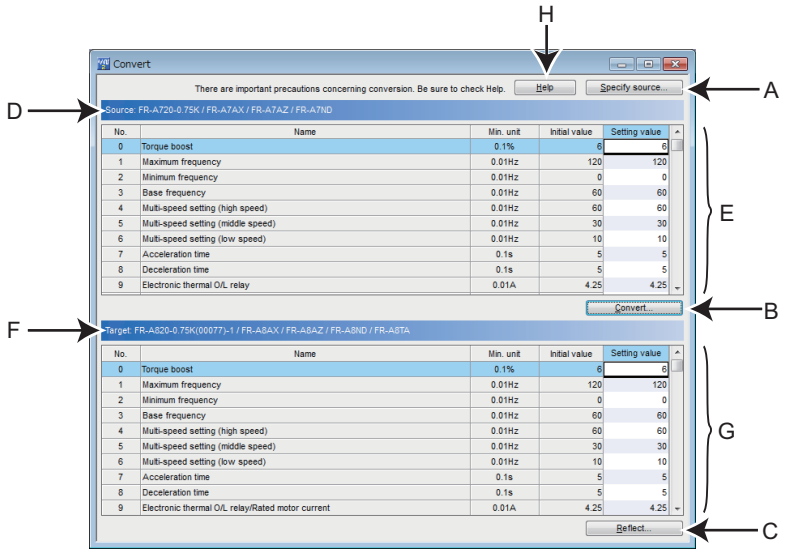
3.3.1 Schematic illustration of the convert function



- Setting flow chart



3.3.2 Convert window

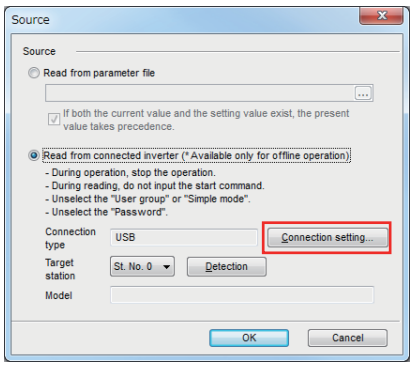


Symbol	Name	Function/description
A	Specify source	Displays the "Source" window. Select the source parameter file (*.pr4, *.pr3, *.prm) or the source inverter model.
B	Convert...	Displays the "Convert" sub window.
C	Reflect...	Displays the "Reflect" window. The converted setting of parameters will be 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	Help	Displays the help window.

3.3.3 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 73.



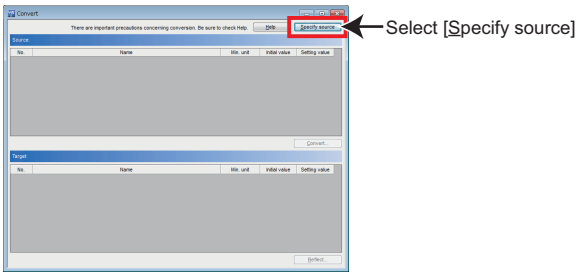
3.3.4 Convert procedures

◆To convert from the directly connected inverter

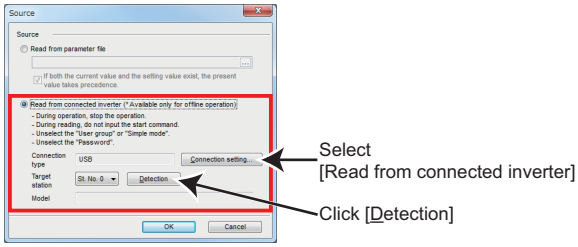
NOTE

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

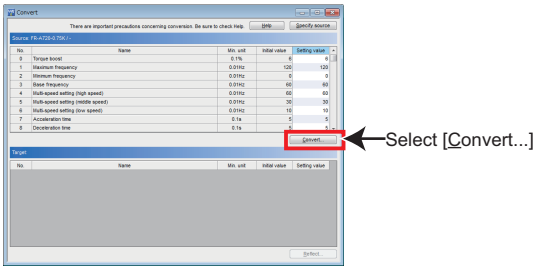
1. Select [Specify source] in the "Convert" window to display the "Source" window.



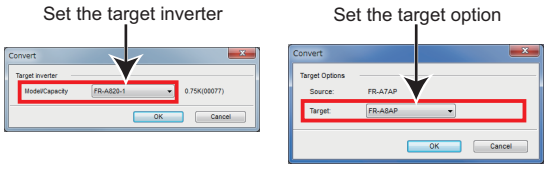
2. Select [Read from connected inverter]. Set the [Connection type], [Target station], and [Connection setting], and click [Detection]. After detection, confirm the inverter model in the [Model] field, and click [OK]. The parameters are converted and the "Source" window closes.



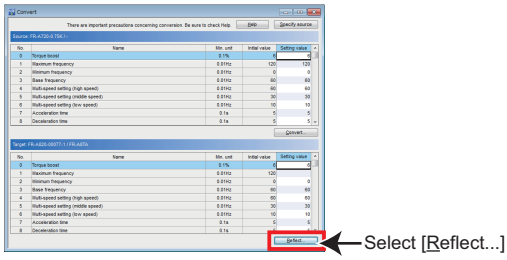
3. The setting can be changed for some parameters of the source inverter. To change the parameter setting value, enter the desired value in the setting value field. After the parameters of the source inverter are displayed in the list, the [Convert...] button in the "Convert" window will be active. Select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



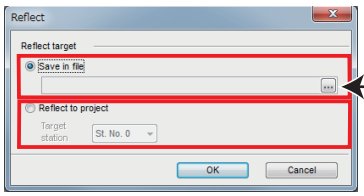
6. Select [Reflect...] in the "Convert" window to display the "Reflect" window.

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

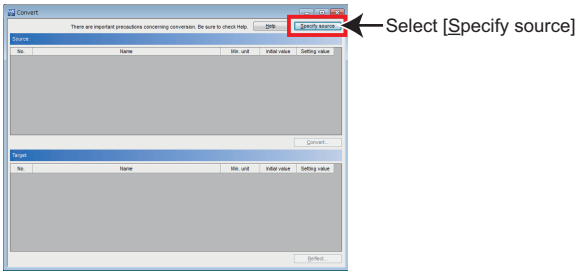
Select [Reflect to project]. Specify the station to reflect the setting and click [OK]. The converted parameter setting is reflected to the project.



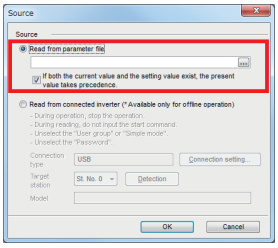
◆To convert from a parameter file (*.pr4, *.pr3, *.prm)

1. Check the online condition between FR Configurator2 and the inverter. (Click on the menu bar to switch the condition to online.)

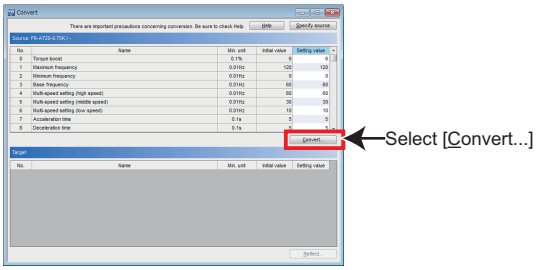
2. Select [Specify source] in the "Convert" window to display the "Source" window.



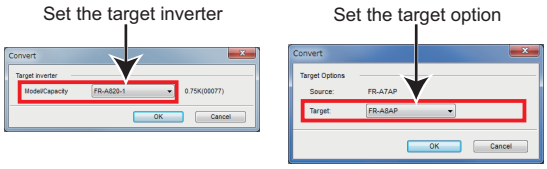
3. Specify the source parameter file (*.pr4, *.pr3, *.prm). Click [OK] to reflect the parameter settings of the source file in the source parameter list in the convert window.



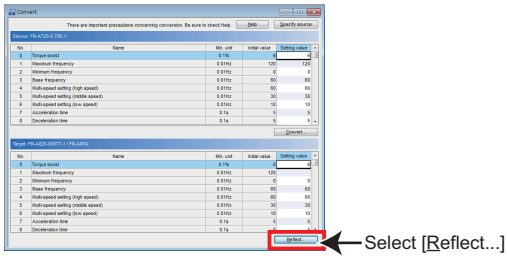
4. The setting can be changed for some parameters of the source inverter. To change the parameter setting value, enter the desired value in the setting value field. After the parameters of the source inverter are displayed in the list, the [Convert...] button in the "Convert" window will be active. Select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



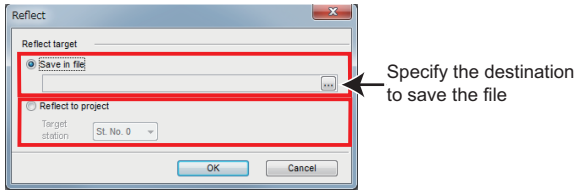
5. Specify the model of the [Target inverter] from the lists in the "Convert" sub window. Click [OK] to convert the parameters and close the "Convert" sub window.
(When several options are selectable as a target, the "Target option" window appears. Select the target option.)



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



7. 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.



3.3.5 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.172 to Pr.174 (User group selection)
Pr.170 Watt-hour meter clear
Pr.171 Operation hour meter clear
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)[*1]
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
  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 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[*1]
  Pr.310 Analog meter voltage output selection[*1]
  Pr.313 to Pr.322 (Output selection)[*1]
  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 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.172 to Pr.174 (User group selection)
  Pr.170 Watt-hour meter clear
  Pr.171 Operation hour meter clear
  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 (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
  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[*1]
  Pr.310 Analog meter voltage output selection[*1]
  Pr.313 to Pr.322 (Output selection)[*1]
  Pr.774 to Pr.776 Operation panel monitor selection

*1 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 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-B (700) inverters to FR-B (800) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.
  Pr.69 Retry count display erase
  Pr.172 to Pr.174 (User group selection)
  Pr.170 Watt-hour meter clear
  Pr.171 Operation hour meter clear
  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 (700) inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-B (800) 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 (700) inverters to FR-B3 (800) inverters

- Set the following parameters as required in the "Parameter list" window because they are not converted.
  Pr.69 Retry count display erase
  Pr.172 to Pr.174 (User group selection)
  Pr.170 Watt-hour meter clear
  Pr.171 Operation hour meter clear
  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 (700) inverter, setting of **Pr.561** and **Pr.1016** and connecting the motor to the target FR-B3 (800) 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.172 to Pr.174 (User group selection)
  Pr.170 Watt-hour meter clear
  Pr.171 Operation hour meter clear
  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
  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[*1]
  Pr.310 Analog meter voltage output selection[*1]
  Pr.313 to Pr.322 (Output selection)[*1]
  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

3.4 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.

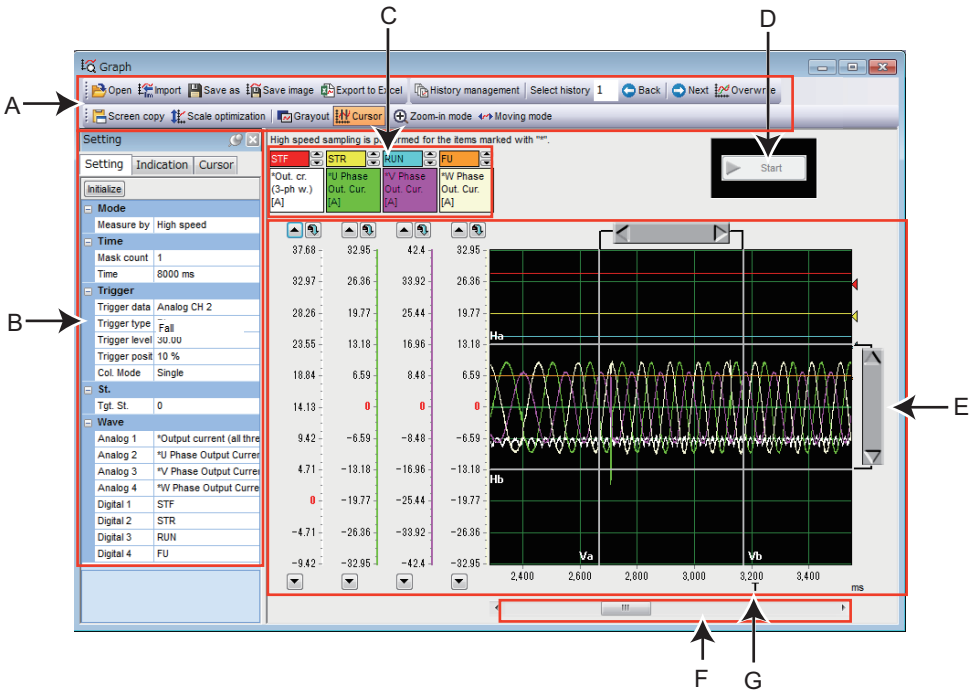
- Trace data display
  Trace data, stored in the USB memory device by the inverter, can be read or imported to be displayed in the graph window.
  For details of the trace function, refer to the Instruction Manual of the inverter.

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.

3.4.1 Graph window

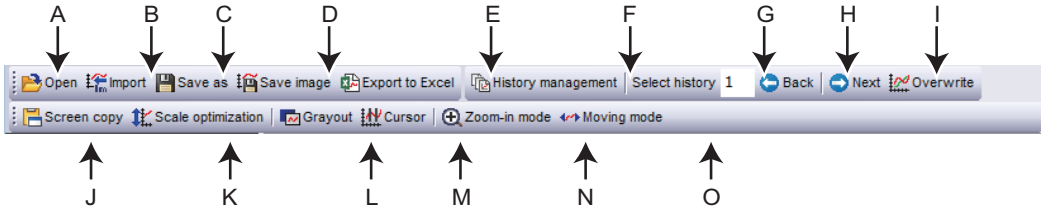


Symbol	Name	Function/description	
A	Tool bar	Allows operation of the file, history control, and graph display settings.	
B	Properties	Setting of the measurement conditions, display conditions, and cursor can be done in the properties.	
C	Sampling item column	Displays the contents of the analog CH and 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.

3.4.2 Graph window toolbar



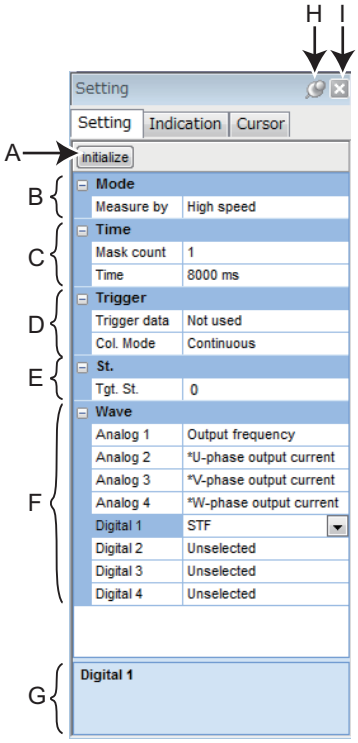
Symbol	Name	Function/description
A	Open	Opens a file (*.gp4, *.st1).
B	Import	Imports a file (*.gp4, *.st1). Use to overlay and compare with previously acquired waveform data.
C	Save as	Saves the file with a different name (*.gp4, *.csv).
D	Save image	Saves the graph screen as image data (*.jpg, *.emf).
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 virtual network terminals although the terminal names are displayed.
- The layout of excel files can be changed by editing the template file "Charts.xltx".
  (An editable file can be found in C:\FREQROL\FRC2\dat\com\ChartTemplate.)
- Do not delete objects in the template file "Charts.xltx" 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.

3.4.3 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*1*2	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*1	1
Sampling time [ms]	Sampling interval × 4000	Sampling interval × 50*2	1

*1 If a fault trigger is set, the fault 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 × 3 = 300 [ms]
Sampling time maximum value = 60000 × 4000 = 240000000 [ms] (approx. 66.67 [h])
Sampling time minimum value = 300 × 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)	×	×	○	×	×
Winding length (lower)	×	×	○	×	×
Output frequency	○	○	○	○	○
*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	○	○	○	○	○
Terminal 1	○	○	○	○	×
*Excitation current (%)	○	○	○	○	○
*Torque current (%)	○	○	○	○	○
Position command	○	○	×	×	○
Current position	○	○	×	×	○
Droop pulse	○	○	×	×	○
*Ideal speed command	×	×	×	×	○
*Output frequency (signed)	○	○	○	○	○
*Motor speed (signed)	○	○	○	○	○
*Speed command (signed)	○	○	○	○	○
*Torque command	○	○	○	×	○
*Motor torque	○	○	○	×	○
*Excitation current command	○	○	○	○	○
*Torque current command	○	○	○	○	○

■700 series

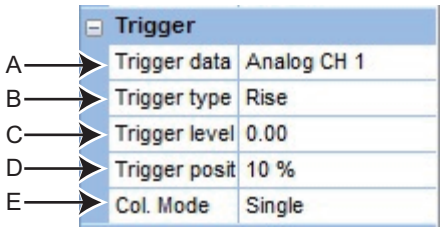
Sampling item	Model			
	E700 and E700-NE		E700EX	D700-G
	USB	Ethernet		
*Output frequency / *rotation speed	○	×	○	×
*U-phase output current	○	×	○	×
*V-phase output current	○	×	○	×
*W-phase output current	○	×	○	×
*Converter output voltage	○	×	○	×
*Output current (for all three phases)	○	×	○	×
*Excitation 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 135.)
- 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.

3.4.4 Trigger settings

Setting a trigger allows sampling to start when an alarm occurs or sampling item conditions are met.



Symbol	Name	Function/description
A	Trigger data	Selects the signal that triggers the start of sampling. The trigger signals are as follows. • Not used • Analog CH, digital CH (sampling starts if the sampling items meet the conditions) • Fault (Sampling starts if a fault occurs.)
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.) • Rise Analog CH: When the value specified by the trigger level is exceeded Digital CH: When the signal changes from OFF to ON • 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
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. Single: Sampling is performed only once. Continuous: Sampling is performed continuously.

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"

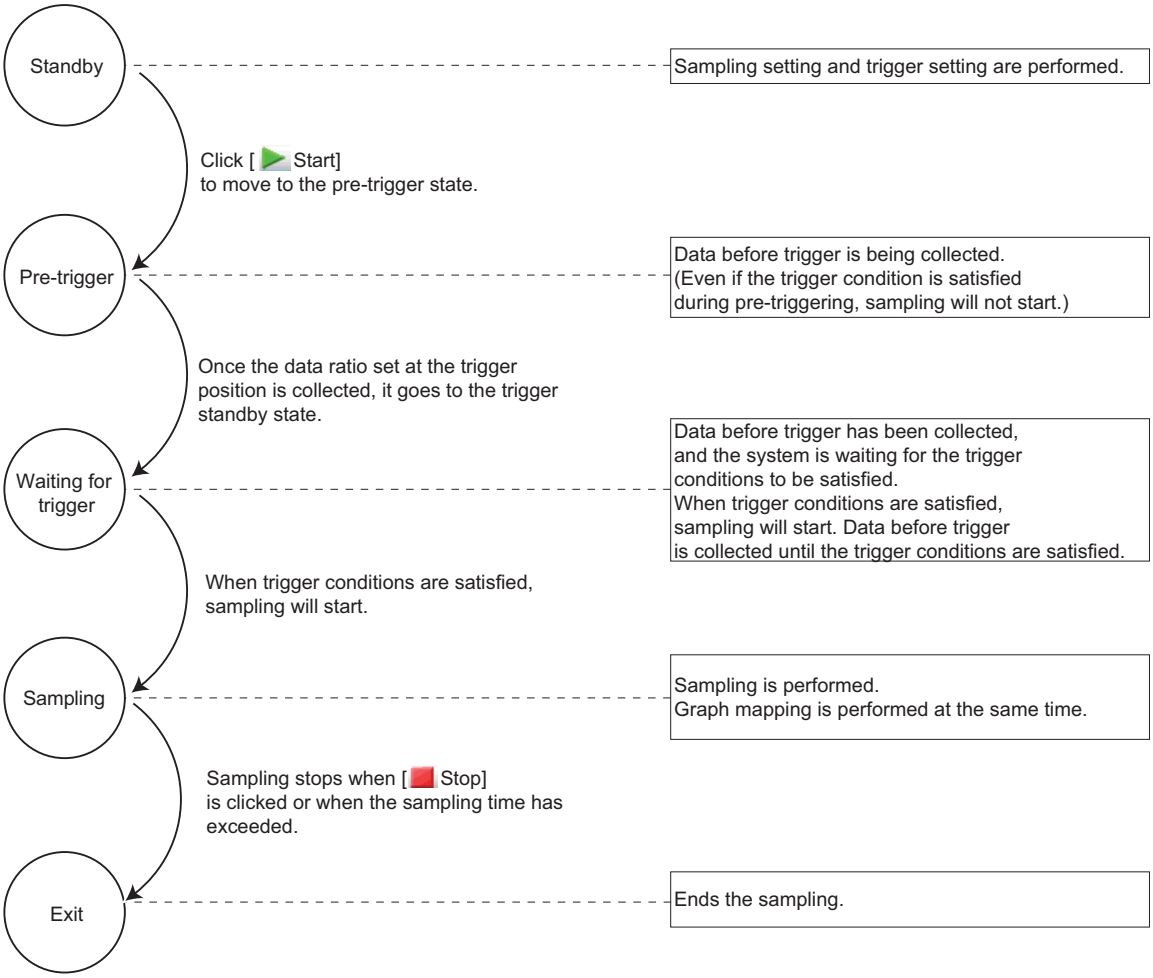
  If the level is 4 when sampling starts, the trigger will not start. When changed from less than 3 to 3 or more, the trigger conditions are met and sampling will start.

- 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

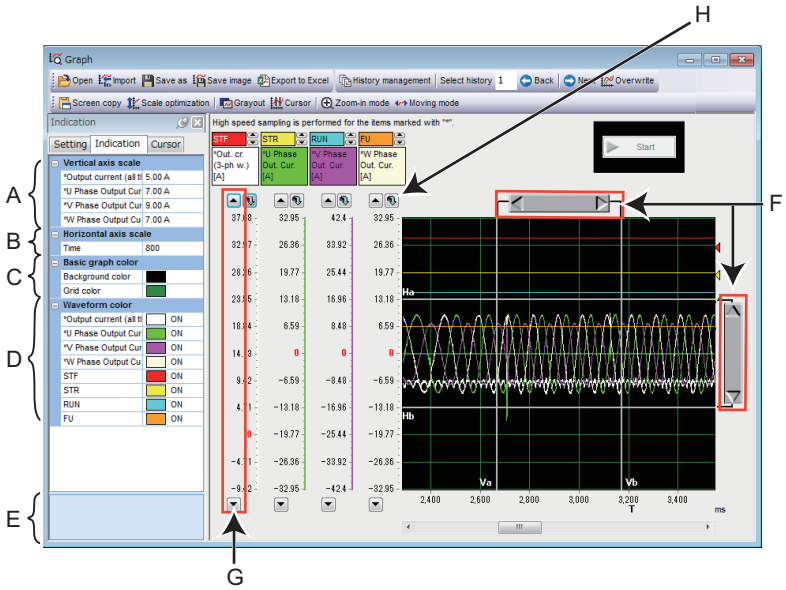


3.4.5 Changing scale and the graph display

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.

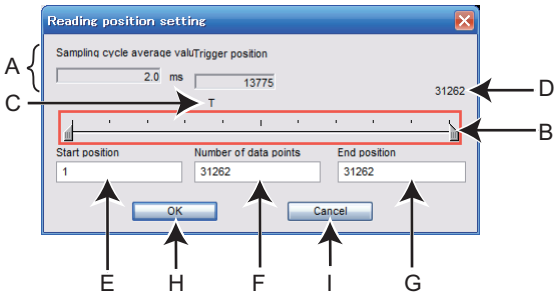
The scale value displayed on the vertical axis changes according to changes in the vertical axis scale.



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.



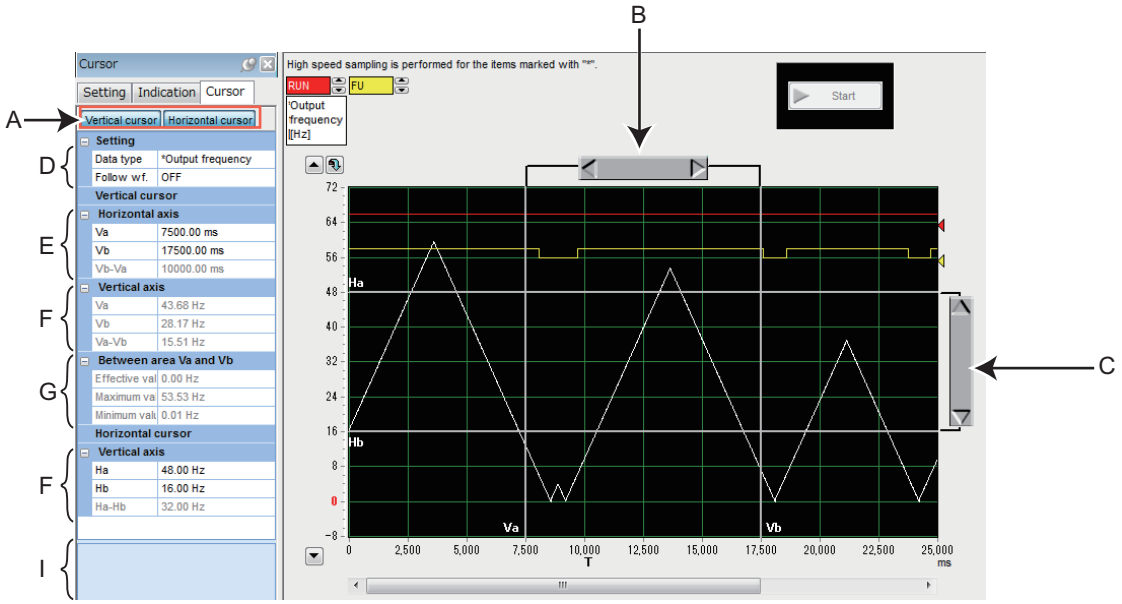
Symbol	Name	Function/description
A	Sampling cycle average value	Displays the sampling cycle.
B	Reading position setting slide bar	Set the reading start position, the number of reading data points, and the reading end position.
C	Trigger position	Displays the trigger position saved in the trace file.
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.

3.4.6 Cursor function

Displays the numerical value, actual value between any two points, maximum value, and minimum value at the cursor on the waveform.

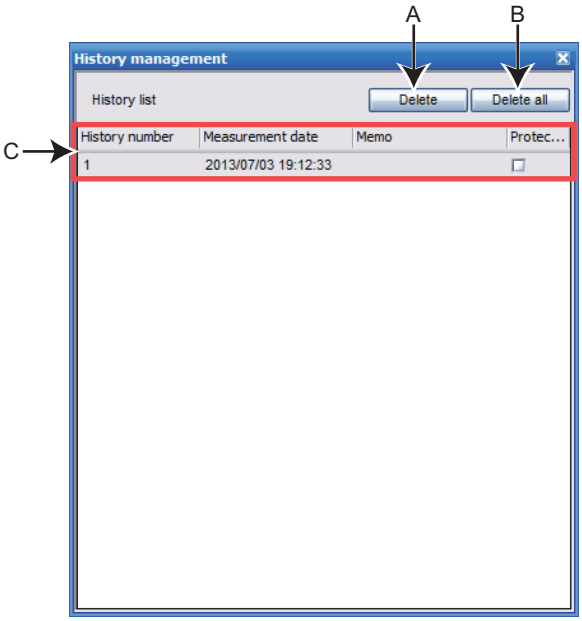


Symbol	Name	Function/description	
A	Vertical/horizontal cursor	Press the Vertical cursor or Horizontal cursor button to show/hide the cursor bar for cursors Va and Vb or the cursor bar for cursors Ha and Hb.	
B	Cursor bar (Horizontal axis)	Specifies the position between cursor Va and cursor Vb.	
C	Cursor 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.	

3.4.7 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.

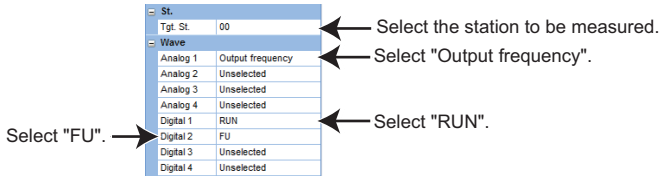
NOTE

- 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.

3.4.8 Graph measurement procedure example (monitoring output frequency, terminal RUN, and terminal FU)

◆ Measurement without a trigger

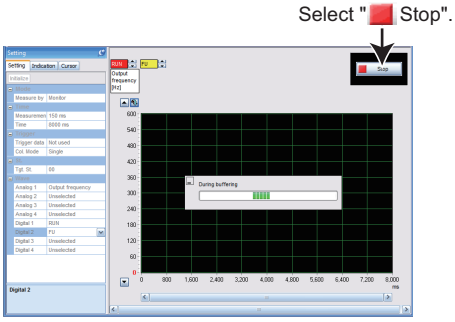
1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".



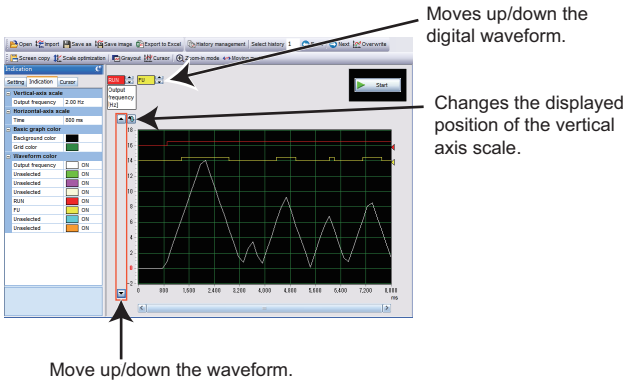
2. The sampling interval can be set for "measurement interval", and the sampling time can be set for "Time".

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.

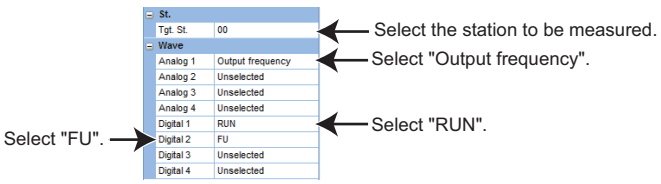


6. Data can be saved to a file by "Save as" (refer to page 91).

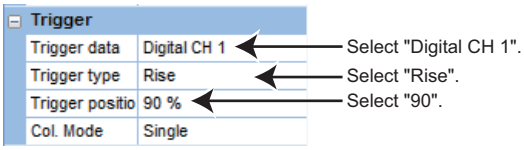
◆ Measurement with a trigger

■ Trigger data: Digital CH1

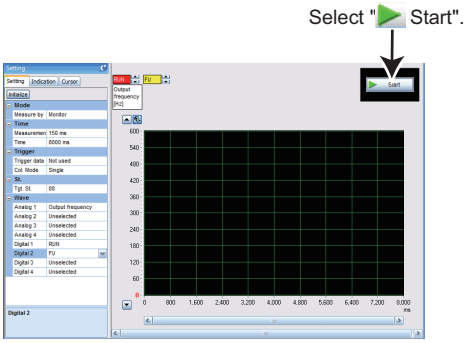
1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".



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.

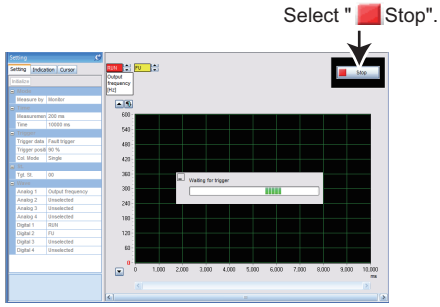


3. Measurement will start by clicking [Start].

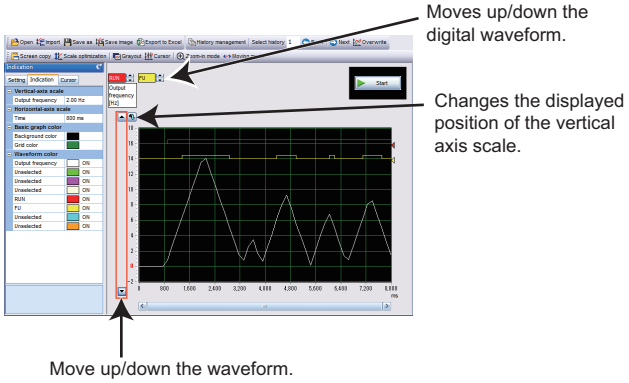


4. Measurement automatically starts if the trigger conditions are met (rise of the terminal RUN signal).

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 91).

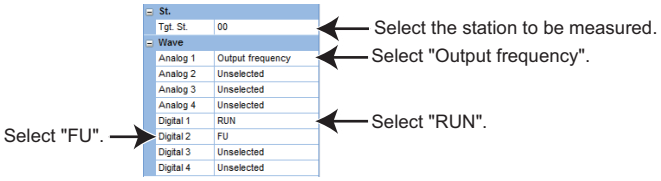
NOTE

- 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.

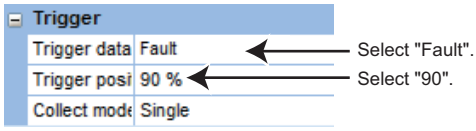
◆ Measurement with a trigger

■ Trigger data: Fault

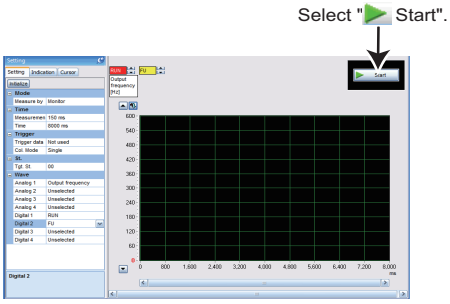
1. Specify the station number to be measured as the "Tgt. St." (Target station). Next, select "Output frequency" for the "Analog 1" column of "Wave", "RUN" for "Digital 1", and "FU" for "Digital 2".



2. Trigger setting:
Select "Fault" from the "Trigger data" column.
Select "90%" in the "Trigger position" column.

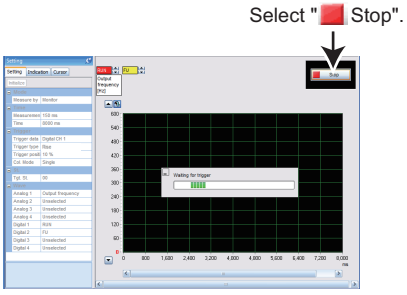


3. Measurement will start by clicking [Start].

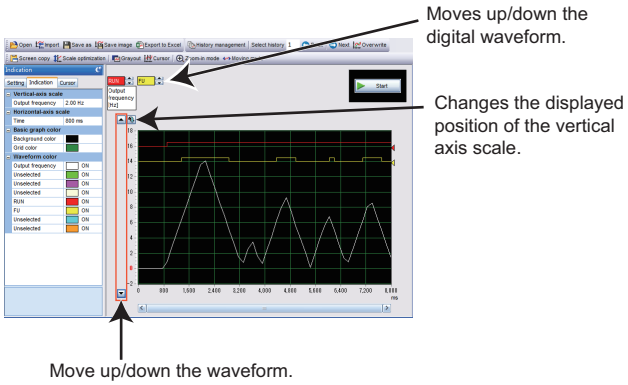


4. Operation starts automatically if an inverter alarm occurs.

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 91).

NOTE

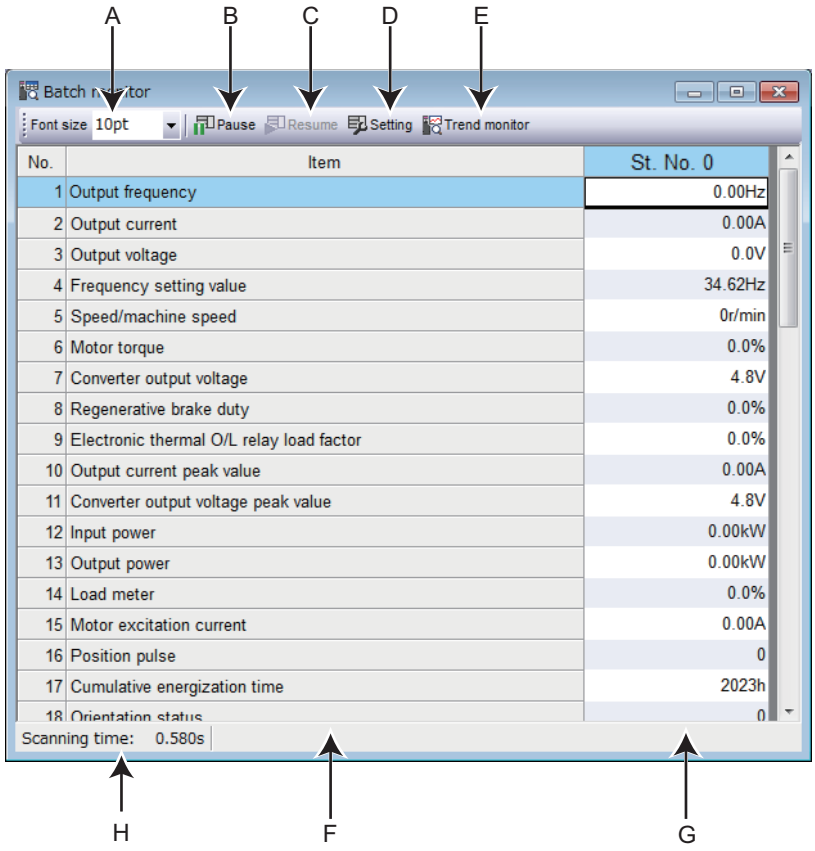
- In this example, "Trigger position" is set to "90%". After clicking [Start], the rise of the terminal RUN signal will be ignored and measurement will not start until 90% of the sampling time elapses.

3.5 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.

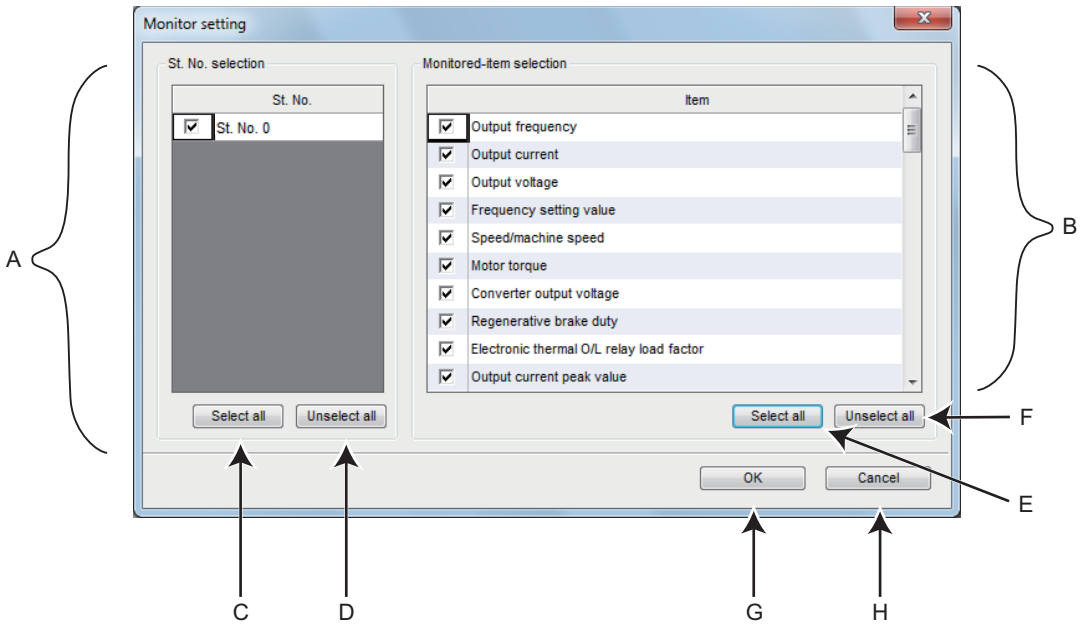


Symbol	Name	Function/description
A	Font size	Changes the size of monitor item characters.
B	Pause	Pauses acquisition of monitor data.*1
C	Resume	Resumes acquisition of monitor data.*1
D	Setting	Set monitor items to display. Refer to page 146.
E	Trend monitor	Displays the window for selecting items to be monitored in a graph. Refer to page 146.
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

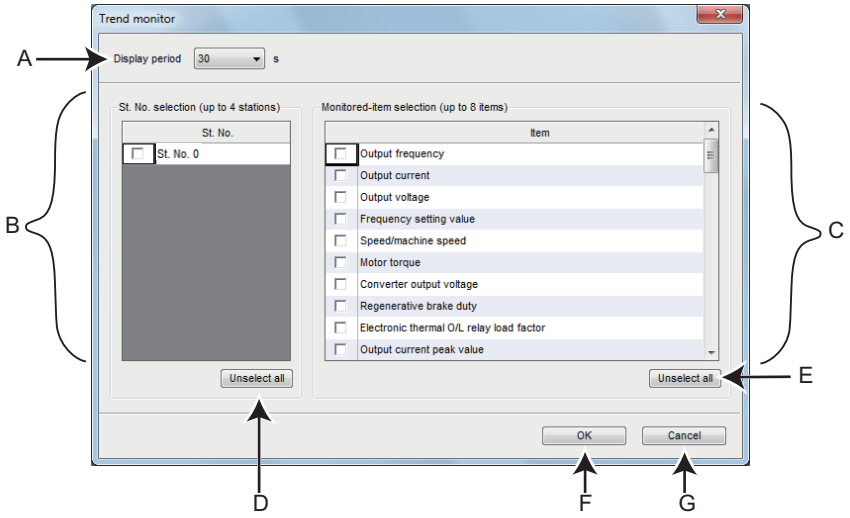
The station number and monitor item to be displayed in the batch monitor window can be set by the monitor setting window. Selecting a monitor item will add the item in the batch monitor window.



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.

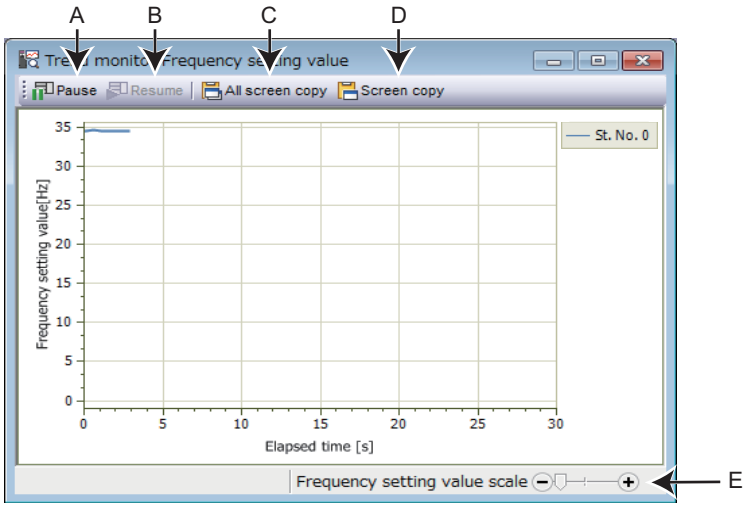
◆ Trend monitor window

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

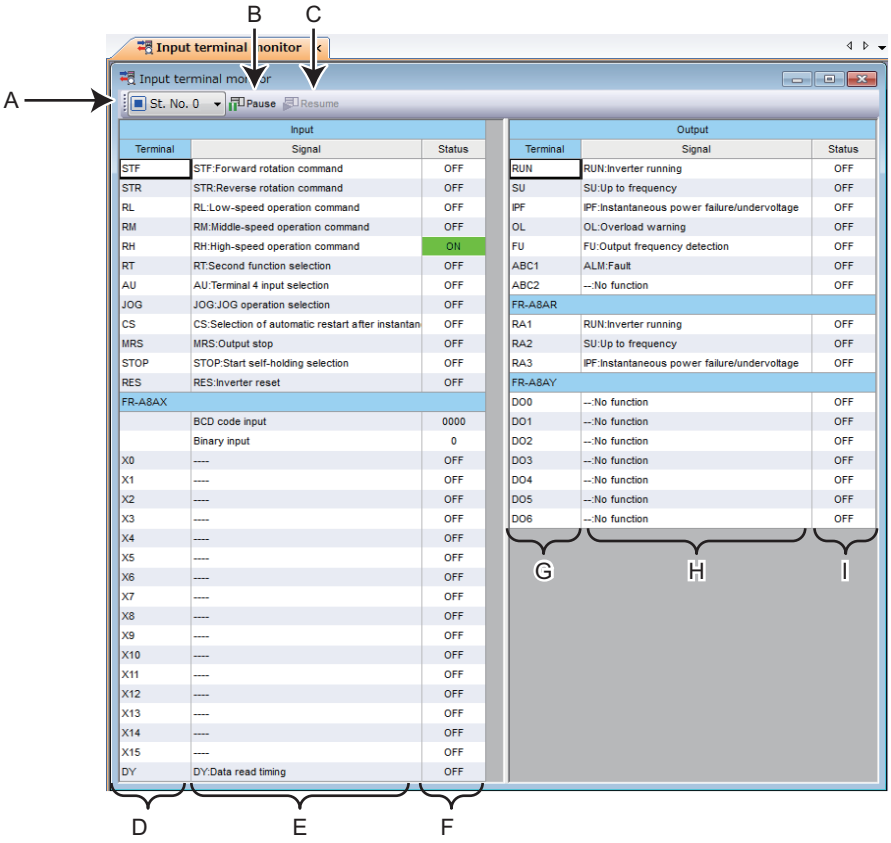
- If a communication error occurs, batch monitoring will be stopped. To perform batch monitoring again, go offline once after correcting the cause of the communication error, and then go online again.
- If an inverter fault occurs during batch monitoring, the output frequency, output current, and output voltage monitors hold the monitored values at the time the fault.

3.6 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.



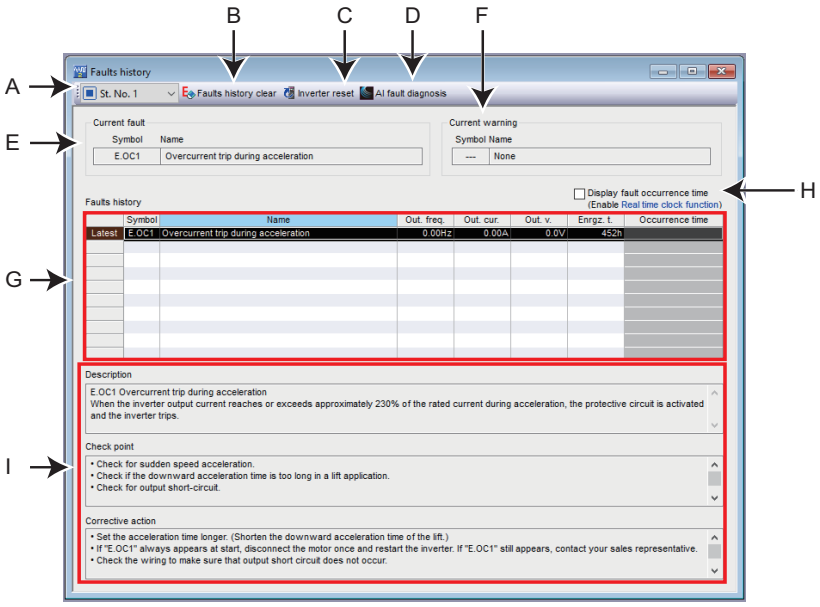
Symbol	Name	Function and Description
A	St. No. (Station number)	Select a station to display its I/O terminal monitor data.
B	Pause	Temporarily stop the acquisition of the I/O terminal monitor data.
C	Resume	Resumes the acquisition of the I/O terminal monitor data.
D	Input Terminal	All the input terminals 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.

3.7 Diagnostics

"Diagnosis" displays fault information of the inverter.

3.7.1 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 page 154.)
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

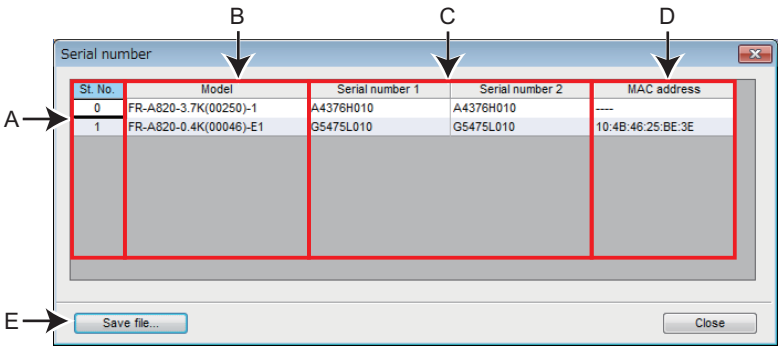
- When "Ethernet" is selected for "PC-side port", "TCP" for "Protocol", and "GOT" for "Through", clicking the [Inverter reset] button for any inverter switches all the connected inverters to offline. Switch the connection status to online to establish the communication with the inverter again.

3.7.2 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 on 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

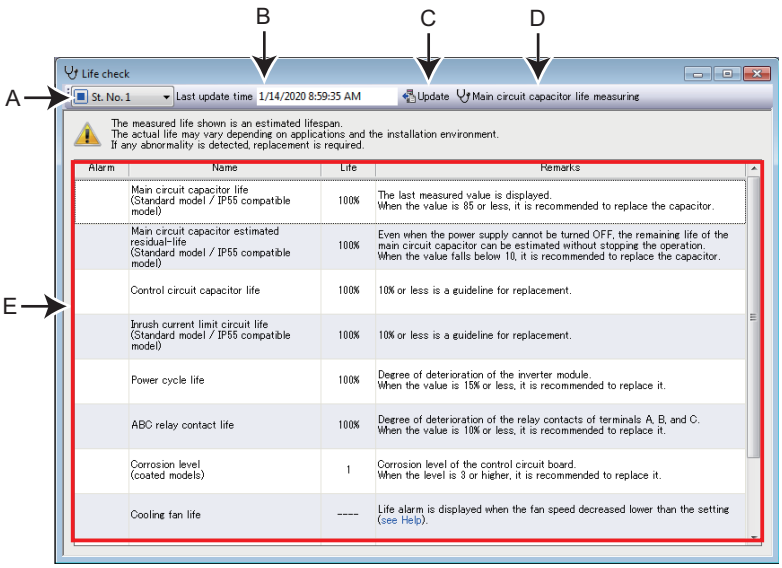
- When the inverter is repaired, its serial number or MAC address may be changed.
- If the serial number is not displayed, check the connection of FR Configurator2 and the inverter. If the serial number is not displayed although the connection is correct, contact your sales representative.

3.7.3 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

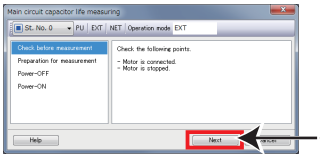
Select [Life check...] in the [Diagnose] menu to display the "Life check" window as a sub window.



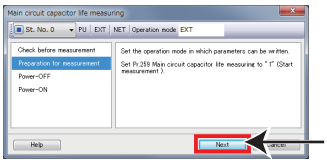
Symbol	Name	Function and Description
A	St. No. selection (Station number selection)	Select a station for the life check.
B	Last update time	Displays the last update time (system clock time of the personal computer).
C	Update	Updates the life information data.
D	Main circuit capacitor life measuring	Starts 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.

◆ Procedure of main circuit capacitor life measuring

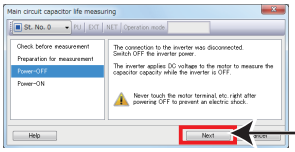
1. The "Check before measurement" instructions are shown. Check the following items, and click [Next].
Motor is connected.
Motor is stopped.



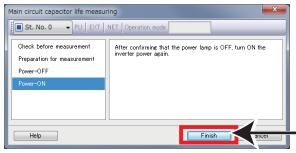
2. The "Preparation for measurement" instructions are shown. Set the operation mode in which parameters can be written and click [Next].
Set **Pr.259 Main circuit capacitor life measuring** to "1".



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].



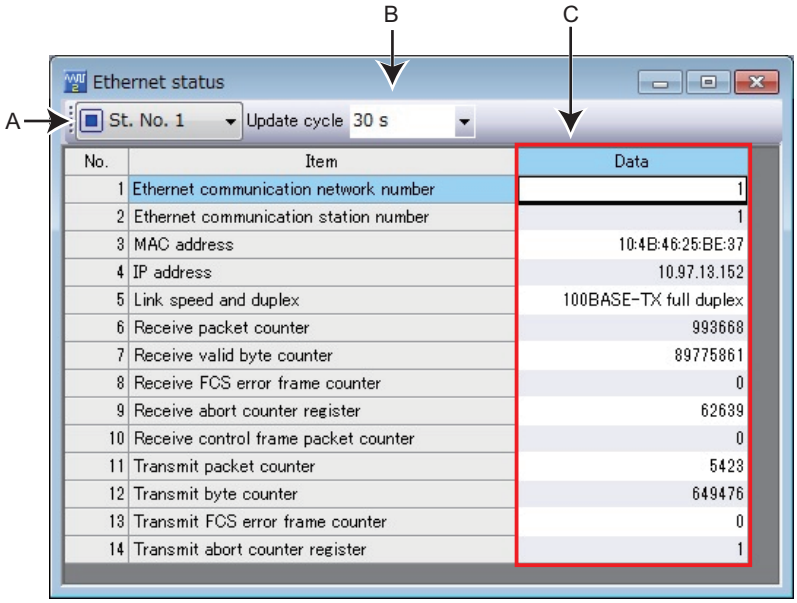
3.7.4 Diagnosis result output

Select [Diagnosis result output...] in the [Diagnose] 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 81.)

3.7.5 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.



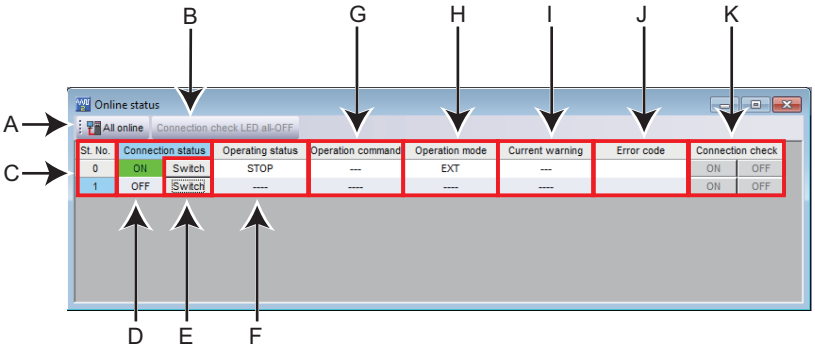
Symbol	Name	Function and Description
A	St. No. selection (Station number selection)	Select a station number to check the Ethernet status. The pull-down list shows station numbers of the Ethernet models only.
B	Update cycle	Set the data update interval.
C	Communication status	Displays the Ethernet communication 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.

3.7.6 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		• FR-A800/FR-F800 inverter with FR-A8NCG in it Used to turn OFF the ACT LEDs on all successfully connected inverters. • FR-E800-(SC)E Used to stop the blinking of the NET LEDs on all successfully connected inverters.
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	• 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.) • 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.)
		OFF	• 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. • FR-E800-(SC)E Used to stop the blinking of the NET LEDs on successfully connected inverters in the communication check of FR Configurator2.

*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**	

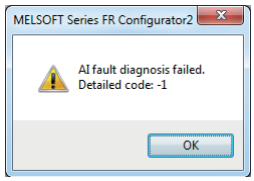
3.8 AI fault diagnosis

The AI fault diagnosis function is available for the following models under the following conditions.
Model: FR-E800(-E/-SCE)
Control method: Any method
Control mode: Speed control
Available fault: Overcurrent trip, Overvoltage trip

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.

NOTE

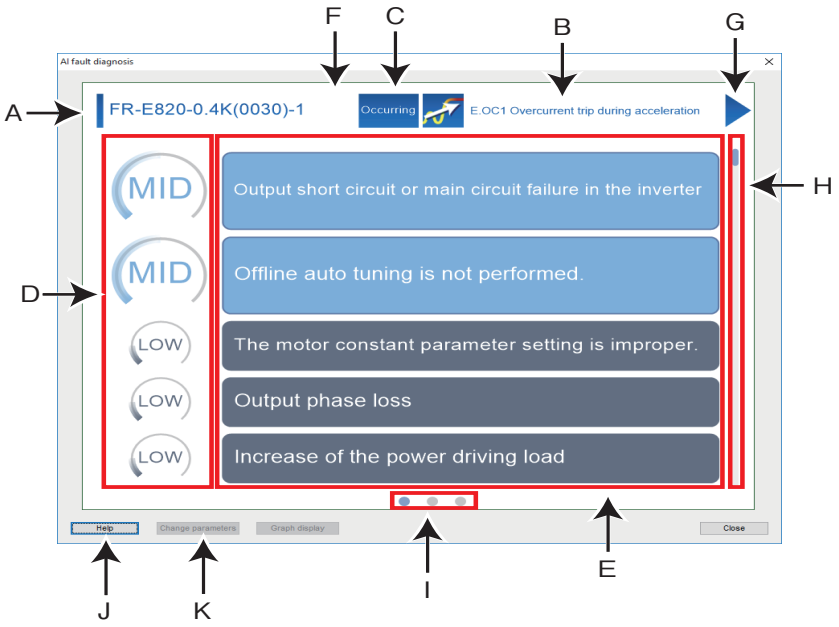
- When the following dialog box appears with the message "AI fault diagnosis failed. Detailed code: -1", update the operating system using Windows Update. After the update, install FR Configurator2 again.



- 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.

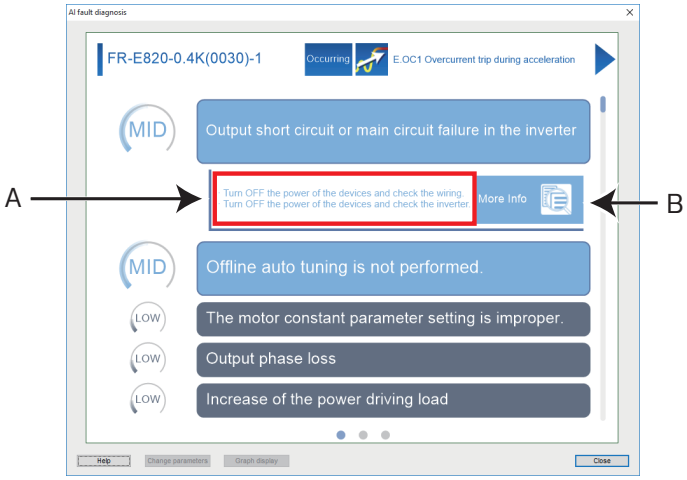
3.8.1 AI fault diagnosis details

◆AI fault diagnosis result screen



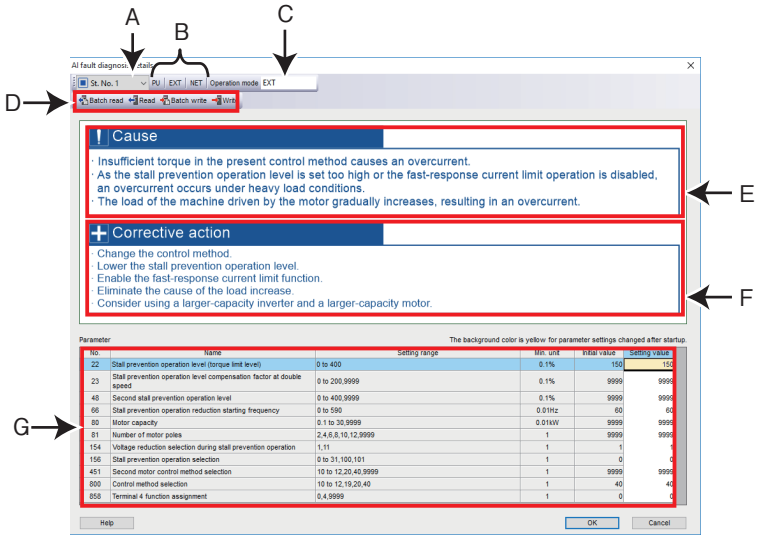
Symbol	Name	Function/description
A	Model	Shows the model of the inverter of the selected station number.
B	Fault name	Shows the name of fault.
C	Fault No.	Shows the fault record number.
D	Probability	Shows the probability (high, mid, and low) of each cause.
E	Cause	Shows probable causes of the fault. When a cause is selected, details of corrective action to be taken and the [Details] button appear. (Refer to page 155.)
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 page 157.)

◆AI fault diagnosis result screen (cause selection)



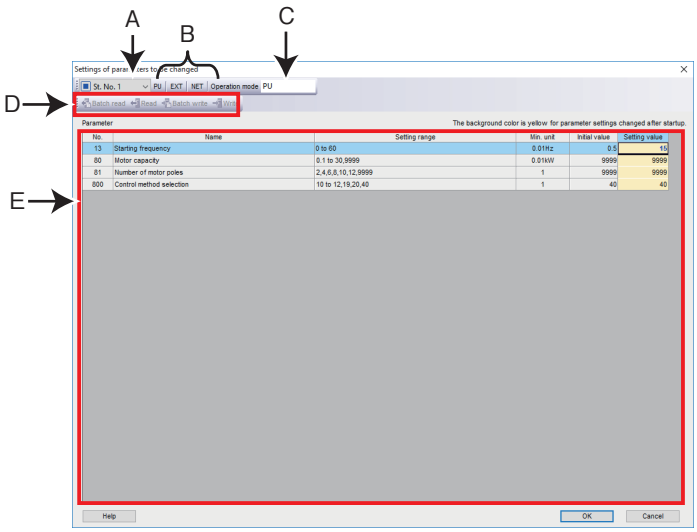
Symbol	Name	Function/description
A	Action	Corrective actions are suggested.
B	Details (space key)	Shows a window for details of the parameters related to the cause. (Refer to page 156.)

◆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.
	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.

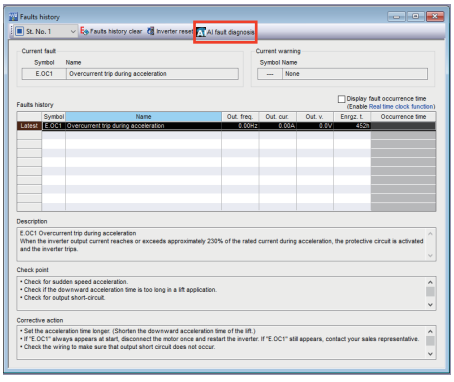
◆AI fault diagnosis result screen (settings of parameters to be changed)



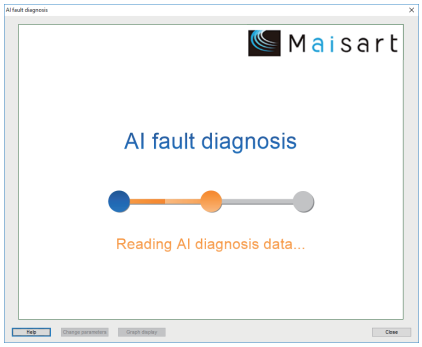
Symbol	Name	Function/description
A	St. No. (Station number)	Select a station registered in the project.
B	Operation mode button	Switch between the operation modes of the inverter.
C	Operation mode indication	Displays the operation mode.
D	Batch read	Reads all the parameter setting values of the selected 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.

3.8.2 Procedure for finding probable causes by AI fault diagnosis

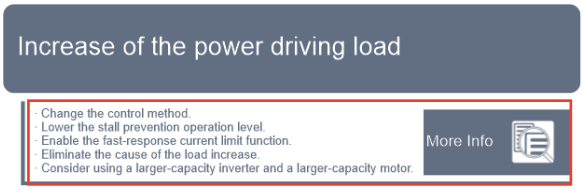
1. Select [Faults history...] in the [Diagnosis].
2. The fault history window is displayed.
3. Display the fault history window front and select [AI fault diagnosis] in the [Faults history (Z)] menu. Alternatively, select [AI fault diagnosis] on the taskbar in the fault history window.



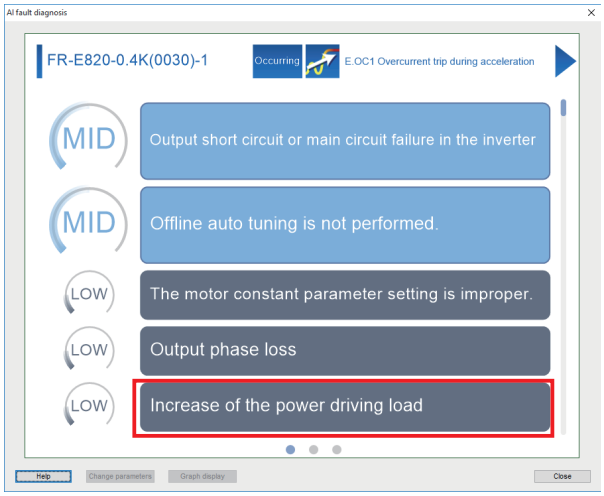
4. The AI fault diagnosis function is activated to find probable causes and display corrective actions for the fault in the fault history using AI technology.



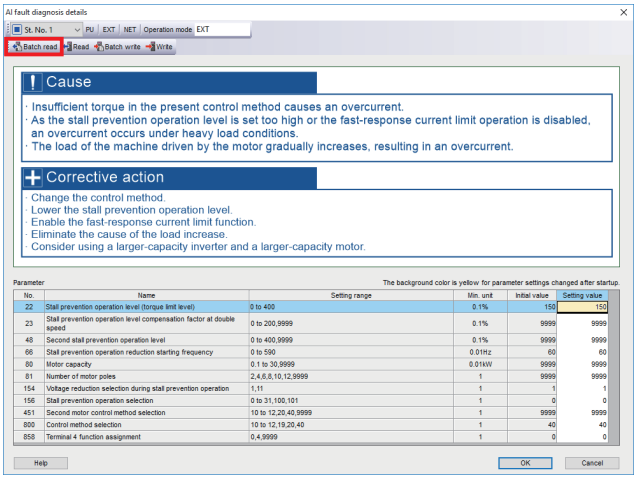
5. Select one of the probable causes suggested in the result screen to check corrective actions to be taken.



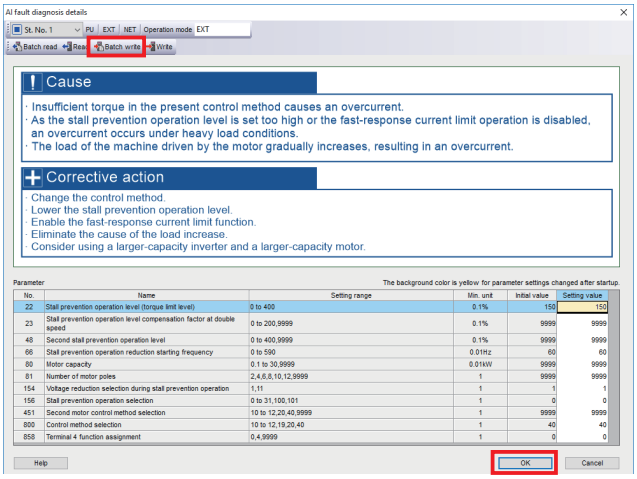
6. When the probable cause is related to parameter settings, click [Details].



7. 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.



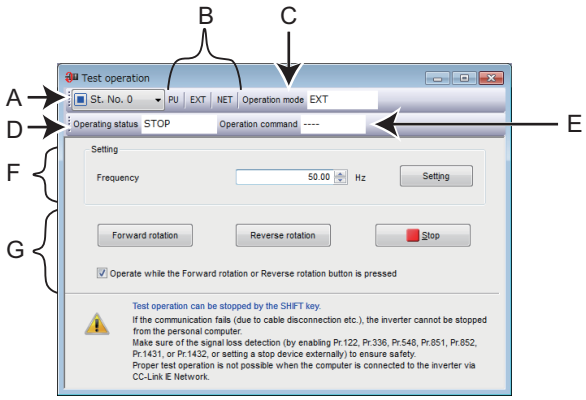
3.9 Test Operation

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.

3.9.1 Test operation window

Select [Test operation...] in the [Test operation] menu or  in the toolbar to display the test operation window.

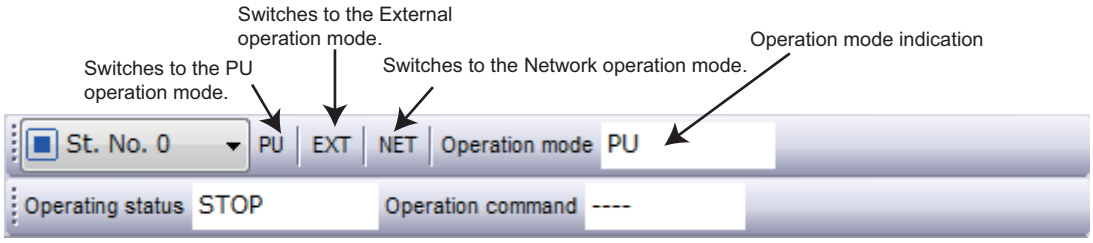


Symbol	Name	Function/description	
A	St. No. (Station number)	Selects a station to perform test operation with.	
B	Operation mode switch	Switches over the inverter's operation mode.	
C	Operation mode	PU	PU operation mode
		EXT	External operation mode
		NET	NET operation mode
		PU + EXT	External/PU combined 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.	

3.9.2 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.

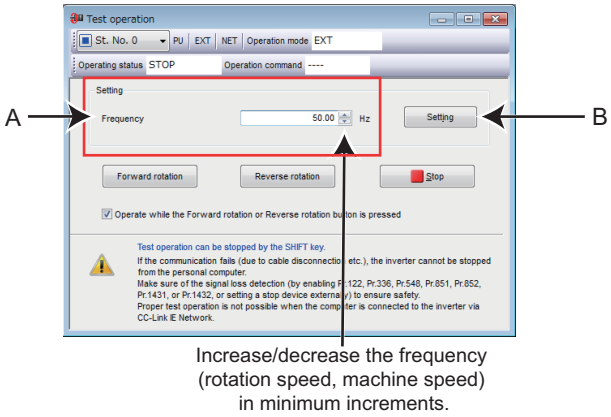


NOTE

- 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.)

3.9.3 Specifying the running frequency (rotation speed, machine speed)

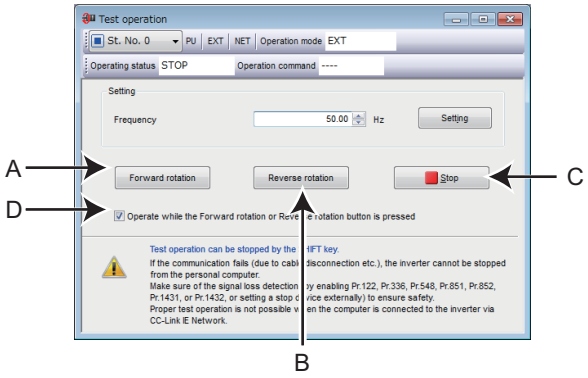
Input a desired frequency (rotation speed, machine speed) to the frequency (speed) input section and press the [Setting] button to write the set frequency to the inverter. To increase or decrease a read setting frequency in minimum setting increments, use the buttons at the right side of the input section.



Symbol	Name	Function/description	
A	Frequency setting	Frequency/ rotation speed/ machine speed	Appears in the following situations. • When offline • When the selected station's set frequency unit is other than the frequency, rotation speed, and machine speed. • When the set frequency information acquisition fails.
		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.	

3.9.4 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 145) 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.

3.10 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.

3.10.1 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.)

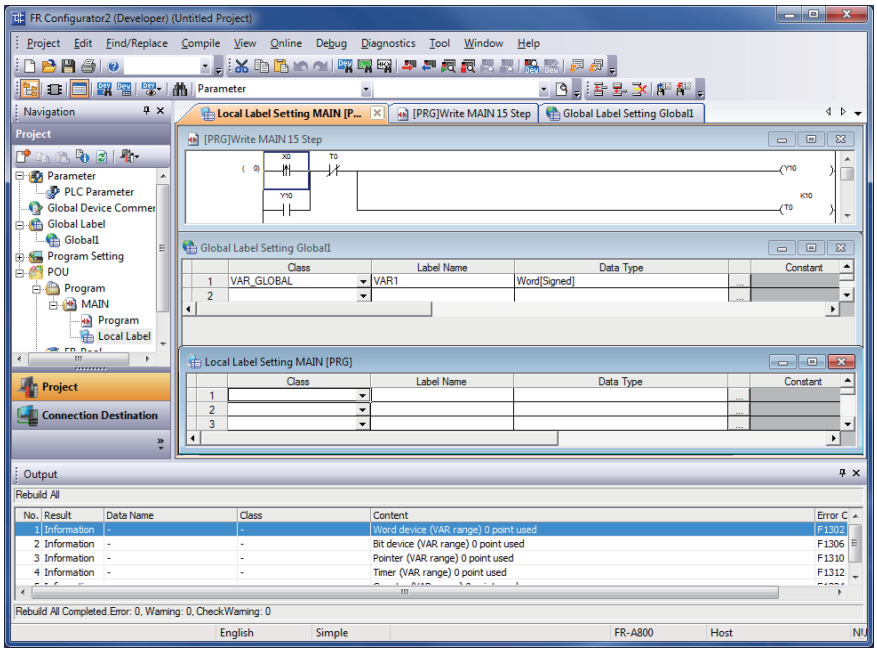
Switch the execution key (RUN/STOP) of the sequence program by turning the SQ signal ON/OFF. The sequence program can be executed by turning the SQ signal ON. To input the SQ signal, set "50" in any parameter from **Pr.178 to Pr.189 (Input terminal function selection)** to assign the function to a terminal.

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.

3.10.2 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 185) 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.

3.10.3 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 (F)...	—	—	—
	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)	—	—

3.10.4 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)...	—	—	—
	Delete...	—	—	—
	Restore After Ladder Conversion	—	—	—
	Insert Row	—	—	—
	Delete Row	—	—	—
	Insert Column	—	—	—
	Delete Column	—	—	—
	NPO Batch Insert...	—	—	—
	NPO Batch Delete	—	—	—
	Edit Line	—	—	F10
	Delete Line	—	—	aF9
	Change TC Setting...	—	—	—
	Ladder Edit Mode (Z)	Read Mode	—	
		Write Mode	—	
	Ladder Symbol	Open Contact...	—	F5
		Close Contact...	—	F6
		Open Branch...	—	sF5
		Close Branch...	—	sF6
		Coil...	—	F7
		Application Instruction...	—	F8
		Vertical Line...	—	sF9
		Horizontal Line...	—	F9
		Delete Vertical Line...	—	cF10
		Delete Horizontal Line...	—	cF9

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon
Edit	Ladder Symbol	Pulse Contact Symbol	Rising Pulse...	
			Falling Pulse...	
			Rising Pulse Branch...	
			Falling Pulse Branch...	
			Rising Pulse Close...	
			Falling Pulse Close...	
			Rising Pulse Close Branch...	
			Falling Pulse Close Branch...	
		Invert Operation Results...	—	
		Operation Result Rising Pulse...	—	
		Operation Result Falling Pulse...	—	
	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
Find/Replace	Change Module I/O No....	—	—	—
	Switch Statement/Note Type...	—	—	—
	Line Statement List...	—	—	
	Jump...	—	—	—
	Jump to Next Ladder Block Start...	—	—	—
	Jump to Previous Ladder Block Start…	—	—	—
	Next Device	—	—	—
	Next Contact (Y)	—	—	—
	Next Coil (Z)	—	—	—
	Back	—	—	—
View	Comment	—	—	—
	Statement	—	—	—
	Note	—	—	—
	Display Lines of Monitored Current Value (W)...	—	—	—
	Display Format for Device Comment (Q)...	—	—	—
	Display Ladder Block	Hide Ladder Block	—	—
		Display Ladder Block	—	—
		Hide All Ladder Block	—	—
		Display All Ladder Block	—	—
	Device Display	Device Display	—	
		Batch Device Display	—	—
		Cancel All Device Display	—	—
	Display Compile Result...	—	—	—
	Zoom...	—	—	
	Text Size	Bigger	—	—
		Smaller	—	—
	Open Other Windows	Open Reference Window	—	—
		Update Reference Window	—	—
		Open Reference Source Window	—	—
		Tile FB Horizontally	—	—
		Open Header	—	—
	Open Instruction Help	—	—	—

3.10.5 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 Editing	
		Overwrite Mode	—
		Insert Mode	—
		Line Mode	—
		Auto Comment	
	Auto Connect	—	
	Recalculate Line	—	—
	Insert Row	—	
	Insert Column	—	
	New Ladder Block List	Top	—
		Before	
		After	
		Bottom	—
	Input Instruction	—	
	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	—	—

3.10.6 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 All	—	—
	New Declaration (Before)	—	
	New Declaration (After)	—	
	Delete Row	—	
	Read from CSV File(J)...	—	
	Write to CSV File(K)...	—	
	Sort	Class	—
		Label Name	—
		Data Type	—
		Constant	—
		Device	—
		Comment	—
		Remark	—
	Unused label list (J)	—	—

3.10.7 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 All	—	—
	Import from Sample Comment	Special Relay/Special Register	
	Clear All	—	—
	Clear All (All Devices)	—	—
	Read from CSV File(J)...	—	
	Write to CSV File(K)...	—	
	Hide Bit Specification Information	—	—
	Show Bit Specification Information	—	—
	Cut The Range including Hidden Bit Specification Information	—	—
	Copy The Range including Hidden Bit Specification Information	—	—
	Paste The Range including Hidden Bit Specification Information	—	—

3.10.8 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(K)...	

Menu	Pull-down menu	Icon
Find/Replace	Next Unmatch	
	Previous Unmatch	
View	Return to Result List	
	Close Detail Result	
	Close Detail Result	

3.11 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

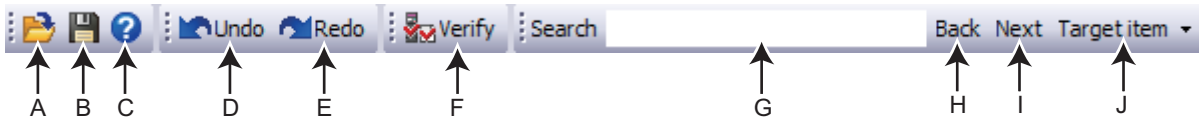
The USB memory parameter copy file editor is dedicated software for editing the setting values of USB memory parameter copy files of the FR Configurator2 compatible models.
To start the USB memory parameter copy file editor, choose [USB memory parameter copy file edit] in the [Tool] menu.

3.11.1 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.

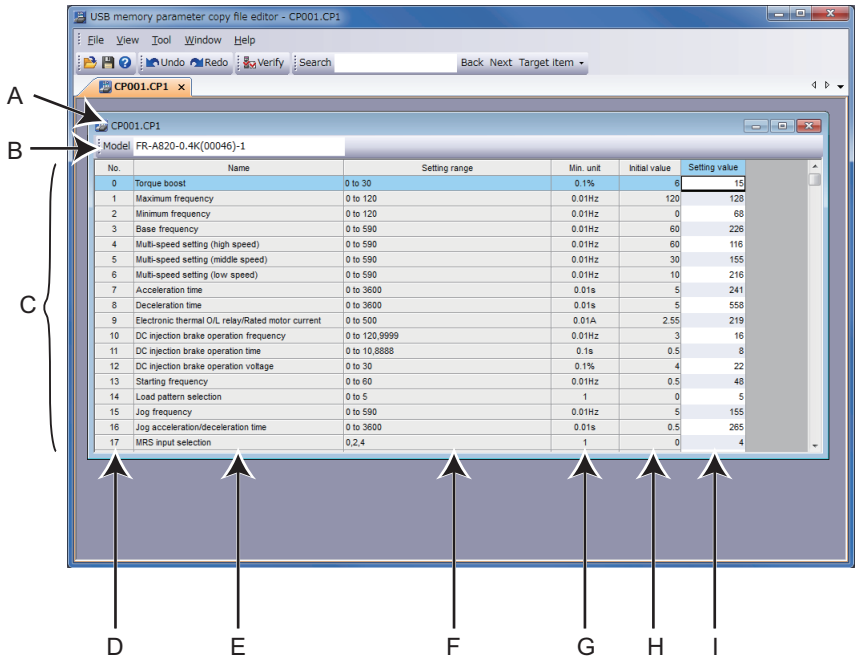


Symbol	Name	Function/operation
A	Open	Shows the "Open" dialog box, and opens the USB memory parameter copy file (*.cp1).
B	Save	Saves the USB memory parameter copy file (*.cp1).
C	Help	Help appears.
D	Undo	Returns the edited parameter setting value to the setting value before editing.
E	Redo	Redoes the 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.

3.11.2 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.

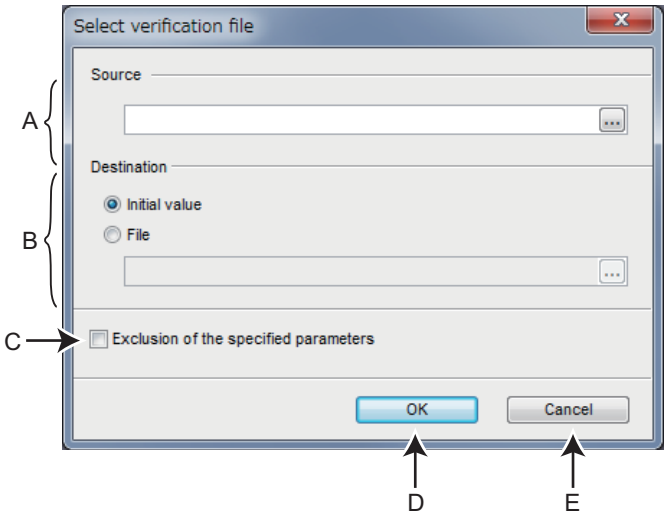
NOTE

- 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.

3.11.3 Verifying parameters

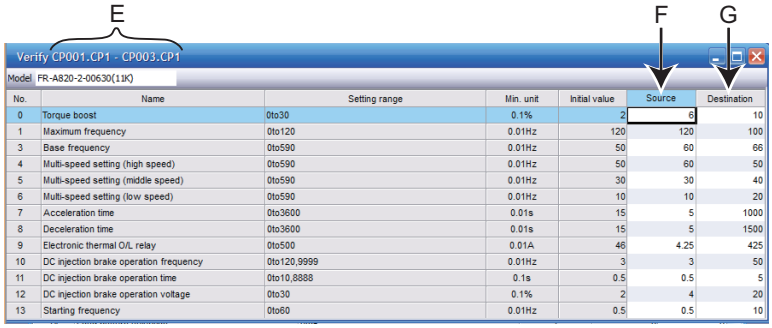
A list of differences between the USB memory parameter copy file to verify (*.cp1) and the parameter initial values or the parameter setting values of the verify destination file (*.cp1) can be displayed.

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. • Input the path of the file to verify (*.cp1) in the verify source text box. • Select [...] in the verify source text box, and specify the file by opening the "Open file" dialog. • 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.
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.

3.12 Ethernet parameter setting function

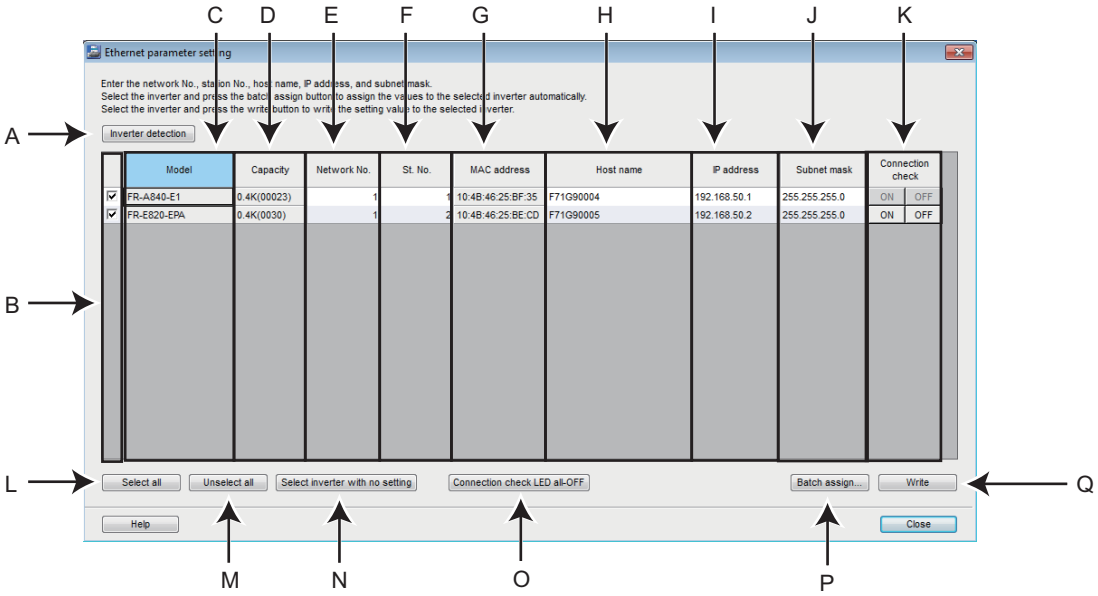
The Ethernet parameter setting function is not available for the following models.
Model: All models except for Ethernet models

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.

3.12.1 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.



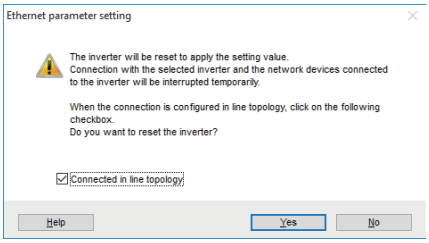
Symbol	Name		Function/description
A	Inverter detection		Detects the inverter(s) connected via Ethernet to read and indicate the parameters.
B	Target inverter checkbox		Select the target inverter(s) to perform [Batch assign] or [Write].
C	Model		Shows the model of the connected inverter.
D	Capacity		Shows the capacity of the connected inverter.
E	Network No.		Set the inverter network number. (Refer to **Pr.1424**.)
F	St. No.		Set the inverter station number to be written to the inverter. (Refer to **Pr.1425**.)
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

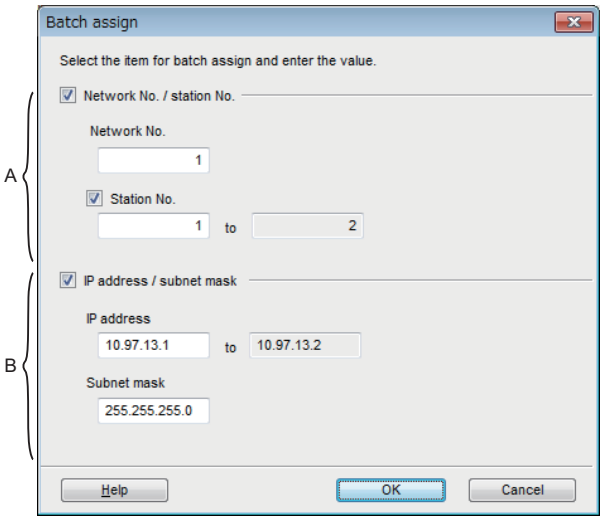
- Before using the Ethernet parameter setting, check the setting of parameters in the following table.

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.

3.12.2 Batch assignment dialog

Batch assignment can be performed to assign the network number, station number, IP address, and subnet mask automatically.

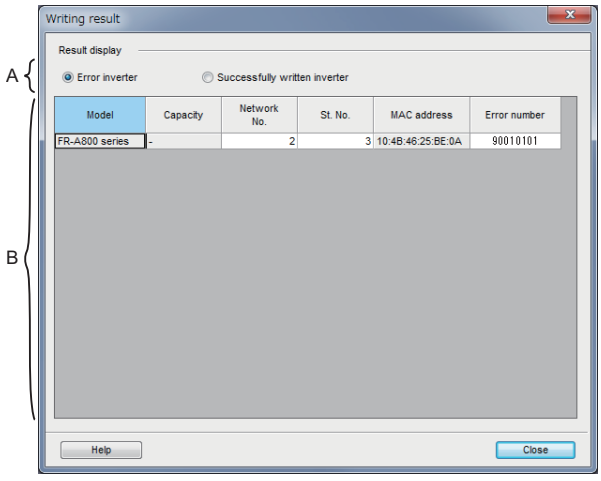
The target inverters are the inverters with a check in the checkbox in the Ethernet parameter setting window.



Symbol	Name	Function/description
A	Network No./station No.	• Check the box to assign the network number and the station number. Set the network number to be assigned. • Check the box to assign the station number. Set the station number to be assigned.
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.

3.12.3 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.



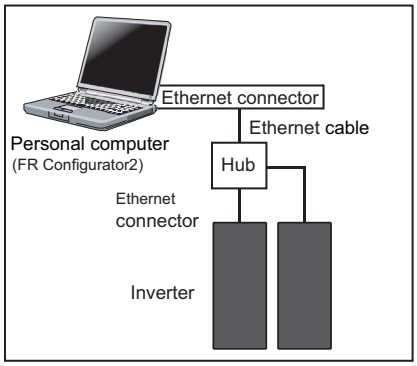
Symbol	Name	Function/description	
A	Result display	Error inverter	Shows the inverters to which the writing failed.
		Successfully written inverter	Shows the inverters to which the writing succeeded.
B	Result list	Error inverter	Shows the model, capacity, network number, station number, MAC address, and 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.

3.12.4 Procedure for connecting inverters via Ethernet

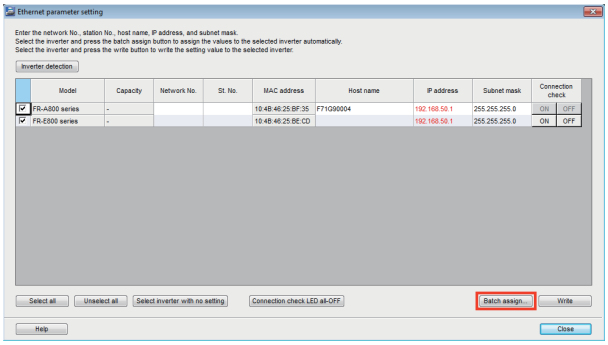
Start from step 7 for connecting inverters via the CC-Link IE Field Network.

◆ 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.



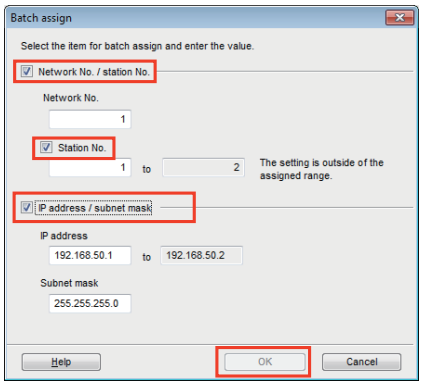
NOTE

- 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.

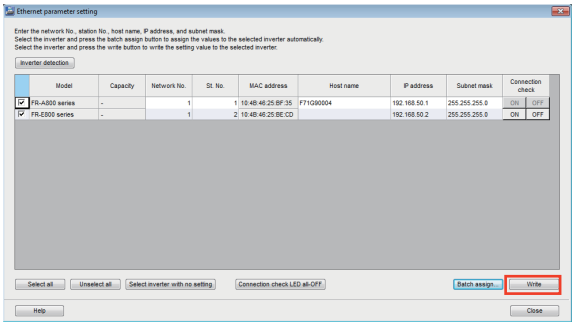
Model	Pr.	Name	Initial value
FR-A800-E FR-F800-E FR-E800-(SC)E	**1427**	**Ethernet function selection 1**	5001
	1428	**Ethernet function selection 2**	45237
FR-A800-E-R2R	**1076**	**Ethernet function selection 1**	5001
	1077	**Ethernet function selection 2**	45237
FR-E700-NE	**833**	**Ethernet function selection 1**	31
	834	**Ethernet function selection 2**	20

- Each inverter has its own MAC address and host name.

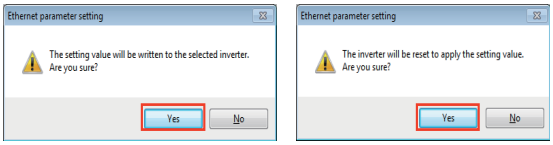
4. Select both the "Network No./station No." and "IP address/subnet mask" checkboxes.
Set the network number, station number, IP address, or subnet mask as required, and click [OK].



5. Click [Write] to write the setting values to the inverters.



6. Click [Yes] to reflect the settings.



7. 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.

8. Automatically-recognized inverters are displayed. Click [OK] and reflect the system setting.

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

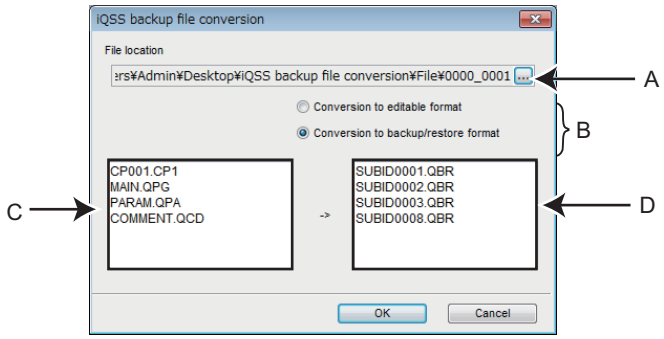
3.13 iQSS backup file conversion function

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.

3.13.1 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.

3.14 Help

3.14.1 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.

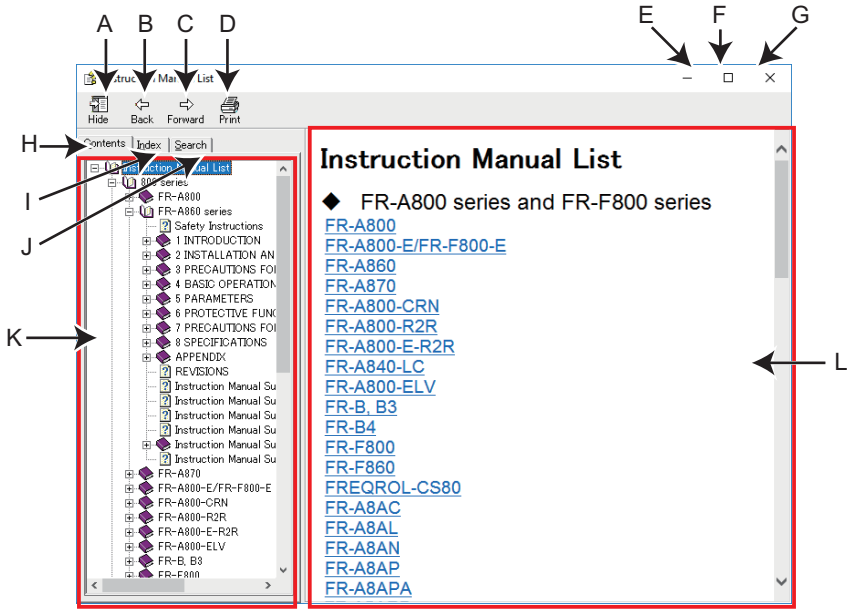
3.14.2 [Instruction Manual of the inverter] menu

The Help window shows the contents of the software and inverter's Instruction Manuals.

There are the 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.



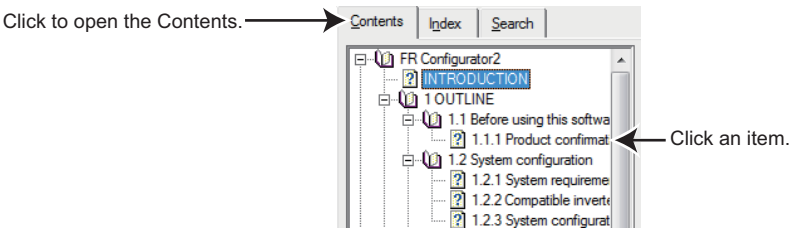
Symbol	Name	Function/description
A	Hide	Hides the navigation panel, [Contents], [Index], and [Search] tabs. While hiding the navigation panel and the tabs, the button changes to Show. Click Show to display the navigation panel and the tabs again.
B	Back	Returns to the previous help description.
C	Forward	Click this to read forward the help description again after using Back.
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	Contents	Click this to check the contents. Contents will be displayed in the navigation panel.
I	Index	Click this to use the index. Index will be displayed in the navigation panel.
J	Search	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

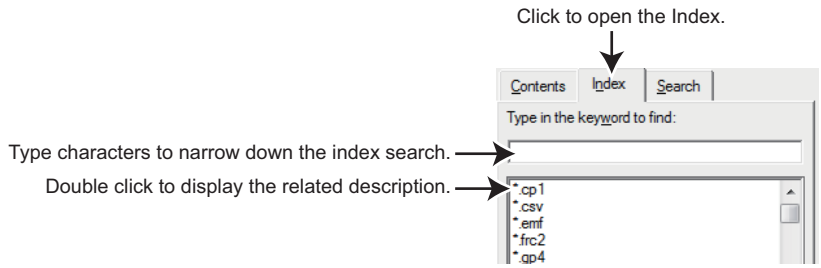
Click [Contents] to display a list of contents. Click a desired item to show the help description.



◆Index

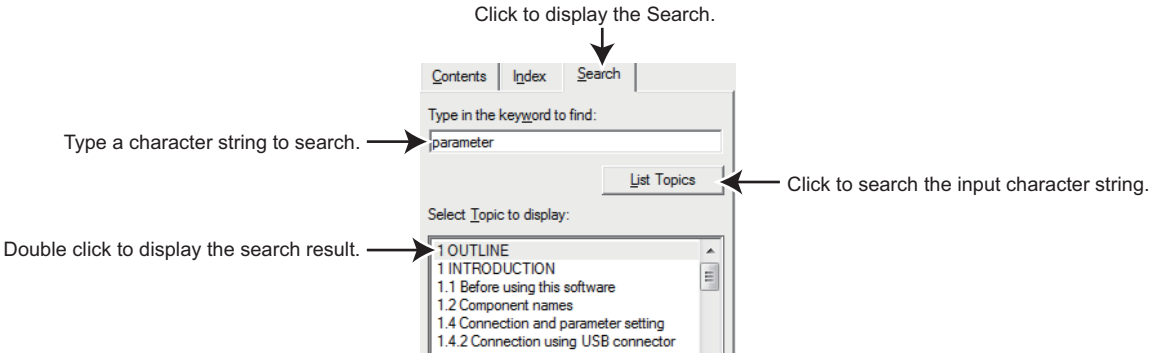
Click [Index] to display the index of keywords contained in the Help.

Type characters to narrow down the index search. Click a desired item to show the help description.



◆ Search

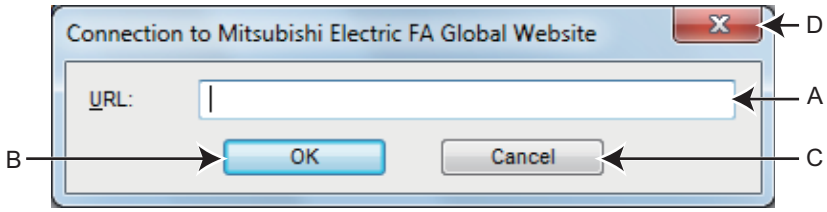
Click [Search] to display the search panel. Type a character string and click [List Topics] to perform full-text search with the character string in the Help. Click a desired topic in the search result to show the help description.



3.14.3 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	URL	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.

3.14.4 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 4 TROUBLE INDICATION

4 TROUBLE INDICATION

This chapter explains the trouble indications of this product.
Always read the instructions before using the equipment.

4.1 Error code

If an error occurs, the following error codes and error messages appear.

4.1.1 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 203.) 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.	• FR-A800-E/F800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1429 Ethernet function selection**. • FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in **Pr.1076 to Pr.1078 Ethernet function selection**. • FR-E800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1430 Ethernet function selection**. • FR-E700-NE The function to communicate with FR Configurator2 is not set in **Pr.833 to Pr.835 Ethernet function selection**.	"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list. • FR-A800-E/F800-E Set the combination of "5001" (or "5002") and "45237" in any two parameters from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two parameters from **Pr.1076 to Pr.1078**. • FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of **Pr.1427 to Pr.1430**. • FR-E700-NE Set the combination of "31" (or "32") and "20" in any two parameters from **Pr.833 to Pr.835**.
			"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet. • FR-A800-E/F800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31", "30", "36", or "38" in any parameter from **Pr.833 to Pr.835**.
			"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list. • FR-A800-E/F800-E Set "5001" in any parameter from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001" in any parameter from **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001" in any of **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31" in any parameter from **Pr.833 to Pr.835**.
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.	• Electromagnetic interference. • Cable is damaged or broken. • The personal computer port is set invalid or the port is broken. • The value in the network part of the IP address is not the same between the inverter and the personal computer. (Ethernet parameter setting) • The communication driver failed to open. • FR-A800-E/F800-E/E800-E The value set in **Pr.1432 Ethernet communication check time interval** is too small. • FR-E700-NE The value set in **Pr.852 Ethernet communication check time interval** is too small.	• Reconnect or replace the cable. • Activate the port using Device Manager, or replace the port. • Use the same value in the network part of the IP address between the inverter and the personal computer. (Ethernet parameter setting) • Establish the online connection. • FR-A800-E/F800-E/E800-E Set a larger value or "9999" in **Pr.1432 Ethernet communication check time interval**. • FR-E700-NE Set a larger value or "9999" in **Pr.852 Ethernet communication check time interval**.
		• FR-A800-E/F800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1429 Ethernet function selection**. • FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in **Pr.1076 to Pr.1078 Ethernet function selection**. • FR-E800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1430 Ethernet function selection**. • FR-E700-NE The function to communicate with FR Configurator2 is not set in **Pr.833 to Pr.835 Ethernet function selection**.	"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list. • FR-A800-E/F800-E Set the combination of "5001" (or "5002") and "45237" in any two parameters from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two parameters from **Pr.1076 to Pr.1078**. • FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of **Pr.1427 to Pr.1430**. • FR-E700-NE Set the combination of "31" (or "32") and "20" in any two parameters from **Pr.833 to Pr.835**.
			"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet. • FR-A800-E/F800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31", "30", "36", or "38" in any parameter from **Pr.833 to Pr.835**.
			"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list. • FR-A800-E/F800-E Set "5001" in any parameter from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001" in any parameter from **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001" in any of **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31" in any parameter from **Pr.833 to Pr.835**.

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.	• Communication setting is not set for the USB while connecting via USB. • No communication port exists on the personal computer, or it is not recognized.	• Check the connection type on the [System setting] window. (Refer to page 70.) • Check that a communication ports exists on the personal computer.
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.	• The **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings are different with the software settings. • Electromagnetic interference. • Cable breakage.	• Match the **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.
0x80010001	The content does not match with the specified parity.	• The **Pr.120 PU communication parity check** and **Pr.334 RS-485 communication parity check selection** settings are different with the software settings. • Electromagnetic interference. • Cable breakage.	• Match the **Pr.120 PU communication parity check** and **Pr.334 RS-485 communication parity check selection** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.
0x80010002	The sum check code of the computer is different from the sum check code of the data received by the inverter.	• The communication setting is different between the inverter and the software. • Data is corrupted due to electromagnetic noise, etc.	• Make the same communication setting. • Check for electromagnetic noise and wiring.
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.	• The **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings are different with the software settings. • Electromagnetic interference. • Cable breakage.	• Match the **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.
0x80010004	The stop bit length is different from the initial value.	• The **Pr.119 PU communication stop bit length / data length** and **Pr.333 RS-485 communication stop bit length / data length** settings are different with the software settings. • Electromagnetic interference. • Cable breakage.	• Match the **Pr.119 PU communication stop bit length / data length** and **Pr.333 RS-485 communication stop bit length / data length** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.

Error code (HEX)	Error message	Possible cause	Countermeasure
0x80010005	Because of incorrect wiring, data was transmitted before completing a data reception.	• The settings of **Pr.123 PU communication waiting time setting** and **Pr.337 RS-485 communication waiting time setting** are too small. • Electromagnetic interference. • Cable breakage.	• Set a larger value or "9999" in **Pr.123 PU communication waiting time setting** and **Pr.337 RS-485 communication waiting time setting**. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.
0x80010007	The inverter received an unusable character (other than 0 to 9, A to F, or control codes).	• The **Pr.119 PU communication stop bit length / data length** and **Pr.333 RS-485 communication stop bit length / data length** settings are different with the software settings. • Electromagnetic interference. • Cable breakage.	• Match the **Pr.119 PU communication stop bit length / data length** and **Pr.333 RS-485 communication stop bit length / data length** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Replace the cable.
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).	• Change the operation mode to the PU operation mode (or NET). • Check the setting values of **Pr.338 Communication operation command source**, **Pr.550 NET mode operation command source selection**, and **Pr.551 PU mode operation command source selection**. (The operation command source changes according to inverter communication connection. Refer to 28 and page 63.)
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.	• **Pr.79 Operation mode selection** is not set for PU/NET (RS-485). • A parameter or frequency setting was attempted without setting FR Configurator2 as such command source, for example in the External operation mode (EXT).	• Click [PU] button of Test Operation. Change the setting of **Pr.79** for PU/NET (RS-485). • Change the operation mode to the PU operation mode (or NET). • Check the setting values of **Pr.339 Communication speed command source**, **Pr.550 NET mode operation command source selection**, and **Pr.551 PU mode operation command source selection**. (The speed command source changes according to inverter communication connection. Refer to 28 and page 63.)
0x80010013	No parameter can be written during inverter running.	Parameter writing was attempted during inverter operation.	Perform parameter writing after the inverter is stopped.

Error code (HEX)	Error message	Possible cause	Countermeasure
0x80010014	The setting value cannot be written to the parameters to which writing is prohibited.	• Writing is disabled by **Pr.77 Parameter write selection**. (Pr.77 = "1 (write disabled)") • Password lock is activated.	• Set **Pr.77 Parameter write selection** to other than "1". • Enter the password in **Pr.297** to unlock password protection. If an error occurs while Ethernet parameters are set, change the setting of the above parameter on the operation panel.
0x80010016	Non-existed parameters cannot be read or written.	• The version of the parameter file in the setup software is different from the inverter version. • Simple mode is set by **Pr.160 User group read selection**. • Password lock is activated. • Parameter writing has been attempted to **Pr.77 Parameter write selection** or **Pr.79 Operation mode selection** in the NET mode. • The user attempted to read from a read-protected parameter, or write to a write-protected parameter. • The user attempted to perform batch write to a set of parameters that includes **Pr.77**.	• Reinstall the software. • Change the setting of **Pr.160** to choose a mode other than the simple mode. • Enter the password in **Pr.297** to unlock the password lock. • Change the setting of **Pr.77** or **Pr.79** on the operation panel. • The user attempted to read from a read-protected parameter, or write to a write-protected parameter. • The user attempted to perform batch write to a set of parameters that includes **Pr.77**.
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.	• Set **Pr.77 Parameter write selection** to "2". • Stop the inverter.
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 **Pr.79 Operation mode selection**.	Change the setting of **Pr.79 Operation mode selection**.
0x80010025	The inverter cannot be reset with the present setting.	Reset is disabled by **Pr.75 Reset selection/disconnected PU detection/PU stop selection**.	Change the setting of **Pr.75 Reset selection/disconnected PU detection/PU stop selection**.
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.

Error code (HEX)	Error message	Possible cause	Countermeasure
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.
0x80010101	Communication was not established with the inverter within the timeout time.	• The setting values in **Pr.122 PU communication check time interval**, **Pr.336 RS-485 communication check time interval**, **Pr.548 USB communication check time interval**, and **Pr.1432 Ethernet communication check time interval** (**Pr.852** for FR-E700-NE) are too small. • Electromagnetic interference. • Cable breakage/damage. • The personal computer port is set invalid or the port is broken. • Power source was changed from the USB power supply to the main circuit power supply or vice versa.	• Set a larger value or "9999" in **Pr.122 PU communication check time interval**, **Pr.336 RS-485 communication check time interval**, **Pr.548 USB communication check time interval**, and **Pr.1432 Ethernet communication check time interval** (**Pr.852** for FR-E700-NE). • Set a larger value for the timeout setting of the software. • Connect or replace the cable. • Activate the port using Device Manager, or replace the port. • Check the status of the inverter.
0x80010102	The data received by the computer contains incorrect data.	• The **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings are different with the software settings. • Electromagnetic interference. • Inverter reset (or power-OFF) • Cable breakage.	• Match the **Pr.124 PU communication CR/LF selection** and **Pr.341 RS-485 communication CR/LF selection** settings with the software settings. • Set a larger value in **Pr.121 PU communication retry count** and **Pr.335 RS-485 communication retry count**. • Do not reset the inverter or turn OFF the inverter power during communication. • Replace the cable.
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.	• Close other applications. • Set a larger value for the mask count. • Decrease the number of sampling channels.

Error code (HEX)	Error message	Possible cause	Countermeasure
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 **Pr.1006 to Pr.1008** 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.	• Activate the port using Device Manager. • Close other applications, and establish the online connection.
0x80030002 0x80030003 0x80030004 0x80030005 0x80030006 0x80030007 0x80030008 0x80030009	An unexpected error occurred in S/W.	Please contact your sales representative.	
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.	• Electromagnetic interference • Cable breakage/damage	• Try again. • Check for cable connection. • Replace any faulty cable.

Error code (HEX)	Error message	Possible cause	Countermeasure
0x90010101	Communication was not established with the inverter within the timeout time.	• Electromagnetic interference. • Cable is damaged or broken. • The personal computer port is set invalid or the port is broken. • The value in the network part of the IP address is not the same between the inverter and the personal computer. (Ethernet parameter setting) • The communication driver failed to open. • FR-A800-E/F800-E/E800-E The value set in **Pr.1432 Ethernet communication check time interval** is too small. • FR-E700-NE The value set in **Pr.852 Ethernet communication check time interval** is too small.	• Reconnect or replace the cable. • Activate the port using Device Manager, or replace the port. • Use the same value in the network part of the IP address between the inverter and the personal computer. (Ethernet parameter setting) • Establish the online connection. • FR-A800-E/F800-E/E800-E Set a larger value or "9999" in **Pr.1432 Ethernet communication check time interval**. • FR-E700-NE Set a larger value or "9999" in **Pr.852 Ethernet communication check time interval**.
		• FR-A800-E/F800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1429 Ethernet function selection**. • FR-A800-E-R2R The function to communicate with FR Configurator2 is not set in **Pr.1076 to Pr.1078 Ethernet function selection**. • FR-E800-E The function to communicate with FR Configurator2 is not set in **Pr.1427 to Pr.1430 Ethernet function selection**. • FR-E700-NE The function to communicate with FR Configurator2 is not set in **Pr.833 to Pr.835 Ethernet function selection**.	"Ethernet" is selected from the "PC-side port" drop-down list and "Not used" from the "Through" drop-down list. • FR-A800-E/F800-E Set the combination of "5001" (or "5002") and "45237" in any two of **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set the combination of "5001" (or "5002") and "45237" in any two of **Pr.1076 to Pr.1078**. • FR-E800-E Set the combination of "5001" (or "5002") and "45237" in any two of **Pr.1427 to Pr.1430**. • FR-E700-NE Set the combination of "31" (or "32") and "20" in any two of **Pr.833 to Pr.835**.
			"GOT" is selected from the "Through" drop-down list and the GOT and the inverter are connected via Ethernet. • FR-A800-E/F800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001", "5000", "5006", or "5008" in any parameter from **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31", "30", "36", or "38" in any parameter from **Pr.833 to Pr.835**.
			"Programmable controller" or "GOT to programmable controller" is selected from the "Through" drop-down list. • FR-A800-E/F800-E Set "5001" in any of **Pr.1427 to Pr.1429**. • FR-A800-E-R2R Set "5001" in any of **Pr.1076 to Pr.1078**. • FR-E800-E Set "5001" in any of **Pr.1427 to Pr.1430**. • FR-E700-NE Set "31" in any of **Pr.833 to Pr.835**.

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 **Pr.1427 to Pr.1430 Ethernet function selection**.	Do not set "34962" in any of **Pr.1427 to Pr.1430 Ethernet function selection**.
0x90A00101	The communication line cannot be opened.	The IP address is used by another inverter.	Set a unique IP address.
0x90F00001	The communication settings cannot be written.	The inverter series name is unknown.	• Upgrade FR Configurator2 to the latest version. • Write the communication settings from the operation panel. For information on the communication settings, refer to the Instruction Manual of the inverter.
0x90F00002		The inverter model is unknown.	

4.1.2 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 203.) The parameters' setting range, initial value, and numbers may be different before and after a version upgrade (with functions added).
- Refer to page 190 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.	• Communication protocol of the inverter and the GOT are not the same. • Setting of **Pr.122 PU communication check time interval**, **Pr.336 RS-485 communication check time interval**, **Pr.548 USB communication check time interval** is other than "0". • Electromagnetic interference • Cable breakage/damage	• Set the same communication protocol for the inverter and the GOT. • Set a value other than "0" in **Pr.122 PU communication check time interval**, **Pr.336 RS-485 communication check time interval**, **Pr.548 USB communication check time interval**. • Set a larger value for the timeout setting of the software. • Cable connection/replacement. Check for communication cable and power supply of devices.
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.	• Electromagnetic interference • Cable breakage/damage	• Set a larger value for the timeout setting of the software. • Cable connection/replacement. Check for the connection.
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.	• Set a larger value for the timeout setting of the software. • Monitor only the station which the GOT is connected. • Check that the GOT is operating correctly and try again.

Error code (HEX)	Error message	Possible cause	Solution
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.	• Occurred before starting the FR Configurator2 or during communication. • Serial cable between the GOT and the personal computer is disconnected.	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.	• A cable between the GOT and the personal computer disconnected before starting FR Configurator2. • The GOT power turned OFF before starting FR Configurator2.	• Connect the cable. • Power ON the GOT.
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.	• USB line error (cable was disconnected halfway) • When a cable between the GOT and the personal computer was disconnected during communication. • When the GOT power turned OFF during communication	• Check for cable connection. • Power ON the GOT.
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.
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.	

Error code (HEX)	Error message	Possible cause	Solution
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.

4.1.3 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 203.) 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	Safety parameter settings are corrupt.	• Retry the operation interrupted by the fault. • Perform safety parameter clear. If the problem still persists after taking the above measure, contact your sales representative.
0x01A00217		
0x01A00417		
0x01A00301		
0x01A00303		
0xA001**01[*1]	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA002**01[*1]		
0xA001**02[*1]		
0xA002**02[*1]		
0xA001**03[*1]		
0xA002**03[*1]		
0xA001**04[*1]	A communication error occurred.	Check the noise and wiring.
0xA002**04[*1]		
0xA001**05[*1]	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA002**05[*1]		
0xA001**10[*1]	A safety parameter reading error occurred.	• Retry the operation interrupted by the fault. • Perform safety parameter clear. If the problem still persists after taking the above measure, contact your sales representative.
0xA002**10[*1]		
0xA001**11[*1]	A safety parameter writing error occurred.	
0xA002**11[*1]		
0xA001**12[*1]	An unexpected error occurred in S/W.	Please contact your sales representative.
0xA002**12[*1]		
0xA001**13[*1]		
0xA002**13[*1]		
0xA001**14[*1]		
0xA002**14[*1]		
0xA001**15[*1]	Any value out of the setting range cannot be written.	Write a value within the setting range.
0xA002**15[*1]		

Error code (HEX)	Error message	Countermeasure
0xA001**16[*1]	Safety parameter settings are corrupt.	• Retry the operation interrupted by the fault. • Perform safety parameter clear. If the problem still persists after taking the above measure, contact your sales representative.
0xA002**16[*1]		
0xA001**17[*1]		
0xA002**17[*1]		
0xA001**18[*1]	A safety parameter clearing error occurred.	
0xA002**18[*1]		
0xA001**20[*1]	The password protection is still active.	• Enter the correct password. • If you forget the password, perform safety parameter clear to reset the password to the initial value, then enter the password again. If the problem still persists after taking the above measure, contact your sales representative.
0xA002**20[*1]		
0xA001**21[*1]	A password writing error occurred.	• Retry the operation interrupted by the fault. • Perform safety parameter clear. If the problem still persists after taking the above measure, contact your sales representative.
0xA002**21[*1]		
0xA00E**04[*1]	A communication error occurred.	Check the noise and wiring.
0xA00F**04[*1]		

*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 • Compatibility with the FR-A802 (Ver.1.03D supported)
Mar 2015	IB(NA)-0600516ENG-C	Added • Compatibility with the FR-F800 • Settings by function • I/O terminal monitor • Serial number reading (Ver.1.07H supported)
Mar. 2016	IB(NA)-0600516ENG-D	Added • Parameter list (filter function) • Settings by function (acceleration/deceleration time setting, point table) • I/O terminal monitor • Batch monitor (trend monitor) Edited • Settings by function (trace setting) • Convert function (Ver.1.08J supported)
May 2016	IB(NA)-0600516ENG-E	Added • Compatibility with the FR-A800-E • Settings by function (start command and frequency setting method) • Compatibility with Windows 10 • Backup/restore file conversion (Ver.1.09K supported)
Dec. 2016	IB(NA)-0600516ENG-F	Added • Compatibility with the FR-B, B3 and FR-F800-E (Ver.1.10L supported)
Jun. 2017	IB(NA)-0600516ENG-G	Added • Compatibility with the FR-A846, A846-E, F860 and F860-E • Compatibility with the 700 series (FR-A700, B, B3, F700 and F700P) • Diagnostics (Life check, Diagnosis result output, Ethernet status) (Ver.1.11M supported)
Oct. 2017	IB(NA)-0600516ENG-H	Added • Compatibility with the FREQROL-CS80 • Compatibility with the 700 series (FR-E700-NE) (Ver.1.12N supported)
Jan. 2018	IB(NA)-0600516ENG-J	Added • 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. • Graph function (Export to Excel) • Diagnose function (Online status) (Ver.1.13P supported)
Mar. 2018	IB(NA)-0600516ENG-K	Added • Compatibility with the FR-A870, A840-LC, A870-LC, A800-ELV, E700EX and E560 (Ver.1.14Q supported)
Jul. 2018	IB(NA)-0600516ENG-L	Added • GOT transparent function • Compatibility with the 700 series (FR-E700) (Ver.1.15R supported)
Apr. 2019	IB(NA)-0600516ENG-N	Added • Compatibility with CC-Link IE TSN • Life check (main circuit capacitor residual-life estimation) (Ver.1.17T supported)

Revision date	*Manual number	Revision
Dec. 2019	IB(NA)-0600516ENG-P	Added • Compatibility with the 800 series (FR-E800, A872, and B4) • Compatibility with the 700 series (FR-D700-G) (Ver.1.19V supported)
Nov. 2018	IB(NA)-0600516ENG-M	Added • GOT transparent function (applicable Intermediate paths added) • Compatibility with the 800 series (FR-A800-E-R2R) • Compatibility with 700 series (FR-D700) (Ver.1.16S supported)
Apr. 2019	IB(NA)-0600516ENG-N	Added • Compatibility with CC-Link IE TSN • Life check (main circuit capacitor residual-life estimation) (Ver.1.17T supported)
Dec. 2019	IB(NA)-0600516ENG-P	Added • Compatibility with the 800 series (FR-E800, A872, and B4) • Compatibility with the 700 series (FR-D700-G) (Ver.1.19V supported)
Jan. 2020	IB(NA)-0600516ENG-Q	Added • AI fault diagnosis (Ver.1.20W supported)
Feb. 2020	IB(NA)-0600516ENG-R	Added • AI fault diagnosis (Ver.1.21X supported)
Apr. 2020	IB(NA)-0600516ENG-S	Added • Compatibility with the 800 series (FR-E820S and FR-E800-SCE) • Safety parameter setting (Ver.1.22YT supported)
Jul. 2020	IB(NA)-0600516ENG-T	Added • Design precautions • Description for using the FR-A8NCG (Ver.1.23Z supported)
Dec. 2020	IB(NA)-0600516ENG-U	Added • Compatibility with the 800 series (FR-E800-11K to 22K) (Ver.1.24A supported)

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