MITSUBISHI ELECTRIC

MELSOFT

FR Configurator2
INSTRUCTION MANUAL

INVERTER SETUP SOFTWARE

SW1DND-FRC2-E

OUTLINE 1

PROJECT CREATION 2

FUNCTION 3

TROUBLE INDICATION 4

INTRODUCTION

Thank you for choosing this Mitsubishi Inverter Setup Software.
This instruction manual gives handling information and precautions for the use of this software. Incorrect handling might cause an unexpected fault. Before using the software, please read this manual carefully to use the software to its optimum performance.
Please forward this manual to the end user.

When reading this manual, note the following.

- This manual is written on the basis that Windows® 7 Professional (English version) is the operating system.
- Drive D is described as the DVD drive and Drive C as the hard disk drive.

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(1) The formal name of Windows® XP is Microsoft® Windows® XP operating system.

(2) The formal name of Windows Vista® is Microsoft® Windows Vista® operating system.

(3) The formal name of Windows® 7 is Microsoft® Windows® 7 operating system.

(4) The formal name of Windows® 8 is Microsoft® Windows® 8 operating system.

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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 lifethreatening 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.**

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1 OUTLINE

This chapter explains the "OUTLINE" for use of this product.
Always read the instructions before using the software.

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<Abbreviations>

- PU: Operation panel (FR-DU08) and parameter unit (FR-PU07)
- Inverter: Mitsubishi inverter FR-A800 series
- FR-A800: Mitsubishi inverter FR-A800 series
- Pr.: Parameter number (Number assigned to function)
- PU operation: Operation and frequency commands are given by the operation panel (FR-DU08), parameter unit (FR-PU07), or RS-485 communication, via the PU connector.
- External operation: Operation and frequency commands are given by an external potentiometer and switches, via control circuit terminals.
- Combined operation: Combined operation using the PU (FR-DU08/FR-PU07) and External operation
- Mitsubishi standard motor: SF-JR
- Mitsubishi 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 general-purpose inverter. The following functions can be performed efficiently on a personal computer.

Function	Description	Trial version
Parameter List	Displays parameter list, functional list, and initial value change list and allows editing of the parameters.	○
Diagnosis	Displays faults history.	○
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.	×
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.	×
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

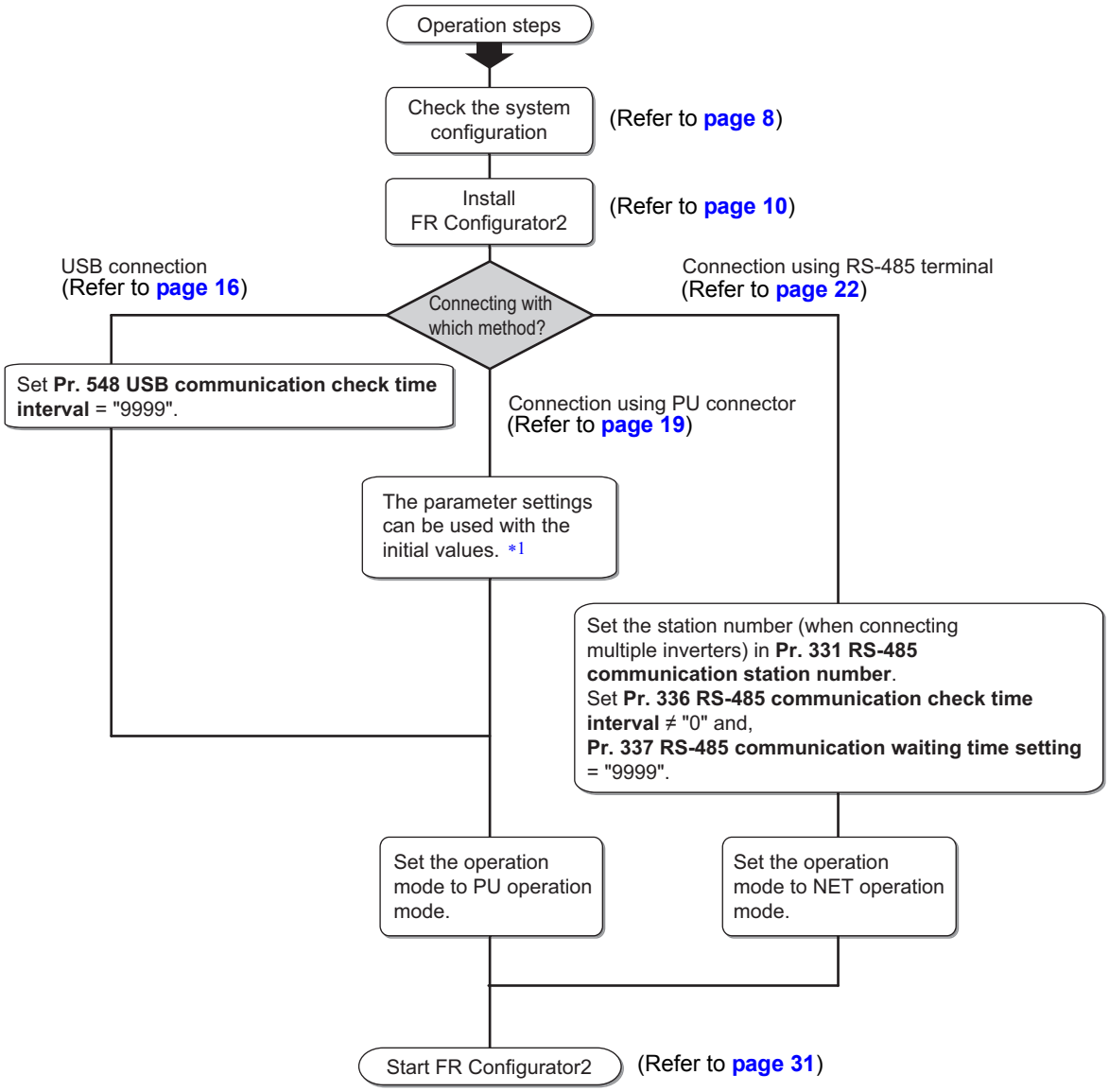
- A part of this software is using a function of Internet Explorer. This software may not operate properly depending on Internet Explorer setting.
- FR Configurator2 is not available when inverter is activated with FR-PU07BB Battery mode. FR Configurator2 may not operate properly.

Related manuals

The manuals related to this product are shown below.
The download of the latest manuals is free at the Mitsubishi Electric FA Global Website.

Manual name	Manual number
FR-A800 Instruction Manual (Startup)	IB-0600493
FR-A800 Instruction Manual (Detailed)	IB-0600503ENG
FR-A802 (Separated Converter Type) Instruction Manual (Hardware)	IB-0600534ENG
FR-A800 PLC Function Programing Manual	IB-0600492ENG
GX Works2 Version 1 Operating Manual (Common)	SH-080779ENG

- **Check the following settings before configuring the inverter with this software. For the details of communication parameters, refer to page 14.**



*1 To use the Developer, parameter setting of the inverter is required. (Refer to page 20)

1.1.1 Product confirmation

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

Item	Quantity
DVD	1
Installation Manual	1

1.2 System configuration

1.2.1 System requirement for FR Configurator2

Components *2	Description *1	
Personal computer	IBM PC/AT compatible machine with DVD drive (for installation), USB port or serial port	
	OS *3	• Windows® 7, Windows® 8, Windows® 8.1/Pro/Enterprise (32-bit Edition and 64-bit Edition) • Windows Vista® (32-bit Edition) • Windows® XP Professional SP3 or later (32-bit Edition) • Windows® XP Home Edition SP3 or later
	Processor	• Desktop PC: Intel® Celeron® Processor 2.8 GHz or higher • Laptop PC: Intel® Pentium® M Processor 1.7 GHz or higher
	Memory	• 1 GB or more (Windows® 7, Windows® 8, Windows® 8.1 32-bit Edition) • 2 GB or more (Windows® 7, Windows® 8, Windows® 8.1 64-bit Edition) • 512 MB or more (Windows Vista®) • 128 MB or more (Windows® XP Professional, Windows® XP Home Edition)
	Hard disk	Free area of 1.5 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 Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
Pentium is a registered trademark of Intel Corporation.
*2 FR Configurator2 may not function properly depending on the using personal computer, peripheral devices, and software.
*3 Operation on an operating system not listed here is not guaranteed.

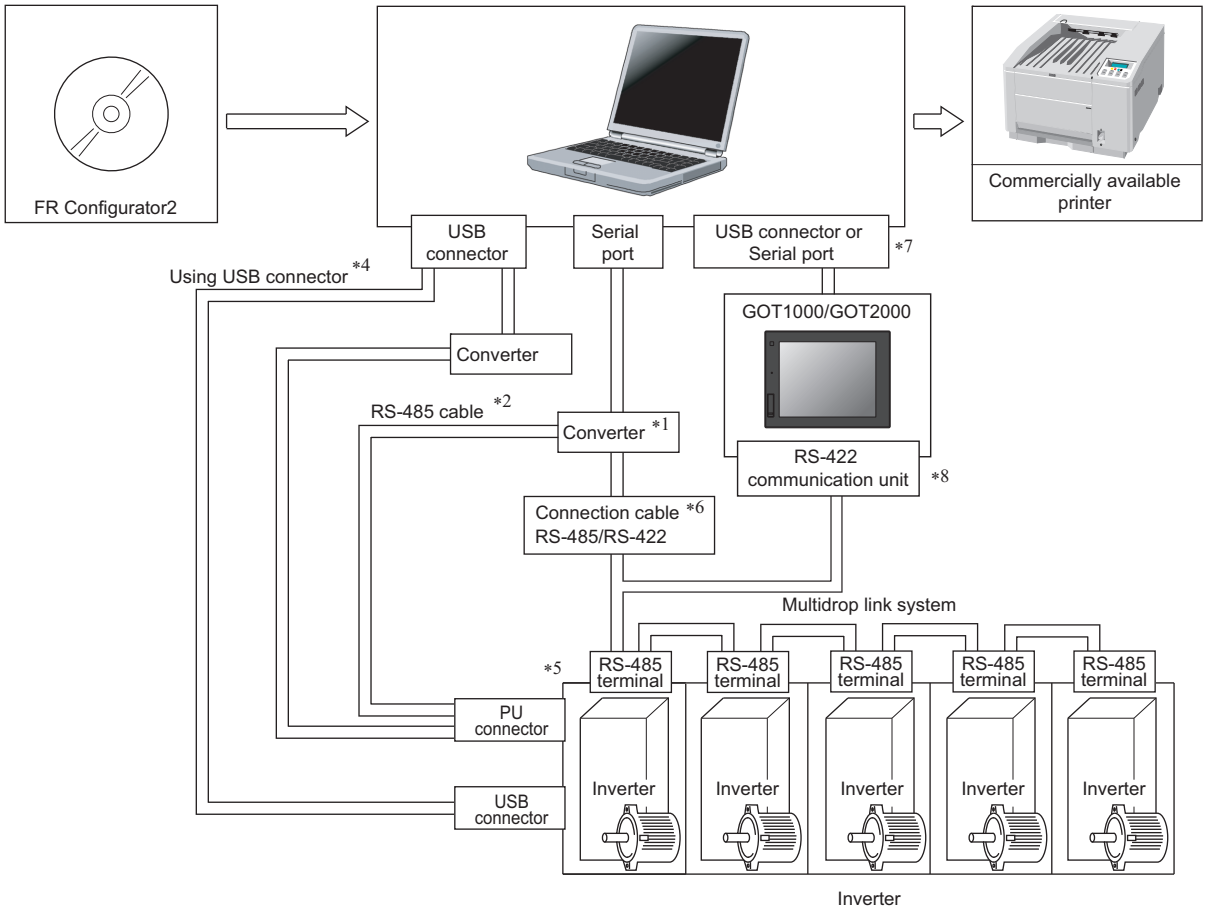
1.2.2 Compatible inverters

FR Configurator2 is compatible with the following inverters.

Series	Model	Capacity	Structure, functionality
FR-A800 series	FR-A820	00046(0.4K) to 04750(90K)	Standard model
	FR-A840	00023(0.4K) to 06830(280K)	
	FR-A842	07700(315K) to 12120(500K)	Separated converter type

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.



*1 When using serial port of a personal computer, a commercially available converter is required.
Examples of product available on the market (as of February 2012)
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 a RS- 232C/RS-485 conversion cable with built-in converter. No additional cable or connector is required. Contact a manufacturer for details of the product.

*2 Connection cable
Examples of product available on the market (as of February 2012)
Connector: RJ45 connector
Example: Tyco Electronics
5-554720-3
Cable: Cable in compliance with EIA568 (such as 10BASE-T cable)
Example: Mitsubishi Cable Industries, Ltd.
SGLPEV-T (Cat5e/300 m) 24 AWG × 4 P

*3 USB/RS-485 convert cable
Examples of product available on the market (as of February 2012)
Model: DINV-U4
Diatrend Corp.
Refer to page 36 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 with PU connector, RS-485 terminal, or USB connector is available.

*6 Maximum overall length of connection cable: 500 m

*7 The USB or a serial port (one of ports 1 to 63) can be used as the communication port. Set the communication port in the Communication settings screen 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. Only the USB connection is available for connecting the GOT2000 series to a personal computer. For the GOT1000 series, an RS-422 communication unit (GT15-RS4-9S) is required.

*8 For the compatible version of GOT or details of the RS-422/485 connection, refer to the GOT1000/GOT2000 Series Connection Manual.

Name	Model	Manufacturer
Communication cable	SGLPEV-T (Cat5e/300 m) 24AWG × 4P	Mitsubishi Cable Industries, Ltd.
RJ-45 connector	5-554720-3	Tyco Electronics

1.3 Installation and uninstallation

1.3.1 Installation of FR Configurator2

To use FR Configurator2 (SW1DND-FRC2-E), 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

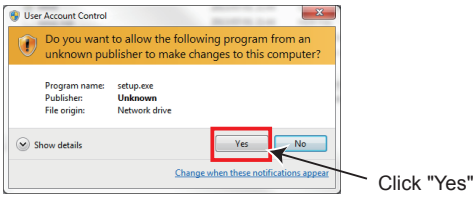
The following section describes the procedures of installing FR Configurator2.

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

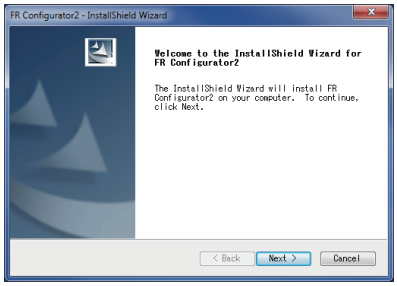
NOTE

- 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)

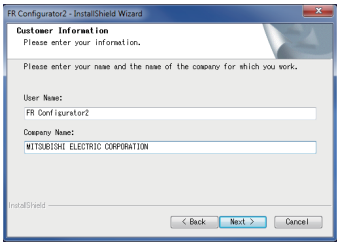
- When using Windows Vista or Windows 7, the following window may appear during the installation. Click "Continue".



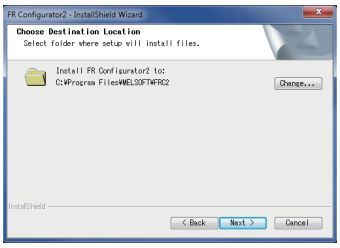
(2) The window shown on the right is displayed. Click [Next>].

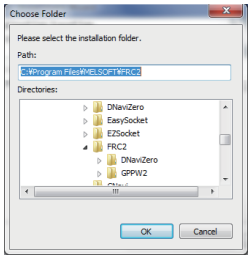


(3) Enter user name and company name. Click [Next>] after entering.

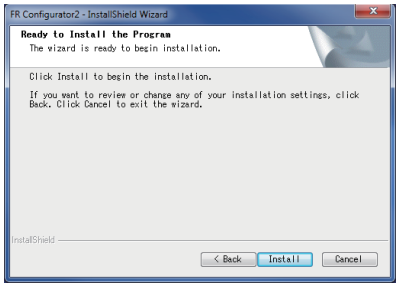


(4) Check the installation folder and click [Next>]. To change the installation folder, click [Change...] and select an installation folder. A new folder "FRC2" is created at the selected installation folder. This software is installed there. (If the installation folder is not changed, the software is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



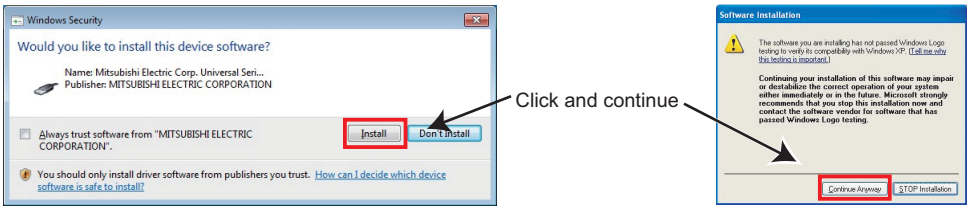


(5) Check that the setting is correct and click [Install]. Installation will start. To change the setting, click [<Back].



NOTE

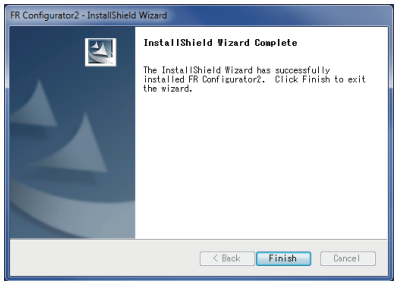
- The following window may appear during the installation.



For Windows Vista or Windows 7 For Windows XP

- Continue the installation by clicking [Continue Anyway] for Windows XP and "Install" for Windows Vista, Windows 7 or Windows 8.

(6) Installation is completed.
Click [Finish] to close the window. Restart the personal computer before using the software.

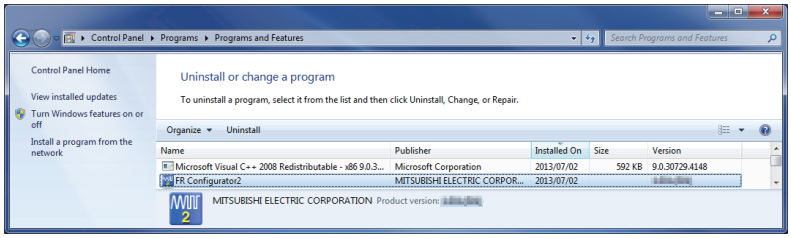


NOTE

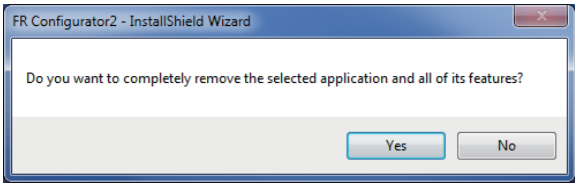
- When Windows Vista or Windows 7 is used, the "Program Compatibility Assistant" dialog box may appear when completing the installation. If the window appears, select "This program installed correctly".
- If the user is not an administrator (Administrator account), the installation cannot be performed. Log in as a user with administrator authority, and start the installation again.

1.3.2 Uninstallation of FR Configurator2

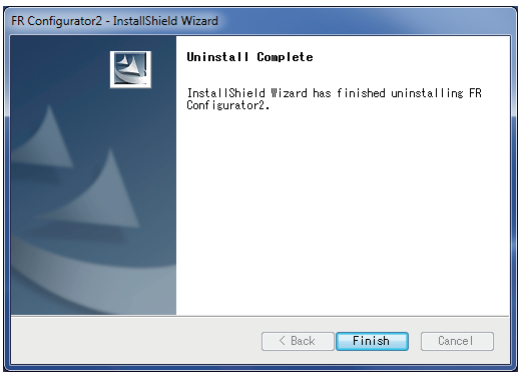
Open the [Start] menu of Windows, and then click [Control Panel]. Click "Programs" in the "Control Panel" window.
When "Programs and Features" window is displayed, select "FR Configurator2" to start uninstallation.



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 uninstallation is completed. Click [Finish] to close the window.



NOTE

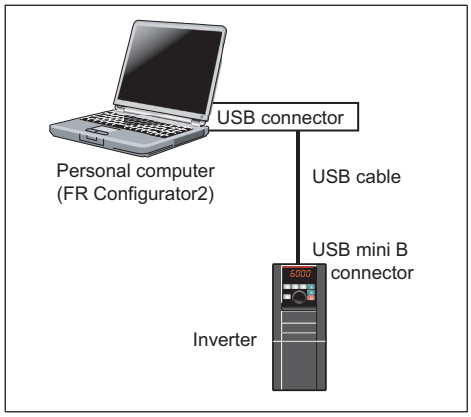
- Uninstallation is unavailable while the application is running. Perform the uninstallation after closing the application.
- For Windows XP, uninstall the software as follows.
  1. Select [Control panel] on the start menu and display the [Add or Remove Programs] window.
  2. Select FR Configurator2 and click the [Delete] button.

1.4 Connection and parameter setting

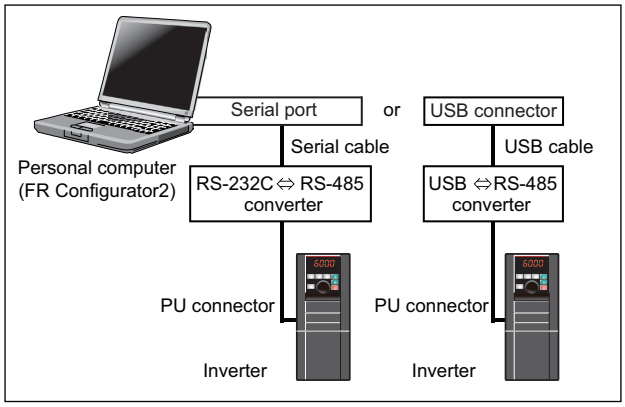
1.4.1 Connection method

For FR Configurator2, communication via USB connector, PU connector, RS-485 terminal block, or GOT is available. USB connection is initially selected. The Developer function is available only during communication via the PU connector.

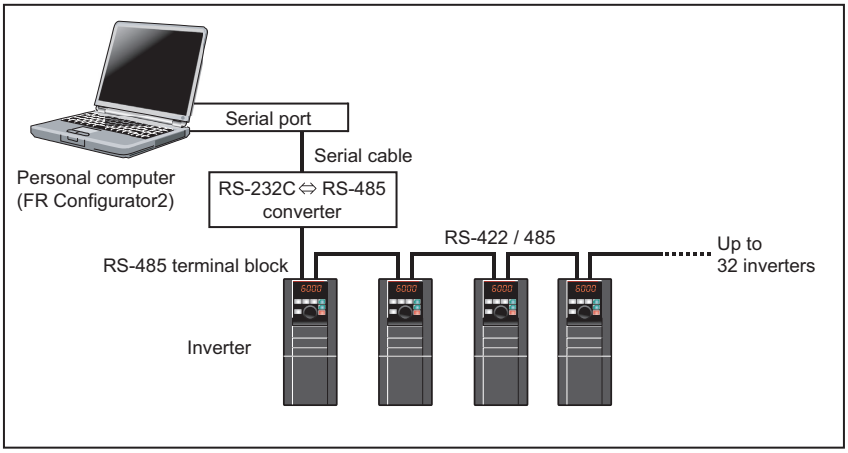
- USB connection (Refer to page 16)
  Connect to USB connector (mini B connector) of the inverter.
  1:1 connection is supported. Connection with using USB hub is not supported.



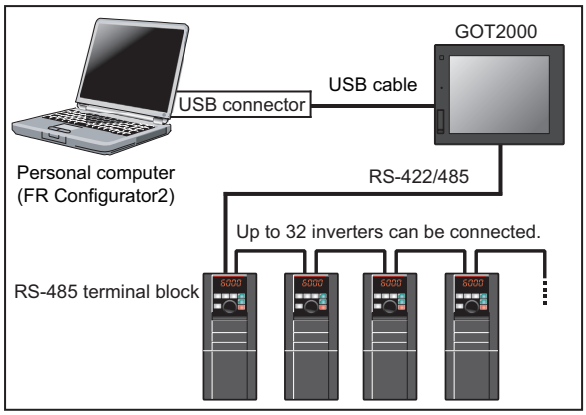
- Serial communication (PU connector)
  (Refer to page 19)
  Connect to PU connector of the inverter. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required.



- Serial communication (RS-485 terminal) (Refer to page 22)
  Connect to RS-485 terminal of the inverter. Up to 32 inverters can be connected.



- Communication through GOT (USB / Serial communication) (Refer to page 22)
  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.

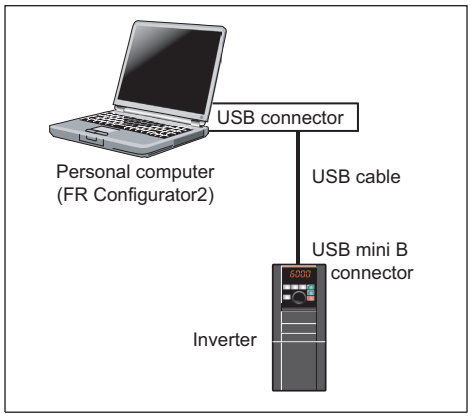


NOTE

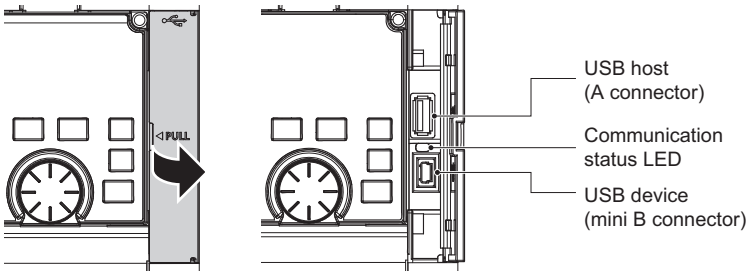
- Inserting or pulling out a USB cable during FR Configurator2 operation may cause the inverter to be unrecognized. Insert and pull out the USB cable for several times, or reset the inverter with the USB cable connected to the personal computer.
- If the **Pr. 999 Automatic parameter setting** setting 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.
  Do not set **Pr. 999** while FR Configurator2 is used. (For **Pr. 999**, refer to the Instruction Manual (Detailed) of the inverter.)
- Only the USB connection is available for connecting the GOT2000 series to a personal computer.

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.



To communicate with FR Configurator2 by the USB connection between the inverter and a personal computer, use the USB mini B connector at the inverter side



- Applicable cable

Interface	Conforms to USB1.1
Transmission speed	12 Mbps
Wiring length	Maximum 5 m
Connector	USB mini B-connector (receptacle mini B type)
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	**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

NOTE

- Switching of the operation mode is available using "test operation" (on page 75) or "parameter list" (on page 49) on the sub window.
- Set a station number of the each inverter in **Pr.547 USB communication station number**. Perform inverter reset after setting the parameter.

- Related parameter list

Pr.	Name	Initial value	Setting range	Description
547*1 N040	USB communication station number	0	0 to 31	Inverter station number specification.
548*1 N040	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	Sets the interval of communication check time. If a no-communication state persists for longer than the permissible time, the inverter trips (E.USB).
			9999	No communication check
551*2 D013	PU mode operation command source selection	9999	1	Selects the RS-485 terminal as the PU operation mode command source.
			2	Selects the PU connector as the PU operation mode command source.
			3	Selects the USB connector as the PU operation mode command source.
			9999	USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.

*1 Changed settings are enabled at the next power-ON or inverter reset.
*2 **Pr. 551** is always write-enabled.

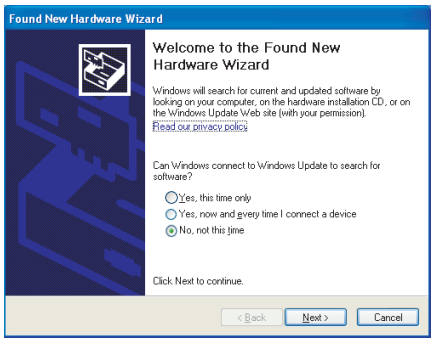
NOTE

- Always reset the inverter after making the setting of the parameters. After you have changed the communication-related parameters, communication cannot be established until the inverter reset.

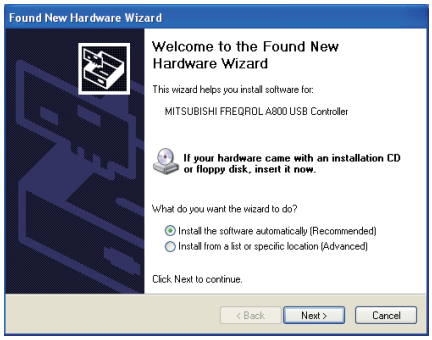
◆When connecting USB for the first time

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.
The following additional wizard is displayed for Windows XP. For Windows Vista and Windows 7, inverter is automatically detected.

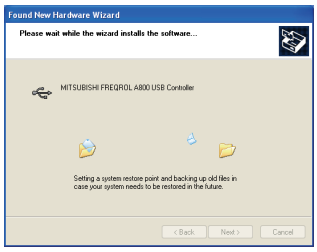
(1) Select "No, not this time", and click [Next].



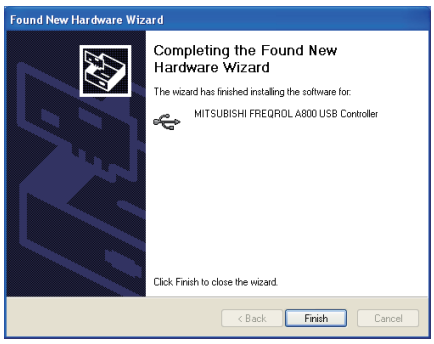
(2) Select "Install the software automatically (Recommended)" and click [Next].



(3) If the dialog box shown on the right is displayed when using Windows XP, click [Continue Anyway] to proceed the installation.

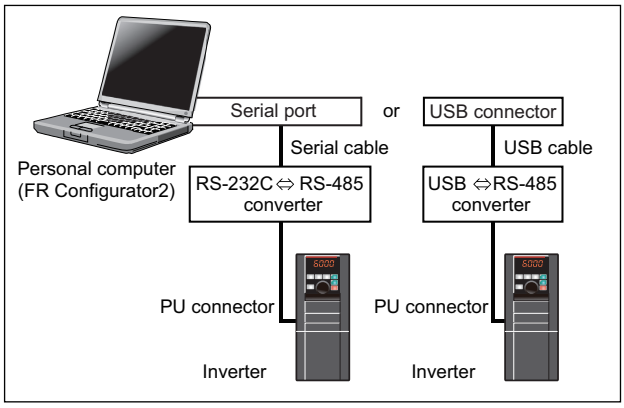


(4) The installation of the driver is completed.
Click [Finish] to close the window.



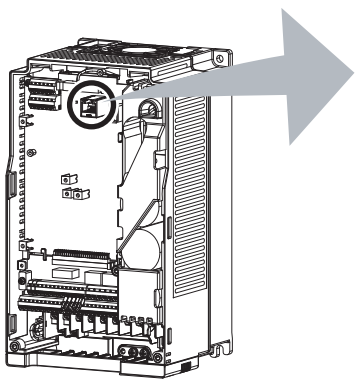
1.4.3 Connection using PU connector

PU connector is used for connecting with a computer. Serial port/RS-485 converter (cable) or USB/RS-485 converter (cable) is required. 1:1 connection is supported.

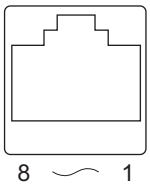


◆PU connector pin layout

Example with FR-A800



Inverter (receptacle) Front view



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

- Refer to the following when fabricating the cable on the user side.
  Commercially available product example (as of February 2012)

Product name	Type	Manufacturer
10BASE-T cable	SGLPEV-T 0.5 mm × 4P*1	Mitsubishi Cable Industries, Ltd.
RJ-45 connector	5-554720-3	Tyco Electronics

*1 Do not use pins No. 2, 8 of the 10BASE-T cable.

- Distributor is necessary when connecting multiple inverters.
  Refer to the inverter manual for connecting multiple inverters.
- 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.
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	—	**Pr.122 PU communication check time interval** ≠ "0" **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

NOTE

- Set 3 s or more (or 9999) in **Pr.122 PU communication check time interval**.
- Set a station number of the each inverter in **Pr.117 PU communication station number** when connecting multiple inverters. Perform inverter reset after setting the parameter.

- Related parameter list

Pr.	Name	Initial value	Setting range	Description	
117 N020	PU communication station number	0	0 to 31 *1	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.	
E022	PU communication data length	0	0	Data length 8 bits	
			1	Data length 7 bits	
E023	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	Number of PU communication retries	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 will trip.	
			9999	If a communication error occurs, the inverter will not trip.	
122 N026	PU communication check time interval	9999	0	RS-485 communication is enabled. Note that a communication fault (E.PUE) occurs as soon as the inverter is switched to the operation mode with control source.	
			0.1 to 999.8 s	Communication check (signal loss detection) time interval. If a no-communication state persists for longer than the permissible time, the inverter trips (depends on **Pr. 502**).	
			9999	No communication check (signal loss detection).	
123 N027	PU communication waiting time setting	9999	0 to 150 ms	Set the waiting time between data transmission to the inverter and response.	
			9999	Set with communication data.	
549 N000	Protocol selection	0	0	Mitsubishi inverter protocol (computer link)	
			1	Modbus-RTU protocol	

Pr.	Name	Initial value	Setting range	Description
551*2 D013	PU mode operation command source selection	9999	1	Selects the RS-485 terminal as the PU operation mode command source.
			2	Selects the PU connector as the PU operation mode command source.
			3	Selects the operation panel as the PU operation mode command source.
			9999	USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.

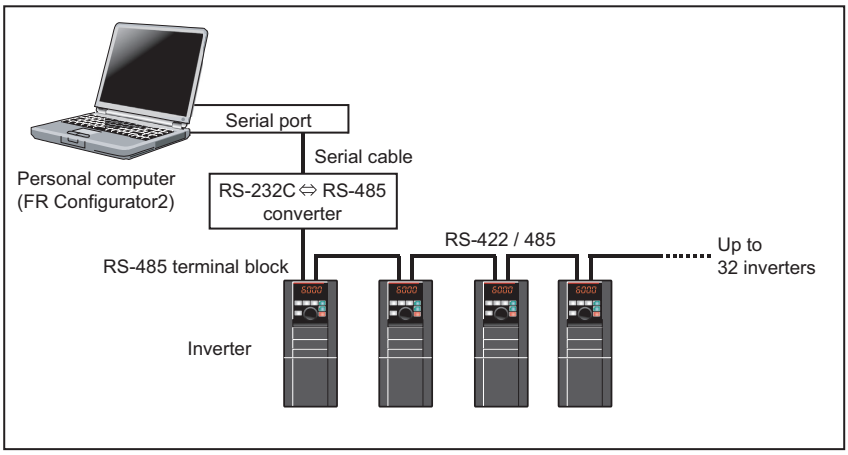
*1 **Pr.549** = "0" (Mitsubishi inverter (Computer link) protocol).
*2 **Pr.551** is always write-enabled.

NOTE

- Always reset the inverter after making the setting of the parameters. After you have changed the communication-related parameters, communication cannot be established until the inverter reset.
- To change an inverter parameter value, use the operation panel (FR-DU08) or parameter unit (FR-PU07). 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 multiple inverters using RS-485 terminal

RS-485 terminal is used for connecting multiple inverters with Serial port of a computer.
Up to 32 inverters can be connected. Serial/RS-485 converter (on page 19) is required.



◆Related parameters for multiple connection using RS-485 terminal

Set the following communication parameter when connecting RS-485 terminal 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	No	Set the station number of the each inverter in **Pr.331 RS-485 communication station number** (when connecting multiple inverters) **Pr.336 RS-485 communication check time interval** ≠ "0" (initial value 0) **Pr.337 RS-485 communication waiting time setting** = "9999 (initial value)"	Initial value	NET
	Yes		**Pr.551 PU mode operation command source selection** = "1" (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 the each inverter in **Pr.117 PU communication station number** and **Pr.331 RS-485 communication station number** when connecting multiple inverters.

• Related parameter list

Pr.	Name	Initial value	Setting range	Description
331 N030	RS-485 communication station number	0	0 to 31 (0 to 247) *1	Set the inverter station number. Set the inverter station numbers when two or more inverters are connected to one personal computer.
336 N036	RS-485 communication check time interval	0s	0	RS-485 communication is enabled. However, the inverter trips 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 longer than the permissible time, the inverter trips.
			9999	No communication check (signal loss detection)
337 N037	RS-485 communication waiting time setting	9999	0 to 150 ms	Set the waiting time between data transmission to the inverter and response.
			9999	Set with communication data.
549 N000	Protocol selection	0	0	Mitsubishi inverter protocol (computer link)
			1	Modbus-RTU protocol
550 D012	NET mode operation command source selection	9999	0	The communication option is the command source when in the NET operation mode.
			1	The RS-485 terminals are the command source when in the NET operation mode.
			9999	Communication option is recognized automatically. Normally, the RS-485 terminals are the command source. When the communication option is mounted, the communication option is the command source.
551*2 D013	PU mode operation command source selection	9999	1	Selects the RS-485 terminals as the PU operation mode command source.
			2	Selects the PU connector as the PU operation mode command source.
			3	Selects the USB connector as the PU operation mode command source.
			9999	USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.

*1 **Pr.549** = “0” (Mitsubishi inverter (Computer link) protocol).
*2 **Pr.551** is always write-enabled.

NOTE

• Always reset the inverter after making the setting of parameters. After you have changed the communication-related parameters, communication cannot be established until the inverter reset.

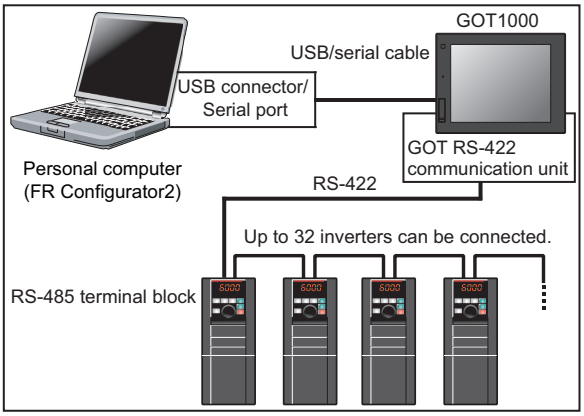
1.4.5 Connection through GOT (FA transparent function)

Using the FA transparent function of GOT1000/GOT2000 series, connecting an inverter to FR Configurator2 is available through GOT.

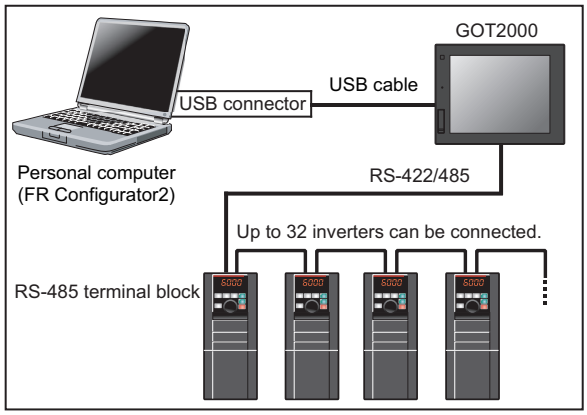
The FA transparent function enables reading, writing and monitoring of a programmable controller of Mitsubishi Electric Corporation through GOT, while connecting the Mitsubishi programmable controller and a personal computer.

A serial port or USB is used for connecting the personal computer and GOT. RS422/485 is used for connecting GOT and the inverter.

[Example of RS-485 terminal connection]

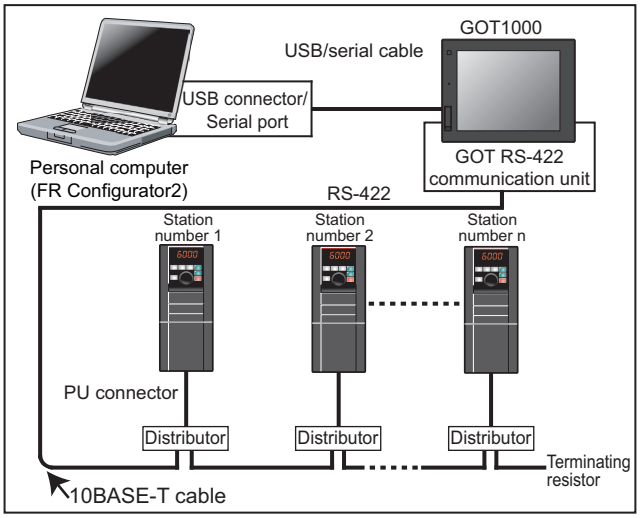


GOT1000 connection example

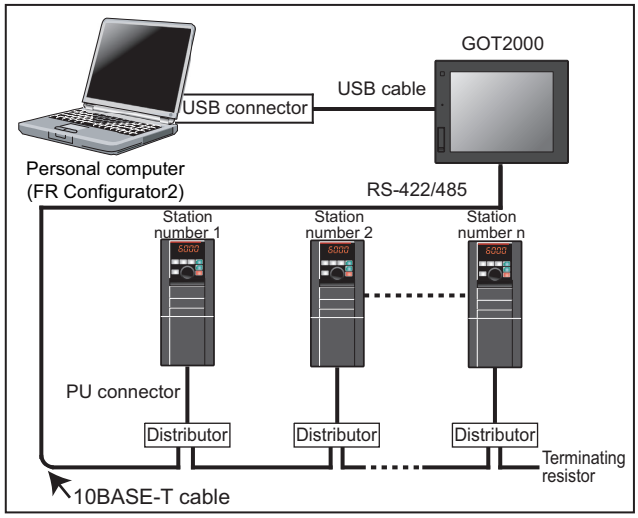


GOT2000 connection example

[Example of PU connector connection]



GOT1000 connection example



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 ONLINE.
  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 GOT (when GOT is monitoring the inverter which is not connected). In that case, set the timeout time value more than the following. (Refer to page 36.)
  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 the GOT2000 series is connected, the parameters required for the GOT connection are automatically changed by setting the automatic recognition on the GOT2000 series side.
- 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 on the GOT side.
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 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) (SH-081197ENG).

◆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".

- List of related parameters

Pr.	Name	Initial value	Setting range	Description	
117 N020	PU communication station number	0	0 to 31 *1	Set the inverter station numbers. The inverter station number setting is required when multiple 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, the communication speed is 19200 bps when the setting value is "192".	
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 odd parity	
			2	With even parity	
121 N025	Number of PU communication retries	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 trips.	
			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 longer than the permissible time, the inverter trips (depends on **Pr.502**).	
			9999	No communication check (signal loss detection).	
123 N027	PU communication waiting time setting	9999	0 to 150 ms	Set the waiting time 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*1	0 to 31 (0 to 247)	Sets the inverter station number. (the same specifications as **Pr.117**)	
332 N031	RS-485 communication speed	96	3 to 6, 12 to 24, 48, 96, 192, 384, 576 to 768, 1152,	Select the communication speed. (the same specifications as **Pr.118**)	
N032	PU communication data length	0	0, 1	Select the data length. (the same specifications as **P.E022**)*3	

Pr.	Name	Initial value	Setting range	Description	
N033	PU communication stop bit length	1	0, 1	Select the stop bit length. (the same specifications as **P.E023**)*4	
333	RS-485 communication stop bit length / data length	1	0, 1, 10, 11	Select the stop bit length and data length. (the same specifications as **Pr.119**)*3*4	
334 N034	RS-485 communication parity check selection	2	0, 1, 2	Select the parity check specifications. (the same specifications as **Pr.120**)	
335*5 N035	RS-485 communication retry count	1	0 to 10, 9999	Set the permissible number of retries for unsuccessful data reception. (the same specifications as **Pr.121**)	
336*5 N036	RS-485 communication check time interval	0 s	0	RS-485 communication is enabled. However, the inverter trips if operation is changed to NET operation mode.	
			0.1 to 999.8 s	Set the communication check (signal loss detection) time interval. (the same specifications as **Pr.122**)	
			9999	No communication check (signal loss detection).	
337*5 N037	RS-485 communication waiting time setting	9999	0 to 150 ms 9999	Set the waiting time between data transmission to the inverter and response. (the same specifications as **Pr.123**)	
341*5 N038	RS-485 communication CR/LF selection	1	0, 1, 2	Select presence/absence of CR/LF. (the same specifications as **Pr.124**)	
549 N000	Protocol selection	0	0	Mitsubishi inverter (computer link) protocol	
			1	Modbus-RTU protocol	
551*2 D013	PTC thermistor protection level	9999	1	The RS-485 terminals are the command source when in the PU operation mode.	
			2	The PU connector is the command source when in the PU operation mode.	
			3	The USB connector is the command source when in the PU operation mode.	
			9999	USB automatic recognition Normally, the operation panel (PU connector) is the command source. When the USB is connected, the USB connector is the command source.	
999 E431	Automatic parameter setting	9999*6	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 Automatic setting
			13	GOT initial setting (RS-485 terminals)	
			20	50 Hz rated frequency	
			21	60Hz 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 With the Modbus-RTU protocol, the data bit length is fixed at 8 bits.
*4 With the Modbus-RTU protocol, the stop bit length is depending on the **Pr.334** setting.
*5 With the Modbus-RTU protocol, the setting is invalid.
*6 The read value is always "9999".

NOTE

- Always perform an inverter reset after performing the initial setting of each parameter. After changing the communication-related parameters, communication cannot be made until the inverter is reset.

1.5 Setting of operation mode of the inverter

The inverter has three operation modes.

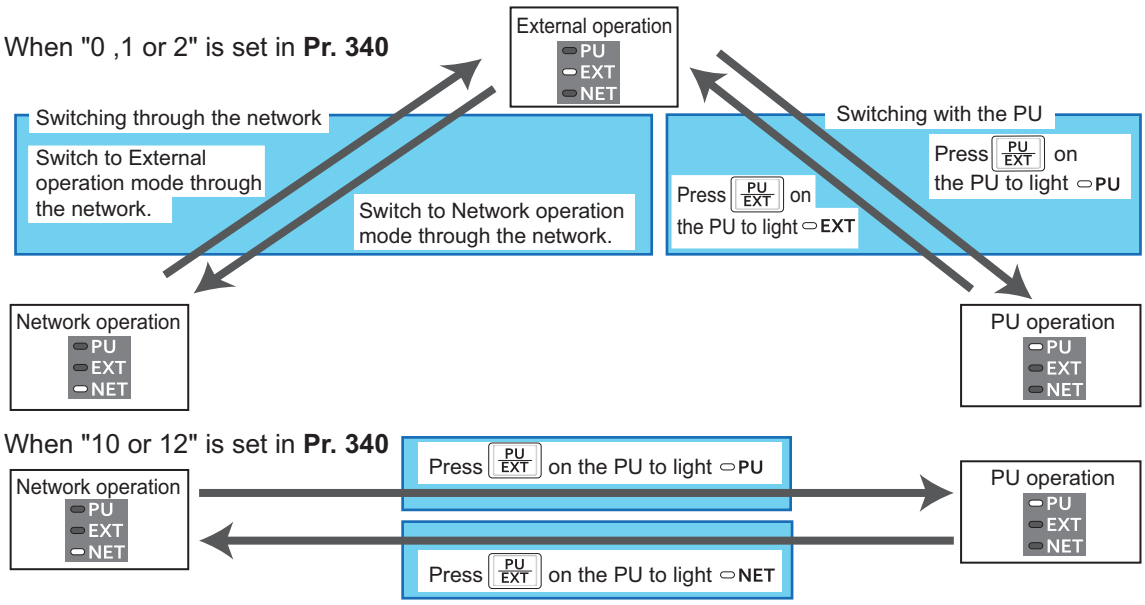
External operation mode: Operation and frequency commands are given by an external potentiometer and switches, via control circuit terminals.

PU operation mode: Operation and frequency commands are given by the operation panel (FR-DU08), parameter unit (FR-PU07), or RS-485 communication, via the PU connector.

Network operation mode (NET operation mode): Operation and frequency commands are given via the RS-485 terminals or a communication option.

Pr. 79 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 mode is enabled. *1
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 mode is enabled. *1
	X12 (MRS) signal OFF...External operation mode	External operation mode fixed. (Forcibly switched to External operation mode.)

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



*When using USB connection, operation mode changing is available from FR Configurator2. (Refer to page 49 , 75)

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 75) or "parameter list" (on page 49) on the sub window.
Refer to the Instruction Manual (Detailed) of the inverter for details of each parameter.

Controllability through communication

- Monitoring and parameter read can be performed from any operation regardless of the operation mode.

Operation location	Condition (Pr. 551 setting)	Operation mode / Item	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)*6	NET operation (with communication option)*7
Control by RS-485 communication via PU connector	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	○	○	○	○	○	
Control by communication via RS-485 terminals	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
		Parameter read	○	○	○	○	○	○
		Inverter reset	×	×	×	×	○*2	×

Setting of operation mode of the inverter

Operation location	Condition (Pr. 551 setting)	Operation mode / Item	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)*6	NET operation (with communication option)*7
Operation via the 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	○	○	○	○	○	
Control by communication from communication option	—	Run command (start, stop)	×	×	×	×	×	○*1
		Running frequency setting	×	×	×	×	×	○*1
		Monitor	○	○	○	○	○	○
		Parameter write	×*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, △: Some are enabled

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

*2 At occurrence of RS-485 communication error from PU connector, 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. 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 independently of the operation mode and command source presence/absence. When **Pr. 77** = "1", 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 When **Pr.550 NET mode operation command source selection** = "0" (communication option valid) or **Pr.550 NET mode operation command source selection** = "9999" and the communication option is mounted.

1.6 Start and close of FR Configurator2

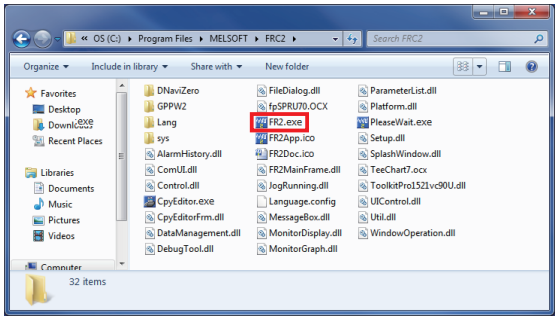
1.6.1 Starting FR Configurator2

There are the following ways to start FR Configurator2.

- Start from Start menu
  Click [Start] on the Taskbar of Windows, and point to [All Programs], [MELSOFT Application], [FR Configurator2], and select [FR Configurator2] in the sub menu to start FR Configurator2.

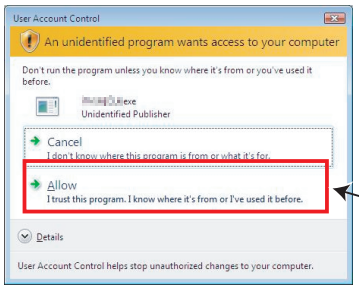
- Start from the project file (*.frc2)
  (Refer to page 43 for the project file (*.frc2).)
  - Select the project file (*.frc2) and execute it (or press the Enter key). The project file settings will be read and FR Configurator2 will be started.
  - Drag and drop the project file to the execution file (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 ".



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 Items] of Windows Vista and [Recent] of Windows 7, Windows 8 or Windows 8.1 are stored in system folders (Program Files for example), the files may not be opened correctly.

1.6.2 Closing FR Configurator2

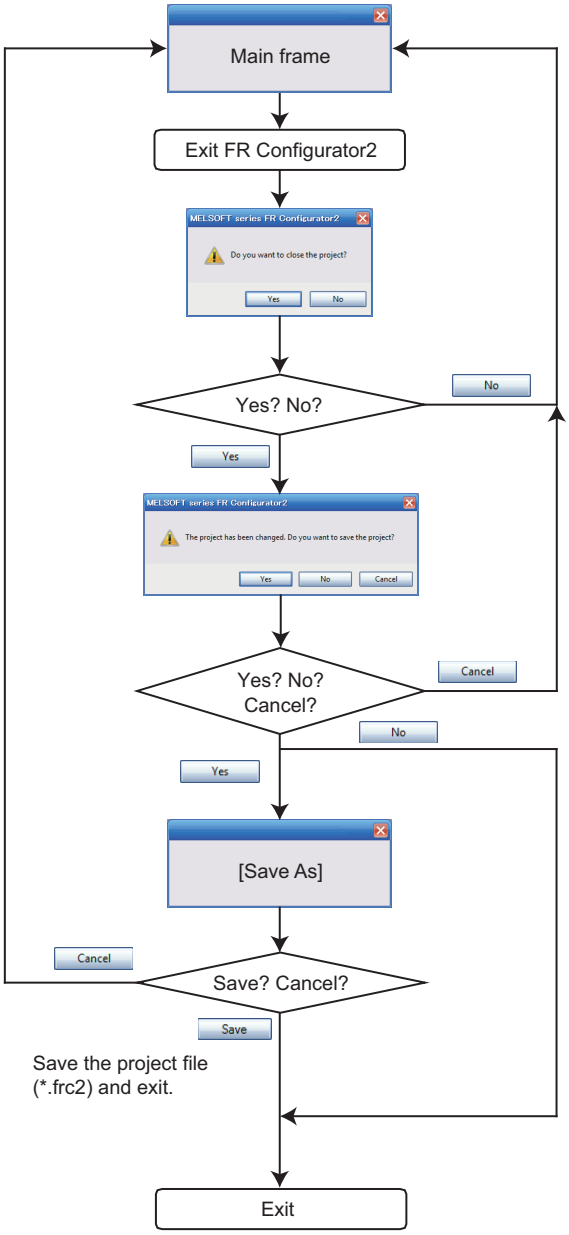
Close FR Configurator2 in the following procedure.

Select [Exit] in [File] menu to close FR Configurator2.

(Press Alt + P to open [Project] menu, and press Ctrl + F4 also 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.



2 PROJECT CREATION

This chapter explains the "PROJECT CREATION".
Always read the instructions before using the equipment.

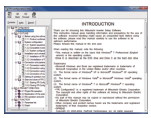
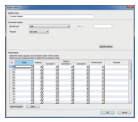
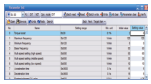
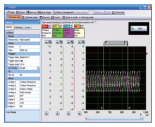
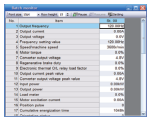
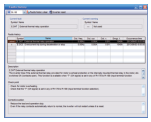
2.1 Project file operation 34
2.2 Explanation of the operating window of FR Configurator2 37
2.3 File operation and print 43

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.

Starting FR Configurator2

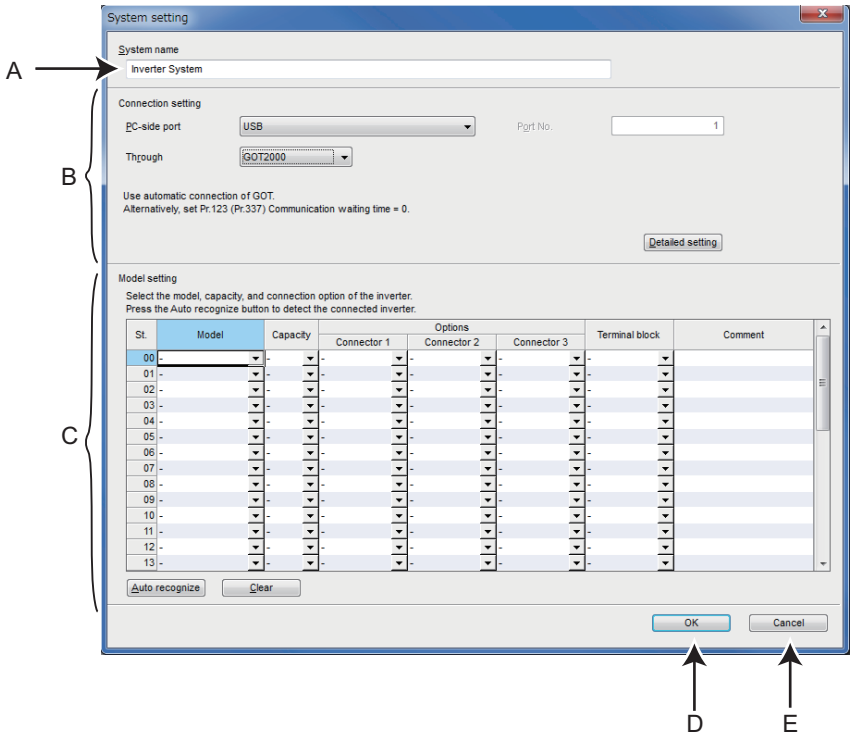
Operation	Function made available after performing the operation	
Starting FR Configurator2	 Developer (Refer to page 77)	
	 USB memory parameter copy file edit (Refer to page 89)	
	 Help(Refer to page 92)	
System setting window	 System setting window(Refer to page 35)	
New project	 Parameter list (Refer to page 48)	 Graph(Refer to page 53)
	 Batch monitor (Refer to page 69)	 Diagnostics(Refer to page 73)
	 Test operation (Refer to page 74)	

Exit

2.1.2 Creating a new project file

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

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



Symbol	Name	Function / description
A	System name	Enter the name of the system within 32 characters.
B	Connection setting	Set the connection type in [PC-side port], [Port No.], [Through], and [Detailed setting].
C	Model setting	• For manual recognition Select the model, capacity, and connection option of the inverter from the list. • For automatic recognition Select "Auto recognize" to enable FR Configurator2 to recognize the information about the connected inverter.
D	OK	Applies the setting to the project and closes the "System setting" window.
E	Cancel	Closes the "System setting" window without applying the setting to the project.

2.1.3 Connection setting

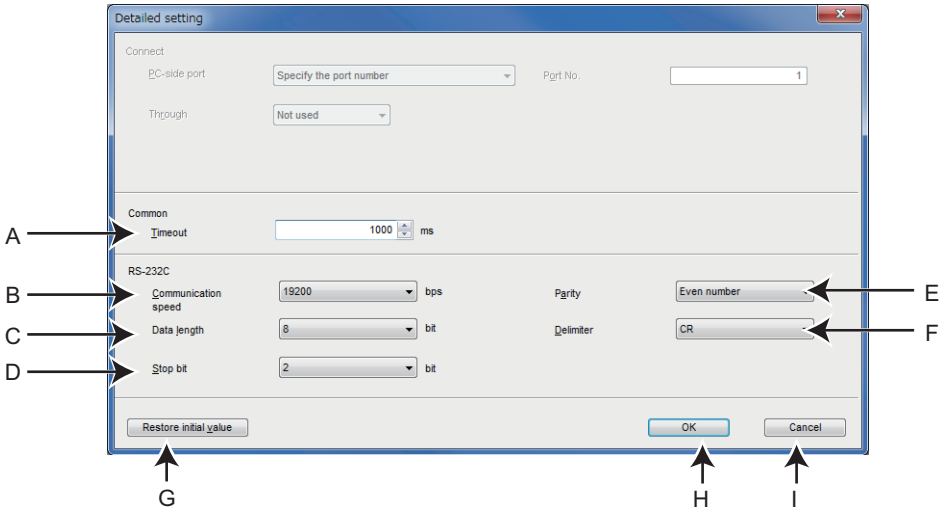
In the "Connection setting" of the "System setting" window, set the communication between the personal computer and inverter, etc.
For communication with the inverter using the USB port of personal computer, set "USB" in the box of "PC-side port".
For communication with the inverter using the serial port of personal computer, set "COM*" 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.

◆Detailed setting

Select [Detailed setting] in the "System setting" window to open the "Detailed setting" window. The connection setting is in accordance with the initial value of the inverter.
Check the PC-side port (serial port/USB) and the port number (1 to 63) of the personal computer.



Symbol	Name	Initial value	Function / description
A	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.
B	Communication speed	19200	Set the communication speed. (Refer to **Pr.118 and Pr.332**.)
C	Data length	8	Set the data bit length. (Refer to **Pr.119 and Pr.333**.)
D	Stop bit	2	Set the stop bit length. (Refer to **Pr.119 and Pr.333**.)
E	Parity	Even	Specify the parity bit. (Refer to **Pr.120 and Pr.334**.)
F	Delimiter	CR	Specify the delimiter at the end of the data. (Refer to **Pr.124 and Pr.341**.)
G	Restore initial value	—	A button to return the communication setting to the initial value of the inverter.
H	OK	—	Proceeds to the "System setting" window. (Refer to **page 35**.)
I	Cancel	—	Clears the setting and closes the "Detailed setting" window.

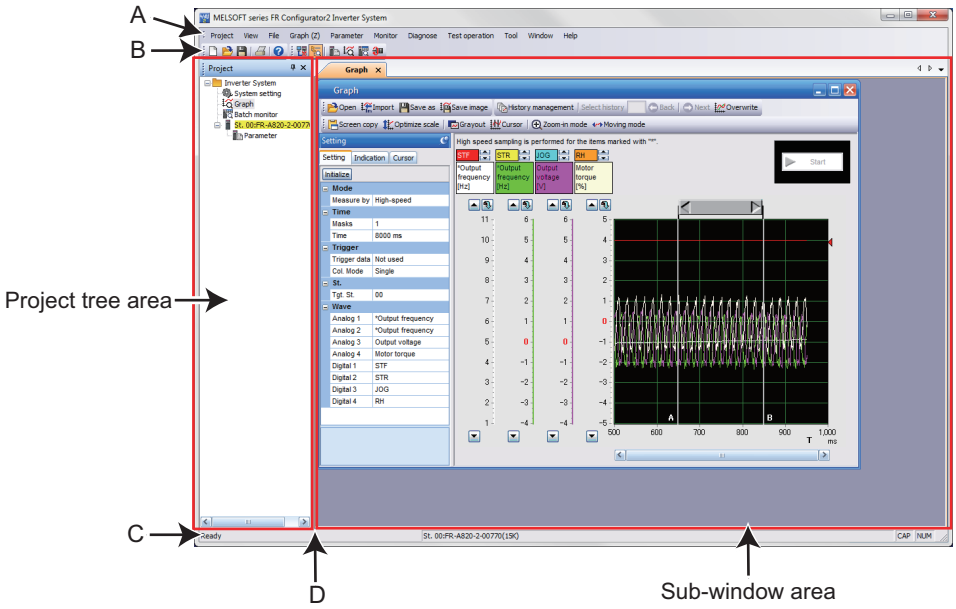
2.2 Explanation of the operating window of FR Configurator2

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.

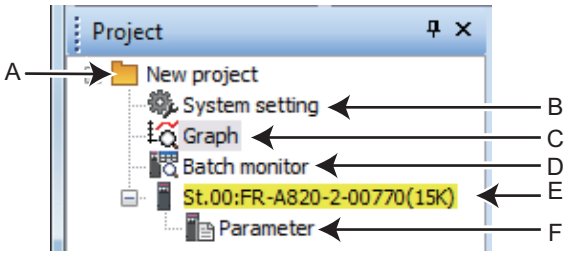
- Project tree area (Refer to page 38)
  An area for showing information of the registered inverter, or for making settings. "System setting", "Graph", and "Batch monitor" are available in this area.
- Sub-window area (Refer to page 39)
  An area for showing obtained monitor data of the inverter. "Parameter list", "Graph", "Batch monitor", and "Faults 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.	40
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.	42
D	Split line	Adjustment of the project tree area size and sub-window area size is available.	—

2.2.2 Project tree area

The project tree area displays a list of the project data including "Parameter list" of the inverters registered in the project, "System setting", "Graph", and "Batch monitor". Select such an item to display the window in the sub-window area.

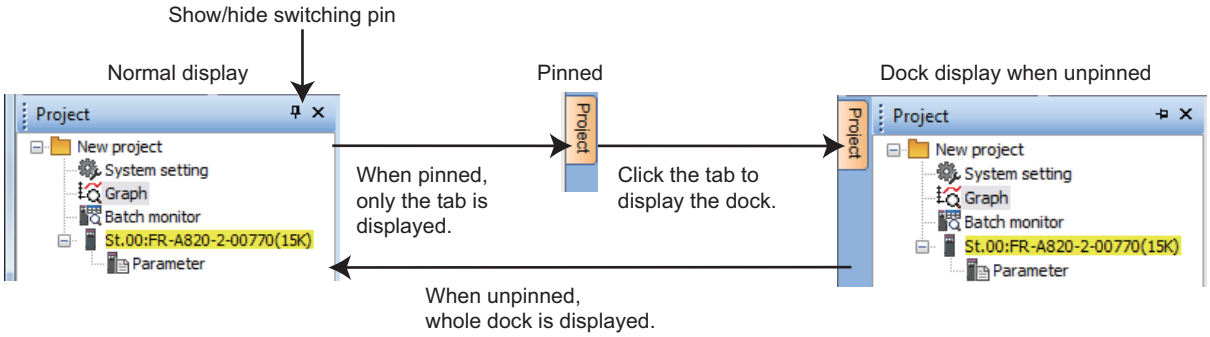


• Details of the project tree area

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.

Display and switching of the project tree area

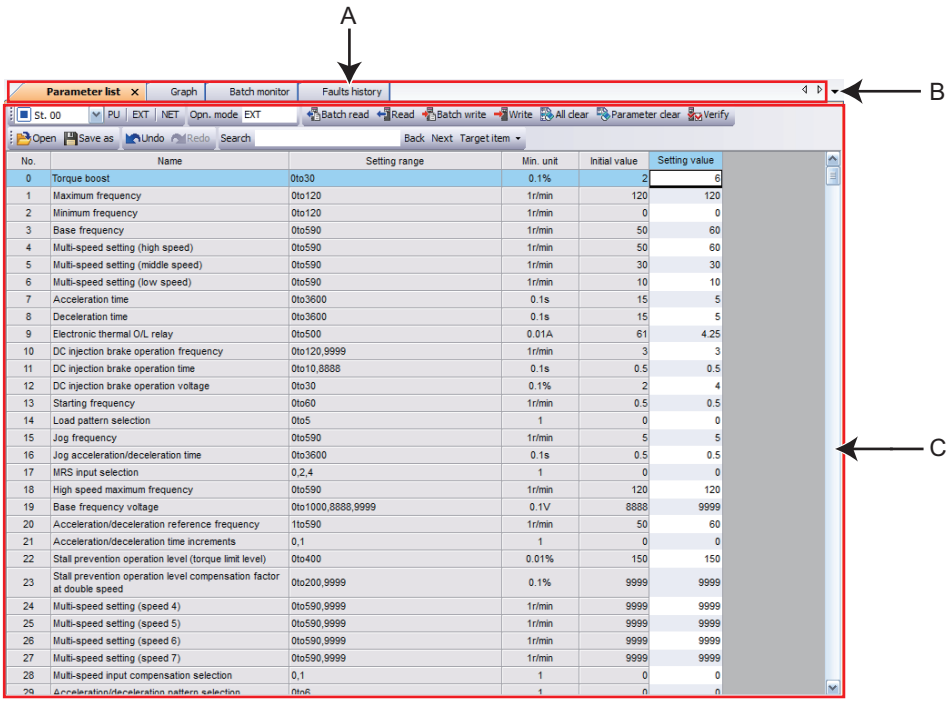
Select [Project window] from [Docking Window] in the [View] menu to switch the display of the project tree area among display, tab display, and hidden.



2.2.3 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	0to30	0.1%	2	6
1	Maximum frequency	0to120	1r/min	120	120
2	Minimum frequency	0to120	1r/min	0	0
3	Base frequency	0to590	1r/min	50	60
4	Multi-speed setting (high speed)	0to590	1r/min	50	60
5	Multi-speed setting (middle speed)	0to590	1r/min	30	30
6	Multi-speed setting (low speed)	0to590	1r/min	10	10
7	Acceleration time	0to3600	0.1s	15	5
8	Deceleration time	0to3600	0.1s	15	5
9	Electronic thermal O/L relay	0to500	0.01A	61	4.25
10	DC injection brake operation frequency	0to120,9999	1r/min	3	3
11	DC injection brake operation time	0to10,8888	0.1s	0.5	0.5
12	DC injection brake operation voltage	0to30	0.1%	2	4
13	Starting frequency	0to60	1r/min	0.5	0.5
14	Load pattern selection	0to5	1	0	0
15	Jog frequency	0to590	1r/min	5	5
16	Jog acceleration/deceleration time	0to3600	0.1s	0.5	0.5
17	MRS input selection	0,2,4	1	0	0
18	High speed maximum frequency	0to590	1r/min	120	120
19	Base frequency voltage	0to1000,8888,9999	0.1V	8888	9999
20	Acceleration/deceleration reference frequency	1to590	1r/min	50	60
21	Acceleration/deceleration time increments	0,1	1	0	0
22	Stall prevention operation level (torque limit level)	0to400	0.01%	150	150
23	Stall prevention operation level compensation factor at double speed	0to200,9999	0.1%	9999	9999
24	Multi-speed setting (speed 4)	0to590,9999	1r/min	9999	9999
25	Multi-speed setting (speed 5)	0to590,9999	1r/min	9999	9999
26	Multi-speed setting (speed 6)	0to590,9999	1r/min	9999	9999
27	Multi-speed setting (speed 7)	0to590,9999	1r/min	9999	9999
28	Multi-speed input compensation selection	0,1	1	0	0
29	Acceleration/deceleration pattern selection	0to6	1	0	0

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.

2.2.4 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.
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 opened. 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 opened.
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 set values of the parameters set in FR Configurator2 with those of the parameters written in the inverter.

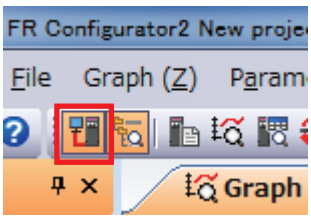
Menu	Pull-down menu		Toolbar icon	Function / operation
Batch monitor (Z)*1	Pause			Pauses the acquisition of the monitor data.
	Resume			Resumes the acquisition of the monitor data.
	Setting...			Sets the monitored item to be displayed.
Graph (Z)*1	Screen copy			Saves the entire sub window as image data (*.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.
Faults history (Z)*1	Faults history clear			Clears the faults history of the inverter.
	Inverter reset			Resets the inverter.
Operation mode (Z)*1	PU		—	Activates the PU operation mode.
	EXT		—	Activates the External operation mode.
	NET		—	Activates the NET operation mode.
Parameter	Parameter list...			Displays the "Parameter list" window in the sub-window area.
Diagnose	Faults history		—	Displays the "Faults history" 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.
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.
Window	Cascade		—	Cascades sub windows.
	Tile horizontally		—	Tiles sub windows horizontally.
	Tile vertically		—	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.

Menu	Pull-down menu	Toolbar icon	Function / operation
Help	FR Configurator2 help...		Starts the help.
	Version information...	—	Opens the "Version information" 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.

◆Communication management

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

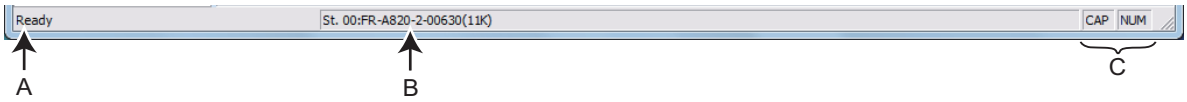


The online/offline condition of communication between FR Configurator2 and the inverter can be checked by the icon that is displayed.

Display	Status
	offline
	online

2.2.5 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	○	○	×	35
*.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	○	○	○	55
*.csv	Holds the waveform data sampled by the graph function in the text file format.		×	○	×	55
*.st1	Holds the operating status of the inverter in a USB memory tracing it.		○	×	○	55
*.jpg	Holds the waveform data of the displayed graph window as an image file.		×	○	×	55
*.emf			×	○	×	55
*.pr4	Holds the parameter setting values set in FR Configurator2.	Parameter list	○	○	×	49
*.xls	Holds Parameter List data in Microsoft Excel format.		×	○	×	49
*.cp1	Holds the parameter setting that has been copied from the inverter to a USB memory device.	USB memory parameter copy file edit	○	○	×	89

(○: Available, ×: Unavailable)

2.3.2 Open the file

◆Saving 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, 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.

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 or the [File] menu to overwrite the file. When saving a file for the first time, "Save As" window is displayed.

NOTE

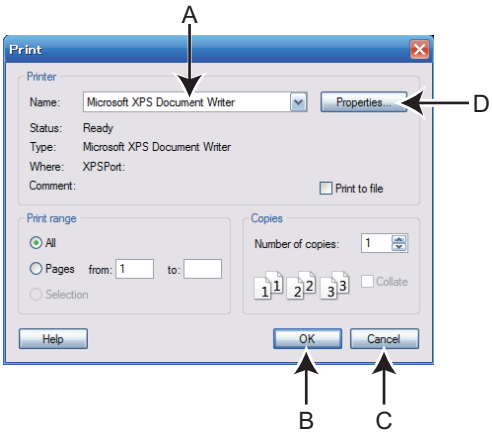
- If the project file (*.frc2) needs to be shared with another user, place it in the folder that another user can access.

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.

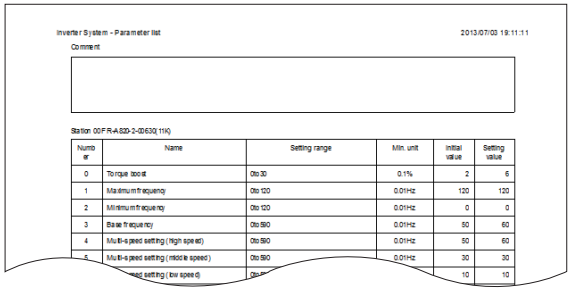
2.3.5 Print

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

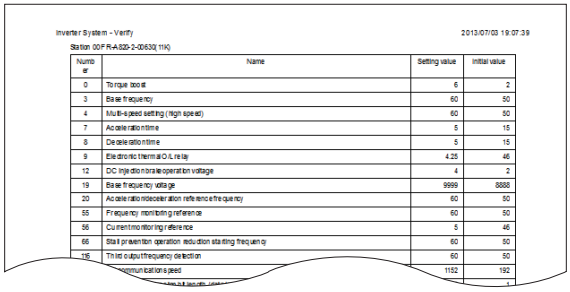


Symbol	Name	Function / description
A	Name	Select a printer.
B	OK	Click to start printing.
C	Cancel	Cancels the printing, and closes the window.
D	Properties	Displays a printer property window of the selected printer.

The parameter list is printed in the following format.



Printing example of a parameter list

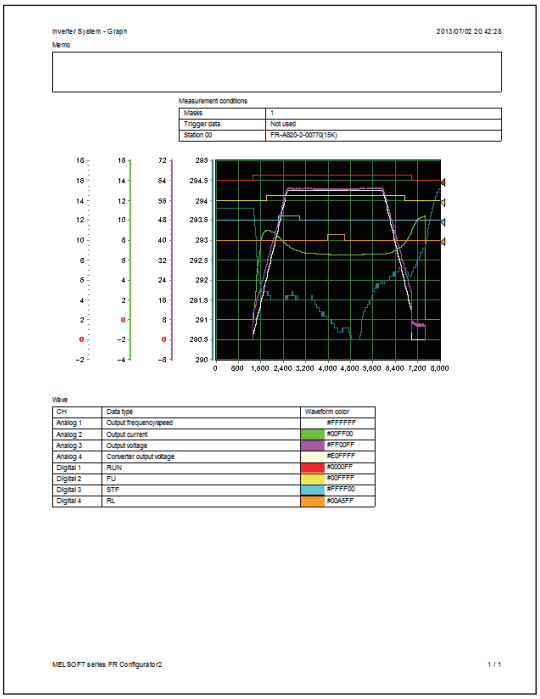


Printing example of a verification list

NOTE

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

The Graph is printed in the following format.



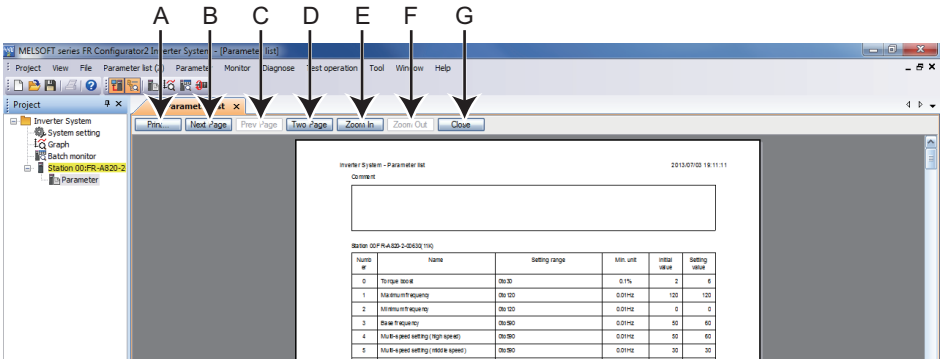
Example of the Graph print

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 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.

MEMO

3 FUNCTION

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

3.1 Parameter list 48
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3.3 Batch monitor 69
3.4 Diagnostics 73
3.5 Test Operation 74
3.6 Using the PLC function 77
3.7 USB memory parameter copy file edit function 89
3.8 Help 92

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.

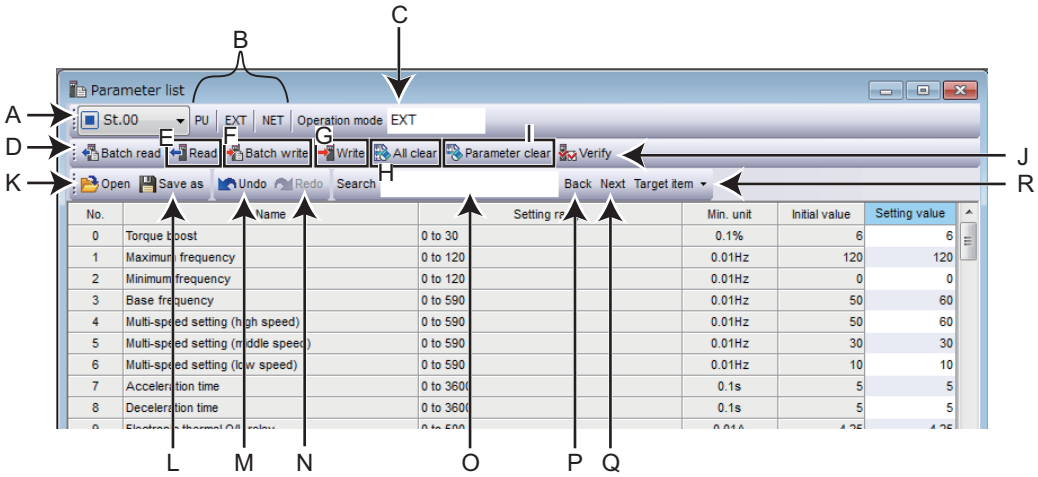
Function	Online	Offline
All parameter clear	○	×
Parameter clear	○	×
Batch read	○	×
Read	○	×
Batch write	○	×
Write	○	×
Verify	○	○
Parameter setting value input	○	○
Undo	○	○
Redo	○	○
Search	○	○

(○: 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 297** do not appear in the parameter list. **Pr.296 and 297** will not change even if parameter settings of another inverter are read. Change **Pr.296 and 297** from the operation panel or the parameter unit.

3.1.1 Parameter list



Symbol	Name	Function / description
A	St. No. (Station number)	Selects a station registered in the project.
B	Operation mode switch	The inverter operation mode can be switched by selecting the operation mode button.
C	Operation mode indication	Shows 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, initial values and parameter files (*.pr4) set in FR Configurator2 against such settings already written to the inverter.
K	Open	Displays the "Open" dialog box for a parameter file (*. pr4) to be opened.
L	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.
M	Undo	Returns the edited parameter setting value to the setting value before editing.
N	Redo	Redoes the setting value changed by "Undo".
O	Search	Searches for the input character string from within the parameter list.
P	Back	Searches for the input character string in the downward direction.
Q	Next	Searches for the input character string in the upward direction.
R	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.
Minimum setting 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. 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.

3.1.2 Parameter clear / all parameter clear

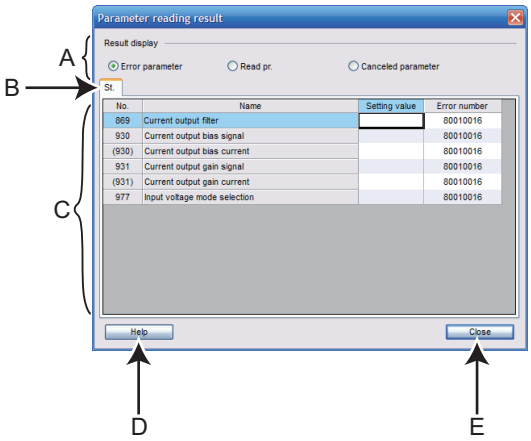
Performing parameter clear or all parameter clear will return the parameters to the initial values.
By selecting [All clear] or [Parameter clear] in the [Parameter list (Z)] menu, or by selecting [All clear] or [Parameter clear] from the toolbar, the confirmation dialog will be displayed, and parameter clear or all parameter clear will be executed. Refer to the Instruction Manual of the inverter for availability of parameter clear and all parameter clear for each parameter.

NOTE

- If parameter clear or all parameter clear is performed from FR Configurator2, clearing of the following communication parameters is not performed. For details regarding each parameter, refer to the Instruction Manual (Startup) for the inverter or the instruction manual for the communication option.
  Pr.117 to Pr.124, Pr.331 to Pr.341, Pr.345, Pr.346, Pr.349, Pr.541 to Pr.544, Pr.547 to Pr.549

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] in the [Parameter list (Z)] menu, or by selecting [Batch read], [Read], [Batch write], or [Write] from 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.	

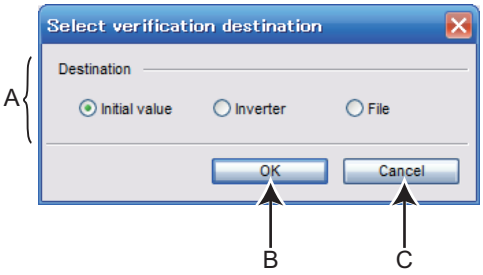
NOTE

- 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.

3.1.4 Parameter verification

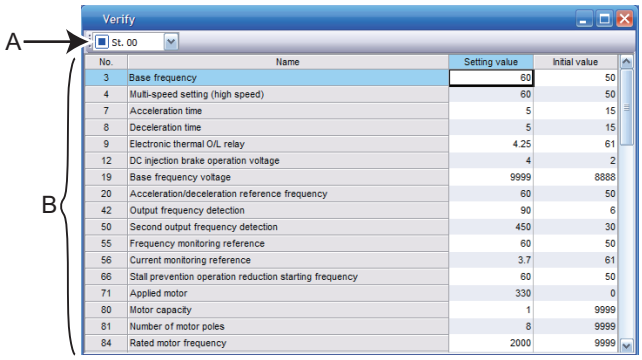
This function accesses the inverter parameters, and verifies the parameter setting values set by FR Configurator2 with the values selected in the verify destination window.

The "Select destination selection" window can be displayed by selecting [Verify...] in the [Parameter list (Z)] menu, 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).
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 Graph

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, 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 only during USB connection.
- 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. 1 [ms] (mask count: 1) 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.	

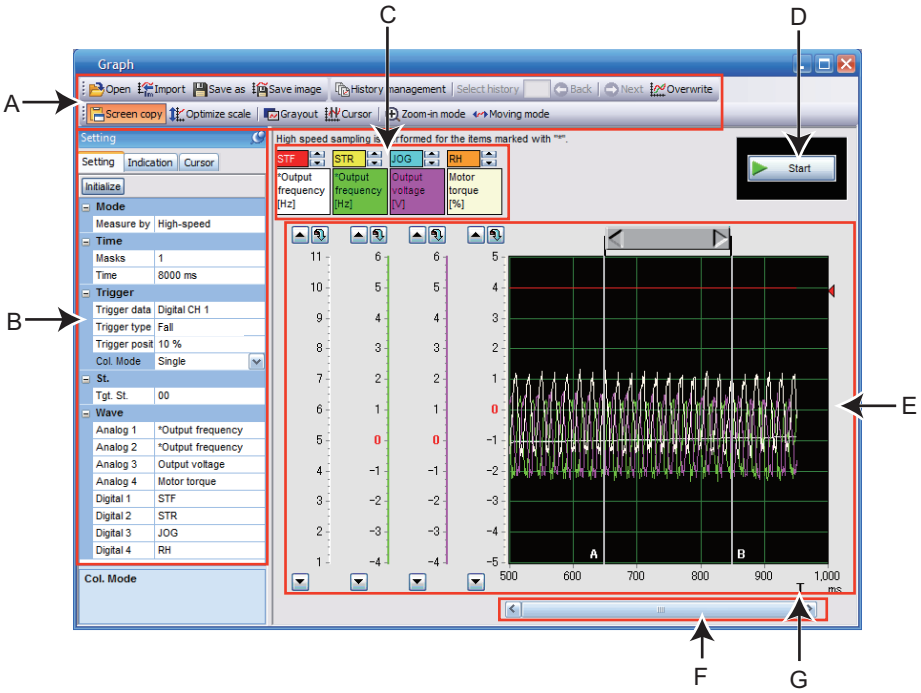
- Trace data display
  Displays in the graph window the trace data that is saved to the USB memory by the inverter.

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.

3.2.1 Graph window

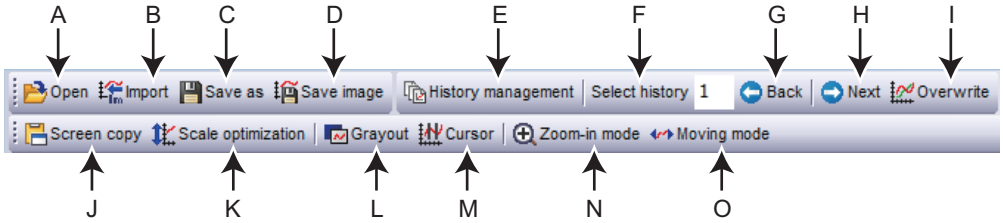


Symbol	Name	Function, description	
A	Toolbar	Allows operation of the file, history control, and graph display settings.	
B	Properties	Setting of the measurement conditions, display conditions, and cursor can be done in the properties.	
C	Sampling item column	Displays the contents of the analog CH and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

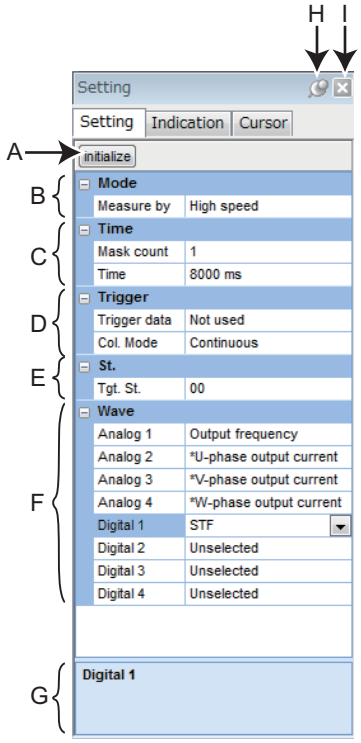
3.2.2 Graph window toolbar



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	History management	Switches between show/hide of the waveform history window.
F	Select history	Shows the history number of the displayed graph window.
G	Back	Changes the order of history numbers displayed in the graph window to ascending.
H	Next	Changes the order of history numbers displayed in the graph window to descending.
I	Overwrite	Switches overlaying of the entire history ON/OFF.
J	Screen copy	Saves the entire sub window to the clipboard as image data (*.bmp).
K	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.
L	Grayout	Changes the display color of the waveform and the display area of the graph (color/gray).
M	Cursor	Switches between show/hide of the screen cursor.
N	Zoom-in mode	Specifies a range of the waveform, and zooms in.
O	Moving mode	Scrolls the waveform data being displayed.

3.2.3 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	Initializes the sampling settings.	
B	Mode	Sets the measurement mode for sampling.	
C	Time	Mask count	Sets the interval for data sampling measurement.
		Measurement time (ms)	Displays the maximum time for data sampling measurement. For details, refer to page 57.
D	Trigger	Sets the start conditions of the sampling measurement. For details, refer to page 60.	
E	St. (Station)	Selects the station to be set for sampling.	
F	Wave	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. For the sampling items, refer to page 58.	
G	Help area	Shows a description of the currently selected item.	
H	Show/hide switching pin	Shows/hides 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.	

◆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 USB connections)
    The sampling interval can be about 0.125 [ms] (mask count 1) 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 sampling time changes due to communication settings. The lower limit of the sampling interval becomes "sampling items × sampling interval lower limit". Refer to the following table for the sampling interval lower limit.

Communication port	Communication speed [bps]	Sampling interval lower limit [ms] *1
Serial port	4800	250
	9600	150
	19200	100
	38400	100
	57600	50
	115200	50
USB	—	50

For the sampling interval and sampling time maximum values, minimum values, and setting units sampling intervals set 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 an alarm trigger is set, the alarm trigger is also counted as a sampling item.
*2 Even if a sampling time shorter than 3000 [ms] is set, the minimum sampling time of 3000 [ms] applies.

Example: Connected to the serial port with a communication speed of 19200 bps, when monitoring three items of output frequency, output current, and output voltage as data items to be displayed in a graph.

Sampling interval lower limit = 100 [ms]

Sampling interval maximum value = 60000 [ms] (60 [s])
Sampling interval minimum value = 100 × 3 = 300 [ms]

Sampling interval maximum value = 60000 × 4000 = 240000000 [ms] (approx. 66.67 [h])
Sampling time minimum value = 300 × 50 = 15000 [ms] (15 [s])

◆Sampling item list

- Items for high speed sampling intervals have " * " attached to the beginning of the name. For details on monitor items, refer to the Instruction Manual of the inverter.
  For digital data sampling items, refer to **the Instruction Manual (Detailed)** of the inverter.

Sampling mode / Sampling item	Monitor	High speed
Output frequency	○	○
Output current	○	○
Output voltage	○	○
Frequency setting value	○	○
Speed/machine speed	○	○
Motor torque	○	○
Converter output voltage	○	○
Regenerative brake duty	○ *1	○ *1
Electronic thermal O/L relay function load factor	○	○
Output current peak value	○	○
Converter output voltage peak value	○	○
Input power	○	○
Output power	○	○
Load meter	○	○
Motor excitation current	○	○
Position pulse	○	○
Cumulative energization time	○	○
Orientation status	○	○
Actual operation time	○	○
Motor load factor	○	○
Torque command	○	○
Torque current command	○	○
Motor output	○	○
Feedback pulse	○	○
PLC function user monitor 1	○	○
PLC function user monitor 2	○	○
PLC function user monitor 3	○	○
PID set point	○	○
PID measured value	○	○
PID deviation	○	○
Motor thermal load factor	○	○
Inverter thermal load factor	○	○
PTC thermistor resistance	○	○
PID measured value 2	○	○
Remote output value 1	○	○
Remote output value 2	○	○
Remote output value 3	○	○
Remote output value 4	○	○
PID manipulated amount	○	○
Second PID set point	○	○
Second PID measured value	○	○

Sampling mode / Sampling item	Monitor	High speed
Second PID deviation	○	○
Second PID measured value 2	○	○
Second PID manipulated amount	○	○
Dancer main speed setting	○	○
*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	×	○
*Output frequency monitor (with sign)	×	○
*Motor rotations par minute	×	○
*Speed command	×	○
*Torque command	×	○
*Motor torque	×	○
*Excitation current command	×	○
*Torque current command	×	○

*1 Available for the standard model only.

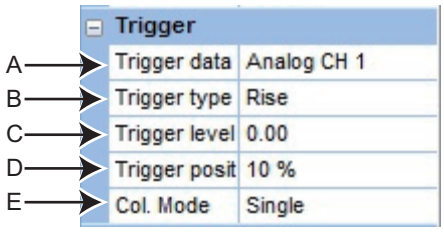
NOTE

- 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.
- 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 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.

3.2.4 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) • Alarm trigger (sampling starts if an alarm occurs)
B	Trigger type	Selects the conditions to determine trigger condition satisfaction from rise or fall. (Only appears when trigger data is 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	Sets 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	Sets the ratio of sampling data to collect before the trigger conditions are met. (Only appears when the trigger data is set to Analog CH, Digital CH, or Alarm trigger.)
E	Col. mode (Collection mode)	Sets 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".

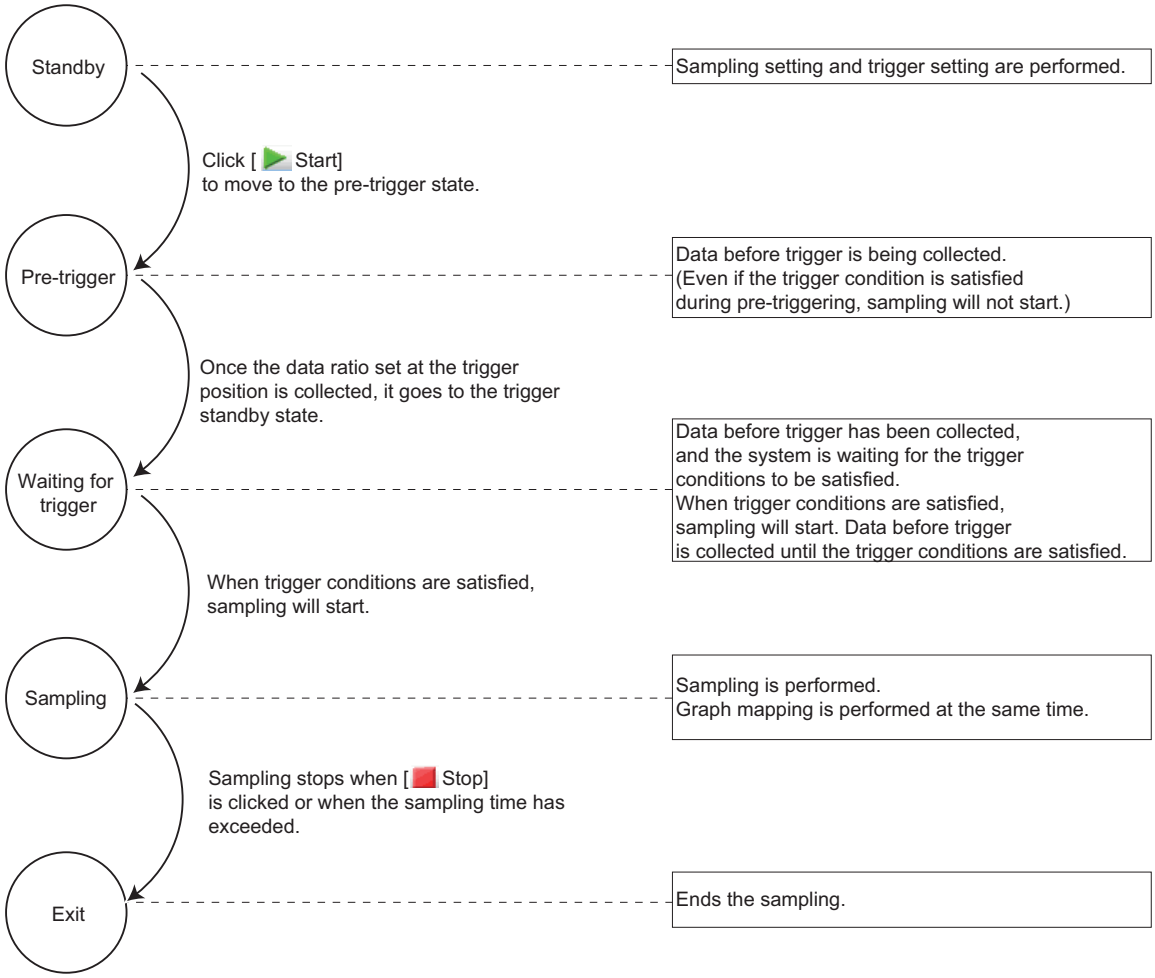
  Example: If trigger start condition is "Rise" and the level is set to "3"

  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.

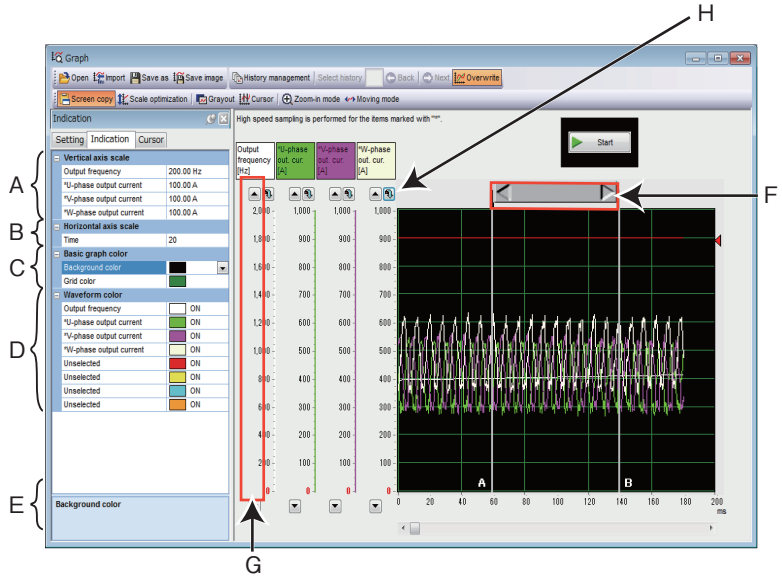
  For example, if **Pr.37 Speed display** is set to "1800" with "Output frequency" as the sampling item, and the trigger is to be activated at "900", input "900" as is to the "level" column.

- Trigger standby state



3.2.5 Changing scale and the graph display

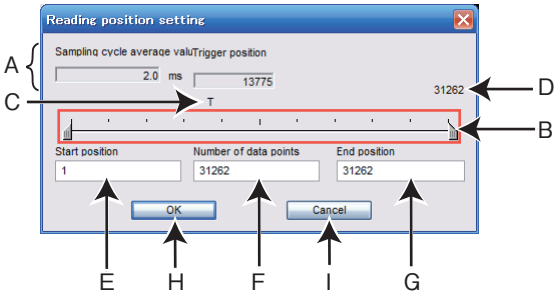
The scale and waveform data display of the displayed graph can be changed. The graph's displayed portion can be divided into a grid of 10 vertical and 10 horizontal sections. The scale of the vertical axis and the horizontal axis can be changed by setting a numerical value for each 1 divided grid.
It 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.



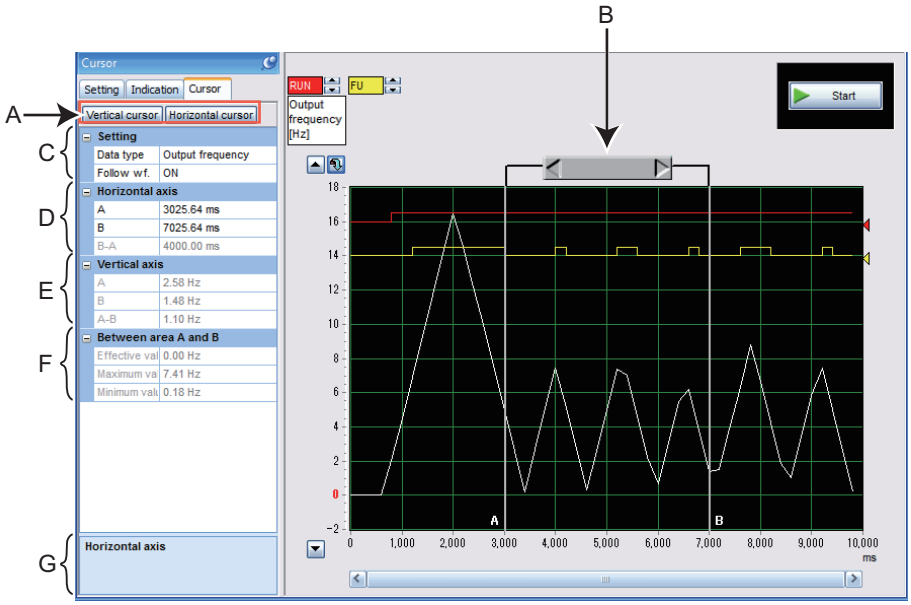
Symbol	Name	Function / description
A	Sampling cycle average value	Displays the sampling cycle.
B	Reading position setting slide bar	Sets the reading start position, the number of reading data points, and the reading end position.
C	Trigger position	Displays the trigger position saved in the trace file.
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 the trace data (*.st1) saved in the recorder mode using the graph function, reading of the file may take time.

3.2.6 Cursor function

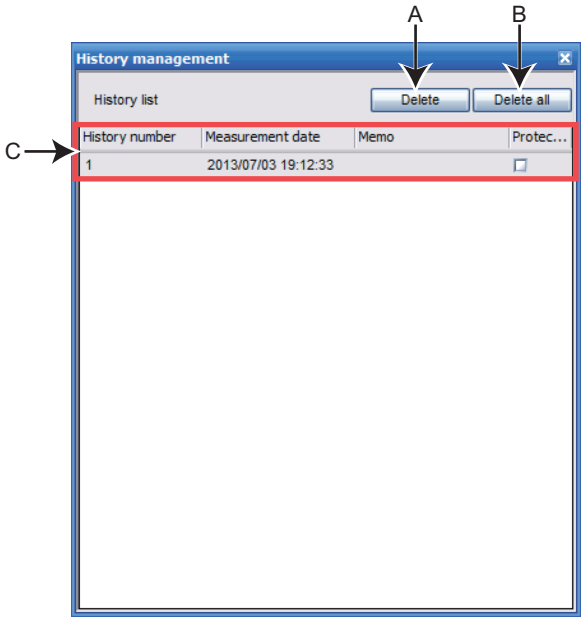
Displays the numerical value, actual value between any two points, maximum value, and minimum value at the cursor on the waveform.



Symbol	Name	Function / description	
A	Vertical/ horizontal cursor	Specifies cursor A and cursor B as the horizontal axis or the vertical axis.	
B	Cursor bar	Specifies the position between cursor A and cursor B.	
C	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.
D	Horizontal axis	A	Shows the time (ms) at cursor point A.
		B	Shows the time (ms) at cursor point B.
		B-A	Shows the time (ms) between cursor points A and B.
E	Vertical axis	A	Shows the measured values at cursor point A on the waveform.
		B	Shows the measured values at cursor point B on the waveform.
		A-B	Shows the values between cursor points A and B.
F	Between area A and B	Effective value	Calculates and displays the effective value between cursor A and cursor B.
		Maximum value	Shows the maximum value between cursor A and cursor B.
		Minimum value	Shows the minimum value between cursor A and cursor B.
G	Help area	Shows a description of the currently selected item.	

3.2.7 Displaying history

Data of the past 20 samplings (including the current data) can be saved as history and then displayed. The graph data is saved as history data at the time of sampling is stopped. If 20 history data are already present, the oldest data is deleted. The "History management" window will be displayed by selecting [History management...] from the [Monitor (Z)] menu while the graph window is displayed, or by clicking from the toolbar.



Symbol	Name	Function / description	
A	Delete	Deletes the selected history.	
B	Delete all	Deletes all history. However, protected history will not be deleted.	
C	History list	History number	History is displayed by number from the most recent history. The allowable history count limit is 20.
		Measurement date and time	Shows the date and time when sampling was executed.
		Memo	Comment can be input to be attached to history.
		Protection	Prevents the checked history from being deleted by the delete button or by continuous sampling. The maximum allowable history protection is 10.

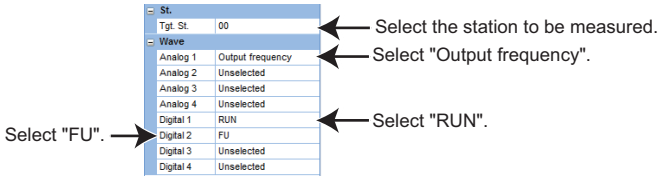
NOTE

- When continuously sampling, all acquired data will be added sequentially to history, and the next sampling will be performed.
- When display is several graphs, cursor functions are available only for the currently displayed graph.

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

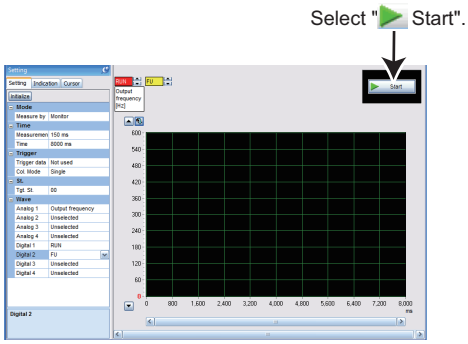
- If operating without a trigger

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

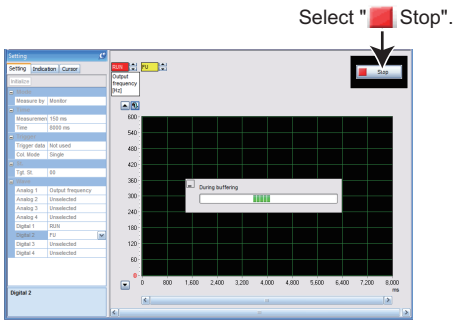


(2) The sampling interval can be set from "measurement interval" in "time", and the sampling time can be set from "measurement time".

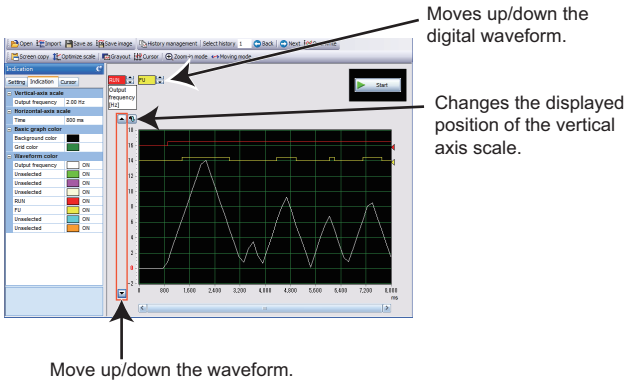
(3) Measurement will start by clicking [Start].



(4) Measurement is finished by clicking [Stop], or when the set sampling time is elapsed.



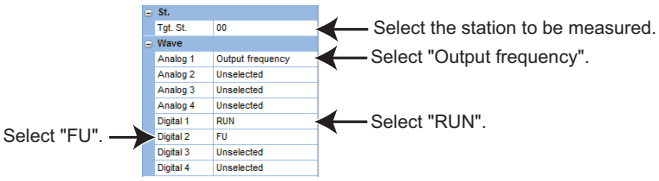
(5) The graph display can be adjusted.



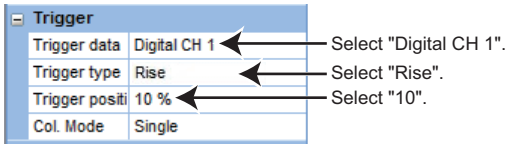
(6) Data can be saved to a file by "Save as" (Refer to page 43).

- If the trigger is set, sampling is started at the rise of the terminal RUN signal, and the measuring includes data from 10% before the trigger completion.

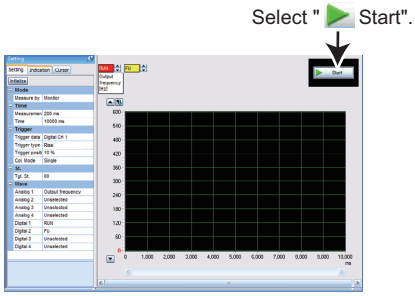
(1) Specify the station number to be measured as the "Tgt. St."(Target station).
Next, from the "Analog 1" column of 'Waveform" select "Output frequency", from "Digital 1" select "RUN", and from "Digital 2" select "FU".



(2) For trigger settings,
- Select "Digital CH1" from the "Trigger data" column.
- Select "Rise" from the "Trigger type" column.
- Select "10%" in the "Trigger position" column.

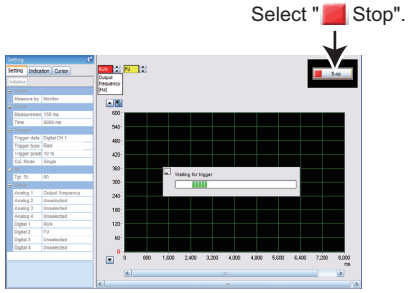


(3) By clicking [Start], data before trigger occurrence (10% of sampling time) will be collected.

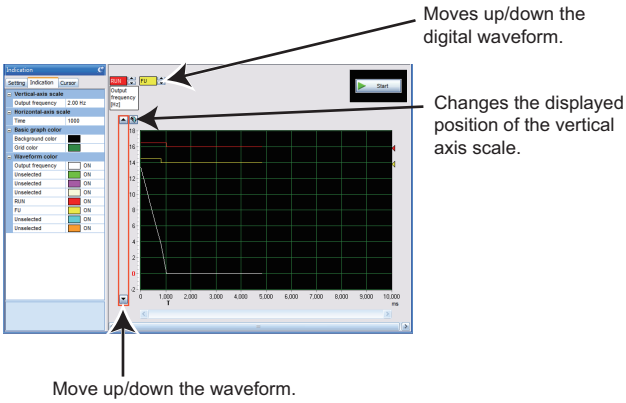


(4) Measurement automatically starts if the trigger conditions are met (rise of the terminal RUN signal).

(5) Measurement is finished when
[Stop] is clicked, or when the set sampling time is elapsed.



(6) The graph display can be adjusted.



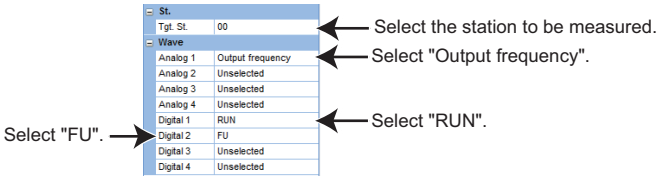
(7) Data can be saved to a file by "Save as" (Refer to page 43).

NOTE

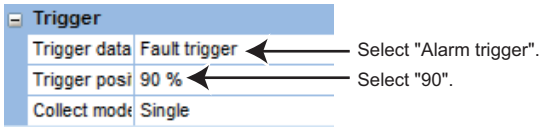
- In this example, "Trigger position" is set to "10%". After clicking [Start], the rise of the terminal RUN signal within 10% of the sampling time will be ignored, and measurement will not start.

- If the alarm trigger is set, sampling is started due to an alarm occurrence, and the measuring includes data from 90% before the alarm occurrence.

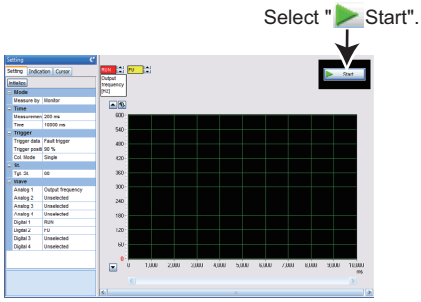
(1) Specify the station number to be measured as the "Tgt. St."(Target station).
Next, from the "Analog 1" column of 'Waveform" select "Output frequency", from "Digital 1" select "RUN", and from "Digital 2" select "FU".



(2) For trigger settings, perform the following:
- Select "Alarm trigger" from the "Trigger data" column.
- Select "90%" in the "Trigger position" column.

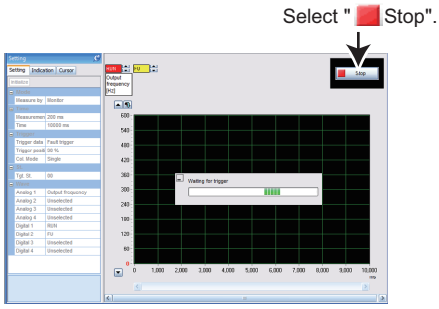


(3) By clicking [Start],
data before trigger occurrence will be collected.

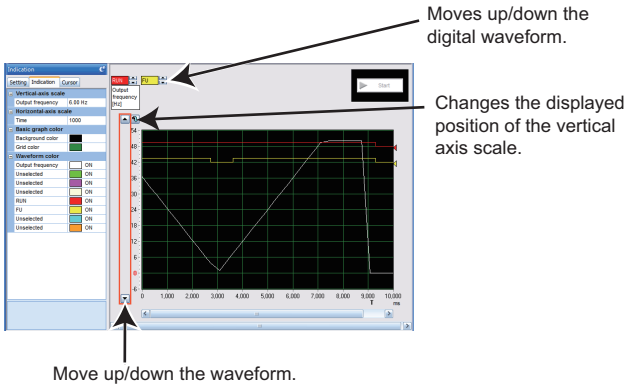


(4) Operation starts automatically if an inverter alarm occurs.

(5) Measurement is finished when
[Stop] is clicked, or when the set sampling time is elapsed.



(6) The graph display can be adjusted.



(7) Data can be saved to a file using "Save as" (Refer to page 43).

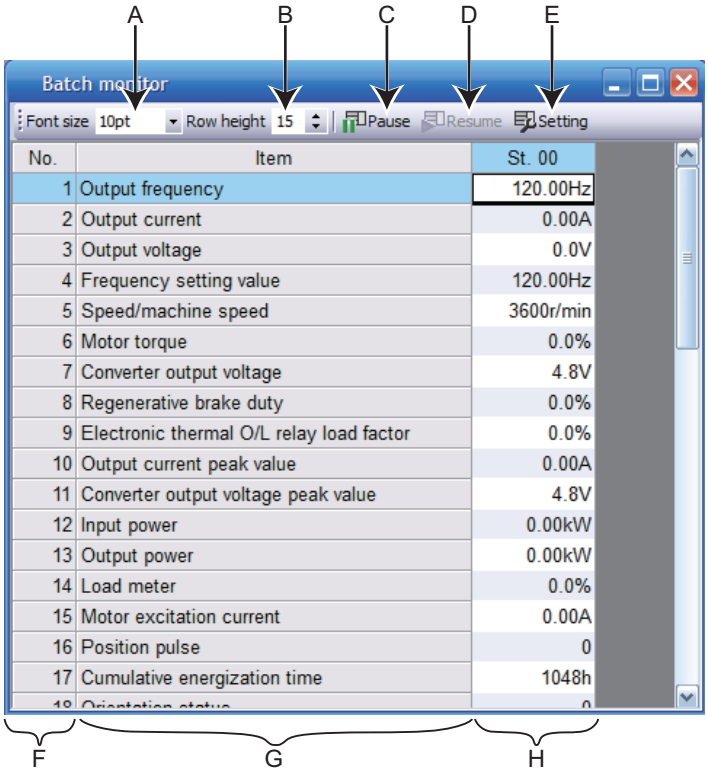
NOTE

- In this example, "Trigger position" is set to "90%". After selecting [Start], alarms within 90% of the sampling time will be ignored, and measurement will not start

3.3 Batch monitor

3.3.1 Batch monitor window

"Batch monitor" monitors more than one inverter monitored item at a time. To show the "Batch monitor" window, select [Batch monitor (D)] in the [Monitor] menu, or select [Batch monitor] from the project tree area.

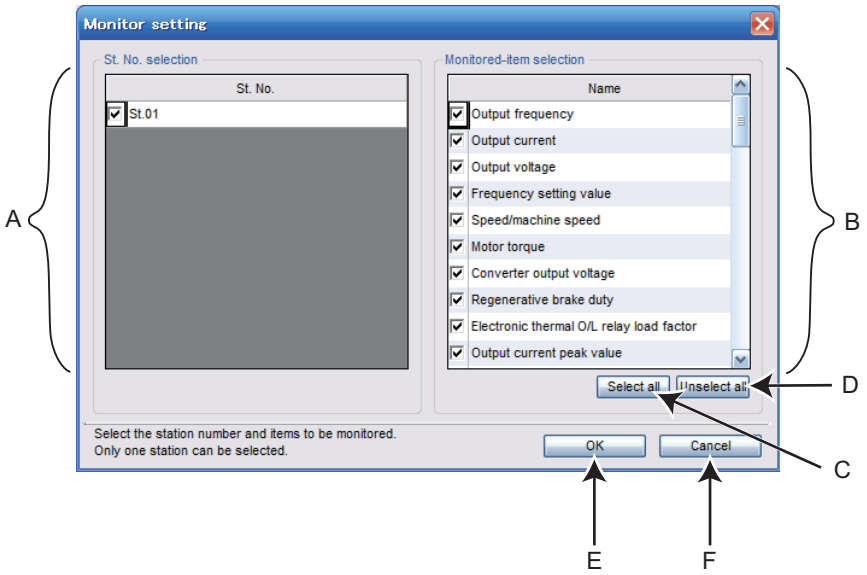


Symbol	Name	Function / description
A	Font size	Changes the size of monitor item characters.
B	Row height	Adjusts the row height of monitor items.
C	Pause	Pauses acquisition of monitor data.
D	Resume	Resumes acquisition of monitor data.
E	Setting	Sets the monitor items to display. Refer to page 70.
F	No.	Shows the monitor item number.
G	Item	Shows the monitor item.
H	St. No. (Station number)	Shows the acquired data of the corresponding station.

The available "Batch monitor" functions are different when online and when offline.

3.3.2 Monitor setting window

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



Symbol	Name	Function / description
A	St. No. selection (Station number selection)	Selects a station registered in the project.
B	Monitored-item selection	Sets the monitor items to display.
C	Select all	Selects all monitored items.
D	Unselect all	Unselects all monitored items.
E	OK	Applies all selected station numbers and monitored items to the batch monitor window.
F	Cancel	Discards the monitor settings, and closes the monitor setting window.

◆Monitored item list

- For details on monitored items, refer to the Instruction Manual of the inverter.

Sampling item
Output frequency
Output current
Output voltage
Frequency setting value
Speed/machine speed
Motor torque
Converter output voltage
Regenerative brake duty
Electronic thermal O/L relay function load factor
Output current peak value
Converter output voltage peak value
Input power
Output power
Load meter
Motor excitation current
Position pulse
Cumulative energization time
Orientation status
Actual operation time
Motor load factor
Cumulative power
Torque command
Torque current command
Motor output
Feedback pulse
PLC function user monitor 1
PLC function user monitor 2
PLC function user monitor 3
Energy saving effect
Cumulative energy saving
PID set point
PID measured value
PID deviation
Motor thermal load factor
Inverter thermal load factor
PTC thermistor resistance
PID measured value 2
Remote output value 1
Remote output value 2
Remote output value 3
Remote output value 4
PID manipulated amount
Second PID set point
Second PID measured value
Second PID deviation
Second PID measured value 2

Batch monitor

Sampling item
Second PID manipulated amount
Dancer main speed setting

NOTE

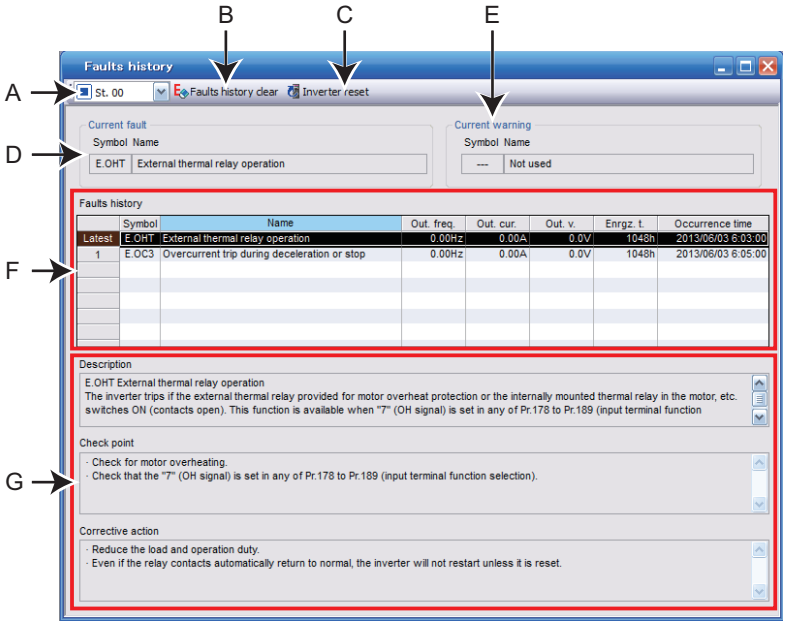
- If a communication error occurs, batch monitoring will be stopped. To perform batch monitoring again, go offline once after correcting the cause of the communication error, and then go online again.
- If an inverter fault occurs during batch monitoring, the output frequency, output current, and output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

3.4 Diagnostics

"Diagnosis" displays fault information of the inverter.

3.4.1 Faults history function

Select [Faults history...] in the [Diagnosis] menu to display "faults history" in the sub-window.

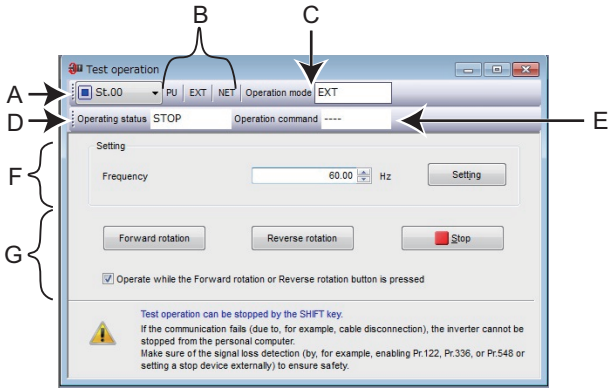


Symbol	Name	Function / description
A	St. No. (Station number)	Selects a station of which fault history is to be displayed.
B	Faults history clear	Clears the selected station's faults history. When selected, the confirmation window appears. Select [Yes] to clear the faults history.
C	Inverter reset	Resets the selected station's inverter. When selected, the confirmation window appears. Select [Yes] to clear the faults history.
D	Current fault	Shows the current fault.
E	Current warning	Shows the current warning.
F	Faults history	Shows a list of the faults history read from the inverter. The output frequency, output current, output voltage, energization time, and occurrence time at the fault are displayed together.
G	Fault details	Shows explanations of selected fault details, check points, and corrective actions.

3.5 Test Operation

3.5.1 Test operation window

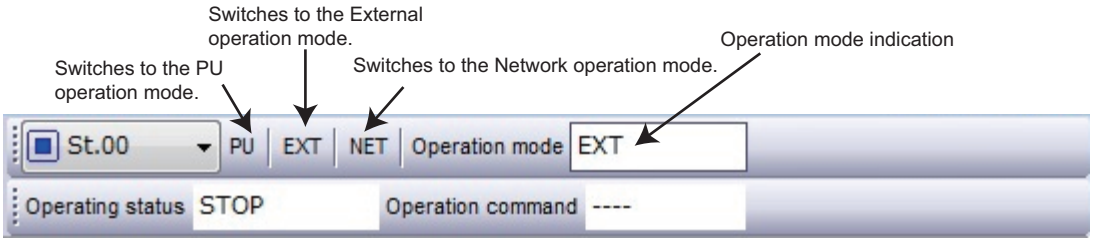
Select [Test operation...] in the [Test operation] menu or in the toolbar to display the test operation window.



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
		—	Indicates that the operating status information was not acquired properly.
		No display	Nothing is displayed when offline.
F	Setting	Set the running frequency.	
G	Run/Stop command buttons	Sends the run/stop commands.	

3.5.2 Displaying and switching the operation mode

The operation mode can be switched by selecting the [PU], [EXT], or [NET] operation mode switching button or by selecting [PU], [EXT], or [NET] in the [Operation mode (Z)] menu.
The connected inverter's operation mode can be verified in the operation mode indicator.

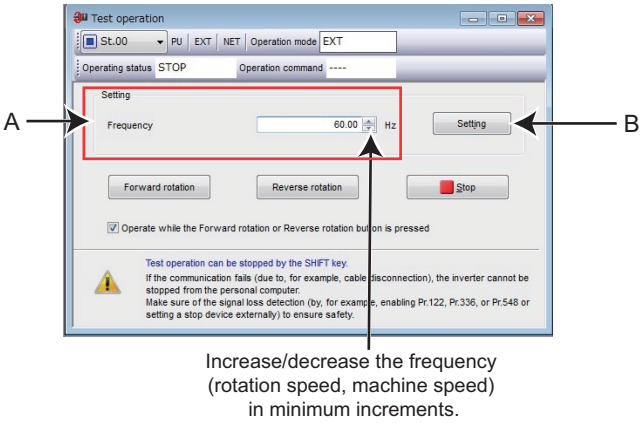


NOTE

- 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 details, refer to the Instruction Manual (Detailed) of the inverter.)

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

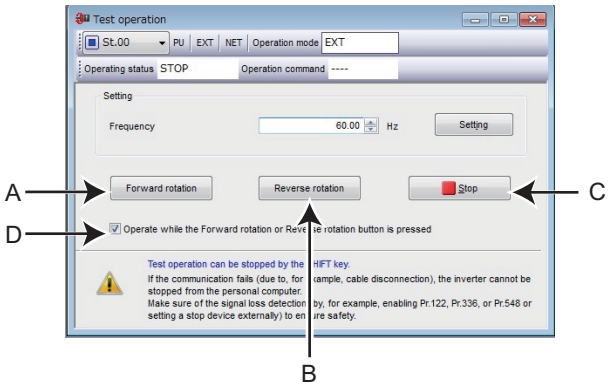
Input a desired frequency (rotation speed, machine speed) to the frequency (speed) input section and press the [Setting] button to write the set frequency to the inverter. To increase or decrease a read setting frequency in minimum setting increments, use the buttons at the right side of the input section.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



Symbol	Name	Function/description	
A	Frequency	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	Sets the set frequency.	

3.5.4 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	Selecting this box will execute test operation only while the [Forward rotation] or [Reverse rotation] button is held down.

NOTE

- Open the batch monitor window (on page 69) 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.
- When the following action is performed due to the Windows operation method, operation may continue without the [Forward rotation] or [Reverse rotation] button being held down. Press the [Stop] button to stop operation.
- Drag the mouse cursor off the button while holding down the [Stop] button.

⚠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, or Pr.548) or externally setting a stop device.

3.6 Using the PLC function

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.

3.6.1 Before using Developer

When using Developer, enable the PLC function of the inverter (**Pr.414 PLC function operation selection** ≠ 0).

Pr.	Name	Initial value	Description
414 A800	PLC function operation selection	0 (PLC function disabled)	1 (SQ signal external/network)
			2 (SQ signal external input)

◆Outline of PLC function

When Pr.414 = "2", the sequence start (SQ) signal from the external input terminal is valid regardless of the Pr.338 Communication operation command source setting.

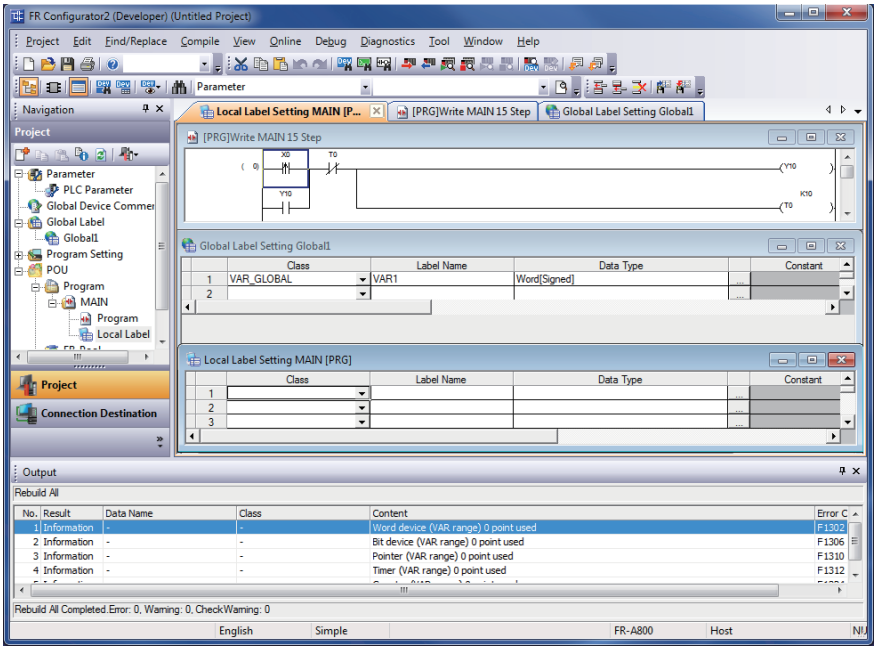
Switch the execution key (RUN/STOP) of the sequence program by turning the SQ signal ON/OFF. The sequence program can be executed by turning the SQ signal ON. To input the SQ signal, set "50" in any of **Pr.178 to Pr.189 (input terminal function selection)** to assign the function to a terminal.

NOTE

- Developer cannot be used if a communication speed setting of 4800 bps or less is set for PU connector communication (Pr.118) or RS-485 communication (Pr.332). To use Developer, set 9600 bps or more.

3.6.2 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 81) 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.

3.6.3 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 each Instruction Manual 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 GXW2 project path 1 to 4	—	—	—
	Exit (Q)	—	—	—
Edit	Undo	—	—	
	Redo	—	—	
	Cut	—	—	
	Copy	—	—	
	Paste	—	—	

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon
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	—	—	
View	Toolbar	Standard	—	—
		Program Common	—	—
		Docking Window/Switch Project Data	—	—
		Intelligent Function Module	—	—
		Display All	—	—
	Statusbar	—	—	—
	Colors and Font...	—	—	—
	Docking Window	Navigation	—	
		Element Selection	—	
		Output	—	
		Cross Reference	—	
		Device Use List	—	
		Watch1 to 4	—	—
		Find/Replace	—	
Online	Read from PLC...	—	—	
	Write to PLC...	—	—	
	Verify with PLC...	—	—	—
	Remote Operation(S)...	—	—	—
	Password/Keyword	New...	—	—
		Delete...	—	—
		Disable...	—	—

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon
Online	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...	—	—	—
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...	—	—	—

Menu	Pull-down menu	Sub-menu	Sub-menu 2	Icon
Help	FR-A800 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)	—	—

3.6.4 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 each Instruction Manual of GX Works2.

Menu	Pull-down menu	Sub-menu 1	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
		Pulse Contact Symbol	Rising Pulse...	sF7
			Falling Pulse...	sF8
			Rising Pulse Branch...	aF7
			Falling Pulse Branch...	aF8
			Rising Pulse Close...	saF5
			Falling Pulse Close...	saF6
			Rising Pulse Close Branch...	saF7
			Falling Pulse Close Branch...	saF8
		Invert Operation Results...	—	caF10

Menu	Pull-down menu	Sub-menu 1	Sub-menu 2	Icon
Edit	Ladder Symbol	Operation Result Rising Pulse...	—	
		Operation Result Falling Pulse...	—	
	Inline Structured Text	Insert Inline Structured Text Box	—	
		Display Template	—	
		MarkTemplate(Left)	—	
		MarkTemplate(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)...	—	—	
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	—	—	—

Menu	Pull-down menu	Sub-menu 1	Sub-menu 2	Icon
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	—	—	—

3.6.5 Structured ladder edit menu

The following menus can be used for structured ladder edit by Developer. For details on each function, refer to each Instruction Manual 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	
		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	—	—

3.6.6 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 each Instruction Manual 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)	—	—

3.6.7 Device comment edit menu

The following menus can be used for device comment editing by Developer. For details on each function, refer to each Instruction Manual of GX Works2.

Menu	Pull-down menu	Icon
Edit	Delete...	—
	Select All	—
	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	—

3.6.8 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 each Instruction Manual of GX Works2.

Menu	Pull-down menu	Icon
Edit	Write to CSV File(K)...	—
Find/Replace	Next Unmatch	
	Previous Unmatch	
View	Return to Result List	
	Close Detail Result	
	Close Detail Result	

3.7 USB memory parameter copy file edit function

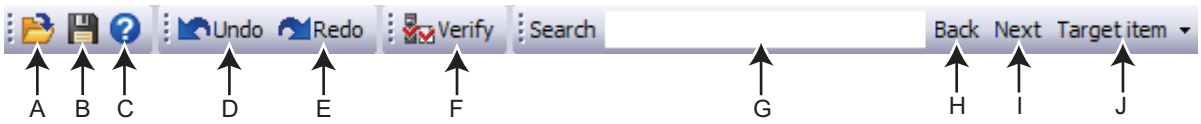
The USB memory parameter copy file editor is a dedicated software for editing setting values of USB memory parameter copy files of the FR Configurator2 compatible models.
To start the USB memory parameter copy file editor, choose [USB memory parameter copy file edit] in the [Tool] menu.

3.7.1 USB parameter copy file editor menu and toolbar

The following functions can be accessed from the menu.

Menu	Pull-down menu	Toolbar icon	Function/description
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.
	Search	—	Switches between show/hide of the search toolbar.
	Verify	—	Switches between show/hide of the verify 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.

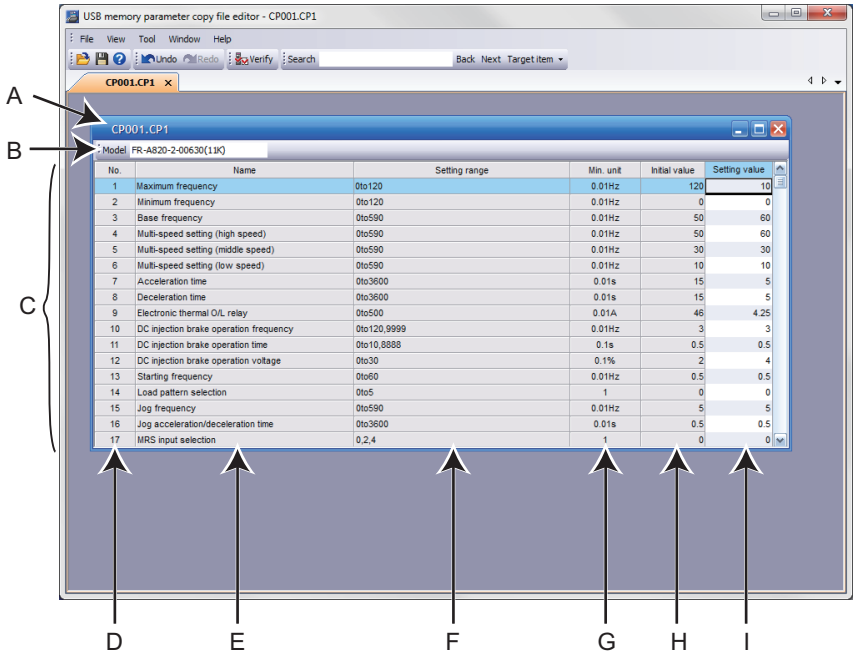


Symbol	Name	Function/description
A	Open	Shows the "Open" dialog box, and opens the USB memory parameter copy file (*.cp1).
B	Save	Saves the USB memory parameter copy file (*.cp1).
C	Help	Help appears.
D	Undo	Returns the edited parameter setting value to the setting value before editing.
E	Redo	Redoes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

3.7.2 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.

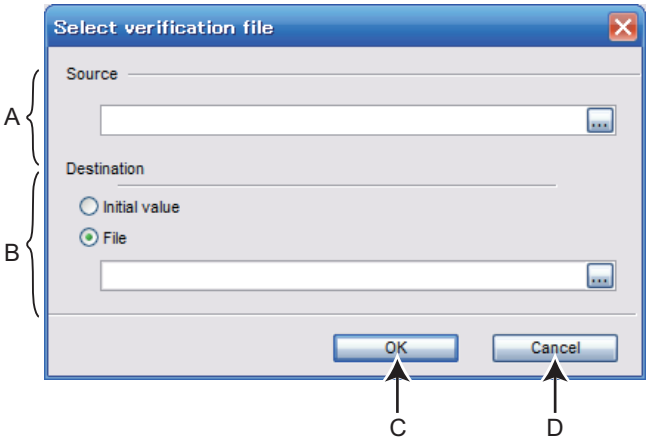
NOTE

- 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-A820-55K (03160) or FR-A840-55K (01800), do not change **Pr.570 Multiple rating setting** from SLD or LD rating (**Pr.570** = "0 or 1") to ND or HD rating, or vice versa.
- 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.

3.7.3 Verifying parameters

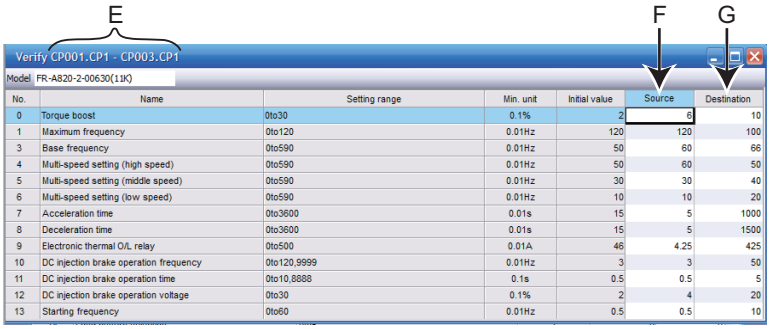
A list of differences between the USB memory parameter copy file to verify (*.cp1) and the parameter initial values or the parameter setting values of the verify destination file (*.cp1) can be displayed.

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	OK	Verification of the verify source parameter values with the verify destination parameter values starts.
D	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

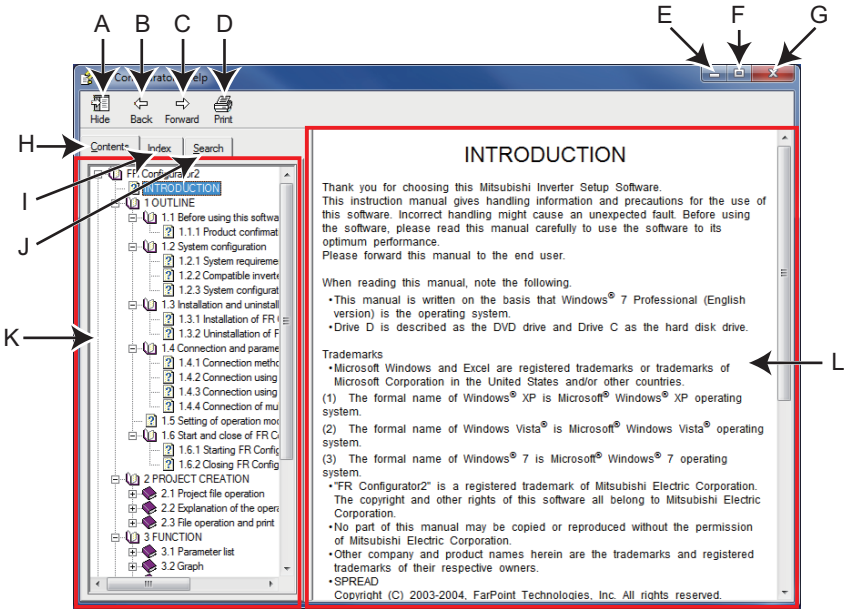
• Parameter setting values cannot be input to the verify source and verify destination cells.

3.8 Help

3.8.1 Help window

The Help window shows the contents of the software and inverter's instruction manuals.
There are the following ways of displaying Help.

- Select [FR Configurator2 Help...F1] in [Help] menu.
- Click on the toolbar.
- Press the F1 key.
- Double clicking a parameter on the parameter list will show the explanation of the selected parameter.



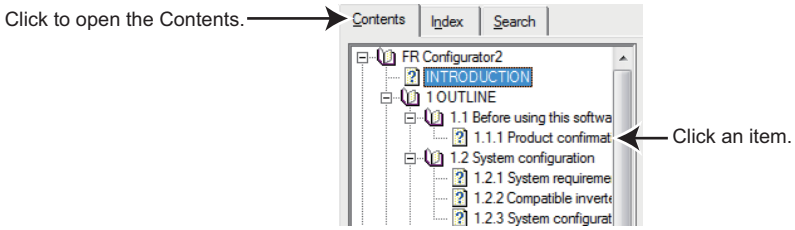
Symbol	Name	Function/description
A	Hide	Hides the navigation panel, [Contents], [Index], and [Search] tabs. While hiding the navigation panel and the tabs, the button changes to Show. Click Show to display the navigation panel and the tabs again.
B	Back	Returns to the previous help description.
C	Forward	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

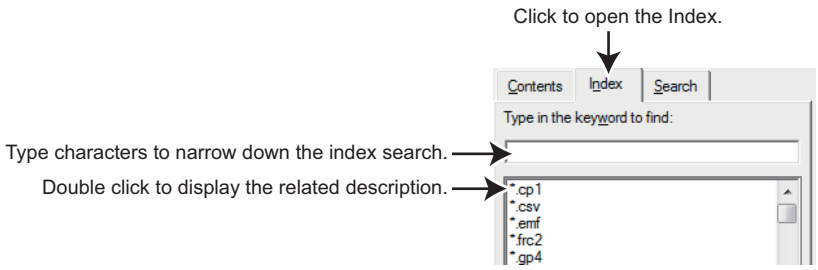
  Click [Contents] to display a list of contents. Click a desired item to show the help description.



- Index

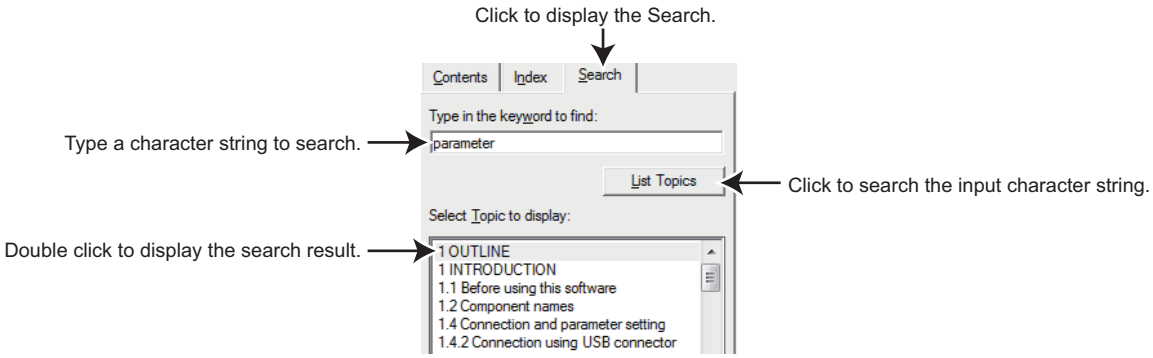
  Click [Index] to display the index of keywords contained in the Help.

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



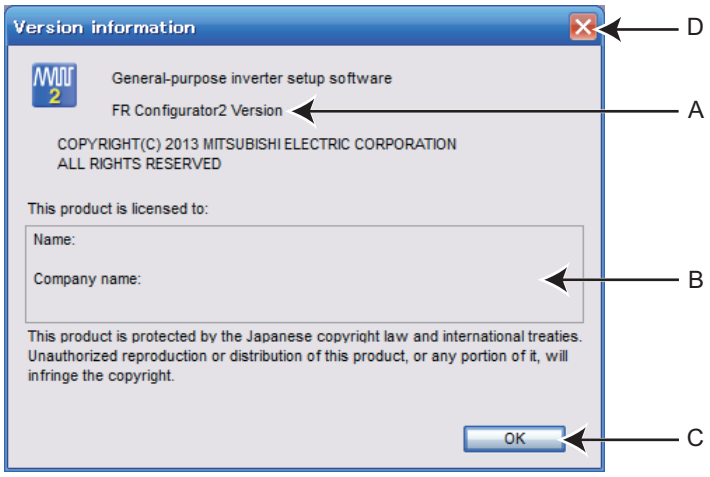
- Search

  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.



3.8.2 Version information

Go to [Help] and select [Version...] 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	

4 TROUBLE INDICATION

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

4.1 Error code 96

4.1 Error code

If an error occurs, the following error codes and error messages appear in the error detail display area.

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 102.) 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
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 35) • 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 Number of PU communication retries** 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.	• The **Pr.120 PU communication parity check** and **Pr.334 RS-485 communication parity check selection** settings are different with the software settings. • Set a larger value in **Pr.121 Number of PU communication retries** 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 Number of PU communication retries** 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 Number of PU communication retries** 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 in **Pr.123 PU communication waiting time setting** and **Pr.337 RS-485 communication waiting time setting**. • Set a larger value in **Pr.121 Number of PU communication retries** 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 Number of PU communication retries** 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 **page 14**, **28**.)
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 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 operation command source changes according to inverter communication connection. Refer to **page 14**, **28**.)
0x80010013	No parameter can be written during inverter running.	Parameter writing was attempted during inverter operation.	Perform parameter writing after the inverter is stopped.
0x80010014	The setting value cannot be written to the parameters to which writing is prohibited.	• Writing is disabled by **Pr.77 Parameter write selection**. Set **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 the password lock.
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.	• 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.

Error code

Error code (HEX)	Error message	Possible cause	Countermeasure
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.	
0x80010101	Communication was not established with the inverter within the timeout time.	• The settings of **Pr.122 PU communication check time interval, Pr.336 RS-485 communication check time interval,** and **Pr.548 USB communication check time interval** are too small. • Electromagnetic interference. • Cable breakage/damage. • Personal computer port is set disabled or its port is broken.	• Set a larger value in **Pr.122 PU communication check time interval, Pr.336 RS-485 communication check time interval,** and **Pr.548 USB communication check time interval**. • 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.
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 Number of PU communication retries** and **Pr.335 RS-485 communication retry count**. • Do not reset the inverter or turn OFF the inverter power during communication. • Replace the cable.
0x80020001	An unexpected error occurred in S/W.	Please contact your sales representative.	
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.	

Error code (HEX)	Error message	Possible cause	Countermeasure
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.
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 go online.
0x80030002 0x80030003 0x80030004 0x80030005 0x80030006 0x80030007 0x80030008 0x80030009 0x8003000A 0x8003000B	An unexpected error occurred in S/W.	Please contact your sales representative.	
0x8003000C	Duplication was detected in station number of the USB communication.		
0x8003000D	An unexpected error occurred in S/W.	Please contact your sales representative.	
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.	

4.1.2 Communication error when connected through GOT

NOTE

- If a Time Out error occurs, set FR Configurator2 to OFFLINE. Please check a communication cable connection etc, to fix the error and then set FR Configurator2 to ONLINE again.
- 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 102.) 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	Cause	Countermeasure
0x80110001	An unexpected error occurred to S/W.	GOT type error.	Check for the GOT type.
0x80110002 0x80110003	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80110004	Failed to make a communication with the inverter during the time set with Time Out.	Communication protocol of the inverter and 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/damaged	Set communication protocol of the inverter and GOT same. 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 larger value for Time Out setting of the software. Cable connection/replacement Check for communication cable and power supply of devices.
0x80110005	Failed to make a communication with the inverter during the time set with Time Out.	FR Configurator2 was started and a communication was established when GX drawing software was starting.	After closing GX drawing software, try communication again.
0x80110006	Failed to make a communication with the inverter during the time set with Time Out.	GX drawing software was started when FR Configurator2 was starting.	After closing GX drawing software, try communication again.
0x80110007	An unexpected error occurred to S/W.	Communication line quality error	Set lower baud rate and make a communication.
0x80110008	An unexpected error occurred to S/W.	Baud rate not supported by connected device	Check for the baud rate supported by connected devices.
0x80110009	Failed to make a communication with the inverter during the time set with Time Out.	Electromagnetic interference Cable breakage/damage	Set larger value for Time Out setting of the software. Cable connection/replacement Check that line is connected.
0x8011000A	Failed to make a communication with the inverter during the time set with Time Out.	Other process is ongoing in GOT and line is BUSY. (retry is performed in the EZSocket) A station not connected is being monitored.	Set a larger value for Time Out setting of the software. Monitor only the station which the GOT is connected. Check that the GOT is operating correctly and try again.
0x8011000B	An unexpected error occurred to S/W.	Protocol type error	Check for protocol type.
0x8011000C	An unexpected error occurred to S/W.	Host name error	Check for connected GOT host name.
0x8011000D	An unexpected error occurred to S/W.	Socket port number error	Check for the port number.

Error Code HEX)	Error Message	Cause	Countermeasure
0x80111001 0x80111002 0x80111003 0x80111004 0x80111005 0x80111101 0x80111102 0x80111103 0x80111104 0x80111105 0x80111106 0x80111107 0x801111FF	Failed to make communication with the inverter during the time set with Time Out.	Electromagnetic interference, etc. are propagated when receiving GOT software.	Set a larger value for Time Out setting of the software and try again.
0x80112001	Wrong communication port is assigned.	Serial line open error	Check for the communication port setting.
0x80112002	An unexpected error occurred to S/W.	Serial line closed error	Try again.
0x80112003	An unexpected error occurred to S/W.	Serial line setting error	Try again.
0x80112004	An unexpected error occurred to S/W.	Serial line baud rate error	Try again.
0x80112005	Failed to make communication with the inverter during the time set with Time Out.	Occurred before starting FR Configurator2, or during communication serial cable between the GOT and PC is disconnected	Connect the cable.
0x80112201	An unexpected error occurred to S/W.	EZSocket GOT is installed, but the file is broken.	Install software again.
0x80112202	Failed to make communication with the inverter during the time set with Time Out.	Before starting FR Configurator2 A cable between the GOT and PC is disconnected. The GOT power is OFF.	Connect the cable. Power ON the GOT.
0x80112203	Failed to make communication with the inverter during the time set with Time Out.	Electromagnetic interference, etc. are affecting between the PC and GOT.	Set a larger value for Time Out setting of the software and try again.
0x80112204	An unexpected error occurred to S/W.	USB line error (at the GOT device error communication ending)	Try again.
0x80112205	An unexpected error occurred to S/W.	USB line error (sending function is invalid)	Try again.
0x80112206	An unexpected error occurred to S/W.	USB line error (receiving function is invalid)	Try again.
0x80112207	An unexpected error occurred to S/W.	USB line error (cable disconnection registration failure)	After reconnecting with the GOT, try again.
0x80112208	Failed to make communication with the inverter during the time set with Time Out.	USB line error (cable was disconnected halfway) When a cable between the GOT and PC 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 to S/W.	The GOT was not found on the network.	Check that the GOT is connected to the network.
0x80112402	An unexpected error occurred to S/W.	Socket line open error (socket generation failed)	Check that specified port number is correct and specified IP address is for GOT.
0x80112403	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80112405	An unexpected error occurred to S/W.	Network error	Check that the GOT is connected to the network.
0x80112406	An unexpected error occurred to S/W.	Connected socket forced disconnection	Check that the GOT is not making a communication in other connection method.

REVISIONS

*The manual number is given on the bottom left of the back cover.

Print date	*Manual number	Revision
Jul. 2013	IB(NA)-0600516ENG-A	First edition (Ver.1.00 supported)
Jun. 2014	IB(NA)-0600516ENG-B	Compatibility with FR-A802 (Ver.1.03D supported)

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IB(NA)-0600516ENG-B(1406)MEE

Specifications subject to change without notice.