MITSUBISHI ELECTRIC

MELSOFT

MELSOFT
FR Configurator SW3
INSTRUCTION MANUAL

INVERTER SETUP SOFTWARE

FR-SW3-SETUP-WE

-Windows®(English) Version-

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WHEN USING FOR THE FIRST TIME 2

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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® XP (English version) is the operating system.
- Drive D is described as the CD-ROM drive and Drive C as the hard disk drive.

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(1) The formal name of Windows® 2000 is Microsoft® Windows® 2000 operating system.

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

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

(4) The formal name of Windows® 7 is Microsoft® Windows® 7 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 life-threatening conditions.
- Please contact our sales office when you are considering using this product in special applications such as passenger mobile, medical, aerospace, nuclear, power or undersea relay equipment or system.
- Although this product was manufactured under conditions of strict quality control, you are strongly advised to install safety devices to prevent serious accidents when it is used in facilities where breakdowns of the product are likely to cause a serious accident.

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<Abbreviation>

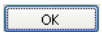
- **PU**: Operation panel and parameter unit (FR-PU04, FR-PU07)
- **Inverter**: Mitsubishi inverter
- **FR-A700**: Mitsubishi inverter FR-A700 series
- **FR-A701**: Mitsubishi inverter FR-A701 series
- **FR-D700**: Mitsubishi inverter FR-D700 series
- **FR-E700**: Mitsubishi inverter FR-E700(SC)(NC) series
- **FR-F700**: Mitsubishi inverter FR-F700 series
- **FR-F700P**: Mitsubishi inverter FR-F700P series
- **FR-F700PJ**: Mitsubishi inverter FR-F700PJ series
- **Pr.** : Parameter number (Number assigned to function)
- **PU operation**: Operation using the PU (FR-PU04/FR-PU07)
- **External operation**: Operation using the control circuit signals
- **Combined operation**: Operation using the PU (FR-PU04/FR-PU07) and External operation
- **Standard motor**: SF-JR
- **Constant torque motor**: SF-HRCA

<Mark>

 **REMARKS**: Additional helpful contents and relations with other functions are stated.

 **Note**: Contents requiring caution or cases when set functions are not activated are stated.

 **POINT**: Useful contents and points are stated.

 : Indicates a button displayed in a window.

 : Indicates a tab displayed in a window.

[ ] : Indicates a menu selected from menu bar.

" " : Indicates a title name of a window.

1 OUTLINE

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

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1.1 Before Using This Software

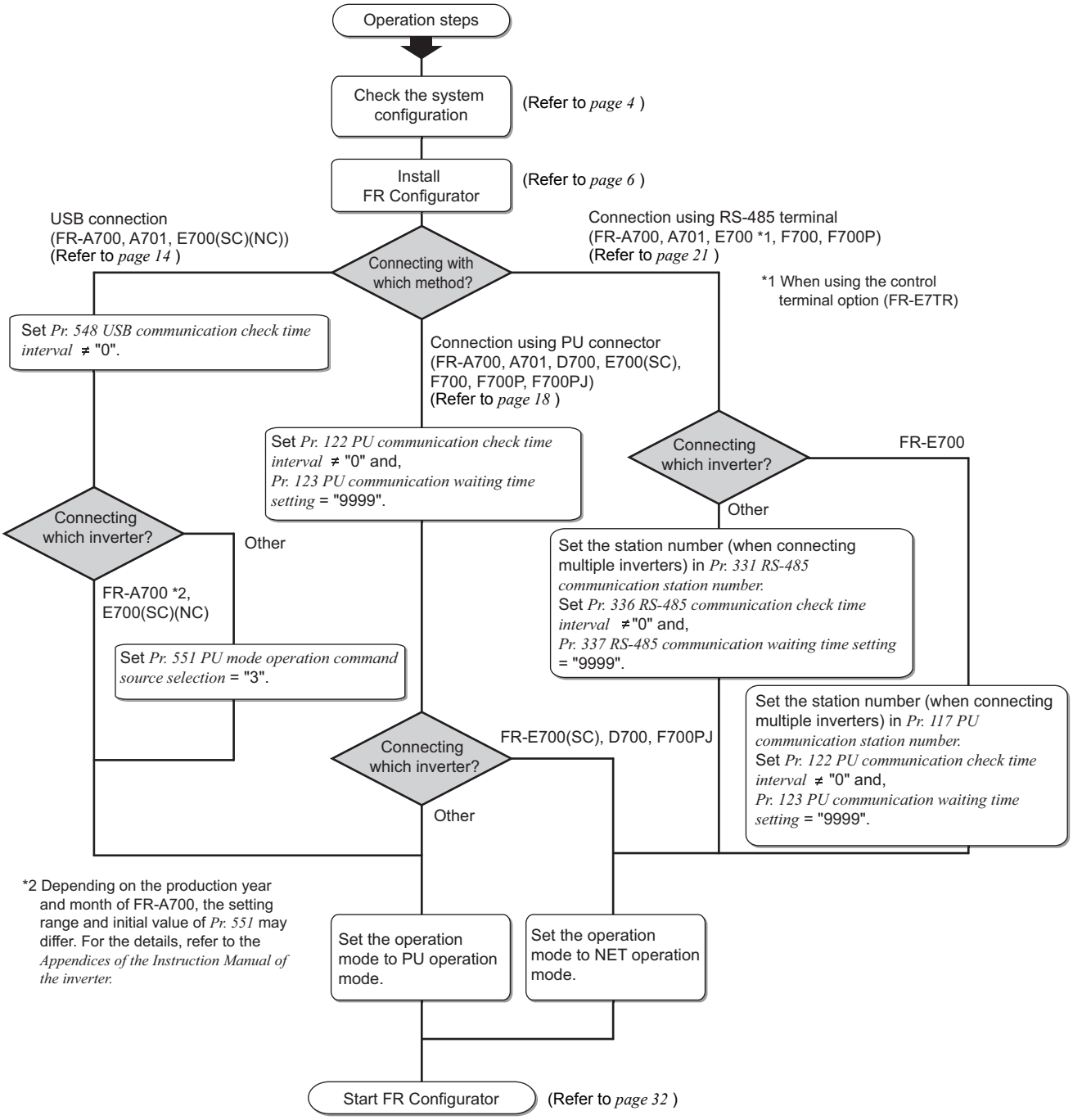
● This software is an effective support tool for startup and maintenance of the Mitsubishi transistorized inverter. The following functions can be performed efficiently on the personal computer.

- Startup ..... Desired function can be performed soon after starting up of this software
- Easy Setup ..... From station number to parameter setting, setting with wizard style dialog (interactive) is available
- Setting Wizard ..... Function setting without regard to parameter number
- Tuning ..... Available from Setting wizard (FR-A700, A701, D700, E700, F700PJ series only)
- Troubleshooting ..... Estimating cause and counter measure at trouble occurrence
- Parameter List ..... Displaying parameter list, functional list, initial value change list and editing of the parameters are available
- Convert ..... Converting a parameter setting of the conventional model into FR-A700, D700, E700, F700, F700P or F700PJ parameter setting
- Diagnosis ..... Displaying faults history and parts life, and measuring main circuit capacitor life
- Graph ..... Monitoring by High Speed sampling or Monitor sampling, and displays in graph form
- Batch Monitor ..... Displaying monitor items of the inverter at the same time
- I/O Terminal Monitor ..... Monitoring the state of input and output terminal
- I/O Terminal Assignment ... Signal assignment of input and output terminal
- Test Operation ..... Send a start/stop command, or change the set frequency as if using the operation panel of the inverter
- Machine Analyzer ..... Resonance point and anti-resonance point of the machine system can be obtained) (For FR-A700, A701 with vector control
- Help ..... Instruction manual of the inverter and this software can be displayed in a window

Note

- **If a file name or folder name is using Unicode, system file writing or reading may not be performed correctly. Please use a file name and folder name without Unicode.**
- **The following functions of Windows® XP, Windows Vista® or Windows® 7 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. For example, if the user assistant is set in "Option", file opening or selecting function in "Startup" window may become unavailable. Please change the Internet Explorer setting into a default setting, or select the desired function from a main screen of FR Configurator.**
- **FR Configurator is not available when inverter is activated with FR-PU07BB Battery mode. FR Configurator may not operate properly.**

- Check the following settings before configuring the inverter with this software. If a communication option is installed, refer to *page 12* for details of the communication parameters.



1.1.1 Product confirmation

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

Item	Quantity
CD-ROM	1
Install Manual	1

1.2 System Configuration

1.2.1 System requirement

Components	Description *1	
Personal computer *2	IBM PC/AT compatible machine with CD-ROM drive (for installation), USB port *3 or serial port	
	OS *4	· Windows® 7 (32-bit Edition and 64-bit Edition) · Windows Vista® SP1 or later (32-bit Edition) · Windows® XP Professional SP2 or later (32-bit Edition) · Windows® XP Home Edition SP2 or later · Windows® 2000 Professional SP4 or later
	Processor	· Pentium® 133MHz or more (Windows® 2000 Professional) · Pentium® 300MHz or more (Windows® XP Professional, Windows® XP Home Edition) · 1GHz or more of 32-bit (x86) processor (Windows Vista®) · 1GHz or more of 32-bit (x86)/64-bit (x64) processor (Windows® 7)
	Memory	· 32MB or more (Windows® 2000 Professional) · 128MB or more (Windows® XP Professional, Windows® XP Home Edition) · 512MB or more (Windows Vista®) · 1GB or more (Windows® 7 32-bit Edition) · 2GB or more (Windows® 7 64-bit Edition)
	Hard disk	Free area of 200MB or more
Software	Internet Explorer 5.0 or more	
Display	Applicable to display at resolution of 1024 x 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 Configurator may not function properly depending on the using personal computer, peripheral devices, and software.

*3 Connection using USB port is available for FR-A700, A701, E700 series.

*4 Operation of this software is not guaranteed for OS not written above.

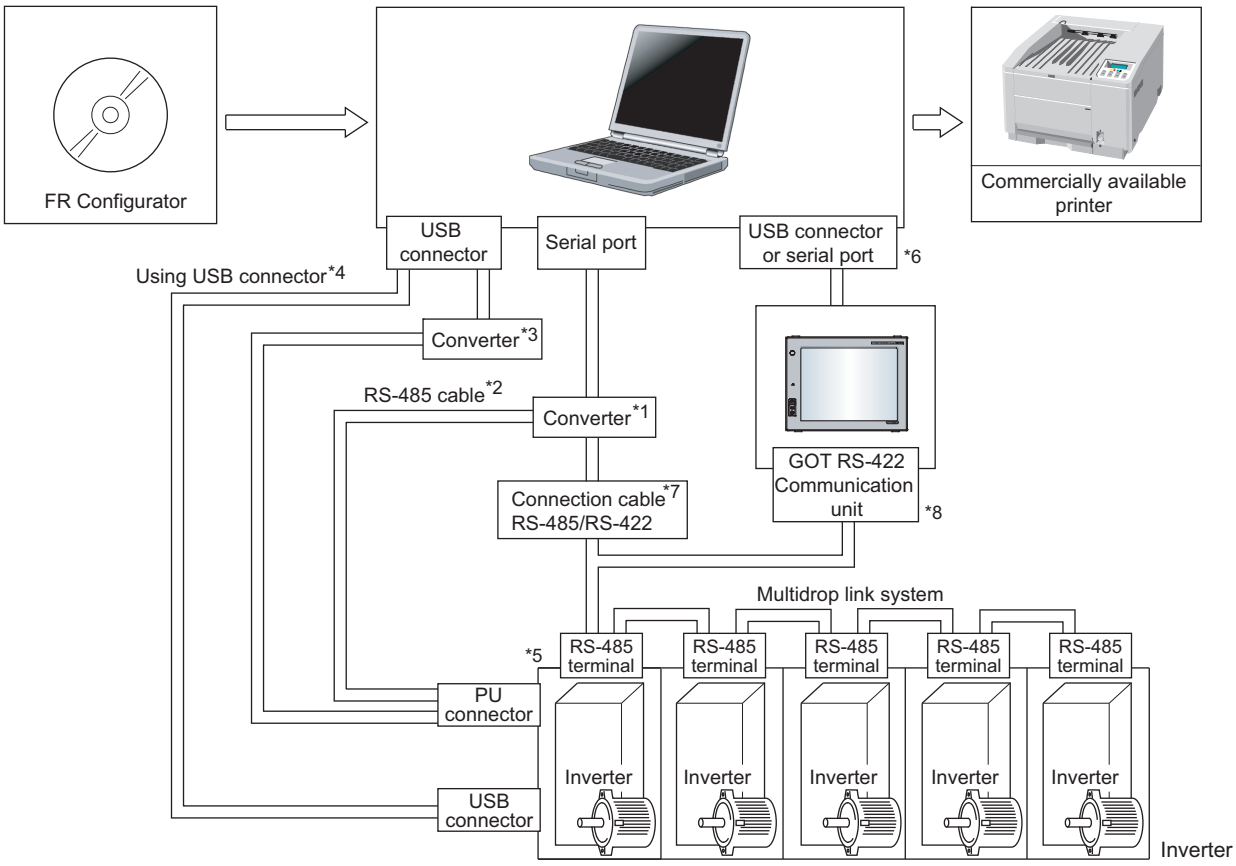
1.2.2 Compatible inverters

FR Configurator is compatible with the following inverters.

Series	Model	Capacity			
		JP	NA	EC	CH/CHT/CHT1
FR-A700 series	FR-A720	0.4K to 90K	00030 to 03460	-	-
	FR-A740	0.4K to 500K	00015 to 09620	00023 to 12120	0.4K to 500K
	FR-A760	-	00017 to 06630	-	-
FR-A701 series	FR-A721	5.5K to 55K	-	-	-
	FR-A741	5.5K to 55K	-	-	-
FR-D700 series	FR-D720	0.1K to 15K	008 to 318	-	-
	FR-D740	0.4K to 15K	012 to 160	012(SC) to 160(SC)	0.4K to 7.5K
	FR-D720S	0.1K to 2.2K	008 to 100	008(SC) to 100(SC)	0.1K to 2.2K
	FR-D710W	0.1K to 0.75K	008 to 042	-	-
FR-E700 series	FR-E720	0.1K(SC)(NC) to 15K(SC)(NC)	008(SC) to 600(SC)	-	-
	FR-E740	0.4K(SC)(NC) to 15K(SC)(NC)	016(SC) to 300(SC)	016(SC) to 300(SC)	0.4K to 15K
	FR-E720S	0.1K(SC)(NC) to 2.2K(SC)(NC)	008 to 110	008(SC) to 110(SC)	0.1K to 2.2K
	FR-E710W	0.1K to 0.75K	008 to 050	-	-
FR-F700 series	FR-F720	0.75K to 110K	00046 to 04750	-	-
	FR-F740	0.75K to 560K	00023 to 12120	00023 to 12120	0.75K to S630K - CH S75K to S630K - CHT, 0.75K to 55K - CHT1
FR-F700P series	FR-F720P	0.75K to 110K	-	-	-
	FR-F740P	0.75K to 560K	-	-	-
FR-F700PJ series	FR-F720PJ	0.4K to 15K	-	-	-
	FR-F740PJ		-	-	-

1.2.3 System configuration

The following devices are required to use FR Configurator. Setup 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/300m) 24AWG x 4P

∗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 49 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 (For FR-E700)

MR-J3USBCBL3M Cable Length 3m



∗5 Communication with PU connector, RS-485 terminal, or USB connector(FR-A700, A701, E700 series only) is available.

∗6 Available communication port is USB or serial port (one of port 1 to 63), and set in Communication settings screen of FR Configurator. (Using multiple port at the same time is unavailable) Connection of a computer to GOT is 1:1 connection.
When using USB for connecting with GOT, use dedicated cable GT09-C30USB-5P or GT09-C20USB-5P.

∗7 Overall length of connection cable: 500m

∗8 GOT RS-422 communication unit (GT15-RS4-9S) is required. The number of connectable inverter depends on GOT. Refer to GOT1000 series connection manual for details of RS-422 connection and compatible version of GOT.

	Product	Type	Manufacturer
1)	10BASE-T cable	SGLPEV-T (Cat5e/300m) 24AWG x 4P	Mitsubishi Cable Industries, Ltd.
2)	RJ-45 connector	5-554720-3	Tyco Electronics

1.3 Installation and Uninstallation

1.3.1 Installation of FR Configurator

To use FR Configurator (FR-SW3-SETUP-WE), the files included on the setup disk (CD-ROM) 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 started.
- 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 Configurator yet. Install the software using the setup program.
- To install the software, follow the installation procedure in Windows screen.
- If VFD Setup Software (FR-SW1-SETUP-WE) of an older version (CD-ROM) is installed after the installation of FR Configurator, FR Configurator does not operate. In this case, please uninstall FR Configurator *(Refer to page 10)*, and then install FR Configurator again.
- If an older version of FR Configurator has been installed, the older version will be uninstalled during the installation.
- In an operation system with antivirus / security software, a warning may appear when installing FR Configurator. If a warning appears, permit the installation of FR Configurator according to the setting procedure of your antivirus/security software.
- FR-SW3-SETUP-WE and FR-SW3-SETUP-WE CC-Link Seamless are in the same software package. When FR-SW3-SETUP-WE is installed, FR-SW3-SETUP-WE CC-Link Seamless is installed together.

Installation procedure
The following section describes the procedures of installing FR Configurator.

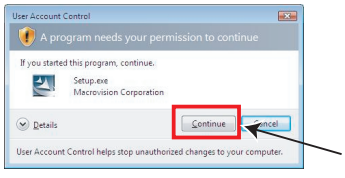
(1) Insert the CD-ROM to an available CD-ROM drive. Installation starts automatically.

REMARKS

Installation can be started with double-clicking the icon of CD-ROM 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 CD-ROM drive is D drive)

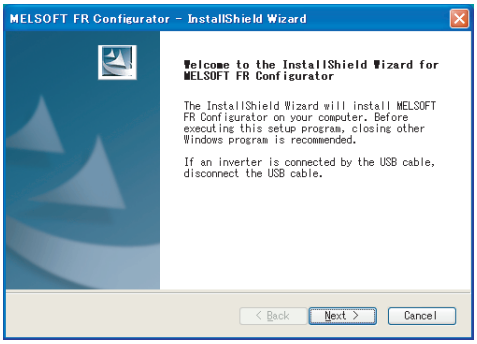
Note

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

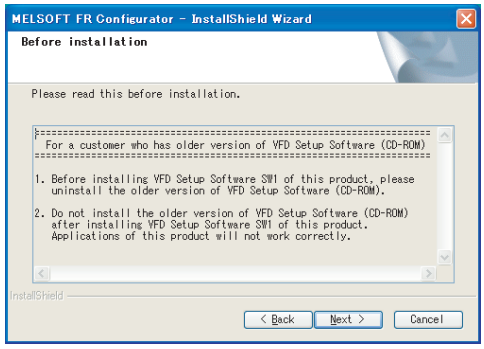


Select "Continue"

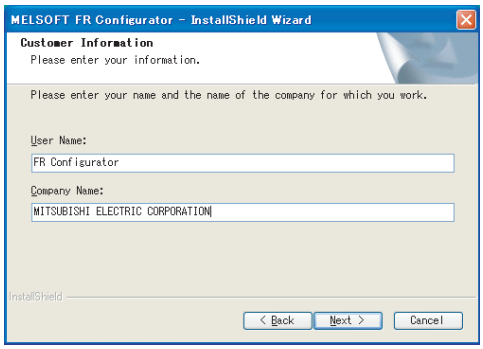
(2) The window shown on the right is displayed. Click Next > .



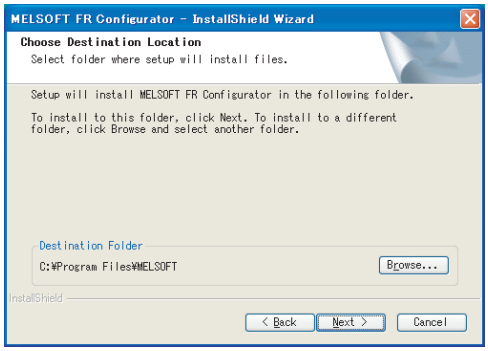
(3) The window shown on the right is displayed.
Click Next > .

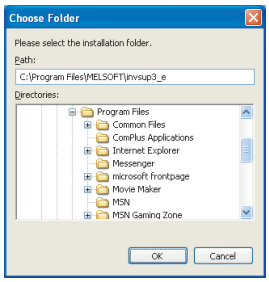


(4) Enter user name and company name.
Click Next > after entering.
(User name and company name are required to proceed to the next step.)

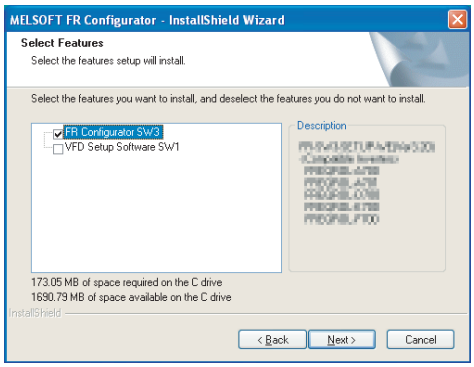


(5) Check the installation folder and click Next > .
To change the installation folder, click Change... and select an installation folder. A new folder "invsup3" is created at the selected installation folder. This software is installed there.
(If the installation folder is not changed, the software is installed at "C:\Program Files\MELSOFT\invsup3_e")

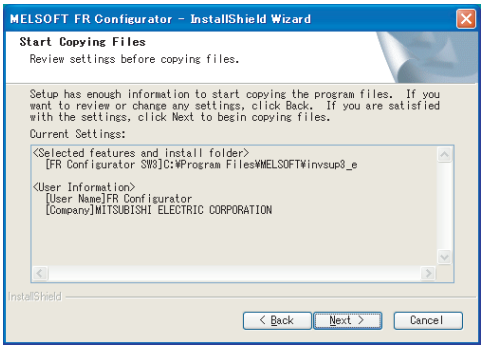




(6) Check the installing application, and click Next > .
(FR Configurator is already selected when this window is shown.)
Check "VFD Setup Software SW1" if required, and click Next > . *(Refer to page 11)*

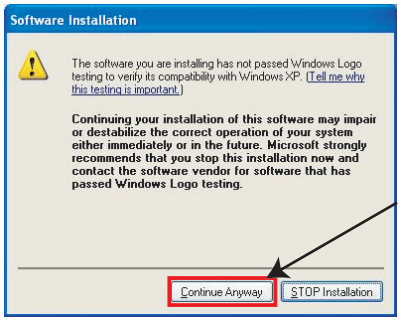


(7) Review the installation setting, and click Next > .
To change the setting, click < Back , and correct the setting.

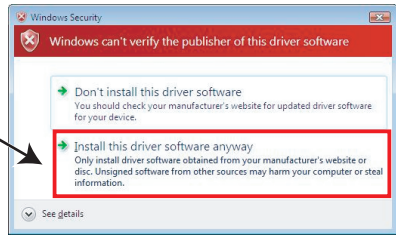


Note

The following window may appear during the installation.



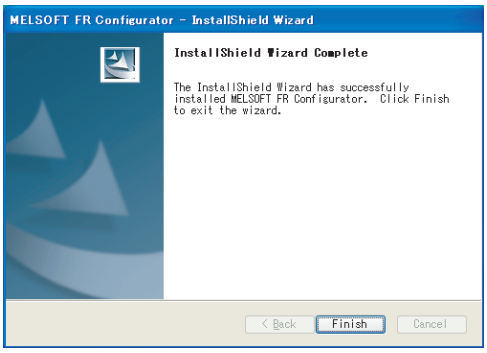
Click and continue



For Windows XP **For Windows Vista or Windows 7**

Continue the installation by clicking Continue Anyway for Windows XP and "Install this driver software anyway" for Windows Vista or Windows 7.

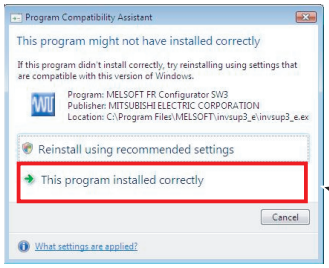
(8) Installation is completed.
Click Finish to close the window. Restart the personal computer before using the software.



(9) A shortcut is created in [Start] menu of Windows after installation is completed.

Note

When using Windows Vista or Windows 7, the following screen may appear when completing the installation. If the window appears, select "This program installed correctly".



Select "This program installed correctly".

REMARKS

- If the user is not an administrator (Administrator account), the installation cannot be performed. Log in as a user with administrator permission, and start the installation again.
- When installer is overwriting an older version of FR Configurator with the newer version of FR Configurator, a backup of the older version parameter file will be created.The backup is stored in the following folder.

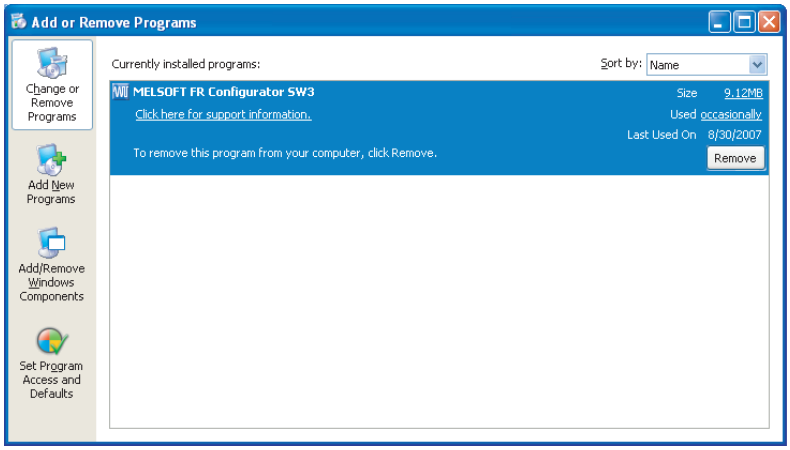
  For Windows 2000 and Windows XP
  C:\Documents and Settings\<User name>\Local Settings\Temp\SW3PrBk_YYYYMMDDhhmmss
  For Windows Vista and Windows 7
  C:\Users\<User name>\AppData\Local\Temp\SW3PrBk_YYYYMMDDhhmmss
  (YYYYMMDDhhmmss indicates a date and time of installation.)

  Example: Overwriting installation at 15:30:09 on May 10, 2009
  C:\ Documents and Settings\<User name>\Local Settings\Temp\SW3PrBk_20090510153009 (when using Windows XP)

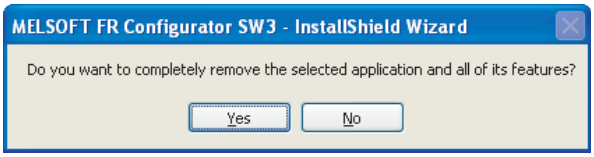
1.3.2 Uninstallation of FR Configurator

Open the [Start] menu of Windows, and then click [Control panel]. Click "Add or Remove Programs" in the "Control panel" window.

When "Add or Remove Programs" window is displayed, select "MELSOFT FR Configurator SW3" and click Remove to start uninstallation.

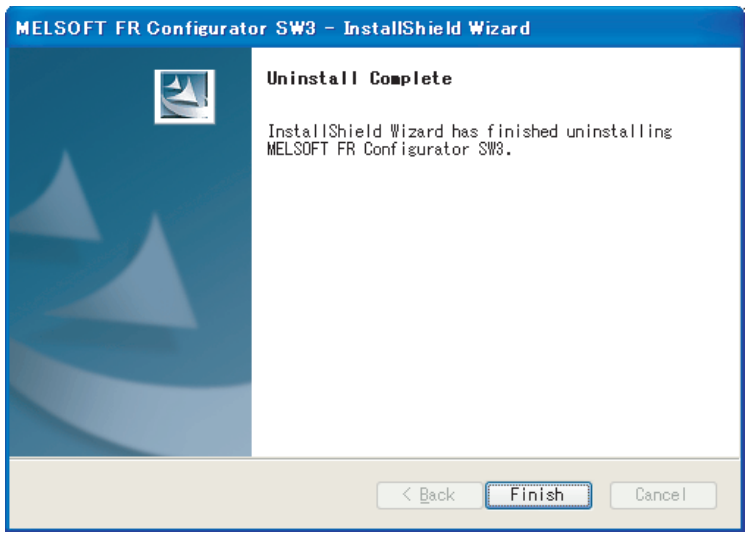


Click Remove , and the following dialog appears.



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.



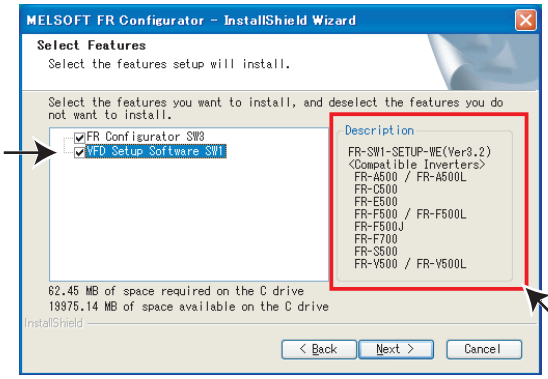
Note

- **Uninstallation is unavailable while the application is running. Perform the uninstallation after closing the application.**
- **When using Windows Vista or Windows 7, uninstall FR Configurator in the following procedure.**
  1. Open "Uninstall a program" window.
  2. Double click FR Configurator SW3.
- **FR-SW3-SETUP-WE and FR-SW3-SETUP-WE CC-Link seamless are in the same software. When FR-SW3-SETUP-WE CC-Link seamless is uninstalled, FR-SW3-SETUP-WE is uninstalled together.**

1.3.3 Installation of VFD setup software SW1

To install VFD Setup Software SW1, select "VFD Setup Software SW1" in [Select Application] window during the installation.

Select "VFD Setup Software SW1"



Compatible inverters are displayed

Click Next > and the installer creates a folder [invsup1] (for VFD Setup Software SW1), and copies required files.

Note

- **If VFD Setup Software (FR-SW1-SETUP-WE) of an older version (CD-ROM) is installed after the installation of FR Configurator, FR Configurator does not operate. In this case, please uninstall FR Configurator (*Refer to page 10*), and then install FR Configurator again.**
- **If the older version of VFD Setup Software SW1 (Version information can be checked in "About VFD Setup S/W" window) is installed, uninstall the older version, and then install the new version of VFD Setup Software SW1 or FR Configurator SW2.**

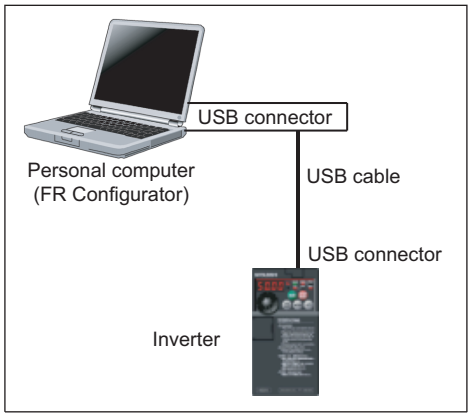
1.4 Connection and Parameter Setting

1.4.1 Connection method

For FR Configurator, communication with USB connector, PU connector, RS-485 terminal block, or through GOT are available. Serial communication (PU connector) is the default setting.

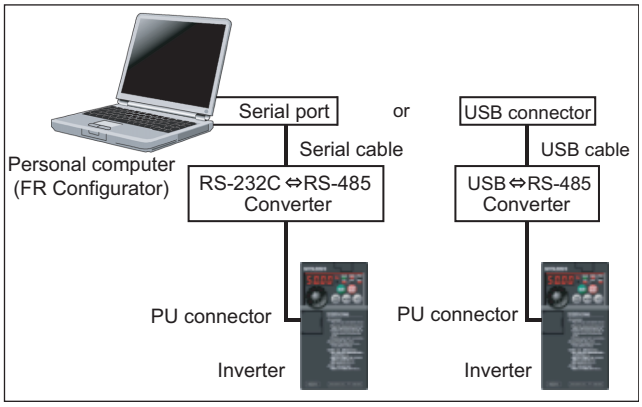
(1) USB connection (FR-A700, A701, E700(SC)(NC) only) *(Refer to page 14)*

Connect to USB connector of the inverter. 1:1 connection is supported. Connection with using USB hub is not supported.



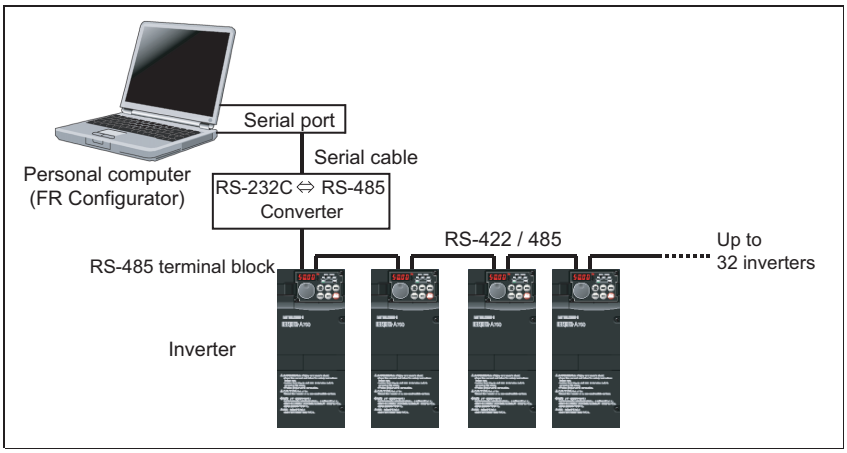
(2) Serial communication (PU connector) *(Refer to page 18)*

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



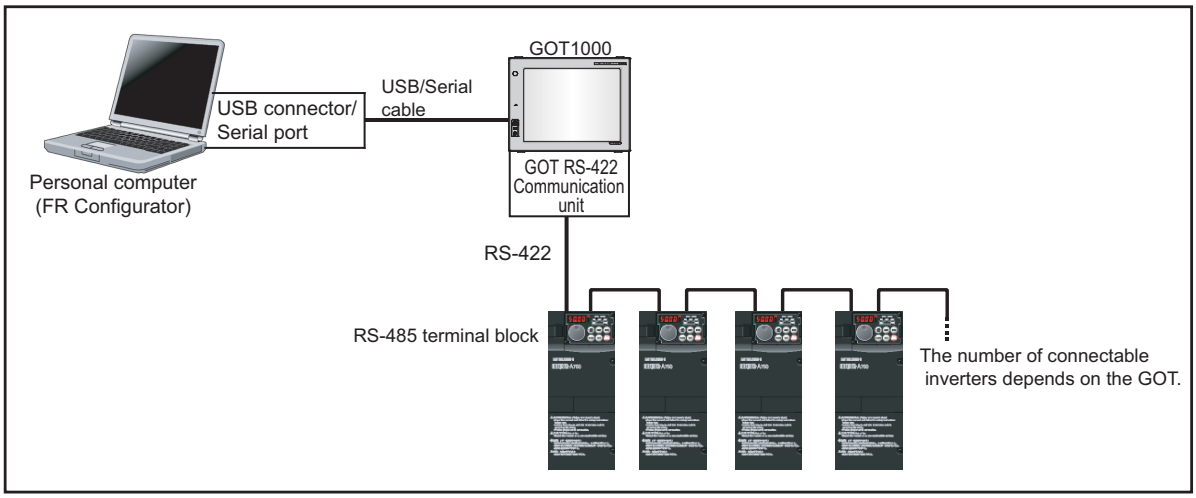
(3) Serial communication (RS-485 terminal) *(Refer to page 21)*

Connect to RS-485 terminal of the inverter. Up to 32 inverters can be connected. (FR-E700 series requires RS-485 terminal block (control terminal option FR-E7TR). The FR-E700-SC/NC is not compatible with the FR-E7TR.)



(4) Communication through GOT (USB / Serial communication) *(Refer to page 23)*

Connect to RS-485 terminal through GOT (Display). RS-422 communication unit is necessary for GOT. The number of connectable inverters depends on the GOT. Refer to GOT1000 series connection manual for details of RS-422 connection and compatible version of GOT.

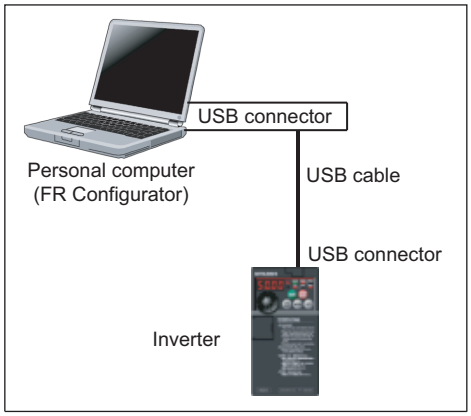


Note

- **Taking out and putting in the USB cable while FR Configurator is working may cause the inverter not to be recognized. Perform taking out and putting in the USB cable for some times, or perform inverter reset (reset GOT when communication through GOT) with the USB cable connected to PC.**

1.4.2 Connection using USB connector (FR-A700, A701, E700(SC)(NC) only)

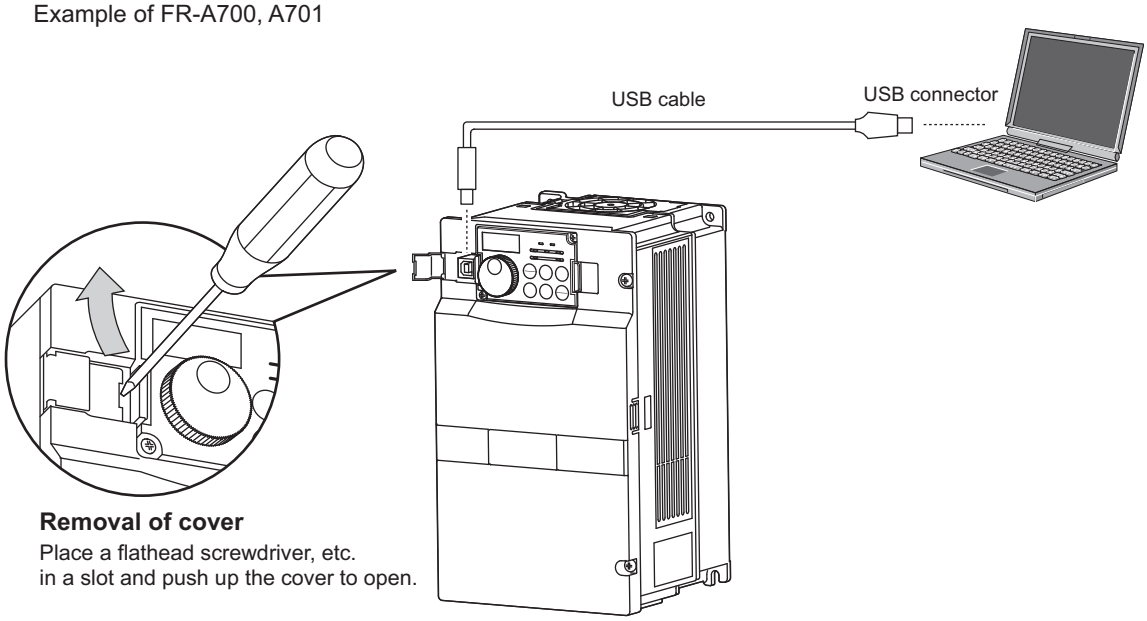
A personal computer and inverter can be easily connected with one USB cable. 1:1 connection is supported. Connection with using USB hub is not supported.



(1) Cable

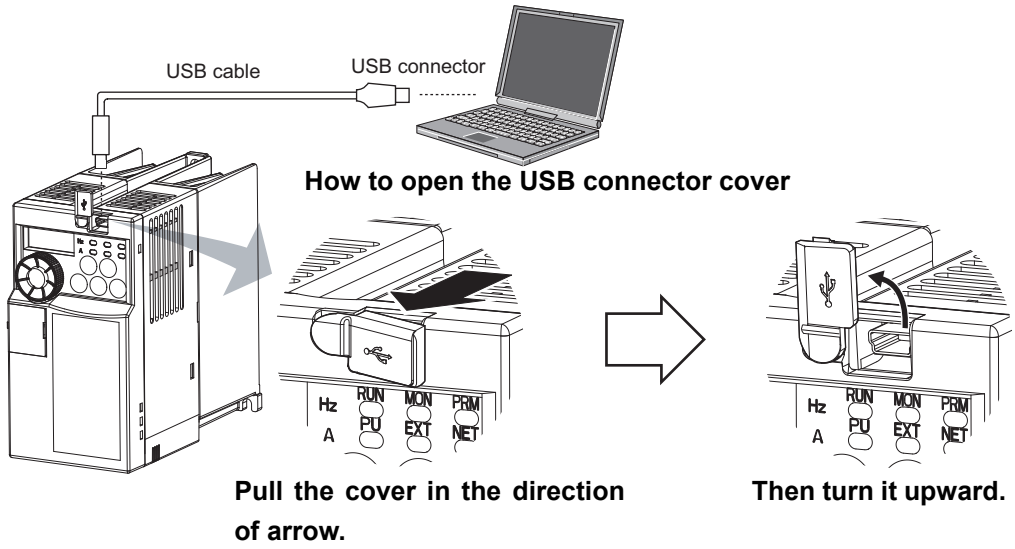
Interface	Conforms to USB1.1	
Transmission Speed	12Mbps	
Wiring Length	Maximum 5m	
Connector	FR-A700, A701	USB B connector (B receptacle)
	FR-E700(SC)(NC)	USB mini B-connector (receptacle mini B type)
Power supply	Self-power supply	

Example of FR-A700, A701



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

Example of FR-E700



REMARKS

- Recommended USB cable for computer-inverter connection (For FR-E700(SC)(NC))

	Type	Specifications
Recommended USB cable	MR-J3USBCBL3M Cable length 3m	Connector for personal computer A-connector Connector for inverter mini B-connector (5 pin)

(2) 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-A700, E700(SC)(NC)	*Pr. 548 USB communication check time interval* ≠ 0 (initial value 9999)	*Pr. 551 PU mode operation command source selection* = "3 or 9999" (initial value 9999) *	PU
FR-A701		*Pr. 551 PU mode operation command source selection* = "3" (initial value 2)	PU

* Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter.*

REMARKS

- Switching of the operation mode is available at "Test Operation" window *(Refer to page 97)* in Navigation area.
- Set 3s or more (or 9999) in *Pr. 548 USB communication check time interval*.
- 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

Parameter Number	Name	Initial Value	Setting Range	Description
547	**USB communication station number**	0	0 to 31	Inverter station number specification
548	**USB communication check time interval**	9999	0	USB communication is possible. Trips in the PU operation mode (E.USB)
			0.1 to 999.8.0s	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*1	**PU mode operation command source selection**	FR-A701 : 2 FR-A700, E700(SC)(NC) : 9999	1*2	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*3	Selects the USB connector as the PU operation mode command source.
			4*4	Selects the operation panel as the PU operation mode command source.
			9999*5	FR-A700: USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.
				FR-E700(SC)(NC): USB automatic recognition Normally, operation panel is the command source. When the parameter unit is connected to the PU connector, PU is the command source. During a USB connection, USB is the command source.

*1 *Pr. 551* is always write-enabled.
*2 Available for FR-A700, A701, F700 and F700P.
*3 Available for FR-A700, A701 and E700(SC)(NC).
*4 Available for FR-E700(SC)(NC).
*5 Available for FR-A700 and E700(SC)(NC).

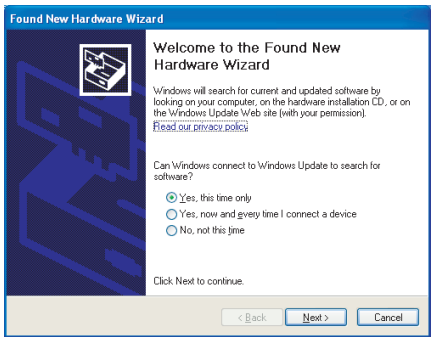
Note

- **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.**

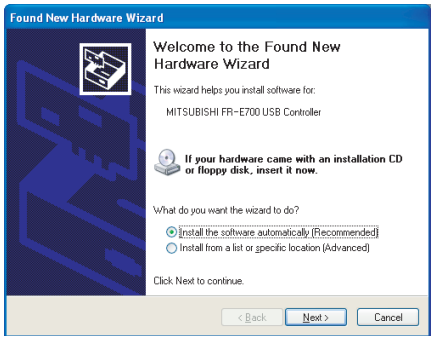
(3) When connecting USB for the first time

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 2000, Windows Vista and Windows 7 inverter is automatically detected.

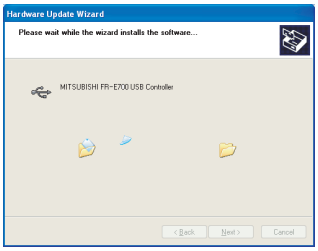
1) Check "No, not this time", and click Next > .

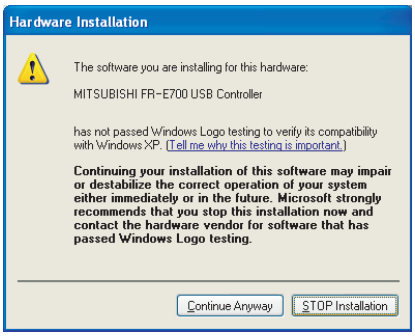


2) Check "Install the software automatically (Recommended)" and click Next > .



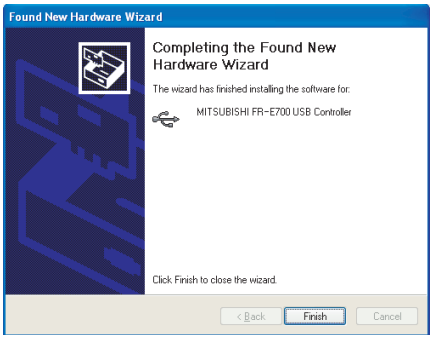
3) If the screen shown on the right is displayed when using Windows XP, click Continue Anyway to proceed the installation.





(Example of FR-E700)

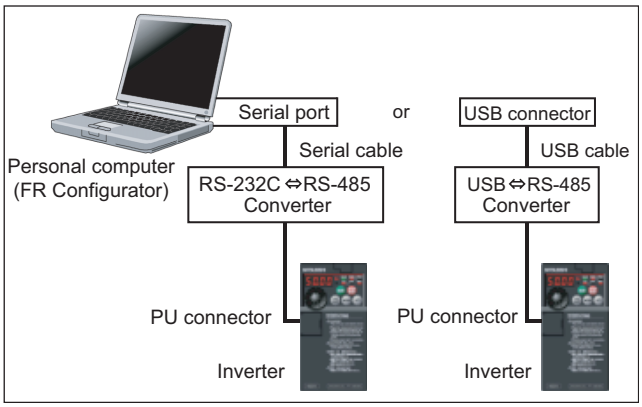
4) The installation of the driver is completed.
Click Finish to close the window.



(Example of FR-E700)

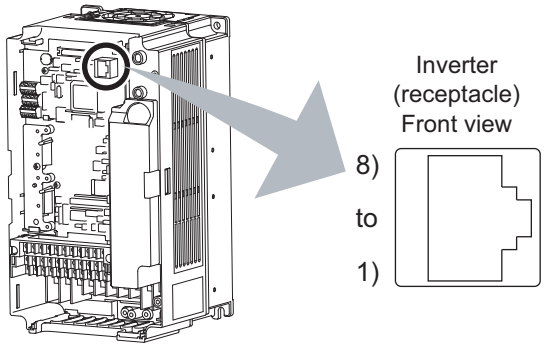
1.4.3 Connection using PU connector

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.



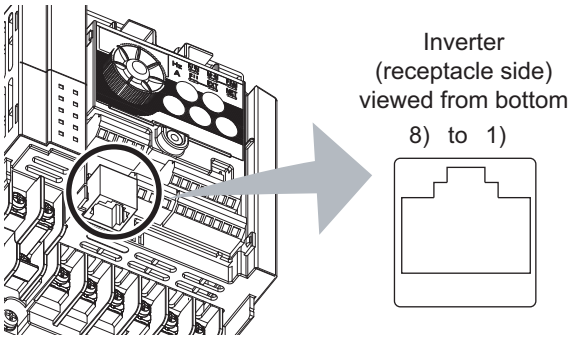
(1) PU connector pin-outs

Example of FR-A700, A701, F700, F700P

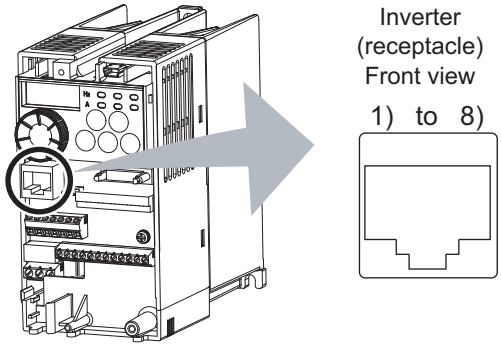


Pin Number	Name	Description
1)	SG	Earth (Ground) (Connected to terminal 5)
2)	—	Operation panel power supply
3)	RDA	Inverter receive+
4)	SDB	Inverter send-
5)	SDA	Inverter send+
6)	RDB	Inverter receive-
7)	SG	Earth (Ground) (Connected to terminal 5)
8)	—	Operation panel power supply

Example of FR-D700, F700PJ



Example of FR-E700(SC)



REMARKS

- 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 0.5mm x 4P*	Mitsubishi Cable Industries, Ltd.
RJ-45 connector	5-554720-3	Tyco Electronics

* 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.

Note

- **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.**

(2) 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-A700	-	*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
FR-A701, F700, F700P	-		Initial value	PU
FR-E700(SC)	No		Initial value	NET
	Yes		*Pr. 551 PU mode operation command source selection* = "2" (initial value 9999)	PU
FR-D700, F700PJ	-		Initial value	NET

* Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter.*

REMARKS

- Switching of the operation mode is available at "Test Operation" *(Refer to page 97)* window in Navigation area.
- Set 3s 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

Parameter Number	Name	Initial Value	Setting Range	Description
117	**PU communication station number**	0	0 to 31 (0 to 247) *1	Inverter station number specification Set the inverter station numbers when two or more inverters are connected to one personal computer.
122	**PU communication check time interval**	FR-A700, A701, F700, F700P : 9999 FR-D700, E700(SC), F700PJ : 0	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 999.8.0s	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	**PU communication waiting time setting**	9999	0 to 150ms	Set the waiting time between data transmission to the inverter and response.
			9999	Set with communication data.
551 *2	**PU mode operation command source selection**	FR-A701, F700, F700P : 2 FR-A700, D700, E700(SC), F700PJ : 9999	1*3	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*4	Selects the USB connector as the PU operation mode command source.
			4*5	Selects the operation panel as the PU operation mode command source.
			9999*6	FR-A700: USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.
				FR-D700, F700PJ: Parameter unit automatic recognition
				FR-E700(SC): USB automatic recognition Normally, operation panel is the command source. When the parameter unit is connected to the PU connector, PU is the command source. During USB connection, USB is the command source.

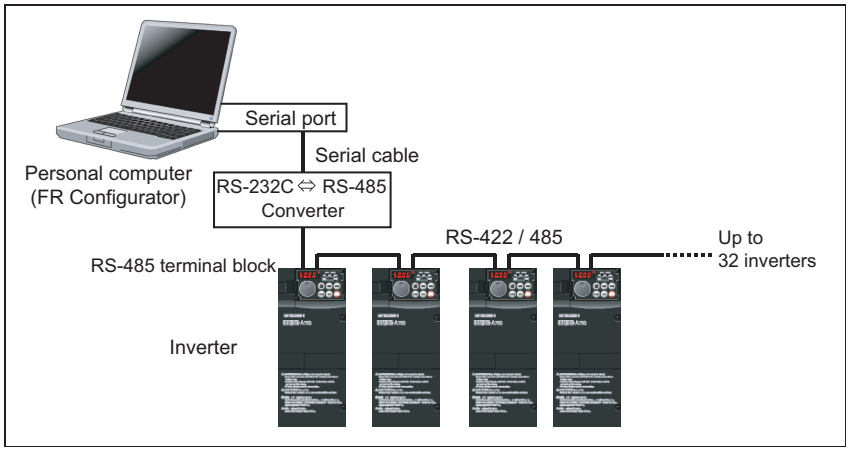
*1 When "1" (Modbus-RTU protocol) is set in *Pr. 549*, the setting range within parentheses is applied.
*2 *Pr. 551* is always write-enabled.
*3 Available for FR-A700, A701, F700 and F700P.
*4 Available for FR-A700, A701 and E700(SC).
*5 Available for FR-D700, E700(SC) and F700PJ.
*6 Available for FR-A700, D700, E700(SC) and F700PJ.

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.**

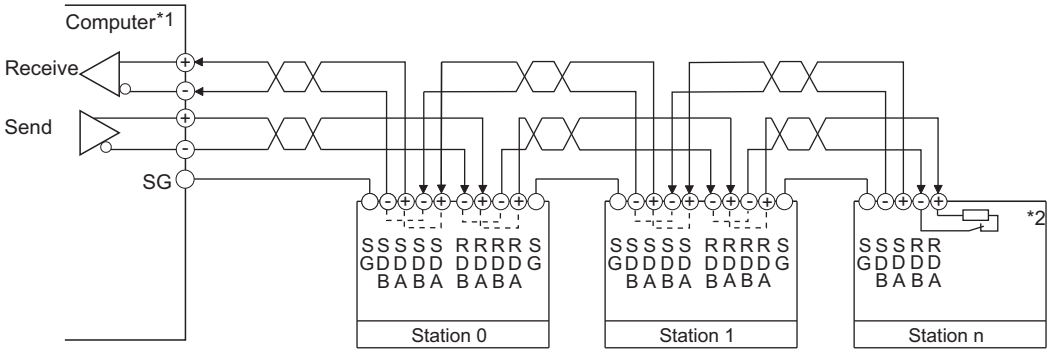
1.4.4 Connection of multiple inverters using RS-485 terminal

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 *(Refer to page 18)* is required.
(FR-E700 series requires control terminal option FR-E7TR. FR-E700-SC/NC are not compatible with FR-E7TR.)



(1) Wiring

The following indicates connection diagram of the multiple inverters. Refer to the Inverter Instruction Manual for details.



*1Make connection in accordance with the instruction manual of the computer to be used with.
Fully check the terminal numbers of the computer since they change with the model.
*2For the inverter farthest from the computer, set the terminating resistor switch to ON (100Ω position).

(2) 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-A700, A701, F700, F700P	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: FR-A700) * (initial value 2: FR-A701, F700 and F700P)	PU
FR-E700	No	Set the station number of the each inverter in *Pr. 117 PU communication station number (when connecting multiple inverters)* *Pr. 122 PU communication check time interval* ≠ "0" (initial value 0) *Pr. 123 PU communication waiting time setting* = "9999" (initial value)	Initial value	NET
	Yes		*Pr. 551 PU mode operation command source selection* = "2" (initial value 9999)	PU

* Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter.*

REMARKS

- Switching of the operation mode is available at "Test Operation" window *(Refer to page 97)* in Navigation area.
- Set 3s 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*, *Pr. 331 RS-485 communication station number* when connecting multiple inverters.

· Related parameter list

Parameter Number	Name	Initial Value	Setting Range	Description
117	**PU communication station number**	0	0 to 31 (0 to 247) *1	Inverter station number specification Set the inverter station numbers when two or more inverters are connected to one personal computer.
122	**PU communication check time interval**	FR-A700, A701, F700, F700P : 9999 FR-E700 : 0	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 999.8s	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	**PU communication waiting time setting**	9999	0 to 150ms	Set the waiting time between data transmission to the inverter and response.
			9999	Set with communication data.
331 *3	**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 *3	**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 999.8s	Set the interval of communication check (signal loss detection) time. (same specifications as *Pr. 122*)
			9999	No communication check (signal loss detection)
337 *3	**RS-485 communication waiting time setting**	9999	0 to 150ms, 9999	Set the waiting time between data transmission to the inverter and response. (same specifications as *Pr. 123*)
551 *2	**PU mode operation command source selection**	FR-A701, F700, F700P : 2 FR-A700, E700 : 9999	1*3	Selects the PU connector as the PU operation mode command source.
			2	Selects the PU connector as the PU operation mode command source.
			3*4	Selects the USB connector as the PU operation mode command source.
			4*5	Selects the operation panel as the PU operation mode command source.
			9999*6	FR-A700: USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.
				FR-E700: USB automatic recognition Normally, operation panel is the command source. When the parameter unit is connected to the PU connector, PU is the command source. During USB connection, USB is the command source.

*1 When "1" (Modbus-RTU protocol) is set in *Pr. 549*, the setting range within parentheses is applied.
*2 *Pr. 551* is always write-enabled.
*3 Available for FR-A700, A701, F700 and F700P.
*4 Available for FR-A700, A701 and E700.
*5 Available for FR-E700.
*6 Available for FR-A700 and E700.

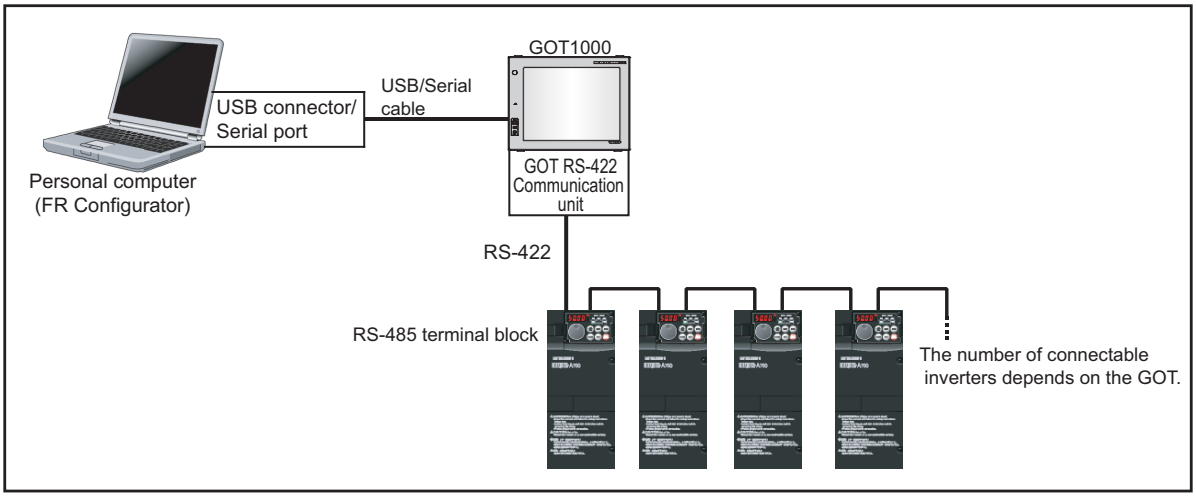
Note

- **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.**

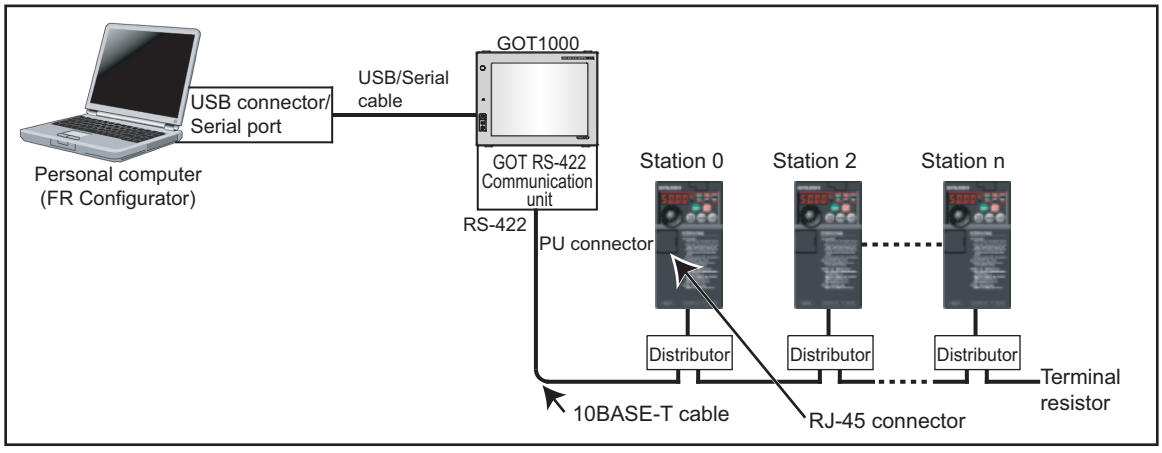
1.4.5 Connection through GOT (FA transparent function)

Using FA transparent function of GOT1000 series, connecting inverter to FR Configurator is available through GOT.
FA transparent function enables reading, writing and monitoring of programmable controller of Mitsubishi Electric Corporation through GOT, while connecting Mitsubishi programmable controller and PC.
Serial port or USB is used for connecting between FR Configurator and GOT. RS-422 is used for connecting between GOT and inverter.

[Example of RS-485 terminal connection]



[Example of PU connector connection (FR-E700(SC))]



GOT RS-422 communication unit (GT15-RS4-9S) is required. When using USB for connecting with GOT, use dedicated cable GT09-C30USB-5P or GT09-C20USB-5P.
The number of connectable inverters depends on the GOT. Refer to GOT1000 series connection manual for details of RS-422 connection and compatible version of GOT.

Note

Do not perform the following operation during FA transparent function is valid and FR Configurator 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**

When using FA transparent communication, communication error (Time Out) may occur when FR Configurator starts communication during Time Out occurrence in GOT (when GOT is monitoring the inverter which is not connected). In that case, set the Time Out value more than the following. *(Refer to page 49)*
Time Out value of GOT[s] x (Retry count of GOT + 1) x 3 x 1000[ms] (500ms increments)
If the value above is more than 30[s], make adjustment to "Time Out value"[s] and "Retry count" of GOT to make the value above become less than 30[s]. *Refer to page 49* **for communication setting.**

(1) Related parameter for connection of multiple inverters through GOT

Check a connection between the inverter and GOT, and set the following communication parameter when connecting through GOT.

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

<table>
<tr><th rowspan="2">Inverter</th><th rowspan="2">Communication Port</th><th colspan="2">Parameter Setting</th><th rowspan="2">Operation Mode</th></tr>
<tr><th>Communication Parameter</th><th>Command Source Parameter</th></tr>
<tr><td rowspan="3">FR-A700, A701, F700, F700P</td><td>PU connector</td><td rowspan="2">Pr. 119 PU communication stop bit length = "10"
(initial value 1)
Pr. 120 PU communication parity check = "1"
(initial value 2)
Pr. 121 Number of PU communication retries = "9999"
(initial value 1)
Pr. 122 PU communication check time interval ≠ "0"
(initial value 9999)
Pr. 123 PU communication waiting time setting = "0"
(initial value 9999)</td><td>Initial value</td><td>PU</td></tr>
<tr><td>RS-485 terminals
(Without communication option)</td><td>Initial value</td><td>NET</td></tr>
<tr><td>RS-485 terminals
(With communication option)</td><td rowspan="2">Set the station number of the each inverter in Pr. 331 RS-485 communication station number (when connecting multiple inverters)
Pr. 332 RS-485 communication speed = "192"
(initial value 96)
Pr. 333 RS-485 communication stop bit length = "10"
(initial value 1)
Pr. 334 RS-485 communication parity check selection = "1"
(initial value 2)
Pr. 335 RS-485 communication retry count = "9999"
(initial value 1)
Pr. 336 RS-485 communication check time interval ≠ "0"
(initial value 0)
Pr. 337 RS-485 communication waiting time setting = "0"
(initial value 9999)</td><td>Pr. 551 PU mode operation command source selection = "1"
(initial value 9999: FR-A700) *1
(initial value 2: FR-A701, F700 and F700P)</td><td>PU</td></tr>
<tr><td rowspan="4">FR-E700(SC)</td><td>PU connector
(Without communication option)</td><td rowspan="5">Set the station number of the each inverter in Pr. 117 PU communication station number (when connecting multiple inverters)
Pr. 119 PU communication stop bit length = "10"
(initial value 1)
Pr. 120 PU communication parity check = "1"
(initial value 2)
Pr. 121 Number of PU communication retries = "9999"
(initial value 1)
Pr. 122 PU communication check time interval ≠ "0"
(initial value 0)
Pr. 123 PU communication waiting time setting = "0"
(initial value 9999)</td><td>Initial value</td><td>NET</td></tr>
<tr><td>PU connector
(With communication option)</td><td>Pr. 551 PU mode operation command source selection = "2"
(initial value 9999)</td><td>PU</td></tr>
<tr><td>RS-485 terminal option *2
(Without communication option)</td><td>Initial value</td><td>NET</td></tr>
<tr><td>RS-485 terminal option *2
(With communication option)</td><td>Pr. 551 PU mode operation command source selection = "2"
(initial value 9999)</td><td>PU</td></tr>
<tr><td>FR-D700, F700PJ</td><td>PU connector</td><td>Initial value</td><td>NET</td></tr>
</table>

*1 Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter*.

*2 FR-E700-SC/NC are not compatible with FR-E7TR.

REMARKS

- Switching of the operation mode is available at "Test Operation" window *(Refer to page 97)* in Navigation area.
- Set the station number of the each inverter in *Pr. 117 PU communication station number*, *Pr.331 RS-485 communication station number* when connecting multiple inverters. Perform inverter reset after setting the parameter.

· **Related parameter list**

Parameter Number	Name	Initial Value	Setting Range	Description
117	**PU communication station number**	0	0 to 31 (0 to 247) *1	Inverter station number specification Set the inverter station numbers when two or more inverters are connected to one personal computer.
118	**PU communication speed**	192	48, 96, 192, 384	Set the communication speed. The setting value x 100 equals the communication speed. For example, the communication speed is 19200bps when the setting value is "192".
119	**PU communication stop bit length**	1	0	Stop bit length: 1 bit; Data length: 8 bits
			1	Stop bit length: 2 bits; Data length: 8 bits
			10	Stop bit length: 1 bit; Data length: 7 bits
			11	Stop bit length: 2 bits; Data length: 7 bits
120	**PU communication parity check**	2	0	Without parity check
			1	With odd parity check
			2	With even parity check
121	**Number of PU communication retries**	1	0 to 10	Set the permissible number of retries at occurrence of a data receive error. If the number of consecutive errors exceeds the permissible value, the inverter trips.
			9999	If a communication error occurs, the inverter will not trip.
122	**PU communication check time interval**	FR-A700, A701, F700, F700P : 9999 FR-D700, E700(SC), F700PJ : 0	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 999.8s	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	**PU communication waiting time setting**	9999	0 to 150ms	Set the waiting time between data transmission to the inverter and response.
			9999	Set with communication data.
124	**PU communication CR/LF selection**	1	0	Without CR/LF
			1	With CR
			2	With CR/LF
331 *3	**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.
332 *3	**RS-485 communication speed**	96	3, 6, 12, 24, 48, 96, 192, 384	Select the communication speed. (same specifications as *Pr. 118*)
333 *3	**RS-485 communication stop bit length**	1	0, 1, 10, 11	Select stop bit length and data length. (same specifications as *Pr. 119*)
334 *3	**RS-485 communication parity check selection**	2	0, 1, 2	Select the parity check specifications. (same specifications as *Pr. 120*)
335 *3	**RS-485 communication retry count**	1	0 to 10, 9999	Set the permissible number of retries at occurrence of a data receive error. (same specifications as *Pr. 121*)
336 *3	**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 999.8s	Set the interval of communication check (signal loss detection) time. (same specifications as *Pr. 122*)
			9999	No communication check (signal loss detection)
337 *3	**RS-485 communication waiting time setting**	9999	0 to 150ms, 9999	Set the waiting time between data transmission to the inverter and response. (same specifications as *Pr. 123*)

Parameter Number	Name	Initial Value	Setting Range	Description
341 *3	**RS-485 communication CR/ LF selection**	1	0, 1, 2	Select presence/absence of CR/LF. (same specifications as *Pr. 124*)
551 *2	**PU mode operation command source selection**	FR-A701, F700, F700P : 2 FR-A700, D700, E700(SC), F700PJ: 9999	1*3	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*4	Selects the USB connector as the PU operation mode command source.
			4*5	Selects the operation panel as the PU operation mode command source.
			9999*6	FR-A700: USB automatic recognition Normally, operation panel (PU connector) is the command source. During USB connection, USB is the command source.
				FR-D700, F700PJ : Parameter unit automatic recognition
				FR-E700(SC): USB automatic recognition During USB connection, USB is the command source. Normally, operation panel is the command source. When the parameter unit is connected to the PU connector, PU is the command source.

*1 When "1" (Modbus-RTU protocol) is set in *Pr. 549*, the setting range within parentheses is applied.
*2 *Pr. 551* is always write-enabled.
*3 Available for FR-A700, A701, F700 and F700P.
*4 Available for FR-A700, A701 and E700(SC).
*5 Available for FR-D700, E700(SC) and F700PJ.
*6 Available for FR-A700, D700, E700(SC) and F700PJ.

Note

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

(2) Communication setting of GOT

If the communication setting of GOT is changed from the initial value, set the inverter communication setting to the same as the GOT setting

Item	Description	Initial value	Range	Compatible parameters
Transmission Speed	Set this item to change the transmission speed used for communication with the connected equipment.	19200bps	9600bps, 19200bps, 38400bps, 57600bps, 115200bps	*Pr. 118, Pr. 332*
Data Bit	Set this item to change the data length used for communication with the connected equipment.	7 bits	7bits/8bits	*Pr. 119, Pr. 333*
Stop Bit	Specify the stop bit length for communications.	1 bit	1bit/2bits	
Parity	Specify whether or not to perform a parity check, and how it is performed during communication.	Odd	None Even Odd	*Pr. 120, Pr. 334*
Retry	Set the number of retries to be performed when a communication timeout occurs.	0 time	0 to 5 times	*Pr. 121, Pr. 335*
Timeout Time	Set the time period for a communication to time out.	3s	1 to 30s	-
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT.	10ms	0 to 300ms	-

1.5 Setting of Operation Mode of the Inverter

The inverter has three operation modes.

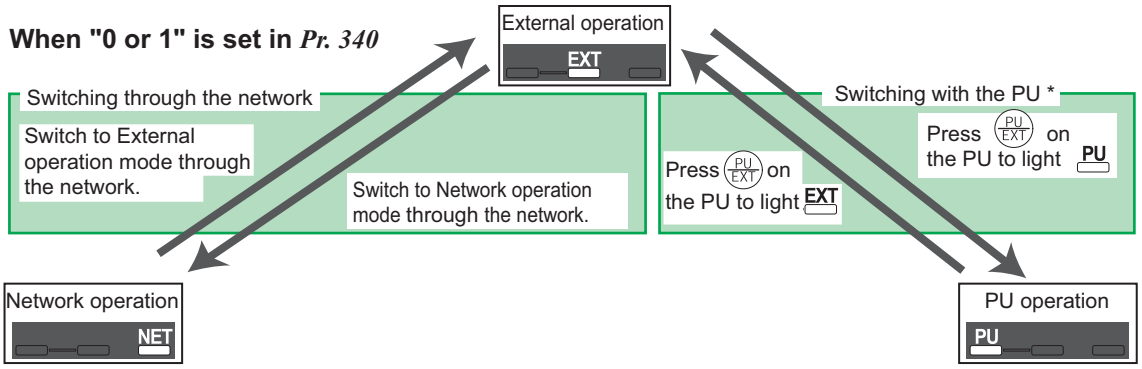
(1) PU operation [PU]..... Controls the inverter from the key of the control panel (FR-DU07) mounted on the inverter.

(2) External operation [EXT]..... Controls the inverter by switching ON/OFF external signals connected to the control circuit terminals of the inverter. (The inverter is initially-set to this mode.)

(3) Network operation [NET] ..... Controls the inverter with instructions from the network via the communication option. (The operation signal and running frequency can be entered from the control circuit terminals depending on the *Pr. 338 Communication operation command source* and *Pr. 339 Communication speed command source* setting.)

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 Configurator. *(Refer to page 97)*

Refer to the following table to select the appropriate operation mode for the connection. Switching of the operation mode is available at "Test Operation" window *(Refer to page 97)* in Navigation area.
Refer to the Inverter Instruction Manual (Applied) for details of each parameter.

Controllability through communication
·Monitoring and parameter read can be performed from any operation regardless of the operation mode.
●FR-A700, A701, F700, F700P series

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 are used) *6	NET Operation (when communication option is used) *7
Control by RS-485 communication from PU connector	2 (PU connector)	Run command (start)	○	×	×	○	×	
		Run command (stop)	○	△ *3	△ *3	○	△ *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)	△ *3	△ *3	△ *3	△ *3	△ *3	
		Running frequency setting	×	×	×	×	×	
		Monitor	○	○	○	○	○	
		Parameter write	× *5	× *5	× *5	× *5	× *5	
		Parameter read	○	○	○	○	○	
		Inverter reset	○	○	○	○	○	
Control by communication from 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	×

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 are used) *6	NET Operation (when communication option is used) *7
Operation from the USB connector *8	3 (USB connector) 9999 (automatic recognition) *9	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	○	○	○	○	○	

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

*1 As set in *Pr. 338 Communication operation command source* and *Pr. 339 Communication speed command source*. *(Refer to the inverter Instruction Manual)*

*2 At occurrence of RS-485 communication error, 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*. *(Refer to the inverter Instruction Manual)*

*4 Some parameters may be write-disabled according to the *Pr. 77 Parameter write selection* setting and operating status. *(Refer to the inverter Instruction Manual)*

*5 Some parameters are write-enabled independently of the operation mode and command source presence/absence. When *Pr. 77* = 2, write is enabled. *(Refer to the inverter Instruction Manual)* Parameter clear is disabled.

*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 fitted.

*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 fitted.

*8 FR-A700, A701 series only.

*9 Setting value "9999" is available only for FR-A700. Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter*.

●FR-E700(SC) series

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 using PU connector) *6	NET Operation (when using communication option) *7
Control by RS-485 communication from PU connector	2 (PU connector)	Run command (Start, stop)	○	△ *3	△ *3	○	△ *3	
		Running frequency setting	○	×	○	×	×	
		Parameter write	○ *4	× *5	○ *4	○ *4	× *5	
		Inverter reset	○	○	○	○	○	
	Other than the above	Run command (Start, stop)	×	×	×	×	○ *1	×
		Running frequency setting	×	×	×	×	○ *1	×
		Parameter write	× *5	× *5	× *5	× *5	○ *4	× *5
		Inverter reset	×	×	×	×	○ *2	×
Operation from the USB connector	3 (USB connector) 9999 (automatic recognition)	Run command (Start, stop)	○	×	×	○	×	
		Running frequency setting	○	×	○	×	×	
		Parameter write	○ *4	× *5	× *5	× *5	× *5	
		Inverter reset	○	○	○	○	○	
	Other than the above	Run command (Start, stop)	×	×	×	×	×	
		Running frequency setting	×	×	×	×	×	
		Parameter write	× *5	× *5	× *5	× *5	× *5	
		Inverter reset	○	○	○	○	○	
Control by communication from communication option	—	Run command (Start, stop)	×	×	×	×	×	○ *1
		Running frequency setting	×	×	×	×	×	○ *1
		Parameter write	× *5	× *5	× *5	× *5	× *5	○ *4
		Inverter reset	×	×	×	×	×	○ *2

○: 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 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* = 2, write is enabled. Parameter clear is unavailable.

*6 When *Pr. 550 NET mode operation command source selection* = "2" (PU connector valid) or *Pr. 550 NET mode operation command source selection* = "9999" and the communication option is not fitted.

*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 fitted.

●FR-E700-NC series

Operation Location	Condition (*Pr. 551* Setting)	Operation Mode / Item	PU Operation	NET Operation
Operation from the USB connector	3 (USB connector) 9999 (automatic recognition)	Run command (Start, stop)	○	×
		Running frequency setting	○	×
		Parameter write	○ *1	× *2
		Inverter reset	○	○
	Other than the above	Run command (Start, stop)	×	×
		Running frequency setting	×	×
		Parameter write	× *2	× *2
		Inverter reset	○	○
CC-Link communication	—	Run command (Start, stop)	×	○
		Running frequency setting	×	○
		Parameter write	× *2	○ *1
		Inverter reset	×	○

○: Enabled, ×: Disabled

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

*2 Some parameters are write-enabled independently of the operation mode and command source presence/absence. When *Pr. 77* = 2, write is enabled. Parameter clear is unavailable.

●FR-D700, F700PJ series

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
Control by RS-485 communication from PU connector	2 (PU connector)	Run command (start)	○	×	×	○	×
		Run command (stop)	○	△ *3	△ *3	○	×
		Running frequency setting	○	×	○	×	×
		Parameter write	○ *4	× *5	○ *4	○ *4	× *5
		Inverter reset	○	○	○	○	×
	Other than the above	Run command (start)	×	×	×	×	○ *1
		Run command (stop)	×	×	×	×	○ *1
		Running frequency setting	×	×	×	×	○ *1
		Parameter write	× *5	× *5	× *5	× *5	○ *4
		Inverter reset	×	×	×	×	○ *2

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

*1 As set in *Pr.338 Communication operation command source* and *Pr. 339 Communication speed command source (Refer to the inverter Instruction Manual)*

*2 At occurrence of RS-485 communication error, 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 PU stop selection*. *(Refer to the inverter Instruction Manual)*

*4 Some parameters may be write-disabled according to the *Pr. 77 Parameter write selection* setting and operating status. *(Refer to the inverter Instruction Manual)*

*5 Some parameters are write-enabled independently of the operation mode and command source presence/absence. When *Pr. 77* = "2", write is enabled. *(Refer to the inverter Instruction Manual)* Parameter clear is disabled.

1.6 Start and Close

1.6.1 Starting FR Configurator

There are the following ways to start FR Configurator.

(1) Start from Start menu

Click [Start] on the Taskbar of Windows, and point to [All Programs], [MELSOFT Application], [FR Configurator], [SW3 (700 Series)], and click [FR Configurator SW3] to start FR Configurator.

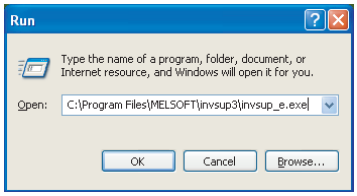


(2) Start from system file (*.me3)

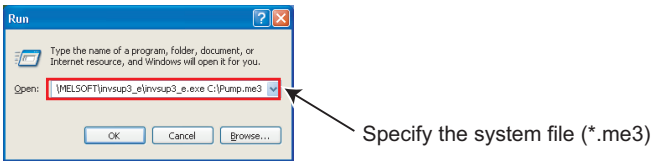
Double-click (or press Enter key) a desired system file (*.me3) to start FR Configurator with reading the setting of the system file. [Startup] window is not displayed. (*Refer to page 93* for the system file (*.me3))

(3) Start from command line

Specify an executable file of FR Configurator (invsup3_e.exe) to [Run...] window in the [Start] menu of Windows, to start FR Configurator.

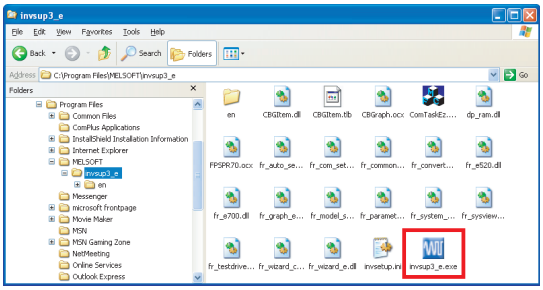


Specify the system file (*.me3) after the executable file, and the setting of the system file (*.me3) is read at the starting up of the software. "Startup" window is not displayed at starting up of the software when the system file (*.me3) is specified.



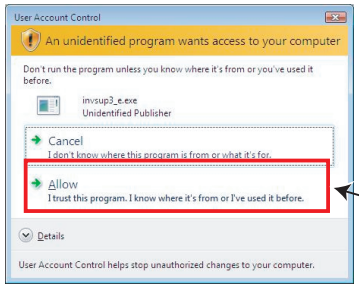
(4) Start from Windows Explorer

Select the executable file of FR Configurator (invsup3_e.exe) by using Windows Explorer, and double-click (or type Enter key) to start FR Configurator.



Note

- When using Windows Vista or Windows 7, the following window may appear at the start up of FR Configurator. If the window appears, select "Allow ".



Select "Allow"

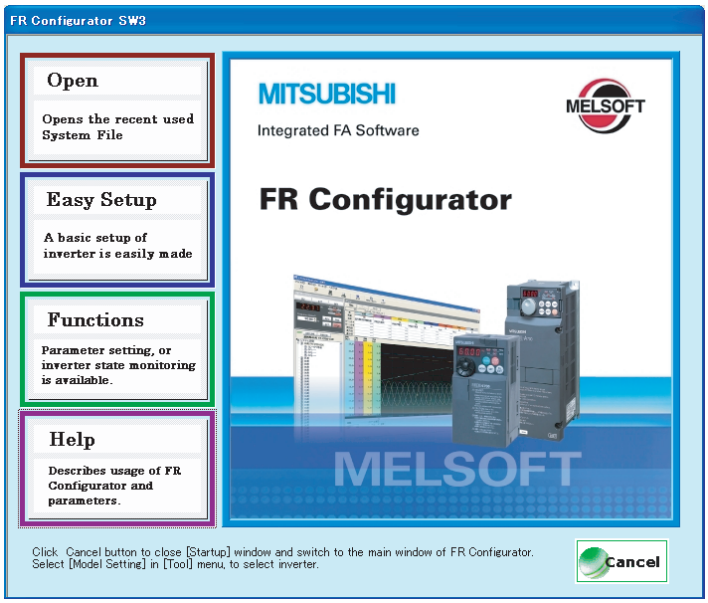
- In an operation system with antivirus/security software, a warning may appear at starting FR Configurator. If a warning appears, permit FR Configurator according to the setting procedure of your antivirus/security software.
- If files shown in [Recent Items] of Windows Vista and [Recent] of Windows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

1.6.2 Start flow of FR Configurator

After FR Configurator is started, the splash screen appears, and the start up is proceeded.



The "Startup" windows is displayed when FR Configurator is started. Each function can be directly selected from the "Startup" window. (*Refer to page 46* for the detail of "Startup") Click Cancel to close the "Startup" window and switch to the main window of FR Configurator.



1.6.3 Closing FR Configurator

There are following ways to close FR Configurator.

(1) Close from menu

Select [Exit] in [File] menu to close FR Configurator.
(Press Alt + F to open [File] menu, and press Ctrl + X also to close FR Configurator)

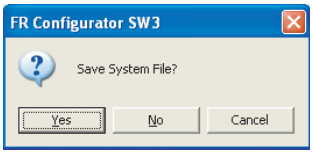
(2) Close from title bar

Click on the right end of the title bar to close FR Configurator.



REMARKS

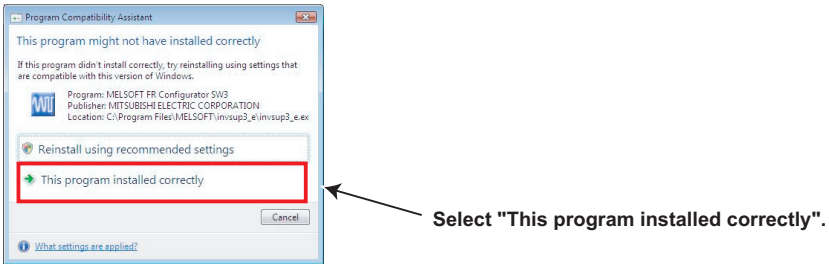
If a system file (*.me3) is not saved yet when closing FR Configurator, the dialog box is displayed to confirm the closing.



Click [Yes] to open "Save As" window for saving the system file (*.me3).
Click [No] to close FR Configurator without saving the system file (*.me3).
Click [Cancel] to cancel the closing of FR Configurator, and switch to the Main frame window.

Note

- **When using Windows Vista or Windows 7, the following window may appear at the exit from FR Configurator. If the window appears, select "This program installed correctly".**



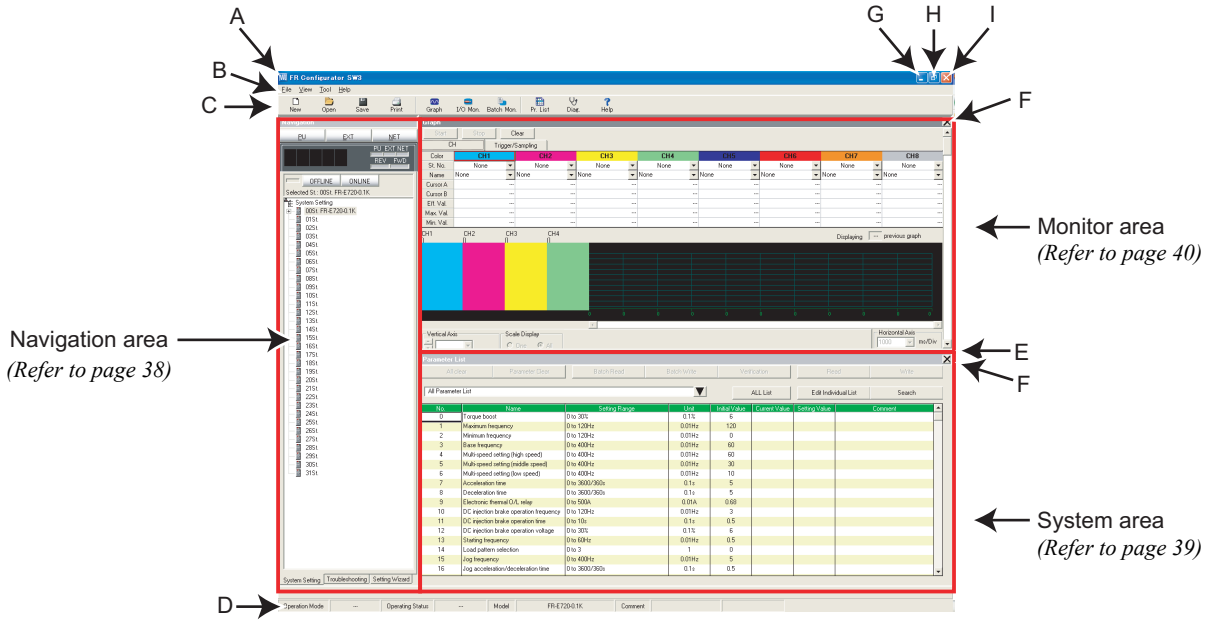
1.7 Explanation of Window

The following section describes FR Configurator window.

1.7.1 Main frame

The Main frame (main window) of FR Configurator consists of three areas.

- Navigation area *(Refer to page 38)*
  An area for showing information of the registered inverter, or for making settings. "Test Operation", "System Settings", "Setting Wizard", and "Troubleshooting" are available in this area.
- Monitor area *(Refer to page 40)*
  An area for showing obtained monitor data of the inverter. "Graph", "I/O Terminal Monitor", "Machine Analyzer", "Batch Monitor" are available in this area.
- System area *(Refer to page 39)*
  An area for showing and read/write parameters, or for converting from parameter setting of conventional model. "Parameter List", "Diagnosis" and "Convert" are available in this area.



• Explanation of Main frame

No.	Name	Function and description	Refer to Page
A	Title bar	"FR Configurator SW3" is displayed on the title bar. If a system file has been read, or has been saved, the file name is displayed.	—
B	Menu bar	Each function is available by selecting from the menu.	41
C	Tool bar	Each function is available by clicking icons of the tool bar.	41
D	Status bar	The model name, Operating status, etc. are shown.	43
E	Split line	Adjustment of System area size and Monitor area size is available.	—
F	Conceal button	Conceals the Monitor area and System area.	—
G	Minimize button	Minimizes the Main frame window size of FR Configurator.	—
H	Maximize button	Maximizes the Main frame window size of FR Configurator.	—
I	Close button	Closes FR Configurator.	—

REMARKS

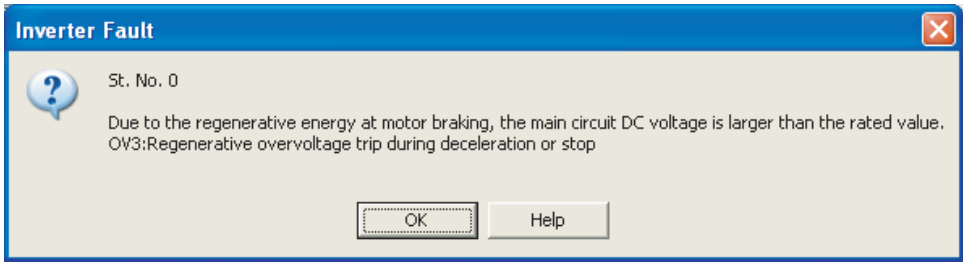
Adjustment of System area size and Monitor area size is available with using the split line. You can adjust the area size to enlarge the currently using area.



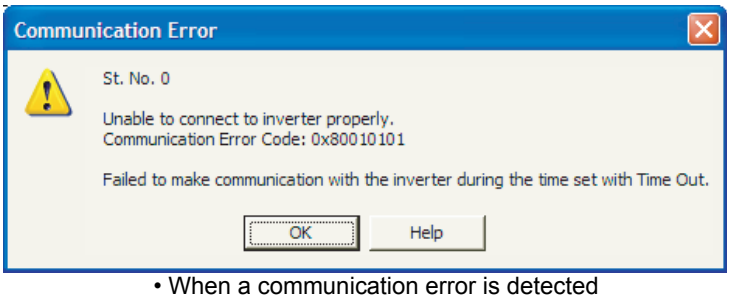
Point the mouse cursor on the boundary. An arrow pointing to a size-adjustable direction appears.
If only one area is displayed, size adjustment is unavailable.
Adjusting window size beyond the maximum size or minimum size of each window is unavailable.

- **Detection of fault and communication error**

FR Configurator checks the operating status of the connected inverter, and detects fault and communication error *(Refer to page 164)*. If a fault or communication error is detected, the following dialog appears. Click Help to show a related Help information.



• When a fault is detected

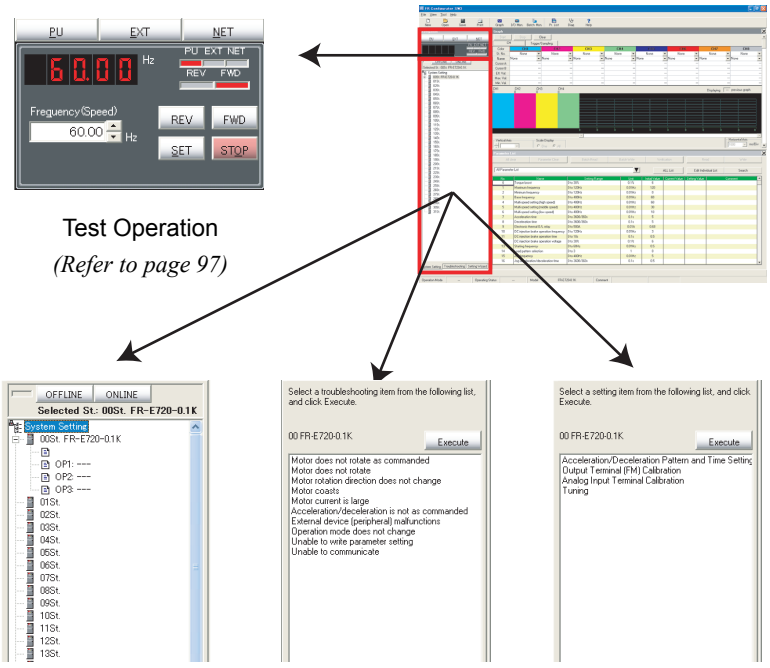


• When a communication error is detected

1.7.2 Navigation area

The Navigation area is for showing registered inverter information, switching of operation mode and ONLINE/OFFLINE, sending of start/stop command, changing of the set frequency, or starting Setting Wizard. "Test Operation", "System Settings", "Troubleshooting" and "Setting Wizard" are available in this area.

The Upper part of the Navigation area displays "Test Operation" *(Refer to page 97)*, and the lower part displays "System View" *(Refer to page 101)*.
Select [System Setting], [Troubleshooting] or [Setting Wizard] under [View] menu to switch the function displayed in "System View".



Test Operation
(Refer to page 97)

System Setting
(Refer to page 102)

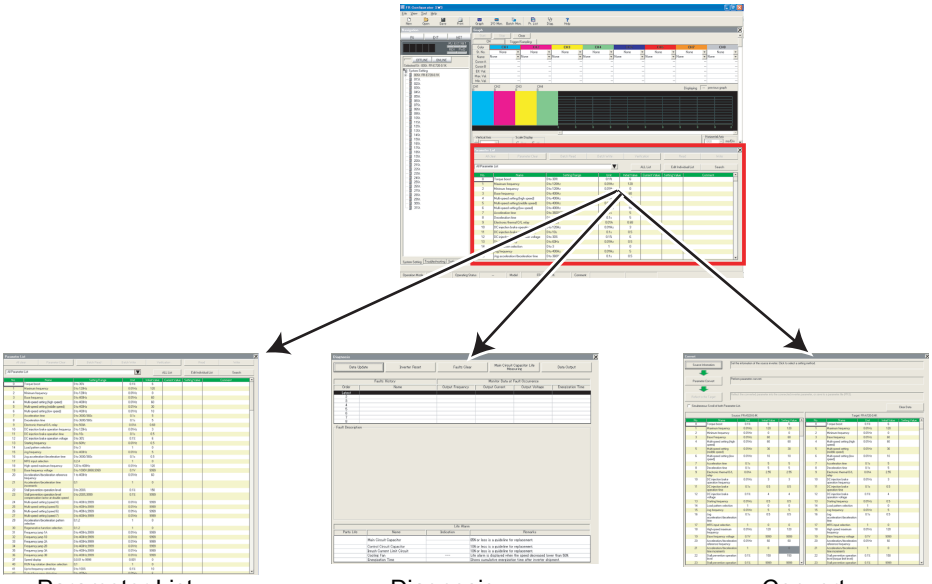
Troubleshooting
(Refer to page 71)

Setting Wizard
(Refer to page 105)

1.7.3 System area

The System area is for showing and reading/writing parameters, or for diagnosis and converting from parameter setting of conventional model. "Parameter List", "Diagnosis", and "Convert" are available in this area.

Select [Parameter List], [Diagnosis], or [Convert] under [View] menu, or click icons on the tool bar to switch the function displayed in the System area.



Parameter List
(Refer to page 106)

Diagnosis
(Refer to page 133)

Convert
(Refer to page 114)

1.7.4 Monitor area

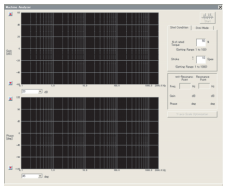
Monitor area is for showing obtained monitor data of inverter. "Graph", "I/O Terminal Monitor", "Machine Analyzer", and "Batch Monitor" are available in this area.

Select [Graph], [Machine Analyzer], [Batch Monitor], or [I/O Terminal Monitor] under [View] menu, or click an icon on the tool bar to display the function in System area.



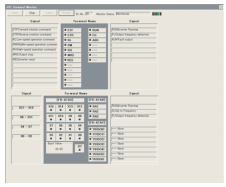
Graph

(Refer to page 135)



Machine Analyzer

(Refer to page 155)



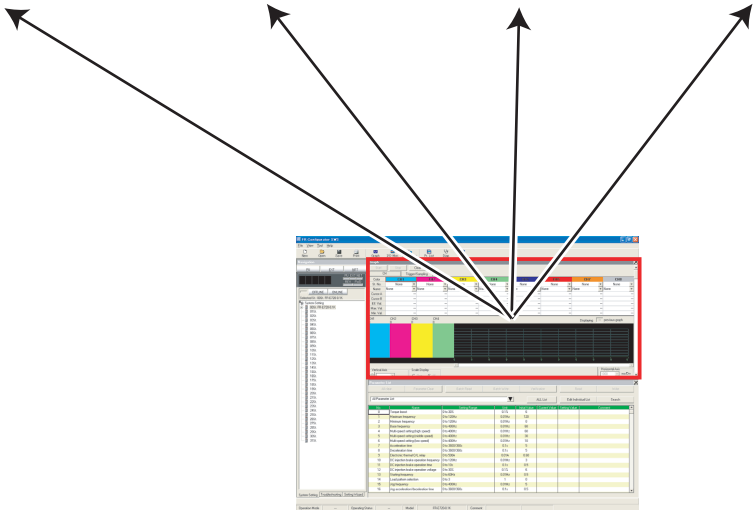
I/O Terminal Monitor

(Refer to page 153)



Batch Monitor

(Refer to page 151)



1.7.5 Menu and tool bar

Desired function is available by selecting it from the menu or the tool bar.

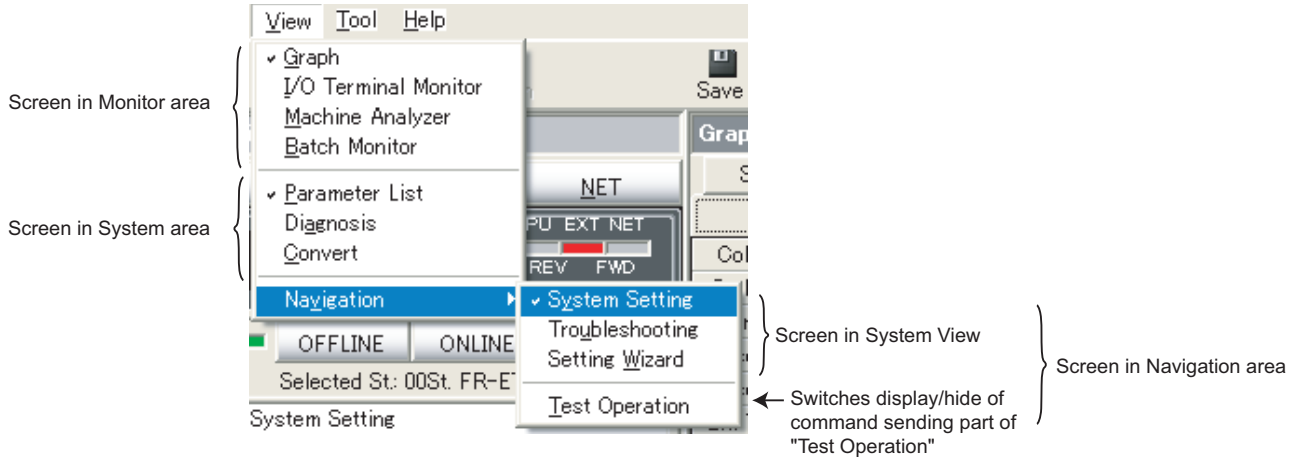
(1) Menu/Tool bar list

Following functions are available from the menu.

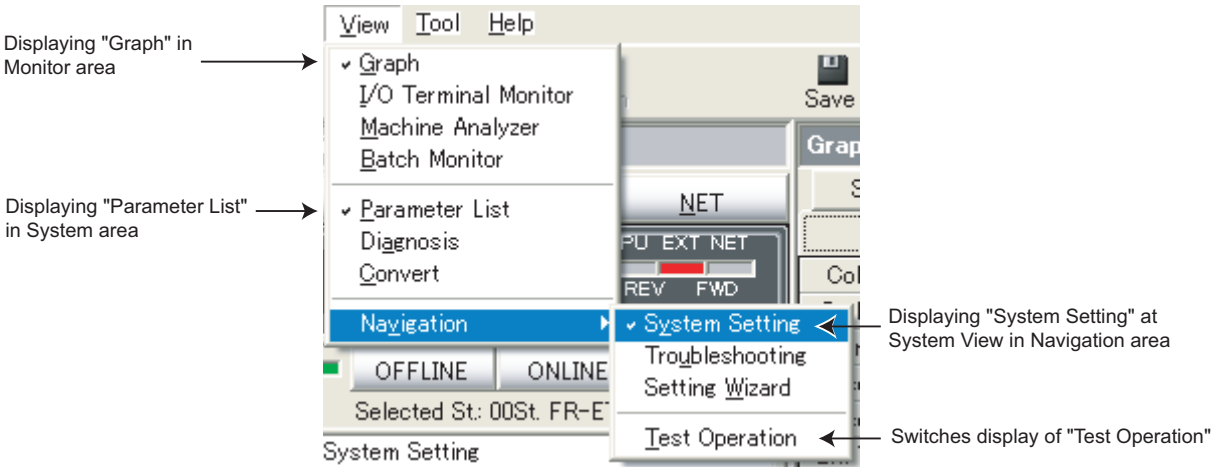
Menu	Pull-down menu		Tool bar Icon	Function/Operation	Refer to Page
File	New ...			Clears the all current settings to create a new setting. Confirmation dialog for new setting appears, and then displays "Startup" window.	34
	Open ...			Opens the system file (*.me3).	93
	Save			Overwrites the system file (*.me3) by current data. When the system file (*.me3) has not been read or not created yet, then "Save As" window is displayed, and saving of the system file is available.	93
	Save As...		—	Puts a name and creates a new system file (*.me3) from the current setting.	93
	Property		—	Checks and edits system name, application and comments.	48
	Import...		—	Imports an exported saved file of the currently using function. Confirmation dialog for erasing the current data appears, and then the import window is displayed.	94
	Export ...		—	Exports the data of currently using function and creates a file.	94
	Print ...			Prints a whole window.	96
	Exit		—	Closes FR Configurator.	—
View	Graph			Displays "Graph" window in Monitor area.	135
	I/O Terminal Monitor			Displays "I/O Terminal Monitor" window in Monitor area.	153
	Machine Analyzer		—	Displays "Machine Analyzer" window in Monitor area.	155
	Batch Monitor			Displays "Batch Monitor" window in Monitor area.	151
	Parameter List			Displays "Parameter List" window in System area.	106
	Diagnosis			Displays "Diagnosis" window in System area.	133
	Convert		—	Displays "Convert" window in System area.	114
	Navigation	System Setting	—	Displays "System Setting" window in System View of Navigation area.	102
		Troubleshooting	—	Displays "Troubleshooting" window in System View of Navigation area.	71
		Setting Wizard	—	Displays "Setting Wizard" in System View of Navigation area.	105
		Test Operation	—	Displays or hides the command sending part of "Test Operation".	97
Tool	Model Setting...		—	Displays "Model Setting" window.	90
	Options...		—	Displays "Option" window.	91
	All St. parameter setting	Read...	—	Displays "All St. Parameter Reading".	103
		Write...	—	Displays "All St. Parameter Writing".	103
Help	Help			Displays "Help" window.	160
	About FR Configurator SW3		—	Displays "About FR Configurator SW3" window.	162

(2) [View] menu and Main frame

Each function screen of FR Configurator is displayed from [View] menu. [View] menu is divided into three segments. Function screens in Monitor area are on top, screens in System area are in the middle, and screens in Navigation area are on the bottom.



A check mark appears on the left of the item inside the [View] menu for each screen displayed in each area. One function each from Monitor area, System area and Navigation area can be displayed. Check on the [Test Operation] under [Navigation] menu to display the command sending part of "Test Operation".



To close a currently displayed function, click and uncheck the name of the function. To hide the Navigation area itself, click and uncheck the item of the System View under [Navigation] menu.
When a function in Monitor area is performing monitoring, all functions in Monitor area are unavailable. Stop the monitoring, and then select a menu.

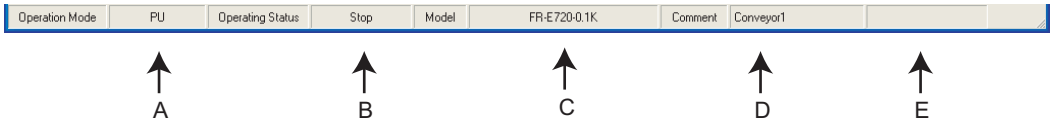
REMARKS

- Depending on connected inverter, with or without of Model Setting, or ONLINE/OFFLINE condition, some functions are unavailable. If an item in menu is displayed in gray, the item is unavailable.
- When functions in both Monitor area and System area are checked, click and uncheck one of them will maximize the window size of another.



1.7.6 Status bar

Status bar shows operation mode of the inverter and model information etc.



No.	Name	Function and description
A	Operation Mode	Shows the operation mode of the selected inverter (station). When model setting (system setting) has not been set, "---" is displayed. At an occurrence of warning, both operation mode and warning are displayed. Example:Stall prevention (overcurrent) occurred at External operation mode "EXT(OL)"
B	Operating Status	Shows the operating status of the selected inverter (station).
C	Model	Shows a model of the selected inverter (station).
D	Comment	Shows a comment.
E	Programmable Controller Status	Show the programmable controller status of the selected inverter (station).

1.7.7 Communication manager

When FR Configurator is started, an icon appears at Windows taskbar indicating communication state. When FR Configurator is closed, the icon disappears.



The icon displays ONLILNE/OFFLINE status of FR Configurator.

Indication	Status	Connection
	OFFLINE	—
	ONLINE	Serial connection(Blue) Serial connection through GOT(Blue)
		USB connection (Green) USB connection through GOT(Green)

MEMO

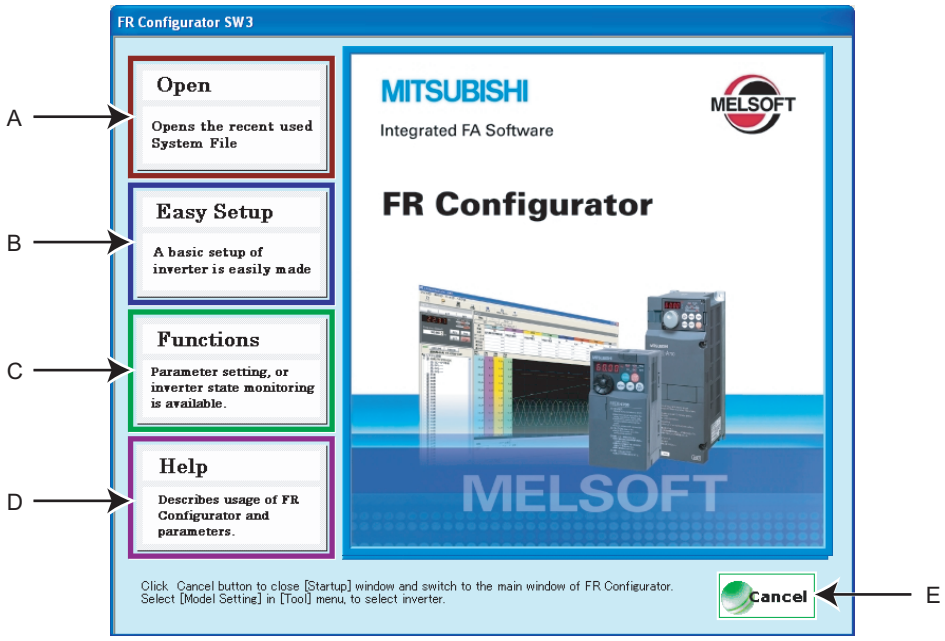
2 WHEN USING FOR THE FIRST TIME

This chapter explains the "Startup" and "Easy Setup" of this product.
Always read the instructions before using the software.

2.1 Startup..... 46
2.2 Easy Setup..... 47

2.1 Startup

"Startup" windows is displayed when FR Configurator is started. Each function can be directly selected from the "Startup" window.



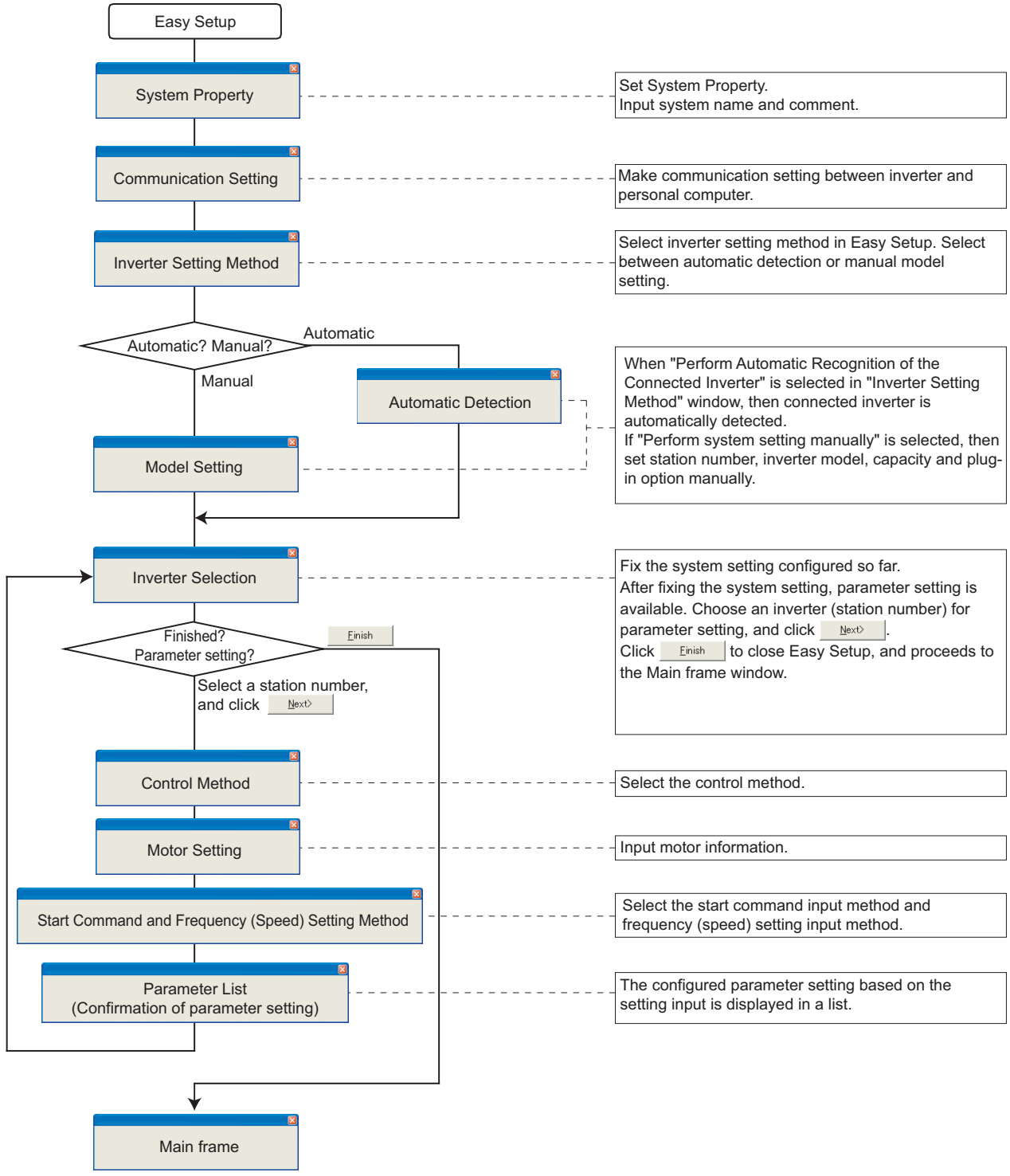
No.	Name	Function and description
A	Open	Shows up to five recent used files. Point a cursor on "Open", and five recent used files are shown. Click the file name, then "Startup" window is closed, and Main frame is displayed with the file contents reflected.
B	Easy Setup	Click to start Easy Setup. From System Property setting to Model setting and parameter setting, the system setting up is easily made with wizard style (interactive). *(Refer to page 47)*
C	Functions	Shows a list of functions.
D	Help	Displays Help window. *(Refer to page 160)*
E	Cancel	Click to close this window, and returns to Main frame.

Note

- **You cannot open a file inside a folder without an access permission even when a system file (*.me3) may appear in the "Open" screen.**

2.2 Easy Setup

Setting from system setting to parameter setting is easily performed with Easy Setup. Even without FR Configurator knowledge, without regard to the parameter number, system setting and basic parameter setting is easily performed.



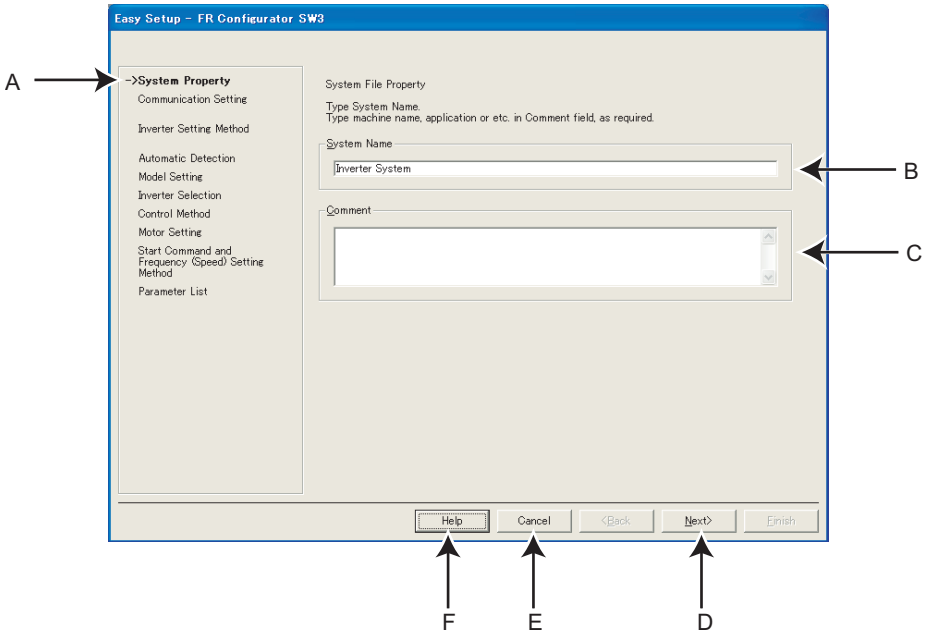
REMARKS

When Cancel is clicked in each setting window, the setting input so far becomes invalid, and the window returns to "Startup".
(Communication setting is saved even when Cancel is clicked.)

2.2.1 System property

Input an information for creating a system file.

Type a system name (up to 32 one byte characters) for this system file. Click Next> after inputting the system name. When Next> is clicked, the screen proceeds to "Communication Setting".



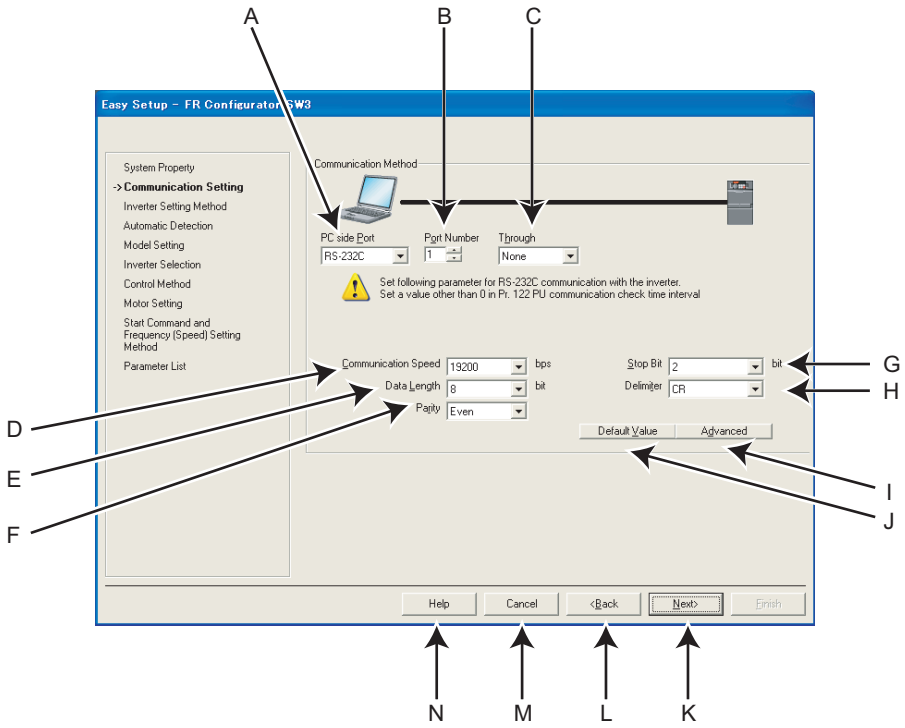
No.	Name	Function and description
A	Setting procedure	Shows description of current setting and next/previous setting in Easy Setup.
B	System Name	Type a system name up to 32 one byte characters.
C	Comment	A field for comments (up to 256 one byte characters) to describe the system.
D	Next>	Proceeds to "Communication Setting" *(Refer to page 49)*.
E	Cancel	Closes Easy Setup with the invalid setting.
F	Help	Displays Help window. *(Refer to page 160)*

2.2.2 Communication setting

Adjust the communication setting between a personal computer and inverter.
When communicating with inverter using an USB port of the personal computer, select "USB" in "PC side Port" field, and click Next> .
When communicating with inverter using a serial port of the personal computer, select "RS-232C" in "PC side Port" field.

POINT

Default communication setting is matching to an initial value of inverter.
Check the personal computer side port (serial/USB) and personal computer port number (1 to 63).

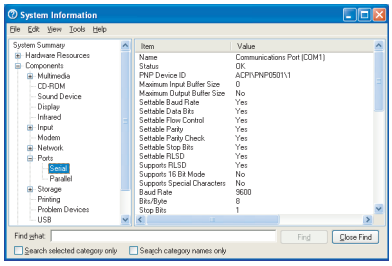


No.	Name	Initial value	Function and description
A	PC side Port	RS-232C	Select the communication port from RS-232C or USB. (USB communication is only available with FR-A700, A701 and E700(SC)(NC) series.)
B	Port Number	1	Select the personal computer communication port number. *(Refer to page 50)*
C	Through	None	Select when connecting through GOT.
D	Communication Speed	19200	Set the communication speed. *(Refer to Pr. 118, Pr. 332)*
E	Data Length	8	Set the data bit length. *(Refer to Pr. 119, Pr. 333)*
F	Parity	Even	Specify the parity bit. *(Refer to Pr. 120, Pr. 334)*
G	Stop Bit	2	Set the stop bit length. *(Refer to Pr. 119, Pr. 333)*
H	Delimiter	CR	Specify the delimiter of the data end. *(Refer to Pr. 124, Pr. 341)*
I	Advanced		Displays "Advanced" window. Setting of TimeOut and Retry Count is available.
J	Default Value		Restores default value of communication setting.
K	Next >		Proceeds to "Inverter Setting Method" *(Refer to page 51)*.
L	<Back		Returns to "System Setting" *(Refer to page 48)*.
M	Cancel		Closes Easy Setup with the invalid setting.
N	Help		Displays Help window. *(Refer to page 160)*

REMARKS

- When "USB" is selected for personal computer side port, unnecessary setting item turns to gray and unavailable for making setting.
- Communication Setting is also available from [Option] in [Tool] menu.
- Refer to the Inverter Instruction Manual for details of the parameters.
- The communication port can be checked by the following procedure.

1. Click [Start] of the Taskbar of Windows, and point to [All Programs], point to [Accessories], point to [System Tools], and then click [System Information]. [System Information] window shown on the right is displayed.
2. Select [Serial] in [Port] folder of [Component] in the left pane.
3. Check the [COM] number of "Communication port" displayed in the right pane. Example: "1" for "Communication port (COM1)"
4. Set the confirmed value to the "Port Number" of B. ("1" in this example)

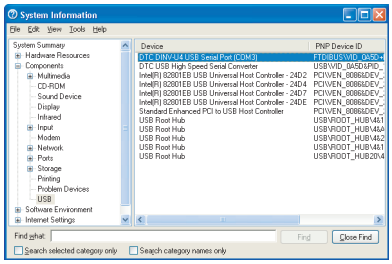


(When using Windows XP)

POINT

- Communication setting for the USB and RS-485 conversion cable, DINV-U4

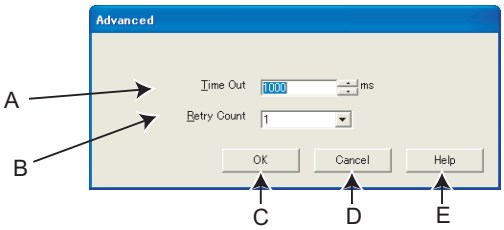
1. Install the DINV-U4 driver.
2. Click [Start] of the taskbar of Windows, and point to [All Programs], point to [Accessories], point to [System Tools], and then click [System Information]. [System Information] window shown on the right is displayed.
3. Select [USB] in [Component] in the left pane.
4. Check the [COM] number of "DTC DINV-U4 USB Serial Port" displayed in the right pane. Example: "4" for "DTC DINV-U4 USB Serial Port (COM4)"
5. Start FR Configurator and proceed to the communication setting
6. Select "RS-232C" for "Computer Port"
7. Set the confirmed value ("4" in this example) to "Port Number."



(When using Windows XP)

(1) Advanced

Click [Advanced] to display "Advanced" window.



No.	Name	Initial	Function and description
A	Time Out *	1000ms	Set a time between personal computer sends a data for inverter, and then personal computer receives a reply. When there is no reply after the set time, "Time Out Occurrence" error dialog appears.
B	Retry Count	1	Set the number of retries. Set a large number when communication is unstable due to EMI. Note that too large setting may affect the communication response.
C	OK		Returns to "Communication Setting" window with the valid setting in "Advanced" window.
D	Cancel		Returns to "Communication Setting" window with the invalid setting.
E	Help		Displays Help window. *(Refer to page 160)*

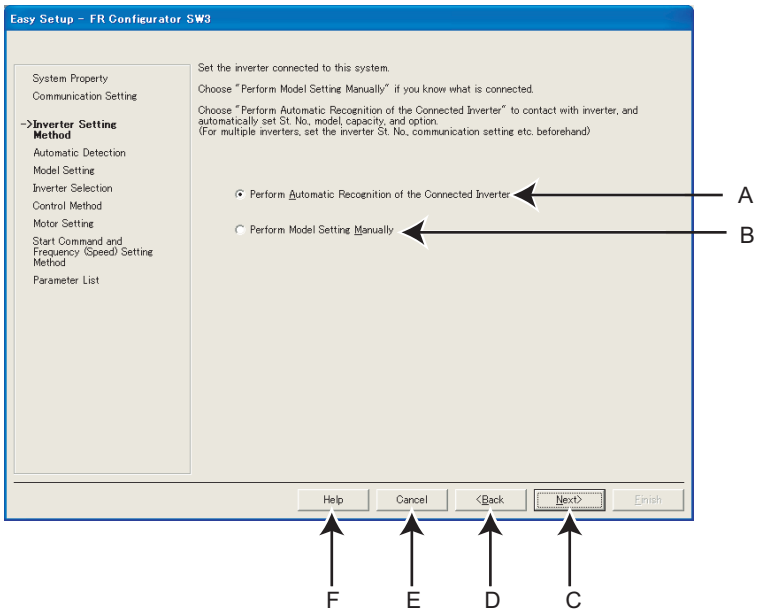
* When connecting with FA transparent function, set the time-out value in 500ms increments (Example: 500 / 1000 / 1500 /... / 30000).

REMARKS

- FR Configurator sends a data with 100ms interval for the operation mode and error checking. Set 3s or more (or 9999) for communication check time interval setting of the inverter (*Pr. 122 or Pr. 548*). If the value less than 3s is set, the inverter may trip. *(Refer to page 14, 18)*
- Communication retry count of the inverter (*Pr. 121, Pr. 335*) should be more than the retry count setting of FR Configurator (or 9999). If the setting is lower than FR Configurator retry count setting, communication fault may occur.

2.2.3 Inverter setting method

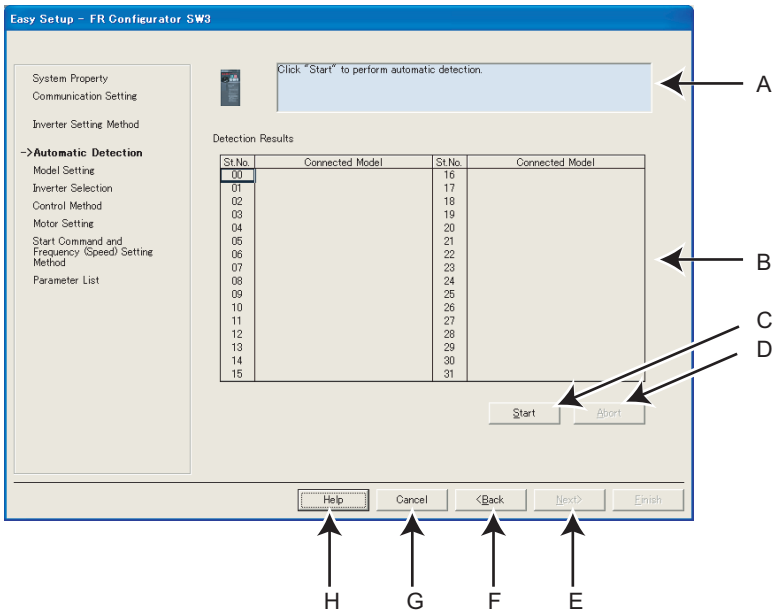
Select inverter setting method between automatic recognition of the connected inverter, or manually model setting for this system.



No.	Name	Function and description
A	Perform Automatic Recognition of the Connected Inverter	Choose "Perform Automatic Recognition of the Connected Inverter" and click Next> to automatically detect the connected inverter. After finishing the automatic detection of the inverter, the window proceeds to "Inverter Selection" (*Refer to page 54*)
B	Perform Model Setting Manually	Make the model setting manually. *(Refer to page 53)*
C	Next>	When "Perform Automatic Recognition of the Connected Inverter" is selected, the window proceeds to "Automatic Detection" *(Refer to page 52)*. If "Perform Model Setting Manually" is selected, the window proceeds to "Model Setting" *(Refer to page 53)*.
D	<Back	Returns to "Communication Setting" *(Refer to page 49)*.
E	Cancel	Closes Easy Setup with the invalid setting.
F	Help	Displays Help window. *(Refer to page 160)*

2.2.4 Automatic detection

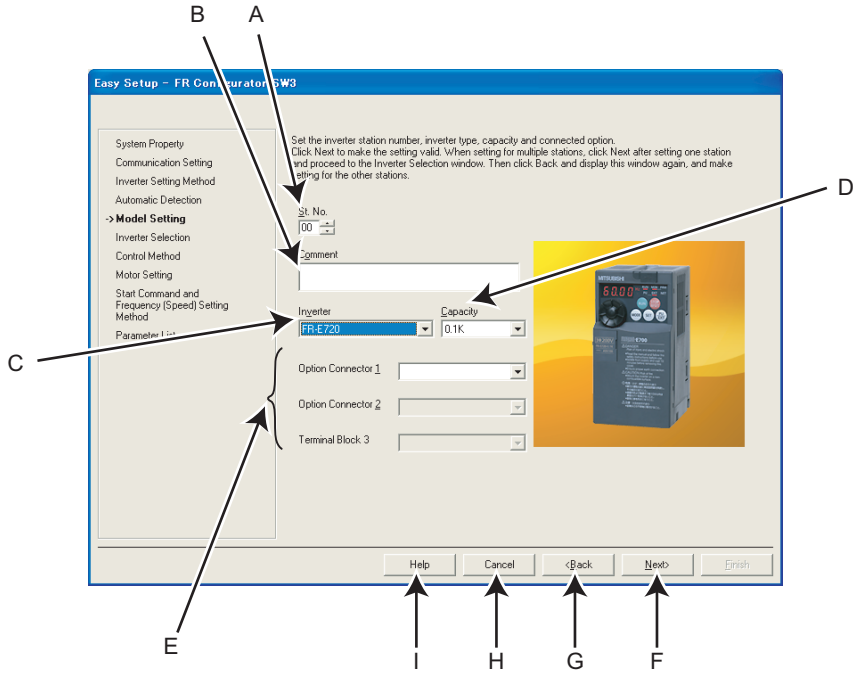
Click Start to detect inverter of which communication is available.



No.	Name	Function and description
A	Message area	Shows a state of automatic detection. When an inverter is detected, the color turns blue, and shows a result of detection. (If an error occurred during automatic detection, the color turns red, and shows error description.)
B	Detection Results	Shows a result of automatic detection. A station during detecting is displayed in blue. And when an inverter is detected, inverter model name is displayed. (For a station failed for detection, the color turns red, and shows error code. *Refer to page 164* for the error code)
C	Start	Starts automatic detection when clicked.
D	Abort	Aborts automatic detection.
E	Next>	Proceeds to "Inverter Selection" *(Refer to page 54)*.
F	<Back	Returns to "Inverter Setting Method" *(Refer to page 51)*.
G	Cancel	Closes Easy Setup with the invalid setting.
H	Help	Displays Help window. *(Refer to page 160)*

2.2.5 Model setting

Make the inverter model setting manually.



No.	Name	Function and description
A	St. No.	Set the inverter station number from 0 to 31.
B	Comment	A field for comments.
C	Inverter	Select the connected inverter model.
D	Capacity	Select the connected inverter capacity.
E	Option Connector 1 to 3, Terminal Block 3	Select the options connected to the option connectors of the inverter. (Option Connector 1 to 3 is available for FR-A700, A701 series.)
F	Next>	Proceeds to "Inverter Selection" *(Refer to page 54)*.
G	<Back	Returns to "Inverter Setting Method" *(Refer to page 51)*.
H	Cancel	Closes Easy Setup with the invalid setting.
I	Help	Displays Help window. *(Refer to page 160)*

REMARKS

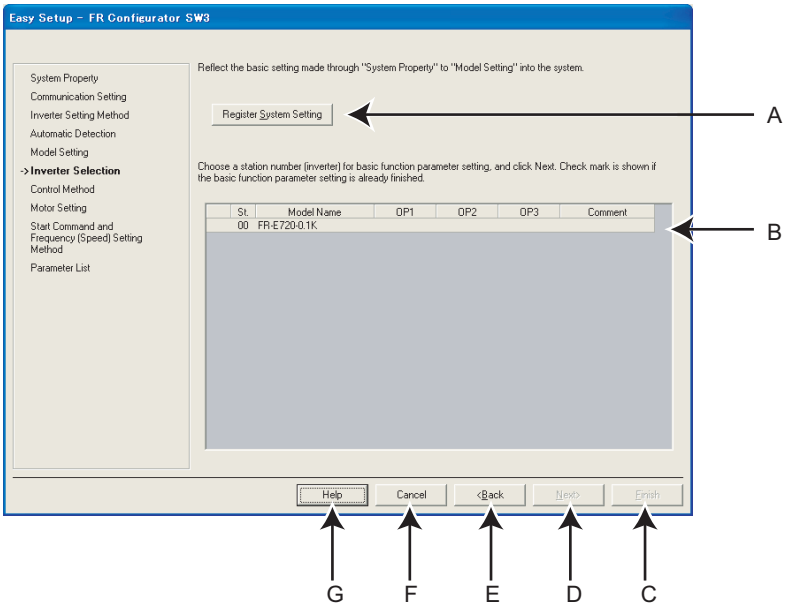
- "Model Setting" is also available from [Model Setting] in the [Tool] menu.
- Use Option Connector 2 on the Model Setting window to select a network option connected to an F700-NA or EC, which is equipped with only one option connector. No network option is selectable in Option connector 1.
  The connected network option will be automatically set to Option Connector 2 when the Automatic Recognition is performed for an F700-NA or EC, which is equipped with only one option connector. The connected network option will be also automatically set in Option Connector 2 when a MEL file set to an F700-NA or EC is read.

2.2.6 Inverter selection

Click [Register System Setting] to register the system setting, and then parameter setting becomes available.

Choose an inverter (station number) for parameter setting, and click [Next>]. After parameter setting is finished, the window returns to "Inverter Selection" again.

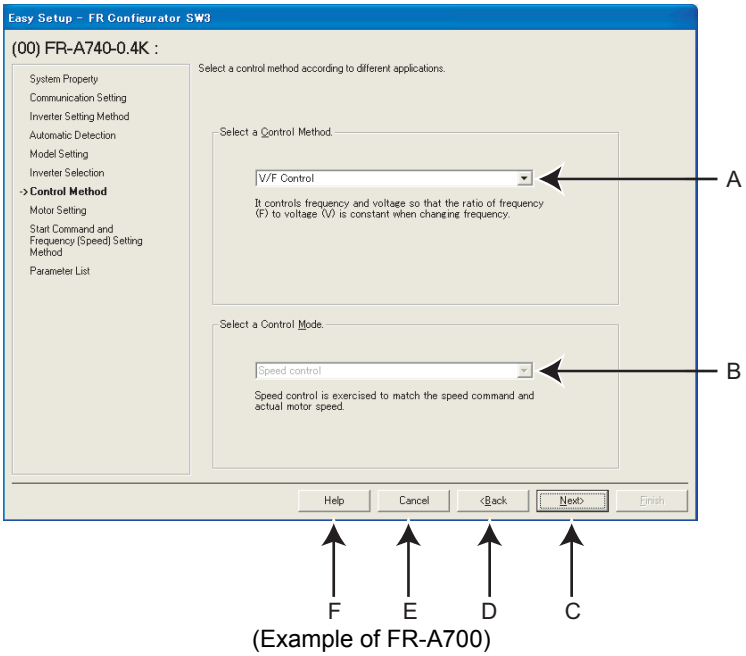
Click [Finish] to close Easy Setup, and proceeds to the Main frame window.



No.	Name	Function and description
A	Register System Setting	Register the system setting configured in Easy Setting.
B	Inverter selecting field	Shows the inverter reflected into the system setting. Choose a station number for parameter setting, and click [Next>]. A check mark is displayed on the station number if the parameter setting has been already configured. (Click [Register System Setting] to register the system setting first, and the field becomes available.)
C	Finish	Click to close Easy Setup, and proceeds to the Main frame window.
D	Next>	Proceeds to "Control Method" *(Refer to page 55)*.
E	<Back	Returns to "Model Setting" *(Refer to page 53)*, "Automatic Detection" *(Refer to page 52)*, or "Parameter List" *(Refer to page 59)*.
F	Cancel	Closes Easy Setup with the invalid setting.
G	Help	Displays Help window. *(Refer to page 160)*

2.2.7 Control method

Set a control method of the inverter. Select the control method, and click Next>.



(Example of FR-A700)

No.	Name	Function and description
A	Select a Control Method.	Select the control method.*
B	Select a Control Mode.	Select the control mode. (FR-A700, A701 only)*
C	Next>	Proceeds to "Motor Setting" *(Refer to page 56)*.
D	<Back	Returns to "Inverter Selection" *(Refer to page 54)*.
E	Cancel	Closes Easy Setup with the invalid setting.
F	Help	Displays Help window. *(Refer to page 160)*

* Some models have fixed settings.

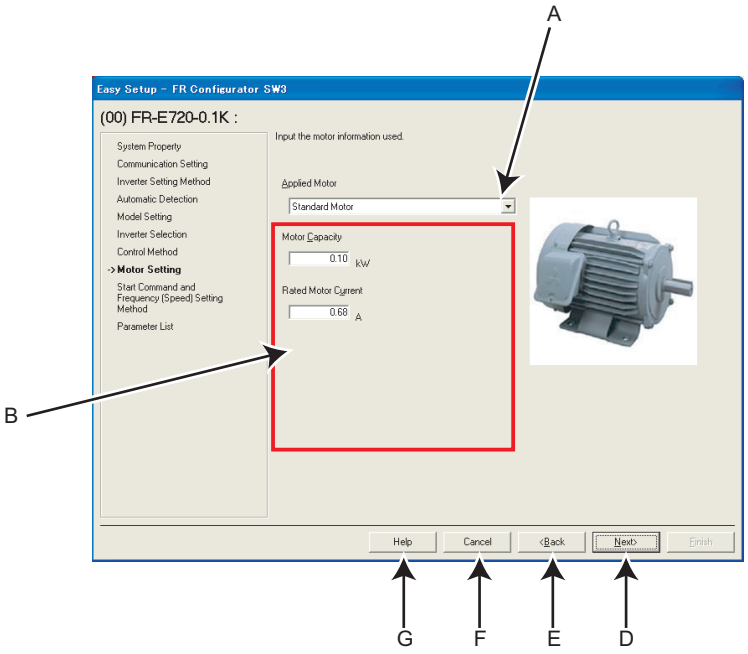
- **Changing parameter**

Parameters related to control methods. (Refer to the Inverter Instruction Manual for details of the parameters.)

Parameter Number	Name
60	Energy saving control selection
71	Applied motor
80	Motor capacity
81	Number of motor poles
800	Control method selection

2.2.8 Motor setting

Adjust the motor settings of the inverter. Click Next> after inputting the motor information.





"Unit (monitor, frequency setting)" setting screen
(Example for IPM motor control)

No.	Name	Function and description
A	Applied Motor	Select a type of motor. Selectable motor types are different according to the control method selected in "Control Method" window (or *Pr. 71* setting).*
B	Motor information	Fill in the motor information. Required motor information to fill in is different according to the control method setting selected in "Control Method" window.
C	Unit (monitor, frequency setting)	Change the Hz unit in the monitor display and the frequency setting to rpm when necessary. This section is enabled when "IPM motor control" or "PM sensorless vector control" has been selected in the "Control Method" window. (According to the mounted communication option, the unit for monitor display and frequency setting may always be Hz.)
D	Next>	Proceeds to "Start Command and Frequency (Speed) Setting Method" *(Refer to page 58)*.
E	<Back	Returns to "Control Method" *(Refer to page 55)*.
F	Cancel	Closes Easy Setup with the invalid setting.
G	Help	Displays Help window. *(Refer to page 160)*

* Some models have fixed settings.

- **Changing parameter**

Parameters related to motor setting. (Refer to the Inverter Instruction Manual for details of the parameters.)

Parameter Number	Name
9	Electronic thermal O/L relay
71	Applied motor
80	Motor capacity
81	Number of motor poles
83	Rated motor voltage
84	Rated motor frequency
359	Encoder rotation direction
369	Number of encoder pulses

- **Parameters to be adjusted for the IPM motor control**

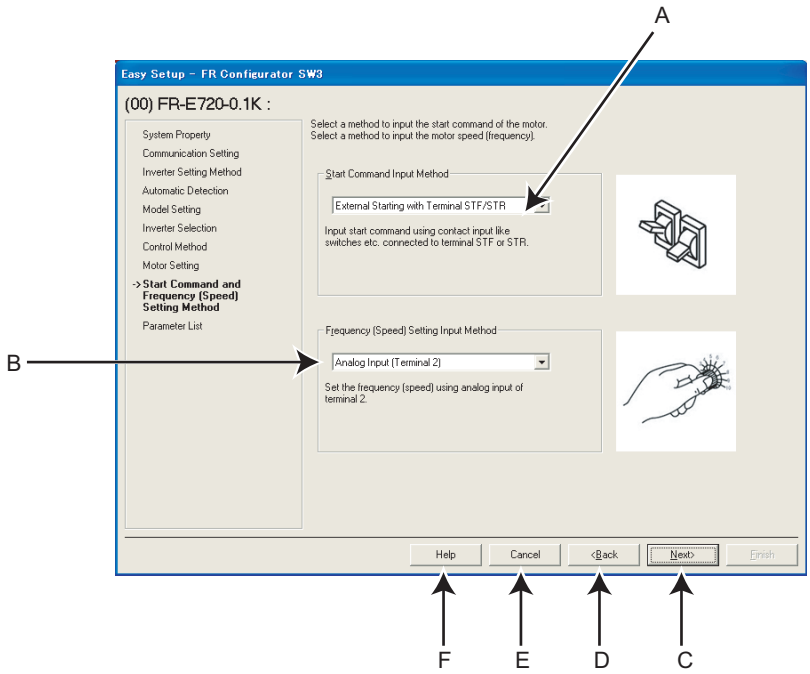
The following parameters are related to the IPM motor control.(Refer to the Instruction Manual of the inverter for the parameter details.)

Parameter Number	Name	FR-A700	FR-F700P	FR-F700PJ
1	Maximum frequency	○	○	○
4	Multi-speed setting (high speed)	○	○	○
9	Electronic thermal O/L relay	○	○	○
13	Starting frequency	○	○	○
15	Jog frequency	○	○	○
18	High speed maximum frequency	○	○	○
20	Acceleration/deceleration reference frequency	○	○	○
22	Stall prevention operation level	○	○	○
37	Speed display	○	○	○
55	Frequency monitoring reference	○	○	○
56	Current monitoring reference	○	○	○
71	Applied motor	○	○	○
80	Motor capacity	○	○	○
81	Number of motor poles	○	–	–
84	Rated motor frequency	○	–	×
125	Terminal 2 frequency setting gain frequency	○	○	○
126	Terminal 4 frequency setting gain frequency	○	○	○
144	Speed setting switchover	○	○	○
240	Soft-PWM operation selection	○	○	○
260	PWM frequency automatic switchover	–	○	○
263	Subtraction starting frequency	×	○	–
266	Power failure deceleration time switchover frequency	○	○	–
374	Overspeed detection level	○	○	○
386	Frequency for maximum input pulse	○	–	–
390	% setting reference frequency	○	○	–
505	Speed setting reference	○	○	○
557	Current average value monitor signal output reference current	○	○	○
820	Speed control P gain 1	○	×	×
821	Speed control integral time 1	○	×	×
824	Torque control P gain 1	○	–	–
825	Torque control integral time 1	○	–	–
870	Speed detection hysteresis	○	○	○
885	Regeneration avoidance compensation frequency limit value	○	○	○
893	Energy saving monitor reference (motor capacity)	○	○	○
C14(918)	Terminal 1 gain frequency (speed)	○	–	–
C24(923)	Frequency setting voltage gain frequency (built-in potentiometer)	–	–	○

○ : Related parameters, × : Non-related parameters, – : No parameter

2.2.9 Start command and frequency (speed) setting method

Select an input method of start command and frequency (speed) setting.



No.	Name	Function and description
A	Start Command Input Method	Select the start command input method of the inverter.
B	Frequency (Speed) Setting Input Method	Select the frequency (speed) setting input method of the inverter.
C	Next>	Proceeds to "Parameter List" *(Refer to page 59)*.
D	<Back	Returns to "Motor Setting" *(Refer to page 56)*.
E	Cancel	Closes Easy Setup with the invalid setting.
F	Help	Displays Help window. *(Refer to page 160)*

- **Changing parameter**

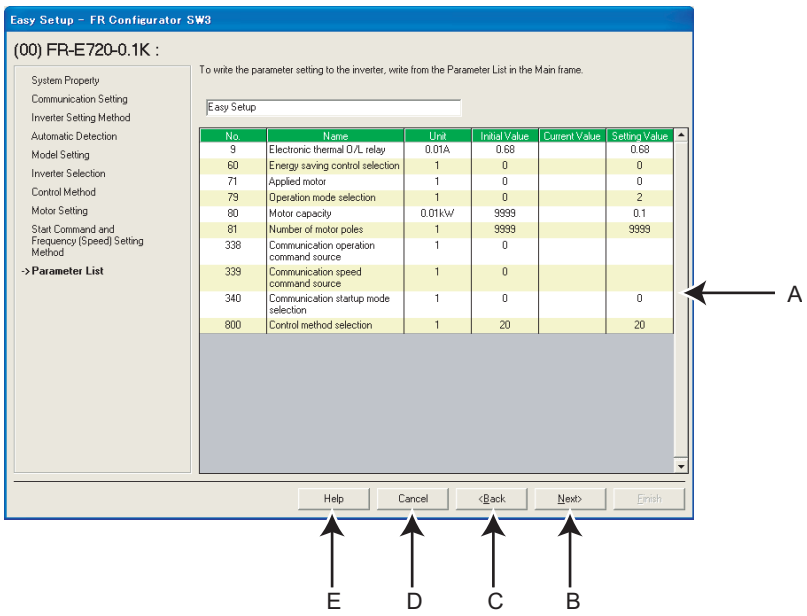
Parameters related to "Start Command and Frequency (Speed) Setting Method". (Refer to the Inverter Instruction Manual for details of the parameters.)

Parameter Number	Name
79	Operation mode selection
338	Communication operation command source
339	Communication speed command source
340	Communication startup mode selection

2.2.10 Parameter list

After the required items are all set, parameter setting is configured based on the input setting. Parameter name and configured value are displayed in the Parameter List. To write the parameter setting to the inverter, write from the Parameter List in the Main frame. *(Refer to page 106)*

Click Next> to return to "Inverter Selection" window *(Refer to page 54)*. To close Easy Setup, click Finish in "Inverter Selection" window. To set parameters for several inverters, select another inverter in "Inverter Selection" and set parameters.



No.	Name	Function and description
A	Parameter setting field	Shows the parameter setting configured by Easy Setup in the list.
B	Next>	Proceeds to "Inverter Selection" *(Refer to page 54)*.
C	<Back	Returns to "Start Command and Frequency (Speed) Setting Method" *(Refer to page 58)*.
D	Cancel	Closes Easy Setup with the invalid setting.
E	Help	Displays Help window. *(Refer to page 160)*

MEMO

3 SETTING WIZARD

This chapter explains the "Setting Wizard" of this product.
Always read the instructions before using the software.

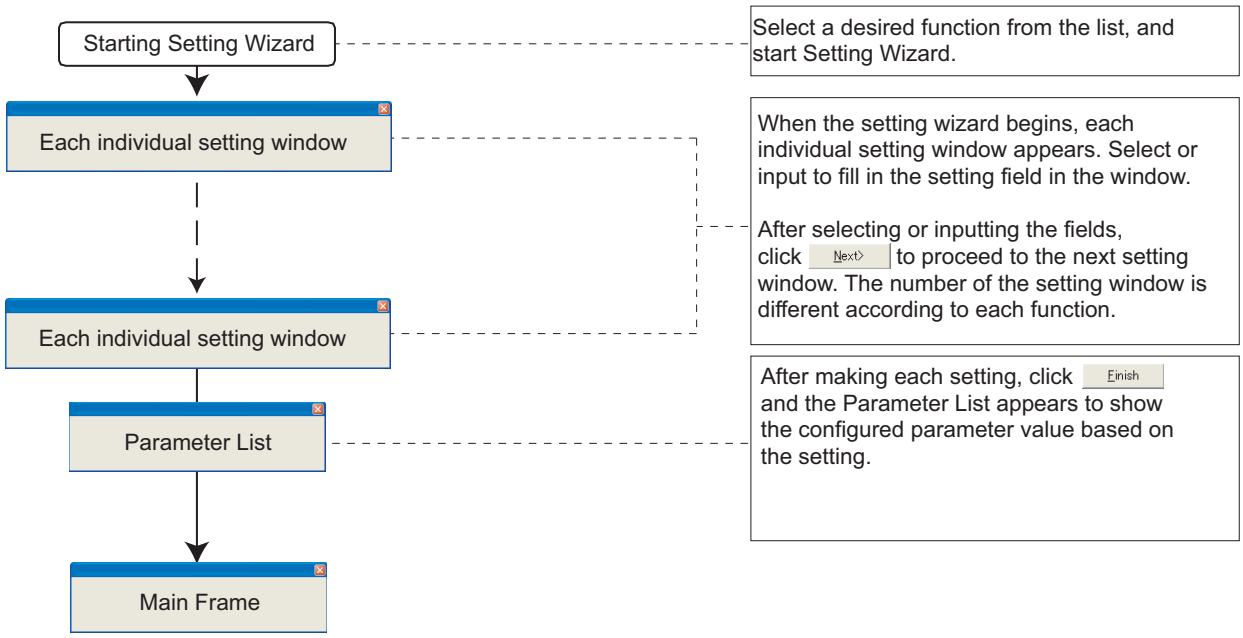
3.1 Overview of Setting Wizard 62
3.2 Details of Setting Wizard 65
3.3 Troubleshooting 71
3.4 Details of Troubleshooting 75

3.1 Overview of Setting Wizard

Setting Wizard can set parameters with wizard style dialog (interactive). Inputting or selecting required items for each function, and parameter setting is configured without regard to parameter number.

Double-click a desired function in the "Setting Wizard" *(Refer to page 105)* in System View (or select a function and click Execute) to start the Setting Wizard of the selected function. Parameter setting is configured based on the input setting after the required item in each window is filled in. Configured parameter setting is displayed in Parameter List *(Refer to page 64)* when every setting is finished. Configured setting can be written to the inverter from Parameter List.

(1) Basic flow of Setting Wizard

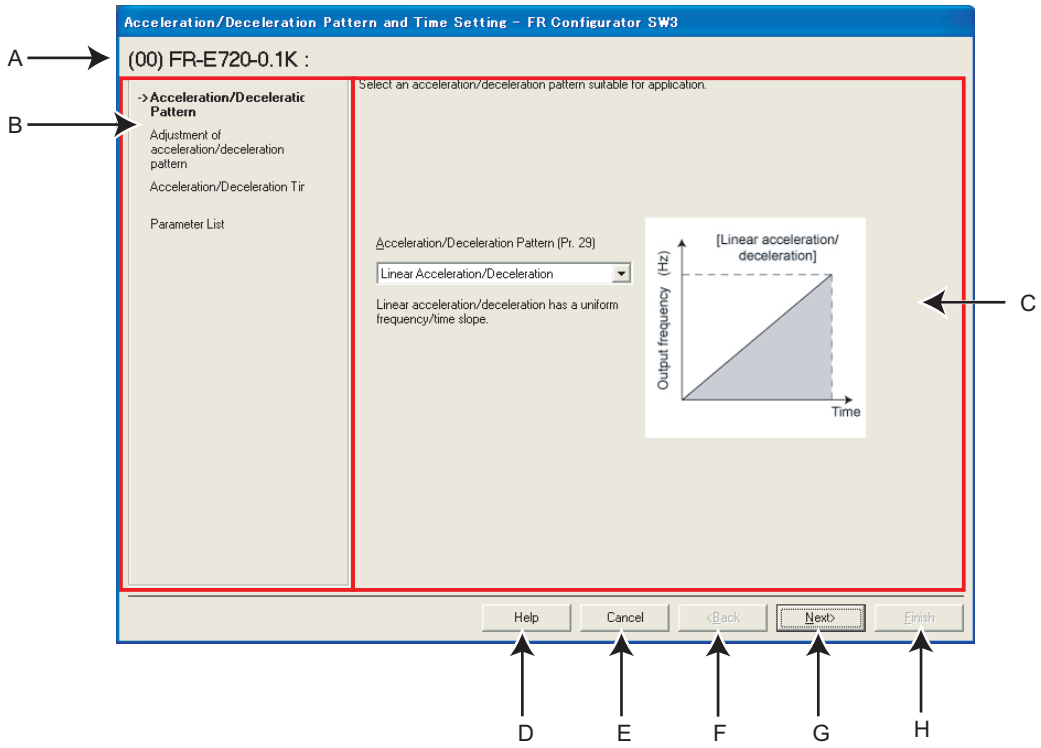


(2) Functions available for Setting Wizard

Function Name	Setting Item	Refer to Page
Acceleration/deceleration pattern and time setting	Acceleration/Deceleration Pattern Adjustment of Acceleration/Deceleration Pattern (when backlash measures are selected for FR-A700, A701,F700 or F700P) Acceleration/Deceleration Time	65
Output Terminal (FM, CA, AM) Calibration	Output Terminal (FM, CA, AM) Calibration	66
Analog Input Terminal Calibration	Calibrating Terminal and Method Calibration Method (1) Calibration Method (2)	67
Tuning	Control Method Motor Setting Tuning Method Tuning	69

3.1.1 Individual setting window of Setting Wizard

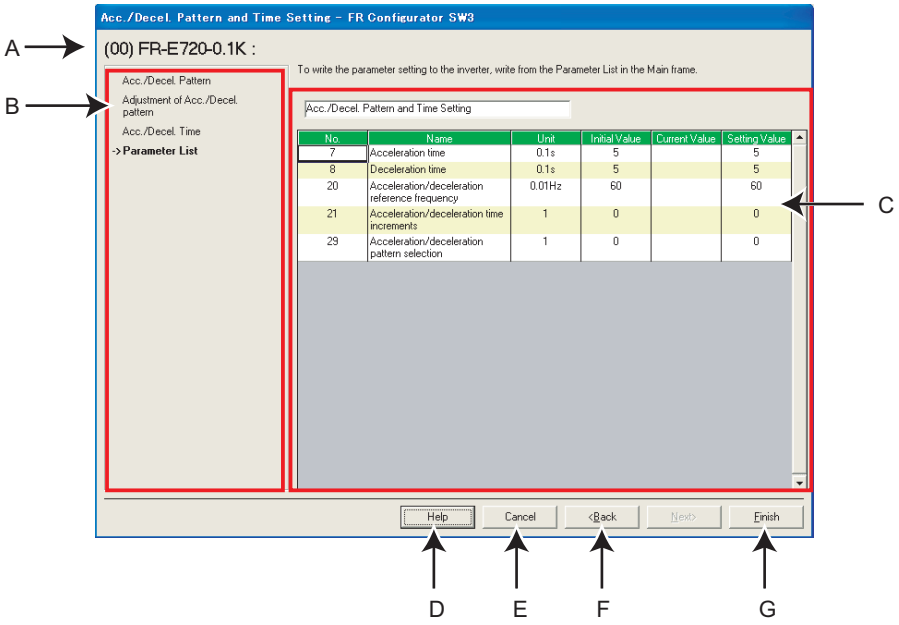
Select a desired function of the "Setting Wizard" *(Refer to page 105)* in System View, and start the Setting Wizard. Input or select in a required field of each individual setting window, and click Next> to proceed to the next individual setting window. Number of the items required to fill in is different according to the selected Setting Wizard.



No.	Name	Function and description
A	Selected station number	Shows the selected station number, inverter model and a comment.
B	Setting procedure	Shows current setting description and next/previous setting in Setting Wizard.
C	Setting item field	Make a setting input. (Setting items are different according to each Setting Wizard and individual setting window.)
D	Help	Displays Help window. *(Refer to page 160)*
E	Cancel	Closes the window with the invalid setting.
F	<Back	Returns to the previous setting window.
G	Next>	Proceeds to the next window.
H	Finish	Applies the settings entered up to this point and shows "Parameter List." (Parameter writing is not performed here.)

3.1.2 Parameter list

Click Finish after the required item in each setting is filled in, and then the parameter setting is configured based on the inputted setting. Configured parameter setting is displayed in Parameter List after every setting is finished.
To write the parameter setting to the inverter, write from the Parameter List in the Main frame. *(Refer to page 106)*



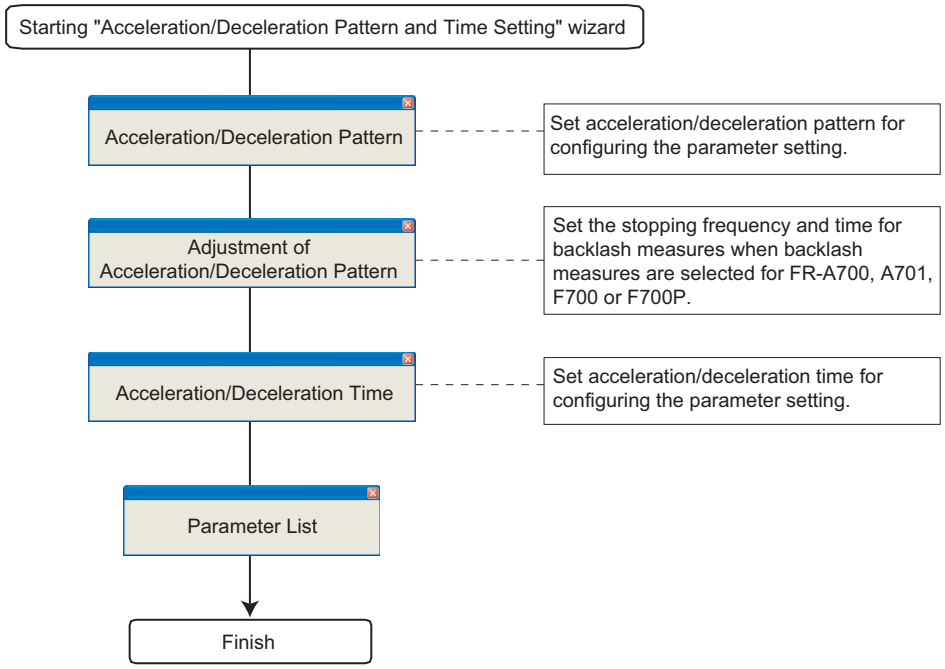
No.	Name	Function and description
A	Selected station number	Shows the selected station number, inverter model and a comment.
B	Setting procedure	Shows the past settings in Setting Wizard.
C	Parameter setting field	Shows the parameter setting configured in Setting Wizard in the list.
D	Help	Displays Help window. *(Refer to page 160)*
E	Cancel	Closes the window with the invalid setting.
F	<Back	Returns to the previous setting window.
G	Finish	Closes Setting Wizard with the valid setting. Configured setting by Setting Wizard is applied to Parameter List. (Parameter writing to the inverter is not performed.)

3.2 Details of Setting Wizard

3.2.1 Acceleration/Deceleration pattern and time setting

Select "Acceleration/Deceleration Pattern and Time Setting" from "Setting Wizard" *(Refer to page 105)* in System View to start the wizard of "Acceleration/Deceleration Pattern and Time Setting". Make acceleration/deceleration pattern and acceleration/deceleration time setting.

(1) Setting flow



(2) Related parameters

Refer to the Inverter Instruction Manual for details of the parameters.

- **Parameters related to "Acceleration/Deceleration Pattern"**

Parameter Number	Name
29	Acceleration/deceleration pattern selection

- **Parameters related to "Adjustment of Acceleration/Deceleration Pattern"**

Parameter Number	Name
140	Backlash acceleration stopping frequency
141	Backlash acceleration stopping time
142	Backlash deceleration stopping frequency
143	Backlash deceleration stopping time

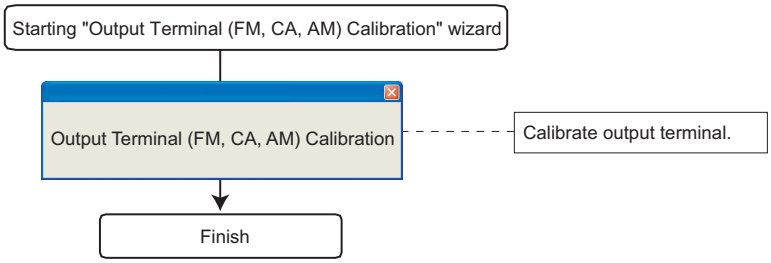
- **Parameters related to "Acceleration/Deceleration Time"**

Parameter Number	Name
7	acceleration time
8	Deceleration time
20	Acceleration/deceleration reference frequency
21	Acceleration/deceleration time increments

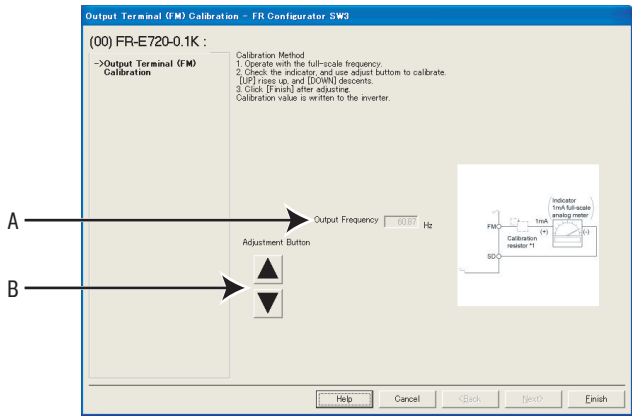
3.2.2 Output terminal (FM, CA, AM) calibration

Select "Output Terminal (FM, CA, AM) Calibration" from "Setting Wizard"*(Refer to page 105)* in System View to start "Output Terminal (FM, CA, AM) Calibration". Terminal FM , terminal CA and terminal AM are calibrated.

(1) Setting flow



(2) Window explanation of Output Terminal Calibration



(FM terminal calibration)

No.	Name	Function and Description
A	Output Frequency (Monitor set to the terminals)	Displays the monitor set to the terminals.
B	Adjustment Button	Press up and down to make calibration.

(3) Related parameters

Refer to the Inverter Instruction Manual for details of the parameters.

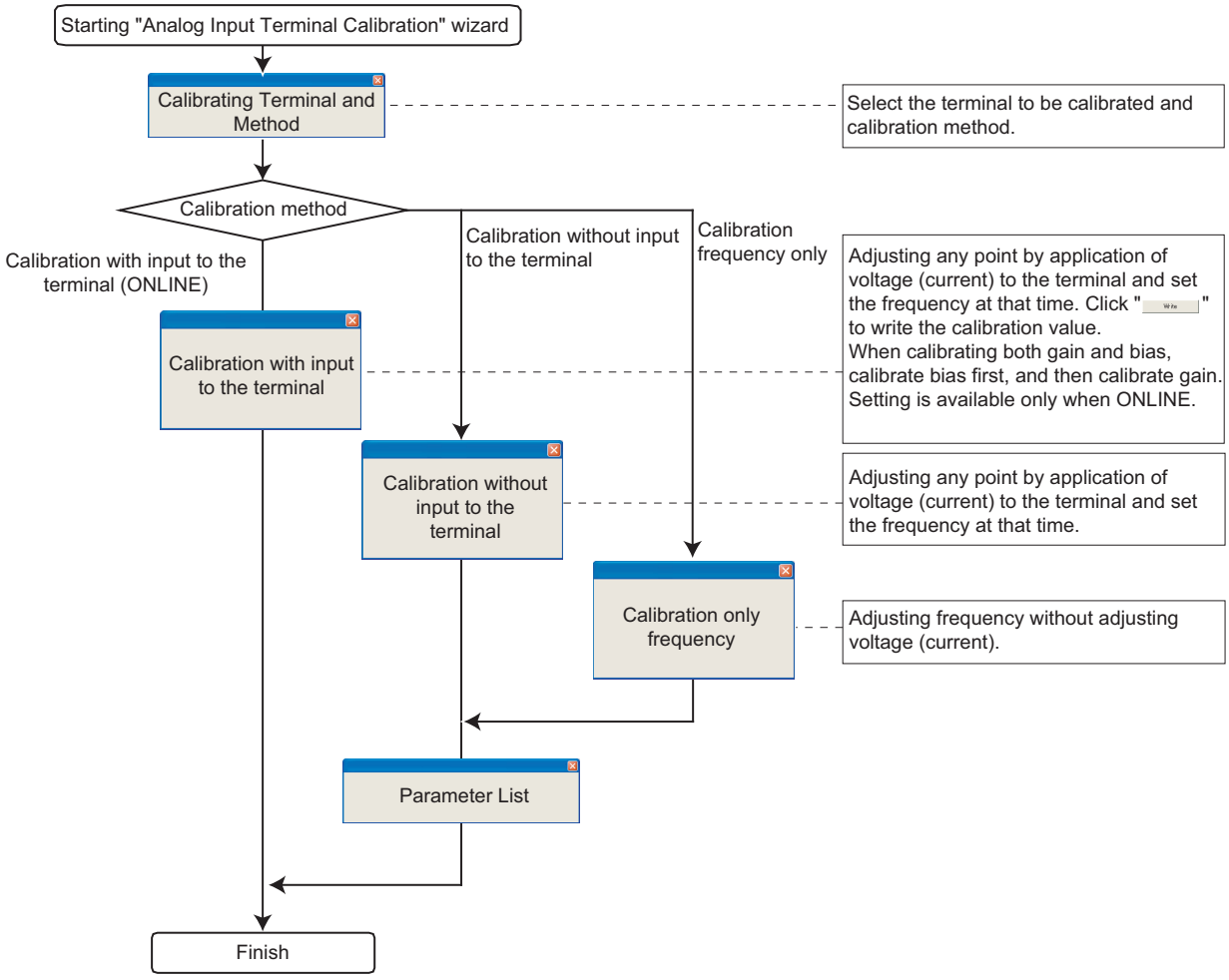
- **Parameters related to "Output Terminal (FM, CA, AM) Calibration"**

Parameter Number	Name
54	FM terminal function selection CA terminal function selection
158	AM terminal function selection
291	Pulse train I/O selection
900	FM terminal calibration CA terminal calibration
901	AM terminal calibration

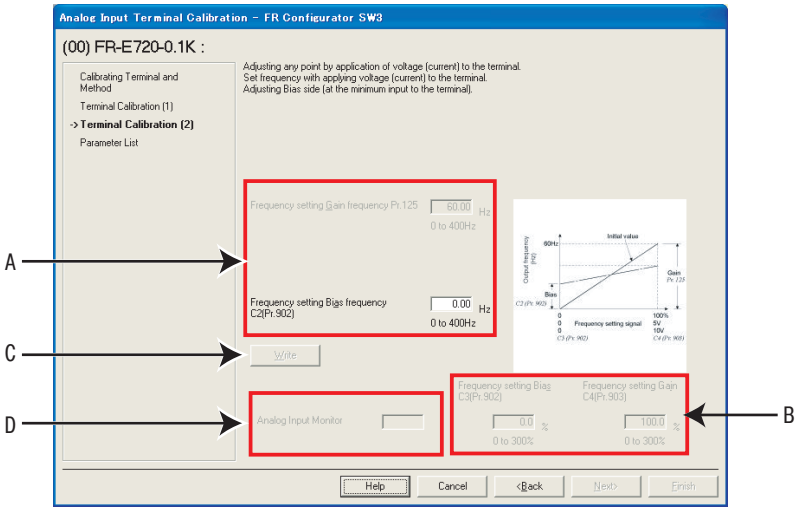
3.2.3 Analog input terminal calibration

Select "Analog Input Terminal Calibration" from "Setting Wizard"*(Refer to page 105)* in System View to start "Analog Input Terminal Calibration". Terminal 2 and terminal 4 are calibrated.

(1) Setting flow



(2) Window explanation of Analog Input Terminal Calibration



No.	Name	Function and Description
A	Frequency setting Gain frequency, Bias frequency	Set the frequency on the gain side, bias side.
B	Frequency setting Bias, Gain	Set the converted % of the voltage (current) on the gain or bias side. Available when making calibration without inputting to terminal.
C	Write	Writes a calibration value. (Available when making calibration without inputting to terminal.)
D	Analog Input Monitor	Monitors input to terminal 2, terminal 4 at intervals. Displays when making calibration with inputting to the terminal.

(3) Related parameters

Refer to the Inverter Instruction Manual for details of the parameters.

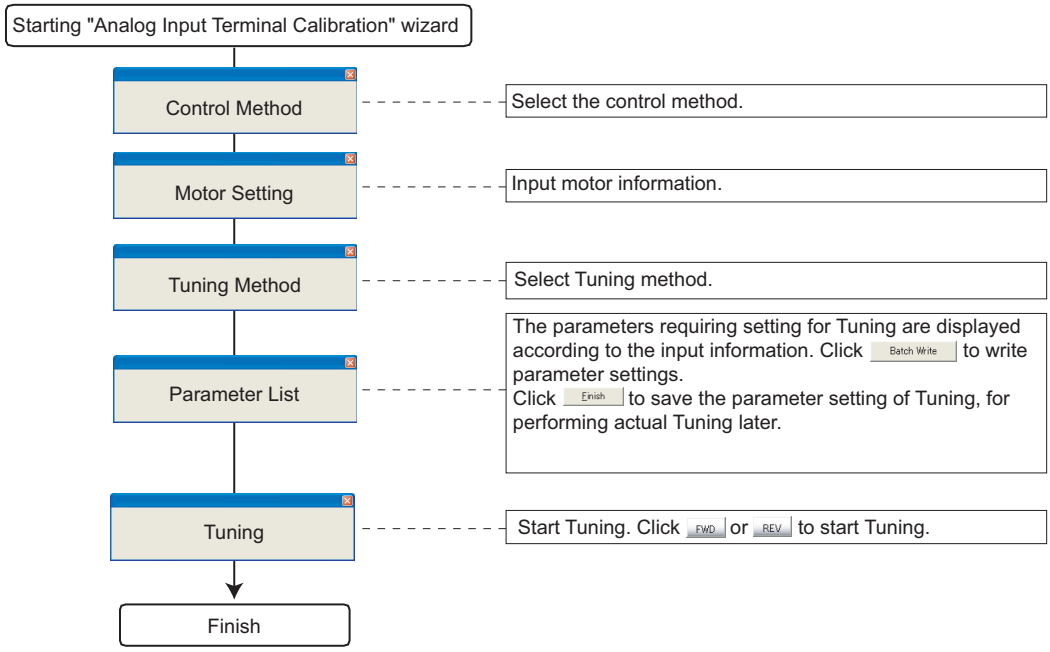
- **Parameters related to "Analog Input Terminal Calibration"**

Parameter Number	Name
73	Analog input selection
125	Terminal 2 frequency setting gain frequency
126	Terminal 4 frequency setting gain frequency
241	Analog input display unit switchover
267	Terminal 4 input selection
C2(902)	Terminal 2 frequency setting bias frequency
C3(902)	Terminal 2 frequency setting bias
C4(903)	Terminal 2 frequency setting gain
C5(904)	Terminal 4 frequency setting bias frequency
C6(904)	Terminal 4 frequency setting bias
C7(905)	Terminal 4 frequency setting gain

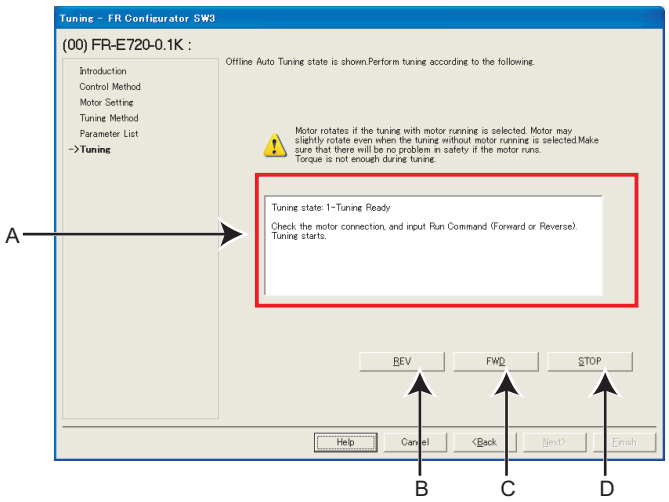
3.2.4 Tuning (FR-A700, A701, D700, E700(SC)(NC), F700PJ only)

Select "Tuning" in the "Setting Wizard"*(Refer to page 105)* in System View to start "Tuning" wizard. Tuning is performed after necessary parameter setting. Tuning is performed during the ONLINE mode only.

(1) Setting flow



(2) Window explanation of Tuning



No.	Name	Function and Description
A	Tuning monitor	Displays progress of tuning.
B	Reverse rotation	Sends reverse rotation command to the inverter to start tuning.
C	Forward rotation	Sends forward rotation command to the inverter to start tuning.
D	Stop	Sends stop command to the inverter to stop tuning.

(3) Related parameters

Refer to the Inverter Instruction Manual for details of the parameters.

- **Parameters related to "Control Selection"**

Parameter Number	Name
60	Energy saving control selection
80	Motor capacity
81	Number of motor poles
800	Control method selection

- **Parameters related to "Motor Setting"**

Parameter Number	Name
9	Electronic thermal O/L relay
60	Energy saving control selection
71	Applied motor
80	Motor capacity
81	Number of motor poles
83	Rated motor voltage
84	Rated motor frequency
359	Encoder rotation direction
369	Number of encoder pulses
800	Control method selection

- **Parameters related to "Tuning Method Selection"**

Parameter Number	Name
96	Auto tuning setting/status

- **Refer to the Inverter Instruction Manual for details of the parameter set by the tuning result.**

REMARKS

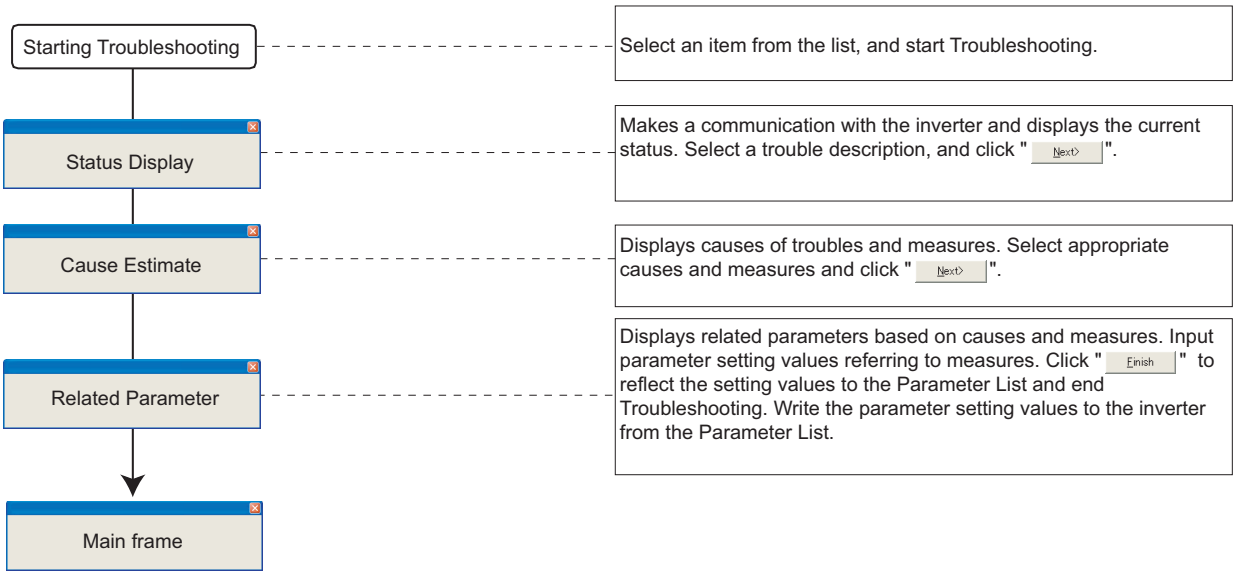
Regardless of the *Pr. 342 Communication EEPROM write selection* setting, the parameters related to tuning are written to EEPROM and RAM.

3.3 Troubleshooting

Troubleshooting is a function that estimates causes of various troubles and take measures against them. By selecting necessary items and making a communication with the inverter, trouble causes can be estimated for taking measures.

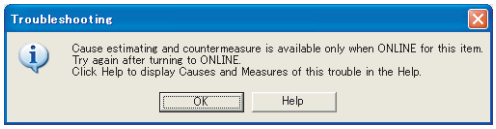
Double-click an item in the "Troubleshooting" in System View (or select a function and click Execute) to start Troubleshooting.

(1) Basic flow of troubleshooting



POINT

Troubleshooting includes items that estimate a cause by making communication with the inverter. Set the system ONLINE to perform Troubleshooting if possible. When a troubleshooting which requires communication is started during OFFLINE, the screen on the right appears. Refer to Help to find trouble causes, and take appropriate measures.



Note

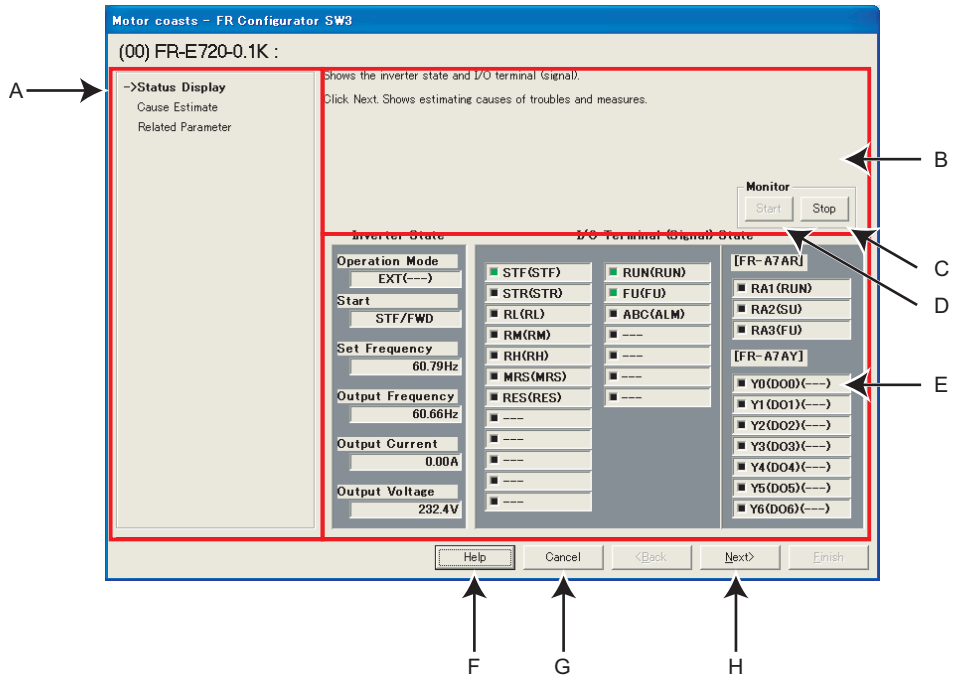
When simple mode parameters or user group parameters are displayed, troubleshooting which requires communication cannot be started. Cancel simple mode parameter or user group parameter display before starting troubleshooting.
(*Pr. 160 User group read selection*="0")

(2) Check item of troubleshooting

Item	Require Communication	Refer to Page
Motor does not rotate as commanded	Yes	*75*
Motor does not rotate	Yes	*76*
Motor rotation direction does not change	Yes	*76*
Motor coasts.	Recommended	*78*
Motor current is large	Recommended	*79*
Acceleration/deceleration is not as commanded	Recommended	*80*
External device (peripheral) malfunctions	No	*81*
Operation mode does not change	Yes	*82*
Unable to write parameter setting	Yes	*85*
Unable to communicate	No	*87*

3.3.1 Status display

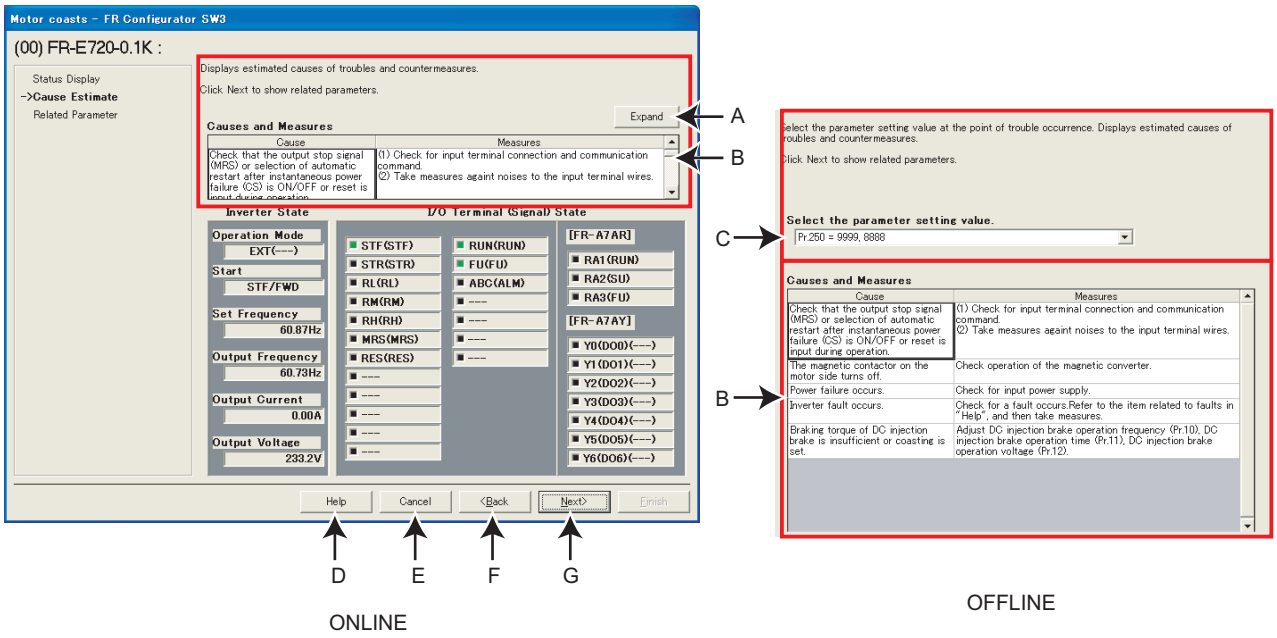
Status Display window appears when Troubleshooting is started. (Note that Cause Estimate window *(Refer to page 73)* appears instead of Status Display for Troubleshooting which does not require communication with the inverter.)
The current inverter state and I/O terminal (signal) is shown. Condition setting field of trouble occurrence is provided according to Troubleshooting items. Click Next> after selecting conditions.



No.	Name	Function and Description
A	Setting Procedure	Displays the current, previous, and next setting in Troubleshooting.
B	Condition setting field	Select a condition of trouble occurrence.
C	Stop	Stops monitoring and holds the status. Use when trouble occurs at a certain condition. Click at the trouble occurrence and stop the monitor, to narrow down the causes.
D	Start	Click to restart monitoring.
E	State	Displays the inverter state and I/O terminal (signal).
F	Help	Displays Help window. *(Refer to page 160)*
G	Cancel	Closes the window with the invalid setting.
H	Next>	Display Cause Estimate window. *(Refer to page 73)*

3.3.2 Cause estimate

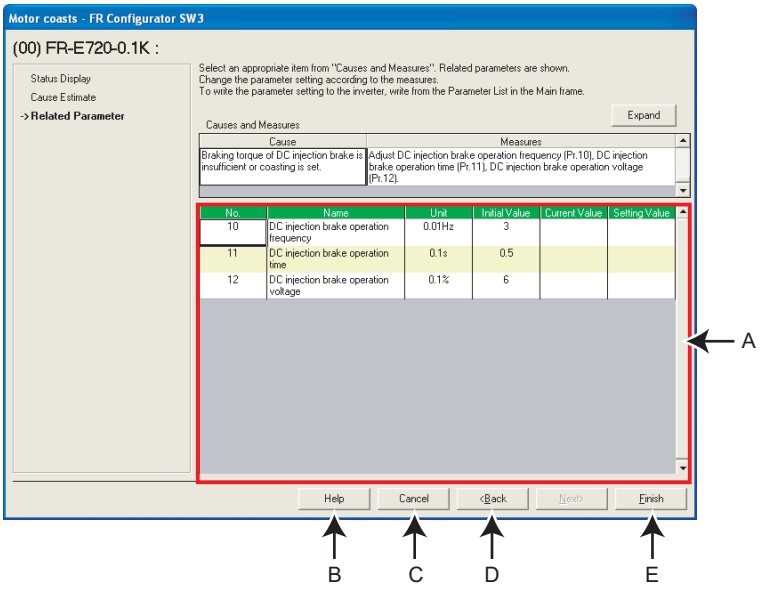
Displays estimated causes and measures. Set conditions in the condition setting field if OFFLINE to display estimated causes and measures. Select a probable cause from the list and click Next> .



No.	Name	Function and Description
A	Expand	Expands the field of causes and measures.
B	Causes and Measures	Displays causes of the trouble and measures. Click Next> after selecting a probable cause. Double click (or select and press F1 key) the cause in the table to show the corresponding Help window.
C	Condition setting field	Select the condition of the trouble occurrence.
D	Help	Displays Help window. *(Refer to page 160)*
E	Cancel	Closes the window with the invalid setting.
F	<Back	Returns to the Status Display window. *(Refer to page 72)*
G	Next>	Displays Related Parameter window. *(Refer to page 74)*

3.3.3 Related parameter

Displays parameters related to the selected cause. Check the measures, and change parameter settings. Click Finish to reflect the changed setting into the Parameter List, and returns to the Main frame.
To write the parameter setting to the inverter, write from the Parameter List in the Main frame. *(Refer to page 106)*



No.	Name	Function and Description
A	Parameter setting field	Displays parameters related to the cause. Check the measures, and change parameter settings.
B	Help	Displays Help window.*(Refer to page 160)*
C	Cancel	Closes the window with the invalid setting.
D	<Back	Returns to the Cause Estimate window. *(Refer to page 73)*
E	Finish	Closes Troubleshooting with the valid setting. Configured setting by Troubleshooting is reflected into Parameter List. (Parameter writing to the inverter is not performed.)

3.4 Details of Troubleshooting

The following shows a list of causes supported in the troubleshooting. Take necessary measures upon checking the possible causes and parameters of the inverter. Refer to the Instruction Manual of the inverter for details.

3.4.1 Motor does not rotate as commanded

- **Main causes**

Cause	Measures	Related Parameters
The set frequency is higher than the maximum frequency *(Pr. 1, 18)* .	Set the maximum frequency *(Pr. 1, 18)* higher than the set frequency.	*Pr. 1, 18*
The set frequency is lower than the minimum frequency *(Pr. 2)*.	Set the minimum frequency *(Pr. 2)* lower than the set frequency.	*Pr. 2*
The set frequency is within the frequency jump *(Pr. 31 to Pr. 36)* .	Change the range of the frequency jump *Pr. 31 to Pr. 32, Pr. 33 to Pr. 34, Pr. 35 to Pr. 36* so that the set frequency will not overlap.	*Pr. 31 to 36*
PID control activated	Cancel PID control.	*Pr. 128*
Stall prevention (current limit/voltage limit) is activated.	(1) Adjust torque boost *(Pr. 0, etc.)* (2) Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*. (3) Reduce the load weight. (4) Try other control method. (5) Increase stall prevention level *(Pr. 22, etc.)*, or limit stall prevention operation using stall prevention operation selection *(Pr. 156)*.	(1) *Pr. 0, 46, 112* (2) *Pr. 7, 8, 44, 45, 110, 111* (4) *Pr. 71, 80, 81, 83, 84, 96, 450, 451, 453, 454, 456, 457, 463, 800* (5) *Pr. 22, 23, 48, 114, 156*

- **Causes related to V/F control**

Cause	Measures	Related Parameters
Torque boost setting may not be an appropriate value.	Adjust torque boost *(Pr. 0, etc.)*	*Pr. 0, 46, 112*
V/F pattern setting may not be an appropriate value.	Adjust V/F pattern related parameters*(Pr. 3, 14, 19, etc.)*	*Pr. 3, 14, 19, 47, 113*
Set frequency is unstable due to external EMI	(1) Take EMI measures. (2) Set a larger value in filter time constant parameter *(Pr. 74, etc.)*.	*Pr. 74, 822, 832*
Load fluctuation	Take measures to prevent load from changing.	-
Power supply voltage fluctuation	Check the power supply voltage.	-

- **Causes other than V/F control**

Cause	Measures	Related Parameters
Frequency fluctuation of magnetic flux vector control	Try other control method.	*Pr. 71, 80, 81, 83, 84, 96, 450, 451, 453, 454, 456, 457, 463, 800*
Set frequency is unstable due to external EMI	(1) Take EMI measures. (2) Set a larger value in filter time constant parameter *(Pr. 74, etc.)*.	*Pr. 74, 822, 832*
Load fluctuation	Take measures to prevent load from changing.	-
Power supply voltage fluctuation	Check the power supply voltage.	-

3.4.2 Motor does not rotate, or motor rotation direction does not change

- **Main causes**

Cause	Measures	Related Parameters
The motor is at a stop due to fault occurrence. Occurred fault : xxx	Refer to the item related to faults in "Help" and then take measures.	-
The main circuit power (R/L1, S/L2, T/L3) is not ON or the power supply phase is lost.	Check the main circuit power (R/L1, S/L2, T/L3) is ON. When high power factor converter, power supply regeneration common converter, etc. is used (driving by DC power input to P and N), check the setting of regenerative function selection *(Pr. 30)* .	*Pr. 30*
Power is not ON or input voltage is insufficient.	Check that the power is ON. Check that the input voltage is not insufficient.	-
Both STF and STR signals are ON or OFF.	Turn ON the signal to the direction which the motor is supposed to run and OFF the other signal.	-
The MRS signal is ON.	Turn OFF the MRS signal.	-
The start frequency is larger than the set frequency.	Set the start frequency *(Pr. 13)* lower than the set frequency.	*Pr. 13*
Although the running speed is entered to terminal 4, the AU signal is OFF.	Turn the AU signal ON.	-
The inverter operates in PU mode and forward rotation/reverse rotation command is not entered.	Give forward rotation or reverse rotation command.	-
The maximum frequency is smaller than the start frequency.	Set the maximum frequency *(Pr. 1, Pr. 18)* larger than the start frequency *(Pr. 13)*, or set the start frequency *(Pr. 13)* smaller than the maximum frequency *(Pr. 1, Pr. 18)* .	*Pr. 1, 13, 18*
Automatic restart after instantaneous power failure is valid and CS signal is OFF.	Cancel automatic restart after instantaneous power failure, or turn the CS signal ON.	*Pr. 57*
Reverse rotation prevention selection is set.	Change the reverse rotation prevention selection *(Pr. 78)* setting to allow the desired rotation direction.	*Pr. 78*
PID control activated	Cancel PID control.	*Pr. 128*
Stall prevention (current limit/voltage limit) or regeneration avoidance is activated.	1. Common Check the motor connection. 2. Current limit (1) Execute trouble shooting of "Motor current is large" (2) Adjust torque boost *(Pr. 0, etc.)* (3) Adjust V/F pattern parameters *(Pr. 3, 14,19, etc.)* (4) Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*. (5) Reduce the load weight. (6) Try other control method. (7) Increase stall prevention level *(Pr. 22, etc.)*, or limit stall prevention operation using stall prevention operation selection *(Pr. 156)*. 3. Voltage limit Set a longer deceleration time *(Pr. 8)*. 4. Regeneration avoidance operation (1) Set a longer deceleration time *(Pr. 8)*. (2) Adjust regeneration avoidance parameters.	2. (2) *Pr. 0, 46, 112* (3) *Pr. 3, 14, 19, 47, 113* (4) *Pr. 7, 8, 44, 45, 110, 111* (6) *Pr. 71, 80, 81, 83, 84, 96, 450, 451, 453, 454, 456, 463, 800* (7) *Pr. 22, 23, 48, 114, 156* 3. *Pr. 8* 4. (1) *Pr. 8* (2) *Pr. 665, 882, 883, 884, 885, 886*

Cause	Measures	Related Parameters
The IPM motor test operation is selected when the IPM motor control (PM sensorless vector control) should be selected.	[FR-A700] Set a value other than "9" in *Pr.800 Control method selection*. [FR-F700P] Set "20" in *Pr.800 Control method selection*. [FR-F700PJ] Set "30" in *Pr.800 Control method selection*.	*Pr. 800*
Shorting wire between S1 and SC/PC or between S2 and SC/PC is disconnected.	Short across terminals S1 and SC/PC and across S2 and SC/PC with shorting wire.	-

- **Causes related to V/F control, General-purpose magnetic flux vector control/Advanced magnetic flux vector control**

Cause	Measures	Related Parameters
The current limit is activated.	(1) Execute trouble shooting of "Motor current is large" (2) Increase stall prevention level *(Pr. 22, etc.)* or limit stall prevention operation using stall prevention operation selection *(Pr. 156)*.	(2) *Pr. 22, 23, 48, 114, 156*
Load is heavy.	Check the load.	-
The motor is not connected securely.	Check the motor connection.	-

- **Causes related to Real sensorless vector control**

Cause	Measures	Related Parameters
Torque limit is activated.	(1) Execute trouble shooting of "Motor current is large" (2) Adjust torque limit level *(Pr. 22, etc.)*	(2) *Pr. 22, 803, 812, 813, 814, 815, 816, 817, 874*
Load is heavy.	Check the load.	-

- **Causes related to vector control**

Cause	Measures	Related Parameters
Torque limit is activated.	(1) Execute trouble shooting of "Motor current is large" (2) Adjust torque limit level *(Pr. 22, etc.)*	(2) *Pr. 22, 803, 812, 813, 814, 815, 816, 817, 874*
Load is heavy.	Check the load.	-
The encoder setting is not an appropriate value.	Check the setting of encoder rotation direction *(Pr. 359)* and number of encoder pulses *(Pr. 369)* .	*Pr. 359, 369*
The motor is not connected securely.	(1) Check the motor connection. (2) Check the phase sequence of the motor.	-

3.4.3 Motor coasts

Cause	Measures	Related Parameters
The stop selection *(Pr. 250)* is selected.	Change the stop selection *(Pr. 250)* setting to cancel coasting to a stop.	*Pr. 250*
Check that the output stop signal (MRS) or selection of automatic restart after instantaneous power failure (CS) is ON/ OFF during operation or reset is input.	(1) Check for input terminal connection and communication command. (2) Take measures against EMI to the input terminal wires.	-
The magnetic contactor on the motor side turns OFF.	Check operation of the magnetic contactor.	-
Power failure occurs.	Check for input power supply.	-
Inverter fault occurs.	Check for a fault occurs. Refer to the item related to faults in "Help" and then take measures.	-
Braking torque of DC injection brake is insufficient or coasting is set.	Adjust DC injection brake operation frequency *(Pr. 10)*, DC injection brake operation time *(Pr. 11)*, DC injection brake operation voltage *(Pr. 12)*.	*Pr. 10, 11, 12*

3.4.4 Motor current is large

- **Causes under V/F control**

Cause	Measures	Related Parameters
Torque boost *(Pr. 0, etc.)* setting is too large.	Decrease torque boost *(Pr. 0, etc.)* setting.	*Pr. 0, 46, 112*
V/F control related parameter setting is not an appropriate value.	Adjust torque boost *(Pr. 0, etc.)*, base frequency *(Pr. 3, etc.)*, base frequency voltage *(Pr. 19)*, load pattern selection *(Pr. 14)*.	*Pr. 0, 3, 14, 19, 46, 47, 112, 113*
Load is heavy.	Check the load.	-
The acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)* setting is too small.	Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*.	*Pr. 7, 8, 44, 45, 110, 111*
Load inertia (GD2) is too large.	(1) Decrease inertia (GD2) (2) Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*.	(2) *Pr. 7, 8, 44, 45, 110, 111*

- **Causes other than V/F control**

Cause	Measures	Related Parameters
Motor specifications setting is not appropriate.	Check that the motor specifications setting is correct.	*Pr. 71, 80, 81, 83, 84, 450, 453, 454, 456, 457*
Offline auto tuning is not performed.	Perform Offline auto tuning.	*Pr. 96, 463*
Load is heavy.	Check the load.	-
The acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)* setting is too small.	Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*.	*Pr. 7, 8, 44, 45, 110, 111*
Load inertia (GD2) is too large.	(1) Decrease inertia (GD2) (2) Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*.	(2) *Pr. 7, 8, 44, 45, 110, 111*

3.4.5 Acceleration/deceleration is not as commanded

- **Causes under V/F control**

Cause	Measures	Related Parameters
The acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)* setting is too small.	Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*. (In vertical lift applications, set a smaller value.)	*Pr. 7, 44, 110*
V/F control related parameter setting is not an appropriate value.	Adjust torque boost *(Pr. 0, etc.)*, base frequency *(Pr. 3, etc.)*, base frequency voltage *(Pr. 19)*, load pattern selection *(Pr. 14)*.	*Pr. 0, 3, 14, 19, 46, 47, 112, 113*
Stall prevention is activated due to heavy load (GD2).	Increase stall prevention level *(Pr. 22, etc.)* or limit stall prevention operation using stall prevention operation selection *(Pr. 156)*.	*Pr. 22, 156*

- **Causes under control other than V/F control**

Cause	Measures	Related Parameters
The acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)* setting is too small.	Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*. (In vertical lift applications, set a smaller value.	*Pr. 7, 44, 110*
Motor specifications setting is not appropriate.	Check that the motor specifications setting is correct.	*Pr. 71, 80, 81, 83, 84, 450, 453, 454, 456, 457*
Stall prevention operation or regeneration avoidance function is set.	(1) Execute trouble shooting of "Motor current is large" (2) Set a larger value in acceleration/deceleration time *(Pr. 7, Pr. 8, etc.)*. (3) Try other control method. (4) Increase stall prevention level *(Pr. 22, etc.)* or limit stall prevention operation using stall prevention operation selection *(Pr. 156)*. (5) Adjust regeneration avoidance related parameters.	(2) *Pr. 7, 8, 44, 45, 110, 111* (3) *Pr. 71, 80, 81, 83, 84, 96, 450, 451, 453, 454, 456, 457, 463, 800* (4) *Pr. 22, 23, 48, 114, 156* (5) *Pr. 665, 882, 883, 884, 885, 886*
Offline auto tuning is not performed.	Perform Offline auto tuning.	*Pr. 96, 463*
Load is heavy.	Check the load.	-

3.4.6 External device (peripherals) malfunctions

- **Causes related to overcurrent relay**

Cause	Measures	Related Parameters
Current is large.	Execute trouble shooting of "Motor current is large"	-
Leakage current is large.	(1) Decrease the setting value of PWM frequency selection *(Pr. 72)*. [FR-A700, F700 and F700P] (2) Connect the EMC filter ON/OFF connector to OFF.	(1) *Pr. 72*
The overcurrent relay (OCR) setting is small.	Set a value 1.1 times of 60Hz rated current.	-

- **Causes related to the earth leakage current breaker**

Cause	Measures	Related Parameters
Leakage current is large.	(1) Decrease the setting value of PWM frequency selection *(Pr. 72)*. (2) Use a breaker designed for harmonic and surge suppression (3) Use a low-permittivity cable. (4) Shorten the wiring length between the motor and inverter. [FR-A700, F700 and F700P] (5) Connect the EMC filter ON/OFF connector to OFF.	(1) *Pr. 72*
The rated sensitivity current of the earth leakage current breaker is small	Increase the rated sensitivity current of the earth leakage current breaker.	-

- **Other causes**

Cause	Measures	Related Parameters
The setting value of PWM frequency selection *(Pr. 72)* is too large.	Decrease the setting value of PWM frequency selection *(Pr. 72)*.	*Pr. 72*
Electromagnetic interference	(1) Separate a signal cable from a power cable. (2) Install a common mode choke. (3) Use a twisted pair cable (4) Route wires using metal conduit. [FR-A700, F700 and F700P] (5) Connect the EMC filter ON/OFF connector to OFF.	-
Misoperation caused by undesirable currents when a programmable controller is connected.	Use terminal PC as a common terminal, and perform wiring.	-

3.4.7 Operation mode does not change

- **Causes during operation**

Cause	Measures	Related Parameters
Operation mode cannot be changed during operation with the current parameter setting.	Change the operation mode after stopping operation. Change operation mode selection*(Pr. 79)* to change the operation mode during operation.	*Pr. 79*

- **Causes when changing from NET operation mode to PU operation mode**

Cause	Measures	Related Parameters
Operation mode cannot be directly changed from NET operation to PU operation with the current parameter setting.	After changing to EXT operation, change to PU operation. If the operation mode will not change to EXT operation, return to "Status Display" screen to execute troubleshooting of "Operation mode does not change to EXT". Change communication start up mode selection*(Pr. 340)* to change directly to PU operation. After changing *Pr. 340*, reset the inverter.	*Pr. 340*
By making parameter setting, operation mode can be changed.	Set 1 in operation mode selection*(Pr. 79)* .	*Pr. 79*
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the PU operation mode by setting as shown below. (1) X65 signal is ON (when only X65 signal is assigned) (2) X66 signal is OFF, and X16 signal is OFF (when only X16 and X66 signals are assigned) (3) X66 signal is OFF, and X65 signal is ON or X16 signal is OFF (when all X16, X65 and X66 signals are assigned)	-
Command for changing to PU operation mode from NET operation mode is given only from the operation location with PU operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-

- **Causes when changing from EXT and NET operation mode to PU operation mode**

Cause	Measures	Related Parameters
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the PU operation mode by setting as shown below. (1) X16 signal is OFF (when only X16 signal is assigned) (2) X66 signal is OFF, and X16 signal is ON (when only X16 and X66 signals are assigned) (3) X66 signal is OFF, and X65 signal is ON or X16 signal is OFF (when all X16, X65 and X66 signals are assigned)	-
Command for changing to PU operation mode from EXT operation mode is given only from the operation location with PU operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-
By making parameter setting, operation mode can be changed.	Set 1 in operation mode selection*(Pr. 79)* .	*Pr. 79*
Operation mode change is restricted with X12 and MRS signals.	When X12 signal is assigned, turn X12 signal ON. When X12 signal is not assigned, turn MRS signal ON.	-

- **Causes when changing from PU operation mode to EXT operation mode**

Cause	Measures	Related Parameters
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the EXT operation mode by setting as shown below. (1) X16 signal is ON (when only X16 signal is assigned) (2) X66 signal is OFF, and X16 signal is ON (when only X16 and X66 signals are assigned) (3) X66 signal is OFF, and X65 signal is OFF and X16 signal is ON (when all X16, X65 and X66 signals are assigned)	-
Command for changing to EXT operation mode from PU operation mode is given only from the operation location with PU operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-
By making parameter setting, operation mode can be changed. (when X16, X65, and X66 signals are not assigned)	Set 2 in operation mode selection*(Pr. 79)* .	*Pr. 79*
Restricted by parameter setting.	Set 0, 1, or 2 in communication startup mode selection *(Pr. 340)*, and reset the inverter.	*Pr. 340*
Operation mode change is restricted with X12 and MRS signals.	When X12 signal is assigned, turn X12 signal OFF. When X12 signal is not assigned, turn MRS signal OFF.	-

- **Causes when changing from NET operation mode to EXT operation mode**

Cause	Measures	Related Parameters
Restricted by parameter setting.	Set 0, 1, or 2 in communication startup mode selection *(Pr. 340)*, and reset the inverter.	*Pr. 340*
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the EXT operation mode by setting as shown below. (1) X66 signal is ON (when only X66 signal is assigned) (2) X66 signal is OFF, and X16 signal is ON (when only X16 and X66 signals are assigned) (3) X66 signal is OFF, and X65 signal is OFF and X16 signal is ON (when all X16, X65 and X66 signals are assigned)	-
Command for changing to EXT operation mode from NET operation mode is given only from the operation location with NET operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-
Operation mode change is restricted with X12 and MRS signals.	When X12 signal is assigned, turn X12 signal OFF. When X12 signal is not assigned, turn MRS signal OFF.	-

- **Causes when changing from EXT operation mode to NET operation mode**

Cause	Measures	Related Parameters
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the NET operation mode by setting as shown below. (1) X66 signal is ON (when only X66 signal is assigned) (2) X66 signal is ON (when only X16 and X66 signals are assigned) (3) X66 signal is ON (when all X16, X65 and X66 signals are assigned)	-
Command for changing to NET operation mode from EXT operation mode is given only from the operation location with NET operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-
By making parameter setting, operation mode can be changed. (when X16, X65, and X66 signals are not assigned)	Set a value other than 0 in communication startup mode selection *(Pr. 340)* to reset the inverter.	*Pr. 340*
Restricted by parameter setting.	Set 0 in operation mode selection *(Pr. 79)*. After changing to PU operation mode, change to NET operation mode.	*Pr. 79*
Operation mode change is restricted with X12 and MRS signals.	When X12 signal is assigned, turn X12 signal ON. When X12 signal is not assigned, turn MRS signal ON.	-

- **Causes when changing from PU operation mode to NET operation mode**

Cause	Measures	Related Parameters
Operation mode cannot be directly changed from PU operation to NET operation with the current parameter setting.	After changing to EXT operation, change to NET operation. If the operation mode will not change to EXT operation, return to "Status Display" screen to execute troubleshooting of "EXT Operation". Change communication start up mode selection*(Pr. 340)* to change directly to PU operation. After changing *Pr. 340*, reset the inverter.	*Pr. 340*
Operation mode is specified with X16, X65, and X66 signals. (when X16, X65, and X66 signals are assigned)	Change to the NET operation mode by setting as shown below. (1) X65 signal is ON (2) X66 signal is ON (when only X16 and X66 signals are assigned) (3) X66 signal is ON (when all X16, X65 and X66 signals are assigned)	-
Command for changing to NET operation mode from PU operation mode is given only from the operation location with PU operation control source. (when X16, X65, and X66 signals are not assigned)	Change the operation mode from the operation location with control source.	-

3.4.8 Unable to write parameter setting

- **Causes during operation**

Cause	Measures	Related Parameters
Parameters cannot be changed during operation with the current setting.	Change parameters after stopping operation. Some parameters can be changed during operation by setting "2" in parameter write selection *(Pr. 77)*.	*Pr. 77*

- **Causes related simple mode and user group setting**

Cause	Measures	Related Parameters
There are restricted parameters for displaying and changing.	Set 0 in User group read selection *(Pr. 160)* to cancel restrictions. If the password lock is activated, enter the password in *Pr. 297* from the operation panel or parameter unit to unlock the password lock.	*Pr. 160* *Pr. 297*

- **Causes related to parameter write selection**

Cause	Measures	Related Parameters
Parameter write is restricted.	Set 0 or 2 in parameter write selection *(Pr. 77)* .	*Pr. 77*

- **Causes when writing from the inverter operation panel (FR-E700(SC)(NC)/F700PJ/D700)**

Cause	Measures	Related Parameters
Parameter write command source is not set.	(1) After removing the parameter unit and USB, set "9999" in PU mode operation command source selection *(Pr. 551)*, and reset the inverter. (2) After setting "4" in PU mode command source selection *(Pr. 551)* , reset the inverter.	*Pr. 551*
PU operation mode is not selected.	Change to PU operation mode.	*Pr. 79, 340*

- **Causes when writing from the PU connector (operation panel/parameter unit) (FR-A700/A701/F700/F700P)**
  Causes when writing from the PU connector (parameter unit) (FR-E700(SC)/F700PJ/D700)

Cause	Measures	Related Parameters
Parameter write command source is not set.	(1) After removing the USB, set "9999" in PU mode operation command source selection *(Pr. 551)* , and reset the inverter. (FR-A700 and E700(SC)) (2) After setting "2" in PU mode command source selection *(Pr. 551)* , reset the inverter.	*Pr. 551*
PU operation mode is not selected.	Change to PU operation mode.	*Pr. 79, 340*

- **Causes when writing from the PU connector (RS-485 communication) (FR-E700(SC)/F700PJ/D700)**

Cause	Measures	Related Parameters
Parameter write command source is not set.	(1) After removing the communication option, set "9999" in NET mode command source selection *(Pr. 550)*, and reset the inverter. (FR-E700(SC)) (2) After setting "2" in NET mode command source selection *(Pr. 550)* and a value other than 2 in PU mode operation command source selection *(Pr. 551)* , reset the inverter. (FR-E700(SC))	*Pr. 550, 551*
Parameter write command source is set in the PU mode	After setting a value other than "2" in PU mode command source selection *(Pr. 551)* , reset the inverter.	*Pr. 551*
NET operation mode is not selected.	Change to NET operation mode.	*Pr. 79, 340*

- **Causes when writing from the USB connector**

Cause	Measures	Related Parameters
Parameter write command source is not set.	[FR-A700 *, E700] After setting "9999, 3" in PU mode operation command source selection *(Pr. 551)* , reset the inverter. [FR-A701] After setting "3" in PU mode command source selection *(Pr. 551)* , reset the inverter.	*Pr. 551*
PU operation mode is not selected.	Change to PU operation mode.	*Pr. 79, 340*

* Depending on the production year and month of FR-A700, the setting range and initial value of *Pr. 551* may differ. For the details, refer to *the Appendices of the Instruction Manual of the inverter.*

- **Causes when writing from the RS-485 terminal**

Cause	Measures	Related Parameters
Parameter write command source is not set.	(1) After removing the communication option, set "9999" in NET mode command source selection *(Pr. 550)* to reset the inverter. (2) After setting "1" in NET mode command source selection *(Pr. 550)* and a value other than 1 in PU mode command source selection *(Pr. 551)* , reset the inverter.	*Pr. 550, 551*
Parameter write command source is set in the PU mode	After setting a value other than "1" in PU mode control source selection *(Pr. 551)* , reset the inverter.	*Pr. 551*
NET operation mode is not selected.	Change to NET operation mode.	*Pr. 79, 340*

- **Causes when writing from the communication option**

Cause	Measures	Related Parameters
Parameter write command source is not set.	After setting "0" in NET mode command source selection *(Pr. 550)* , reset the inverter.	*Pr. 550*
NET operation mode is not selected.	Change to NET operation mode.	*Pr. 79, 340*

3.4.9 Unable to communicate

- **Causes related to serial port**

Cause	Measures	Related Parameters
Communication port setting of the PC and FR Configurator SW3 are not the same.	Select [Options] in [Tool] menu. Select [Communication] tab on the option window and check the following items. (1) Check "RS-232C" is selected for "PC Side Port". (2) Check that the COM port number of the personal computer and "Port Number" setting are the same. (3) Check that the "Through" setting is "None". When connecting through the GOT (4) Check that the "Through" setting is "GOT".	-

- **Causes related to serial communication**

Cause	Measures	Related Parameters
Parameter setting for PU connector communication is not an appropriate value.	(1) Check that the correct station number is set for PU communication station number *(Pr. 117)* . When multiple inverters are connected, set a different station number for each inverter. (2) Set 3s or more, or "9999" in PU communication check time interval*(Pr. 122)*. (3) Set "9999" in PU communication waiting time setting *(Pr. 123)* . (4) Select [Options] in [Tool] menu, and click [Communication] tab on the option window. Check that the "Communication Speed", "Stop Bit", "Delimiter", and "Parity" settings are the same as the parameter setting for PU connector communication *(Pr. 118, 119, 120, 124)*. (5) Select [Options] in [Tool] menu. Click [Communication] tab on the option window and press [Advanced]. Increase the value of "TimeOut" and "Retry Count". (6) Set "0" in protocol selection *(Pr. 549)* .	*Pr. 117, 118, 119, 120, 121, 122, 123, 124, 549*
Parameter setting for RS-485 terminal communication is not an appropriate value.	(1) Check that the correct station number is set for RS-485 communication station number *(Pr. 331)* . When multiple inverters are connected, set a different station number for each inverter. (2) Set 3s or more, or "9999" in RS-485 communication check time interval*(Pr. 336)* . (3) Set "9999" in RS-485 communication waiting time setting *(Pr. 337)* . (4) Select [Options] in [Tool] menu, and click [Communication] tab on the option window. Check that the "Communication Speed", "Stop Bit", "Delimiter", and "Parity" settings are the same as the parameter setting for RS-485 terminal communication *(Pr. 332, 333, 334, 341)*. (5) Select [Options] in [Tool] menu. Click [Communication] tab on the option window and press [Advanced]. Increase the value of "TimeOut" and "Retry Count". (6) Set "0" in protocol selection*(Pr. 549)* .	*Pr. 331, 332, 333, 334, 335, 336, 337, 341, 549*

- **Causes related to serial communication through GOT**

Cause	Measures	Related Parameters
Parameter setting for PU connector communication is not an appropriate value.	(1) Check that the correct station number is set for PU communication station number *(Pr. 117)* . When multiple inverters are connected, set a different station number for each inverter. (2) Set 3s or more, or "9999" in PU communication check time interval *(Pr. 122)* . (3) Set "0" in PU communication waiting time setting *(Pr. 123)* . (4) Select [Options] in [Tool] menu, and click [Communication] tab on the option window. Check that the "Communication Speed", "Stop Bit", "Delimiter", and "Parity" settings are the same as the parameter setting for PU connector communication *(Pr. 118, 119, 120, 124)*. (5) Select [Options] in [Tool] menu. Click [Communication] tab on the option window and press [Advanced]. Increase the value of "Timeout" and "Retry Count". (6) Set "0" in protocol selection *(Pr. 549)* .	*Pr. 117, 118, 119, 120, 121, 122, 123, 124, 549*
Parameter setting for RS-485 terminal communication is not an appropriate value.	(1) Check that the correct station number is set for RS-485 communication station number *(Pr. 331)* . When multiple inverters are connected, set a different station number for each inverter. (2) Set 3s or more, or "9999" in RS-485 communication check time interval*(Pr. 336)* . (3) Set "0" in RS-485 communication waiting time setting *(Pr. 337)* . (4) Select [Options] in [Tool] menu, and click [Communication] tab on the option window. Check that the "Communication speed", "Stop Bit", "Delimiter", and "Parity" settings are the same as the parameter setting for RS-485 terminal communication *(Pr. 332, 333, 334, 341)*. (5) Select [Options] in [Tool] menu. Click [Communication] tab on the option window and press [Advanced]. Increase the value of "TimeOut" and "Retry Count". (6) Set "0" in protocol selection*(Pr. 549)* .	*Pr. 331, 332, 333, 334, 335, 336, 337, 341, 549*

- **Causes related to USB communication**

Cause	Measures	Related Parameters
Communication port setting of the FR Configurator SW3 is not an appropriate value.	Select [Options] in [Tool] menu. Select [Communication] tab on the option window and check the following items. (1) Check "USB" is selected for "PC Side Port". (2) Check that the "Through" setting is "None".	-
Parameter setting for USB connector communication is not an appropriate value.	(1) Check that the correct station number is set for USB communication station number *(Pr. 547)* . When multiple inverters are connected, set a different station number for each inverter. (2) Set 3s or more, or "9999" in USB communication check time interval *(Pr. 548)*.	*Pr. 547, 548*

- **Causes related to USB communication via GOT**

Cause	Measures	Related Parameters
Communication port setting of the FR Configurator SW3 is not an appropriate value.	Select [Options] in [Tool] menu. Click [Communication] tab on the option window and check the following items. (1) Check "USB" is selected for "PC Side Port". (2) Check that the "Through" setting is "GOT".	-

4 FUNCTION

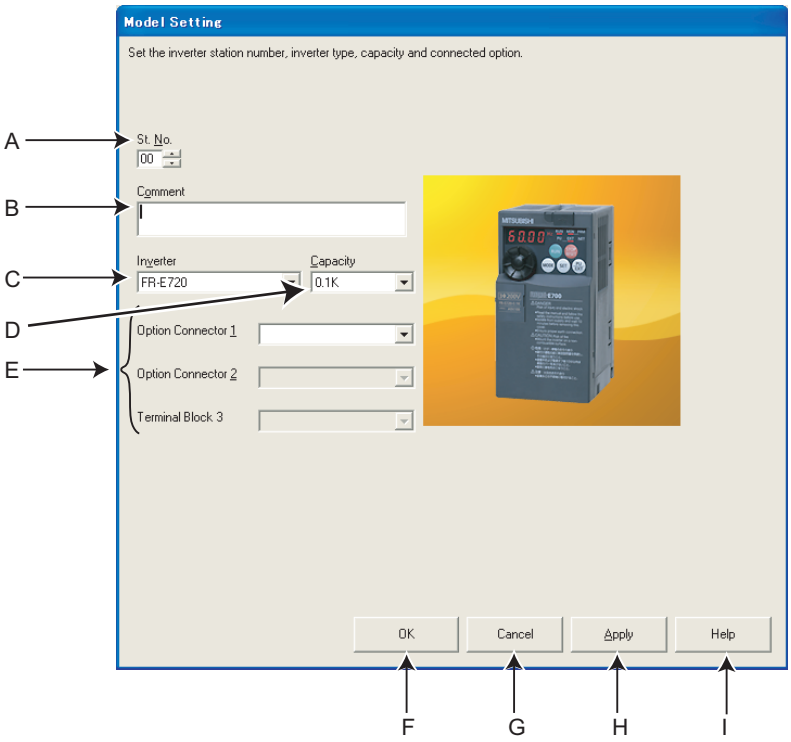
This chapter explains the "FUNCTION" for use of this product.
Always read the instructions before using the software.

4.1 Model Setting 90
4.2 Options 91
4.3 File Management and Print 93
4.4 Test Operation (Navigation Area) 97
4.5 System View (Navigation Area) 101
4.6 Parameter List (System Area) 106
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4.12 I/O Terminal Assignment 154
4.13 Machine Analyzer (Monitor Area) (FR-A700, A701 with Vector Control) 155
4.14 Help 160

4.1 Model Setting

Set inverter model in "Model Setting" window.
There are the following ways to display "Model Setting" window.

(1) Select [Model Setting] in [Tool] menu.
(2) Double-click a station number in "System Setting" of System View.



No.	Name	Function and description
A	St. No.	Set the inverter station number from 0 to 31.
B	Comment	A field for comments.
C	Inverter	Select the connected inverter model.
D	Capacity	Select the connected inverter capacity.
E	Option Connector 1 to 3, Terminal Block 3	Select the options connected to the option connectors. (Option Connector 1 to 3 are available for FR-A700, A701 series)
F	OK	Applies the Model Setting into the system, and closes the "Model Setting" window.
G	Cancel	Returns to the Main frame with the invalid setting.
H	Apply	Applies the Model Setting into the system.
I	Help	Displays Help window. *(Refer to page 160)*

REMARKS

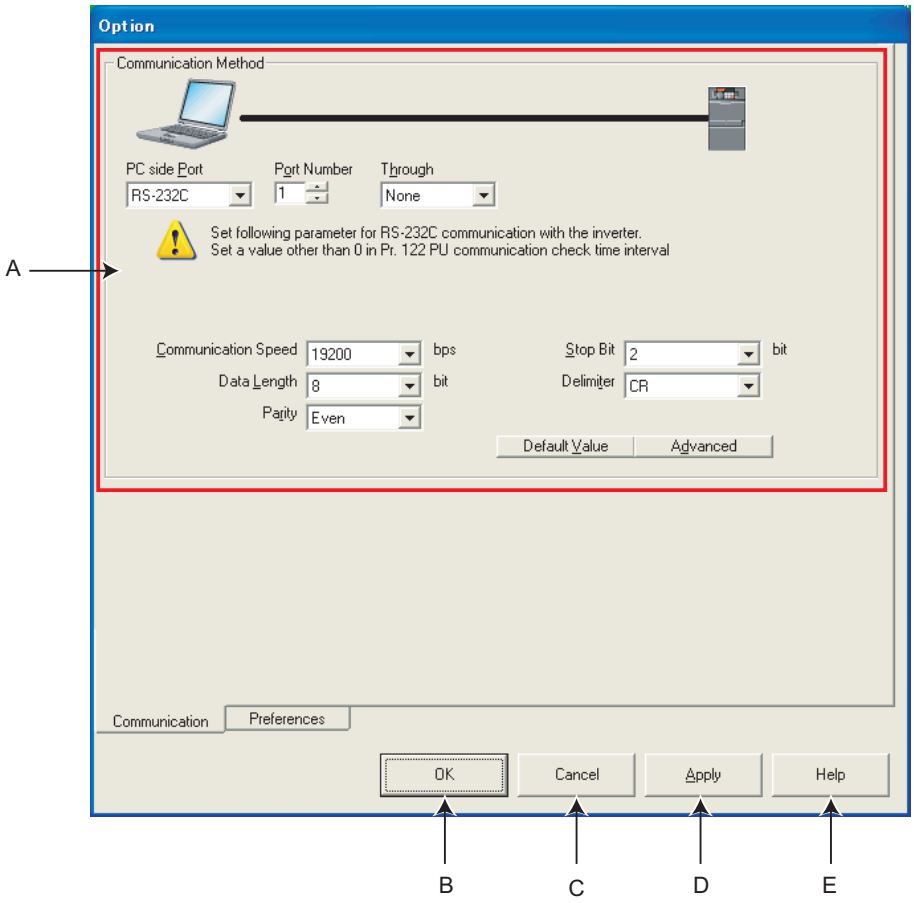
- Inverter model will change if capacity or option setting field is changed, therefore current value, setting value and comment in "Parameter List" are also cleared. If you want to reuse the current value, setting value and comment, export the "Parameter List" data beforehand, and then change the model setting. After adjusting model setting, import the exported data from the "Parameter List" window to reuse the current setting, setting value and comment.
- Use Option Connector 2 on the Model Setting window to select a network option connected to an F700-NA or EC, which is equipped with only one option connector. No network option is selectable in Option connector 1.
  The connected network option will be automatically set to Option Connector 2 when the Automatic Recognition is performed for an F700-NA or EC, which is equipped with only one option connector. The connected network option will be also automatically set in Option Connector 2 when a MEL file set to an F700-NA or EC is read.

4.2 Options

Communication and preference setting is available in "Option" window. Displays the communication and preference setting windows by switching tabs.
Select [Options] in [Tool] menu to display "Option" window.

4.2.1 Communication

Click Communication of "Option" window to make a communication setting.



No.	Name	Function and description
A	Setting items	*Refer to page 49* for details of each communication setting items.
B	OK	Closes Option window with the valid setting.
C	Cancel	Closes the window with the invalid setting.
D	Apply	Reflects the setting into the system without closing the window.
E	Help	Displays Help window. *(Refer to page 160)*

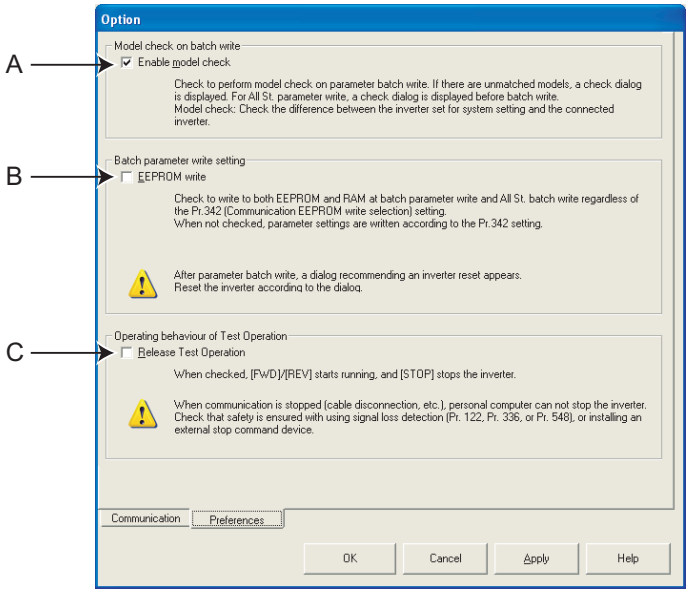
REMARKS

- Communication setting window is active only when OFFLINE. During ONLINE, every item is turned gray and unavailable for making setting.
- When "USB" is selected for personal computer side port, unnecessary setting item turns to gray and unavailable for making setting.
- When using a USB/RS-485 convert cable, DINV-U4, set "RS-232C" for "PC side Port". *Refer to page 49* for the communication setting with DINV-U4.

4.2.2 Preferences

Setting of the model check at parameter batch write, test operation setting and batch parameter write setting are available.

Click [Preferences] of the "Option" window to display the Preferences window.



No.	Name	Function and description
A	Enable model check	When checked, inverter models, voltage classes, capacities and region codes of the inverters set for system setting and the connected inverter are checked at parameter batch write (refer to *page 111*) and All St. parameter setting (refer to *page 103*).
B	EEPROM write	When checked, parameter settings are written to both EEPROM and RAM regardless of the *Pr. 342 Communication EEPROM write selection* setting. When unchecked, parameter settings are written according to the *Pr. 342 Communication EEPROM write selection* setting.
C	Release Test Operation	When checked, clicking [REV] or [FWD] button of the test operation window once keeps the motor running.

Note

- **When test operation is being performed, check button of "Release Test Operation" cannot be checked.**
- **Setting of "Release Test Operation" and "EEPROM write" is not stored. At a start of FR Configurator, this setting is always return to unchecked.**

⚠CAUTION

⚠ **When communication stops (due to cable disconnection, etc.) after the test operation has been cancelled, the inverter cannot be stopped from the personal computer.**
Activate signal loss detection *(Pr. 122, Pr. 336, or Pr. 548)* or install an external stop device to always ensure the safety.

4.3 File Management and Print

4.3.1 Type of files

Extension	Description	Corresponding screen	Open	Save	Import	Export	Refer to Page
*.me3	Manages system setting, model information, data of Parameter List and Graph with a single file.	All screen	Available	Available	-	-	-
*.gp3	Manages Graph sampling data at the moment of exporting.	Graph	-	-	Available	Available	135
*.bmp	Saves the present Graph display in the bmp format.		-	-	-	Available	
*.pr3	Manages Parameter List data at the moment of exporting (text format). Used to copy the parameter setting into the other inverters.	Parameter List	-	-	Available	Available	106
*.xls	For saving Parameter List or Batch Monitor data in Microsoft Excel format.	Parameter List Batch Monitor	-	-	-	Available	106
*.hdt	Manages retrieved data of Machine Analyzer at the time of exporting. Data created by FR Configurator SW2 can be read too.	Machine Analyzer	-	-	Available	Available	155

4.3.2 Open

"Open" is a command to read data such as model information and other functions in system file (*.me3), and reflect to each screen. (For *.gp3 or *.pr3 file, data can be read using [Import] at a window of each function. *Refer to page 94*)

Select [Open] in [File] menu to display "Open" window. Select the desired file, and click Open to read the saved data. Whether each function screen is currently displayed or not, data in the file are reflected into each function.

REMARKS

- When copying the current value of the parameter to other station or other inverter, use import and export of data (*.pr3). (A *xls file exported from Parameter List is not available for importing.)
- System file (*.mel) of older version (FR Configurator SW2) cannot be opened. To use a system file (*.mel) of older version, convert the system file (*.mel) to a system file of new version (*.me3) using MEL file convert software. *(Refer to page 174)*
- When several station settings exist, it may take several tens of seconds to open a system file.

4.3.3 Save

Select [Save As...] in [File] menu to display "Save As" window. Check the saving location, put a name on a file, and save. Select [Save] in [File] menu to save the file with the same name. When saving a file for the first time, the same window as "Save As" is displayed.

REMARKS

- When you try to save a file by clicking "Save As..." , the folder where FR Configurator is installed appears at first. (When the installed folder is unchanged, c:\Program Files\MELSOFT\invsup3_e is displayed.)
  If the system file (*.me3) needs to be shared with another user, place it in the folder where another user has access to.

4.3.4 Data import and export (file input and output)

Data of "Graph", "Batch Monitor", "Parameter List" and "Machine Analyzer" can be input or output as a file. When copying parameter settings to other inverter, export the data of "Parameter List" in *.pr3 file type, and import it to the other inverter for copying.

(1) Import (file input)

Exported data of "Graph", "Parameter List" and "Machine Analyzer" can be read (import) and reflected into a screen.
Select [Import] in [File] menu to display a window for selecting the importing file.

Note

- **Importing data of "Graph" is available only when inverter model, capacity, model and option connector are all matched with the exported data.**
- **Import of "Parameter List" data is available when the exported inverter model matches the inverter model to be imported.**
  (FR-A700 data can be imported to the FR-A701. The "Parameter List" data of the FR-F700 and FR-F700P can both be imported to either the FR-F700 or FR-F700P.)

(2) Export (file output)

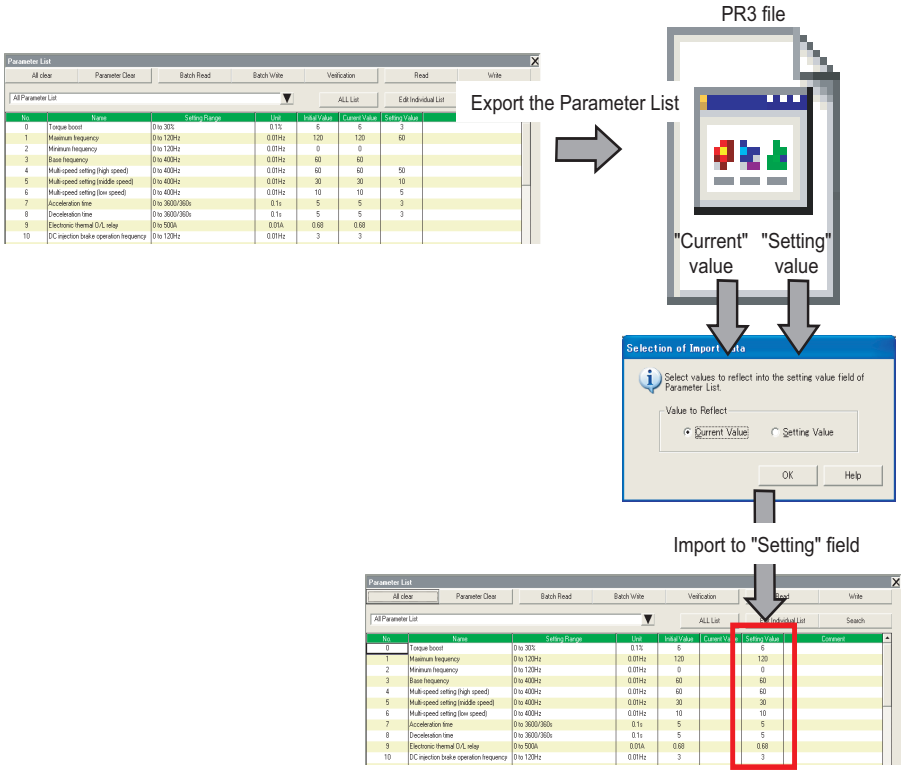
Data of "Graph", "Batch Monitor", "Machine Analyzer" or "Parameter List" can be output (export) into a file separately to the system file.
Select [Export] in [File] menu to display a window for exporting file.
The exported file can be imported (displayed) with "Graph Function (*.gp3)" and "Parameter List (*.pr3)" and "Machine Analyzer (*.hdt)". ("Batch Monitor" data is for export only.)

Note

- **Exported file is saved in a text format. If the contents of the file is edited, the file may not be read correctly when importing. Do not edit the contents of the exported file. (If "Parameter List" is exported in *.xls file type, import is unavailable.)**

REMARKS

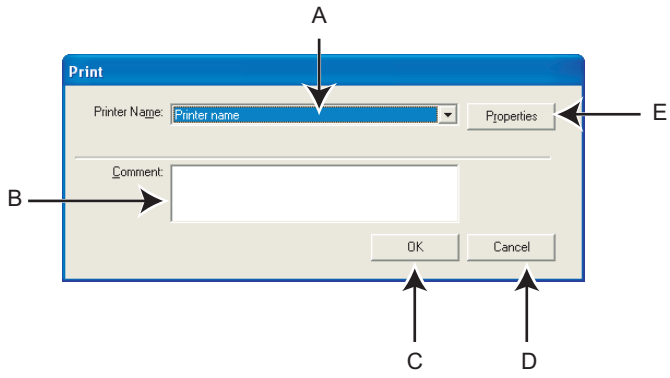
- Parameter file (*.prm) of older version S/W (FR Configurator SW2) can be imported. Note that the exported file is *.pr3 file type.
- Import and export of "Parameter List"
  Exported file of Parameter List contains both "Current" field data and "Setting" field data.
  When importing the exported file, select which data to be imported between "Current" value or "Setting" value in the file ("Selection of Import Data" window is displayed after selecting a file). And the selected data is applied to "Setting" field of the Parameter List.

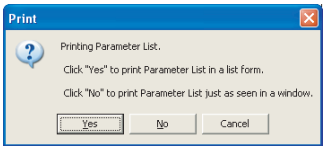


4.3.5 Print

FR Configurator window can be printed as it is. The Parameter List can be printed as a list. Select [Print...] from the [File] menu or click 

of the tool bar.



No.	Name	Function and description
A	Printer Name	Select a printer.
B	Comment	A field for comments to describe the contents of the printing. (up to 100 characters, line feed available)
C	OK	Click to start printing. The following window appears when printing Parameter List.  Click [Yes] to print Parameter List in a list format. Click [No] to print the window as it is.
D	Cancel	Cancels the printing, and closes the window.
E	Property	Displays a printer property window of the selected printer.

POINT

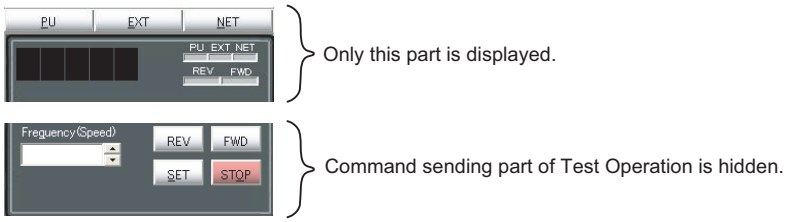
- For printing a specific section, hide unused sections, and print only the section you want. *(Refer to page 41)*
- As for the parameter list, you can select between printing in a list form and printing as is displayed. Select in the window displayed at printing.

4.4 Test Operation (Navigation Area)

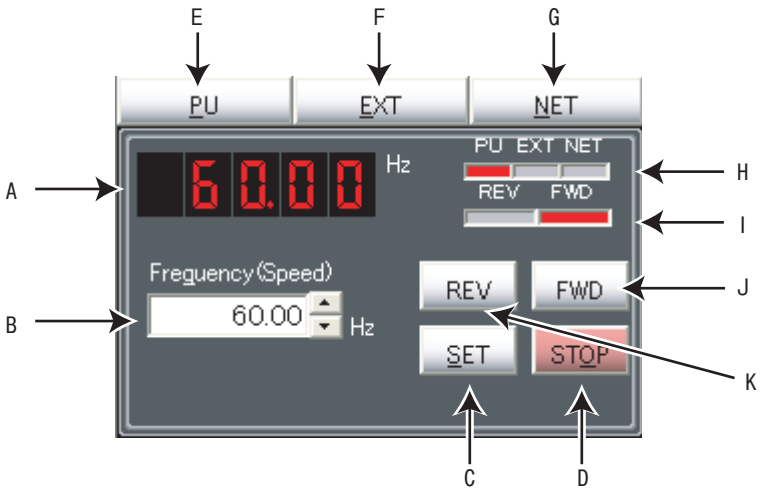
Frequency (fault) indication, operation mode indication and switching, sending of forward/reverse rotation command and writing of the set frequency are available.

Note

- **For safety issue, command sending part of Test Operation is hidden at start up of FR Configurator. When performing Test Operation, check [Test Operation] sub-menu under [Navigation] of [View] menu to display the command sending part of Test Operation.**



4.4.1 Test operation screen



No.	Name	Function and description
A	Frequency (Speed) indication	Shows frequency (speed) or fault indication etc. of the selected inverter.
B	Set frequency (speed) input field	Input the set frequency and click SET to write the set frequency to the selected inverter. Pressing SET while the field is empty shows the output frequency of the selected station.
C	SET	Writes the value of "Frequency (speed) input" field as the set frequency of the selected inverter.
D	STOP	Sends stop command to the selected inverter.
E	PU	Changes the operation mode of the selected inverter to PU operation mode.
F	EXT	Changes the operation mode of the selected inverter to External operation mode.
G	NET	Changes the operation mode of the selected inverter to Network operation mode.
H	Operation mode indication	Shows the operation mode of the selected inverter in red.
I	Rotation direction indication	At forward rotation, "FWD" turns red, and at reverse rotation "REV" turns red.
J	FWD	Sends forward rotation command to the selected inverter. Performing test operation during the button is pressed. (When "Release Test Operation" is selected, clicking button once keeps operation. *Refer to page 91*)
K	REV	Sends reverse rotation command to the selected inverter. Performing test operation during the button is pressed. (When "Release Test Operation" is selected, clicking button once keeps operation. *Refer to page 91*)

4.4.2 Indication of inverter frequency and fault

Shows output frequency or fault indication etc. of the selected inverter. If model setting of the selected station has been set and changed to ONLINE, the indicator shows output frequency. During OFFLINE, or if model setting of the selected station has not been set, indicator turns to blank. If unit of frequency (speed, machine speed) has been changed by parameter setting, output frequency of selected station is indicated along with the change of the unit.
JOG, PS, PU STOP, Pr. CL, PCPY, Warning and Alarm are not displayed.



Output frequency display



At fault occurrence (OC1)



At communication error occurrence

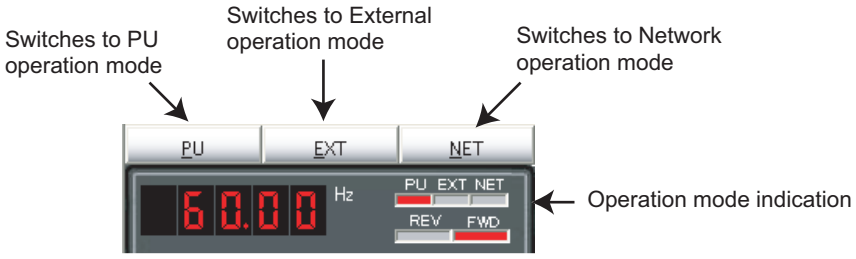


Graph sampling


OFFLINE

4.4.3 Indication of operation mode and switching

Click PU , EXT , NET to switch the operation mode.
Operation mode of the selected inverter is shown at the operation mode indicating part.





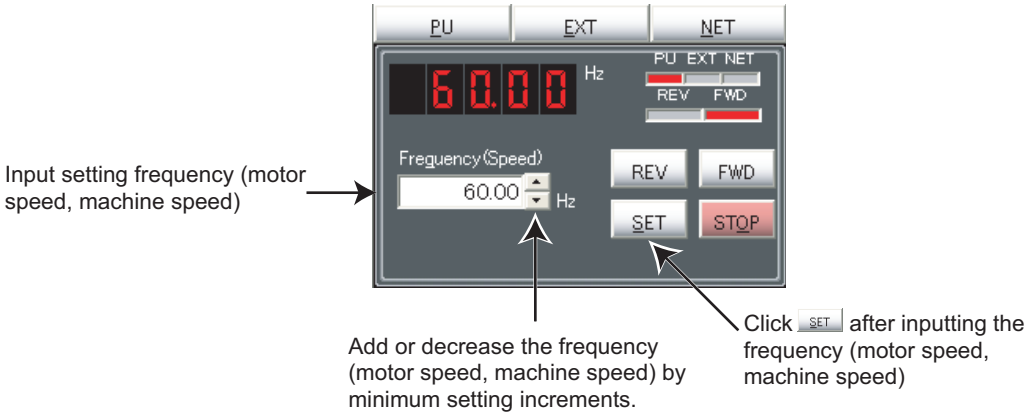
Indication of External/PU combined operation mode

REMARKS

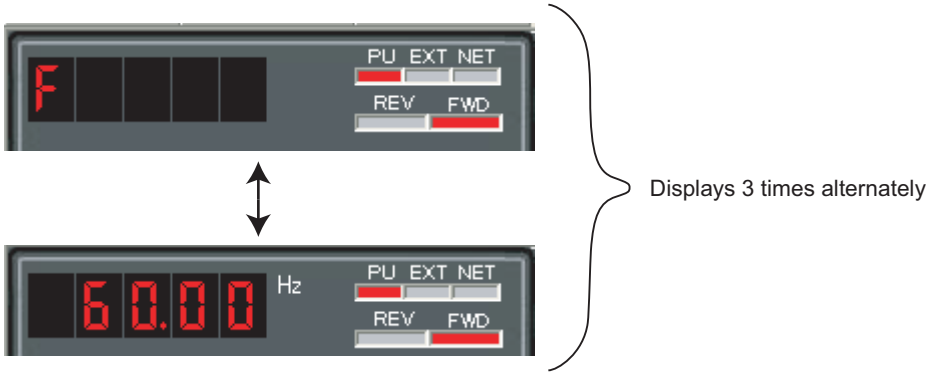
- Depending on the current operation mode or parameter setting, some operation modes are unavailable for change. For example, at the initial state, switching between PU operation mode and Network operation mode is unavailable. *(Refer to page 27 or the inverter manual for details.)*

4.4.4 Setting of running frequency (speed, machine speed)

Input a set frequency (speed, machine speed) in "Frequency (Speed) input" field, and click SET to write the set frequency into the inverter. Use the buttons on the right of the input field to add or decrease the setting frequency by minimum setting increments. (Available only when ONLINE.)



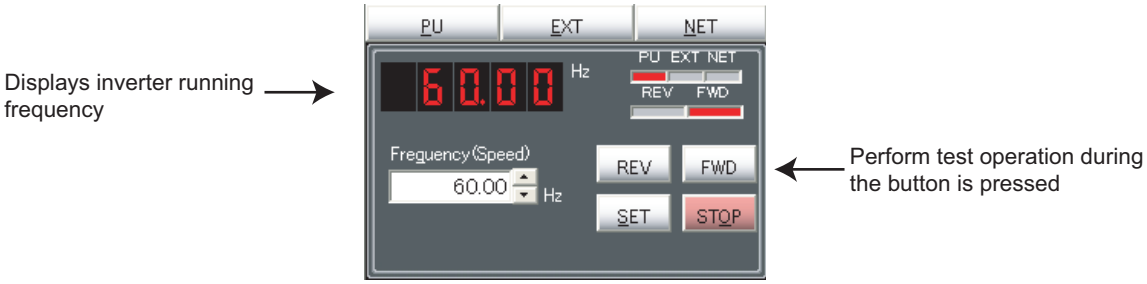
When the set frequency is written, "F" and the set frequency is displayed alternately 3 times. After displaying 3 times, the display shows output frequency (speed, machine speed).



4.4.5 Sending of forward/reverse rotation command

• When performing inverter test operation

Test operation is performed during FWD, REV is pressed. To stop the test operation, release FWD, REV.



• At releasing of test operation

Releasing test operation enables operation to continue by pressing FWD or REV once. Press STOP to stop operation.

To release test operation, select [Options] in [Tool] menu to display "Option" window (*Refer to page 92*). Click Preferences, then check "Release Test Operation" on the Preferences window and click (OK or Apply).

Note

- **If the selected station has been changed during Test Operation, FR Configurator sends stop command, and stops the inverter.**
- **Do not click repeatedly each operation button, FWD and REV . Doing so may result in unstable operation of FR Configurator. If operation continues unintentionally, press STOP to stop operation.**
- **Due to Windows operation style, test operation may be kept operating without pressing FWD or REV if the following movement is performed. To stop the operation, click STOP.**

  Dragging a mouse cursor out of FWD or REV while the button is pressed.

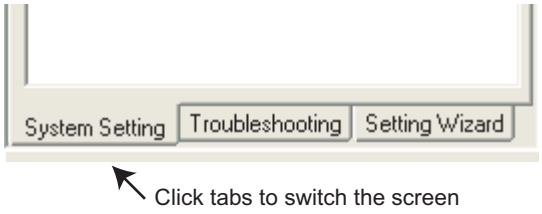
- **Test operation (FWD, REV) does not function during graph sampling of two or more stations with communication through GOT (FA transparent function).**

CAUTION

When communication is stopped (cable disconnection, etc.), personal computer cannot stop the inverter. Make sure that safety precaution is provided with using signal loss detection *(Pr. 122, Pr. 336, or Pr. 548)*, or installing an external stop command device.

4.5 System View (Navigation Area)

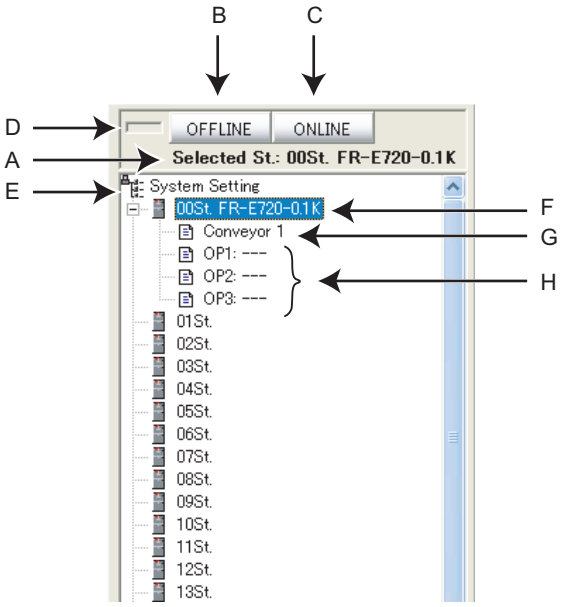
"System Setting" *(Refer to page 102)*, "Troubleshooting" *(Refer to page 71)* and "Setting Wizard" *(Refer to page 105)* can be displayed in System View by switching tabs.

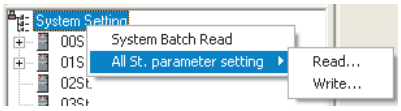


Switching of the display is also available using [Navigation] sub-menu in [View] menu.

4.5.1 System setting

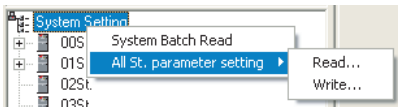
Function for browsing setting information of all 32 stations. Click System Setting in System View or select [System Setting] sub-menu under [Navigation] of [View] menu to display "System Setting".



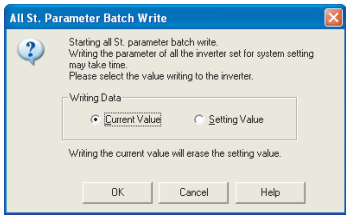
No.	Name	Function and description
A	Station number, inverter type	Shows the station number and the inverter model.
B	OFFLINE	Changes to OFFLINE. (Disconnect all inverters registered to the system)
C	ONLINE	Changes to ONLINE. (Connect to all inverters registered to the system)
D	ON, OFF indicator	Shows ONLINE or OFFLINE state.  When ONLINE When OFFLINE
E	System Setting	Right-click on "System Setting" to display a pop-up menu. From the pop-up menu, System Batch Read *(Refer to page 52)* or batch reading/batch writing of the parameters of all the stations set in the system setting are available. *(Refer to page 103)* 
F	Station number, inverter type	Shows the inverter model on the right of station number if model setting has been already set to that station number. Clicking the station number selects the station number. (Press ↑ or ↓ to select the station number set upward or downward. Click ⊞ on the left of the icon to open a tree view for checking a detail of the model setting. Double-click on the station number to display Model Setting window.
G	Comment	Displays a comment.
H	OP1 to OP3	Shows a name of plug-in option installed to the selected inverter.

4.5.2 All St. parameter setting

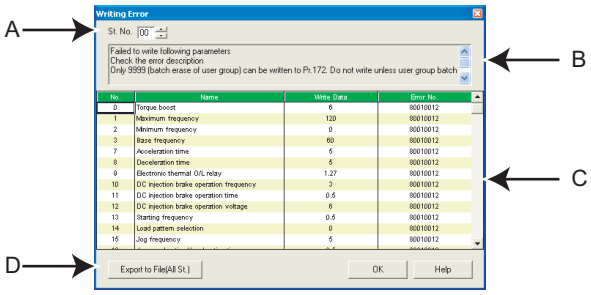
FR Configurator can batch read/batch write the parameters of all the stations set in the system setting at the same time.
To perform batch read/batch write, right-click on "System Setting", and select "Read" or "Write". Or select [Read...] or [Write...] in [All St. parameter setting] under [Tool] menu.



The following window appears when performing All St. parameter write.



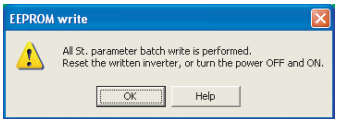
Select "Current value" or "Setting value". FR Configurator starts parameter writing to the all stations with the selected value. (Writing with the current value will erase all the value in the setting value column.)
A confirmation window will appear at an error occurrence of batch read/batch write of All St. parameter read/write.



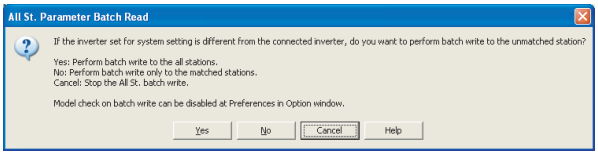
No.	Name	Function and description	
A	St. No.	Shows the station number of the error display.	
B	Result message	Shows the result message.	
C	Result list	Read	Shows the parameter number, name, initial value, and error number of the reading error parameters.
		Write	Shows the parameter number, name, data, and error number of the writing error parameters.
D	Export to File(All St.)	Saves the result in a text format.	

REMARKS

- When "1" is set in *Pr. 342 Communication EEPROM write selection*, the parameter setting set from FR Configurator is written into RAM only (cannot be written to EEPROM).
  Batch parameter settings can also be set to EEPROM regardless of the *Pr. 342 Communication EEPROM write selection* setting of the inverter. Select [Options] in [Tool] menu to display "Option" window. (*Refer to page 91*) Click Preferences, and check "EEPROM write" in the preference setting window to write setting values into EEPROM for batch parameter writing.



  If batch parameter write is performed while the checkbox is checked, the above display appears. Some parameter settings are applied after a reset. After the batch writing, reset the inverter of which the parameter settings are written to, or turn OFF the power once, then turn it ON again.
- When "Enable model check" is checked in Preference window, the following window appears before the All St. parameter write.



  Select a behavior of parameter write for when the inverters set for system setting and the connected inverters are different. If the model check is not necessary, uncheck "Enable model check" in Preference window. (*Refer to page 92*)

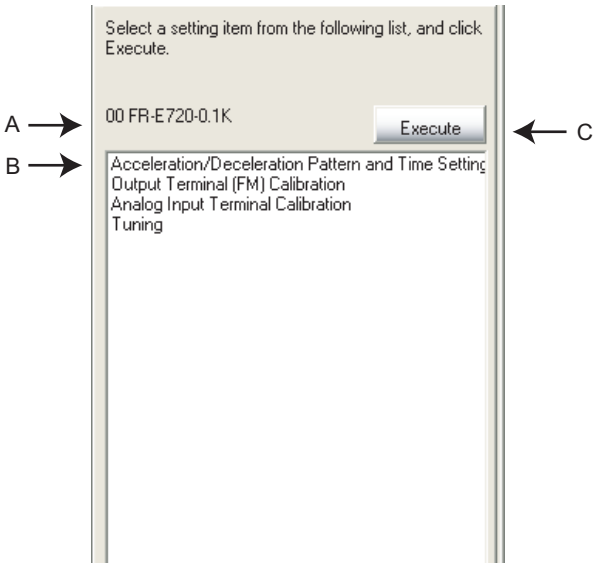
Note

- **When changing some specific parameters *(Pr. 21 Acceleration/deceleration, Pr. 71 Applied motor etc.)* with FR Configurator, setting value of related parameters may also change.**
  For example, if *Pr. 21 Acceleration/deceleration time increments* setting has been changed, the setting value of acceleration/deceleration time parameters *(Pr. 7, Pr. 8 etc.)* also change. (When *Pr. 21* ="0" and *Pr. 7* = "5.0s", changing *Pr. 21* setting to "1" will automatically change the setting of *Pr. 7* to "0.5s".)
  If parameter writing is performed with All St. parameter write which causes a change of related parameters, please perform All St. parameter read or batch read from Parameter List.
- **When "*Pr. 342 Communication EEPROM write selection* = 1", the parameter settings from FR Configurator are written into RAM only (the settings cannot be written into EEPROM). If the *Pr. 342* setting is changed from "0" to "1" during batch writing, only the settings of *Pr. 77 Parameter write selection, Pr. 122 PU communication check time interval, Pr. 336 RS-485 communication check time interval* are written into RAM (*Pr. 77, Pr. 122, Pr. 336* settings cannot be written into EEPROM). In this case, to change the setting value of *Pr. 77, Pr. 122, Pr. 336*, set from a parameter unit or the operation panel.**
- **All St. parameter setting may take longer than batch write/ batch read of Parameter List since FR Configurator performs reading/writing to the all stations.**
- **According to the *Pr.77 Parameter write selection* and *Pr.79 Operation mode selection* settings, writing to *Pr.122 PU communication check time interval*, *Pr.336 RS-485 communication check time interval*, and *Pr.342 Communication EEPROM write selection* may fail during parameter batch write.**

4.5.3 Setting wizard

Setting Wizard is a function to make parameter setting without regard to parameter number. Double-click a desired function in the "Setting Wizard" (or select the function and click Execute) to start the Setting Wizard of the selected function.

Click Setting Wizard in System View or select [Setting Wizard] sub-menu under [Navigation] of [View] menu to display "Setting Wizard".



No.	Name	Function and description
A	Inverter type information	Shows station number, inverter model, capacity and comment of the selected inverter.
B	Setting Wizard item	Shows Setting Wizard items. Select a desired function (Up-key and Down-key are also available) and double-click (or click Execute) to start the Setting Wizard of the selected function *(Refer to page 62)*.
C	Execute	Click to start the Setting Wizard of the selected function. *(Refer to page 62)* (If Model Setting has not been set yet, color turns gray and unavailable to select.)

4.6 Parameter List (System Area)

"Parameter List" has the following functions.

- Showing parameters (all list, functional, individual, changed parameter, verification result parameter)
- Editing Individual List
- Reading and batch reading of parameter setting value
- Input, writing and batch writing of parameter setting value
- Parameter clear and all parameter clear
- Parameter verification (verifies parameter values set on FR Configurator and values already written into the inverter)
- Parameter searching
- File output of parameter verification results, batch read, and batch write.
- Writing of comment
- Parameter copy (use import/export. *Refer to page 94.*)

Select [Parameter List] under [View] menu, or click 

on the tool bar to display "Parameter List".

The functions available in "Parameter List" are different between ONLINE or OFFLINE.

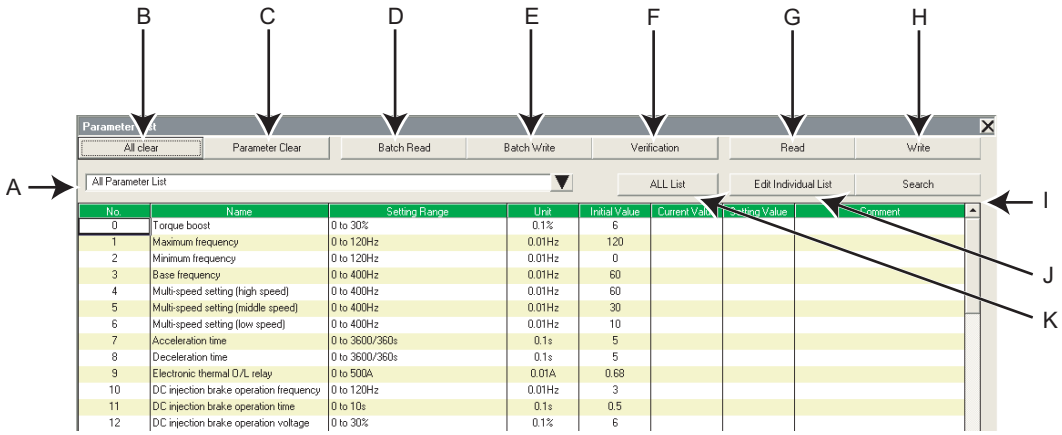
Function	ONLINE	OFFLINE
All Parameter Clear	○	–
Parameter Clear	○	–
Batch Read	○	–
Batch Write	○	–
Verification	○	–
Read	○	–
Write	○	–
Input of parameter setting value	○	○
Edit Individual List	○	○
Search	○	○
Display list selection	○	○
Writing of comment	○	○

○: Available, – : Not available

Note

- **The Parameter List of FR Configurator supports the newest inverter. Setting range, initial value, number of parameters may differ to the inverter produced before upgrade (function addition).**
- **Parameter name in an inverter manual and the one in FR Configurator may be different, but the function of each parameter is the same.**
- ***Pr. 296 and 297* are not shown in Parameter List. *Pr. 296 and 297* do not change when importing parameter setting from other inverters. Change the *Pr. 296 and 297* settings from the operation panel or parameter unit.**

4.6.1 Explanation of screen



No.	Name	Function and description
A	Parameter List display format	Select a "Parameter List" display format. Click ▼ to display format of "Parameter List" from the menu. *(Refer to page 108)*
B	All clear	Performs all parameter clear with the selected inverter.
C	Parameter Clear	Performs parameter clear with the selected inverter.
D	Batch Read	Reads all parameter settings of the selected inverter.
E	Batch Write	Writes values of Setting value field into the selected inverter.
F	Verification	Verifies parameter values set on FR Configurator and values already written into the inverter. *(Refer to page 111)*
G	Read	Reads the current value of the selected parameter from the connected inverter.
H	Write	Writes the setting value of the selected parameter into the connected inverter.
I	Search	Displays Search window. *(Refer to page 113)*
J	Edit Individual List	Click to edit parameter Individual List. *(Refer to page 113)*
K	ALL List	Returns display format of the Parameter List to All Parameter List.

- **Item of Parameter List**

Item	Function and description	Input availability
No.	Shows parameter number. When the current value and parameter initial value are different, " > " appears in front of the number and the color turns green. (Calibration parameters, *Pr. 902, 903, 904, 905,* etc. are displayed with ( ).)	–
Name	Shows parameter name.	–
Setting Range	Shows setting range.	–
Unit	Shows minimum setting increments.	–
Initial Value	Shows initial parameter values.	–
Current Value	Shows the value read from the inverter or the value written to the inverter.	–
Setting Value	Input a value desired to write to the inverter. Click Write or Batch Write to write the value into the inverter. (Numeric value and a decimal point can be input up to 6 characters including a decimal point.)	○
Comment	A field for comments. Available to write one byte code up to 128 characters (2 byte code up to 64 characters).	○

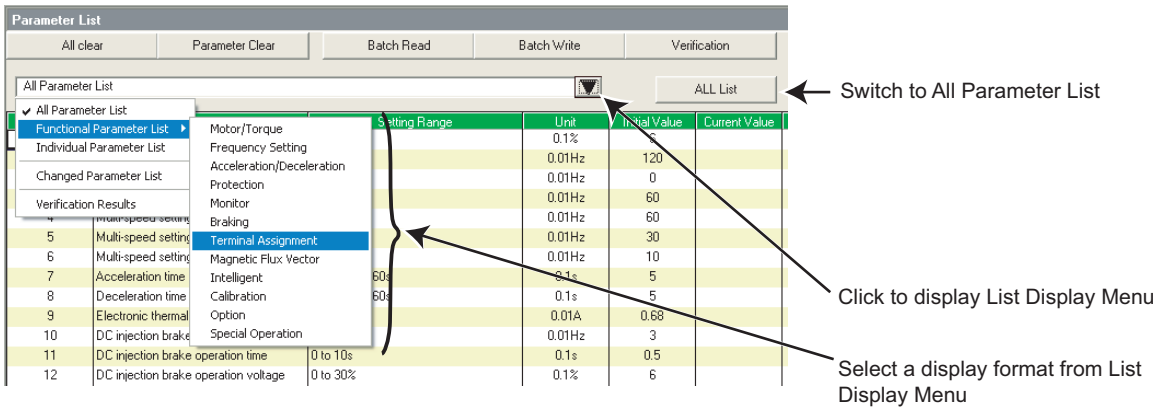
○: Available, – : Not available

REMARKS

Double-click a parameter name, or select a parameter and press F1 key to display a description of the selected parameter in the help window.

4.6.2 Parameter list display format

Display format of "Parameter List" can be changed to other display format according to your purposes. Click ▼ and select a display format from the list menu to change the display.



Display Format	Description
All Parameter List	Displays all parameters of the selected inverters. (Option parameter of the selected inverter is displayed when selecting Option.)
Functional Parameter list	Select a desired function from the sub-menu to display related parameters. "Functional parameters" - "function name" are displayed on the list field.
Individual Parameter List	Displays parameters set in the individual list.
Changed Parameter List	Displays parameters whose current values are different from the initial values. (Displays parameters which have ">" at parameter number.)
Verification Results	Displays parameters of verification result. Displays verification result performed last time. *(Refer to page 111)*

Changed Parameter List and Verification Results can be displayed along with other display format.

Parameter List items according to the FR-A700, A701 series functions

Function	Description
Basic Functions	Basic function parameters
Frequency Setting	Parameters related to frequency
Acceleration/ Deceleration Setting	Parameters related to acceleration/deceleration
V/F Characteristic	Parameters related to V/F characteristic
Protection	Parameters related to protective function
Operation Mode	Parameters related to operation mode
Monitor	Parameters related to monitor function
Braking	Parameters related to frequency, time, etc. at brake operation
Terminal	Parameters related to control circuit terminals
Additional Function	Other parameters
Maintenance	Parameters related to maintenance
Magnetic Flux Vector	Parameters related to Advanced magnetic flux vector control
Vector	Parameters related to vector control
Calibration	Parameters for calibrating terminal FM, AM and setting bias/gain of frequency (speed) setting voltage and current.
Communication	Parameters related to communication
Option	Parameters related to option

Parameter List items according to the FR-E700(SC)(NC), D700, F700, F700P and F700PJ series functions

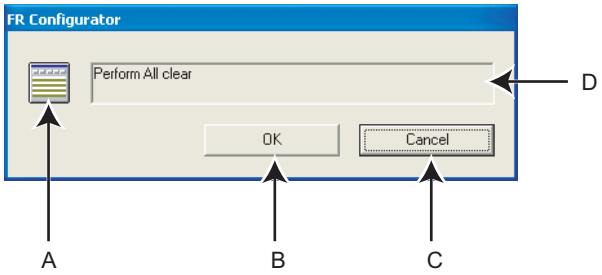
Function	Description
Motor/Torque	Parameters related to motor and torque
Frequency Setting	Parameters related to frequency
Acceleration/ Deceleration	Parameters related to acceleration/deceleration
Protection	Parameters related to protective function
Monitor	Parameters related to monitor function
Braking	Parameters related to frequency, time, etc. at brake operation
Terminal Assignment	Parameters related to control circuit terminals
Magnetic Flux Vector	Parameters related to Advanced magnetic flux vector control (General-purpose magnetic flux vector control)
Intelligent	Parameters related to the intelligent mode which automatically set appropriate parameters and operate.
Calibration	Parameters for calibrating terminal FM, AM, and CA and setting bias/gain of frequency (speed) setting voltage and current.
Option/Network *	Parameters related to option/network
Special Operation	Parameters related to special operations such as communication and PID operation

* Available for FR-E700-NC.

4.6.3 Parameter clear and all parameter clear

Performing parameter clear or all parameter clear can initialize parameter setting values.

Click Parameter Clear or All clear to display the following dialog to confirm the parameter clear or all parameter clear. Refer to the Inverter Instruction Manual for the availability of parameter clear and all parameter clear for each parameter.



No.	Name	Function and description
A	Icon display of clearing	Icon display switches during parameter clear. 
B	OK	Click to perform parameter clear. (The color turns gray during parameter clear, and unavailable to use.)
C	Cancel	Click to cancel parameter clear. (The color turns gray during parameter clear, and unavailable to use.)
D	Message	Shows a message to confirm parameter clear, and shows a message during parameter clear.

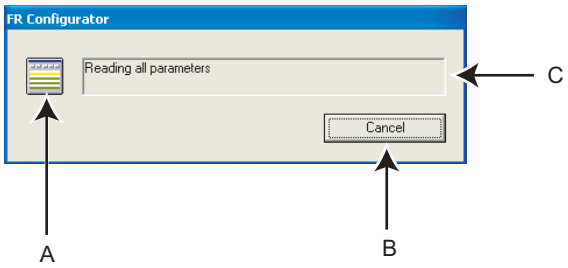
REMARKS

- When parameter clear or all parameter clear were performed from FR Configurator, the following communication parameters are not cleared. Refer to the Inverter Instruction Manual or communication option manual for details of each parameter.

  Pr. 117, Pr. 118, Pr. 119, Pr. 120, Pr. 121, Pr. 122, Pr. 123, Pr. 124, Pr. 331, Pr. 332, Pr. 333, Pr. 334, Pr. 335, Pr. 336, Pr. 337, Pr. 338, Pr. 339, Pr. 340, Pr. 341, Pr. 345, Pr. 346, Pr. 347, Pr. 348, Pr. 349, Pr. 409, Pr. 431, Pr. 434, Pr. 435, Pr. 436, Pr. 438, Pr. 439, Pr. 440, Pr. 452, Pr. 500, Pr. 502, Pr. 539, Pr. 541, Pr. 542, Pr. 543, Pr. 544, Pr. 547, Pr. 548, Pr. 549, Pr. 550, Pr. 551

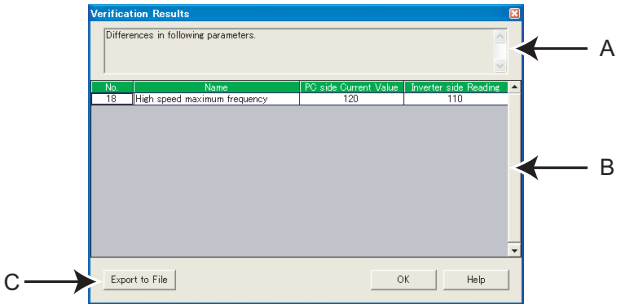
4.6.4 Read (Batch Read), write (Batch Write) and verification

Performing Read or Write gains access to inverter parameter, and parameter reading and writing is performed. Performing Verification verifies the parameter values set on FR Configurator and the ones already written in the inverter.
Click [Batch Read], [Batch Write], [Verification], [Read] or [Write] to display the following dialog.



No.	Name	Function and description
A	Icon display during access	Icon display switches during parameter access. 
B	Cancel	Click to cancel batch read, batch write or verification. If [Cancel] is clicked, access is canceled and the data already processed are displayed.
C	Message	Shows a message during parameter access.

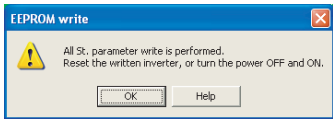
After verification, the following dialog appears. The results can be saved as a text file. (The dialog also appears at reading errors and writing errors.)



No.	Name	Function and description	
A	Result	Shows result message.	
B	Result list	Read	Shows the parameter number, name, initial value, and error number of the reading error parameters.
		Write	Shows the parameter number, name, data, and error number of the writing error parameters.
		Verification	If the parameter setting value in FR Configurator (current value in the personal computer) is different with the parameter setting value written in the inverter (read value from the inverter), the parameter numbers, names, mismatched current values in the personal computer, and inverter read values are displayed.
C	Export to File	Saves the result in a text format.	

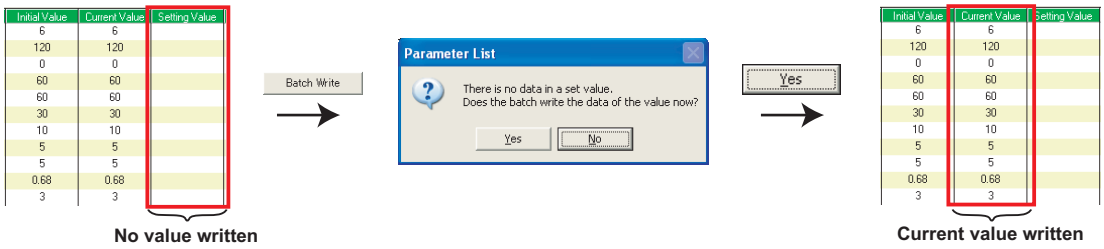
REMARKS

- When "1" is set in *Pr. 342 Communication EEPROM write selection*, the parameter setting set from FR Configurator is written into RAM only (cannot be written to EEPROM).
  Batch parameter settings can also be set to EEPROM regardless of the *Pr. 342 Communication EEPROM write selection* setting of the inverter. Select [Options] in [Tool] menu to display "Option" window. (*Refer to page 91*) Click Preferences, and check "EEPROM write" in the preference setting window to write setting values into EEPROM for batch parameter writing.

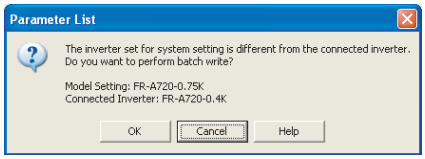


  If batch parameter write is performed while the checkbox is checked, the above display appears. Some parameter settings are applied after a reset. After the batch writing, reset the inverter of which the parameter settings are written to, or turn OFF the power once, then turn it ON again.

- If current value fields are empty when batch write is selected, below confirmation message appears. Click "Yes" to batch write the current values.



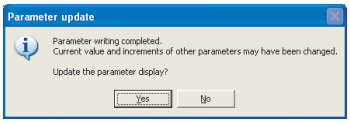
- With All St. parameter setting, batch writing from and batch reading to all the connected inverters are available. (*Refer to page 103*)
- When "Enable model check" is checked in Preference window, the inverter set for system setting and the connected inverter are checked before the parameter batch write.



  If the model check is not necessary, uncheck "Enable model check" in Preference window. (*Refer to page 92*)

Note

- **When changing some specific parameters *(Pr. 21 Acceleration/deceleration time increments, Pr. 71 Applied motor etc.)* with FR Configurator, setting values of the related parameters may also change.**
  For example, if the *Pr. 21* setting has been changed, the setting value of acceleration/deceleration time parameters *(Pr. 7, Pr. 8, etc.)* also change. (When *Pr. 21* ="0", and *Pr. 7* = "5.0s", and changing *Pr. 21* setting to "1" will automatically change the setting of *Pr. 7* to "0.5s".)
  If parameter writing is performed with Batch Write or Write which causes a change of related parameters, or if Parameter Clear or All clear is performed, the following dialog is displayed. Please perform update of parameter display.

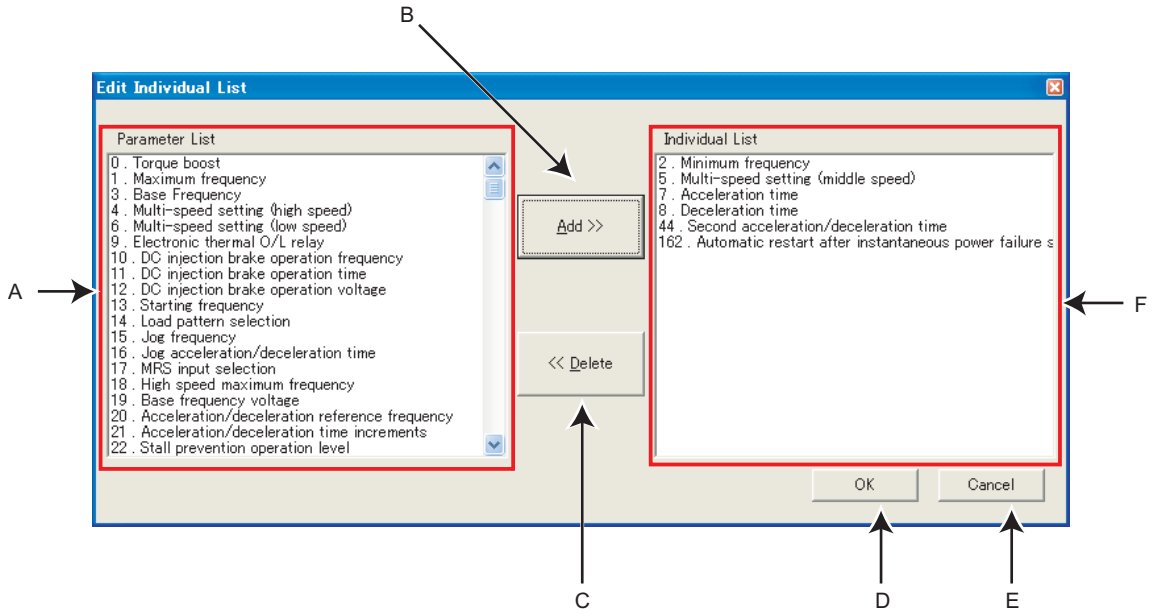


- **When the *Pr. 342* setting is changed from "0" to "1," only the settings of *Pr. 77 Parameter write selection, Pr. 122 PU communication check time interval, and Pr. 336 RS-485 communication check time interval* are written into RAM (not written to EEPROM). To change the *Pr. 77, Pr. 122, and Pr. 336* settings, use the operation panel or the parameter unit.**
- **According to the *Pr.77 Parameter write selection* and *Pr.79 Operation mode selection* settings, writing to *Pr.122 PU communication check time interval*, *Pr.336 RS-485 communication check time interval*, and *Pr.342 Communication EEPROM write selection* may fail during parameter batch write.**

4.6.5 Edit individual list

Select and add parameters desired to register into the individual parameter list.

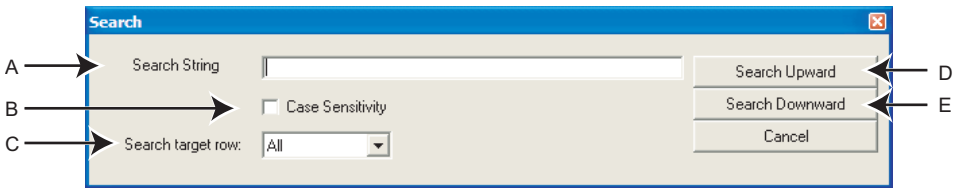
Click Edit Individual List in "Parameter List" window to display the following window.



No.	Name	Function and Description
A	Parameter List	Displays number and name of all parameters. Select a parameter and click Add >> to add it in the individual parameter list. Several parameters can be selected.
B	Add >>	Adds parameters selected in the Parameter List in the individual list.
C	<< Delete	Move the selected parameter from Individual List to Parameter List.
D	OK	Saves edited information of the individual list and returns to the Parameter List window.
E	Cancel	Parameters set in the individual list become invalid and returns to the Parameter List.
F	Individual List	Displays parameters added from the Parameter List. Parameters selected from the list are displayed in the individual Parameter List.

4.6.6 Parameter search

Parameter name can be searched. Input a searching character string to jump to the matching parameters. Click Search in "Parameter List" window to display the following window.



No.	Name	Function and Description
A	Search String	Input a character string you like to search. Up to 64 double-byte characters can be input.
B	Case Sensitivity	Check when distinguishing between upper case and lower case.
C	Search target row	Select the target column in Parameter List for the search.
D	Search Upward	Click to search the parameter list upward.
E	Search Downward	Click to search the parameter list downward.

4.7 Convert (System Area)

Converting a parameter setting from a conventional model into 700 series inverter parameter setting is available. Select [Convert] in [View] menu to display "Convert".

- Compatible models for Convert

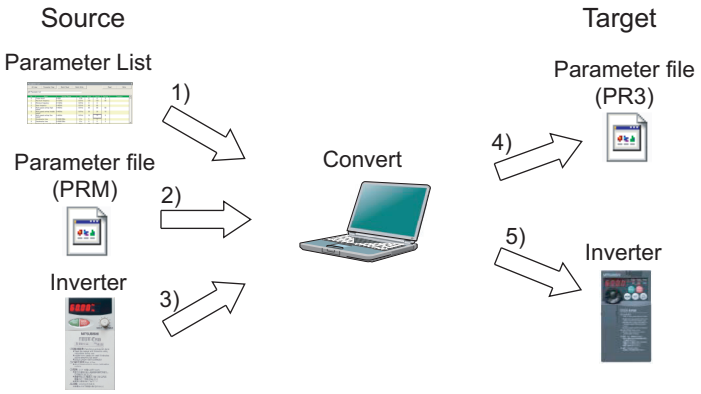
Source Inverter	Target Inverter	REMARKS
FR-V500(L)	FR-A700	Setting of plug-in options is changed. *(Refer to page 123)*
FR-A500(L)	FR-A700	
FR-E500(S)(W)	FR-D700(S)(W) FR-E700(S)(W)(SC)(NC)	FR-E510W is recognized as FR-E520 when detecting the source inverter through communication. Select FR-E710W for the target inverter.
FR-E500-N	FR-E700(SC)(NC)	
FR-F500(L)	FR-F700 FR-F700P	Setting of plug-in options is changed. *(Refer to page 123)*
FR-F500J	FR-D700 FR-F700PJ	
FR-S500(S)(W)(E)	FR-D700(S)(W)	

Voltage class of the target inverter follows the voltage class of the source inverter.

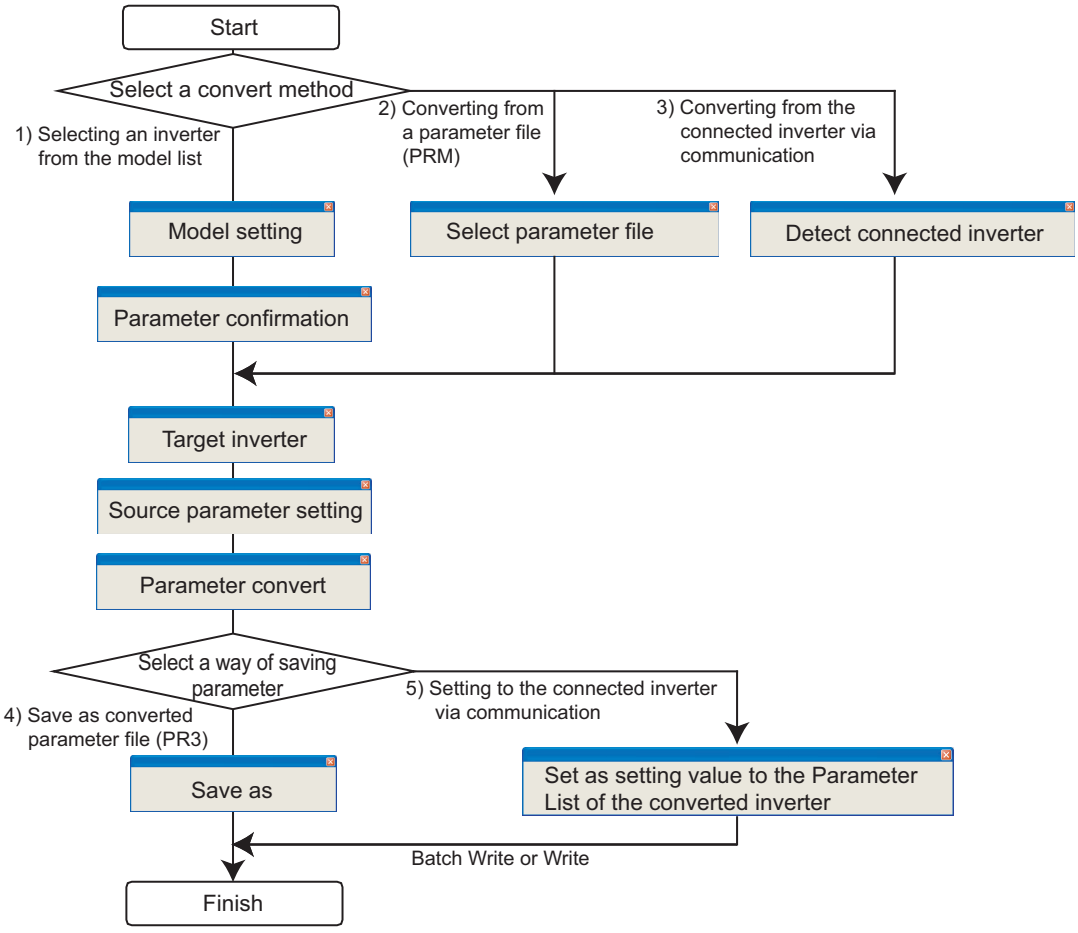
Note

- **Parameter name in an inverter manual and the one in FR Configurator can be different, but the function of each parameter is the same.**
- **FR-A701 is not compatible for the convert.**

4.7.1 Convert image



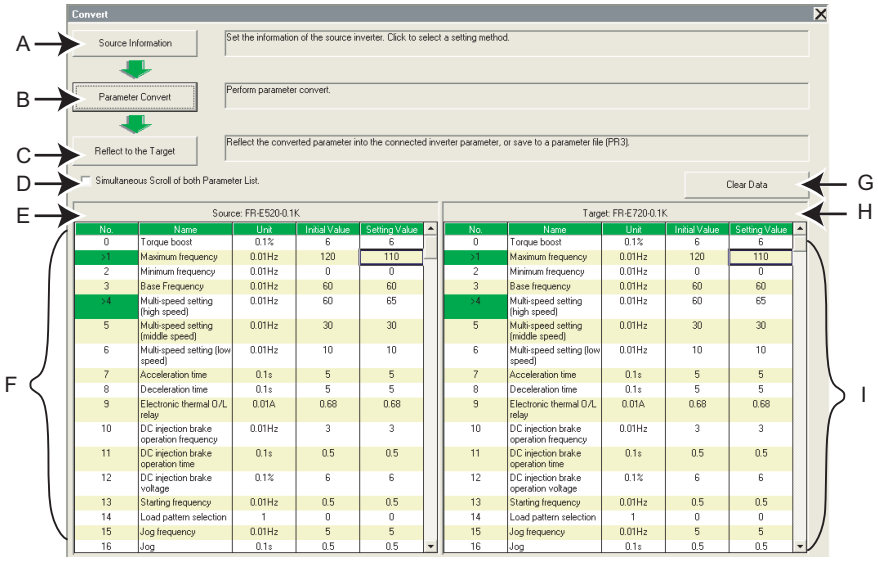
· Setting flow



Note

- **Converting a parameter setting does not provide any guarantees of the inverter operation characteristic or performance, etc.**

4.7.2 Explanation of window



No.	Name	Function and description
A	Source Information	Displays "Convert Method" window. Set converting method, source and target model setting.
B	Parameter Convert	Displays "Convert Confirmation" window. Parameter converting is available. (Click after converting method, source and target model information is set.)
C	Reflect to the Target	Displays "Parameter saving" window. Reflect the converted setting into a Parameter List of the selected inverter. Saving to a parameter file (PR3) is also available. (Click after the parameter is converted.)
D	Simultaneous Scroll of both Parameter List	Checked : When scrolling one of source/target parameter list, the other parameter list also scrolls. Without check : Even when scrolling one of source/target parameter list, the other parameter list does not scroll.
E	Source inverter information	Shows the inverter model of the source.
F	Parameter List of source	Shows parameter setting read from the source. " >" appears next to the parameter number of which the setting has been changed, and also a color turns green.
G	Clear data	Initialize the all setting data. Confirmation dialog is displayed when clicked. Click Yes to initialize when a confirmation dialog is displayed.
H	Target inverter information	Shows the inverter model of the target.
I	Parameter List of target	Shows converted parameter setting. " > " appears next to the parameter number of which the setting has changed, and also a color turns green.

REMARKS

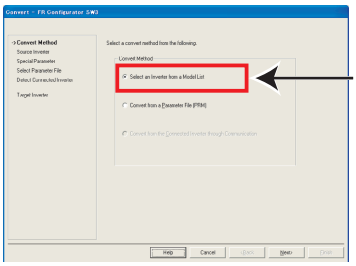
Double-click a parameter name, or select a parameter and press F1 key to display a description of the selected parameter in the help window.

4.7.3 Example of converting

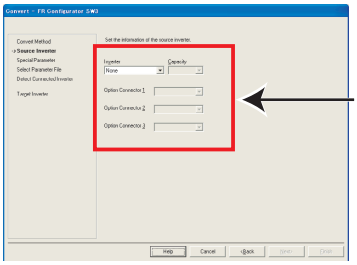
(1) When selecting an inverter from a model list

1) Click Source Information in "Convert" window to display "Convert Method".

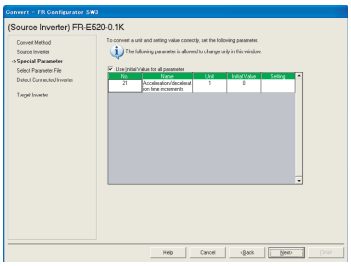
2) Choose "Select an Inverter from a Model List". Click Next> after selecting.



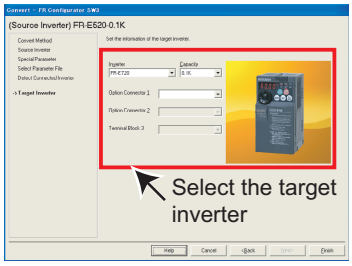
3) Set the information of the source inverter in "Model Setting". Fill in the each item of the source inverter. Click Next> after setting.



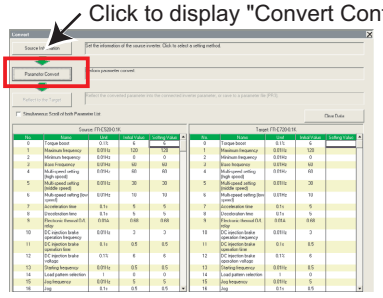
4) A parameter requiring caution is displayed in a list. Parameter in the list is converted with an initial value. Click Next> after confirmed.
(If a setting of parameter in the list is required, uncheck "Use Initial Value for all parameter", and change the required parameter setting.)



5) Select the target inverter on the "Target Inverter" window, and the convert setting is finished. Click Finish , and proceed to the next according to the message on the window.

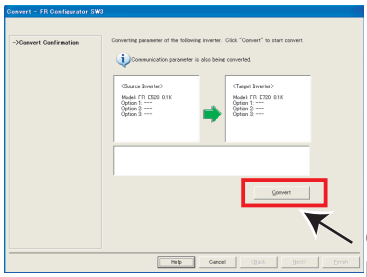


6) The value of some of the source parameter is available for changing. When changing the parameter setting value, enter a changed value in Setting field.
When the convert setting is finished, Parameter Convert in "Convert" window becomes available. Click Parameter Convert to display "Convert Confirmation".

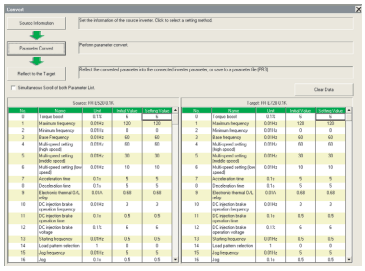


7) Check the information of the source inverter and target inverter. Click Convert and proceed to the next according to the messages appear in the screen to convert parameters.

8) Click Finish when "Parameter converting is finished." is displayed.

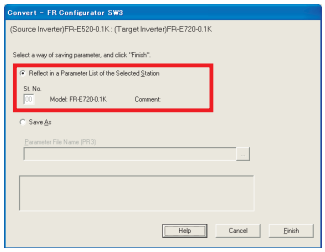


9) Results of parameter converting is shown in "Convert" window.

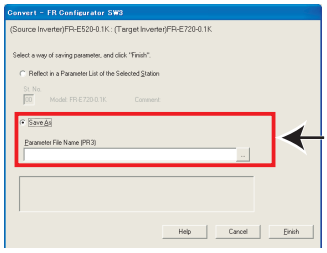


10) Click Reflect to the Target in "Convert" window to display "Parameter Saving".

11) Check "Reflect in a Parameter List of the Selected Station", and Finish to reflect the converted parameter setting into the Parameter List.
If a station has not finished model setting or the inverter model is different, that station is unavailable to select.



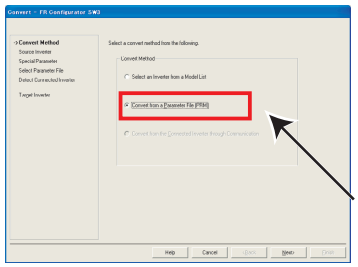
12) When saving the converted parameter setting as a file, check "Save As". Specify the file location, and click Finish to save the converted parameter setting into a parameter file (PR3).



(2) When converting from a parameter file (PRM)

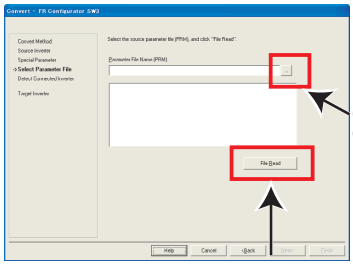
1) Click [Source Information] in "Convert" window to display "Convert Method".

2) Select "Convert from a Parameter File (PRM)". Click [Next>] after selecting.

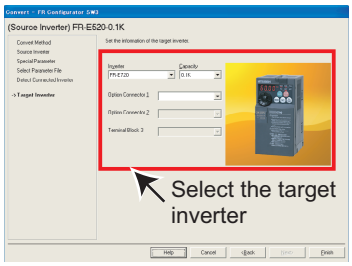


3) Select the converting parameter file in "Select Parameter File" screen. Click [...] to display "Open" window. Select a parameter file in that window.

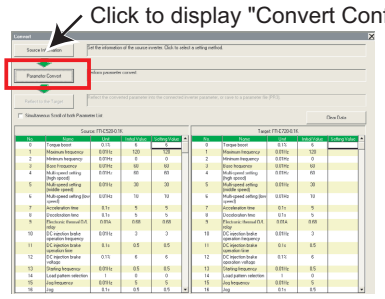
4) Click [File Read] to read the selected parameter file. "Selection of Import Data" is displayed. Select between Current Value or Setting Value for use. *(Refer to page 94)* Check File Read result, and click [Next>].



5) Select the target inverter on the "Target Inverter" window, and the convert setting is finished. Click [Finish], and proceed to the next according to the message on the window.

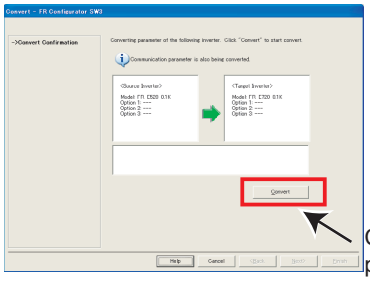


6) The value of some of the source parameter is available for changing. When changing the parameter setting value, enter a changed value in Setting field.
When the convert setting is finished, [Parameter Convert] in "Convert" window becomes available. Click [Parameter Convert] to display "Convert Confirmation".

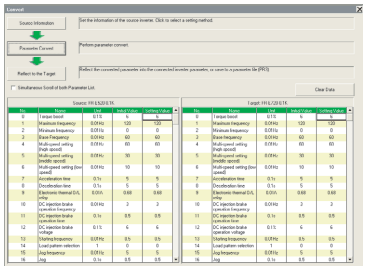


7) Check the information of the source inverter and target inverter. Click [Convert] and proceed to the next according to the messages appear in the screen to convert parameters.

8) Click [Finish], when "Parameter converting is finished" is displayed.

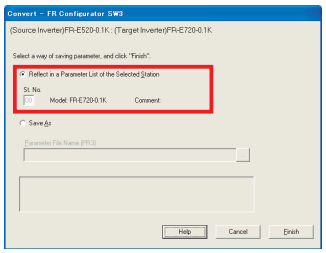


9) Results of parameter converting is shown in "Convert" window.

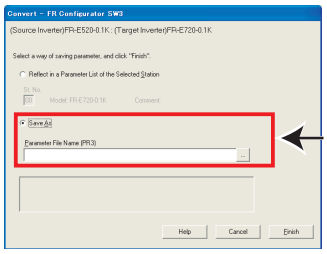


10) Click Reflect to the Target in "Convert" window to display "Parameter Saving".

11) Check "Reflect in a Parameter List of the Selected Station", and Finish to reflect the converted parameter setting into the Parameter List.
If a station has not finished model setting or the inverter model is different, the station is unavailable to select.



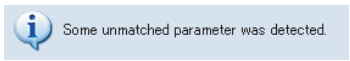
12) When saving the converted parameter setting as a file, check [Save As]. Specify the file location, and click Finish to save the converted parameter setting into a parameter file (PR3).



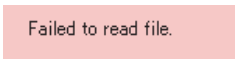
Specify the file location

REMARKS

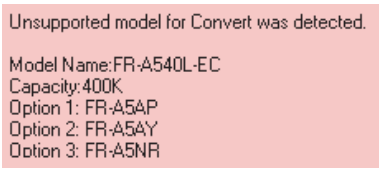
- Parameter file (PRM) is a text format file. If an nonexistent parameter is added to the source, a caution shown on right appears. The data about nonexistent parameter is not converted.



- If the parameter file (PRM) is broken, a caution shown on right appears when reading the file. In this case, select a normal parameter file, and perform read file again.



- If the parameter file (PRM) is a one from not-compatible inverter, a caution shown on right appears. In this case, select a parameter file of the compatible inverter, and perform Read File again.



- In some versions of the setup software SW1, calibration parameter settings are not included in the saved parameter file (PRM). After a convert, check the calibration parameter settings.

(3) When converting from the Connected Inverter through Communication

POINT

Perform during a inverter stop. Do not input a start command.

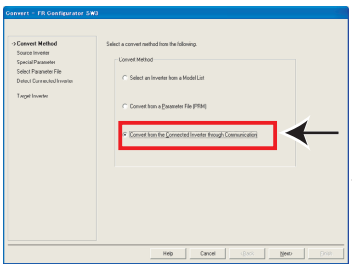
1) Check that FR Configurator is ONLINE. (Click ONLINE in "System Setting" to switch to ONLINE.)

REMARKS

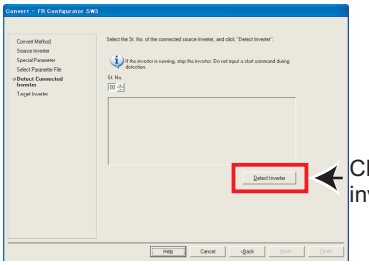
If FR-E500 is connected to the station number where FR-E700 is set for system setting, switching to ONLINE will display a communication error dialog. In this case, click OK, and proceed converting.

2) Click Source Information in "Convert" window to display "Convert Method".

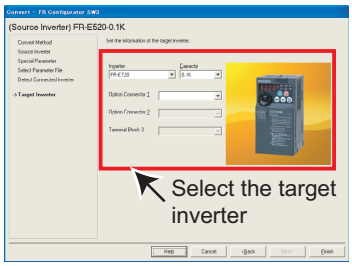
3) Choose "Convert from the Connected Inverter through Communication". Click Next> after selecting.



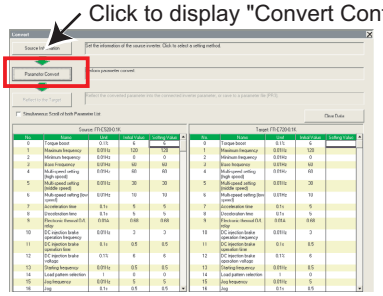
4) Click Detect Inverter in "Connected Inverter Detection" window. Check the inverter detection result, and click Next> .



5) Select the target inverter on the "Target Inverter" window, and the convert setting is finished. Click Finish , and proceed to the next according to the message on the window.

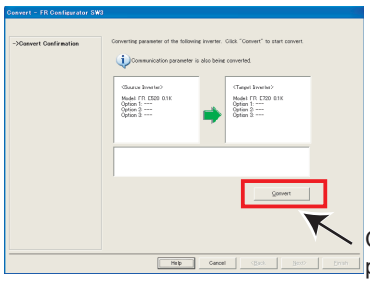


6) The value of some of the source parameter is available for changing. When changing the parameter setting value, enter a changed value in Setting field.
When the convert setting is finished, Parameter Convert in "Convert" window becomes available. Click Parameter Convert to display "Convert Confirmation".



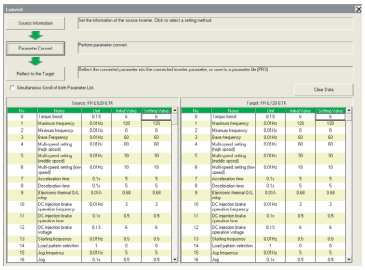
7) Check the information of the source inverter and target inverter. Click [Convert] and proceed to the next according to the messages appear in the screen to convert parameters.

8) Click [Finish] when "Parameter converting is finished." is displayed.



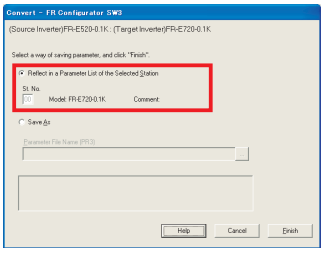
Click to convert parameters

9) Results of parameter converting is shown in "Convert" window.

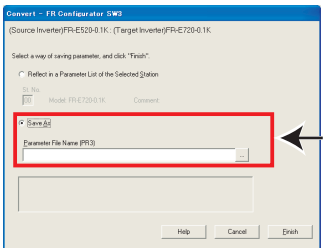


10) Click [Reflect to the Target] in "Convert" window to display "Parameter Saving".

11) Check "Reflect in a Parameter List of the Selected Station", and click [Finish] to reflect the converted parameter setting into the Parameter List.
If a station has not finished model setting or the inverter model is different, the station is unavailable to select.



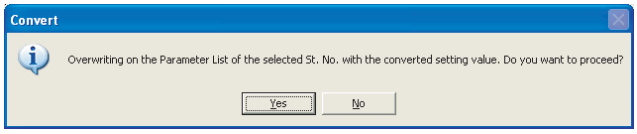
12) When saving the converted parameter setting as a file, check [Save As]. Specify the file location, and click [Finish] to save the converted parameter setting into a parameter file (PR3).



Specify the file location

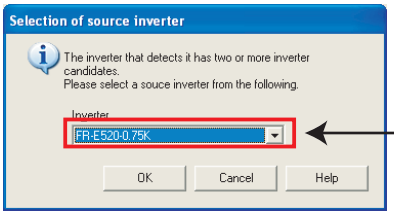
REMARKS

- Following confirmation dialog is displayed when applying the converted parameter setting.



Click [Yes] to apply and overwrite the parameter setting.

- If a nonexistent parameter is added to the source, the nonexistent parameter data will not be applied to the target.
- Depending on the connected model, FR Configurator may not recognize the source inverter at the detection. In that case, the following window appears. Please select the connected model from the selection.



Select the connected model from the selection

4.7.4 Precautions for convert

Please note the following for using "Convert", and make a setting again if necessary.
Refer to the Inverter Instruction Manual for details of the parameters.

<When converting the FR-V500 (L) series to the FR-A700 series >

(1) When a plug-in option and inverter terminal are used for the FR-V500 (L), check the following item.

FR-V500(L)		FR-A700
Function	**Options/terminal**	**Options/terminal**
Encoder connection	Inverter terminal for encoder	FR-A7AP or FR-A7AL
Position control	FR-V5AP	FR-A7AL
Encoder pulse division output	FR-V5AY	FR-A7AL
Extension open collector output	FR-V5AY	Inverter output terminals
16-bit digital input	FR-V5AH(FR-A5AX)	FR-A7AX
High resolution analog input / thermistor interface	FR-V5AX	FR-A7AZ
Extension contact input	FR-V5AX	Inverter output terminals
Bipolar analog output	Inverter terminal DA1	FR-A7AZ (terminal DA1)
Torque setting input	Inverter terminal 3	FR-A7AZ (terminal 6)

(2) Since the following parameters are not converted, make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 160 Extended function display selection*
- *Pr. 900, 901 (FM, AM output terminal calibration)*
- *PU contrast adjustment (Pr. 991)*

(3) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 820, 821, 824, 825, 830, 831, 834, 835 (vector control, speed control/torque control gain)*
- *Pr. 902, 903, 917, 918, 926, 927 (frequency setting input calibration parameter)*
- *Pr. 919, 920, 928, 929 (torque/magnetic flux setting input calibration parameter)*

(4) When vector control is selected for the FR-V500 (L) series, check the following item.
- When offline auto tuning (*Pr. 71 Applied motor* = "3, 4, 7, 8, 13, 14, 17, 18, 23, 24, 33, 34") is performed with the source inverter, it is recommended to perform tuning and parameter setting again with the target inverter.
- Since the SF-VH motor compatible with the FR-V500L series is not supported by the FR-A700 series, make sure to perform tuning and parameter setting again same as other manufacturer's constant motors before use.

(5) Communication related parameters *(Pr. 117 to Pr. 124, Pr. 331 to Pr. 337, 341)* are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122* or *Pr. 336 Communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE or E.SER).

(6) The following wiring needs to be changed. Refer to the FR-A700 series Instruction Manual for details of wiring.
- When terminal DA2 was used, change the connection to terminal AM.
- When automatic restart after instantaneous power failure (*Pr. 57* is not "9999") was used, short STOP-SD (terminal STOP is changed to CS signal by Convert)
- When using pulse train input of the FR-A5AP, change the connection to JOG/pulse train input terminal of the inverter (terminal JOG is changed to pulse train input by Convert). Note that a resistance is necessary when connecting.
- When thermal protector is connected (*Pr. 876* = "0"), change the connection to terminal CS (terminal CS was changed to OH signal by Convert. Note that a resistance is necessary when connecting.
- When a relay output terminal of the FR-A5NR was used, change the connection to terminal ABC2 of the inverter.
- Terminal DI1, DI2, DI3, and DI4 of the FR-V500 (L) series are replaced with terminal RL, RM, RH, and RT of the FR-A700 series.
- Terminal DO1, DO2, and DO3 of the FR-V500 (L) series are replaced with terminal RUN, SU, and IPF of the FR-A700 series.
- When performing PID control by measured value signal input (*Pr. 128* = "30, 31"), it is necessary to change the terminal of measured value signal from terminal 1 to terminal 4. Since terminal 4 is factory set to current input, any of the following change is necessary in such a case.
  1) Change to current input
  2) When *Pr. 262* = "2", set Switch 1 on board to OFF and change terminal 4 input to 0 to 10V input.
- When stop position command of orientation control was given from the FR-A5AX (*Pr. 350* = "2", *Pr. 360* = "1") and the number of encoder pulses *(Pr. 369)* was 2048 and 4096, wire to the FR-A7AX as shown below.
  When the number of encoder pulses *(Pr. 369)* is 2048
  Change connection from X0 to X1.....from X11 to X12 (X0 is always open)
  When the number of encoder pulses *(Pr. 369)* is 4096
  Change connection from X0 to X2.....from X11 to X13 (X0 and X1 are always open)
- When terminal 3 is used as "Torque limit command", it can be assigned to terminal 4. Make sure that current input/voltage input settings are correct when assigning to terminal 4.

(7) There is a change in the following functions. Refer to the FR-A700 series Instruction Manual for details.
- Motors with the rated motor frequency higher than 120Hz are not supported.
- *Pr. 285 Overspeed detection speed* and *Pr. 870 Speed deviation level* of the FR-V500 (L) series are integrated into *Pr. 285* for the FR-A700 series. When different values are set, make sure to check that the *Pr. 285* setting is as intended. If any problem occurs, set manually again.
- Since the setting range of *Pr. 357 In-position zone* has been narrowed down due to orientation control, the value may be changed. Check that there is no problem for stop operation.
- When stop position command of orientation control was given from the FR-A5AX (*Pr. 350* = "2", *Pr. 360* = "1"), orientation with the number of encoder pulses *(Pr. 369)* 1025 to 2047, or 2049 to 4059 is not supported by Convert.
- When using relay terminal of the FR-A5NR as remote output *(Pr. 496, 497)*, bit assignment is changed.
  Pr. 497 bit10 to *Pr. 496* bit6
- When using CC-Link communication with the FR-A5NC, set the communication station number and baud rate in *Pr. 542* and *Pr. 543* according to the rotary switch setting of the FR-A5NC.

(8) The following functions are not converted, since they have been deleted or changed from the FR-A700 series.
- *Pr. 53 PU level display data selection*
- Setting value 36, torque monitor (driving/regenerative polarity switchover) of *Pr. 54, Pr. 158, Pr. 306, Pr. 310*
- *Pr. 359 Orientation encoder rotation direction*
- Setting value 10, 11, 12, machine end orientation of *Pr. 369 (the number of encoder pulses of orientation) and Pr. 393*
- *Pr. 394 Number of machine side gear teeth*
- *Pr. 395 Number of motor side gear teeth*
- *Pr. 400 to Pr. 405 extension input terminal*
- *Pr. 400 to Pr. 412 extension output terminal*
- *Pr. 446 password for Ethernet*
- *Pr. 496 Remote output data 1*
- *Pr. 497 Remote output data 2*
- Setting value 38, Y40 (trace status) signal, trace function of the FR-V500L series of *Pr. 52, Pr. 520 to Pr. 538*
- *Pr. 801 Torque characteristic selection*
- *Pr. 805 Torque command source (RAM)*

<When converting the FR-A500 (L) series to the FR-A700 series >

(1) Since the following parameters are not converted, make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 160, Pr. 173 to Pr. 176 (User group selection)*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 902 to Pr. 905 (frequency setting input calibration parameter)*

(3) Note the following when Advanced magnetic flux vector control or vector control is selected for the FR-A500 (L) series (*Pr. 80 Motor capacity* is not "9999", *Pr. 81 number of motor poles* is not "9999").
- Tuning and parameter setting of the target inverter are recommended, if offline auto tuning is performed (*Pr. 71 Applied motor* = "3, 4, 7, 8, 13, 14, 17, 18, 23, 24") or motor constants is directly input (*Pr. 71* = "5, 6, 15, 16") at the source inverter.
- When SF-HR or SF-HRCA type motor is used, set *Pr. 71* = "40, 43, 44, 50, 53, 54" after writing the converted parameter to the target inverter. (Conversion of *Pr. 82, Pr. 85, Pr. 86, Pr. 89, Pr. 90* to *Pr. 94* is not necessary)

(4) Communication related parameters (*Pr. 117* to *Pr. 124*, *Pr. 331* to *Pr. 337*, *341*) are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122* or *Pr. 336 Communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE or E.SER).

(5) The following wiring needs to be changed. Refer to the FR-A700 series Instruction Manual for details of wiring.
- When using pulse train input of the FR-A5AP, change the connection to JOG/pulse train input terminal of the inverter (JOG terminal is changed to pulse train input by Convert). Note that a resistance is necessary when connecting.
- When using a relay output terminal of the FR-A5NR, change the connection to terminal ABC2 of the inverter.
- When stop position command of orientation control was given from the FR-A5AX (*Pr. 350* = "2", *Pr. 360* = "1") and the number of encoder pulses *(Pr. 369)* was 2048 and 4096, wire to the FR-A7AX as shown below.
  When the number of encoder pulses *(Pr. 369)* is 2048
  Change connection from X0 to X1.....from X11 to X12 (X0 is always open)
  When the number of encoder pulses *(Pr. 369)* is 4096
  Change connection from X0 to X2.....from X11 to X13 (X0 and X1 are always open)

(6) There is a change in the following functions. Refer to the FR-A700 series manual for details.

- When automatic restart after instantaneous power failure is performed with residual voltage detection system by T-SEN50 (*Pr. 162* = "11"), it is changed to automatic restart after instantaneous power failure with reduced voltage system. Fully check that there is no problem in automatic restart operation after instantaneous power failure. If there are any problem, consider changing to f search system, etc.
- Y29 (acceleration speed detection) signal is deleted, and major fault by E.OS occurs instead.
- When stop position command of orientation control was given from the FR-A5AX (*Pr. 360* = "1"), orientation with the number of encoder pulses *(Pr. 369)* 1025 to 2047, or 2049 to 4059 is not supported by Convert.
- Since convert is performed using the full scale value of the motor torque as 200%, the full scale value of the load meter is converted as 200% (FR-A500 (L) series is 100%). Use *Pr. 866* to change. In such a case, note that the full scale value of the motor torque also changes accordingly.

(7) The following functions are not converted, since they have been deleted from the FR-A700 series.

- *Pr. 53 PU level display data selection*
- *Pr. 199 User initial value*
- Setting value 3, PRG signal (program operation) of *Pr. 200 to Pr. 231 and Pr. 76*, setting value 5 of *Pr. 79*
- *Pr. 371 Torque characteristic selection*
- *Pr. 390 to Pr. 396* Trace function of the FR-A500L series
- *Pr. 450 to Pr. 453* Motor constant adjustment function for vector control of the FR-A500L series and FR-A5AP (encoder 50)

<When converting the FR-E500 series to the FR-D700 series >

(1) The following parameters are not converted. Make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 146 Frequency setting command selection*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 245 Rated slip*
- *Pr. 246 Slip compensation time constant*
- *Pr. 902 to 905, 922, 923 (frequency setting input calibration parameter)* *

* Depending on a product date of FR-E500, converting of *Pr. 902, 903, 922 and 923* may not be available. In this case, please adjust the parameter setting manually after the convert.

(3) When General-purpose magnetic-flux vector control is selected (*Pr. 80 Motor capacity* is not "9999") for FR-E500 series, note the following precautions.
- Tuning and parameter setting of the target inverter are recommended, if offline auto tuning is performed (*Pr. 71 Applied motor* = "3, 13, 23, 103, 113, 123") or motor constants is directly input (*Pr. 71* = "5, 6, 15, 16, 105, 106, 115, 116") to the source inverter.
- When SF-HR or SF-HRCA type motor is used, set *Pr. 71* = "40, 43, 44, 50, 53, 54" after writing the converted parameter to the target inverter. (Conversion of *Pr. 82, Pr. 86, Pr. 90* is not necessary)

(4) Communication related parameters *(Pr. 117 to Pr. 124)* are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122 PU communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE).

(5) When communication operation is selected with the FR-E500 series, parameter writing and operation command sending, etc. is performed in PU operation mode. Therefore, one of the following setting is required for FR-D700 series.
- Set *Pr. 79* = "1"(PU operation mode always), *Pr. 551* = "2"(PU control source is PU connector), and change to PU operation mode. Note that parameter writing and operation command from the operation panel is unavailable.
- Set *Pr. 79* = "0"(initial value), *Pr. 340* = "1" (Network operation mode at power-ON), and change to Network operation mode.

(6) If FR-E510W or FR-E520S is connected and convert from the connected inverter through communication is performed, the inverter is detected as FR-E520. Check that a compatible inverter is connected for source inverter, and then perform inverter detection.

(7) Since FR-D700 series does not have *Pr. 21 (Acceleration/deceleration time increments)*, if *Pr. 21* = "1", the setting value of the hundredth place of the following parameters are rounded to the tenth place.

(8) The following functions are not converted, since they have been deleted or changed from the FR-D700 series.
- *Pr. 21 Acceleration/deceleration time increments*
- *Pr. 38 Frequency at 5V (10V) input*
- *Pr. 39 Frequency at 20mA input*
- *Pr. 60 Shortest acceleration/deceleration mode*
- *Pr. 61 Reference current*
- *Pr. 62 Reference current for acceleration*
- *Pr. 63 Reference current for deceleration*
- *Pr. 183 MRS terminal function selection*
- *Pr. 191 FU terminal function selection*
- *Pr. 160, 173 to 176 (User group selection)*
- *Pr. 345 to 348 (DeviceNet communication)*
- *Pr. 387 to 392 (LonWorks communication)*
- *Pr. 500, 501 (communication option parameter)*

<When converting the FR-S500(E) series or FR-F500J series to the FR-D700 series >

( ) indicates parameter number for FR-S500(E) series and FR-F500J series.

(1) The following parameters are not converted. Make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 160 (P30) Extended function display selection*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake operation voltage*
- *Pr. 245 (P95) Rated slip*
- *Pr. 246 (P96) Slip compensation time constant*
- *Pr. 902 to 905, 922, 923 (C3, C4, C6, C7) (frequency setting input calibration parameter)*

(3) When Automatic torque boost is selected (*Pr. 98 Motor capacity* is not "9999") for FR-S500(E) series, note the following precautions.
- Tuning and parameter setting of the target inverter are recommended.
- When SF-HR or SF-HRCA type motor is used, set *Pr. 71* = "40, 43, 44, 50, 53, 54" after writing the converted parameter to the target inverter.

(4) Communication related parameters *(Pr. 117 to Pr. 124 (n1 to n7, n11))* are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122(n6) PU communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE).

(5) The following functions have different behavior due to specification change. Refer to the Instruction Manual of FR-D700 for details.
- Since formula of *Pr. 23 Stall prevention operation level compensation factor at double speed* has been changed, operation level of stall prevention at double speed changes if the setting has been changed greatly from 100%.
- *Pr. 992 (n16) PU main display screen data selection* is integrated into *Pr. 52*. Setting *Pr. 52* changes both operation panel display and PU display.

(6) The following function is not converted, since it has been deleted from the FR-D700 series.
- *Pr. 93 PID action set point for PU operation*

<When converting the FR-E500(N) series to the FR-E700(SC)(NC) series >

(1) The following parameters are not converted. Make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 146 Frequency setting command selection*
- *Pr. 160, Pr. 173 to Pr. 176 (User group selection)*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 245 Rated slip*
- *Pr. 246 Slip compensation time constant*
- *Pr. 902 to 905, 922, 923 (frequency setting input calibration parameter)* *

* Depending on a product date of FR-E500, converting of *Pr. 902, 903, 922 and 923* may not be available. In this case, please adjust the parameter setting manually after the convert.

(3) When General-purpose magnetic-flux vector control is selected (*Pr. 80 Motor capacity* is not "9999") for FR-E500 series, note the following precautions.
- When converting, motor pole is considered as 4 poles (*Pr. 81 Number of motor poles* = "4"). Set the number of motor poles of the using motor in *Pr. 81*.
- Tuning and parameter setting of the target inverter are recommended, if offline auto tuning is performed (*Pr. 71 Applied motor* = "3, 13, 23, 103, 113, 123") or motor constants is directly input (*Pr. 71* = "5, 6, 15, 16, 105, 106, 115, 116") to the source inverter.
- When SF-HR or SF-HRCA type motor is used, set *Pr. 71* = "40, 43, 44, 50, 53, 54" after writing the converted parameter to the target inverter. (Conversion of *Pr. 82, Pr. 86, Pr. 90* is not necessary)

(4) Communication related parameters *(Pr. 117 to Pr. 124)* are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122 PU communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE).

(5) When communication operation is selected with the FR-E500 series, parameter writing and operation command sending, etc. is performed in PU operation mode. Therefore, one of the following setting is required for FR-E700 series.
- Set *Pr. 79* = "1"(PU operation mode always), *Pr. 551* = "2"(PU control source is PU connector), and change to PU operation mode. Note that parameter writing and operation command from the operation panel is unavailable.
- Set *Pr. 79* = "0"(initial value), *Pr. 340* = "1" (Network operation mode at power-ON), and change to Network operation mode.

(6) If FR-E510W or FR-E520S is connected and convert from the connected inverter through communication is performed, the inverter is detected as FR-E520. Check that a compatible inverter is connected for source inverter, and then perform inverter detection.

(7) There is a change in the following functions. Refer to the FR-E700 series Instruction Manual for details.
- When using CC-Link communication with the FR-E5NC or using FR-E500-N series, set the communication station number and baud rate in *Pr. 542 and Pr. 543* according to the rotary switch setting of the FR-E5NC.
- FR-E700-SC series does not have terminal MRS, but *Pr. 183* setting is converted.
- Terminal functions of *Pr. 180 to 183*, and *Pr. 190 to Pr. 192* differ between FR-E500-N and FR-E700(SC). Change the setting as required.

(8) The following functions are not converted, since they have been deleted or changed from the FR-E700(SC)(NC) series.
- *Pr. 38 Frequency at 5V (10V) input*
- *Pr. 39 Frequency at 20mA input*

<When converting the FR-E500-N series to the FR-E700-NC series >

(1) The following parameters are not converted. Make a setting from "Parameter List" as required.
- *Pr. 160, Pr. 173 to Pr. 174 (User group selection)*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 245 Rated slip*
- *Pr. 246 Slip compensation time constant*

(3) When General-purpose magnetic-flux vector control is selected (*Pr. 80 Motor capacity* is not "9999") for FR-E500-N series, note the following precautions.
- When converting, motor pole is considered as 4 poles (*Pr. 81 Number of motor poles* = "4"). Set the number of motor poles of the using motor in *Pr. 81*.
- Tuning and parameter setting of the target inverter are recommended, if offline auto tuning is performed (*Pr. 71 Applied motor* = "3, 13, 23, 103, 113, 123") or motor constants is directly input (*Pr. 71* = "5, 6, 15, 16, 105, 106, 115, 116") to the source inverter.
- When SF-HR or SF-HRCA type motor is used, set *Pr. 71* = "40, 43, 44, 50, 53, 54" after writing the converted parameter to the target inverter. (Conversion of *Pr. 82, Pr. 86, Pr. 90* is not necessary)

(4) To operate FR-E700-NC via CC-Link communication, set *Pr. 79* = "0 or 2" and check that the operation mode is NET operation mode.

(5) There is a change in the following functions. Refer to *the Instruction Manual of the FR-E700-NC series* for details.
- If STF signal is set as the start signal and STR signal is set as the forward/reverse signal (*Pr. 250* = "1000 to 1100, 8888") in FR-E500-N, STF signal is converted as the forward rotation start signal and STR signal is converted as the reverse rotation start signal (*Pr. 250* = "0 to 100, 9999") for FR-E700-NC.
- Set the communication station number and baud rate in *Pr. 542* and *Pr. 543* according to the rotary switch setting of FR-E500-N.

<When converting the FR-F500 (L) series to the FR-F700 or FR-F700P series >

(1) Since the following parameters are not converted, make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 160, Pr. 173 to Pr. 176 (User group selection)*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake voltage*
- *Pr. 902 to Pr. 905 (frequency setting input calibration parameter)*

(3) Automatic torque boost *(Pr.38, Pr.39)* of the FR-F500(L) series has been changed to Simple magnetic flux vector control for the FR-F700 and FR-F700P series. When automatic torque boost is used and operation conditions meets Simple magnetic flux vector control, then manually set Simple magnetic flux vector control. Refer to the Instruction Manuals of the FR-F700 and FR-F700P series.

(4) Communication related parameters *(Pr. 117 to Pr. 124, Pr. 331 to Pr. 337, 341)* are also converted. Depending on a setting, communication may not be established after writing the parameter. For example, if *Pr. 122* or *Pr. 336 Communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE or E.SER).

(5) The following wiring needs to be changed. For the details of wiring methods, refer to the Instruction Manuals of the FR-F700 and FR-F700P series.
- When a relay output terminal of the FR-A5NR was used, change the connection to terminal ABC2 of the inverter.

(6) There is a change in the following functions. Refer to the Instruction Manuals of the FR-F700 and FR-F700P series.
- Since formula of *Pr. 23 Stall prevention operation level compensation factor at double speed* has been changed, operation level of stall prevention at double speed changes if the setting has been changed greatly from 100%.
- When using CC-Link communication with the FR-A5NC, set the communication station number and baud rate in *Pr. 542 and Pr. 543* according to the rotary switch setting of the FR-A5NC.

(7) The following functions are not convertible because they have been deleted or changed in the FR-F700 and FR-F700P series.
- *Pr. 11* setting 8888 (external DC injection brake)
- *Pr. 38 Automatic torque boost*
- *Pr. 39 Automatic torque boost operation starting current*
- *Pr. 53 PU level display data selection*
- Setting 3 of *Pr. 60, Pr. 61 to Pr. 63 (optimum acceleration/deceleration)*
- *Pr. 93 PID action set point for PU operation*
- *Pr. 199 User initial value*
- *Pr. 390 to Pr. 396* Trace function of the FR-F500L series
- *Pr. 508 Output stop cancel process value level*

<When converting the FR-F500J series to the FR-F700PJ series >

( ) indicates parameter number for the FR-F500J series.

(1) The following parameters are not converted. Make a setting from "Parameter List" as required.
- *Pr. 133 PID action set point*
- *Pr. 160 (P30) Extended function display selection*
- *Pr. 900, Pr. 901 (FM, AM output terminal calibration)*
- *Pr. 991 PU contrast adjustment*

(2) The following parameters are adjustment parameters. Parameter readjustment according to the machine is recommended after converting.
- *Pr. 0 Torque boost*
- *Pr. 12 DC injection brake operation voltage*
- *Pr. 245 (P95) Rated slip*
- *Pr. 246 (P96) Slip compensation time constant*
- *Pr. 902 to 905, 922, 923 (C3, C4, C6, C7) (frequency setting input calibration parameter)*

(3) When Automatic torque boost is selected (*Pr.98 Motor capacity* is not "9999") for the FR-F500J series, note the following precautions.
- Tuning and parameter setting of the target inverter are recommended.
- When SF-HR or SF-HRCA type motor is used, set *Pr.71* = "40, 43, 50, 53" after writing the converted parameters to the target inverter.

(4) Communication related parameters *(Pr.117 to Pr.124 (n1 to n7, n11))* are also converted. Depending on a setting, communication may not be established after writing the parameters. For example, if *Pr.122 (n6) PU communication check time interval* = "0" (initial value), changing to the command source operation mode causes a communication fault (E.PUE).

(5) The following functions have different behavior due to specification changes. Refer to the Instruction Manual of FR-F700PJ for details.
- Since the formula of *Pr.23 Stall prevention operation level compensation factor at double speed* has been changed, the operation level of the stall prevention at double speed changes if the setting has been changed greatly from 100%.
- *Pr.992 (n16) PU main display screen data selection* is integrated into *Pr.52* . Setting *Pr.52* changes both operation panel display and PU display.

(6) The following function is not converted since it has been deleted from the FR-F700PJ series.
- *Pr.93 PID action set point for PU operation*

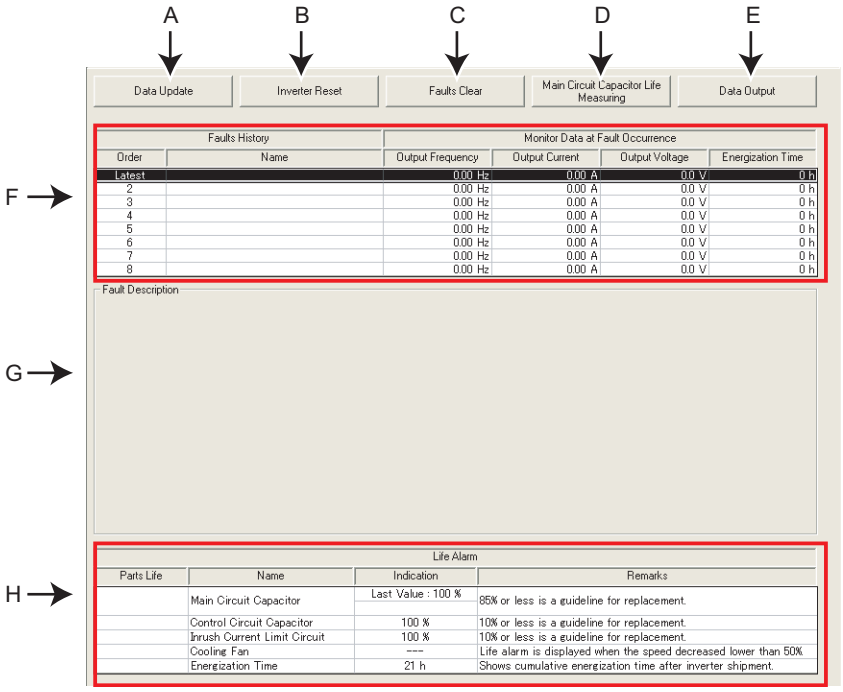
4.8 Diagnosis (System Area)

"Diagnosis" displays fault information and parts life information of the inverter. Use "Diagnosis" to operate the following functions. (Available only when ONLINE.)

Select [Diagnosis] under [View] menu, or click Diag. on the tool bar to display "Diagnosis".

- Displays the faults history and monitor value of each fault occurrence.
- Inverter reset
- Faults history clear
- Measuring of the main circuit capacitor life
- Display of parts life and alarm
- File output of diagnosis data

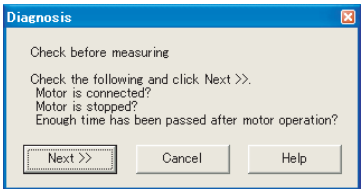
4.8.1 Explanation of window



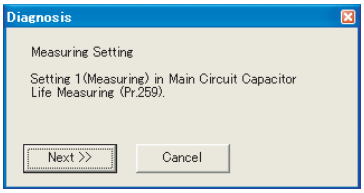
No.	Name	Function and description
A	Data Update	Reads faults history and parts life information from the selected inverter and updates display. (Available only when ONLINE.)
B	Inverter Reset	Resets the selected inverter. Confirmation window appears. Click OK to proceed. (Available only when ONLINE.)
C	Faults Clear	Clears the faults history of the selected station. Confirmation window appears. Click OK to proceed. (Available only when ONLINE.)
D	Main Circuit Capacitor Life Measuring	Starts life measuring of the main circuit capacitor. *Refer to page 134* for the measuring procedure.
E	Data Output	Outputs diagnosis data of the selected inverter to a file (text format). Specify the file name and save the diagnosis data file.
F	Faults history	Displays faults history read from the inverter in a list. Also displays output frequency, output current, output voltage, and energization time of fault occurrence.
G	Faults description	Displays description of the selected fault.
H	Parts life information	Displays parts life information read from the inverter. A check mark is shown in the parts life alarm field for the parts recommended to be replaced.

4.8.2 Procedure of main circuit capacitor life measuring

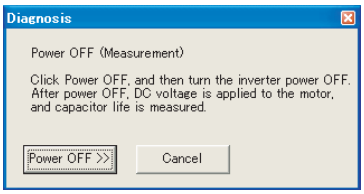
1) Confirmation window appears before measuring. Check the following items, and click [Next >>].
   • Motor is connected?
   • Motor is stopped?
   • Enough time has been passed after the motor operation?



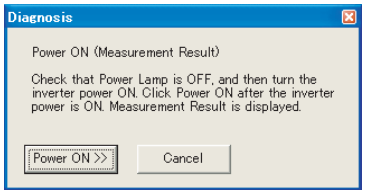
2) Performs parameter setting for measuring the main circuit capacitor life. Click [Next >>].



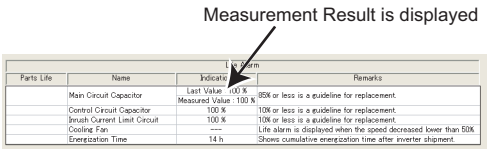
3) Click [Power OFF >>], and then turn the inverter power OFF.



4) After making sure that the POWER lamp of the inverter is OFF, switch ON the power supply again. Click [Power ON >>] after powering ON the inverter.



5) Displays the measuring result of the main circuit capacitor life in "Measured Value". A check mark is shown at the life information field of main circuit capacitor if the main circuit capacitor is recommended to be replaced. (Displays a previous value in "Last Value" if the main circuit capacitor life value measured last time is stored in the inverter when updating diagnostic information.)



REMARKS

- When the main circuit capacitor life is measured under the following conditions, "forced end" (*Pr. 259* = "8") or "measuring error" (*Pr. 259* = "9") occurs or it remains in "measuring start" (*Pr. 259* = "1"). Therefore, do not measure in such case. Proper measurement is not performed when "measuring" (*Pr. 259* = "3") appears under the following conditions.
  (a) FR-HC, MT-HC, FR-CV, or a sine wave filter is connected
  (b) Terminals R1/L11, S1/L21 or DC power supply is connected to the terminal P/+ and N/-.
  (c) The power supply is switched ON during measurement.
  (d) The motor is not connected to the inverter.
  (e) The motor is running (coasting)
  (f) The motor capacity is two ranks smaller as compared to the inverter capacity.
  (g)The inverter is tripped or a fault occurred when power is OFF.
  (h) The inverter output is shut off with the MRS signal.
  (i) The start command is given while measuring.
  (j) The parameter unit (FR-PU04/FR-PU07) is connected (FR-D700, E700, F700PJ series only)
  (k) Terminal PC is used as power supply (FR-D700, E700(SC), F700PJ series only)
  (l) An I/O terminal of the control terminal block or the plug-in option is ON (continuity) (FR-D700, E700, F700PJ series only)
  (m)A plug-in option is fitted. (only for the 0.75K or less of the FR-E700(SC) series)
  (n) Test operation is being performed. (*Pr.800* = "9") (FR-A700, F700P, F700PJ series only)
  (o) "EV" is displayed on the operation panel. (The main circuit power supply is OFF and the 24V external power supply is ON.) (When using the safety stop function model with FR-E7DS mounted.)
- Turning the power ON during measuring before LED of the operation panel turns OFF, it may remain in "measuring" (*Pr. 259* = "2") status. In such a case, perform life measurement again.

4.9 Graph (Monitor Area)

Sampling the output frequency or current, etc. of the inverter and displays the data in graph form (wave form). The sampling data can be saved in a file (Export to *.bmp or *.gp3). And the saved sampling data can be read and displayed (Import from *.gp3).

Select [Graph] under [View] menu, or click 

on the tool bar to display "Graph".

There are two sampling methods.

- **High Speed sampling (only when the FR-A700 or E700(SC)(NC) series is connected with USB without connecting through GOT)**

  Able to sample a data with minimum sampling interval of about 1 [ms]. One station can be sampled.

- **Monitor sampling**

  Able to sample a data from multiple stations. Sampling interval varies depending on communication setting (communication speed and communication port) and a number of sampling items.

Setting Items	Specifications
Sampling point	Sampling is available up to 10000 points per each CH
Sampling interval	High Speed sampling: Setting available from about 1 [ms] (mask count: 1) to 20 [ms] (mask count: 40) Monitor sampling: Setting available from about 50 [ms] to 540000 [ms] (varies depending on communication speed, communication port or number of sampling items)
Sampling time [ms]	High Speed sampling: Maximum sampling interval × 8000 Monitor sampling: Maximum sampling interval × 10000
Analog data	Sampling of 1CH to 4CH (4CHs) analog data is available.
Digital data	Sampling of 5CH to 8CH (4CHs) digital data is available.

Note

- **During High Speed sampling, if other application is running or performing file handling with personal computer, communication error (Error code 0x8002007, 0x80020008) or buffer overflow error may occur, and unable to display data correctly. In this case, take measures such as, to close the other application, to refrain FR Configurator operation, or to set larger value in Mask count of sampling interval.**
- **Test operation (FWD , REV) does not function during graph sampling of two or more stations by communication through GOT (FA transparent function).**
- **High Speed sampling is available for the FR-A700 series manufactured in December 2011 or later. Check the SERIAL number specified on the inverter rating plate or package. (For how to find the SERIAL number, refer to *the Instruction Manuals of the inverter*.)**

4.9.1 Basic flow of sampling

1) Sampling setting

Set sampling items. Changing of the sampling mode (High Speed or Monitor), sampling interval or sampling time, etc. is available for your purpose. When starting sampling with using a trigger, make a trigger setting.

2) Start sampling

Click Start to start the sampling when sampling item is set already. If the trigger is set, sampling starts when the trigger condition is satisfied during "Waiting for Trigger" state which comes after "Sampling Pre-trigger Data" state.

3) Sampling complete

Sampling stops in the following condition.

•When elapsed time from the beginning of the monitoring exceeds the sampling time

•When Stop is clicked

4) Graph display

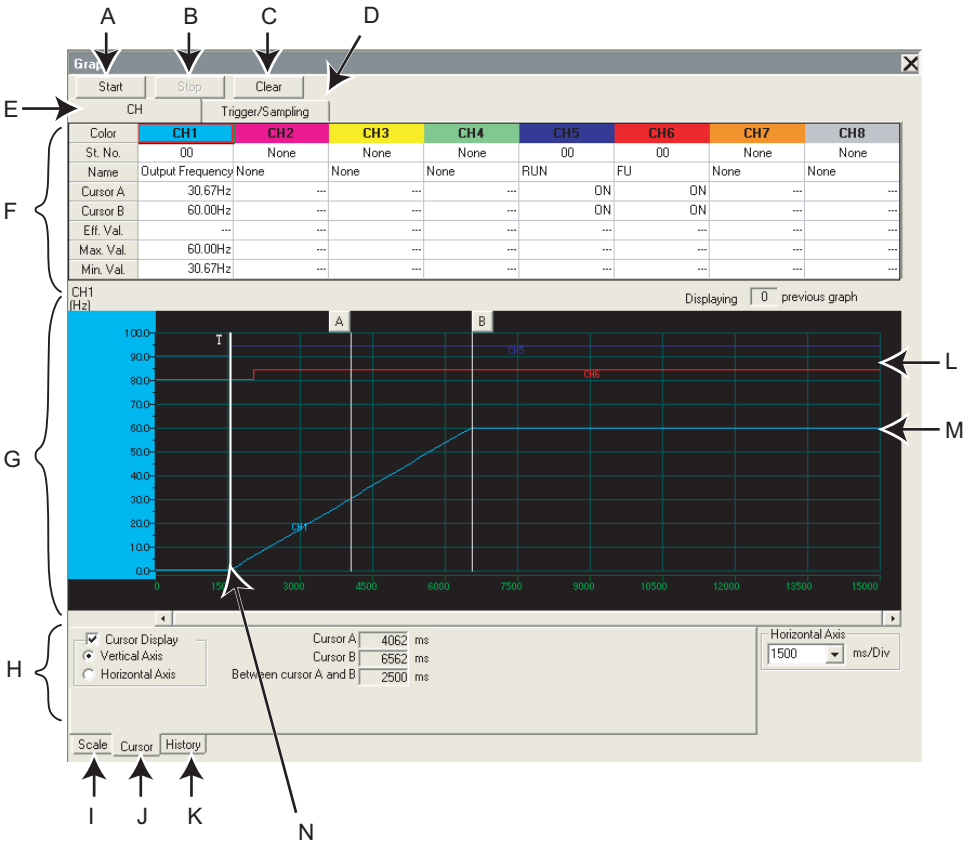
You can change a scale of the graph, show a numeric value of a wave at where cursors is laid, or show effective value of between any 2 points, maximum value, and minimum value. Exporting of graph data *(Refer to page 94)* for saving as a file is also available.



Note

If an normal communication is not maintained (communication error, etc.), the sampling stops.
If an fault occurs during sampling, sampling continues.
During sampling, other communication tasks such as parameter reading are unavailable.

4.9.2 Explanation of window



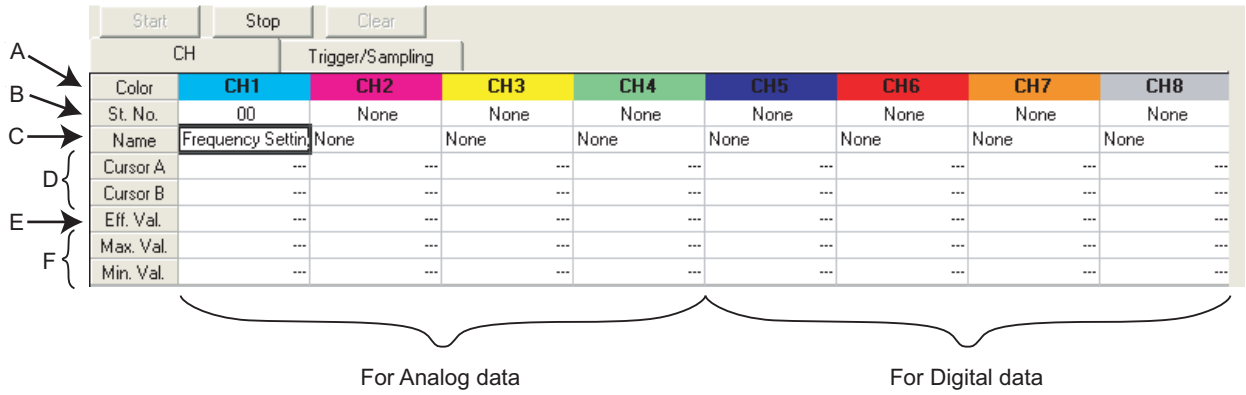
No.	Name	Function and description
A	Start	Starts sampling. For High Speed sampling, the selected station is switched to the sampled station.
B	Stop	Stops sampling.
C	Clear	Clears the graph. If a graph has been displayed, data history is also cleared. If a graph has not been displayed yet, the setting of sampling item is cleared.
D	Trigger/Sampling	Click [Trigger/Sampling] to display trigger/sampling setting section. *(Refer to page 141)*
E	CH	Click [CH] to display sampling item setting section. *(Refer to page 138)*
F	Sampling item setting section (Trigger/sampling setting section)	Click tabs to switch displaying Sampling item setting section *(Refer to page 138)* and Trigger/sampling setting section *(Refer to page 141)*.
G	Graph area	Shows sampling data in graph form.
H	Scale changing section (Cursor function section, History display section)	Click tabs to switch displaying Scale changing section *(Refer to page 145)*, Cursor function section *(Refer to page 146)* and History display section *(Refer to page 147)*.
I	Scale	Click [Scale] to display Scale changing section. *(Refer to page 145)*
J	Cursor	Click [Cursor] to display Cursor function section. *(Refer to page 146)*
K	History	Click [History] to display History display section. *(Refer to page 147)*
L	Graph (digital data)	Digital data drawn in graph form (CH5 to CH8). OFF is drawn on a grid line, and ON is drawn between the grid lines.
M	Graph (analog data)	Analog data drawn in graph form (CH1 to CH4). Graph is drawn based on the setting of Vertical Axis scale and 0 position adjust. Vertical Axis scale of each data (CH) can be changed separately.
N	Trigger Line	Shows a position of trigger start. "T" is displayed on top of Trigger Line.

Note

- **Each graph displays their own CH number. Though when a graph data is out from Graph area, CH number may not be displayed. Adjust with 0 position adjust and scale changing to make a data visible inside of Graph area.**

4.9.3 Sampling item setting

Click CH to display Sampling item setting section. Set station number and item for sampling. Analog data is set in CH1 to CH4, and digital data is set in CH5 to CH8.



No.	Name	Function and description
A	Color	Shows the color of the graph drawing.
B	St. No.	Select station number for sampling. For High Speed sampling, only CH1 is available for setting. CH2 to CH8 has the same station number as the one set in CH1.
C	Name	Select sampling item. Four analog data (CH1 to CH4), and four digital data (CH5 to CH8) are available.
D	Cursor A (Cursor B)	Shows measured value of cursor A and B on a wave form.
E	Eff. Val.	Shows calculated effective value between cursor A and B. (Effective value is displayed when U, V, W phase output current are sampled in High Speed sampling.)
F	Max. Val. (Min. Val.)	Shows maximum value and minimum value between cursor A and B while cursor is displayed in Vertical Axis.

- **Sampling item list**

Sampling items with high speed sampling interval have a " * " in front of the name. Refer to *the Inverter Instruction Manual* for details of monitor item.

Refer to *Control circuit terminal section of the Inverter Instruction Manual* for details of digital data sampling items.

Model	A700		A701	F700(P)	F700PJ	E700		D700
Sampling mode / Sampling item	Monitor	High speed	Monitor	Monitor	Monitor	Monitor	High speed	Monitor
Output Frequency	○	○	○	○	○	○	○	○
Output Current	○	○	○	○	○	○	○	○
Output Voltage	○	○	○	○	○	○	○	○
Frequency Setting Value	○	○	○	○	○	○	○	○
Running Speed	○	○	○	○	–	–	–	–
Motor Torque	○	○	○	–	–	○	○	–
Converter Output Voltage	○	○	○	○	○	○	○	○
Regenerative Brake Duty	○	○	–	○	○	○	○	○
Electronic Thermal 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	○	○	○	–	–	–	–	–
Motor Temperature	○*1	○*1	–	–	–	–	–	–
Power Saving Effect	○	–	○	○	○	–	–	–
Cumulative Saving Power	○	–	○	○	○	–	–	–
PID Set Point	○	○	○	○	○	○	○	○
PID Measured Value	○	○	○	○	○	○	○	○
PID Deviation	○	○	○	○	○	○	○	○
Motor Thermal Load Factor	–	–	–	–	○	○	○	○
Inverter Thermal Load Factor	–	–	–	–	○	○	○	○
PTC Thermistor Resistance	–	–	–	○*3	○	–	–	○
Cumulative Regenerative Power	–	–	○*1	–	–	–	–	–
PID measured value 2	–	–	–	○*3	–	–	–	–
BACnet reception status	–	–	–	○*3	–	–	–	–
BACnet token pass counter	–	–	–	○*3	–	–	–	–
BACnet valid APDU counter	–	–	–	○*3	–	–	–	–
BACnet communication error counter	–	–	–	○*3	–	–	–	–
Terminal CA output level	–	–	–	○*3	–	–	–	–
Terminal AM output level	–	–	–	○*3	–	–	–	–
*Output Frequency	–	○*4	–	–	–	–	○	–
*U Phase Output Current	–	○	–	–	–	–	○	–

Model	A700		A701	F700(P)	F700PJ	E700		D700
Sampling mode / Sampling item	Monitor	High speed	Monitor	Monitor	Monitor	Monitor	High speed	Monitor
*V Phase Output Current	–	○	–	–	–	–	○	–
*W Phase Output Current	–	○	–	–	–	–	○	–
*Converter Output Voltage	–	○	–	–	–	–	○	–
*Output Current (all three phases)	–	○	–	–	–	–	○	–
*Excitation Current(A)	–	○*2	–	–	–	–	○	–
*Torque Current(A)	–	○*2	–	–	–	–	○	–
Terminal 2	–	○	–	–	–	–	○	–
Terminal 4	–	○	–	–	–	–	○	–
Terminal 1	–	○	–	–	–	–	–	–
*Excitation Current (%)	–	○*2	–	–	–	–	–	–
*Torque Current (%)	–	○*2	–	–	–	–	–	–
*Output Frequency (signed)	–	○*4	–	–	–	–	–	–
*Motor Speed	–	○*4	–	–	–	–	–	–
*Speed Command	–	○*4	–	–	–	–	–	–
*Torque Command	–	○*4	–	–	–	–	–	–
*Motor Torque	–	○*2*4	–	–	–	–	–	–
*Excitation Current Command	–	○*4	–	–	–	–	–	–
*Torque Current Command	–	○*4	–	–	–	–	–	–

○: Available, – : Not available

*1 Depending on the production year and month of the inverter, availability of monitoring may differ. For the details, refer to the *Appendices of the Instruction Manual of the inverter*.

*2 Monitoring is disabled during DC injection brake or during magnetic flux decay output shutoff.(The monitor displays "0".)

*3 Available for the FR-F700-NA and FR-F700-EC models.

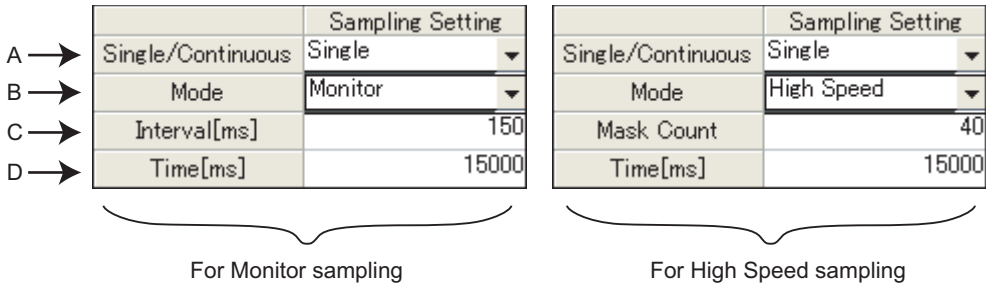
*4 Monitoring is disabled under V/F control or under Advanced magnetic flux vector control.(The monitor displays "0".)

Note

- Change the sampling mode (Monitor/High Speed) before setting sampling items. Since some monitor items are different between the sampling mode, the setting of uncommon sampling item is cleared when changing the sampling mode. *(Refer to page 141)*
- When making sampling item setting, set analog data (CH1 to CH4) in ascending order from CH1, and digital data (CH5 to CH8) in ascending order from CH5.
- When sampling terminal 2, terminal 4, and terminal 1 of voltage input while *Pr. 241 Analog input display* is set to "0" (% display), the sampled data appear as 10V=100%.
  Example: *Pr. 73* = 1 (terminal 2 input is 0 to 5V), *Pr. 241* = 0 (% display)
  Sampling data in the graph appear as 50% when 5V is input to terminal 2.

4.9.4 Sampling setting

Click Trigger/Sampling to display Sampling setting section. Setting sampling mode, Single/Continuous setting, and sampling time are available.



No.	Name	Function and description
A	Single/Continuous	Select between Single sampling or Continuous sampling. • Single: Sampling from start to end is performed only once. • Continuous: Sampling from start to end is performed continuously. When sampling ends, the data is added to History, and starts the next sampling. *(Refer to page 147)*
B	Mode	Select between High Speed sampling or Monitor sampling. High speed sampling is available when an FR-A700 or FR-E700 series model is connected via USB (not available when the inverter is connected via GOT.) Since some monitor items are different between the sampling mode, the setting of uncommon sampling item is cleared when changing the sampling mode
C	Interval [ms]	Set interval (cycle) of data sampling. Sampling interval is fixed depending on a number of sampling items and communication setting. *(Refer to page 142)*
	Mask Count	Set interval (cycle) of data sampling. For High Speed sampling, set Mask count (available from 1 to 40) for the sampling interval. Refer to the following formula for sampling interval. Sampling interval is approximately equal to (Mask Count + 1) × 0.5ms Example: when the Mask Count is 1 Sampling interval is approximately equal to (1 + 1) × 0.5ms = About 1ms
D	Time [ms]	Set maximum sampling time. When elapsed time exceeds the sampling time, sampling stops. Maximum sampling time can be set as follows. *(Refer to page 142)* High Speed sampling: Maximum sampling interval × 8000 Monitor sampling: Maximum sampling interval × 10000 Example: when the Mask Count is 1 for High Speed sampling Maximum sampling time = 8000ms

- **Setting range and setting increments of "Sampling Interval" and "Sampling Time"**

Setting range of "Sampling Interval" and "Sampling Time" are different between High Speed sampling and Monitor sampling.

1) For High Speed sampling (only when using USB connection)
Sampling interval can be set from about 1 [ms] (Mask Count: 1) to about 20 [ms] (Mask Count: 40), and sampling time can be set up to "setting sampling interval × 8000".

2) For Monitor sampling
Setting range of "Sampling Interval" and "Sampling Time" varies according to communication setting. The minimum sampling interval is "number of sampling items × Lower limit of sampling interval". Refer to the following table for Lower limit of sampling interval.

Communication port	Communication speed [bps]	Lower limit of sampling interval [ms] *
Serial port	4800	250
	9600	150
	19200	100
	38400	100
USB	-	50

* When making a communication through GOT (FA transparent function), minimum value of the sampling interval is 200ms regardless of communication speed.

Refer to the following table for the maximum value, the minimum value, and the setting increments of "Sampling Interval" and "Sampling Time" when the measuring conditions are actually set.

	Maximum value	Minimum value	Increments
Sampling interval [ms]	540000	Lower limit of sampling interval × the number of the sampling items *	50
Sampling time [ms]	Sampling interval * 10000	Sampling interval * 100	Sampling interval

* If a fault trigger is set, the fault trigger is also added to the measuring items.

Example: When connecting with serial port, Communication Speed is 19200bps, and monitoring 3 items, "Output Frequency", "Output Current", and "Output Voltage".

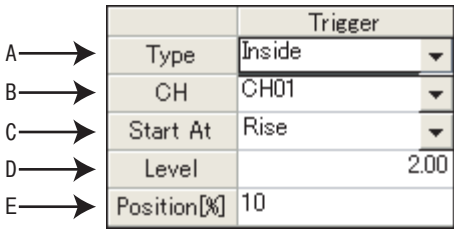
Lower limit of sampling interval = 100 [ms]

Maximum value of sampling interval = 540000 [ms] (540 [s])
Minimum value of sampling interval = 100 × 3 = 300 [ms]
Setting increments of sampling interval = 100 [ms]

Maximum value of sampling time = 540000 × 10000 = 5400000000 [ms] (1500 [h])
Minimum value of sampling time = 300 × 100 = 30000 [ms] (30 [s])
Setting increments of sampling time = 300 [ms]

4.9.5 Trigger setting

With making Trigger setting, sampling can be started at a fault occurrence or when sampling item meets a trigger condition.



No.	Name	Function and description
A	Type	Select a trigger type for sampling start. You can select the trigger type from the following three. • Not used • Inside (Sampling starts when sampling item meets a trigger condition) • Fault (Sampling starts at a fault occurrence)
B	CH/St. No.	Selecting item is different according to the trigger type. • For Inside trigger: Select a trigger item (CH1 to CH8). • For Fault trigger: Select a station number for checking a fault. Station number from which sampling item is already set can be selected.
C	Start At	Select a trigger meeting condition from Rise or Fall. (Only "Rise" can be selected for Fault trigger.) • Rise For analog data: Starts when a value exceeds more than a setting of Trigger Level For digital data: Starts when a signal turns ON from OFF • Fall For analog data: Starts when a value falls lower than a setting of Trigger Level For digital data: Starts when a signal turns OFF from ON
D	Level	Set a level of trigger meeting condition for analog signal. (Setting is available only when Inside trigger is set, and analog data is selected.)
E	Position [%]	Set a percentage for an amount of data before trigger meets the condition. The amount based on the specified percentage of total sampling data is assigned for the data before trigger meets the condition. Value is 10% increments and can be set from 10% to 90%.

REMARKS

- For starting with analog data

  If the trigger condition has already met when [Start] is clicked, sampling will not start. Sampling starts only when a value exceeds more than the setting of "Level" when "Rise" is selected, or when the value falls lower than the setting of "Level" when "Fall" is selected.

  Example: when trigger starts at "Rise", and "3" is set for Level

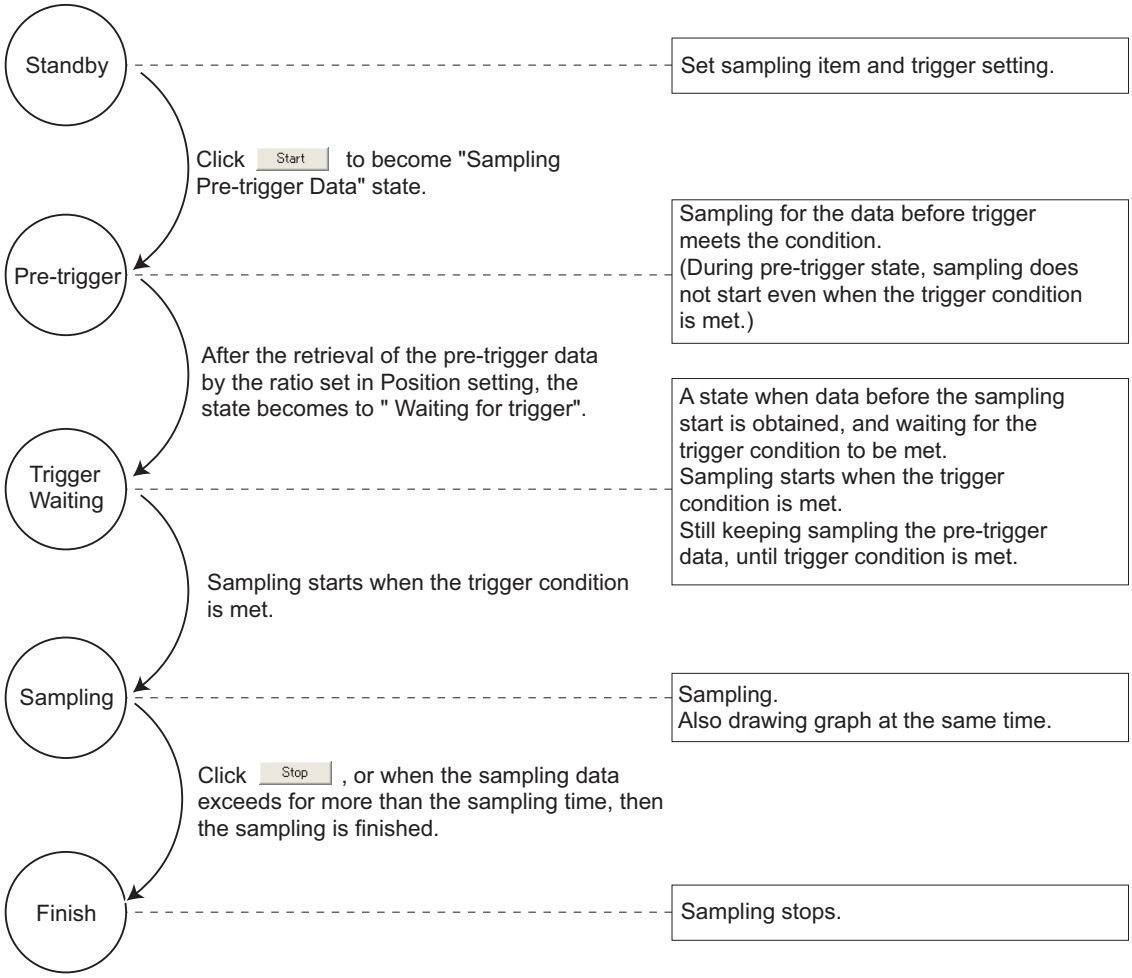
  If the value is already 4 at sampling start, then this case does not meet trigger condition. If the value lower than 3 exceeds more than 3, then the case meets trigger condition, and starts sampling.

- When monitor display is changed to the machine speed with a value other than 0 is set in *Pr. 37 Speed display*

  When setting "Output Frequency" or "Frequency Setting" for Inside trigger, set machine speed for trigger level directly into "Level" field.

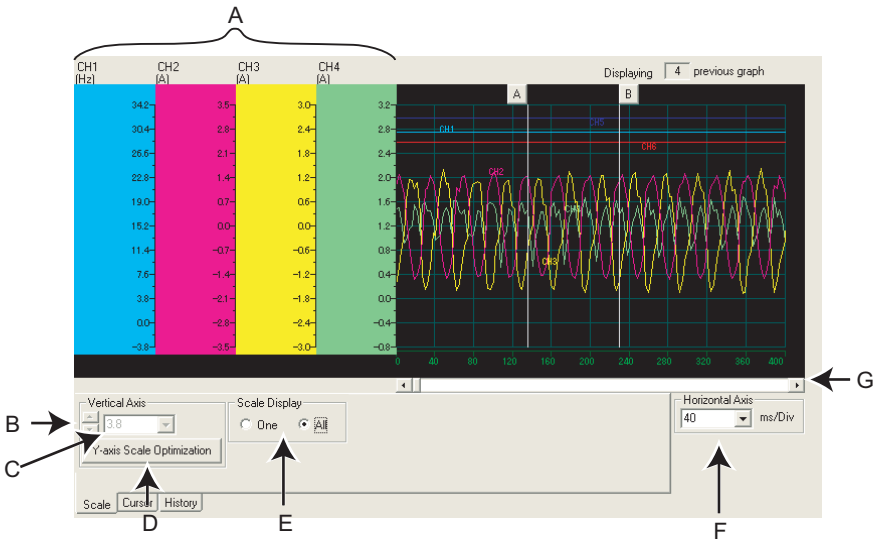
  For example, if 1800 is set in *Pr. 37 Speed display*, sampling "Output Frequency", and want to meet trigger condition at 900, then you can set 900 directly into "Level" field.

- **About trigger waiting state**



4.9.6 Scale changing

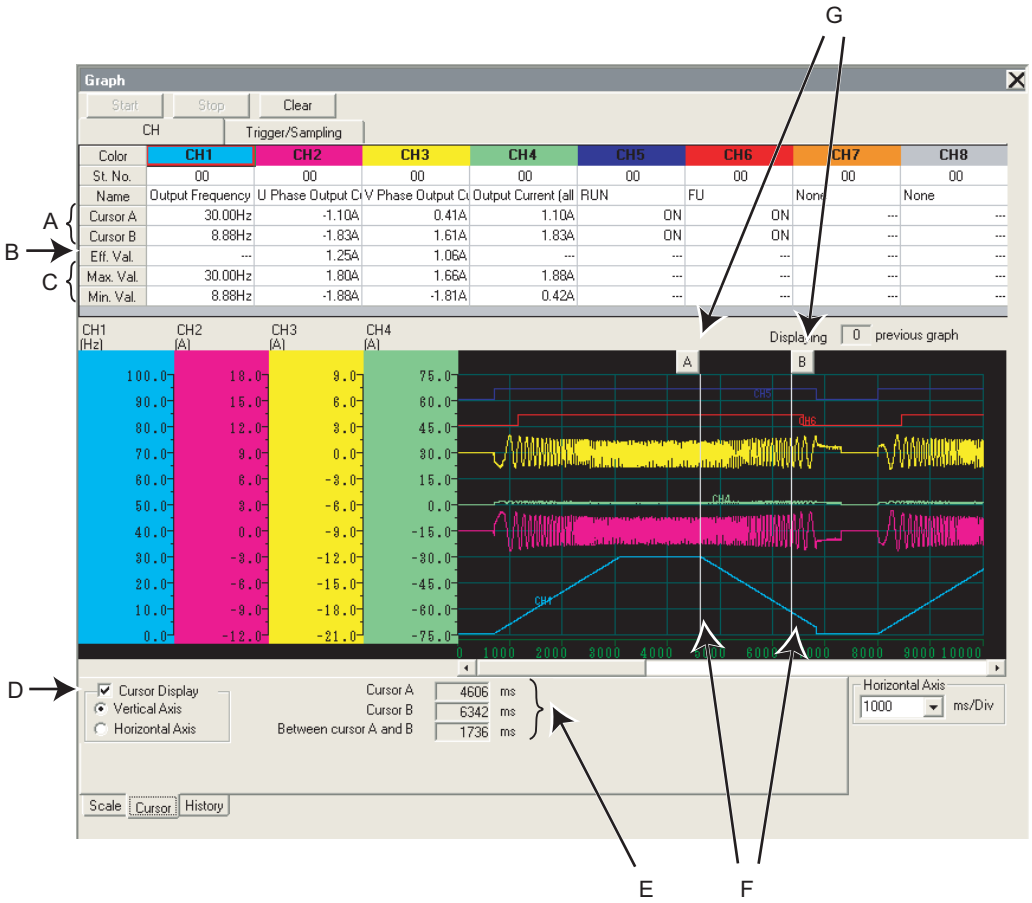
Scale changing of the displayed graph is available. Graph area is divided into vertical 10 grids and horizontal 10 grids. Scale of vertical axis and horizontal axis can be changed by setting a value of each one grid.
Selected graph can be moved upper or lower with changing 0 position adjust.
Scale value shown on vertical axis changes along with the vertical scale setting.

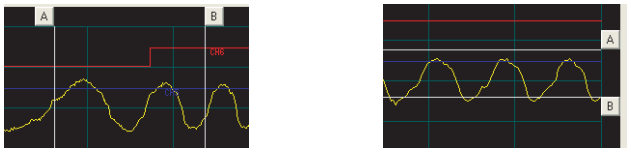


No.	Name	Function and description
A	Vertical Scale	Shows vertical axis scale of each CH. Scale of each analog data can be set separately.
B	▲ / ▼ (0 position adjust)	Click ▲ / ▼ to move the 0 position of the selected graph upper or lower.
C	Vertical Axis	Vertical scale of the selected CH can be changed. To change the scale, set a graph value proportional for each grid. (Each CH can be changed separately.) Unavailable to change when digital data is selected.
D	Y-axis Scale Optimization	Click button to adjust the wave form of each analog data of graph to fit in the window.
E	Scale display switching	Switches the display of the vertical axis between the selected CH only or the vertical axis of all analog data (or all digital data). (When showing all vertical axis, scale changing and 0 position adjust are unavailable.)
F	Horizontal Scale changing	Horizontal scale of the displayed graph can be changed. To change the scale, set a graph value proportional for each grid. Setting is available between "sampling interval * 10" to "sampling time/10".
G	Horizontal Axis scroll	Scrolls the graph to right and left

4.9.7 Cursor function

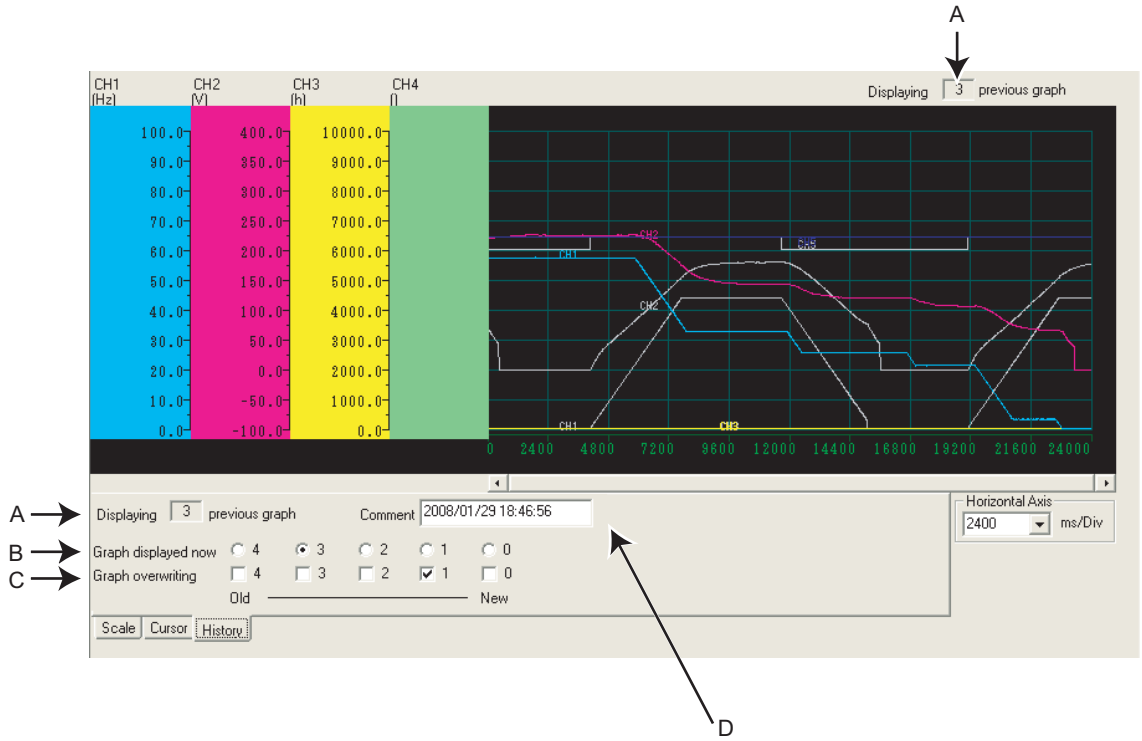
Shows a numeric value of a wave at where cursors is laid, or shows effective value of between any 2 points, maximum value, and minimum value.



No.	Name	Function and description
A	Cursor A (Cursor B)	Shows measured value of cursor A and B of the graph.
B	Eff. Val.	Shows calculated effective value between cursor A and B.
C	Max. Val. (Min. Val.)	Shows maximum value and minimum value between cursor A and B while cursor is displayed in Vertical Axis.
D	Cursor Display	Switches the cursor displaying or hiding with a check box. Selecting Vertical Axis or Horizontal Axis switches the cursor display.
E	Cursor time	Shows time of cursor A and cursor B, and time between cursor A and B when cursor is displayed in Vertical Axis.
F	Cursor Line	Shows a position of cursor A and B. Move a mouse near around the cursor line and click to move the cursor line to the mouse position. Cursor Line can be also moved with dragging. Dragging the cursor with Shift key pressed can move the both cursor A and B simultaneously.  **Vertical Axis** **Horizontal Axis** The position of cursor A and B does not switch.
G	Cursor mark (A, B)	A numeric value of a wave at where cursors is laid is displayed in Sampling item field (Cursor A, B).

4.9.8 History display

The past 5 sampling data (including the current data) can be saved in History, and can be available to display again. When sampling ends, the graph data and comment is added to History. If there are already 5 data when adding to History, the oldest data is erased.
When there are several data in the history, two graphs can be drawn at the same time. When overwriting graphs, the graph currently displayed is shown in each CH color and the one for overwriting is shown in gray.
Click History tab to display History section.



No.	Name	Function and description
A	History display	Shows how old the displaying graph is from the newest graph.
B	Graph displayed now	Click the number to display the responding graph of that number.
C	Graph overwriting	Checked graphs are displayed in layer.
D	Comment	A field for comments. Sampling date and time is automatically inputted when the sampling is finished and saved to History. Available to write up to 128 characters.

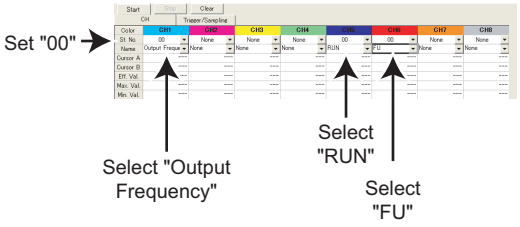
REMARKS

- For Continuous sampling, the data is added to History sequentially, and starts the next sampling.
- When overwriting graphs, cursor function is valid only for the currently displayed graph.
- Clearing of graph also deletes the History data.

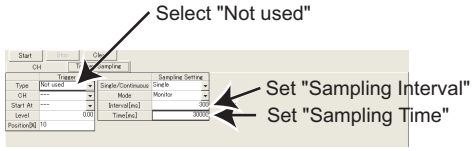
4.9.9 Example of graph sampling (monitoring output frequency, terminal RUN, terminal FU)

- **When sampling without trigger**

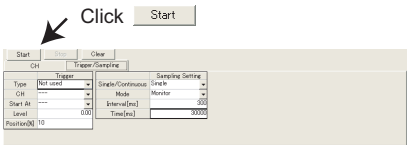
(1) Select "00" at St. No. field.
Select "Output Frequency" at Name field in CH1, "RUN" in CH5, and "FU" in CH6.



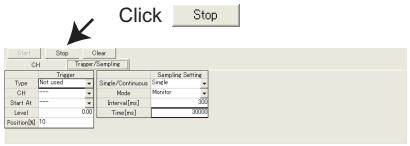
(2) Select "Not used" at Type field for trigger setting.
Set sampling interval and sampling time.



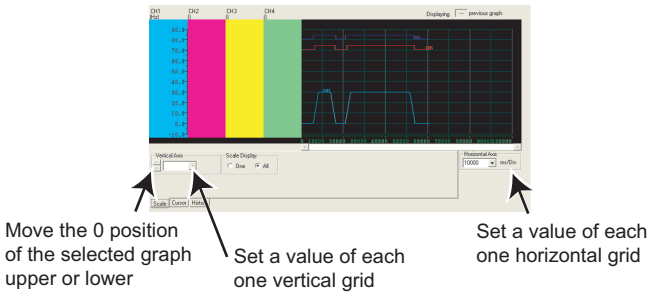
(3) Click Start to start sampling.



(4) Click Stop , or the sampling time has passed, and the sampling is finished.



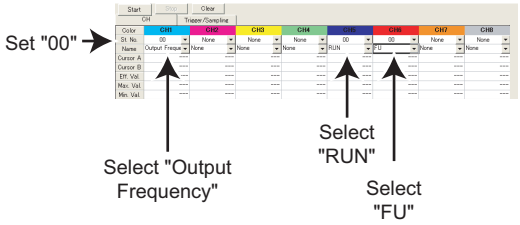
(5) Graph is adjustable for a better viewing.



(6) Graph data can be exported *(Refer to page 94)* for saving data as a file.

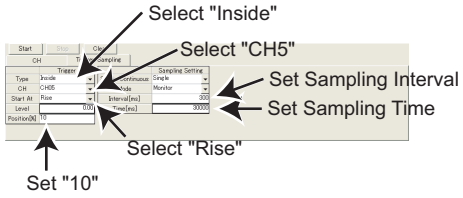
- **When sampling with Inside trigger, starting at the Rise of terminal RUN, with 10% of sampling data before the trigger meets the condition**

(1) Select "00" at St. No. field.
Select "Output Frequency" at Name field in CH1, "RUN" in CH5, and "FU" in CH6.

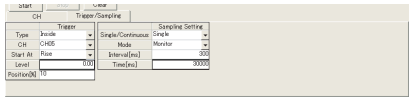


(2) Make trigger setting as follows:
Select "Inside" at Type field.
Select "CH5" at CH field.
Select "Rise" at Start At field.
Set "10" at Position [%] field.

Set sampling interval and sampling time.



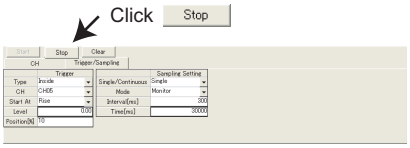
(3) Click Start to show "Sampling Pre-trigger Data", and retrieves the data before the trigger meets condition (10% of whole sampling time).
After the retrieval of the data before the trigger meets condition, then the screen shows "Waiting for Trigger" and becomes the trigger waiting state.



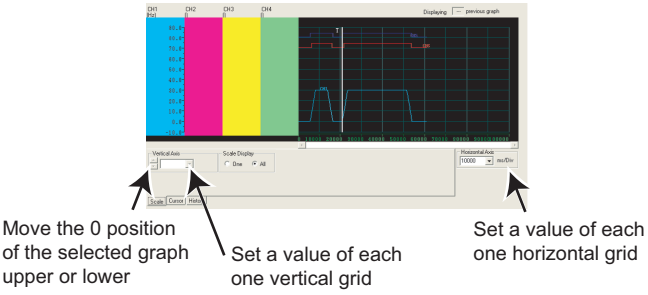


(4) When trigger meets the condition (Rise of terminal RUN), sampling starts automatically.

(5) Click Stop , or the sampling time has passed, and the sampling is finished.



(6) Graph is adjustable for a better viewing.



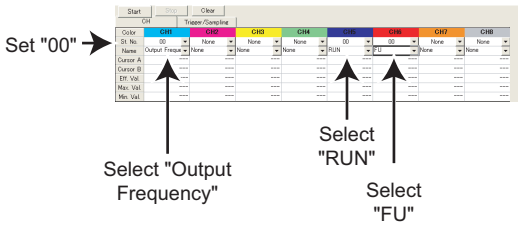
(7) Graph data can be exported *(Refer to page 94)* for saving data as a file.

REMARKS

- In this example, "Position [%]" is set to "10%". The Rise of terminal RUN during the 10% of the whole sampling time after clicking Start (during Pre-Trigger state) is ignored, and sampling is not started.

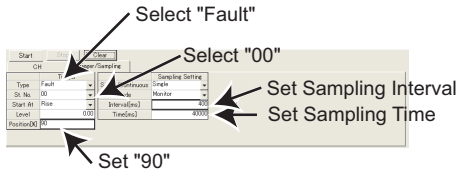
- **When sampling with Fault trigger, starting at a fault occurrence, with 90% of sampling data before the fault occurrence**

(1) Select "00" at St. No. field.
Select "Output Frequency" at Name field in CH1, "RUN" in CH5, and "FU" in CH6.

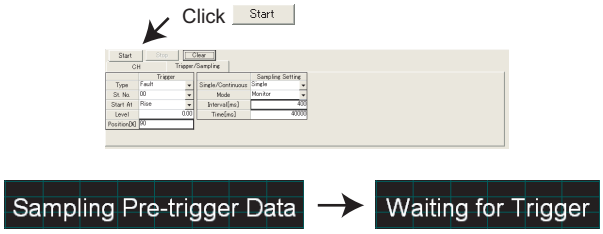


(2) Make trigger setting as follows:
Select "Fault" at Type field.
Select "00" at St. No. field.
Input "90" at Position [%] field.

Set sampling interval and sampling time.

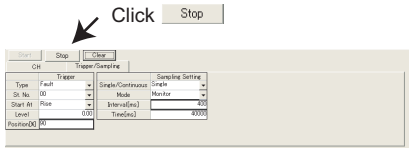


(3) Click Start to show "Sampling Pre-trigger Data", and retrieves the data before the trigger meets condition.
After the retrieval of the data before the trigger meets condition, then the screen shows "Waiting for Trigger" and becomes the trigger waiting state.

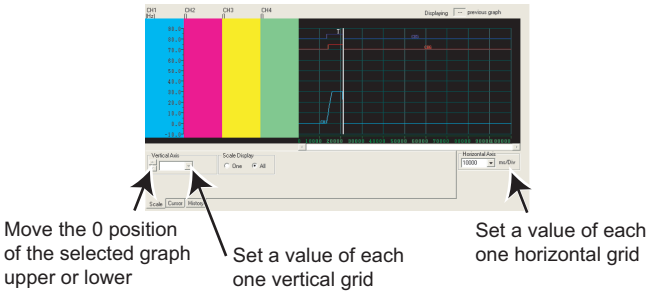


(4) When inverter fault occurs, sampling starts automatically.

(5) Click Stop , or the sampling time has passed, and then the sampling is finished.



(6) Graph is adjustable for a better viewing.



(7) Graph data can be exported *(Refer to page 94)* for saving data as a file.

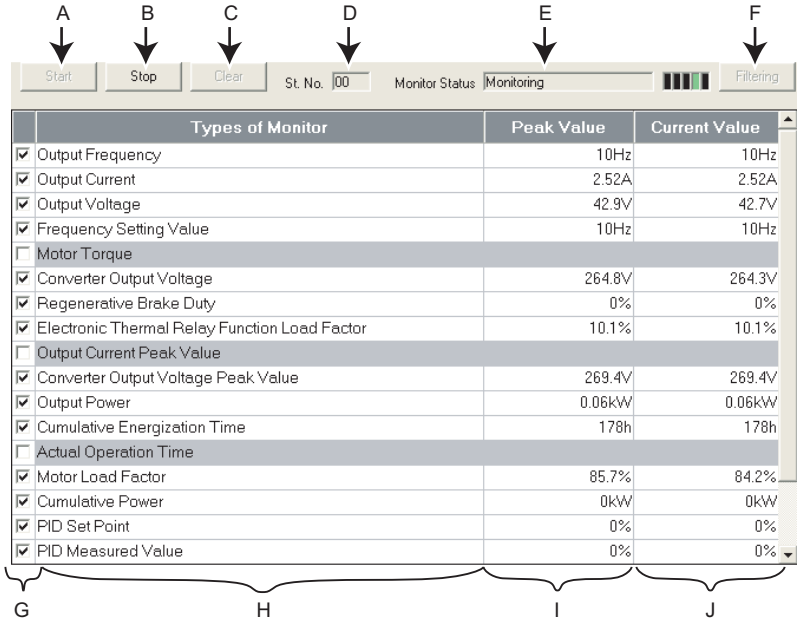
REMARKS

- In this example, "Position [%]" is set to "90%". The fault occurrence during the 90% of the sampling time after clicking Start (during Pre-Trigger state) is ignored, and sampling is not started.

4.10 Batch Monitor (Monitor Area)

"Batch Monitor" is for monitoring various data of a selected station. Export of monitored data into *.xls file is also available. (*Refer to page 94*)

Select [Batch Monitor] in [View] menu to display "Batch Monitor".



No.	Name	Function and description
A	Start	Starts monitoring.
B	Stop	Stops monitoring.
C	Clear	Clears Peak Value and Current Value.
D	Station number	Displays the station number being monitored.
E	Monitor State	Shows a state of monitor. If an error occurs, the color changes to red to display an error stop. During monitoring, the following indication appears to indicate monitoring. 
F	Filtering, All items	Hides unselected monitored items (filtering) or displays all. (This button is valid when batch monitoring is in stop.)
G	Monitored item selection	Select the monitored items that are displayed when Filtering is clicked. (All items are checked in the initial status.)
H	Monitor items	Displays monitored item.
I	Peak Value	Displays the maximum value detected in each monitored item. The items without the monitor selection check are not displayed.
J	Current Value	Displays the current monitoring value being measured in each monitored item. The items without the monitor selection check are not displayed.

Monitored item list

Refer to the Inverter Instruction Manual for details of monitored items.

Sampling Item	Model Name					
	A700	A701	F700(P)	F700PJ	E700	D700
Output Frequency	○	○	○	○	○	○
Output Current	○	○	○	○	○	○
Output Voltage	○	○	○	○	○	○
Frequency Setting Value	○	○	○	○	○	○
Running Speed	○	○	○	–	–	–
Motor Torque	○	○	–	–	○	–
Converter Output Voltage	○	○	○	○	○	○
Regenerative Brake Duty	○	–	○*1	○	○	○
Electronic Thermal 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	○	○	–	–	–	–
SSCNET III Communication Status	○	○	–	–	–	–
Motor Temperature	○*2	–	–	–	–	–
Power Saving Effect	○	○	○	○	–	–
Cumulative Saving Power	○	○	○	○	–	–
PID Set Point	○	○	○	○	○	○
PID Measured Value	○	○	○	○	○	○
PID Deviation	○	○	○	○	○	○
Motor Thermal Load Factor	–	–	–	○	○	○
Inverter Thermal Load Factor	–	–	–	○	○	○
PTC Thermistor Resistance	–	–	○*3	○	–	○
Cumulative Regenerative Power	–	○*2	–	–	–	–
PID measured value 2	–	–	○*3	–	–	–
BACnet reception status	–	–	○*3	–	–	–
BACnet token pass counter	–	–	○*3	–	–	–
BACnet valid APDU counter	–	–	○*3	–	–	–
BACnet communication error counter	–	–	○*3	–	–	–
Terminal CA output level	–	–	○*3	–	–	–
Terminal AM output level	–	–	○*3	–	–	–

○: Available, – : Not available

*1 Available for 75K or higher.

*2 Depending on the production year and month of the inverter, availability of monitoring may differ. For the details, refer to *the Appendices of the Instruction Manual of the inverter*.

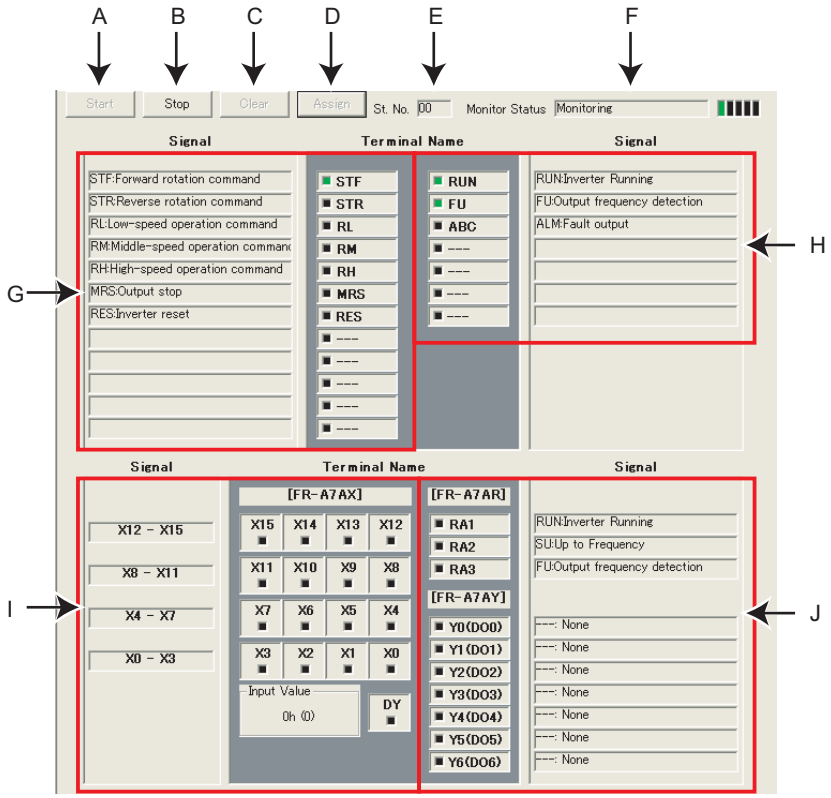
*3 Available for the FR-F700-NA and FR-F700-EC models.

Note

- **If a communication error occurs, a batch monitor stops. To perform batch monitor again, solve the cause of the communication error first, set the system OFFLINE once, and then ONLINE.**
- **When an inverter fault has occurred during Batch Monitor, the monitored value of Output Frequency, Output Current, Output Voltage at fault occurrence are held.**

4.11 I/O Terminal Monitor (Monitor Area)

You can check terminal assignment status of I/O terminal of the inverter, and plug-in option (FR-A7AR, FR-A7AX, FR-A7AY), and ON/OFF state of each terminal. The monitor turns green when terminal is ON and turns black when terminal is OFF. You can also start Wizard *(Refer to page 154)* for function assignment of each I/O terminal from "I/O Terminal Monitor".
Select [I/O Terminal Monitor] in [View] menu to display "I/O Terminal Monitor".



No.	Name	Function and Description
A	Start	Starts monitoring of I/O terminal.
B	Stop	Stops monitoring of I/O terminal. (I/O terminal state is held at the monitor stop.
C	Clear	Clears signal status (ON/OFF state) of I/O terminal.
D	Assign	Starts I/O terminal assignment wizard (*Refer to page 154*). I/O terminal can be assigned when ONLINE and during not monitoring.
E	Station number	Displays the station number of the monitoring inverter.
F	Monitor status	Shows a state of monitor. If an error occurs, the color changes to red to indicate an error stop. During monitoring, the following indication appears to indicate monitoring.
G	Inverter input terminal state	Displays input terminal state and function assignment status of the inverter.
H	Inverter output terminal state	Displays output terminal state and function assignment status of the inverter. If negative logic is set, "(negative logic)" is displayed after function name.
I	Option input terminal state	Displays input terminal state of the plug-in option (FR-A7AX), function assignment status, and numerical data of the terminal. Displays numerical data of the terminal in hexadecimal and decimal in parentheses.
J	Option output terminal state	Displays output terminal state and function assignment status of the plug-in option (FR-A7AR and FR-A7AY). If negative logic is set, "(Negative Logic)" is displayed after function name.

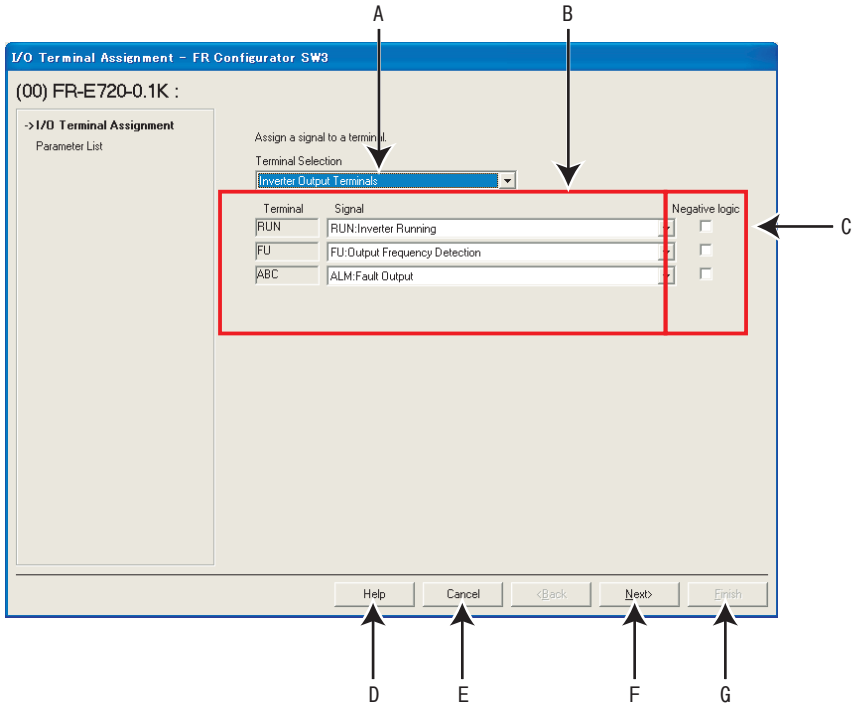
4.12 I/O Terminal Assignment

Use "I/O Terminal Assignment" to assign signal to I/O terminals of the inverter or plug-in option.

Click [Assign] of "I/O Terminal Monitor" to display "I/O Terminal Assignment" window.
Select terminal location to change the screen.

Select a signal for each terminal, then click [Next>]. Necessary settings according to each terminal and the selected signal are displayed in the Parameter List.

Click [Finish] to reflect the changed setting into the Parameter List, then returns to the Main flame. To write the parameter setting to the inverter, write from the Parameter List in the Main frame. *(Refer to page 106)*



No.	Name	Function and Description
A	Terminal Selection	Select a location of terminal to be assigned. Select input terminal, output terminal or plug-in option.
B	Signal selection field	Select a signal to be assigned.
C	Negative Logic	Check when selecting negative logic for assigning signal of the output terminal.
D	Help	Shows Help window.*(Refer to page 160)*
E	Cancel	Closes the window with the invalid setting.
F	Next>	Displays Parameter List.
G	Finish	Closes I/O terminal assignment at the Parameter List window with the valid setting. Configured setting by I/O terminal assignment is reflected into Parameter List. (Parameter writing to the inverter is not performed.)

4.13 Machine Analyzer (Monitor Area) (FR-A700, A701 with Vector Control)

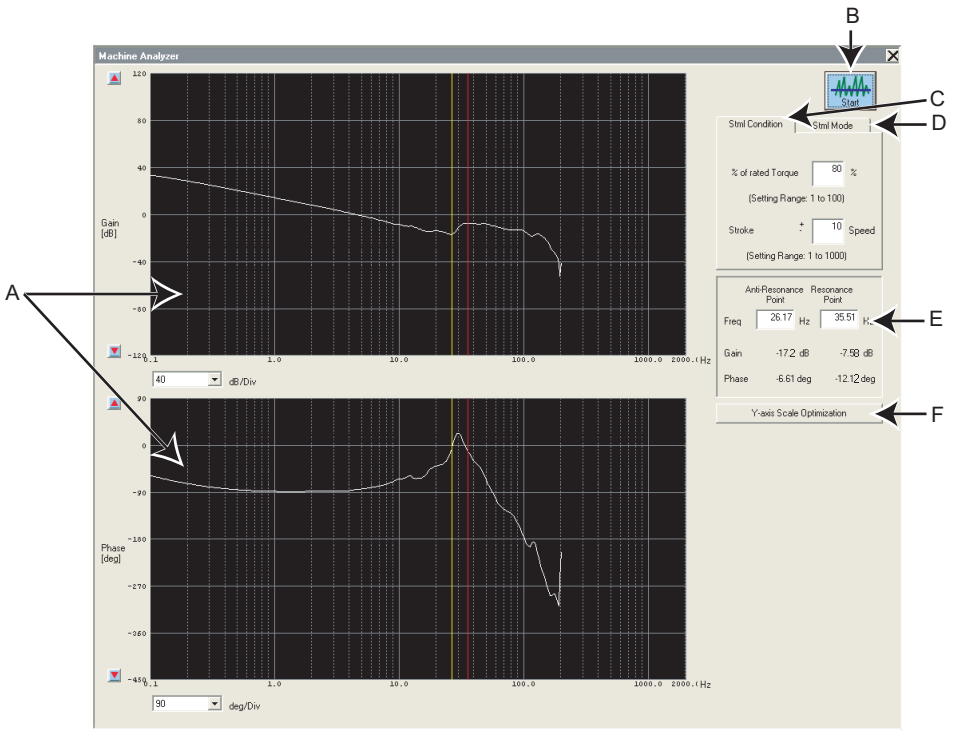
Machine analyzer reads and analyzes the torque and speed data when the inverter oscillates the motor at random torque for about 0.5 to 4s.
This allows measuring of the response frequency characteristic of speed relative to the motor torque of the machine so that you can grasp the frequency at which the mechanical system has the resonance point.
The analyzed data can be saved in a file (Export). And the saved data can be read (Import) and displayed. *(Refer to page 94)*

Select [Machine Analyzer] under [View] menu to display "Machine Analyzer" window.

Note

- **The Machine Analyzer function is available only for the system that can perform vector control with an encoder (FR-A7AP/FR-A7AL required).**
- **Machine Analyzer will not work in the following cases.**
  - **Inverter running**
  - **When the second motor is selected (Pr. 450 is not "9999")**
  - **When the control mode is other than the vector control mode (*Pr. 800* is not "0 to 5")**
  - **Modbus-RTU communication is selected (*Pr. 549* = "1")**
- **If a motor shaft is locked when performing Machine Analyzer, correct data may not be obtained, forced to end Machine Analyzer. Check the load applied to the motor beforehand.**

Before starting Machine Analyzer operation, set the oscillation conditions and oscillation mode.

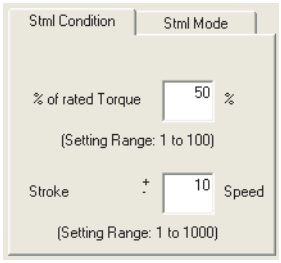


Machine Analyzer window

No.	Name	Function and Description
A	Waveform data	Frequency characteristic measuring results are displayed in the Bode diagram (gain, phase).
B	Start	Starts the Machine Analyzer.
C	Stml Condition	Sets the oscillation conditions for Machine Analyzer.
D	Stml Mode	Sets the oscillation mode for Machine Analyzer.
E	Resonance Point, Anti Resonance Point	Used to directly enter and specify the resonance point and opposite resonance point when they cannot be detected automatically.
F	Y-axis Scale Optimization	Used to change the scale automatically so that the waveform is contained within the window.

Procedure of Machine Analyzer operation

(1) Set Stml condition.

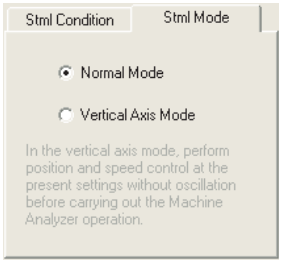


- "% of rated Torque" ..... Set the maximum oscillation torque for oscillating the motor under a random torque command. (Setting range: 1 to 100%)
- "Stroke" ..... Set the rotation range permitted for oscillation, beginning at the motor position when Machine Analyzer is started. If this range is exceeded, Machine analyzer is stopped immediately, and the motor is coasted in the vertical shaft mode or is coasted after deceleration in the normal mode. (Setting range: ± to ±1000)

REMARKS

- If a measuring result varies, accurate measuring may not have been acquired.
- Accurate measuring may not be acquired in a mechanical system whose oscillation torque is too small or whose friction is large. In such a case, increase the oscillation torque and restart Machine Analyzer.
- If the oscillation torque is too large relative to the load inertia moment, an overcurrent or similar alarm may occur. At that time, reduce the oscillation torque and restart Machine Analyzer.
- Starting oscillation automatically switches to the torque control mode and shifts the position. Before starting operation after oscillation, therefore, always return to a home position.

(2) Select the Stml mode



- "Normal mode" ..... The inverter operates in the torque control mode and oscillates the motor randomly.
- "Vertical Axis Mode" ..... A servo lock is placed in the speed control mode, preventing a fall. Gain setting must have been acquired to ensure that stable servo lock operation will be performed.

REMARKS

In "Vertical Axis Mode"

- The accuracy of 100Hz or less on the low frequency side may become poor.
- The measuring accuracy becomes poor if the position loop gain *(Pr. 422)* is set too high.

Note

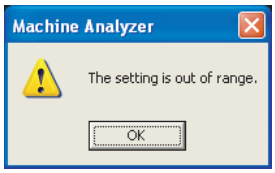
When the machine is a vertical shaft, always perform this function in the "Vertical Axis Mode" since a fall may occur.

(3) Press 

button to display a message to confirm that the operation is at a stop. Check that the operation status is at a stop, and click [OK].

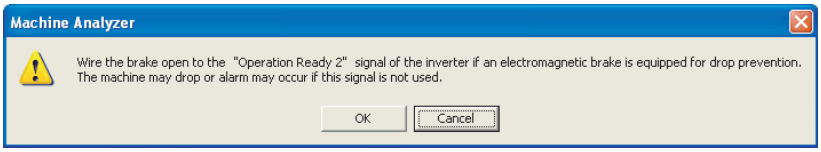
REMARKS

- "Stml condition" ..... The following screen appears if either or both "% of rated Torque" and "Stroke" are set outside of the setting ranges.



Click [OK] button to return to Machine Analyzer setting window.

The following screen appears when the "Vertical Axis Mode" is selected.

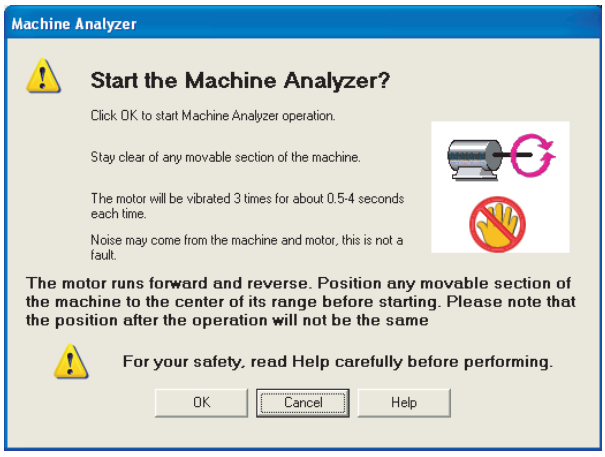


Click [Cancel] button to return to the Machine Analyzer setting window.
Click [OK] button to display the Machine Analyzer Operation start window.

Note

- When Machine Analyzer is executed in the vertical shaft mode, a servo lock is first placed, and "Operation ready 2" signal is output, and then the motor is started in 0.5s.
- When an electromagnetic brake is used, assign the "Operation ready 2" signal to any of the output terminals and modify the circuit to open the electromagnetic brake using this signal. If this is not done, a machine drop or an overcurrent or similar alarm may occur. (For details of *Pr. 190 to Pr. 196 "output terminal function selection"*, refer to the Instruction Manual of the inverter.)

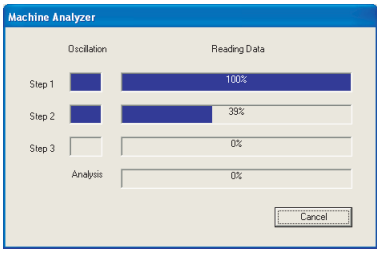
(4) Click [OK] button in the Machine Analyzer Operation screen to start the operation.



Machine Analyzer Operation window

Click [Cancel] button to return to the Machine Analyzer window.

(5) When Machine Analyzer is started, the following screen appears so that you can check the Machine Analyzer progress conditions.



• Guideline of oscillation time

Step	Oscillation Time
Step 1	Approx. 0.5s
Step 2	Approx. 1s
Step 3	Approx. 4s
Analysis	Approx. 15s

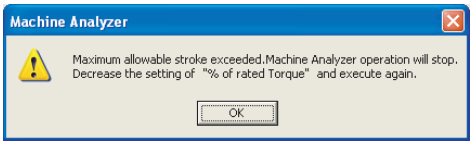
Click [Cancel] button to stop the Machine Analyzer Operation, and return to the Machine Analyzer window.

REMARKS

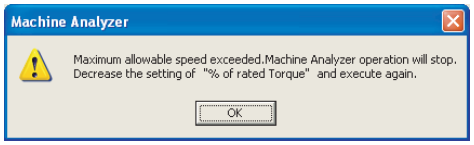
During oscillation, oscillation can be stopped with [Cancel] button, MRS signal (output stop signal) or the parameter unit [STOP] key.

The following screen appears if the motor rotation stroke exceeds the permissible range or the motor speed exceeds 3000r/min during oscillation.
Click [OK] button to return to the Machine Analyzer setting window.

• If the motor rotation stroke exceeds the permissible range

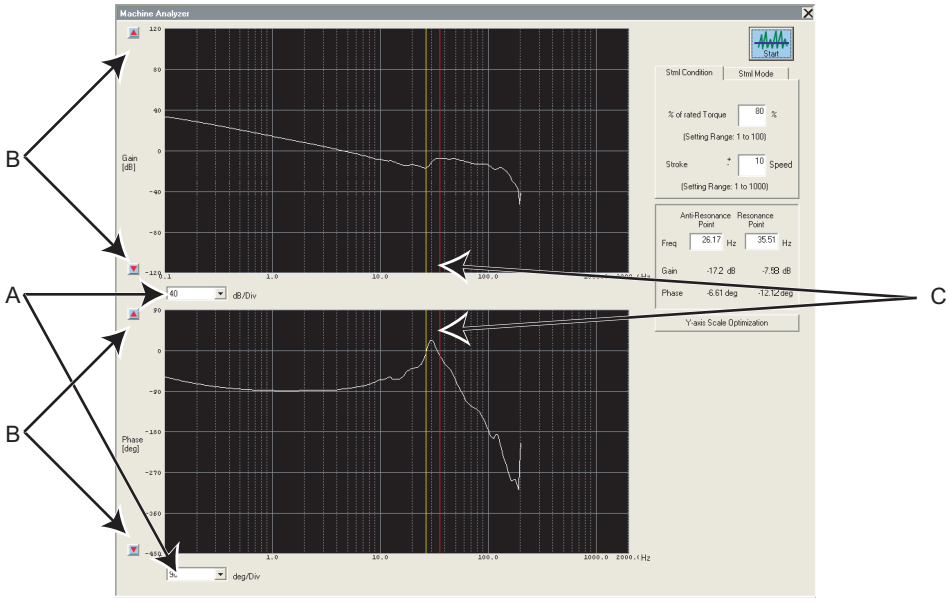


• If the motor speed exceeds 3000r/min



(6) On completion of Machine Analyzer, the frequency characteristics are displayed on the Machine Analyzer window.

(7) The frequency characteristics measured by Machine analyzer are displayed in Bode diagram.
For the waveform data, you can change the vertical axis scale and/or move the resonance point and opposite resonance point cursors.



No.	Name	Function and Description
A	Setting of the vertical axis scale	Click the [▼] to display the drop-down list. The unit of the vertical axis scale can be selected from the list. Click " Y-axis scale optimization" button to automatically change the scale to put the waveform within the screen.
B	Moving the position of zero in the vertical axis	Click the [▲]/[▼] button to move the position of zero.
C	Resonance Point, Anti-Resonance Point cursors	The resonance point (red cursor) and opposite resonance point (yellow cursor) are normally detected automatically. In case not being detected automatically depending on the characteristic, move the cursors to the normal positions by directly writing the resonance point and opposite resonance point frequency.

4.14 Help

4.14.1 Help

Checking a software manual and inverter manual is available using Help function.
There are the following ways of displaying Help.

(1) Select [Help] in [Help] menu to display.

(2) Click 

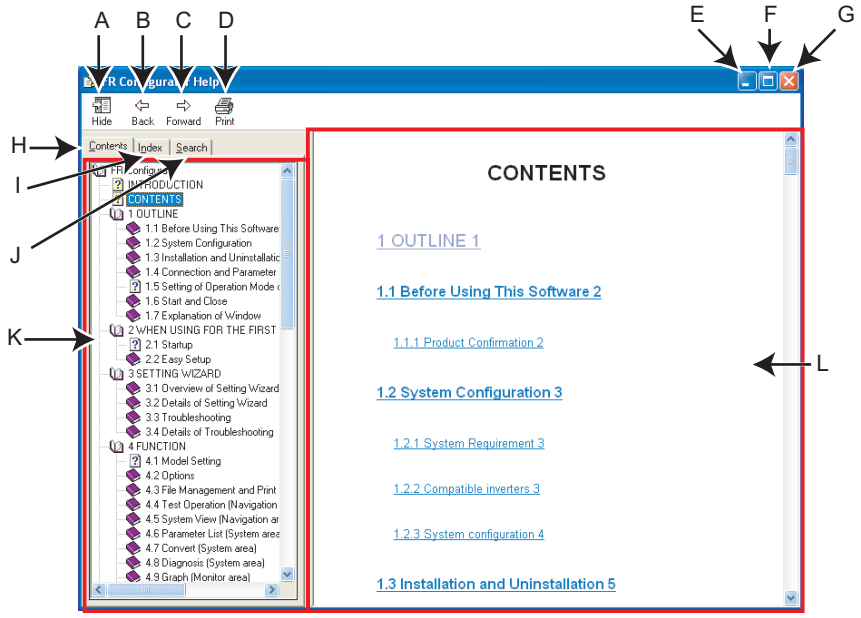
on the tool bar to display.

(3) Press F1 key on the keyboard to display.

(4) Click 

on the current window to display.

(5) Press F1 key when selecting a parameter on the parameter list to display Help. Description of the selected parameter appears.



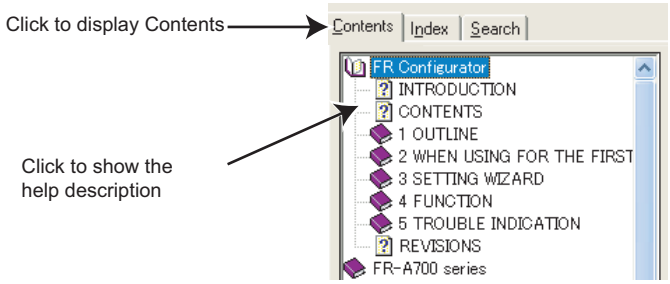
No.	Name	Function and description
A	Hide	Hides the navigation panel, Contents, Index, and Search tabs. While hiding the navigation panel and the tabs, the button changes to Show. Click Show to display the navigation panel and the tabs again.
B	Back	Returns to the previous help description.
C	Forward	Click to read forward the help description again after using Back and returned to the previous description.
D	Print	Prints help description.
E	Minimize button	Click to minimize the help window.
F	Maximize button	Click to maximize the help window.
G	Close button	Click to close the help window.
H	Contents	Click when checking the contents. Displays Contents in the navigation panel.
I	Index	Click when checking index. Displays Index in the navigation panel.
J	Search	Click when using search function. Displays Search in the navigation panel.
K	Navigation	Displays Contents, Index and 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**

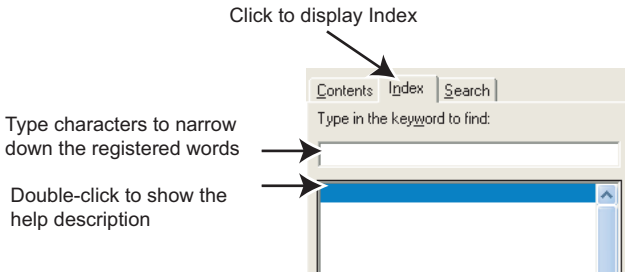
Click Contents to display a list of contents. Click a desired item in the list to show the help description.



- **Index**

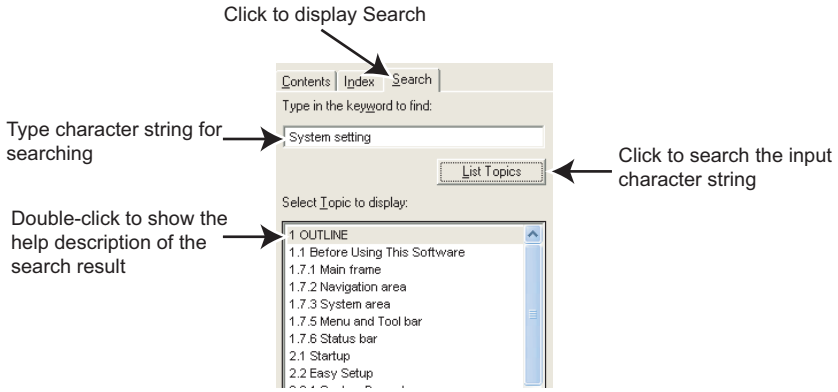
Click Index to display the index of registered words.

Type characters to narrow down the registered words. Double-click the desired word in the list to show the help description of that word.



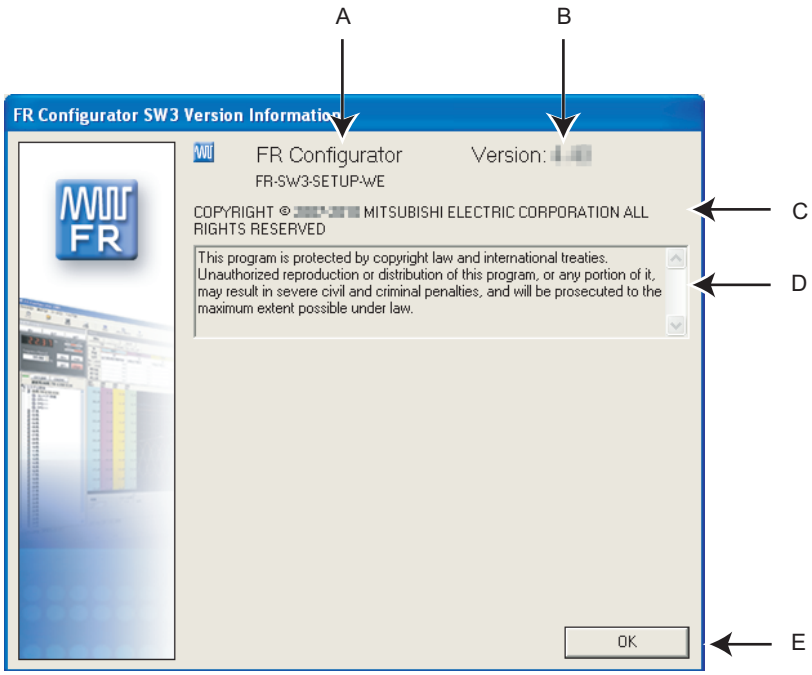
- **Search**

Click Search to display the search panel. Type character string and click List Topics to perform full-text search with the character string. Double-click the desired topic in the search result to show the help description of that topic.



4.14.2 Version information

Select [About FR Configurator SW3...] in [Help] menu to display copyright, product name, type name, version information and license of FR Configurator.



No.	Name	Function and description
A	Product name	Shows the product name.
B	Version	Shows version information.
C	Copyright information	Shows copyright information.
D	Copyright description	Shows copyright description.
E	OK	Click to close the version information window.

5 TROUBLE INDICATION

This chapter explains the "Trouble indication" of this product.
Always read the instructions before using the software.

5.1 Error Code 164
5.2 Error Display on a Dialog 171

5.1 Error Code

If a communication error is detected, the following communication error code and error message appears in the communication error dialog *(Refer to page 36)*.

5.1.1 Communication error with the inverter

POINT

If a Time Out error occurs, set FR Configurator to OFFLINE. Please check a communication cable connection, etc. to fix the error and then set FR Configurator to ONLINE again.

Error Code (HEX)	Error Message	Cause	Countermeasure
0x01010001	Failed to write because the parameter writing destination was not successfully changed to EEPROM. ( )	Failed to write *Pr. 342* at batch parameter writing.	Refer to the error code displayed in ( ) of the message, and enable the writing of *Pr. 342*.
0x80A00101	Failed to open a communication line.	1. Communication setting is not set for USB while connecting with USB. 2. No communication port existed on the personal computer. Or not recognized.	1. Check for connection configuration at [Options] in [Tool] menu. *(Refer to page 91)* 2. Check that communication port exists on the personal computer.
0x80A00104 0x80A00107 0x80A0010A	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80010000	Errors from computer in a row are more than the retry count.	1. Setting of *Pr. 124 PU communication CR/LF selection, Pr. 341 RS-485 communication CR/LF selection* is different with software setting. 2. Electromagnetic interference 3. Cable breakage	1. Set *Pr. 124 PU communication CR/LF selection*, *Pr. 341 RS-485 communication CR/LF selection* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable
0x80010001	The parity check result does not match the specified parity.	1. Setting of *Pr. 120 PU communication parity check*, *Pr. 334 RS-485 communication parity check selection* is different with software setting. 2. Electromagnetic interference 3. Cable breakage	1. Set *Pr. 120 PU communication parity check, Pr. 334 RS-485 communication parity check selection* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable
0x80010002	The sum check code in the computer does not match that of the data received by the inverter.	1. Communication setting is different between the inverter and the software. 2. Data is corrupted due to electromagnetic interference, etc.	1. Make a same communication setting. 2. Check for electromagnetic interference and wiring.
0x80010003	Data received by the inverter is in the wrong protocol, or data receive is not completed within the given time.	1. Setting of *Pr. 124 PU communication CR/LF selection, Pr. 341 RS-485 communication CR/LF selection* is different with software setting. 2. Electromagnetic interference 3. Cable breakage	1. Set *Pr. 124 PU communication CR/LF selection*, *Pr. 341 RS-485 communication CR/LF selection* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable

Error Code (HEX)	Error Message	Cause	Countermeasure
0x80010004	The stop bit length differs from the initial setting.	1. Setting of *Pr. 119 PU communication stop bit length, Pr. 333 RS-485 communication stop bit length* is different with software setting. 2. Electromagnetic interference 3. Cable breakage	1. Set *Pr. 119 PU communication stop bit length*, *Pr. 333 RS-485 communication stop bit length* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable
0x80010005	Due to wiring error, next data intruded before data reception is completed.	1. Setting of *Pr. 123 PU communication waiting time setting, Pr. 337 RS-485 communication waiting time setting* is too small. 2. Electromagnetic interference 3. Cable breakage	1. Set larger value or 9999 in *Pr. 123 PU communication waiting time setting, Pr.337 RS-485 communication waiting time setting.* 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable
0x80010007	The character received is invalid (other than 0 to 9, A to F, control code).	1. Setting of *Pr. 119 PU communication stop bit length*, *Pr. 333 RS-485 communication stop bit length* is different with software setting. 2. Electromagnetic interference 3. Cable breakage	1. Set *Pr. 119 PU communication stop bit length, Pr. 333 RS-485 communication stop bit length* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Replacement of the cable
0x8001000A	A mode error occurred.	Parameter setting or frequency setting was performed in the operation mode such as External operation (EXT) etc. which has no parameter setting and speed command source with FR Configurator.	Change the operation mode to the PU operation mode (or NET). Check the setting value of *Pr. 338 Communication operation command source, Pr. 550 NET mode operation command source selection, Pr. 551 PU mode operation command source selection.* (Operation command source changes according to inverter communication connection. *Refer to page 12, 27*)
0x8001000C	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80010011	You cannot write a value out of range to parameter.	Tried to write a value out of setting range of the parameter.	Set a value within the setting range, and write. If a writing error occurs even if a value is written within the setting range, check for writing requirements of each parameter. Refer to *the Instruction Manual of the inverter* for writing requirements.
0x80010012	A mode error occurred.	1. *Pr. 79 Operation mode selection* is not set for PU/NET (RS-485). 2. Parameter setting or frequency setting was performed in the operation mode such as External operation (EXT) etc. which has no parameter setting and speed command source with FR Configurator.	1. Click [PU] button of Test Operation. Change the setting of *Pr. 79* for PU/NET (RS-485). 2. Change the operation mode to the PU operation mode (or NET). Check the setting value of *Pr. 339 Communication speed command source*, *Pr. 551 PU mode operation command source selection*. (Speed command source changes according to inverter communication connection. *Refer to page 12, 27*
0x80010013	Parameter writing during inverter operation is unavailable.	Parameter writing was attempted during inverter operation.	Perform parameter writing after inverter is stopped.

Error Code (HEX)	Error Message	Cause	Countermeasure
0x80010014	Parameter writing to a write disabled parameter is unavailable.	1. Writing is disabled by *Pr. 77 Parameter write selection*. *Pr. 77* = 1 (write disabled) 2. Password lock is activated.	1. Change the setting of *Pr. 77 Parameter write selection* except for "1". 2. Enter the password in *Pr. 297* to unlock the password lock.
0x80010016	Can not read/write an nonexistent parameter.	1. Version of inverter and version of setup software parameter file is not corresponding. 2. Simple mode is set by *Pr. 160 User group read selection.* 3. Password lock is activated.	1. Reinstallation of the software 2. Change the setting of *Pr. 160* except for simple mode setting. 3. Enter the password in *Pr. 297* to unlock the password lock.
0x80010017	Specified option is not installed in the inverter.	Reading of option parameter was attempted while the option is not installed.	Install the option to the inverter.
0x80010018	There is no difference between the analog setting of gain and bias.	There is only small difference between the analog setting of gain and bias.	Set larger setting between the analog setting of gain and bias.
0x8001001A	Unsupported model is connected.	If FR-E500 is connected to the station where FR-E700 is set for system setting, switching to ONLINE will display a communication error dialog. In this case, click OK, and proceed converting. If the case is not the one above, please contact your sales representative.	
0x80010021	Operation mode switching during inverter operation is unavailable.	Change the operation mode after the inverter stop.	Set "2" in *Pr. 77 Parameter write selection.* Stop the inverter.
0x80010022	When forward rotation signal (STF) is ON, switching to External mode is unavailable.	Switching to External mode was attempted when forward rotation signal (STF) is ON.	Change the operation mode after switching STF to OFF.
0x80010023	When reverse rotation signal (STR) is ON, switching to External mode is unavailable.	Switching to External mode was attempted when reverse rotation signal (STR) is ON.	Change the operation mode after switching STR to OFF.
0x80010024	Switching of operation mode is unavailable with current operation mode.	Attempted to switch the operation mode other than the one set in *Pr. 79 Operation mode selection*.	Change the setting of *Pr. 79 Operation mode selection.*
0x80010025	Reset is unavailable with current setting.	Reset is restricted 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 to S/W.	Please contact your sales representative.	
0x80010101	Failed to make communication with the inverter during the time set with Time Out.	1. 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 too small. 2. Electromagnetic interference 3. Cable breakage/damage 4. Personal computer port is set invalid/ port breakage	1. Set larger value or 9999 in *Pr. 122 PU communication check time interval, Pr. 336 RS-485 communication check time interval, Pr. 548 USB communication check time interval.* 2. Set larger value for Time Out setting of the software. 3. Cable connection/replacement 4. Activate the port by using Device Manager/port replacement
0x80010102	Illegal data is included in the data received by the computer.	1. Setting of *Pr. 124 PU communication CR/ LF selection, Pr. 341 RS-485 communication CR/LF selection* is different with software setting. 2. Electromagnetic interference 3. Inverter reset (or power-OFF) 4. Cable breakage	1. Set *Pr. 124 PU communication CR/LF selection, Pr. 341 RS-485 communication CR/LF selection* same as the setting of the software. 2. Set larger value in *Pr. 121 Number of PU communication retries, Pr. 335 RS-485 communication retry count.* 3. Do not reset the inverter or turn OFF the inverter power during communication. 4. Replacement of cable

Error Code (HEX)	Error Message	Cause	Countermeasure
0x80020001	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80020002	You cannot write a value out of range to parameter.	Tried to write a value out of setting range of the parameter.	Set a value within the setting range, and write. If a writing error occurs even if a value is written within the setting range, check for writing requirements of each parameter. Refer to *the Instruction Manual of the inverter* for writing requirements.
0x80020003 0x80020004	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x80020005 0x80020006 0x80020007 0x80020008	Failed to obtain the received data.	Failed to obtain the graph sampling data during High Speed sampling.	Close other applications. Set larger value for Mask Count. Decrease the sampling CH.
0x80030001	Wrong communication port is assigned.	1. Communication port is set invalid. 2. Other application is already using the same port.	1. Activate the port by using Device Manager. 2. Close other applications, and turn ONLINE.
0x80030002 0x80030003 0x80030004 0x80030005 0x80030006 0x80030007 0x80030008 0x80030009 0x8003000A 0x8003000B	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x8003000C	Duplicated station number were found with USB communication.		
0x8003000D	An unexpected error occurred to S/W.	Please contact your sales representative.	
0x8003000E	Driver is not installed or broken.	Driver is not installed or broken.	Reinstallation of the software
0x8003000F 0x80030010	An unexpected error occurred to S/W.	Please contact your sales representative.	

5.1.2 Communication error when connected through GOT

POINT

If a Time Out error occurs, set FR Configurator to OFFLINE. Please check a communication cable connection etc, to fix the error and then set FR Configurator to ONLINE again.

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.	1. Communication protocol of the inverter and GOT are not the same. 2. 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". 3. Electromagnetic interference 4. Cable breakage/damaged	1. Set communication protocol of the inverter and GOT same. 2. 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* . 3. Set larger value for Time Out setting of the software. 4. 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 Configurator 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 Configurator 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.	1. Electromagnetic interference 2. Cable breakage/damage	1. Set larger value for Time Out setting of the software. 2. 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 Configurator, 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 Configurator 1. A cable between the GOT and PC is disconnected. 2. The GOT power is OFF.	1. Connect the cable. 2. 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) 1. When a cable between the GOT and PC was disconnected during communication. 2. When the GOT power turned OFF during communication	1. Check for cable connection. 2. 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.

5.1.3 Other error (task busy)

Error Code (HEX)	Error Message	Cause	Countermeasure
Error code other than above	Task busy state. Try the operation again.	Processing could not be completed, due to increase in load of software processing or communication processing.	End unnecessary applications. Delete the setting of non-connected station.

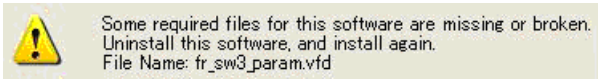
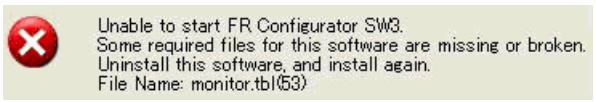
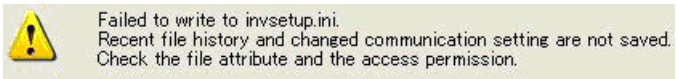
5.2 Error Display on a Dialog

When using or closing FR Configurator, or at fault occurrence, a message dialog appears for providing information or for warning.

There are four types of message dialog.

Icon	Error Type	Mainly Used Button	Description
	Warning	OK	Appears if an attempted operation may have an affect on the human body, or may cause an inverter failure.
	Caution	OK Cancel	Appears when a confirmation is required before the operation.
	Information	Yes No	Appears to provide information about the operation.
	Inquiry	Yes No Cancel	Appears when reply to the inquiry message is variable

There are the following messages for warnings and cautions.

Display	Description
	Appears when FR Configurator has been already started.
	Appears when the display resolution is less than 800 x 600.
	Appears when the startup of the communication control task or the configuration of common memory is failed. Uninstall the software once, and set up again.
	Appears when starting up FR Configurator even though reading of the required files has failed.
	Appears when reading of the required files for the startup has failed, and startup of FR Configurator is unavailable.
	Appears when writing to the setting file is invalid (the file attribute is read-only or write-disabled.)

MEMO

7 APPENDICES

This chapter explains "Supplementary Software" supplied with this product.
Always read the instructions before using the equipment.

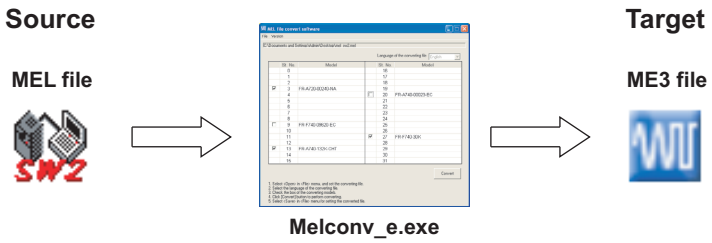
Appendix 1 Supplementary Software MEL file convert software 174

Appendix 1 Supplementary Software MEL file convert software

Appendix 1-1 Introduction

MEL file convert software is a dedicated software to convert former system files (*.mel), which are created in FR Configurator SW2, to the system files (*.me3), which correspond to FR Configurator SW3. Please note in advance that Mitsubishi does not offer any guarantee regarding MEL file convert software.

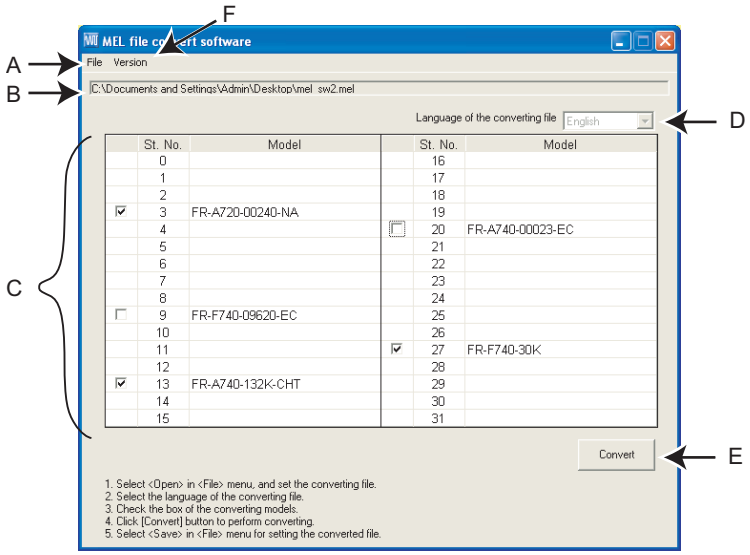
MEL file convert software will be installed in the folder where FR Configurator SW3 is installed. To start this software, double click "Melconv_e.exe."

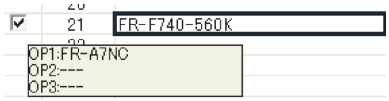


Note

- **System files of setup software SW1 (*.mel) are not supported.**
- **When using Windows Vista or Windows 7, "User Account Control" window may appear for the start up of MEL file convert software. If the window appears, select [Allow] in the "User Account Control" window.** *(Refer to page 6)*
  Also, "Program Compatibility Assistant" window may appear when closing MEL file convert software. If the window appears, select "This program installed correctly" in the "Program Compatibility Assistant" window. *(Refer to page 6)*
- **Parameter increments information is not stored in source system files (*.mel). As a result, increments in the parameter list are not displayed properly in a converted system file (*.me3). To display correct increments, perform parameter write from the parameter list to the inverter. (Parameters are written to the inverter correctly regardless of their displayed increments.)**

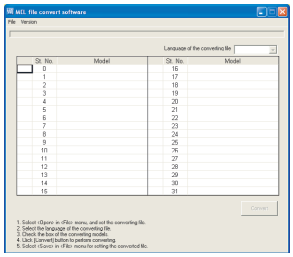
Appendix 1-2 Explanation of window



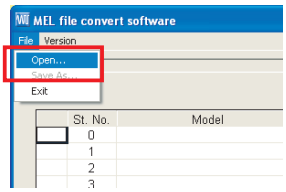
No.	Name		Function and Description
A	File	Open	Screen to select a source file is displayed.
		Save As	Converted file is saved. (This button is active only after a file is converted.)
		Exit	MEL file convert software is closed.
B	Source file		Selected source file is displayed.
C	Model lineup		Inverter model and station number stored in a source file are displayed. Convertible inverter models are displayed with check boxes. Inverters with checks are converted. To display option information of each inverter, move a mouse cursor to the inverter models. 
D	Language of the converting file		Language of a target file can be set to Japanese or English. (When source file is an inverter other than Japanese specification, language cannot be changed.)
E	Convert		Conversion is performed.
F	Version		Version information of MEL file convert software is displayed.

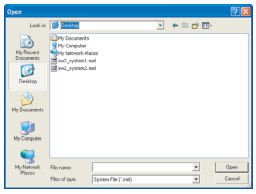
Appendix 1-3 MEL file conversion example

1) Start MEL file convert software.
(Refer to page 174)

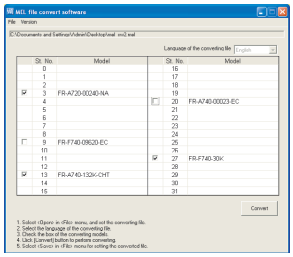


2) Go to [File] menu, click [Open], and select a source file.

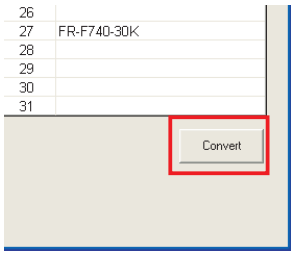




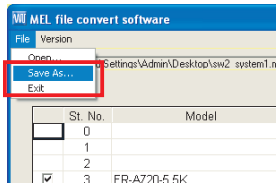
3) Inverter model and station number stored in a source file are displayed. Convertible inverters are displayed with check boxes. Uncheck the inverters which do not need to be converted.

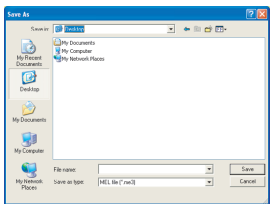


4) Click [Convert] to perform conversion.



5) Go to [File] menu, click [Save], and select a target file.





6) Go to [File] menu, click [Exit] to close MEL file convert software.

REMARKS

- **When the source file is an inverter with Japanese specification, language of the target file can be set to Japanese or English.**

MEMO

REVISIONS

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

Print Date	*Manual Number	Revision
Sep. 2007	IB(NA)-0600306ENG-A	First edition (For Sample Version 0.01)
Jan. 2008	IB(NA)-0600306ENG-B	Addition • Multiple connection of inverters • Connection through GOT (FA transparent function) • Additional functions (Tuning, Troubleshooting, Parameter List Enhancement, Diagnosis, Batch Monitor, I/O Terminal Monitor, I/O Terminal Assignment) (For Sample Version 0.20)
Apr. 2008	IB(NA)-0600306ENG-C	Addition • Compatibility with FR-A700 series, FR-D700 series, FR-F700 series • Machine Analyzer (For Version 3.00)
Nov. 2008	IB(NA)-0600306ENG-D	Addition • Compatibility with FR-A701 series • MEL file convert software (For Version 3.20)
Feb. 2009	IB(NA)-0600306ENG-E	Addition • Compatibility with Microsoft® Windows Vista® operating system (For Version 3.30)
Aug. 2009	IB(NA)-0600306ENG-F	Addition • All St. parameter setting • Parameter List export in EXCEL file type • Connection cable available on the market (DINV-U4) (For Version 3.40)
Aug. 2010	IB(NA)-0600306ENG-G	Addition • Filtering of monitor item display for Batch Monitor • Batch Monitor export in EXCEL file type • Graph export in BMP file type • EEPROM write selection for Batch Write • Search target column selection of Parameter List • Compatibility with Microsoft® Windows® 7 operating system (For Version 4.40)
Feb. 2012	IB(NA)-0600306ENG-H	Addition • Compatibility with FR-E700-SC series, FR-E700-NC series • High speed sampling with FR-A700 series (For Version 4.80)
Mar. 2013	IB(NA)-0600306ENG-J	Addition • Compatibility with FR-F700P series, FR-F700PJ series • FR-A700 series' compatibility with the IPM motors (For Version 5.10)

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