

Inverter Support Software
FRENIC Loader VG
(WPS-VG1-STR)

 CAUTION

Thank you for purchasing our high-performance, vector control FRENIC-VG series of inverters.

- This manual provides all the information on Fuji's inverter support software FRENIC Loader VG.

Read this manual carefully for correct use of FRENIC Loader VG

- This manual does not contain information on the inverter itself. Read the inverter user's manual, inverter instruction manual in conjunction with this manual.
- Incorrect handling may prevent Loader from operating correctly, shorten the inverter service life, or cause problems.

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The information contained herein is subject to change without prior notice for improvement.

Preface

This manual provides all the information on Fuji's inverter support software FRENIC Loader VG.

Read this manual carefully for correct use of FRENIC Loader VG



This manual does not contain information on the inverter itself. Read the inverter user's manual, inverter instruction manual in conjunction with this manual.

Incorrect handling may prevent Loader from operating correctly, shorten the inverter service life, or cause problems.


■ Safety Precautions

Read this manual thoroughly before proceeding with installation, connections (wiring), or operation. Ensure you have sound knowledge of the device and software and have familiarized yourself with all safety information and precautions before proceeding to operate the inverter via FRENIC Loader VG

Safety precautions are classified into the following two categories in this manual.

 WARNING	Failure to heed the information indicated by this symbol may result in death or serious injury.
 CAUTION	Failure to heed the information indicated by this symbol may result in minor or light injury and/or substantial property damage.

Wiring and Connection of Cables

 WARNING
<ul style="list-style-type: none">• Be sure to turn off the power to the inverters and related devices before making RS-485 connection. <p>Risk of electric shock if this warning is not heeded.</p>

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Chapter 1 Before Using FRENIC Loader VG

This chapter gives an overview of the inverter support software FRENIC Loader VG and provisions for its installation and operation.

1.1. Overview

1.1.1. Features

- Loader enables a PC to support remote operation of inverters either individually or collectively via the RS-485 port or the USB port on the inverters.
- Simplified operation of Loader allows you to easily manage and set the function code data for the inverter.

1.1.2. Warranty

Limited Warranty	In no event will Fuji Electric Co., Ltd. be held liable for any damage (including, but not limited to lost profit, suspension or interruption of operations, loss of operational data or other monetary loss) whatsoever resulting from the use of the software or malfunction of the same or from information contained in this document.
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1.2. Connecting Inverters to a PC

1.2.1. Connection

The table below lists the connection methods available for connecting inverters to a PC.

PC : Inverters	On PC	On inverter	Connection
1 : 1	USB	USB	Using a USB cable
	USB	RS-485	Via a USB / RS-485 converter
	COM port (RS-232C)	RS-485	Via an RS-232C / RS-485 converter
1 : n	USB	RS-485	Via an RS-232C / RS-485 converter When using an RJ-45 connector, use a branch adapter for multi-drop connection for each of the 2nd and the subsequent inverters.
	COM port (RS-232C)	RS-485	Via an RS-232C / RS-485 converter



- 1) For details about the RS-232C / RS-485 converter and USB / RS-485 converter, refer to Section 1.2.3.2. " Communications support devices for RS-485".
- 2) To minimize the effects of noise, separate the signal lines from the power lines. Refer to Section 1.2.3.2. " RS-485 Noise suppression.
- 3) The inverter cannot be concurrently shared by the Loader-running PC and other host equipment (e.g., PLC). To use Loader, therefore, be sure to disconnect the cables of other host equipment from the RS-485 port on the inverter.
- 4) For multi-drop connection of inverters, assign different station addresses to each of the inverters connected.

WARNING

- Be sure to turn off the power to the inverters and related devices before making RS-485 connection.

Risk of electric shock if this warning is not heeded.

1.2.2. Configuring USB network

1.2.2.1. Example of networking

To configure a USB network connecting the inverter and a Loader-running PC, use a commercially available USB cable (mini B connector). (See **Note** below.)

Connection using the USB connector

For connection using the USB connector, refer to Section 1.4.4. "Setting up communications parameters."

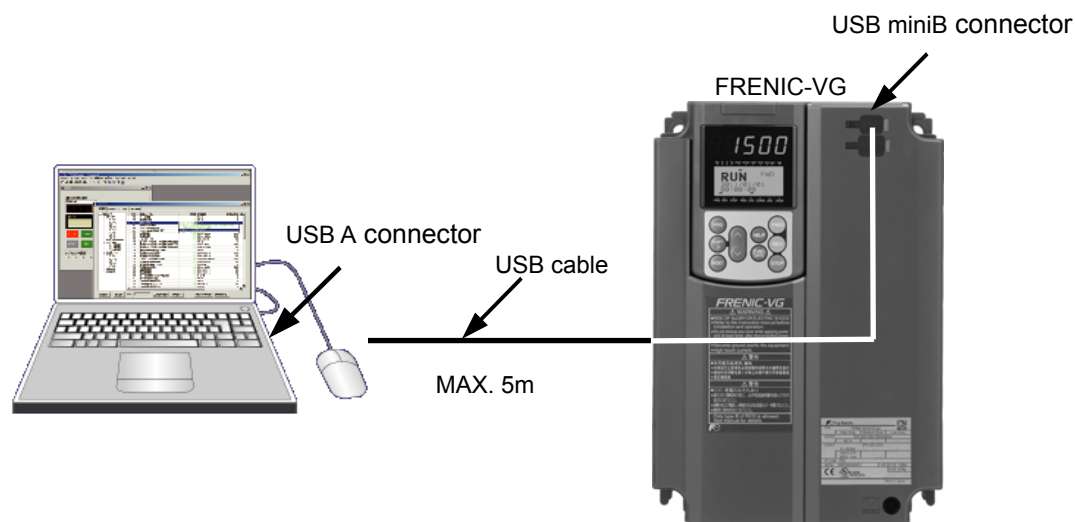


Figure 1.2.2-1 USB Network Using a USB Cable (mini B)

Table 1.2.2-1 Specifications of USB Network


Specifications	USB 1.1 compliant
Transmission speed	12M bps
Wiring length	Max. 5 m
Connector	USB mini B connector



Note When connecting the inverter to a PC via the USB port, be sure to connect them, one to one. Do not use a USB hub.

1.2.3. Configuring an RS-485 communications network

1.2.3.1. Example of networking

To configure an RS-485 communications network connecting inverters and a Loader-running PC, use a Shielded twisted pair cable for long distance transmission. (See  below.)

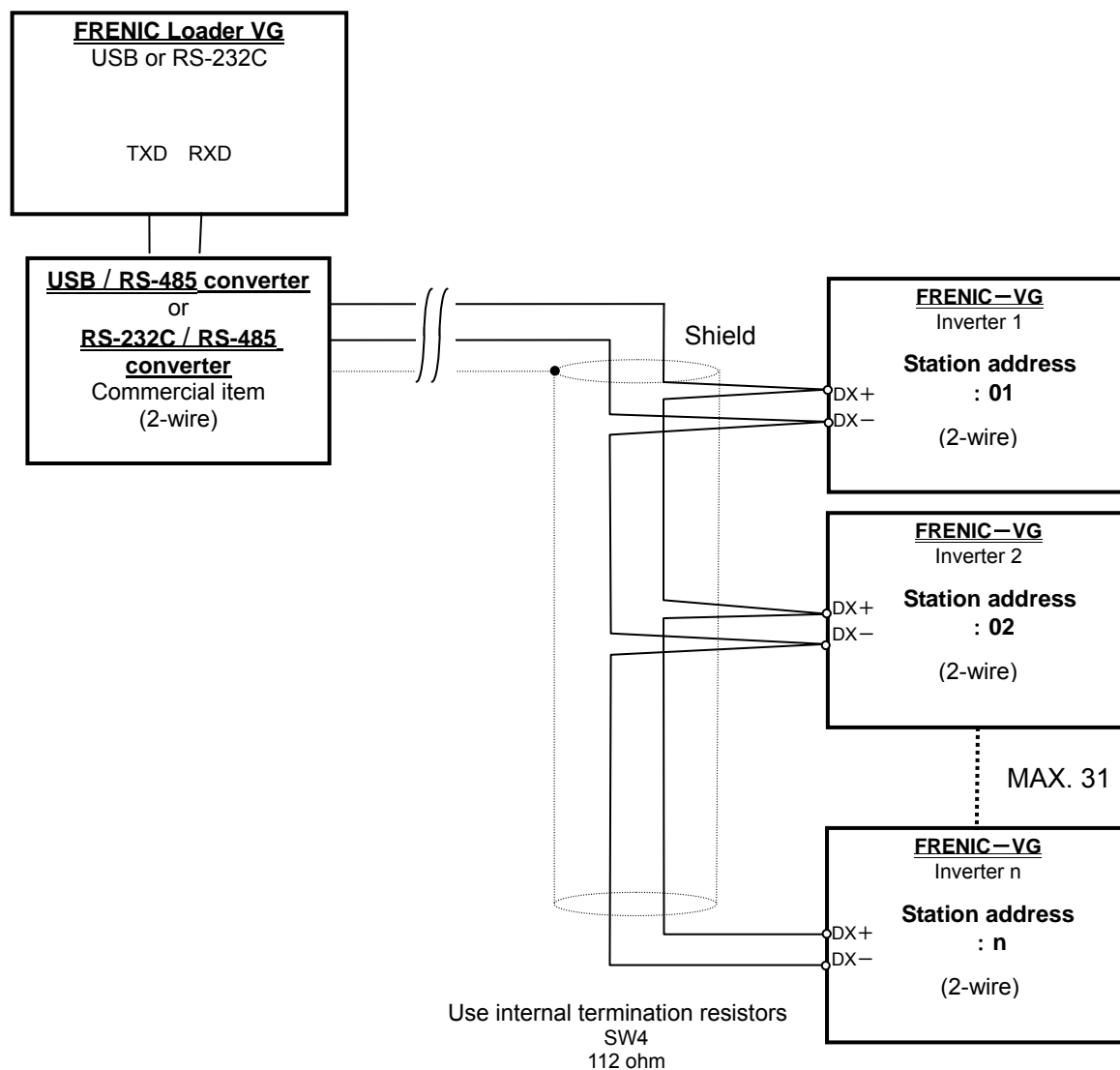


Figure 1.2.3-1 RS-485 Multi-drop Network (Terminal Block Connections)



When selecting communications support devices that protect parts on the printed circuit boards of inverters from damage or malfunction due to external electrical noise or to keep the network in high noise immunity level, carefully read through the descriptions in FRENIC-VG user's manual Section 5.1.4 "Communications support devices for RS-485".

1.2.3.2. Communications support devices for RS-485

Description of the equipment needed when connecting to a PC not equipped with an RS485 interface, refer to FRENIC-VG user's manual Section 5.1.4 "Communications support devices for RS-485".

1.2.3.3. Noise suppression

Depending on the operating environment, instruments may malfunction due to the noise generated by the inverter. Possible measures to prevent such malfunction are: separating the wiring, use of shielded cable, isolating the power supply, and adding an inductance component. Show below is an example of adding an inductance component.

Adding inductance components

To suppress or eliminate noise for keeping the network in high noise immunity level, insert inductance components such as choke coils in series in the signal circuit, or pass the RS-485 communications cable through a ferrite core ring or wind it around by 2 or 3 turns as shown below to keep the impedance of the signal lines high.

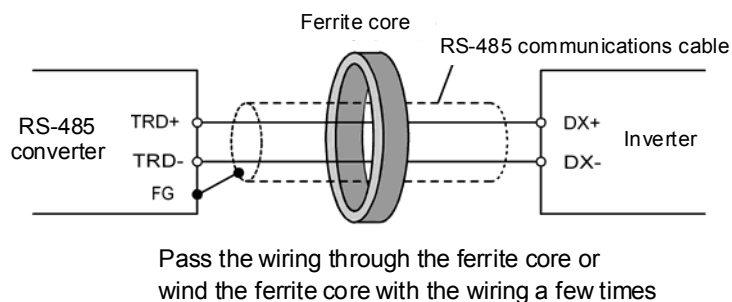


Figure 1.2.3-2 Adding an Inductance Component

1.3. Installation

1.3.1. Installing software

Before installation

Execute the following before installation.

Check items	Requirements
Windows OS	Microsoft Windows XP, Vista (32-bit), or 7 (32-bit / 64-bit)
Hard disk space	Free space of approx. 9 MB or more
Other applications	Terminate all the applications being in execution.
Uninstalling the Earlier version of Loader	If any earlier versions of FRENIC Loader VG have been installed on your PC, uninstall it.
Uninstalling the Message Manager of VG7 loader	If Message Manager of VG7 loader has been installed on your PC, uninstall it.

[FRENIC Loader VG Setup.exe] and [MsgMgr USB Setup. exe] are contained in the CD that comes with Fuji Inverter FRENIC VG. Copy these setup files to any folder.



Note

To use FRENIC Loader VG, you need to install two setup files: the loader software main program [FRENIC Loader VG Setup.exe] and the message manager [MsgMgr USB Setup.exe] that manages communications.

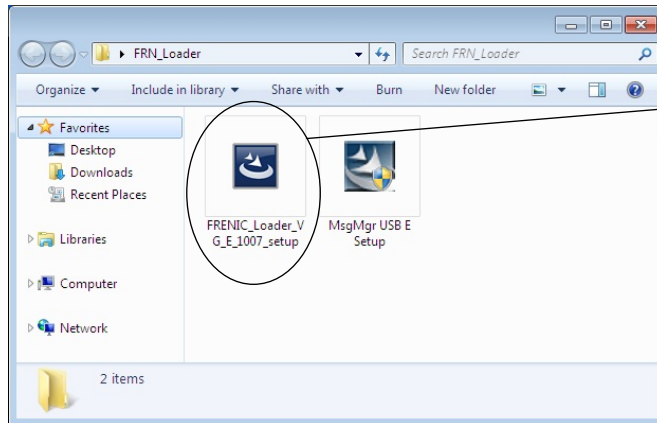
To install the loader software, install with an account that has sufficient authority to install the software.

Paid version (WPS-VG1-PCL) and free version (WPS-VG1-STR) of FRENIC Loader VG can not be installed at the same time. Install the loader software of one or the other.

1.3.1.1. Installing FRENIC Loader VG

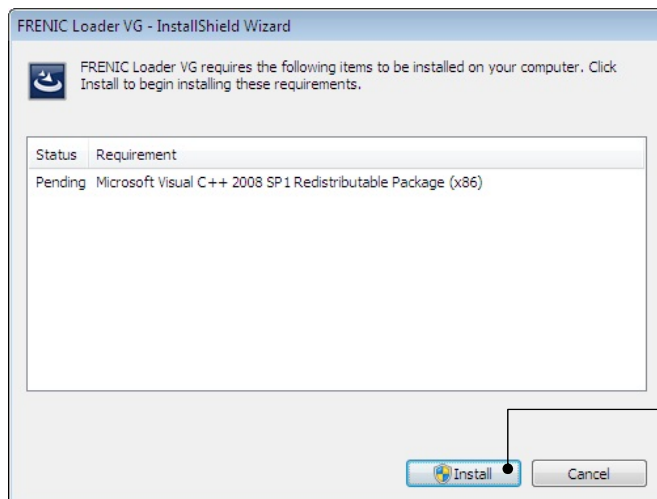
[1] Windows 7 / Windows Vista

Follow the wizard and install Loader as shown below.

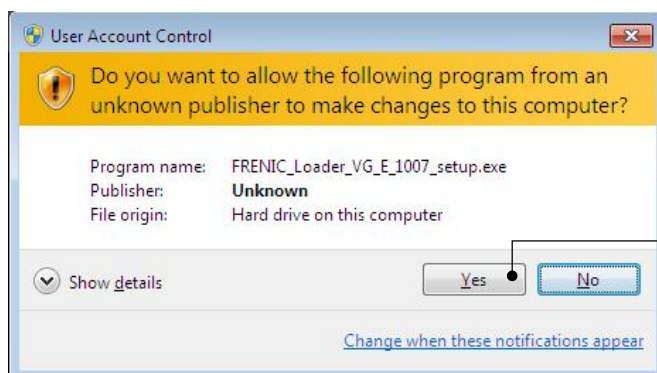


Double-click the FRENIC Loader VG Setup.exe icon.

The exe automatically starts the installation wizard.

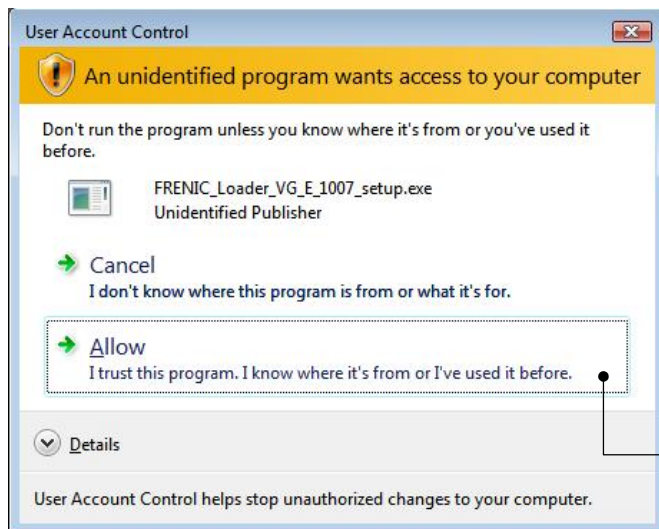


To continue, click **Install**.



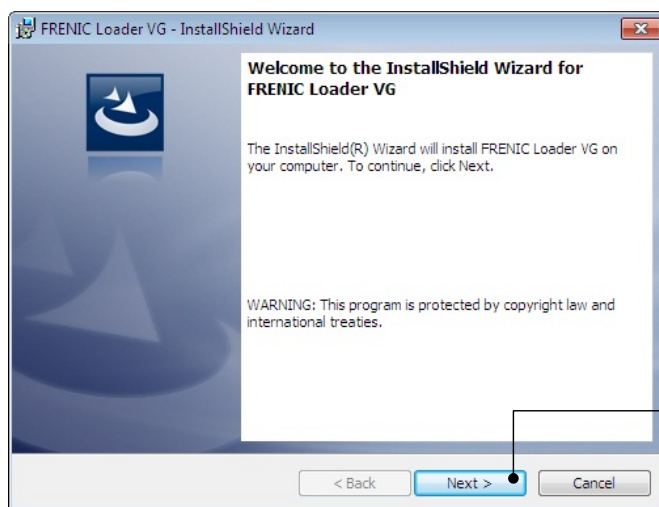
* Windows 7 only

To continue, click **Yes**.

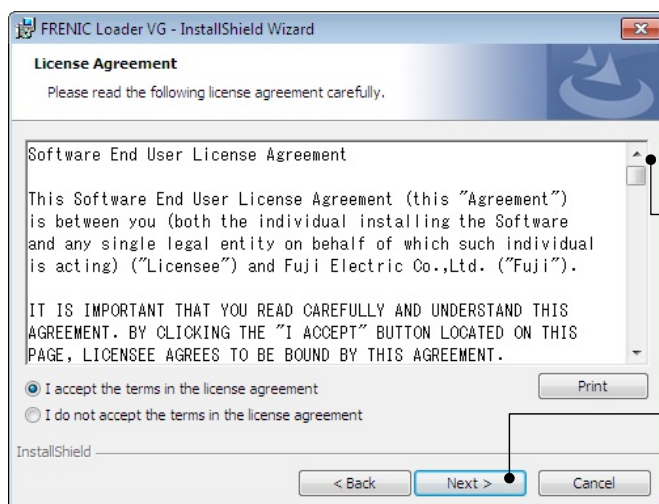


* Windows Vista only

To continue, click **Allow**.

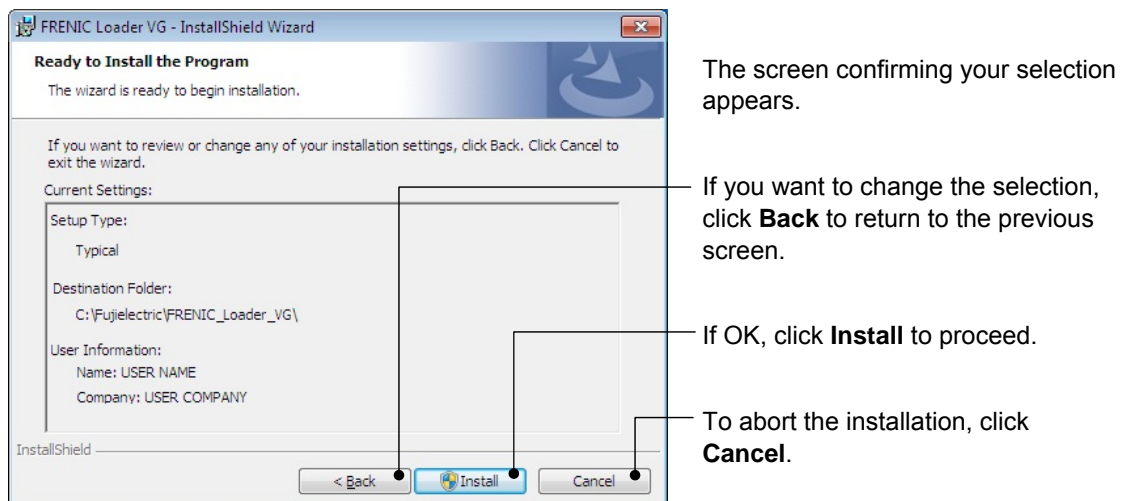
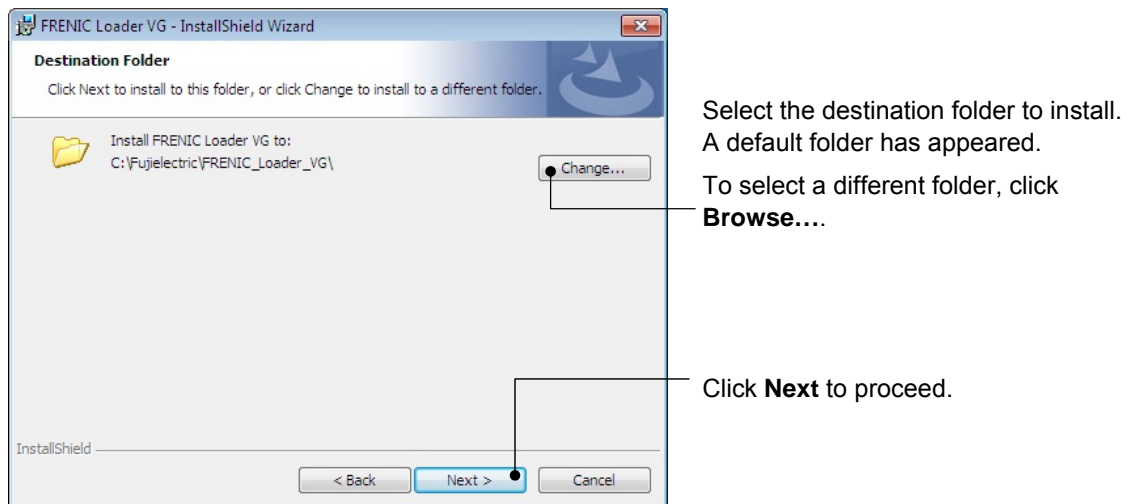
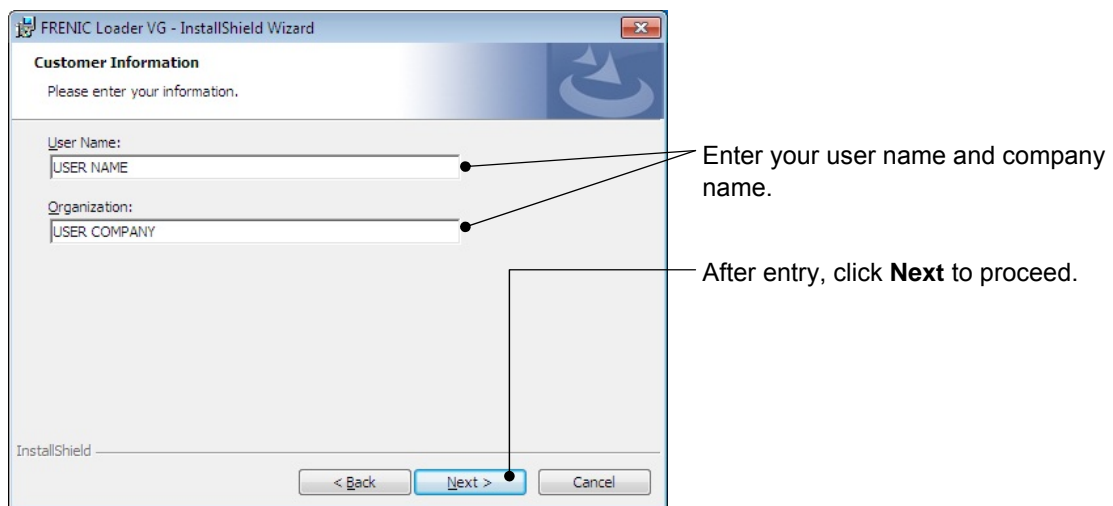


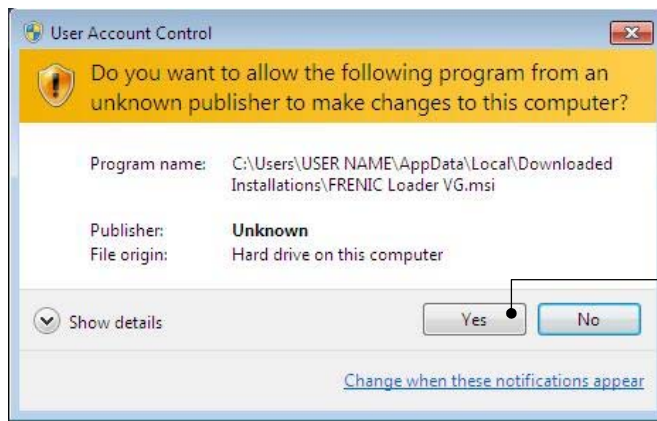
To continue, click **Next**.



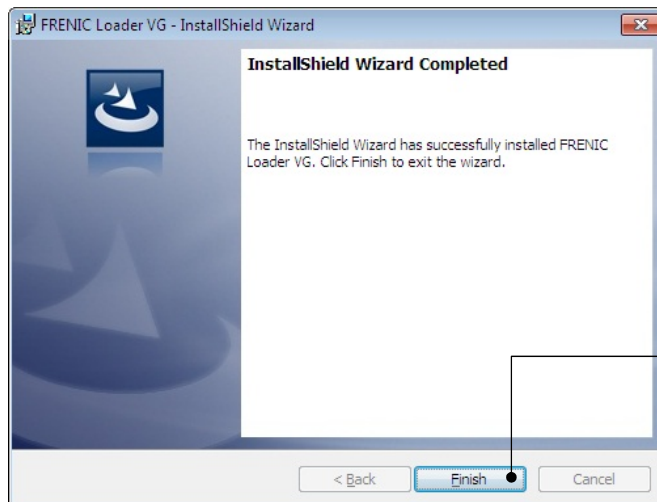
Carefully read the license agreement. To view the entire contents of the agreement, scroll the screen up and down using the Page Up/Down keys or the scroll bar.

If you agree, click **Next** to proceed.





To continue, click **Yes**.

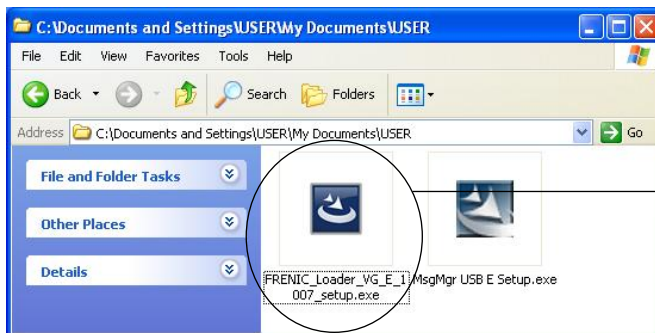


Upon completion of the installation, the screen at left appears.

To exit the installation wizard and return to Windows, click **Finish**.

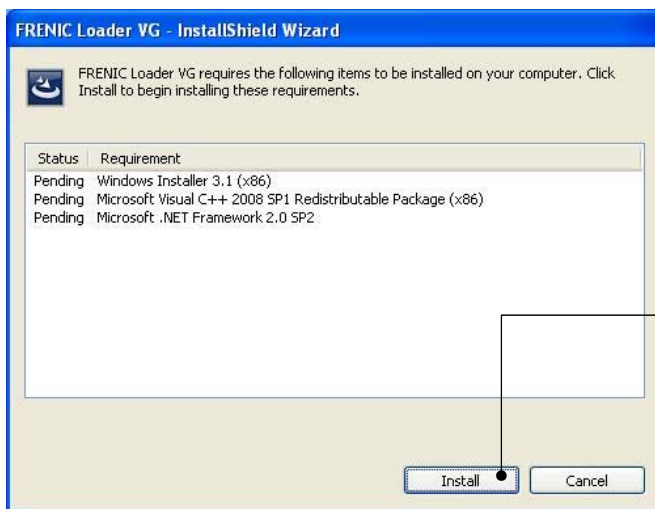
[2] Windows XP

Follow the wizard and install Loader as shown below.



Double-click the FRENIC Loader VG Setup.exe icon.

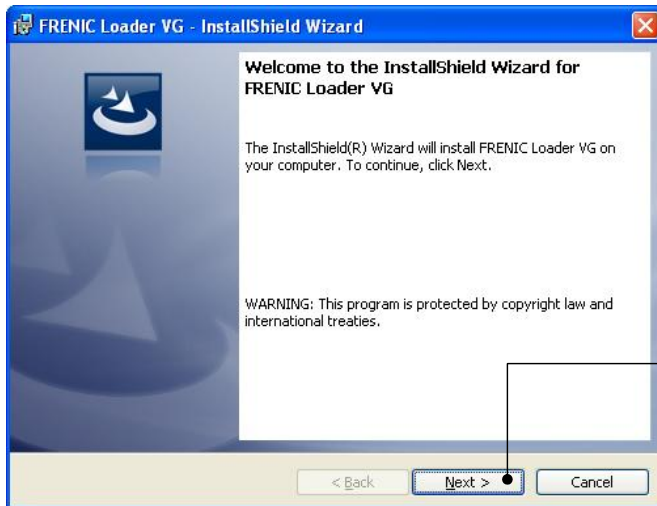
The exe automatically starts the installation wizard.



To continue, click **Install**.



To abort the installation, click **Cancel**.



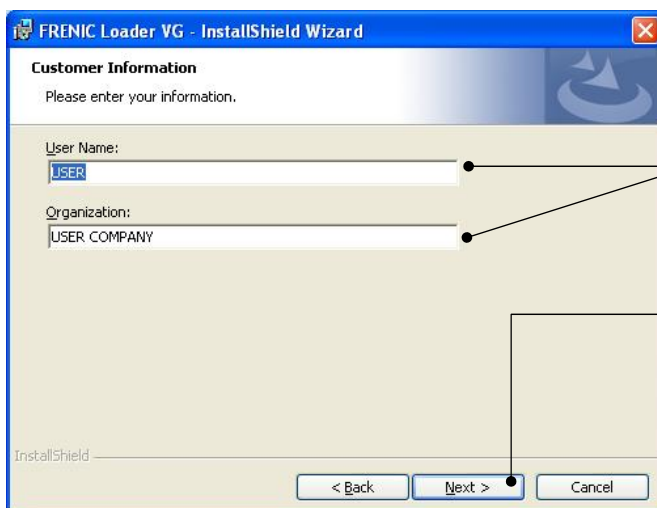
To continue, click **Next**.



Carefully read the license agreement.

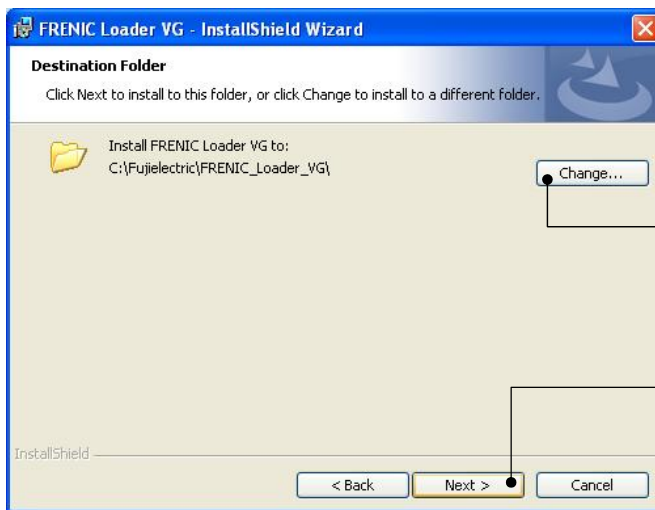
To view the entire contents of the agreement, scroll the screen up and down using the Page Up/Down keys or the scroll bar.

If you agree, click **Next** to proceed.



Enter your user name and company name.

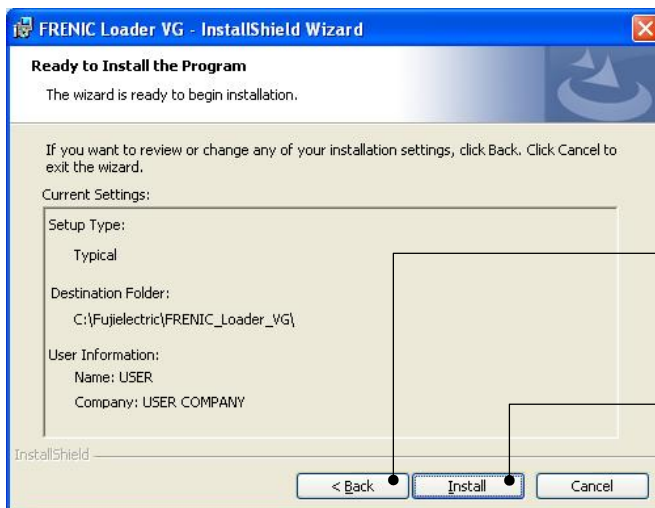
After entry, click **Next** to proceed.



Select the destination folder to install.
A default folder has appeared.

To select a different folder, click
Browse...

Click **Next** to proceed.

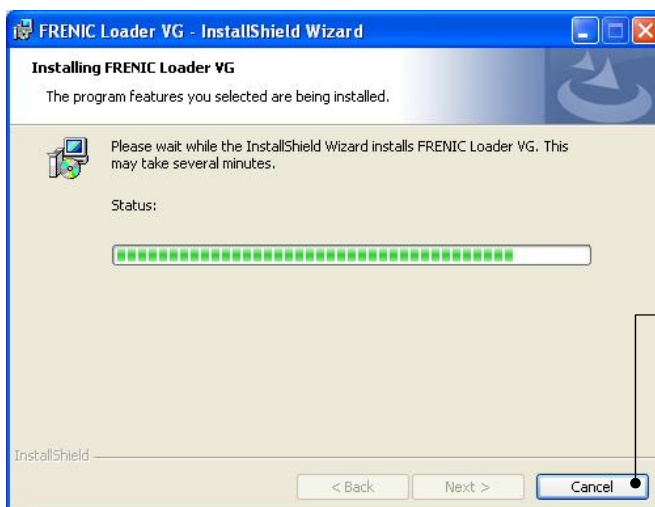


The screen confirming your selection
appears.

If you want to change the selection,
click **Back** to return to the previous
screen.

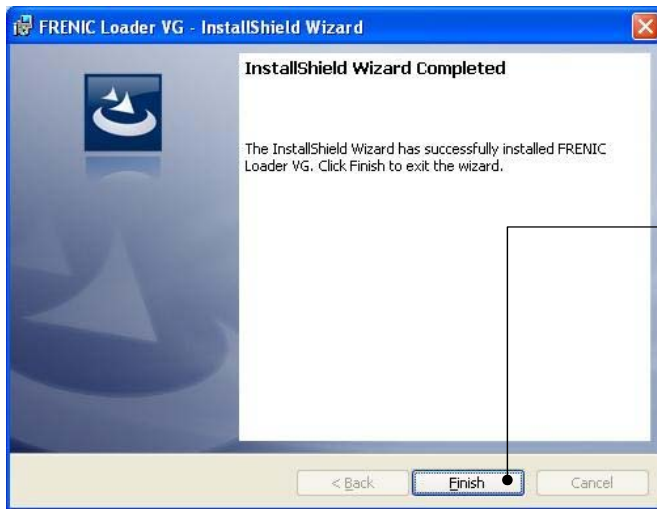
When it is ready to restart, click Yes
Install.

*If you do not restart FRENIC Loader
VG, the program cannot be normally
installed.



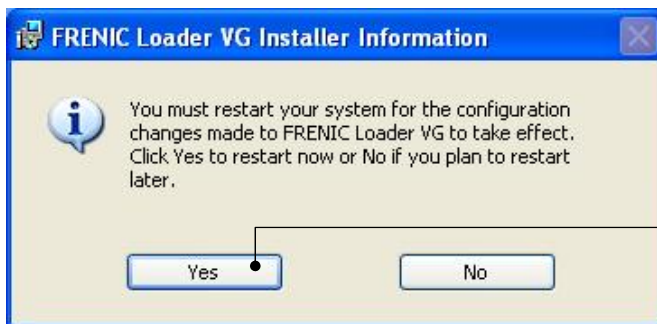
The installation progress bar
appears.

To abort the installation, click
Cancel.



Upon completion of the installation, the screen at left appears.

To exit the installation wizard and return to Windows, click **Finish**.

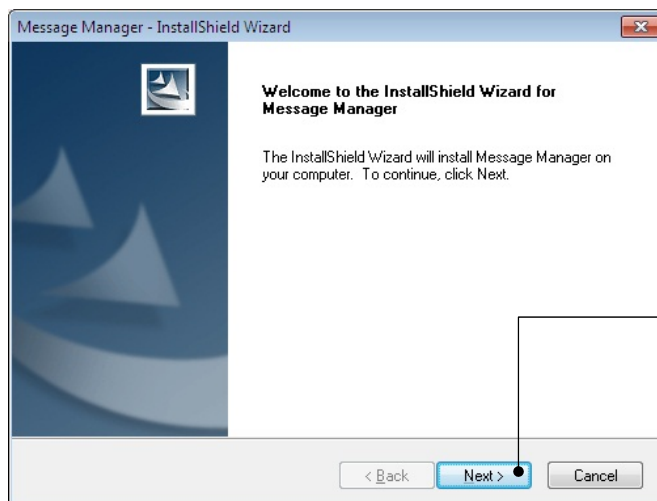
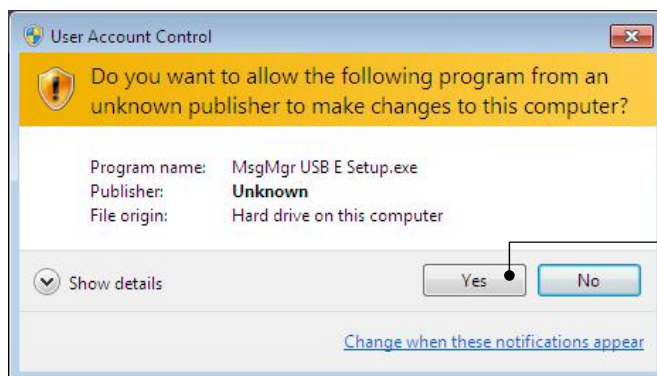
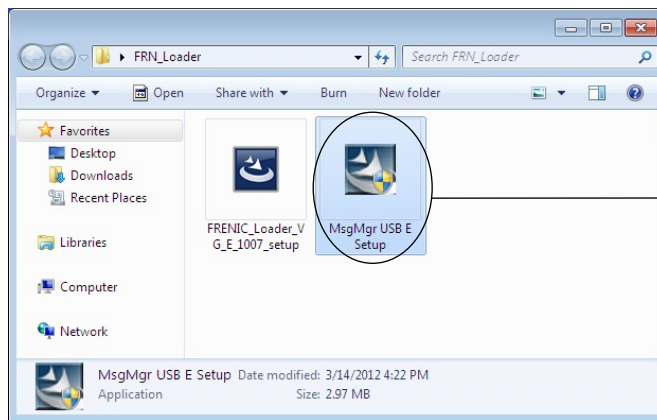


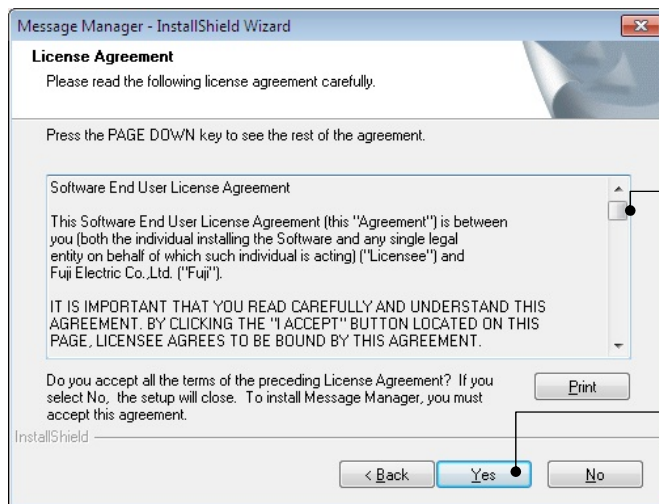
When it is ready to restart, click **Yes**.

*If you do not restart FRENIC Loader VG, the program cannot be normally installed.

1.3.1.2. Installing Message Manager

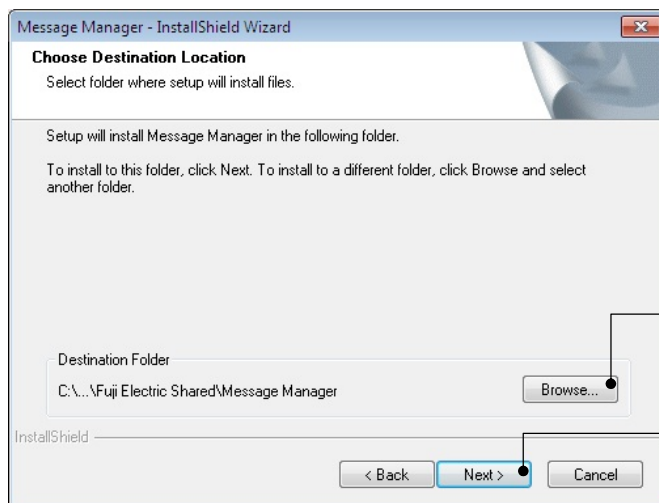
Follow the wizard and install Message Manager as shown below.





Carefully read the license agreement. To view the entire contents of the agreement, scroll the screen up and down using the Page Up/Down keys or the scroll bar.

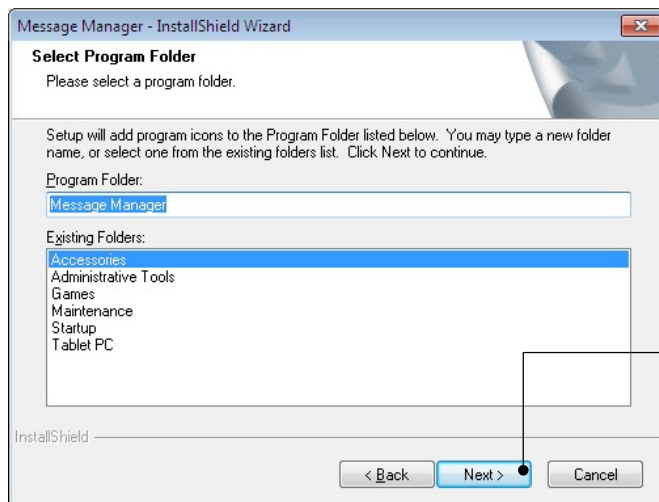
If you agree, click **Yes** to proceed.



Select the destination folder to install. A default folder has appeared.

To select a different folder, click **Browse....**

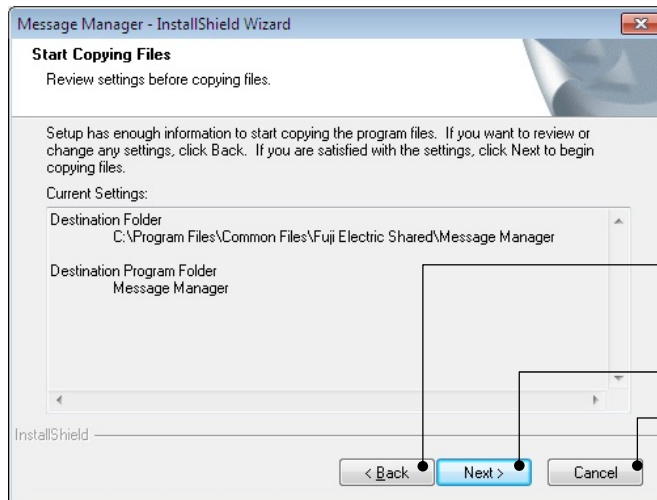
Click **Next** to proceed.



Select the start menu folder that the shortcut to FRENIC Loader is to be added to.

You can select one from existing folders in the list or create a new one.

After entry, click **Next** to proceed.

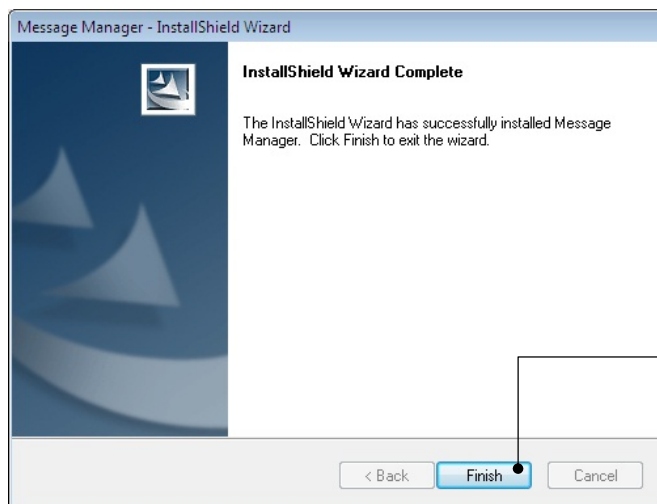


The screen confirming your selection appears.

If you want to change the selection, click **Back** to return to the previous screen.

If OK, click **Next** to proceed.

To abort the installation, click **Cancel**.



Upon completion of the installation, the screen at left appears.

To exit the installation wizard and return to Windows, click **Finish**.

1.3.1.3. Installing USB driver

Using the USB interface for accessing the inverter(s) requires installing the USB driver to your PC. The driver installation is required only once at the first use of the USB interface.

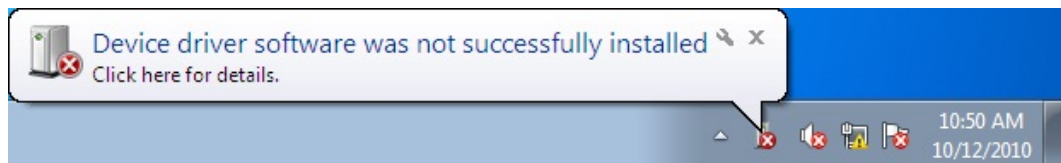
Note If the USB driver has not been installed correctly, no communication via the USB interface is possible.

First of all, connect the USB connector (A) on the PC and the USB connector (mini B) on the inverter's keypad with each other using a USB cable.

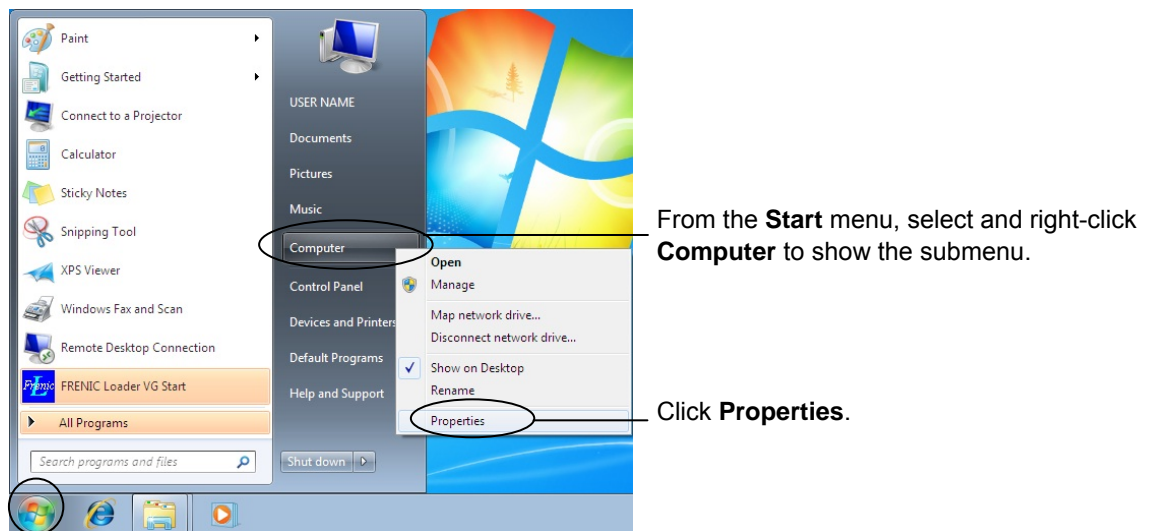
Note Before installation of the USB driver, install Loader and Message Manager.

[3] Windows 7

When the OS finds a USB device of the Loader, it displays the following.

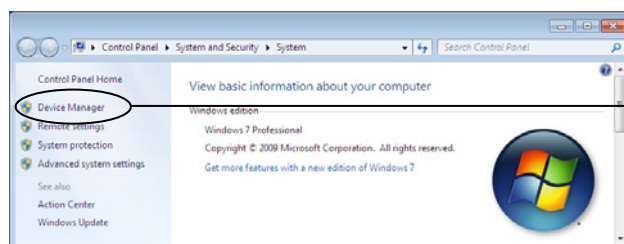


The system-supplied driver setup wizard does not run automatically. Install the USB driver as shown below.

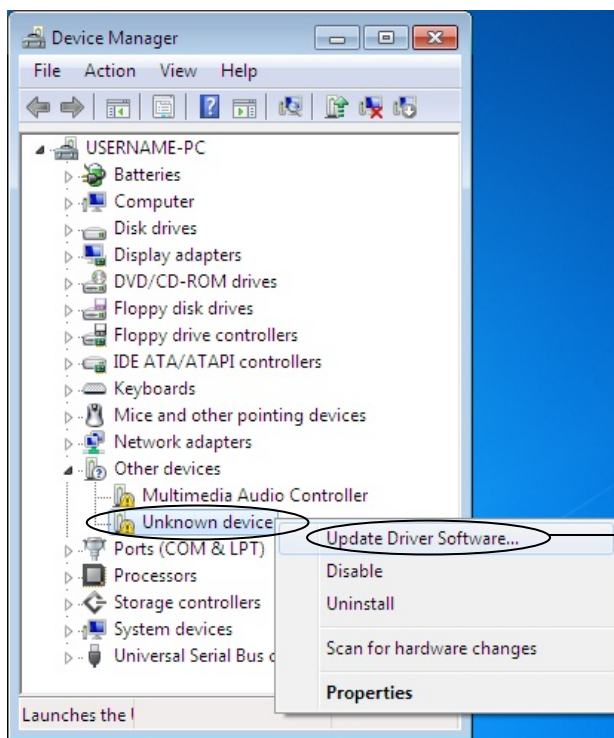


From the **Start** menu, select and right-click **Computer** to show the submenu.

Click **Properties**.

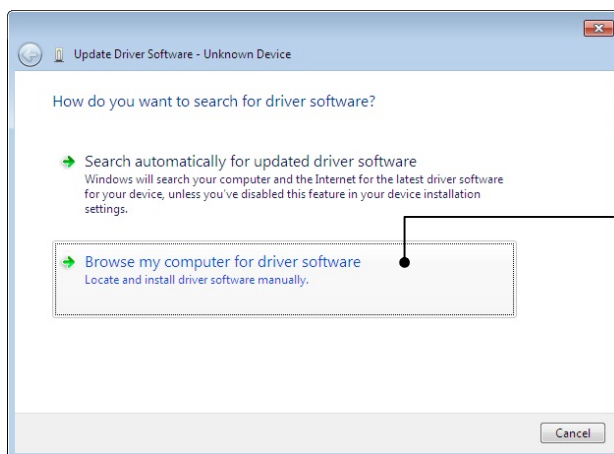


Wait for the Control Panel Home screen and click **Device Manager**.

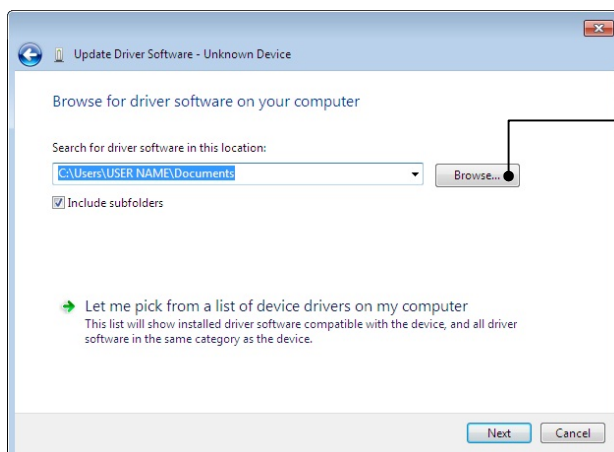


On the **Device Manager** window, right-click **Unknown device** to show the drop-down list.

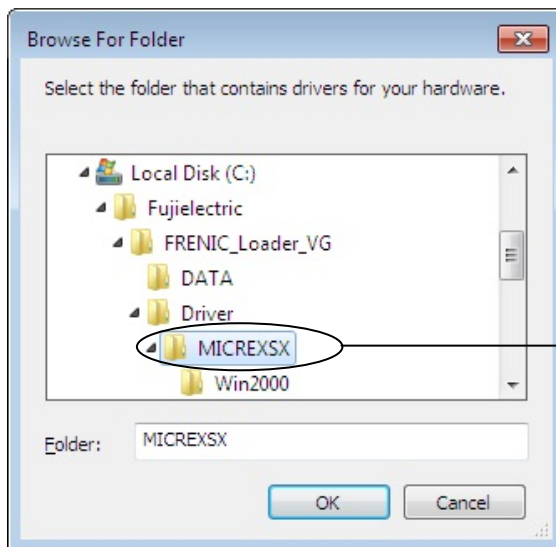
Click **Update Driver Software....**



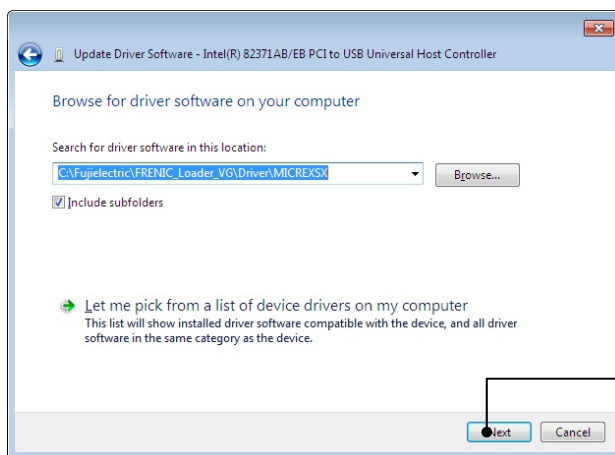
Click **Browse my computer for driver software.**



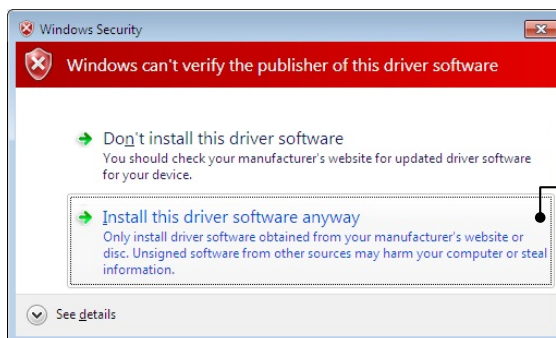
Click **Browse....**



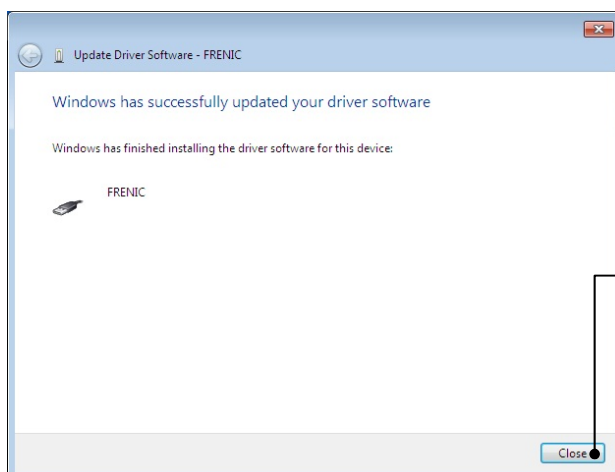
In the folder in which FRENIC Loader has been installed, select ¥Driver¥MICREXSX and then click **OK**.
The default folder is C:¥Fuji Electric ¥FRENIC_Loader_VG¥Driver¥MICREXSX when the OS drive is C.



To continue, click **Next**.



Click **Install this driver software anyway**.

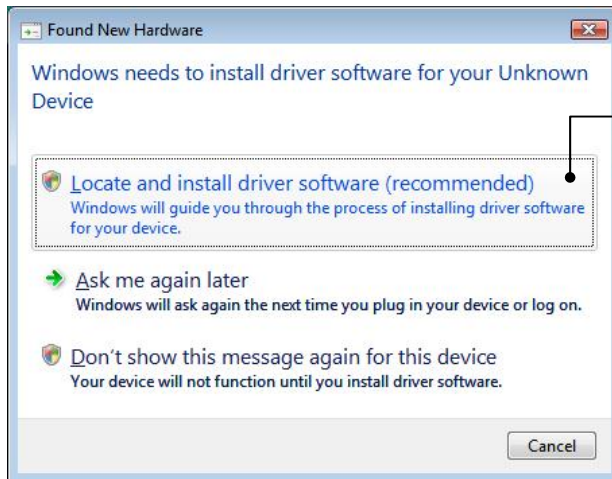


Upon completion of the installation, the screen at left appears.

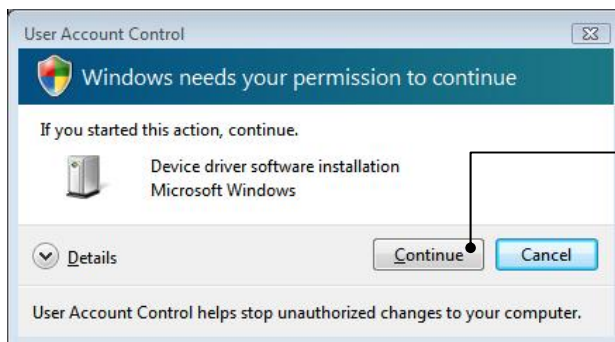
To exit the installation wizard and return to Windows, click **Close**.

[4] Windows Vista

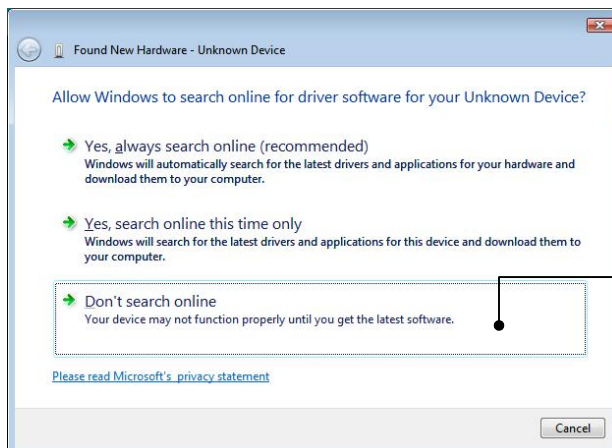
When the OS finds a USB device of the Loader, it displays the following. Follow the wizard and install Loader as shown below.



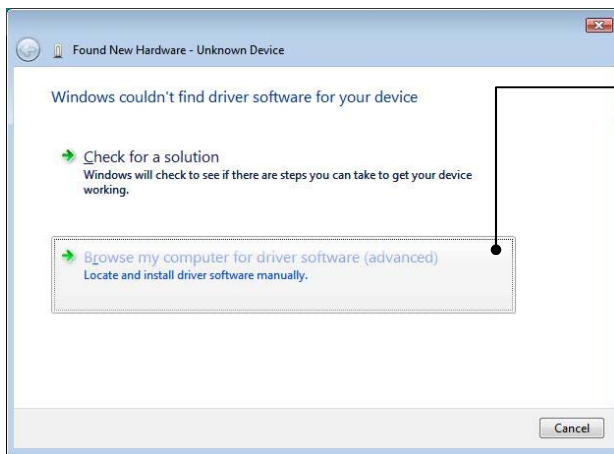
Click **Locate and install driver software**.



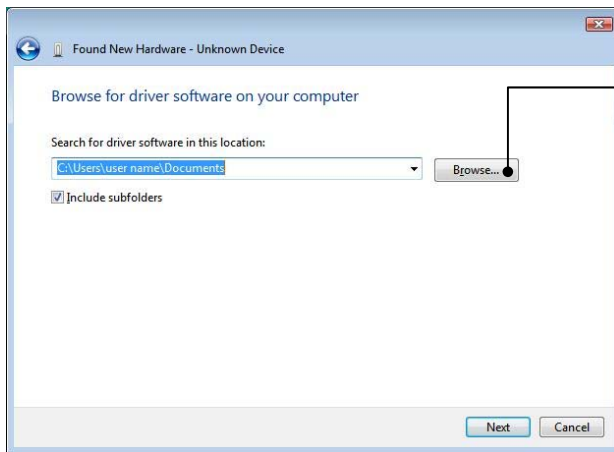
Click **Continue** to proceed.



Click **Don't search online**.



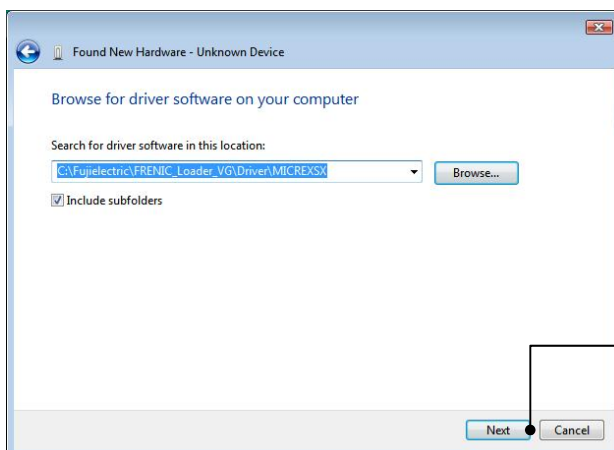
Click **Browse my computer for driver software (advanced)**.



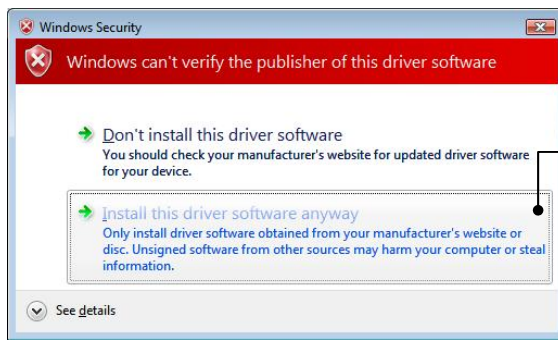
Click **Browse....**



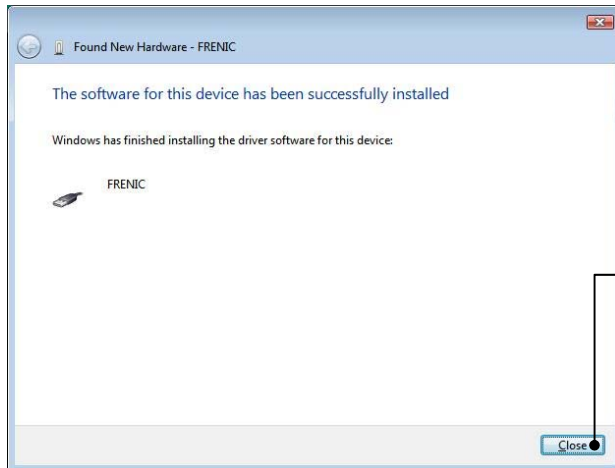
In the folder in which FRENIC Loader has been installed, select ¥Driver¥MICREXSX and then click **OK**.
The default folder is C:¥ Fuji Electric ¥FRENIC Loader VG¥Driver¥MICREXSX when the OS drive is C.



To continue, click **Next**.

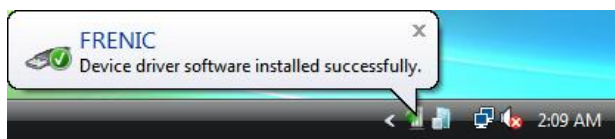


Click **Install this driver software anyway**.



Upon completion of the installation, the screen at left appears.

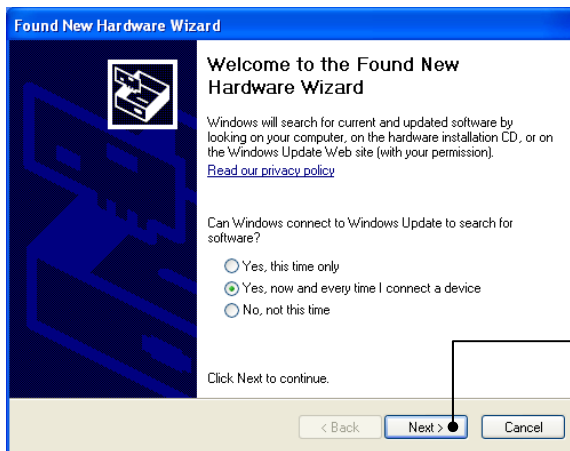
To exit the installation wizard and return to Windows, click **Close**.



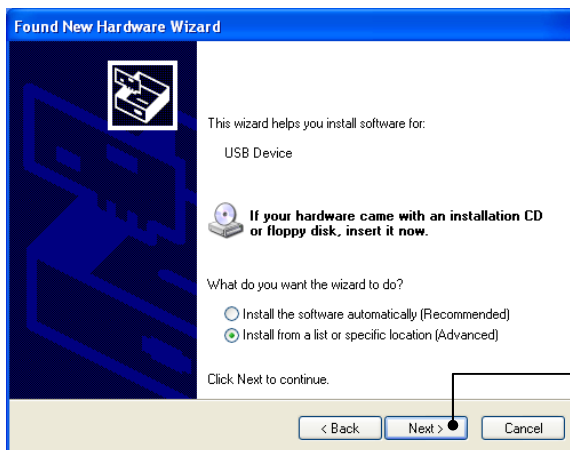
This message appears when the USB driver has been successfully installed.

[5] Windows XP

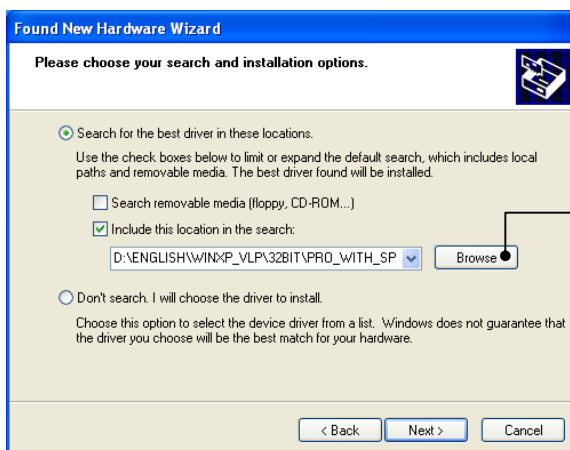
When the OS finds a USB device of the Loader, it displays the following. Follow the wizard and install Loader as shown below.



Wait for this screen to appear, select **Yes, now and every time I connect a device**, then click **Next**.



Select **Install from a list or specific location (Advanced)**, then click **Next**.

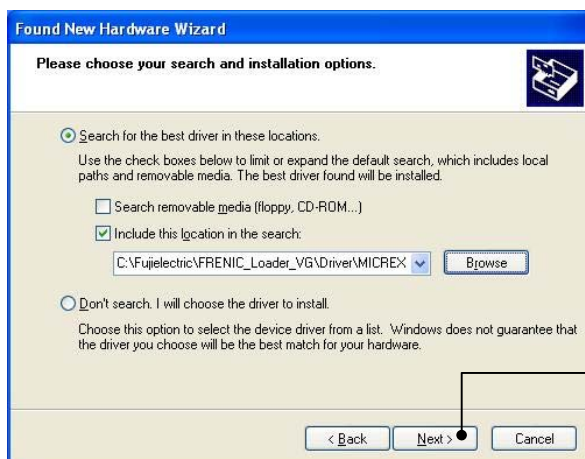


Select **Search for the best driver in these locations** and the **Include this location in the search** check box, then click **Browse...**



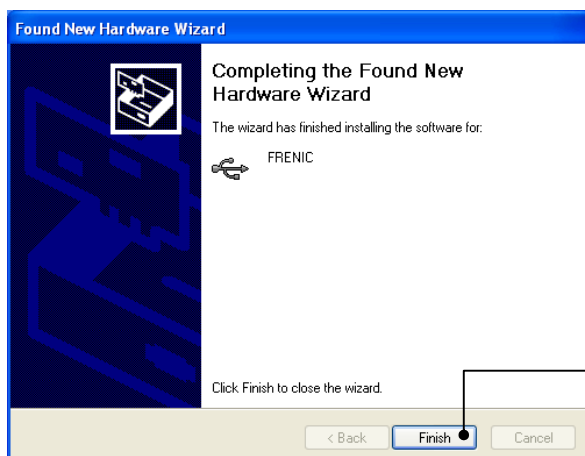
In the folder in which FRENIC Loader has been installed, select ¥Driver¥MICREXSX and then click **OK**.

The default folder is C:¥Fuji Electric ¥FRENIC Loader VG¥Driver¥MICREXSX when the OS drive is C.



Click **Next**.

Installation starts.



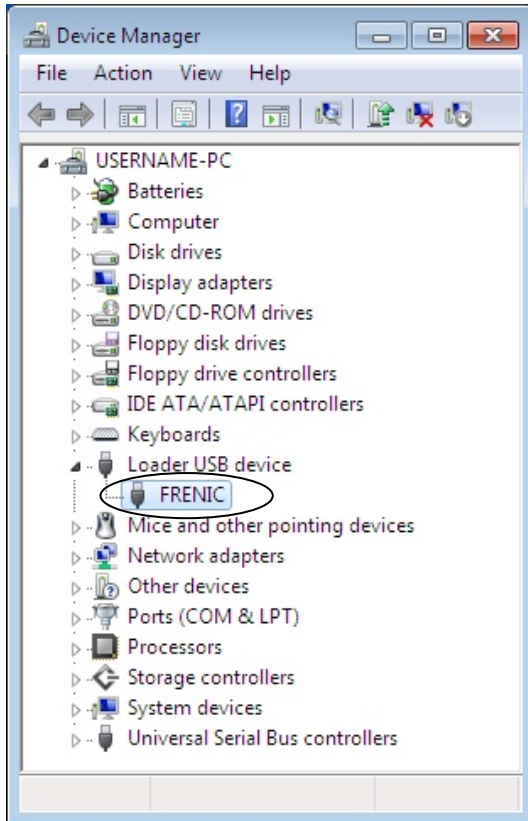
Upon completion of the installation, the screen at left appears.

To exit the installation wizard and return to Windows, click **Finish**.

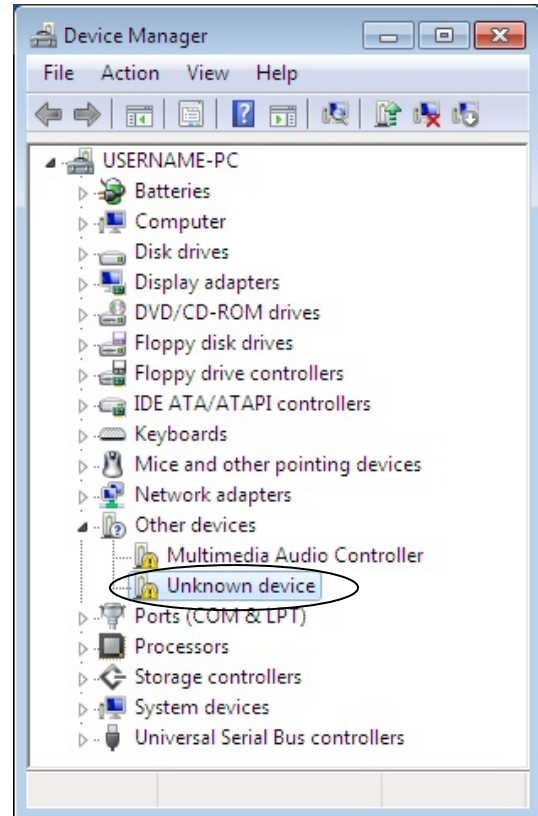
1.3.1.4. Checking the installation of the USB driver

To check whether the USB driver has been installed correctly, open Device Manager. If **FRENIC** is added to the sub-tree of Loader USB device, the driver has been installed correctly.

Installation finished successfully



Installation failed

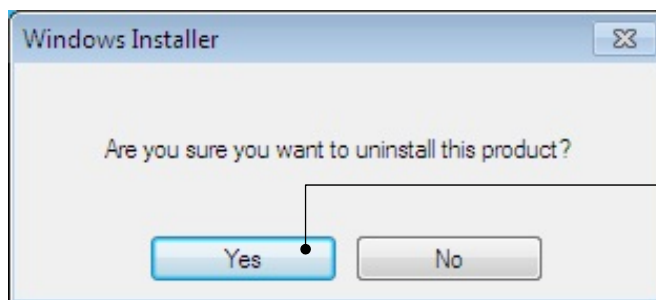
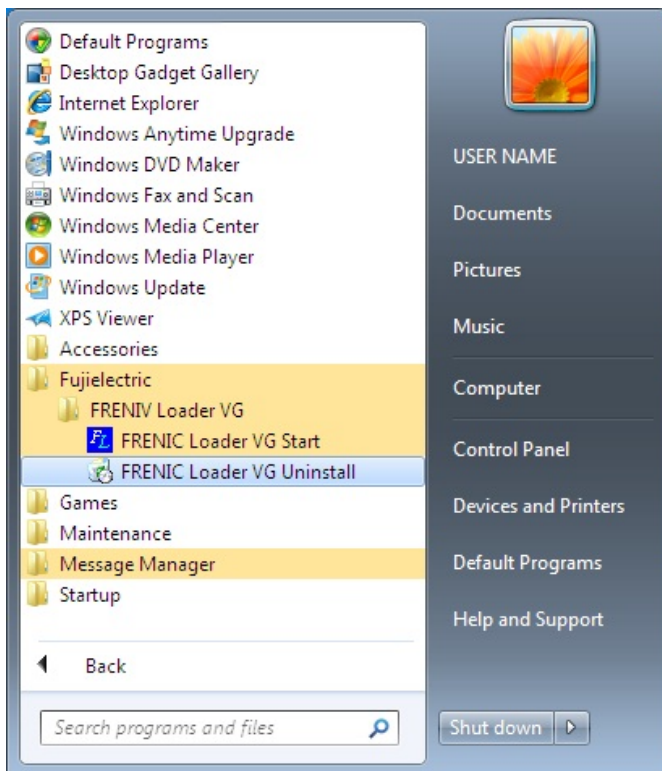


1.3.2. Uninstallation

1.3.2.1. Uninstalling FRENIC Loader VG

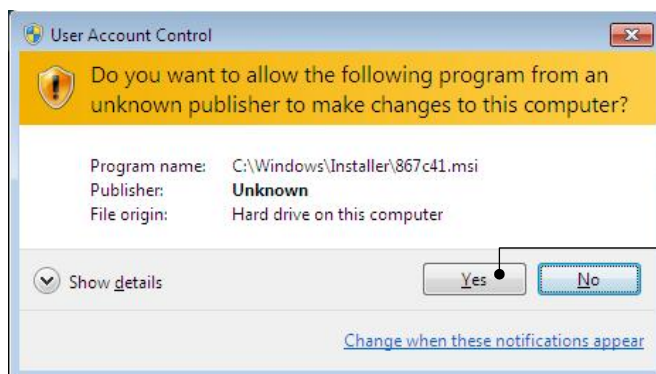
[1] Windows 7 / Windows Vista

From the **Start** menu, select **All Programs | FRENIC Loader VG | FRENIC Loader VG Uninstall**.



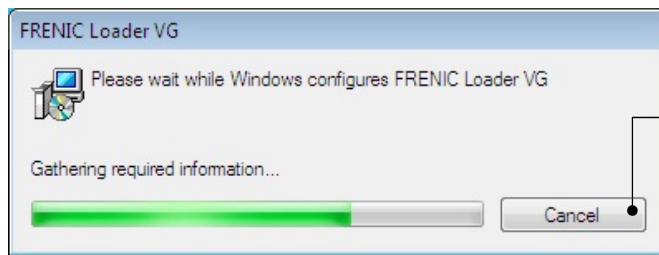
The confirmation screen at left appears.

Click **Yes**.



The confirmation screen at left appears.

Click **Yes**.



The uninstallation progress bar appears.
To abort the uninstallation, click **Cancel**.

In the above procedure, perform the uninstallation.

[2] Windows XP

From the **Start** menu, select **All Programs | FRENIC Loader VG | FRENIC Loader VG Uninstall**.



The uninstallation confirmation screen appears as shown left.

To proceed and uninstall Loader, click **Yes**.



The uninstallation progress bar appears.

To abort the uninstallation, click **Cancel**.

In the above procedure, perform the uninstallation.

1.3.2.2. Before uninstalling Message Manager

Before uninstalling Message Manager, be sure to quit both Loader and Message Manager.

Note Quitting Message Manager

Message Manager is software that manages communication between the PC and inverters. To make sure that Message Manager has quitted, check that no Message Manager icon is displayed in the task tray. If the icon is displayed, right-click it to quit Message Manager. If doing so cannot quit it, shut down or log off Windows.

Once you uninstall Loader when Message Manager is running, a new version of Loader installed after that cannot run properly, that is, it may no longer be able to recognize inverters. If this happens, first delete the folder (including its contents) named Fuji Electric Shared in the file path as shown below, and then reinstall Loader.

C:\Program Files\Common Files\Fuji Electric Shared

(In the file path shown above, "C" represents the drive letter of the partition or hard disk where Windows is installed. If Windows is installed on a different drive in your system, replace "C" with the letter corresponding to that drive.)

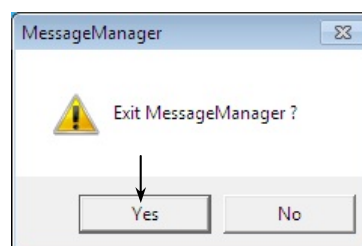
Quitting Message Manager

[3] Windows 7



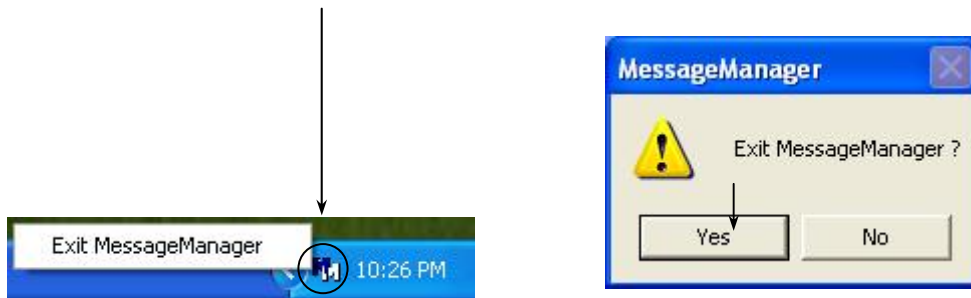
Click this to display the hidden icons as shown below.

Right-click this icon to display **Exit MessageManager**, then click it. The confirmation window appears. Click **Yes** to quit Message Manager.



[4] Windows Vista / XP

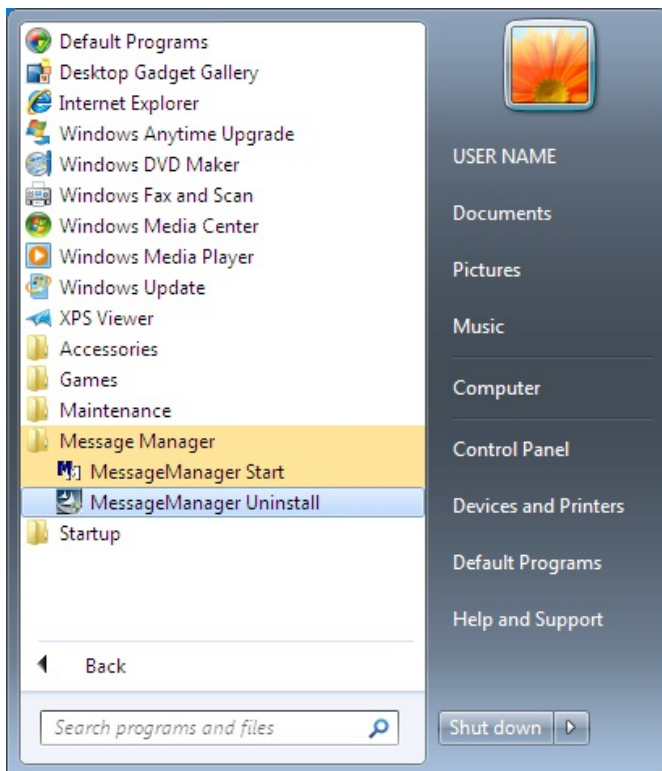
Right-click the Message Manager icon to display **Exit MessageManager**, then click it. The confirmation window appears. Click **Yes** to quit Message Manager.



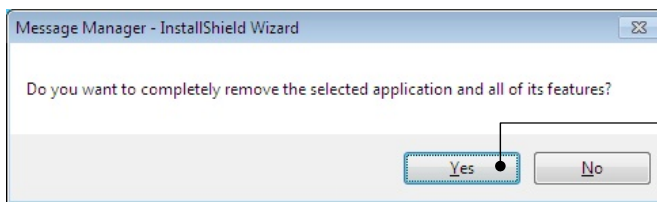
1.3.2.3. Uninstalling Message Manager

[1] Windows 7 / Windows Vista

From the **Start** menu, select **All Programs | Message Manager | Message Manager Uninstall**.



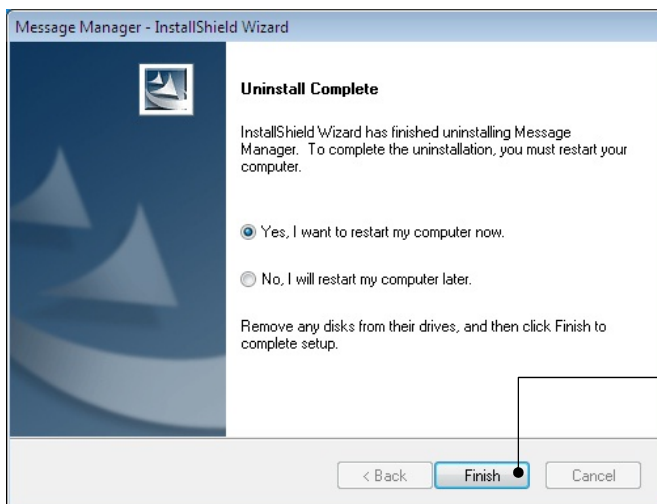
To continue, click **Yes**.



The confirmation screen at left appears.

To continue the uninstallation procedure, click **Yes**.

In the above procedure, perform the uninstallation.



When it is ready to restart, click **Finish**.

[2] Windows XP

From the **Start** menu, select **All Programs | Message Manager | Message Manager Uninstall**.



The uninstallation confirmation screen appears as shown left.

To proceed and uninstall Loader, click **Yes**.

In the above procedure, perform the uninstallation.



1.4. Configuring the Settings for Inverter(s) and Loader

1.4.1. Configuring communication-related function codes in the inverter (Case of RS-485 connection)

The table below lists inverter's function codes related to Loader. Configure those codes before connecting Loader to the inverter

Function code	Name	Setting range	Factory default
H31	Station address	1~255	1
H34	Baud rate	0 : 2400 bps 2 : 9600 bps 4 : 38400 bps 1 : 4800 bps 3 : 19200 bps	4
H40	Protocol	0 : Modbus RTU protocol 1 : SX protocol (Loader protocol) 2 : Fuji general-purpose inverter protocol	1

H31 : Station address

Set the H31 data to the same value as the RS-485 Station address. setting made in Loader's Device connection list. (see Section 1.4.5. , [2])

H34 : Baud rate

Set the H34 data to the same value as the baud rate setting made in Loader's Communication Setting window. (see Section 1.4.4.)

H40 : Protocol

Set the H40 data to "1" (FRENIC Loader protocol).



In the case of USB connection, the above function code setting is not required.

1.4.2. Checking the COM port on the PC (when using a communications level converter)

Loader running on the PC uses the RS-232C communications port (COM) to interface with inverters.

When an **RS-232C / RS-485 converter** is connected to the PC, check what COM port number (COM#) on the PC is assigned to the RS-232C / RS-485 converter.

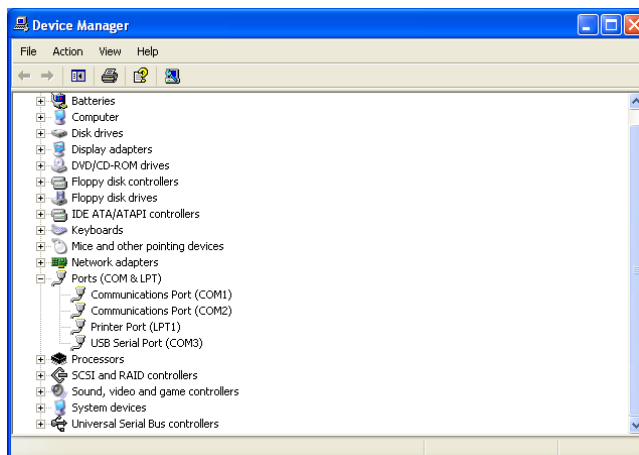
To use the USB interface, select a **USB / RS-485 converter** that functions as a virtual RS-232C communications port (COM). When a USB / RS-485 converter is connected, Windows automatically assigns a free COM port on the PC to the converter. To check the assignment, follow the procedure below.

Windows 7 / Windows Vista

From the **Start** menu, select **Control Panel | Hardware and Sound | Device Manager**.

Windows XP

From the **Start** menu, select **Control Panel | System | Hardware | Device Manager**.



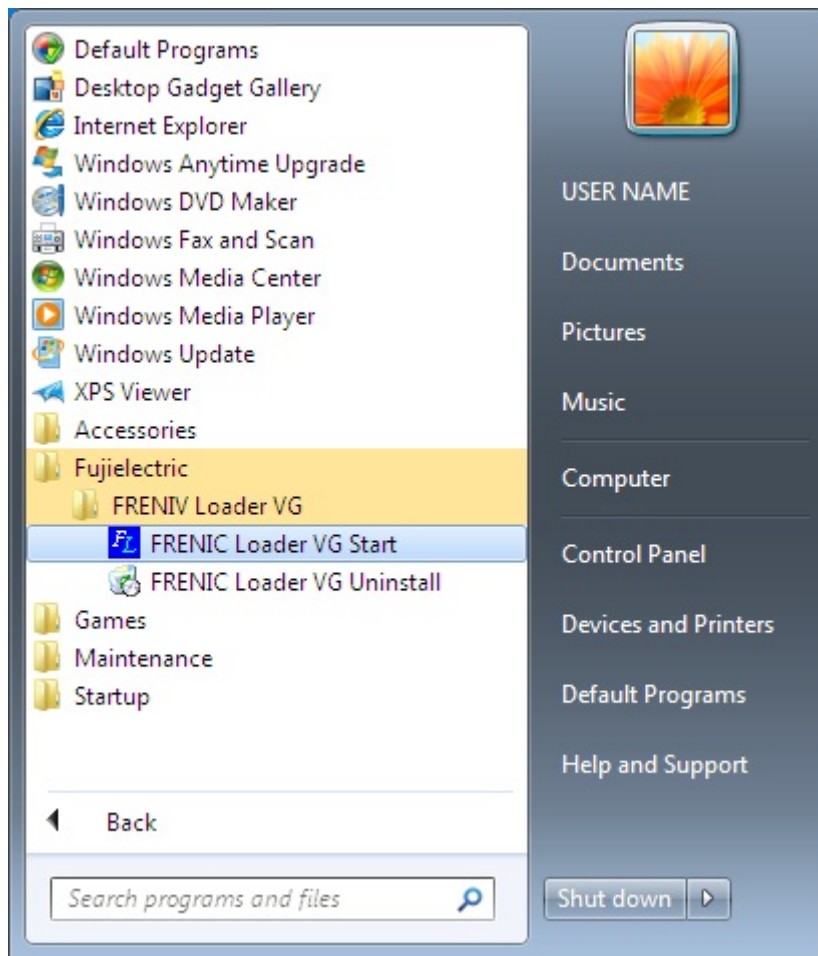
Click  preceding **Ports (COM & LPT)** to show details.

Check the number "n" in **USB Serial Port (COMn)**.

This example shows that **COM3** is assigned to the **USB Serial Port**.

1.4.3. Configuring Loader

When Loader has been installed on your PC, selecting **All Programs | FRENIC Loader VG | FRENIC Loader VG Start** from the **Start** menu starts Loader.



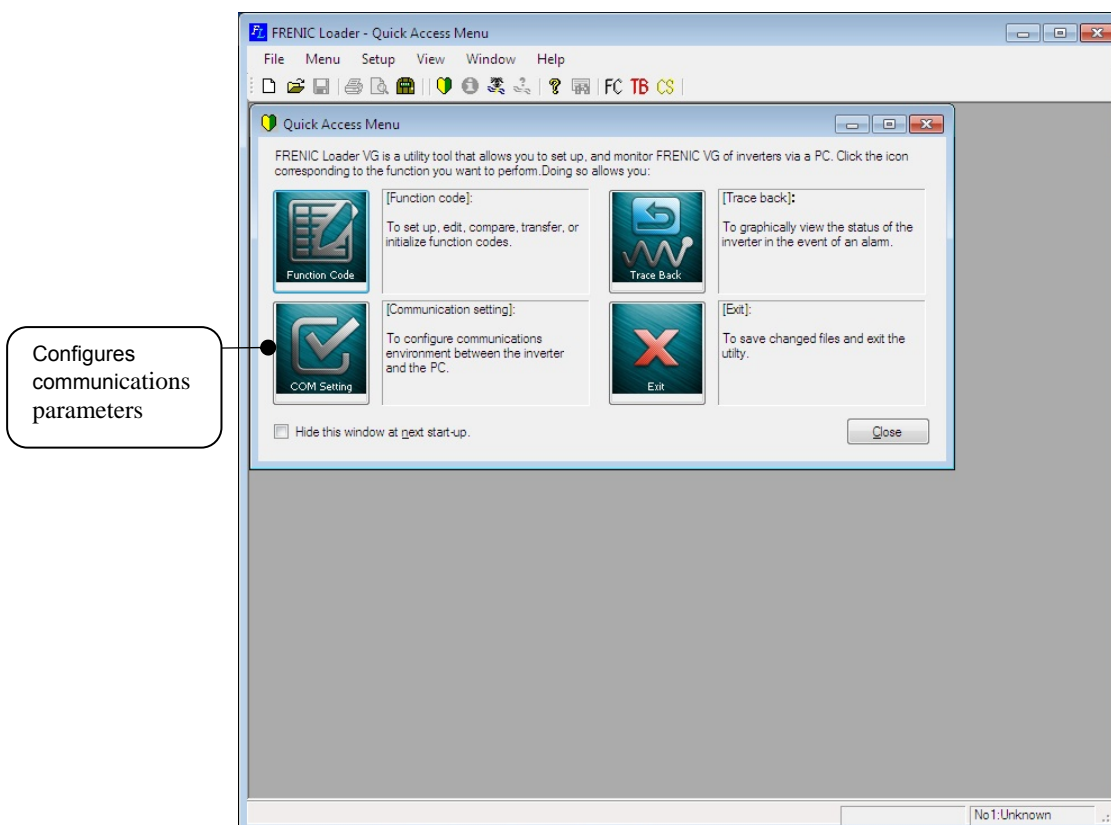
If Loader starts, the **Quick Access Menu** first appears as shown below.


This menu contains the 4 quick-start icons for the programs contained in Loader. To start a program, simply click the corresponding icon.

Details of the programs are described in Chapter 2.

When using Loader for the first time or after having changed the supporting inverter(s), you need to configure the operating environment by setting up the communications parameters (**COM Setting**).

Click the **COM Setting** icon to open the **Communication Setting** dialog or **Device connection list** window.



Note If the Quick Access Menu is not displayed, click the  icon on the toolbar (shown below) at the bottom of the Loader top window to open the menu.



1.4.4. Communication Settings

Click [**COM.Setting.**] icon in the left row in Simple Menu to display the screen which sets the methods to connect the loader, targets to be connected and communication conditions. Enter the data by referring to the following descriptions. Alternatively, by selecting **Setup | Communication Settings** from Main Menu, you can display the communication setting screen without using Simple Menu.

Communication setting

Connection Methods

☒ Connect Loader Directly to Inverter

☐ Communicate via MICREX-SX SX bus address 1

Port

☐ RS485

COM port COM1

Baud rate 38400[bps]

Flow control RTS

Data length 8bit

Parity Even

Stop bit 1bit

☒ USB Data in Inverter

☐ Communication board

Type Ethernet

Parameter

Port number 507

Communication Conditions

Retry count 3 times

Timeout 1.0 [s]

Connected Check

Connection setting

OK

Cancel

[1] Connection Methods

Select the method to connect the loader.

Connect Loader Directly to Inverter

Select this method when connecting your PC to the inverter directly, not via MICREX-SX Controller.

(You can select one of the two communication types: RS485 or USB.)

Communicate via MICREX-SX

Select this method when communicating with the inverter via MICREX-SX Controller.

(You can select one of the three communication types: RS485, USB or communication board (Ethernet)).

SX bus address

This entry becomes available when “Communicate via MICREX-SX” is selected. You should select the SX bus address.

[2] Port

You can do settings on communications. (In the initial status, you can establish communications without changing any setting because the PC initial settings are well matched with those of the inverter.)

RS-485

Select this method when connecting your PC to the inverter via RS-485.

- **Port setting**

Select the communication port of the PC to which the RS-232C / RS-485 converter is connected.

- **Baud rate**

Set the transmission rate. You must select the transmission rate same as the one for the inverter.

- **Flow control**

Since the recommended converter manages the flow control by automatic switching through transmission data monitoring, you do not have to change this setting. The flow control is a method that uses RS-232C control signals to control RS-485 transmission/reception switching.

- **Data length**

Set the data length per frame. However, regardless of the setting is fixed to "8bit".

- **Parity**

Set the parity type. However, regardless of the setting is fixed to "Even".

- **Stop bit**

Set the stop bit length per frame. However, regardless of the setting is fixed to "1bit".

USB

Select this method when connecting your PC to the inverter directly via USB.

Communication board

This entry becomes available when "Communicate via MICREX-SX" is selected. You should do settings on the communication board.

- **Type**

Set the communication board type. Currently, you can select "Ethernet" only.

- **Parameter**

Set the parameter to be used for the communication board. Currently, Ethernet IP address is set as the parameter.

- **Port number**

Set the port number that will be used on Ethernet to be connected.

When using MICREX-SX, the port No is fixed to 507.

Port No. 507 = Loader command interface server port 251 + Own standard port 256

[3] Communication Conditions

Do the settings on the communication retry.

- **Retry count**

This sets how many times communication allows retry in case of failure. As the retry count increases, the possibility to succeed communications may increase. However, it will take time until the error dialog appears. The count of one or so is recommended.

- **Timeout**

If no response is received from the inverter within the time limit set here, the communication error dialog will open. A shorter timeout setting allows sooner display of the error dialog. However, an extremely short timeout may cause a communication error even during normal operation, for example, when taking long time to handle the inverter rather than the communication errors.

[4] Perform Connection Check

Connection Check is a function to always monitor the communication status between your PC and the inverter that is registered through the connection settings. By clicking the check box to the left of [Perform Connection Check] and checking the box, the PC will automatically check the status of connection with the inverter and displays the communication status on the status bar. If one of the previously registered inverters disables to communicate due to disconnection or other problem, the response performance will become very slow. Be sure to remove the disabled inverter from the connection settings.

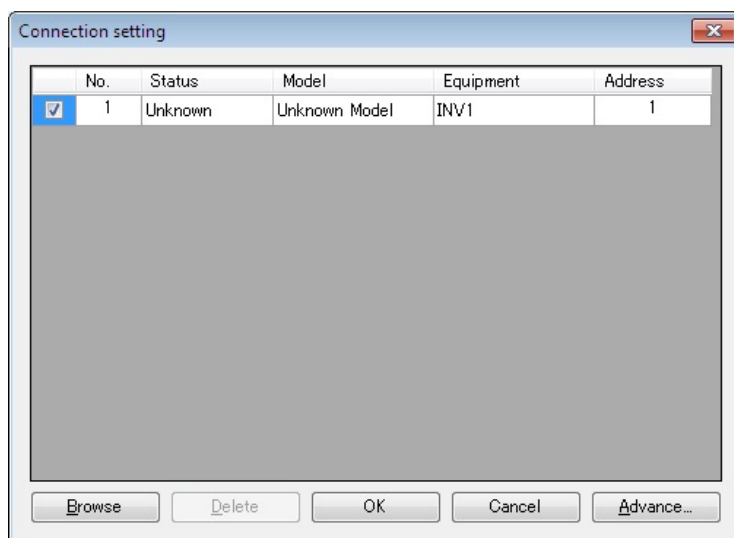
1.4.5. Connection settings

Click **COM setting** | **Connection Setting** to display the Connection Settings screen.

[1] For connection to USB port

When "USB: Data in inverter" is selected

Only a single line appears as shown below. After making sure that the equipment name and RS-485 num. (station address) are correct, click the **Browse** button to monitor the current communications link status.



Selection of inverters to be monitored

To make an inverter enable to be monitored, put a check mark (✓) in the box located at the left end column of the list.

Browse

Clicking this button checks whether a link between Loader and the inverter is established. The result appears in the Status column.

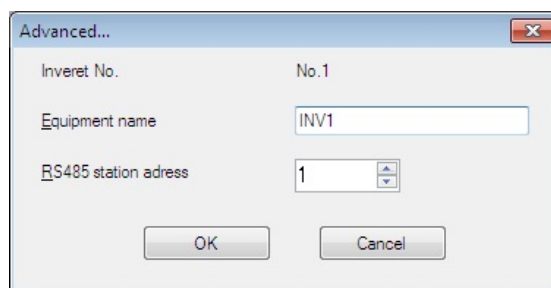
Status column

- Unknown : The communications status has been unknown.
- Connecting : The communications link has been established.
- Disconnected : The communications link has not yet been established.

Advance...

Clicking the row to be modified and clicking this **Advance** button calls up the **Advanced** dialog shown at the right.

Clicking the **OK** button returns to the **Device connection list** window.



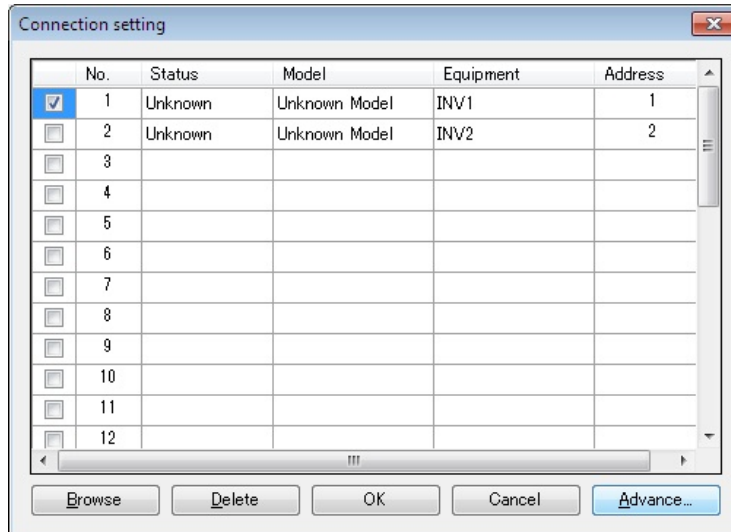
After completion of data entry, check the settings again and click **OK** to exit the device connection operation.

[2] For connection to RS-485 port

When "RS-485: Data in inverter" is selected

The **Device connection list** window shows the inverters available for RS-485 communication.

Double-clicking (or use the **Advance...** button) the row where the inverter to be modified or added is listed calls up **Advanced** dialog shown below.



Selection of inverters to be monitored

To make an inverter enable to be monitored, put a check mark (✓) in the box located at the left end column of the list.

Delete

Clicking the row to be deleted and clicking this **Delete** button deletes the inverter listed in that row. Use this for the inverter(s) that has been disconnected from Loader.

Browse

Clicking this button checks whether a link between Loader and the inverter(s) (marked with ✓) is established. The result appears in the Status column.

Status column

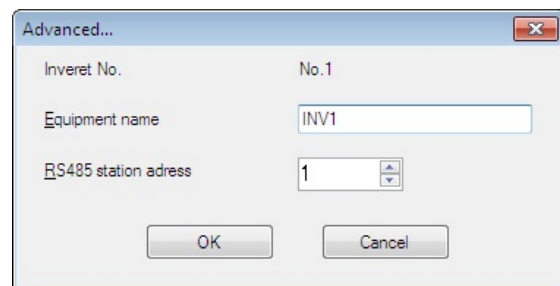
- Unknown : The communications status has been unknown.
- Connecting : The communications link has been established.
- Disconnected : The communications link has not yet been established.

Advance...

Clicking the row to be modified or added and clicking this **Advance** button calls up the **Advanced** dialog shown at the right.

Fill in the **Equipment name** and **RS-485** address (station address) boxes in the dialog and click **OK**. To cancel your entry or selection, click **Cancel**.

Clicking the **OK** button returns to the **Device connection list** window.

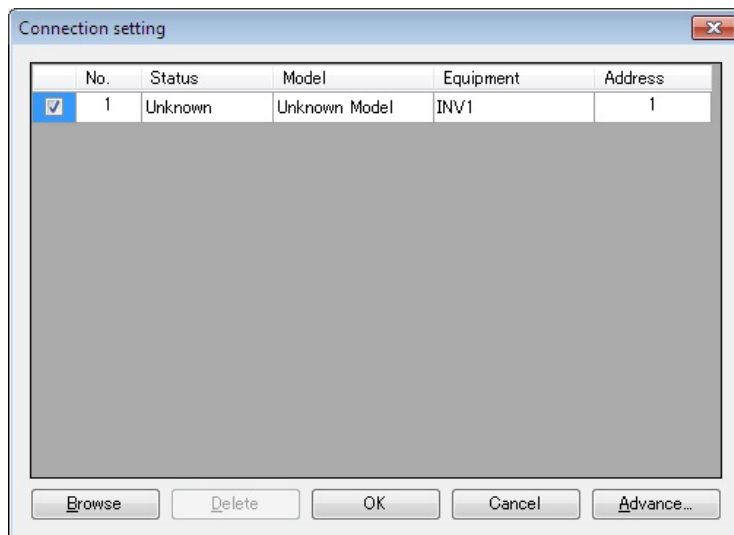


After completion of data entry, check the settings again and click **OK** to exit the device connection operation.

[3] For connection to Communication board (Ethernet)

When " Communication board (Ethernet)" is selected

Only a single line appears as shown below. After making sure that the equipment name and RS-485 num. (station address) are correct, click the **Browse** button to monitor the current communications link status.



Browse

Clicking this button checks whether a link between Loader and the inverter is established. The result appears in the Status column.

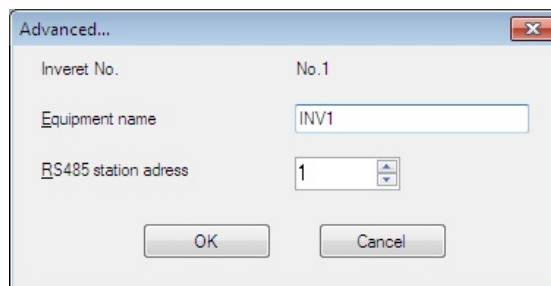
Status column

- Unknown : The communications status has been unknown.
- Connecting : The communications link has been established.
- Disconnected : The communications link has not yet been established.

Advance...

Clicking the row to be modified and clicking this **Advance** button calls up the **Advanced** dialog shown at the right.

Clicking the **OK** button returns to the **Device connection list** window.



After completion of data entry, check the settings again and click **OK** to exit the device connection operation.

Chapter 2 Description of Functions

2.1. Main Window

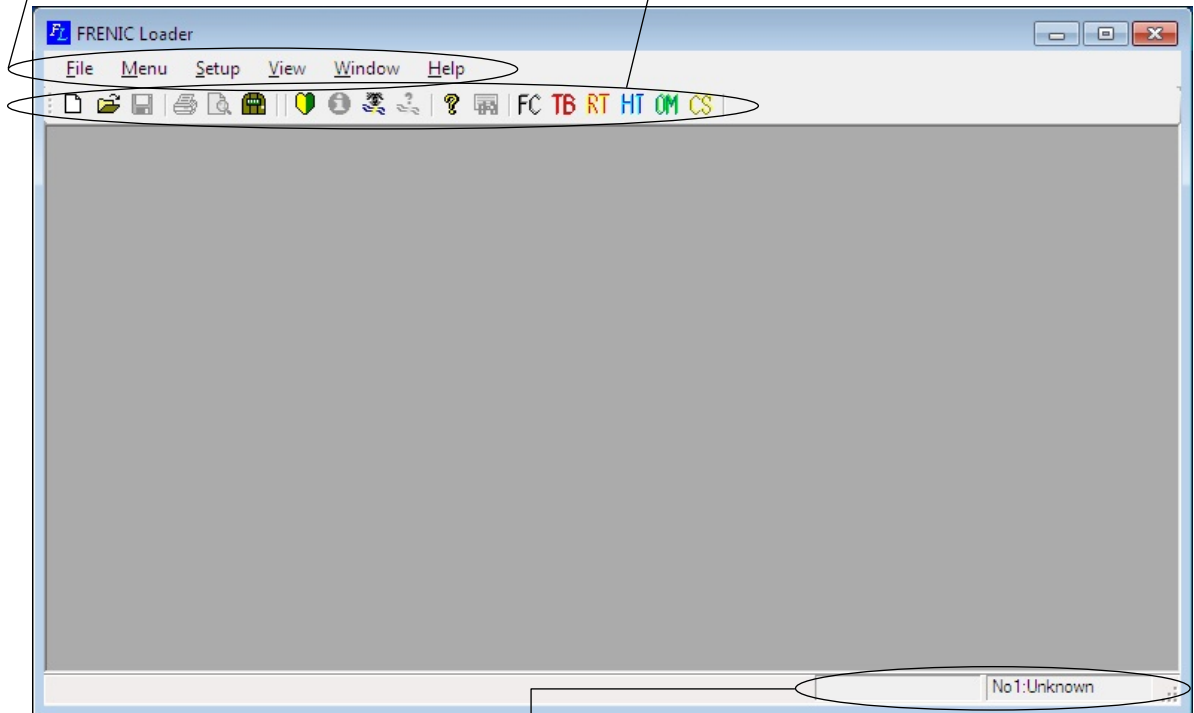
Main Window is the first screen appearing after starting the loader. Simple Menu is displayed on Main Window. (The following example omits the display.)

Main Menu

You can select all the Loader functions.

Tool Bar

You can select primary Loader functions.




Status Bar

This shows the outline of the function to be selected. It also displays the status of connection with the inverter in the upper right box.

Main Menu

It contains six selectable functions: [File], [Menu], [Setup], [View], [Window] and [Help].

Tool Bar

This allows you to select common functions quickly and easily. For example, to open a file which contains the function code data, you should normally click [File] on Main Menu and then click [Open] under [File] menu; accordingly two actions are required. Using Tool Bar, you can open the file simply by clicking  icon.

Status Bar

Place the mouse pointer on the function icon or menu being displayed. Then, the statement appears, describing the meaning of the function or menu.

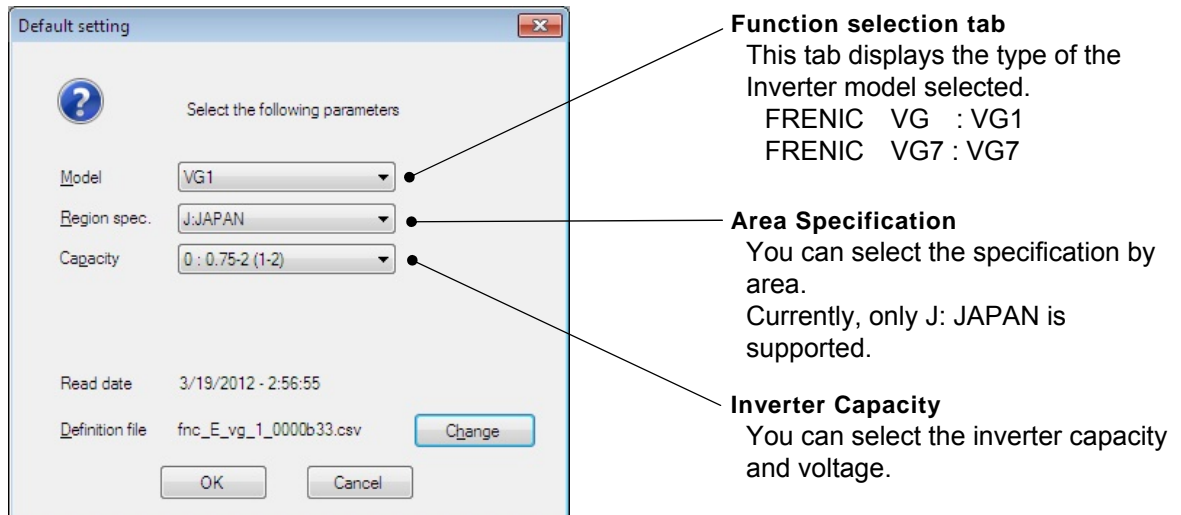
When “Perform Connection Check” is selected in Communication Setting (see “1.4.3 Communication Settings and Connection Settings of Loader”), the status of connection with the inverter is displayed in the upper right box. (In the above example, “Unknown” is displayed.)

2.2. File

This section describes main functions of File.

2.2.1. Create New File

This function creates a new file of function code data.

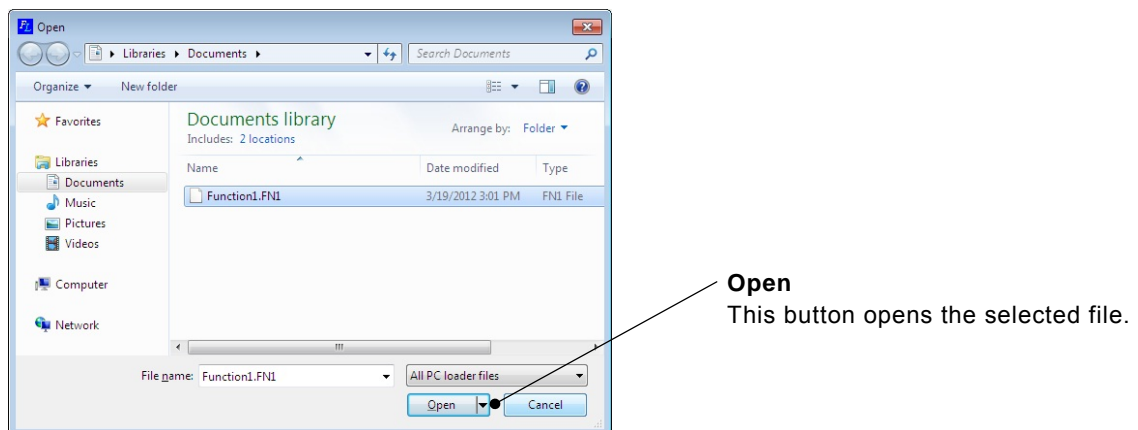


You can also open a list of function code data defaulted by the loader.

Therefore, you can edit the function code data even if the inverter is not connected to your PC

2.2.2. Open

This function reads a file of Function code data, Traceback data, Realtime trace data or Historical trace data that has been already created and saved in your PC and opens the window to edit the file data.



File type

- 1) Function code data : [*.FN1] (VG1/VG7), [*.FNC] (VG7)
- 2) Traceback data : [*.TB1] (VG1)

2.2.3. Close

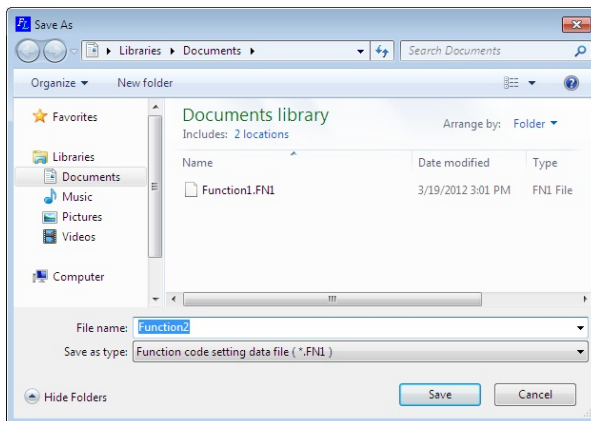
This function closes the active window.

2.2.4. Save

This function overwrites and saves the active function code setting. If the data has not been saved before, the Save function does the same operation for the data as “5) Save As...”.

2.2.5. Save As ...

This function opens the following dialog, which allows you to enter the name of the active file and save it under the name.

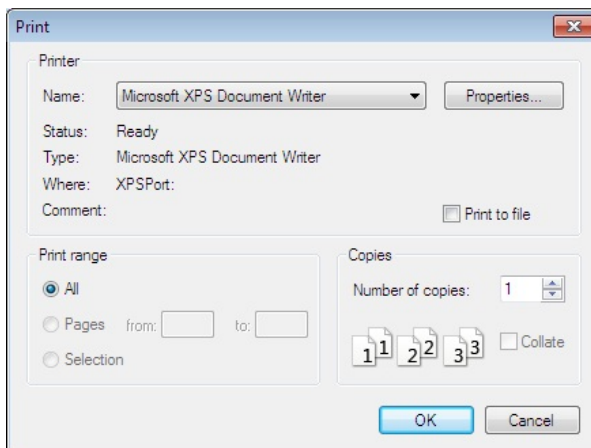


* The types of files you can save are as below:

- 1) Function code data : [*.FNI] (VG1/VG7)
- 2) Traceback data : [*.TB1] (VG1)
- 3) Comma delimiter : [*.CSV] (VG1/VG7)
- 4) trace data (Graph image) : [*.JPG] (VG1)

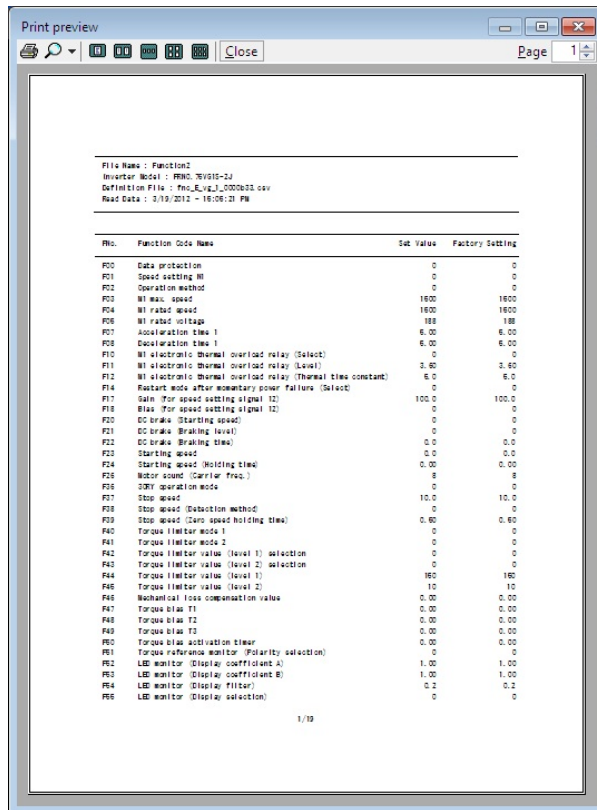
2.2.6. Print

This function sets the printer used to print the data.



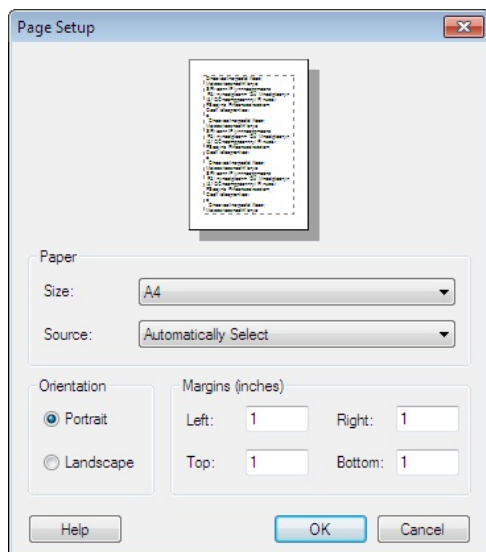
2.2.7. Print Preview

This function displays the print preview of the printable data of the active function code setting.



2.2.8. Page Setup

Make settings for the paper.



2.2.9. End

This function terminates the loader.

2.3. Menu

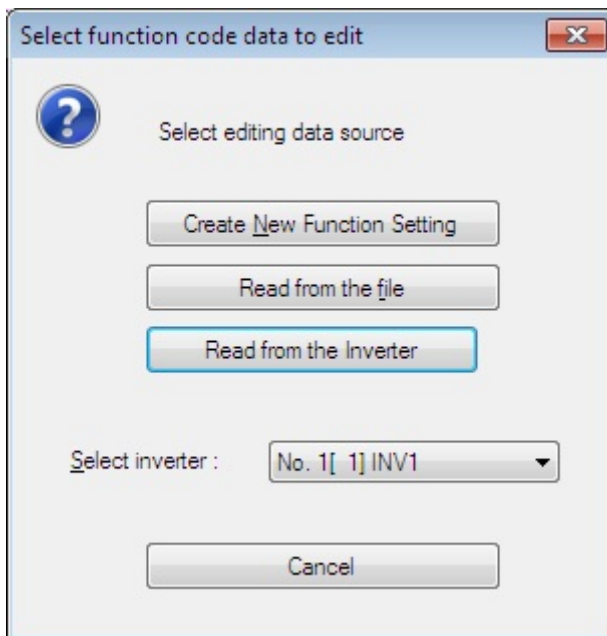
You can select Function Code Setting or Simple Menu Function.

2.3.1. Function Code Setting

Click [Menu] -> [Function Code Setting] or select Simple Menu and click [simple Menu] -> [Function Code Setting]. Then, [Select Edit Data] dialog will open.



Select the items to be read from [Select Edit Data] dialog.



2.3.1.1. Create New Function Setting

Use this function to open a new function code setting.

See "2.2.1 Create New File".

2.3.1.2. Read File from the file

Use this function to open the function code setting file which has been previously saved.

See "2.2.2 Open".

2.3.1.3. Read from the Inverter

Use this function to read the function code setting from the connected inverter and open the function code setting.

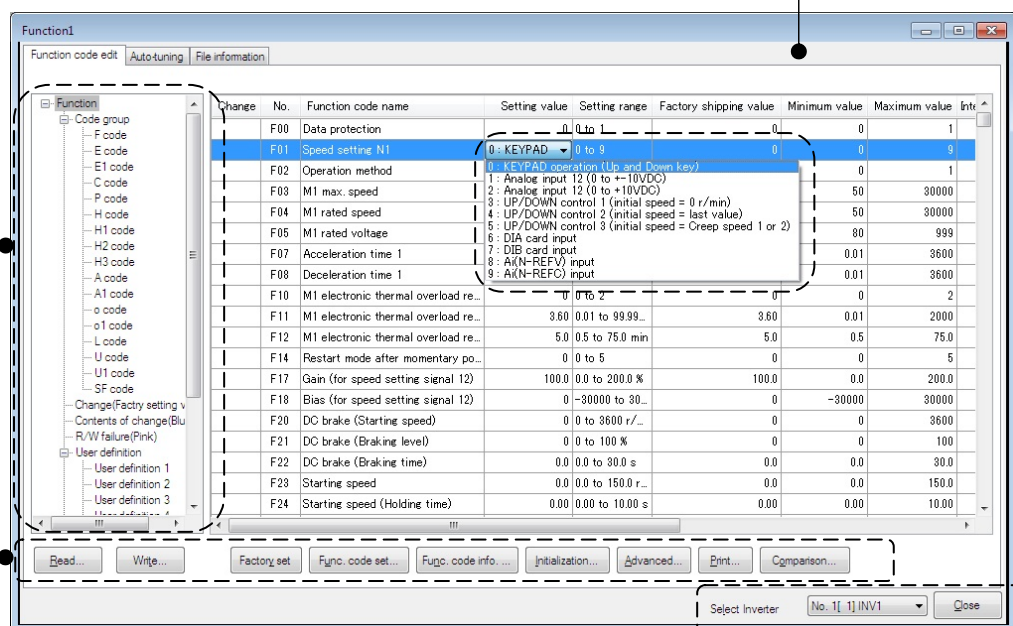
2.3.1.4. Edit List

This function allows you to list the function code setting values and setting ranges and edit them. You can display the function codes by various classifications. [Edit] menu on Menu Bar is displayed only when the Edit List window opens.

- **Function** : Display the function codes by group.
- **Change from Factory-set Values** : Displays the function codes of the setting values different from the factory-set values (excluding communication codes).
- **Contents of change (Blue)** : Displays the edited function codes before written to the inverter.
- **R/W failure (Pink)** : Displays the function codes which have failed to write to the inverter.
- **User Definition** : The user can freely define the display items.
- **Communication Code** : Displays communication function codes only.
- **Comparison Result** : Displays comparison results with the inverter or saved files only.
- **Search Result** : Displays the execution result of [Edit] -> [Search].

Change of Setting Values:

You can select the function code data from Drop down Menu or Edit Window.



- [Read]** : Reads the function codes of the inverter selected in [Target Inverter] to the loader.
- [Write]** : Write the function codes of the loader to the inverter selected in [Target Inverter].
- [Factory-set]** : Resets the selected function code to the factory-set value.
- [Func. Code set]** : Displays a dialog to edit the selected function code setting values.
- [Function code info]** : Displays the selected function code information.
- [Initialize]** : Initializes the function code setting values within the inverter.
- [Advanced]** : Displays a dialog to change the display items, function code attributes and printing setting.
- [Print]** : Prints the function code list selected in the tree in the left pane.
- [Comparison]** : Displays the comparison results with the saved data or the inverter data.

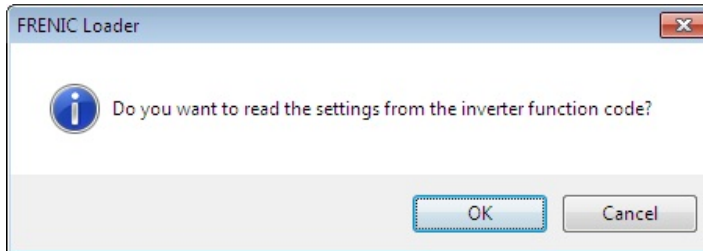
[Target Inverter]:
Selects the target inverter to/from which data is read/written.

[Close]:
Closes the Function Code Setting window.

[1] Read the function code setting values from the inverter

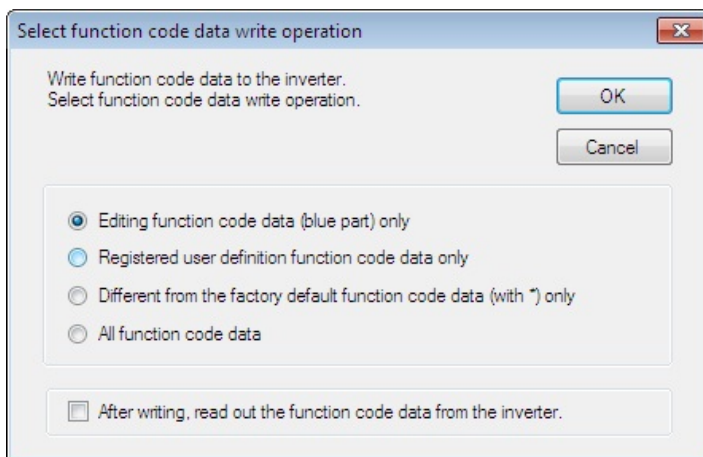
When you want to update the function code setting values read from the inverter

Click [Read] button to open the following dialog. Click [OK] to read the function code setting values from the inverter again.



[2] Write the function codes from the loader to the inverter

To write the function codes to the inverter, use [Write] button displayed at the lower bottom of the List Edit window appearing when editing function codes.



- **Editing function code data (blue part) only**

This function writes to the inverter only the setting values of the function codes that are edited by the loader and have not been written to the inverter yet (displayed in blue).

- **Registered user definition function code data only**

This function writes only the setting values of the function codes registered to the user definition on the List Edit window.

- **Different from the factory function code data (with *) only**

This function writes the setting values to the inverter only when those of function codes are different from the factory-set values (excluding communication codes).

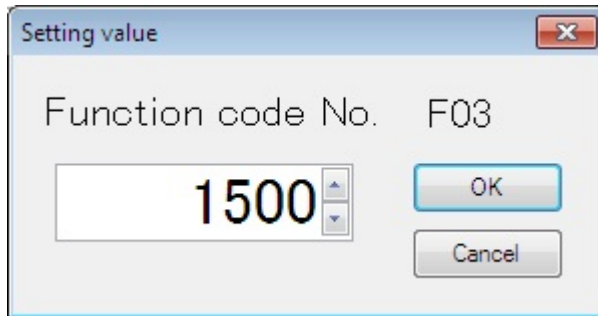
- **All function code data**


This function writes all the function code setting values in the table (excluding communication codes).

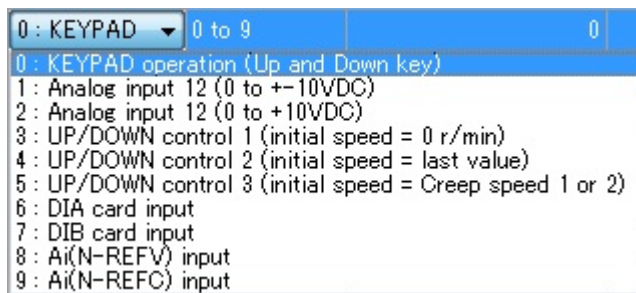
[3] Change the setting value

The method to change the setting values varies depending on the function code.

- (1) For the function codes which set speed, time, voltage or other numeric values, double-click the field of the function code setting value to be changed. When [Set Values] dialog appears, set the new value.



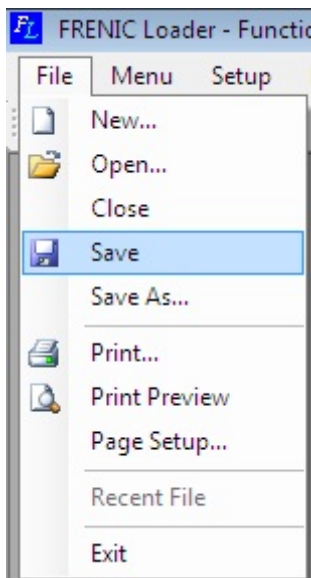
- (2) For the function codes which set the code data values (for example, F00 Data Protection, F01 Speed setting N1, F02 Operation method), click the field of the function code setting value to be changed to check that  button appears. Click the button to display the selection menu which lists the function data that can be set and the meaning of each function.



- Note**
- When the changed function code data has not been written to the inverter yet, the data is displayed in blue.
 - When the changed function code data is different from the factory-set values, it is marked with * leftmost on the Edit List window.

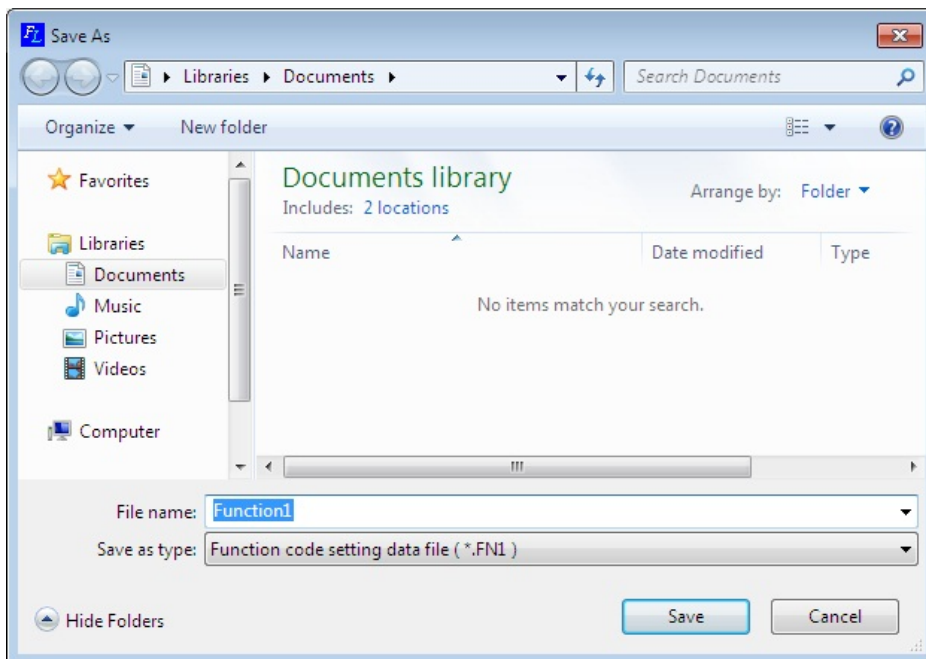
[4] Save

To save the function code settings opening on the loader, select [File] -> [Save] or [Save As ...] from Main Menu.

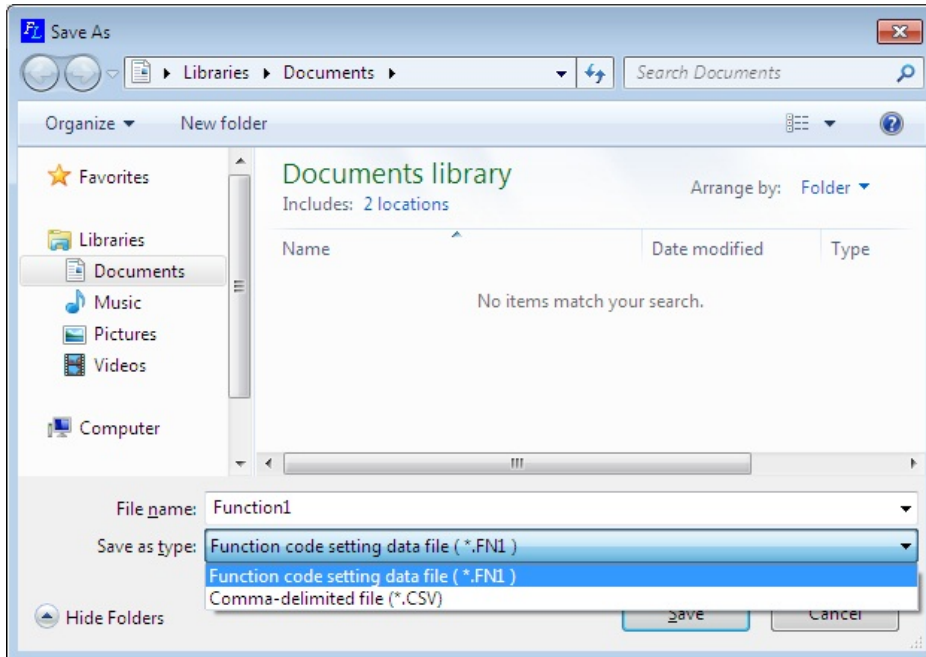


When selecting [Save] for the data for the first time, the following dialog will open in the same manner as when selecting [Save As ...].

Select [Save to ...] and enter the file name under which the data is saved in [File Name]. Click [Save] and confirm the entry.



After selecting [Save to ...] and select the file type from [File Type], click [Save] to save the data to the specified type of file.



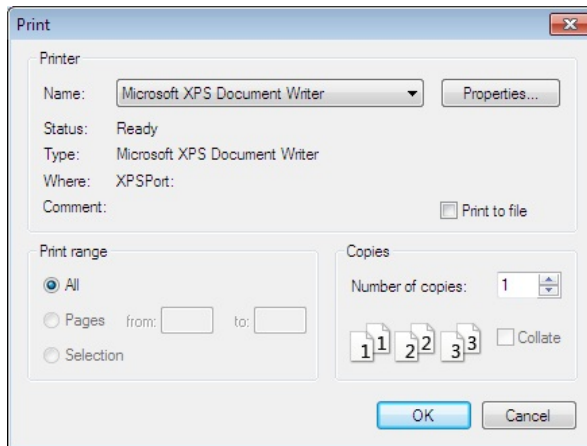
- ***.FN1** : File format specific to the loader. Files in this format can be opened only on the FRENIC Loader VG.
- ***.CSV** : Comma delimiter format. Files in this format can be opened on Microsoft Excel or equivalent. However, they cannot be opened on the general-purpose inverter loader.

[5] Print

The items selected from the tree in the left pane on the Edit List tab are target to be printed.

When selecting “Function” or “Code group” from the tree in the left pane on the Edit List tab, function codes such as F, E, C, ... or the group name will appear.

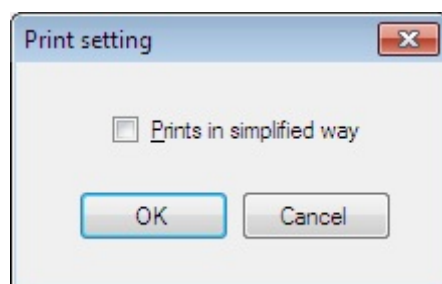
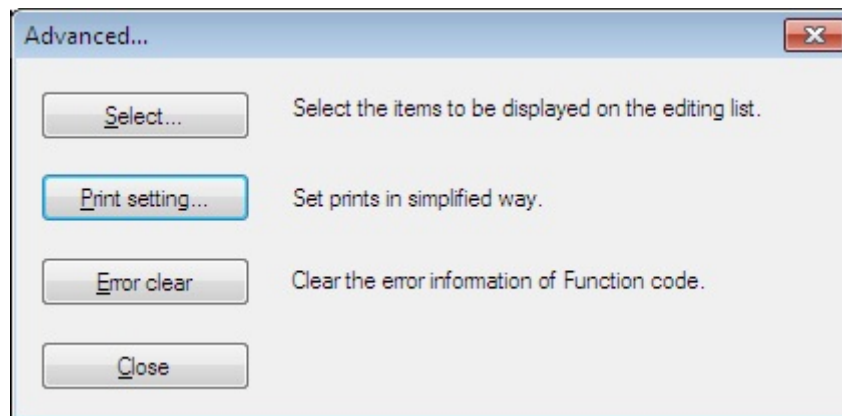
Click [Print] button displayed at the lower right of the [Edit List] window or select [File] -> [Print] from Main Menu to display [Print] window.



Set the printer to be used, printing range and number of copies and click [OK] button.

How to set simple printing

To print only the function code numbers and setting values from among the items in the Edit List window, click [Detail Setting] at the bottom of that window to open the Detail Setting dialog and click [Print Setting]. When the [Print Setting] dialog appears, check the box of [Simple Printing] and click [OK]. Note that this operation determines the setting only and does not actually print the setting.

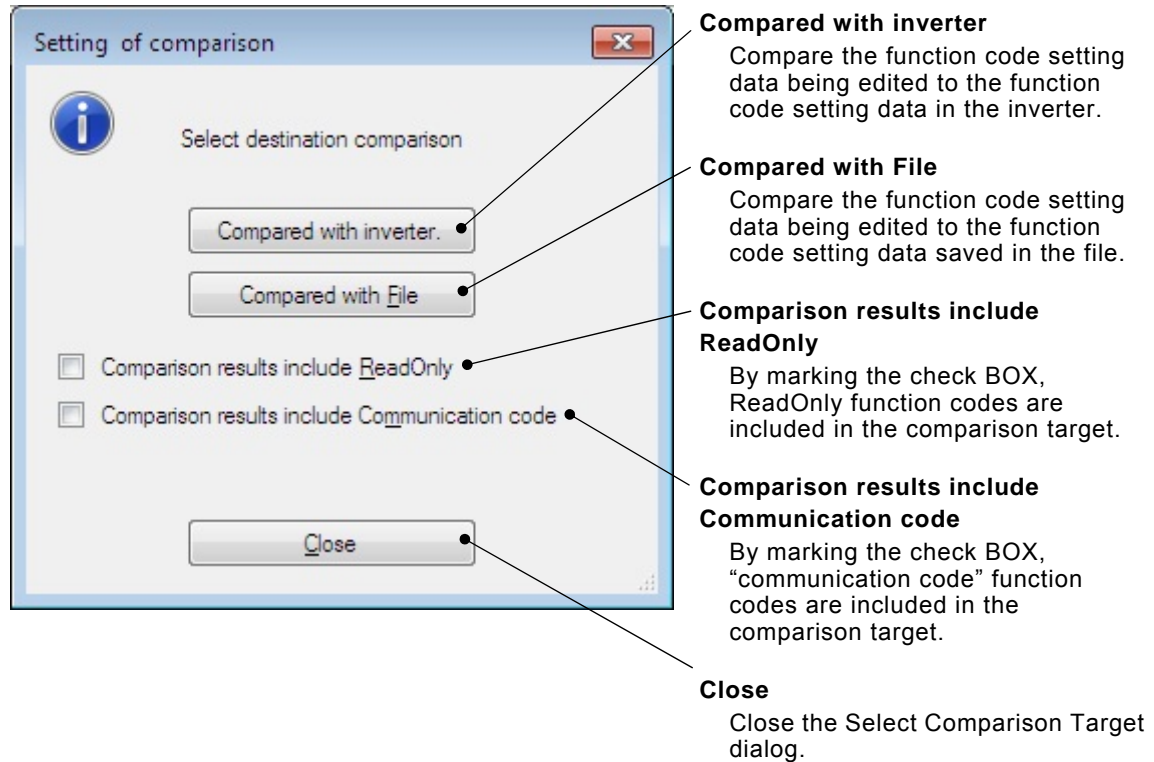


How to check the printed appearance before actually printing

Select [File] -> [Print Preview] from Main Menu.

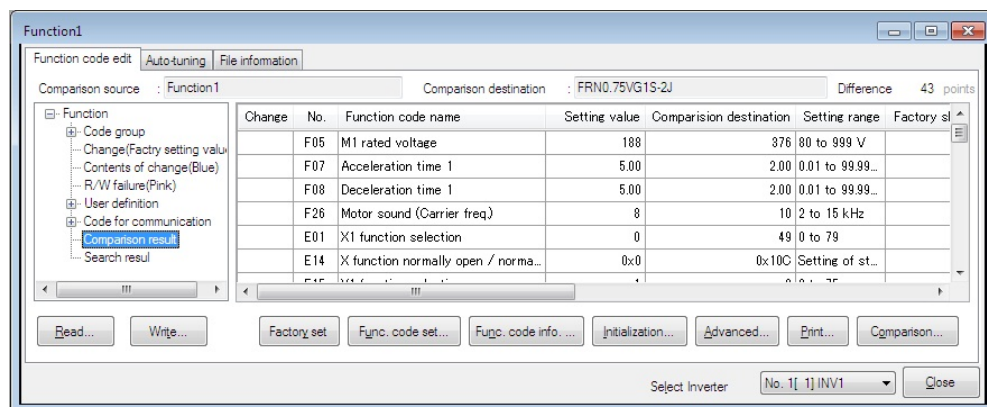
[6] Compare

You can compare the function code setting data being edited to the data saved in the file or the data set in the inverter that is selected in [Target Inverter] and display the results.



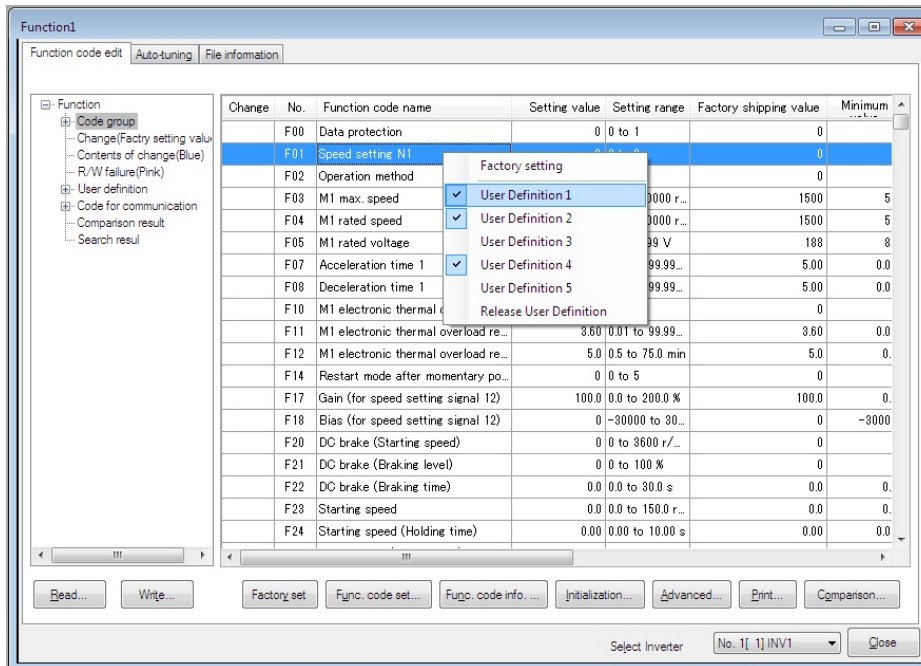
- * You should select the inverters to be compared in advance by clicking ▼ of [Select Inverter] displayed at the bottom of the [Edit List] window.

By selecting "Comparison Results" in the tree in [Edit List], you can check the same contents.

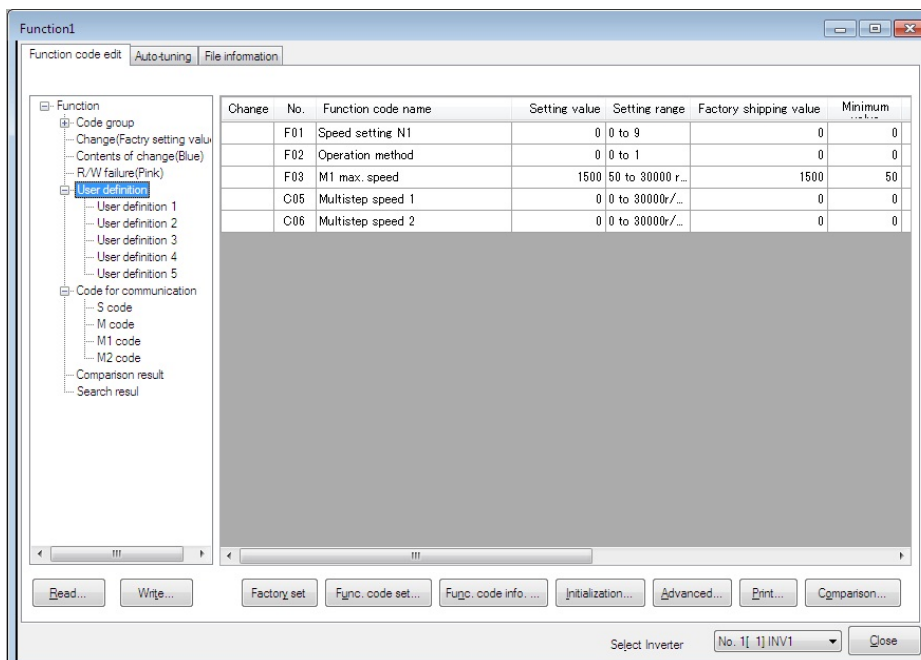


[7] User Definition (Display desired function codes only)

Select the function code from the Edit List window and right-click it to display the window related to “User Definition”. Select one of User Definition 1 to 5 and left-click it to register the selected function code to “User Definition”.

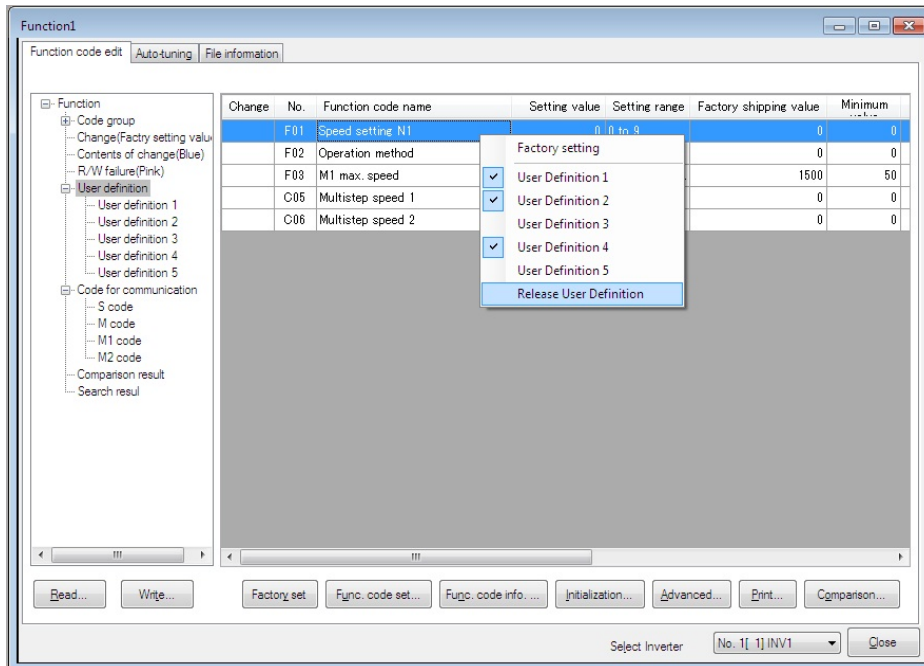


Select any one of User Definition 1 to 5 from the tree in the left pane of the Edit List tab. Then, the registered function codes will be listed.



To unregister the function code, select the target one and right-click it to display the window related to “User Definition”. Then, select Reset User Definition and left-click it to unregister the target function code from “User Definition”.

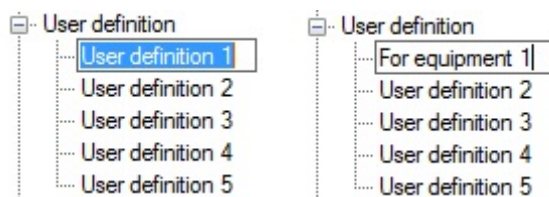
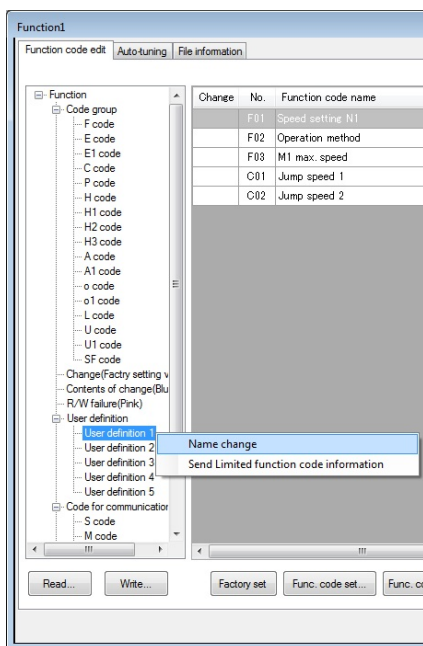
To unregister the function code from all the user definition groups (1 to 5), select “Release User Definition” and left-click it. Then, the function code will be unregistered from all the user definition groups.



Name change of User definition

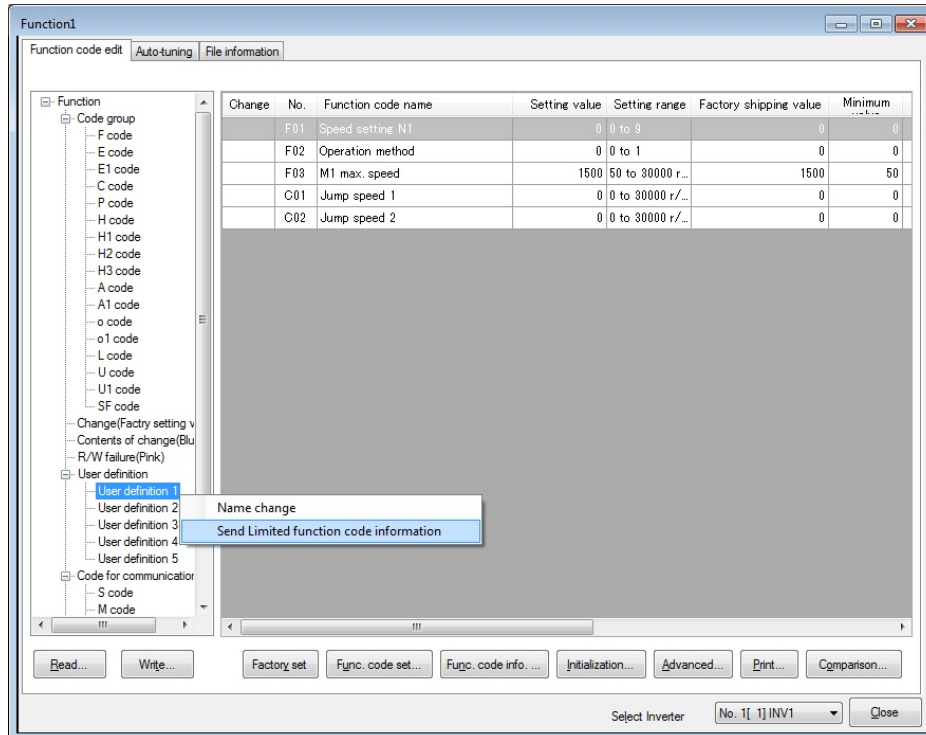
“User definition” name for the tree view can be Changed.

Select “User definition” on the tree view → Right click → Select "Name change", the character input is possible.

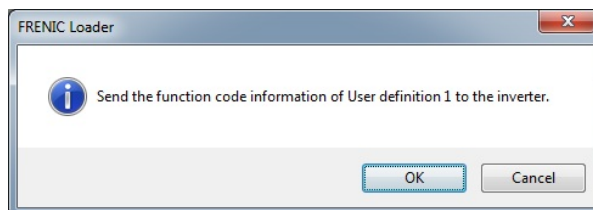


Send Limited function code information

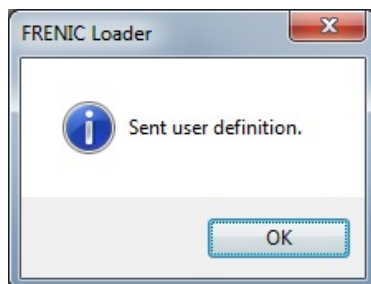
Only the function code selected by "User definition" displayed on the touch panel of the inverter. By "User definition", Select the function code to be limited display on the touch panel, Select "User definition" on the tree view → Right click → Select "Send Limited function code information".



Click the [OK] button, and send "Limited function code information" to the inverter.



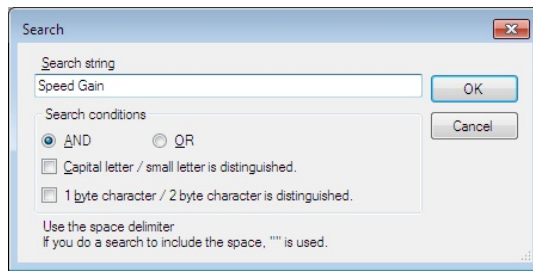
If it is sent successfully, the following dialog will be displayed.



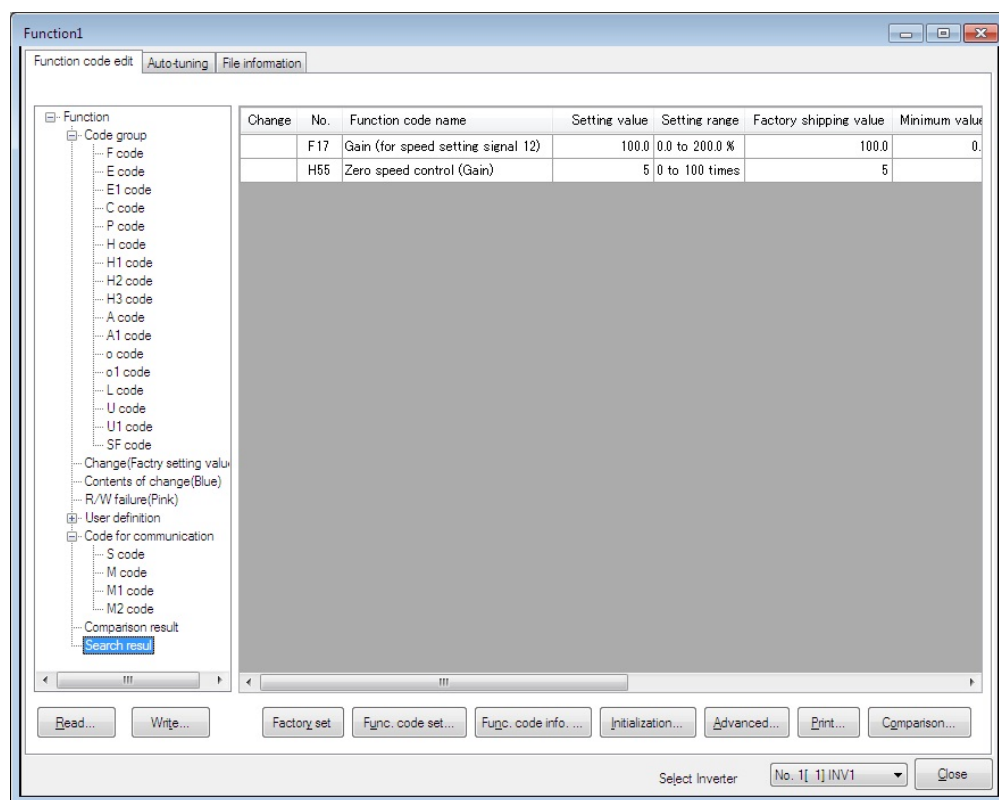
Note About the operation of the touch panel of the inverter, Refer to FRENIC-VG user's manual Section 3.4.4.13 Limiting function codes to be displayed -- Menu #14 "LIMITED FC".

[8] Search (Search function code terminologically)

Select [Edit] -> [Search] from Main Menu to display [Search] dialog.



From among words on the Edit List window, enter the key word to be searched, for example, speed or gain, and click [OK] button. If the entry is correct, the program automatically moves to [Search Results] in the tree in the left pane of the Edit List tab and the function codes including the entered key word are listed. The following figure shows the example of search results with “Speed” and “Gain” as the key word.



- Note**
- The search target range covers all items (changes, No., function code names, setting values, etc.) However, the items set to be “hidden” by [Advanced] -> [Display Item] are also included in the search target.
 - The contents of function code information are not included in the search target.

2.3.1.5. Auto Tuning

This function automatically measures the motor constants and saves them to the inverter as parameters of Motor 1 to Motor 3. Function code H01: Function to perform motor auto tuning using the tuning operation selection and display the tuning results.

Note • Be sure to refer to the inverter user's manual (FRN-VG1) "[4.3.5] H01:tuning operation selection" before executing motor parameter auto tuning.

Select Tuning Operation
Select which motor constant is to be tuned.

Current Process
Display the tuning progression status.

Tuning Results
Read the values before and after tuning and display them.

Motor Constant
Read the motor constant set in the target inverter and display it.

Auto Tuning
Start the tuning operation.

All Save
Save the tuning results to the inverter EPROM.

Select Inverter
Select the tuning target inverter.

Target Motor
Display Motor 1 (M1), Motor 2 (M2) and Motor 3 (M3).

Function1 Auto-tuning Interface Details:

- Motor tuning (Select):** 2: Motor automatic tuning: R1, Ls
- Motor:** Motor 1(M1)
- Now doing:** 1 Tuning end
- Note:**
 - Operating procedure:
 - 1. Select the inverter to be tuned.
 - 2. Specify tuning operation.
 - 3. Select the rotation direction of the motor.
 - 4. Upon completion, the result of tuning will be displayed.
- Motor constant:**
 - Number of motor poles: 4 poles
 - Motor capacity: 30.00 Kw
 - Motor rated current: 58.00 A
- Auto-tuning:** START button
- All save:** button
- Tuned results table:**

Function code name	Before	After
P06 M1 %R1	2.55	3.37
P07 M1 %X	12.16	17.02
P08 M1 exciting current	25.74	25.74
P09 M1 Torque current	52.52	52.52
P10 M1 slip on driving	0.666	0.666
P11 M1 slip on braking	0.648	0.648
P15 M1 magnetic saturation coeffi...	84.4	84.4
P16 M1 magnetic saturation coeffi...	74.0	74.0
P17 M1 magnetic saturation coeffi...	59.5	59.5
P18 M1 magnetic saturation coeffi...	48.9	48.9
P19 M1 magnetic saturation coeffi...	38.0	38.0
P20 M1 Secondary time constant	0.173	0.173
P21 M1 Induced voltage coefficient	331	331
P22 M1 R2 correction coefficient 1	2.268	2.268
P23 M1 R2 correction coefficient 2	2.078	2.078
P24 M1 R2 correction coefficient 3	1.000	1.000
P25 M1 exciting current correction...	0.070	0.070
σ11 M1 Salient pole ratio (%Xq/%...	1.000	1.000
- Select Inverter:** No. 1[1] INV1
- Close:** button

Select tuning operation

- 1: ASR (speed control) tuning (disabled during v/f control) (to be supported soon)**
- 2: Motor constant tuning (for VG standard motors)**
Motor stop status : R1, Lσ
- 3: Motor constant tuning (for non-standard motors) (disabled during v/f control)**
Motor stop status : %R1, %X, exciting current, rated skidding, magnetic saturation coefficient, inductive voltage, secondary constant
- 4: Motor constant tuning (for non-standard motors) (disabled during v/f control)**
Motor stop status : %R1, %X
Motor rotation status : Exciting current, rated skidding, magnetic status coefficient, inductive voltage, secondary constant

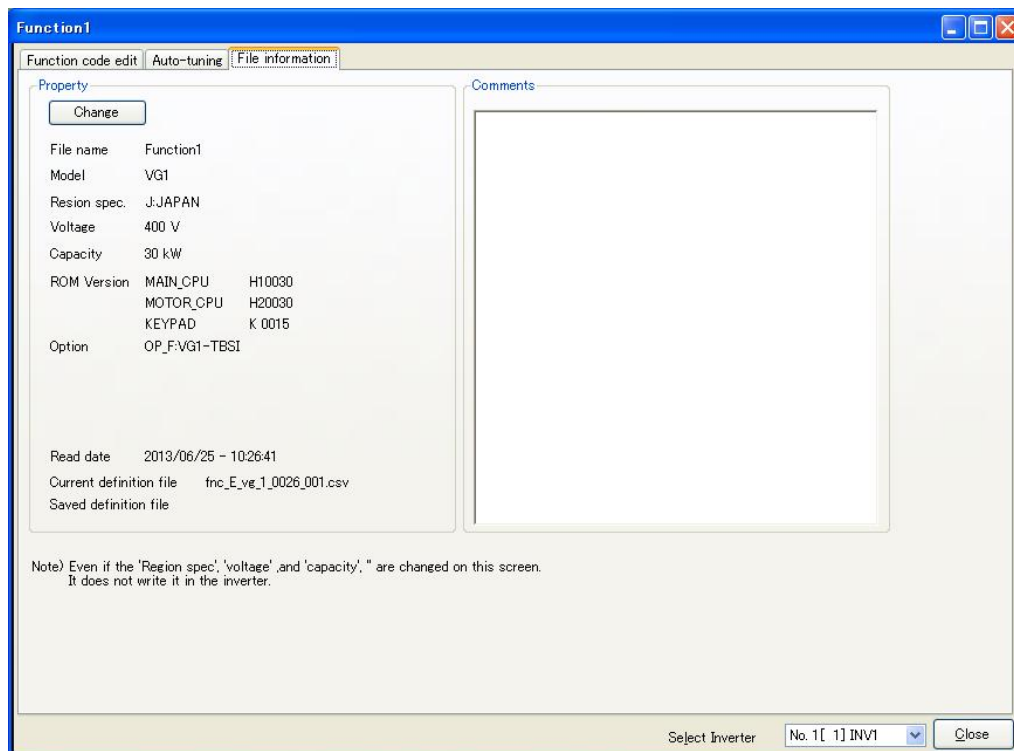
⚠ WARNING

When H01 = 1 or 4, the motor rotates during tuning. Make sure that there is no danger in rotating the motor. **Injuries could occur.**

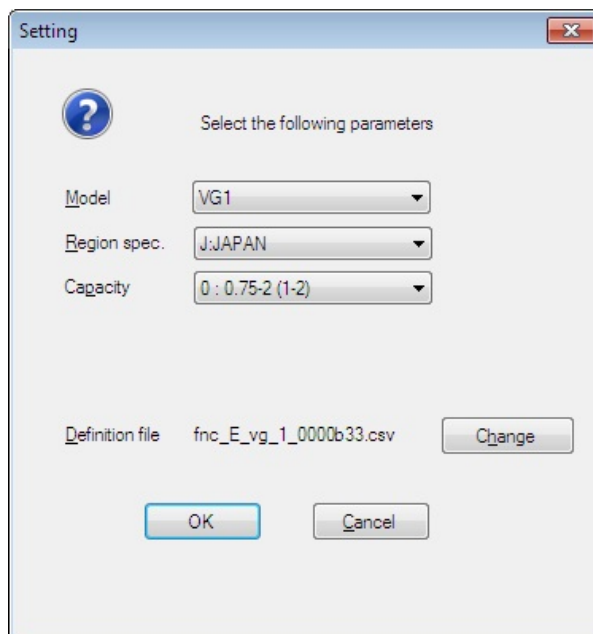
2.3.1.6. File Information

This function displays the information which may affect the function codes. You can change “Type”, “Voltage”, “Capacity” and “Definition File” as you want.

- When reading the information codes from the inverter, the information on that inverter is displayed.
- When creating a new code, the default information by machine type is displayed.
- If the VG loader free version is after "1.3.0.0", the ROM version of an inverter and the loading information on an option card will also be displayed (not expressed as the function code data of VG7 series).



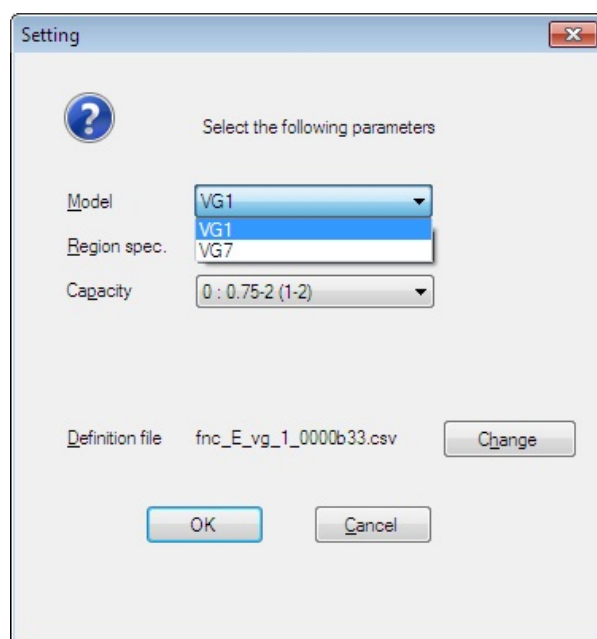
When clicking on the file information [Change] button, the Settings dialog is displayed.



[1] Change models (VG7 → VG1, or VG1 → VG7)

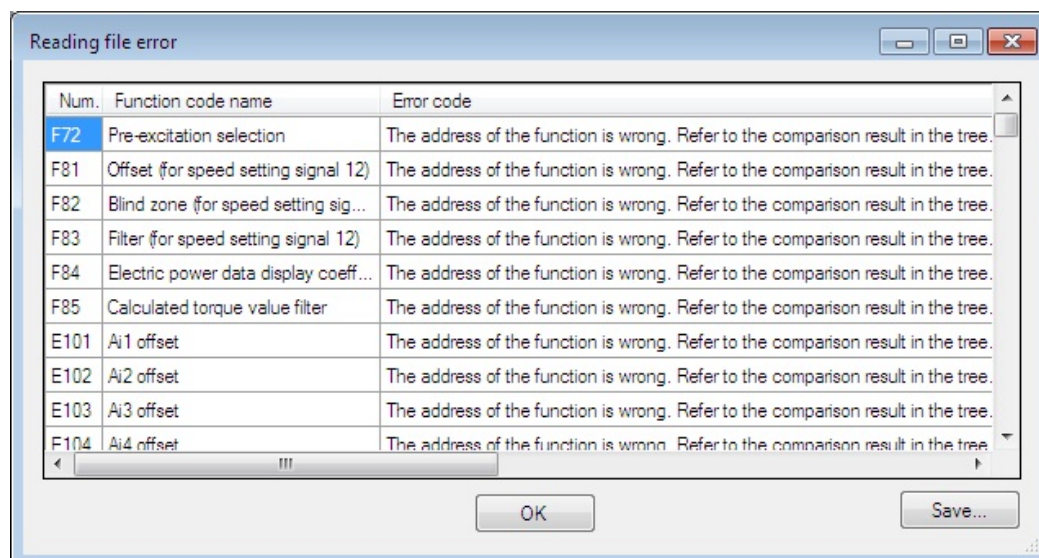
To use the function code data read from the inverter of "FRENIC-VG7" for the inverter of "FRENIC-VG", it is necessary to change a "model" into "VG1" from "VG7."

It is also the same as when using the function code data of "VG1" for "VG7."



The function code which exists in the model before conversion and does not exist in the model after conversion is displayed on the dialog of a file reading error.

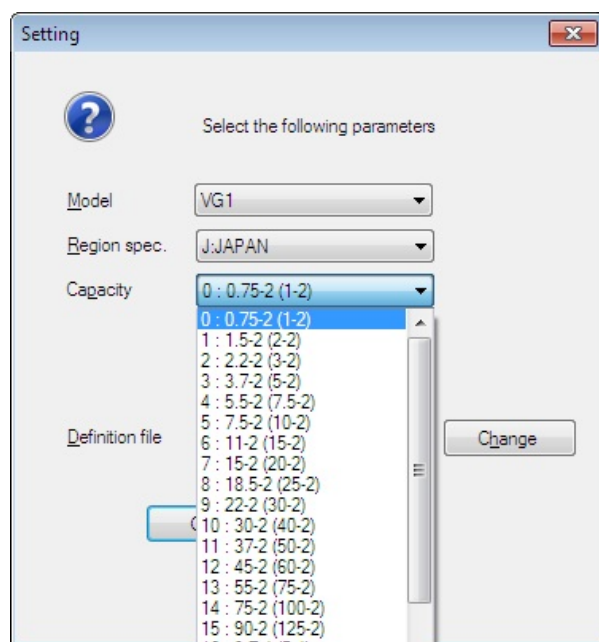
(The following figure is a case where it changes into "VG1" from "VG7".)



Note · Change models (VG7 → VG1/VG1 → VG7) is only possible if the standard or semi-standard (CC, SX, FB) products.

[2] Change of inverter capacity

Change the "capacity inverter" of the current function code list.



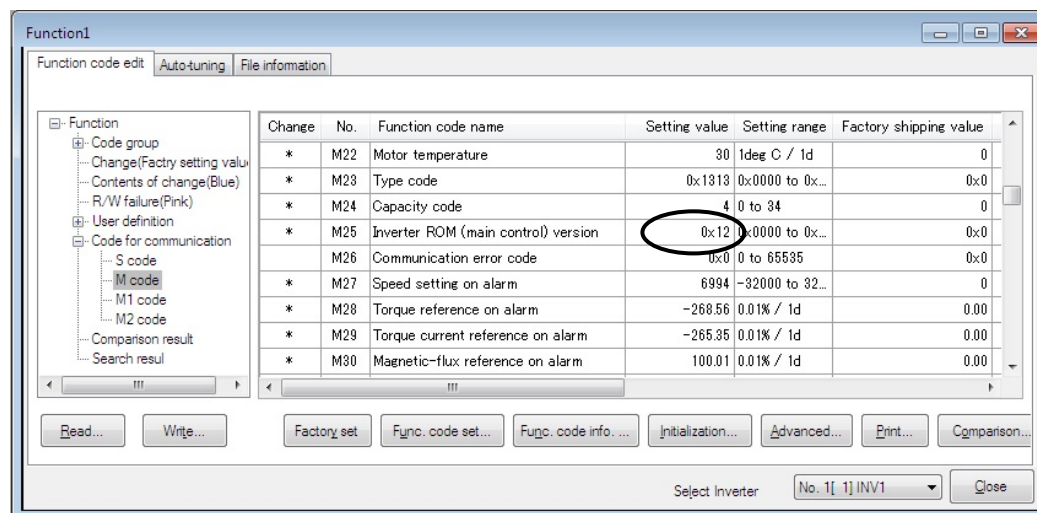
Note It will be changed into the value of the capacity as which the "preset value" of the following function code and the "factory-shipments value" were chosen if "Inverter capacity" is changed.

Function code	Name	Function code	Name
F04	M1 Maximum Speed	P15	M1 Magnetic Saturation Factor 1
F05	M1 Rated Voltage	P16	M1 Magnetic Saturation Factor 2
F11	M1 Electronic Thermal Overload Protection (Detection level)	P17	M1 Magnetic Saturation Factor 3
F12	M1 Electronic Thermal Overload Protection (Thermal time constant)	P18	M1 Magnetic Saturation Factor 4
F26	Motor Sound (Carrier frequency)	P19	M1 Magnetic Saturation Factor 5
P02	M1 Motor Selection	P20	M1 Secondary Time Constant
P03	M1 Rated Capacity	P21	M1 Induced Voltage Factor
P04	M1 Rated Current	P22	M1 R2 Correction Factor 1
P05	M1 Number of Poles	P23	M1 R2 Correction Factor 2
P06	M1 %R1	P24	M1 R2 Correction Factor 3
P07	M1 %X	P25	M1 Exciting Current Correction Factor
P08	M1 Exciting Current/Magnetic Flux Weakening Current (-Id)	P33	M1 Maximum Output Voltage/ Maximum Voltage Limit
P09	M1 Torque Current	H15	Restart Mode after Momentary Power Failure (Continuous running level)
P10	M1 Slip Frequency (For driving)	H51	Observer (M1 load inertia)
P11	M1 Slip Frequency (For braking)		
P12	M1 Iron Loss Factor 1		
P13	M1 Iron Loss Factor 2		
P14	M1 Iron Loss Factor 3		

[3] Change of definition file

"Definition file" of the function code list is a one-to-one correspondence to the inverter ROM version. The inverter ROM version is displayed in the "MAIN" on the fifth page of the Key pad of the "5. Maintenance". (Refer to the operation manual "3.4.6 See maintenance information" of the main part of an inverter for operation.)

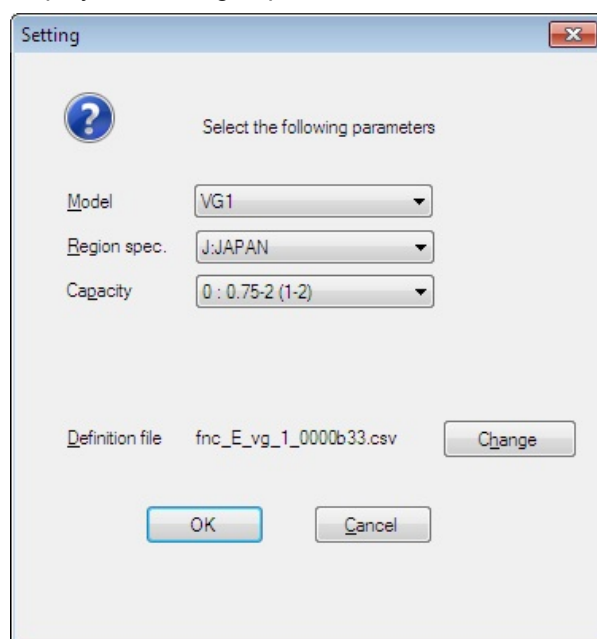
When checking by a loader, Check an "M25 : Inverter ROM (main control) version" after reading function code data from an inverter.



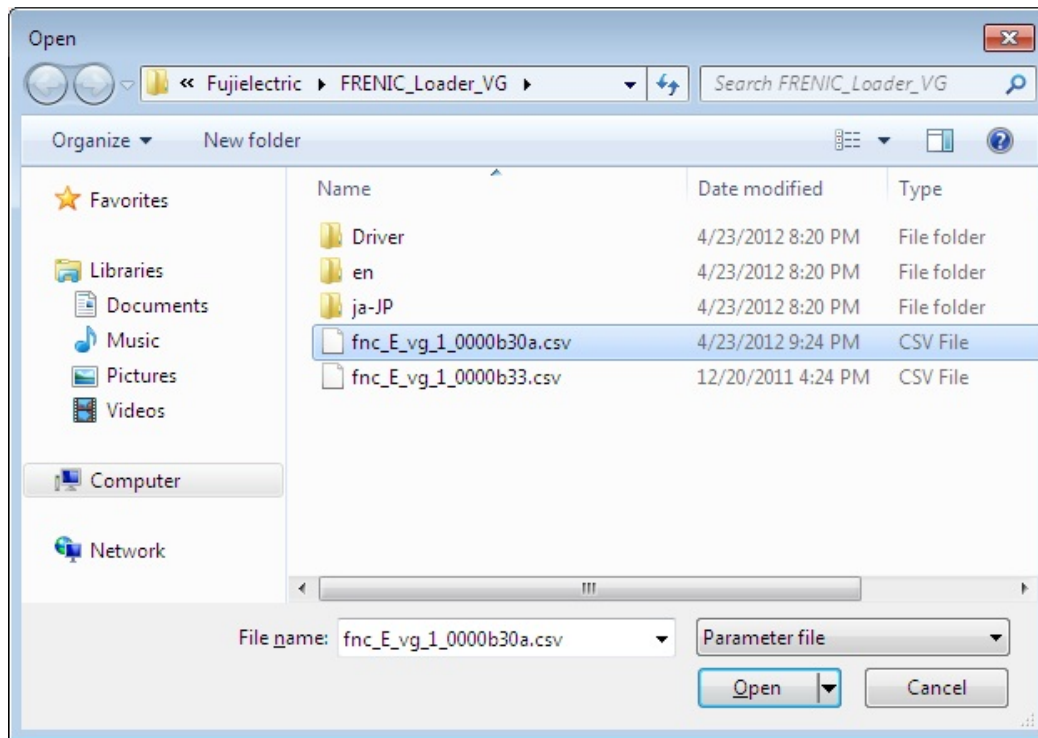
Shows the relationship between the "Inverter ROM version" and "Definition file" below.

Inverter ROM version		Definition file
Key pad display	: H10011	fnc_E_vg_1_0000b30a.csv
Loader M25 display	: 0x11	
Key pad display	: H10012	fnc_E_vg_1_0000b33.csv
Loader M25 display	: 0x12	

When changing the "definition file" of the current function code list, click [change] button and displays the dialog "Open file."

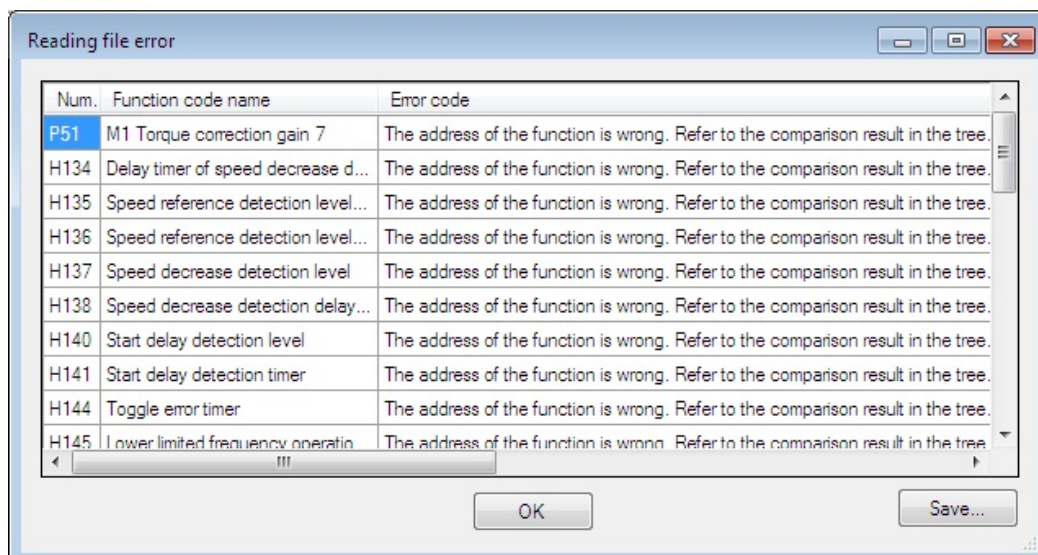


Select the definition file that corresponds to the ROM version of the inverter. Then, click the [Open] button.



The function code which exists in the definition file before conversion and does not exist in the definition file after conversion is displayed on the dialog of a file reading error.

(The following figure is a case where it changes into "fnc_vg_1_0000b28a.csv" from "fnc_vg_1_0000b33.csv".)




After changing the definition file, the setting of function code other than an error reading the file is transferred intact.

2.3.2. Read and write (SF code) code safety functions

In order to conform to the functional safety standards, writing of code safety functions, you must follow the instructions in the instruction manual of functional safety card.

For details, Refer to "INR-SI47-1541-JE OPC-VG1-SAFE instruction manual."

 **Note** To read or write properly safety function codes, must be attached a functional safety card (OPC-VG1-SAFE) to the inverter.

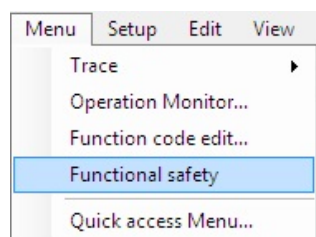
2.3.2.1. Read

Read of a safety function code can be performed by the same operation as read of the usual function codes other than safety function code. (Refer to "2.3.1 Setting function code.")

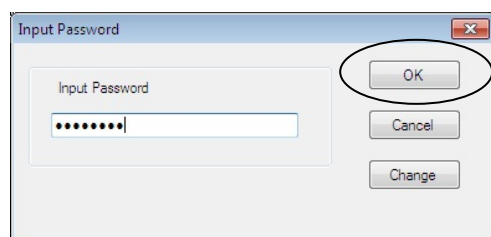
2.3.2.2. Write (Unlock Functional safety password)

The writing of a safety function code needs to open the list display of a function code edit, and unlock Functional safety password.

Select the "menu" -> "Functional safety", then the functional safety password entry screen is opened.



Enter functional safety password the 8-digit characters (0 to 9, A to F). And, click the [OK] button.



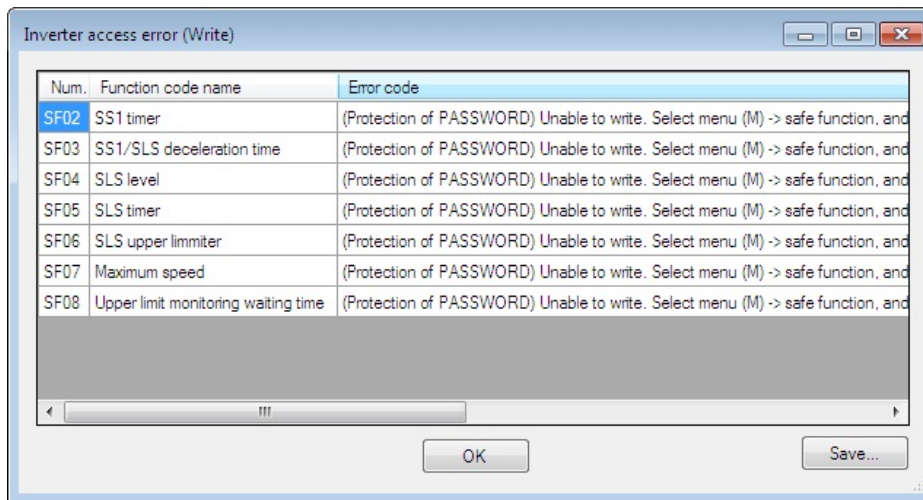
The following dialog is displayed after the safe password is unlocked.



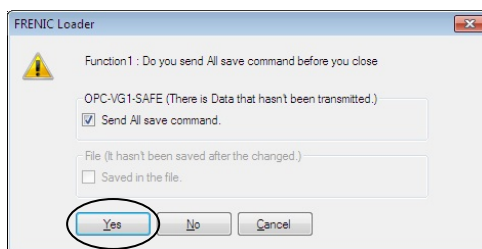
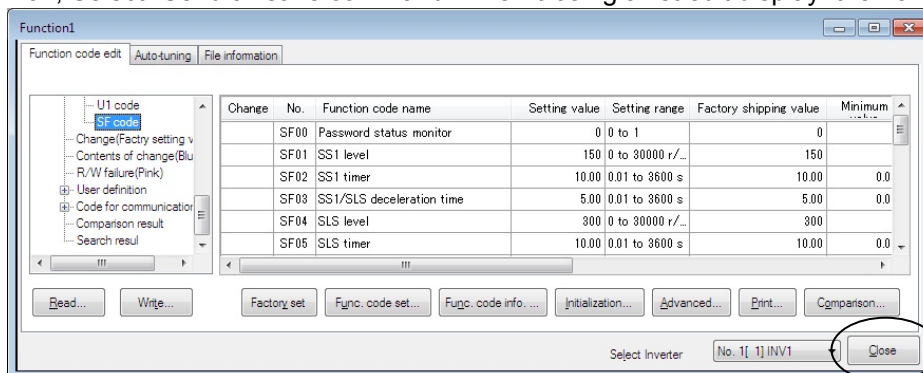
If Functional safe password is unlocked, the writing of a safety function code can carry out by the same operation as the writing of the usual function codes other than the safety function codes. (Refer to "2.3.1.4 List edit.")



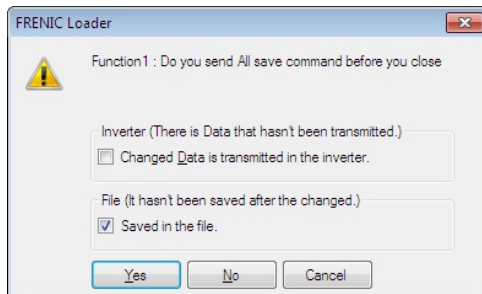
Write the safety function codes after unlocking the functional safety password.



Safety function codes are only temporarily stored in the functional safety card (OPC-VG1-SAFE). To save the safety function codes even when the power is turned off, Select "Send all save command" when closing a list edit display. then click "OK".



Make a selection of whether to save settings to a file function code.

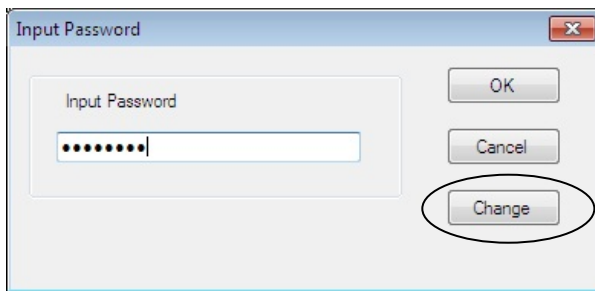


Completes the write operation (SF code) Safety functions codes using the loader.

Steps continue, refer to the "INR-SI47-1541-JE OPC-VG1-SAFE instruction manual".

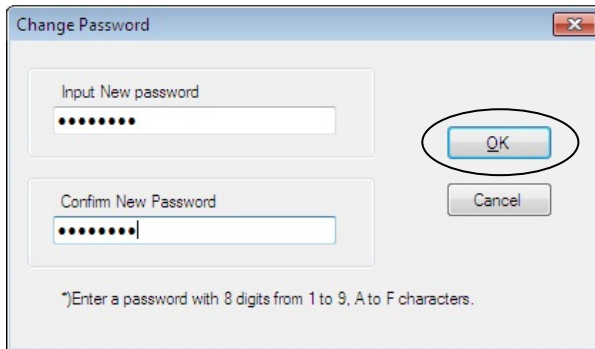
2.3.2.3. Change of the functional safety password

Select the "menu" -> "Functional safety", then the functional safety password entry screen is opened. And, Click the "Change" button.



Note In order to change the functional safe password, it is necessary to unlock the password.

Enter functional safety password the 8-digit characters (0 to 9, A to F). Moreover, Enter the same password also into the check of a new password. And, click the [OK] button.

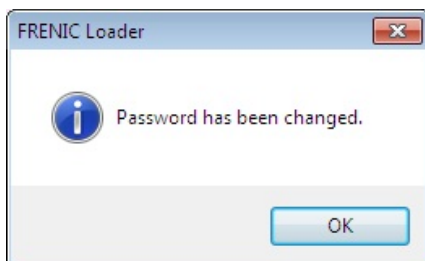


If the input password is incorrect, the following dialog will be displayed.

Try again to enter the password.



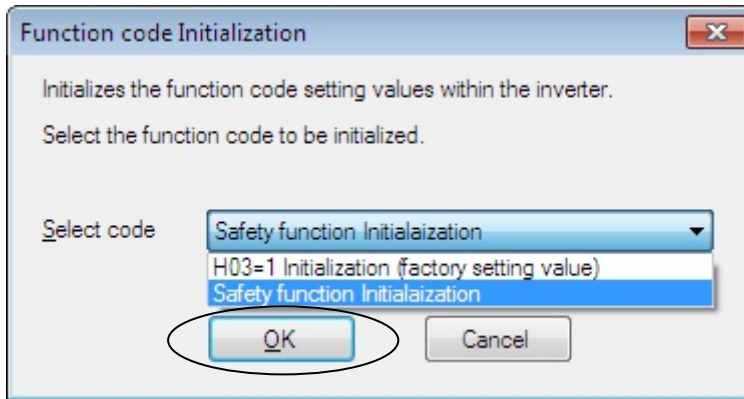
After the successful password change, the following dialog will be displayed.



Note If the password is changed, it will return to the password lock state.
Write the safety function codes after unlocking the functional safety password again.

2.3.2.4. Safety function code initialization

To initialize the safety function code, open the edit screen of function code list, click the [Initialization...] button, display the dialog of initialization selection. Then, select the "Initialization the safety function code", click the [OK] button.



- Safety function code will be initialized even if the functional safety password is not unlocked.
- When the safety function code are initialized, functional safety password will return to the default setting.

2.3.3. Trace back

The operation status of an inverter can be observed as continuous waveform data.

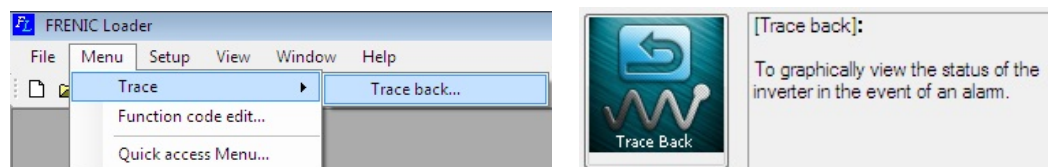
The trace (shown below) provides the following three types functions.

The inverter operation status at occurrence of alarm is saved into the memory in the inverter as waveform data. Trace Back is a function to read the saved waveform data and display it in the graph. This is suitable to reference for troubleshooting.

The waveform data for the last 3 times including the latest alarm is saved. The waveform data before the last 3 alarm is cleared.

Item	Trace Back
Sampling time	Current detection, Electrical angle : 50us to 83.36us 100us to 166.72us Others : 400us to 666.88us 1ms to 1s
Number of samplings	1100 point/Ch Before trigger :1000 point/Ch After trigger : 100 point/Ch
Number of displayed data	Analog : 8 Digital : 16
Number of selectable data	Analog : 26 Digital : IN : 16 OUT : 16 x 8 blocks

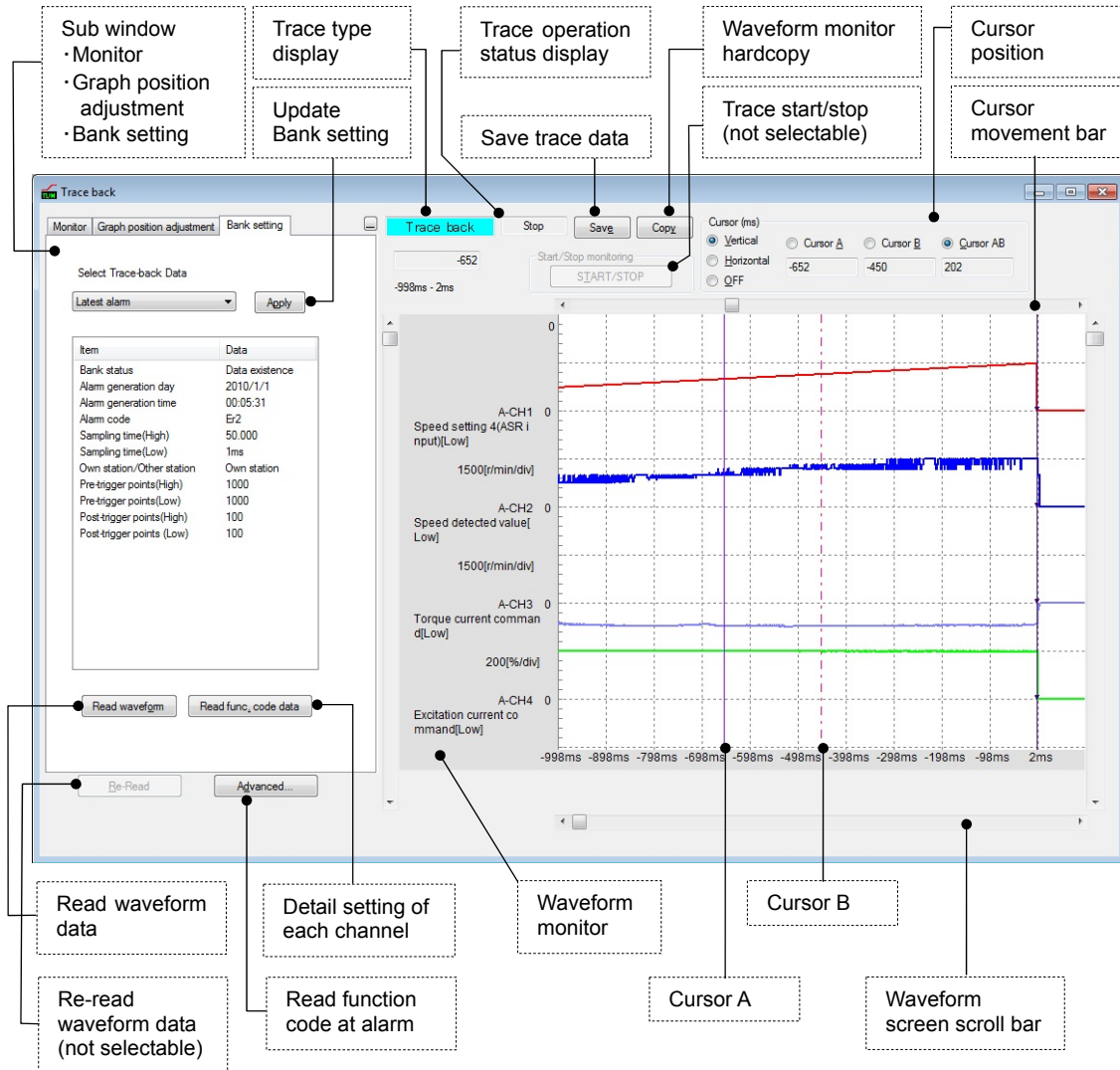
Click [Menu] -> [Trace] -> [Trace Back] or select Simple Menu and click [Simple Menu] -> [Trace Back] . Then, [Select Edit Data] dialog will open.



- VG7 does not support the each trace.
- When using trace, do not assign the function code (E01 to E13 : X function selection) "23 : Write enable through link". When you assign 23, set to "Allow".
- If you want to keep the data for the trace back, when you turn off the inverter power supply, you need a battery for memory backup(22kW or less : Options, more than 30kW : Standard accessories). For more information about the battery for memory backup, refer to the inverter's instruction manual (FRN-VG1) "7.4.2 battery".
- Trace back data saved in VG loader free version "1.1.0.0" can not be opened in earlier versions loader. Do the version up to "1.1.0.0".

2.3.3.1. Trace back screen

The following shows the Trace Back window.



2.3.3.2. Read Waveform Data

You can read the trace back waveform data saved in the memory within the inverter.

Follow the steps below:

- (1) Select [Bank Setting] tab.
- (2) Select the alarm to be read from [Select Trace Back Data] up to the past three times and click [Update] button.
- (3) The alarm information saved in the inverter appears. If the contents are OK, click [Read Waveform] button.

2.3.3.3. Read Function Code Settings (during Trace Back)

You can read the function code setting values when trace back waveform data is saved.

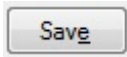
Follow the steps below:

- (1) Select [Bank Setting] tab and select the alarm to be read from [Select Trace Back Data] up to the past three times.
- (2) Click [Update] button.
- (3) The alarm information saved in the inverter appears. If the contents are OK, click [Read Function Code] button.

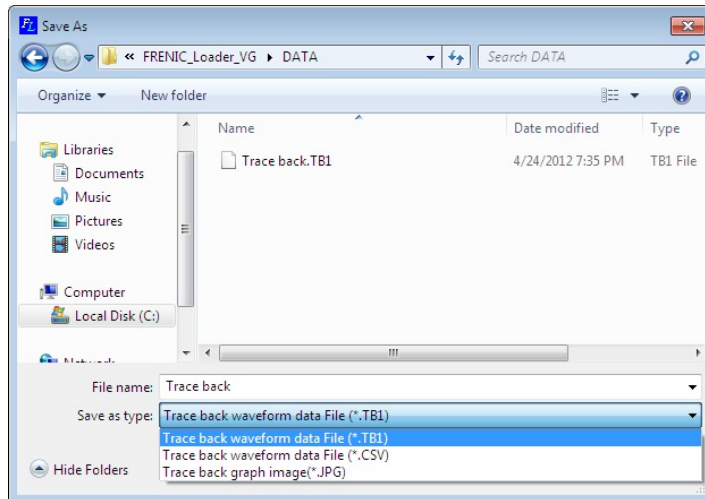
Item	Data
Bank status	Data existence
Alarm generation day	2010/1/1
Alarm generation time	00:05:31
Alarm code	Er2
Sampling time(High)	50.000
Sampling time(Low)	1ms
Own station/Other station	Own station
Pre-trigger points(High)	1000
Pre-trigger points(Low)	1000
Post-trigger points(High)	100
Post-trigger points (Low)	100

2.3.3.4. Save Trace Data

To save each trace data, click [Save] button in the upper center in the trace window or select [File] -> [Save As...].



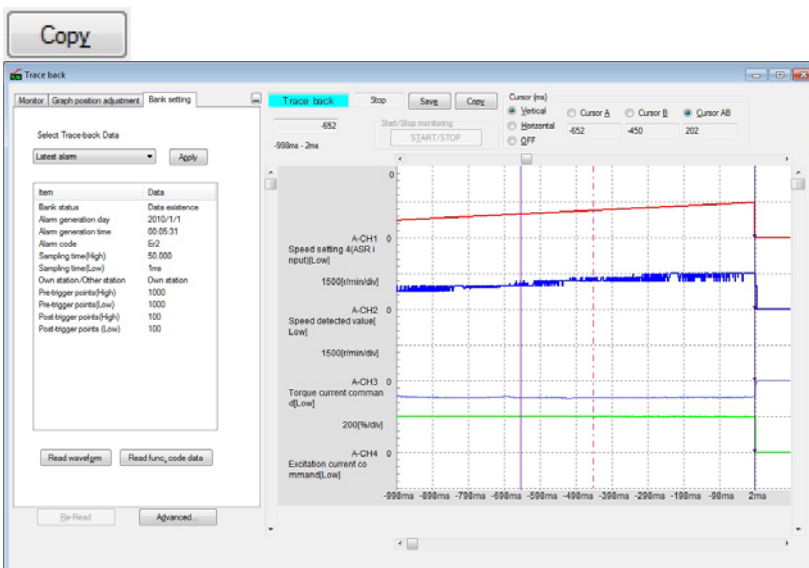
When selecting [Save] for the data for the first time, the following dialog will open in the same manner as when selecting [Save As ...]. Select [Save to...] and [File Type], enter the file name under which the file is saved in [File Name] and then click [Save] to determine the entry.



- Trace back data is saved as *.TB1 file. (VG1)
- The comma delimiter format is saved as *.CSV (VG1)
- Trace data (Graph image) is saved as *.JPG file. (VG1)

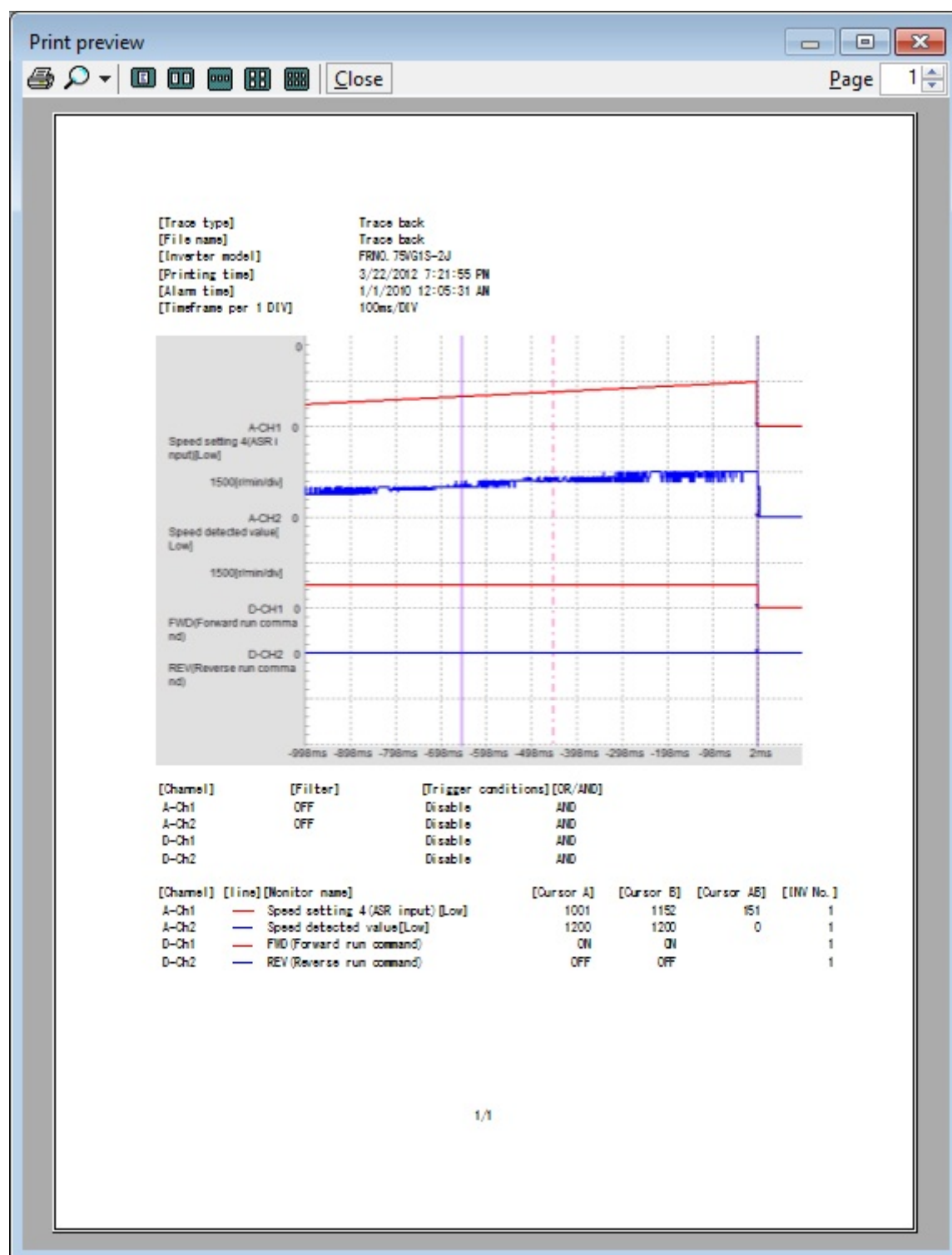
2.3.3.5. Copy Trace Back Data Screen

To copy each trace data screen, click [Copy] button in the upper center in the trace screen. Then, the screen is copied in the clip board. You can paste it onto the target document.



2.3.3.6. Print Trace Data

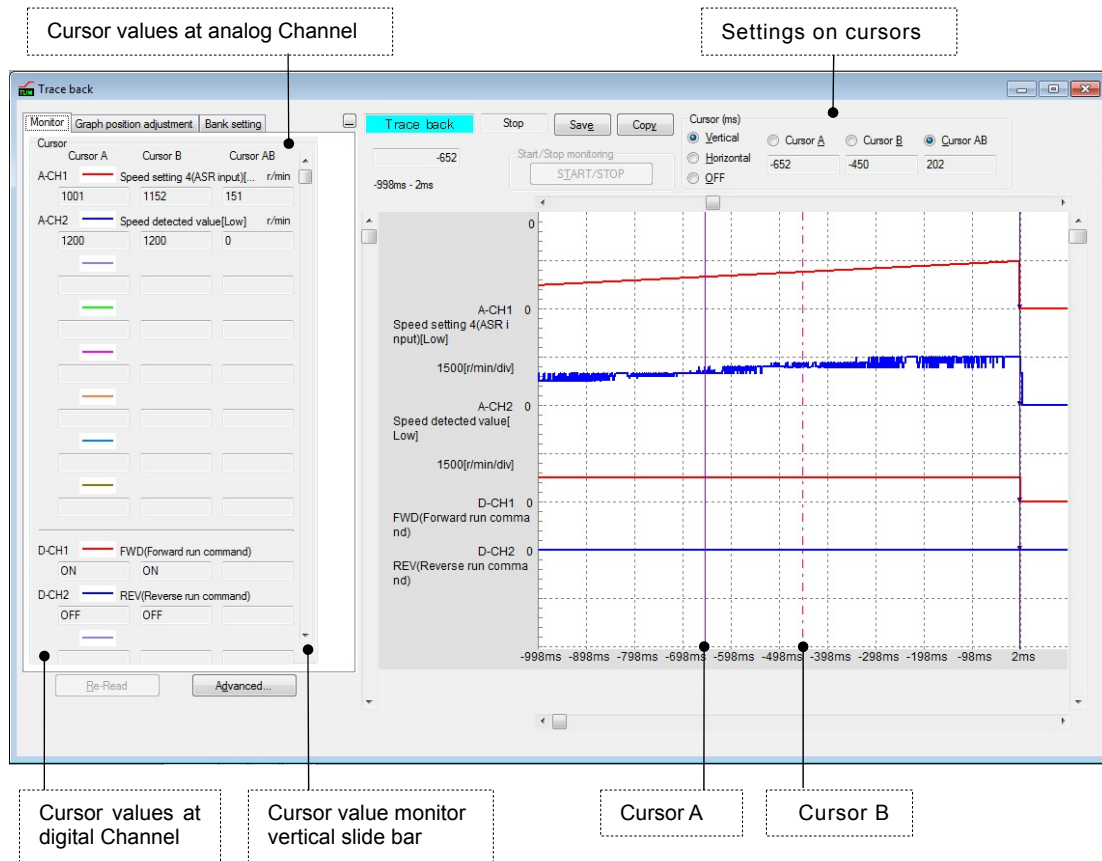
To print the trace data, set the trace screen in the active state and select [File] -> [Print]. The trace data is printed as shown below.



2.3.3.7. Sub Window

[1] Cursor

Each box in the cursor sub window shows the channel setting values or status at each cursor position.



Select cursor display

Vertical: Two cursors (Cursor A, Cursor B, Cursors A and B)

Horizontal: Two cursors (Cursor A, Cursor B, Cursors A and B)

No display

Cursor value monitor

Analog channel: 8 channels

Digital channel: 16 channels

(You can display the hidden portions using the cursor value monitor vertical slide bar.)

Use the scroll bar to move to the waveform screen to be analyzed and click the point to be observed in the graph. The cursor will move to that position. The cursor movement position is the sampling point (time point) closest to the clicked point. The trace data of all channels on the cursor appears in the measurement monitor.

Alternatively, you can move the cursor using the cursor movement bar or by dragging the mouse.

The cursor keys on the keyboard are also available.

However, while tracing, neither waveform screen nor cursor can be moved.

[2] Adjust graph position

Each box in the cursor sub window shows the channel setting values or status at each cursor position.

You can use the boxes to adjust the graph position at each channel.

Select CH

Select the channel at which the graph position is adjusted.

Display

Display only the channels with checked mark.
Hide the channels without checked mark.

Y axis display position

Set the Y axis display position of the selected channel. The upper end comes to 0 point (50 points each at grid).

X axis display position

Set the X axis display position of the selected channel. The leftmost end comes to 0 point (200 points each at grid).

Amplitude

Set the amplitude of the selected channel by magnification (in increments of 0.25).

Change the magnification using 0 point for reference.

As changing the amplitude input value, Scale/DIV value changes in unison and the graph display also changes according to the Scale/DIV value.

Scale

Set the scale of the selected channel.

Enter the numeric value per DIV. This setting covers the analog setting channels only.

Graph position reset

Reset the display position and amplitude setting of the selected channel to the initial values.

- Y axis display position: Ch1 = 50 and the value increments by +50 for the subsequent channels.
- X axis display position: Each Ch = 0
- Amplitude: 1.00

Optimize Y axis graph

Arrange the Y axis display position and scale of the displayed channels without overlapping by channel. Reset the amplitude setting to the initial value.

- Y axis display position: Ch1=100 and the value increments by +100 for the subsequent channels.
- Scale: Set the scale value so that the maximum value can be within two grids. (Minimum unit: 50)

Detect waveform peak

Move Cursor A to the maximum value of the selected channel automatically. If there are two or more peaks, the cursor moves to the earliest one.

Display range in one DIV

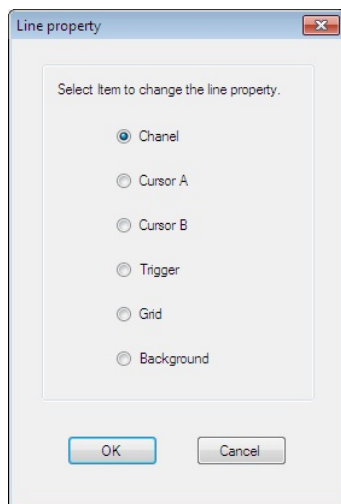
Set the time to be displayed in one waveform monitor screen.

Ttrace back:

(1ms, 5ms, 10ms, 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 2s, 5s, 10s, 20s, 30s, 1min, 5min, 10min)

Color setting

The color setting data is held. When obtaining the waveform, you can change the color setting.

**Ch line**

Line color and line type of the trace data of the selected channel

Cursor line A

Select the line color, line type and line thickness of Cursor line A.

Color line B

Select the line color, line type and line thickness of Cursor line B.

Trigger line

Select the line color, line type and line thickness of the trigger line.

Grid line

Select the line color, line type and line thickness of the grid line.

Graph background color setting

Select the waveform monitor background color.

The settings of the trace line of each CH are as below:

• Color

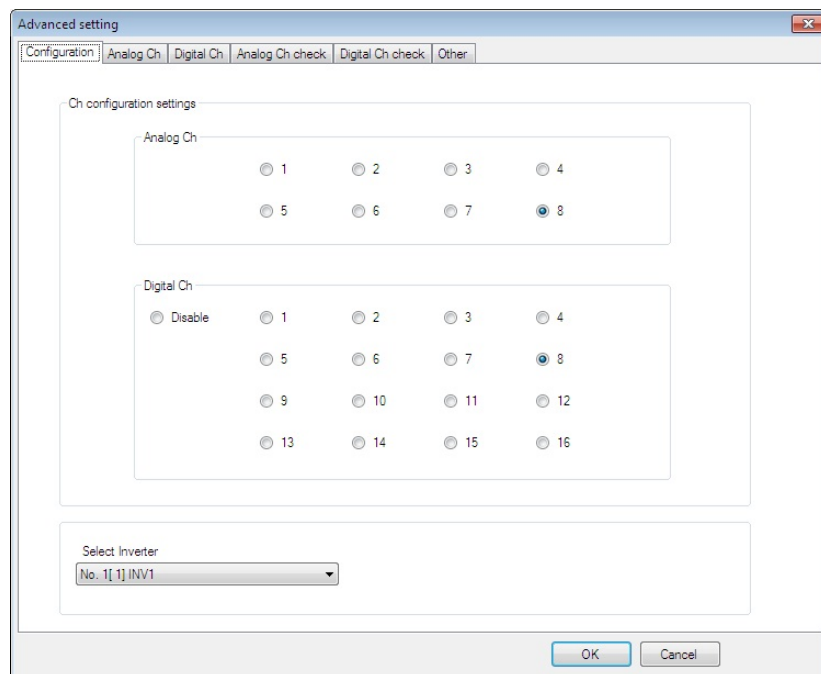
• Type of line

• Thickness

2.3.3.8. Waveform Detail Settings

[1] Channel configuration setting

You can set the configuration of analog channels and digital channels to be traced. See [2] to [5] for detail settings of each channel.

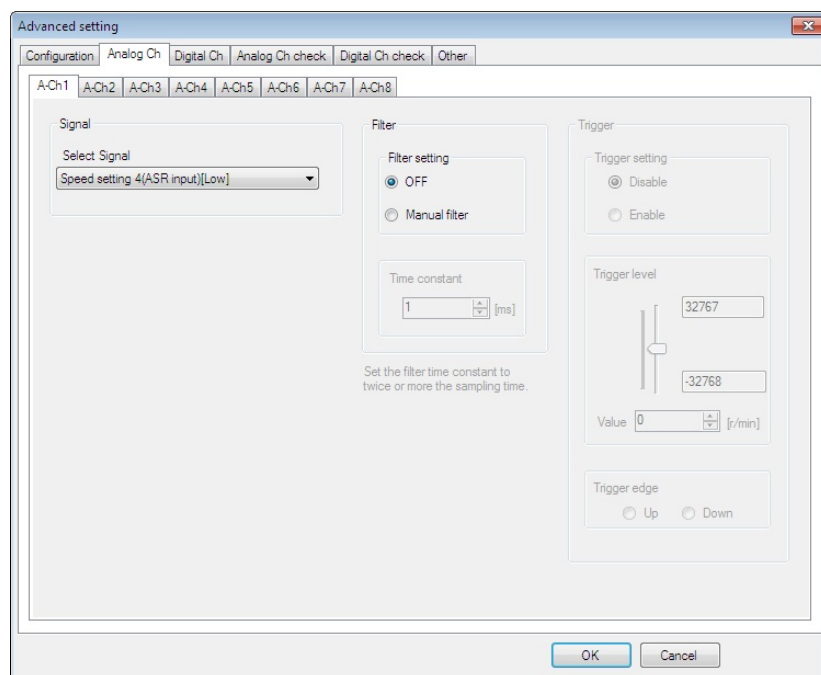


Target inverter

Select No. of the inverter registered in Connection Setting.

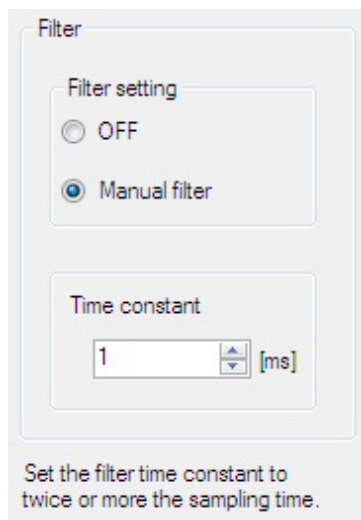
[2] Ch1 to Ch8 (analog setting)

You can set the analog channels.



Filter setting

You can do settings on filters of each channel.



Filter

Filter setting

☐ OFF

☒ Manual filter

Time constant

1 [ms]

Set the filter time constant to twice or more the sampling time.

Not used

Select this when no file is used.

Manual filter

Low path filter with filter time constant freely set.

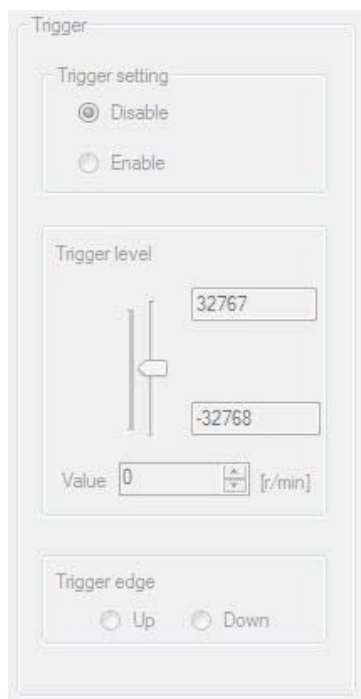
Set the filter time constant using numeric values.

The setting range is from 1 [ms] to 1 [s].

(Common to historical/real time/trace back)

Trigger

In Trace-back, this setting is disabled.



Trigger

Trigger setting

☒ Disable

☐ Enable

Trigger level

32767

-32768

Value 0 [r/min]

Trigger edge

☐ Up ☐ Down

Signal selection

The information items of the inverters that can be monitored are as shown below.

Analog channel signal selection items (trace back)

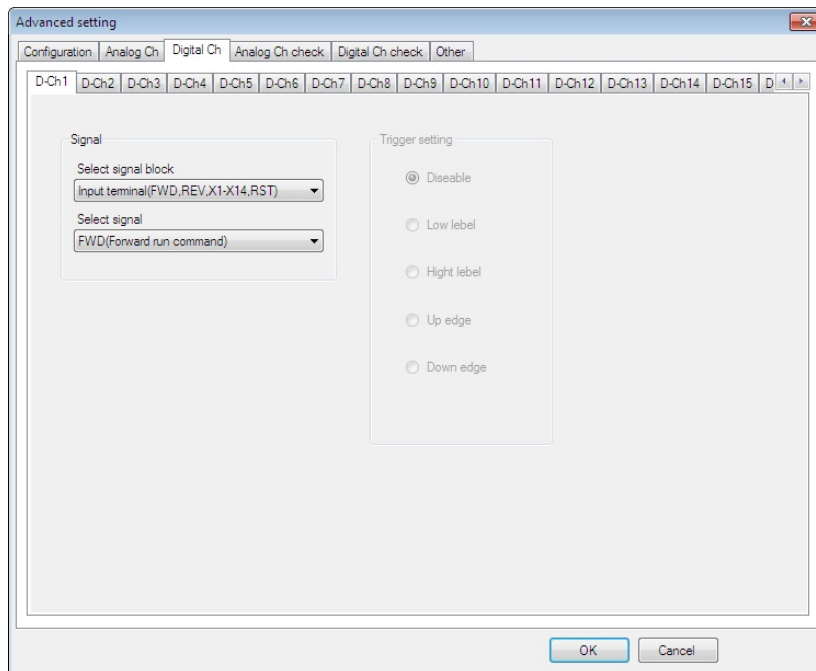
No	Item	Fast /Lower	Note
0	Speed setting 2 (before calculating acceleration/deceleration)	Lower	
1	Speed setting 4 (ASR input)	Lower	
2	Speed detected value	Lower	
3	Torque command	Lower	100%:Rated motor torque
4	Torque current command	Lower	100%:Rated motor torque (P09,A11,A111)
5	Torque current calculation value	Lower	100%:Motor rated torque current (P09,A11,A111)
6	Exciting current command	Lower	100%:Motor rated excitation current (P08,A10,A110)
7	Exciting current detection	Lower	100%:Motor rated excitation current (P08,A10,A110)
8	Magnetic-flux calculation	Lower	
9	Output current effective value	Lower	
10	Output voltage effective value	Lower	
11	DC intermediate voltage	Lower	
12	Motor temperature	Lower	
13	Line speed detected value	Lower	
14	U phase voltage detected value	Lower	100%: Motor rated voltage (F05,A04,A104)
15	V phase voltage detected value	Lower	100%: Motor rated voltage (F05,A04,A104)
16	W phase voltage detected value	Lower	100%: Motor rated voltage (F05,A04,A104)
17	Cooling fin temperature	Lower	
18	PID output	Lower	
19	Torque bias	Lower	
20	Ai1 adjusted value	Lower	10000/10V
21	Ai2 adjusted value	Lower	10000/10V
22	U phase current detected value	Fast	100%: Motor rated current (P04,A03,A103)
23	V phase current detected value	Fast	100%: Motor rated current (P04,A03,A103)
24	W phase current detected value	Fast	100%: Motor rated current (P04,A03,A103)
25	Electric angle	Fast	8192/360°
26	Reserve 1 (No polarity)	Fast	* Do not set.
27	Reserve 1 (With polarity)	Fast	* Do not set.
28	Reserve 2 (No polarity)	Fast	* Do not set.
29	Reserve 2 (With polarity)	Fast	* Do not set.
30	Reserve 3 (No polarity)	Lower	* Do not set.
31	Reserve 3 (With polarity)	Lower	* Do not set.



If you choose a mixture of high-speed data and low-speed data, displays only part of the low-speed data that was retrieved for the time axis to the length of the high-speed data side.

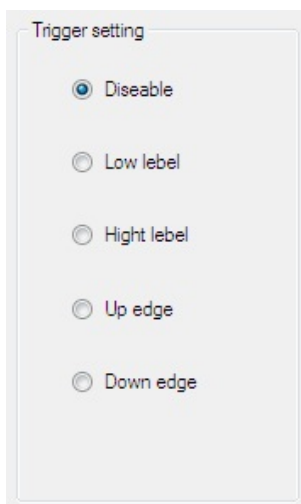
[3] Ch1 to Ch16 (digital setting)

You can set the digital channels.



Trigger

In Trace-back, this setting is disabled.



Signal selection block

Signal selection block	High speed / low speed
Input terminal (FWD, REV, X1 – X14, RST)	1: Low speed
Operation status	1: Low speed
Output terminal (Y1 – Y4, RY, X11 – X18)	1: Low speed
Output 1 Y terminal function (0 – 15)	1: Low speed
Output 2 Y terminal function (16 – 31)	1: Low speed
Output 3 Y terminal function (32 – 47)	1: Low speed
Output 4 Y terminal function (48 – 63)	1: Low speed
Output 5 Y terminal function (64 – 79)	1: Low speed
Output 6 Y terminal function (80 – 95)	1: Low speed

Signal selection

The information items of the inverters that can be monitored are as shown below.

Signal selection block “Input terminal (FWD, REV, X1 - X14, RST)” items

No	Item
0	FWD (Forward run command)
1	REV (Reverse run command)
2	X1
3	X2
4	X3
5	X4
6	X5
7	X6
8	X7
9	X8
10	X9
11	X11
12	X12
13	X13
14	X14
15	RST (RESET command)

Signal selection block “Operation status” items

No	Item
0	FWD (forward running)
1	REV (reverse running)
2	EXT (DC controlling, pre-exciting)
3	INT (inverter shutoff)
4	BRK (braking)
5	NUV (DC intermediate voltage established)
6	TL (torque limiting)
7	VL (voltage limiting)
8	IL (current limiting)
9	ACC (accelerating)
10	DEC (decelerating)
11	ALM (overall trouble)
12	-
13	-
14	-
15	-

Signal selection block “Output terminal (Y1 - Y5, Y11 - Y18)” items

No	Item
0	Y1
1	Y2
2	Y3
3	Y4
4	RY
5	Y11
6	Y12
7	Y13
8	Y14
9	Y15
10	Y16
11	Y17
12	Y18
13	-
14	-
15	-

Signal selection block “Output 1 Y terminal function (0 - 15)” items

No	Item
0	0: Inverter running [RUN]
1	1: Speed existence signal [N-EX]
2	2: Speed agreement signal 1 [N-AG1]
3	3: Speed arrival signal [N-AR]
4	4: Speed level detection 1 [N-DT1]
5	5: Speed level detection 2 [N-DT2]
6	6: Speed level detection 3 [N-DT3]
7	7: Stopping on undervoltage [LU]
8	8: Detected TRQ. polarity(Brake/Drive) [B/D]
9	9: Torque limiting [TL]
10	10: Torque detection 1 [T-DT1]
11	11: Torque detection 2 [T-DT2]
12	12: KEYPAD operation mode [KP]
13	13: Inverter stopping [STOP]
14	14: Operation ready output [RDY]
15	15: Magnetic-flux detection [MF-DT]

Signal selection block “Output 2 Y terminal function (16 - 31)” items

No	Item
0	16: Motor M2 selected [SW-M2]
1	17: Motor M3 selected [SW-M3]
2	18: Brake release signal [BRK]
3	19: Alarm content [AL1]
4	20: Alarm content [AL2]
5	21: Alarm content [AL4]
6	22: Alarm content [AL8]
7	23: Cooling fan running [FAN]
8	24: Retry function running [TRY]
9	25: Universal DO [U-DO]
10	26: Cooling fin OH. forecast [INV-OH]
11	27: Synchronization completed [SY-C]
12	28: Service life forecast [LIFE]
13	29: Under acceleration [U-ACC]
14	30: Under deceleration [U-DEC]
15	31: Inverter OL. forecast [INV-OL]

Signal selection block "Output 3 Y terminal function (32 - 47)" items

No	Item
0	32: Motor temperature OH. forecast [M-OH]
1	33: Motor OL. forecast [M-OL]
2	34: DB OL. forecast [DB-OL]
3	35: Transmission error [LK-ERR]
4	36: Load adaptive control under limit [ANL]
5	37: Load adaptive control under calc. [ANC]
6	38: Analog torque bias hold [TBH]
7	39:Custom Do1[C-DO1]
8	40:Custom Do2[C-DO2]
9	41:Custom Do3[C-DO3]
10	42:Custom Do4[C-DO4]
11	43:Custom Do5[C-DO5]
12	44:Custom Do6[C-DO6]
13	45:Custom Do7[C-DO7]
14	46:Custom Do8[C-DO8]
15	47:Custom Do9[C-DO9]

Signal selection block "Output 4 Y terminal function (48 - 63)" items


No	Item
0	48:Custom Do10[C-DO10]
1	49: -
2	50: Z phase detect completed [Z-RDY]
3	51: Multiplex sys. com. establishment [MTS]
4	52: Multiplex sys. cancel response [MES-AB]
5	53: Master selected [MSS]
6	54: Multiplex system self-alarm [AL-SF]
7	55: Communication error stop [LES]
8	56: Overall alarm [ALM]
9	57: Slight trouble [L-ALM]
10	58: Maintenance forecast [MNT]
11	59: Brake transistor error [DBAL]
12	60: DC fan lock signal [DCFL]
13	61: Speed match 2 [N-AG2]
14	62: Speed match 3 [N-AG3]
15	63: Electric motor fan stop [MFAN]

Signal selection block "Output 5 Y terminal function (64 - 79)" items

No	Item
0	64: Assign ready[AS-RDY]
1	65: -
2	66: Droop select response [DSAB]
3	67: TRQ.(current) ref. cancel response [TCL-C]
4	68: TRQ. limit 1 cancel response [F40-AB]
5	69: -
6	70: -
7	71: 73-on reference[PRT-73]
8	72: Y terminal test output ON [Y-ON]
9	73: Y terminal test output OFF [Y-OFF]
10	74: -
11	75: Clock battery life [BATT]
12	76: Tune in Pole position [TUN-MG]
13	77: SPGT battery warning [SPGT-B]
14	78: -
15	79: -

Signal selection block "Output 6 Y terminal function (80 - 95)" items

No	Item
0	80: EN terminal detected circuit Err. [DECF]
1	81: EN terminal OFF [ENOFF]
2	82: Safety func. operating [SF-RUN]
3	83: -
4	84: STO test by safety func. [SF-TST]
5	85: -
6	86: -
7	87: -
8	88: -
9	89: -
10	90: -
11	91: -
12	92: -
13	93: -
14	94: -
15	95: -

 **Note** · Item of "Output terminal function 6 Y (80 - 95)" is only supported with the inverter (VG1) rom number after H0020.

[4] Ch setting check (analog/digital)

The data set in each channel is listed. To reflect the setting, click OK button. To cancel the setting, click Cancel button.

Configuration	Analog Ch	Digital Ch	Analog Ch check	Digital Ch check	Other
Waveform name	Visible	Filter	Trigger	INV No.	
A-Ch1	Speed setting 4(ASR input)[Low]	ON	OFF	Disable	1
A-Ch2	Speed detected value[Low]	ON	OFF	Disable	1
A-Ch3	Torque current command[Low]	ON	OFF	Disable	1
A-Ch4	Excitation current command[Low]	ON	OFF	Disable	1
A-Ch5	Output current[Low]	ON	OFF	Disable	1
A-Ch6	Output voltage[Low]	ON	OFF	Disable	1
A-Ch7	DC Link voltage[Low]	ON	OFF	Disable	1
A-Ch8	Motor temperature[Low]	ON	OFF	Disable	1

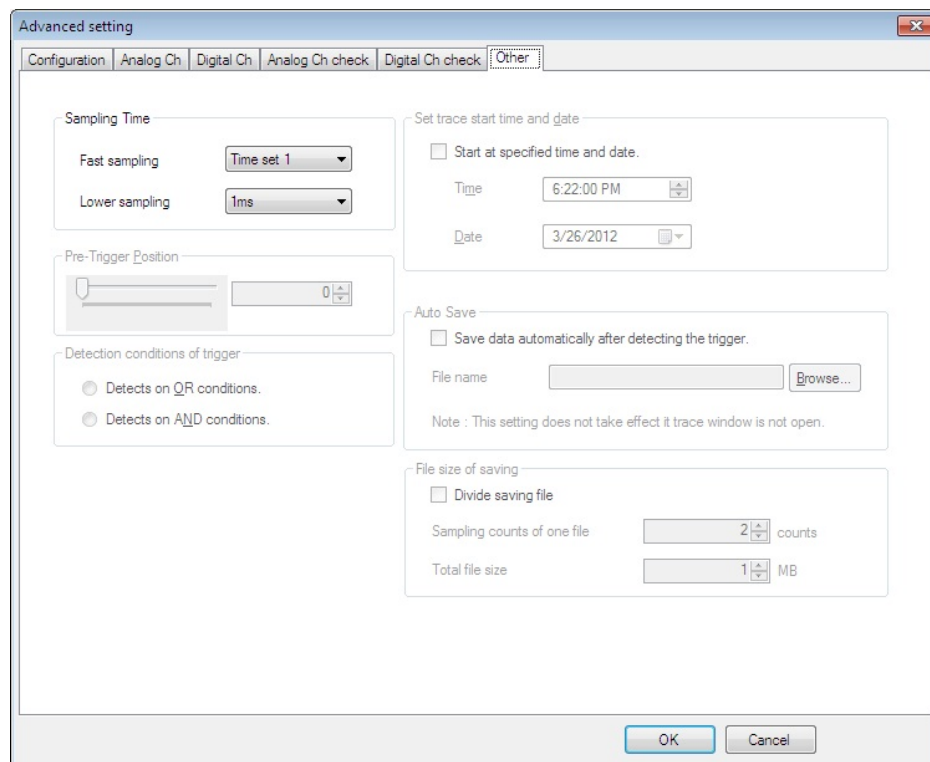
OK Cancel

Configuration	Analog Ch	Digital Ch	Analog Ch check	Digital Ch check	Other
Waveform name	Visible	Trigger	INV No.		
D-Ch1	FWD(Forward run command)	ON	Disable	1	
D-Ch2	REV(Reverse run command)	ON	Disable	1	
D-Ch3	Speed existence signal[N-EX]	ON	Disable	1	
D-Ch4	Speed agreement signal[N-AG]	ON	Disable	1	
D-Ch5	Speed equivalent signal[N-AR]	ON	Disable	1	
D-Ch6	Speed level detection 1[N-DT1]	ON	Disable	1	
D-Ch7	Operation ready output[RDY]	ON	Disable	1	
D-Ch8	TL(Torque limiting)	ON	Disable	1	

OK Cancel

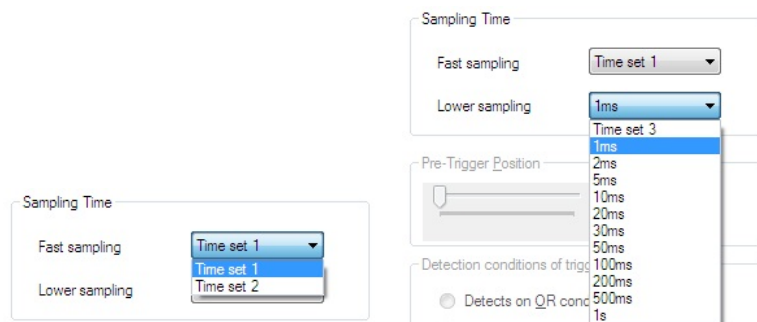
[5] Other settings (including sampling time setting)

In the Trace Back operation, you can change the sampling time only.



Sampling time setting

Sampling time setting is as shown below:



Sampling time setting	Trace back	Real-time	Historical
Time set 1 * (50.00 to 83.36us)	Y : Fast	N	Y
Time set 2 * (100.00 to 166.72us)	Y : Fast	N	Y
Time set 3 * (400.00 to 666.88us)	Y : Lower	N	Y
1ms	Y : Lower	Y	Y
2ms	Y : Lower	Y	Y
5ms	Y : Lower	Y	Y
10ms	Y : Lower	Y	Y
20ms	Y : Lower	Y	Y
30ms	Y : Lower	Y	Y
50ms	Y : Lower	Y	Y
100ms	Y : Lower	Y	Y
200ms	Y : Lower	Y	Y
500ms	Y : Lower	Y	Y
1s	Y : Lower	Y	Y


Y: Available, N: Not available

* The sampling time of the Time set 1 to 3 is varied by the setting of F26 : Motor sound(Carrier freq.).

Trigger position

In Trace-back, this setting is disabled.

Pre-Trigger Position



A slider control with a vertical bar and a horizontal line, and a numeric input box showing the value 100.

Detection conditions

In Trace-back, this setting is disabled.

Detection conditions of trigger

☒ Detects on QR conditions.

☐ Detects on AND conditions.

Set trace start date and time

In Trace-back, this setting is disabled.

Set trace start time and date

☒ Start at specified time and date.

Time

Date

Auto Save

In Trace-back, this setting is disabled.

Auto Save

☒ Save data automatically after detecting the trigger.

File name

Note : This setting does not take effect if trace window is not open.

Save data file size

In Trace-back, this setting is disabled.

File size of saving

☒ Divide saving file

Sampling counts of one file counts

Total file size MB

2.4. Setup

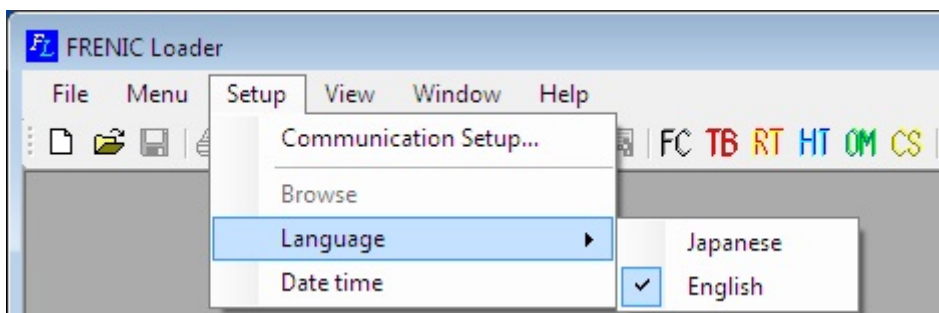
2.4.1. Communication Setup

Refer to "1.4.4 Communication Settings".

2.4.2. Language

Sets the language of the loader. Select the [Setup] → [Language] → [Japanese] or [English], then exit the loader.

You can select "English" and "Japanese" language.



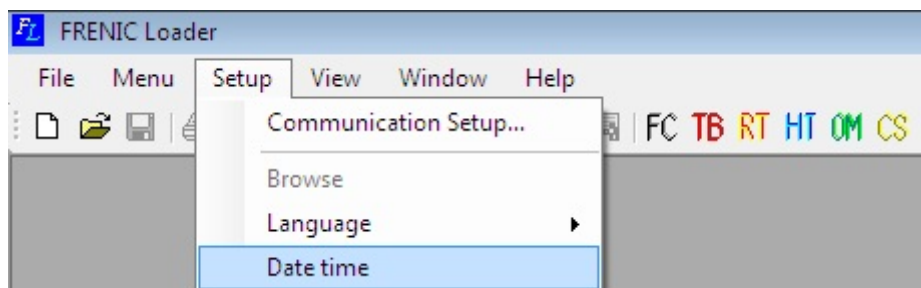
After you have selected a language, exit the loader and restart the loader.

Switches to the selected language when restart the loader.

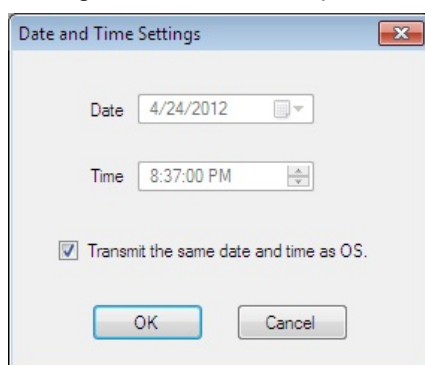
* If you do not exit the loader and restart the loader, language is not changed.

2.4.3. Date time

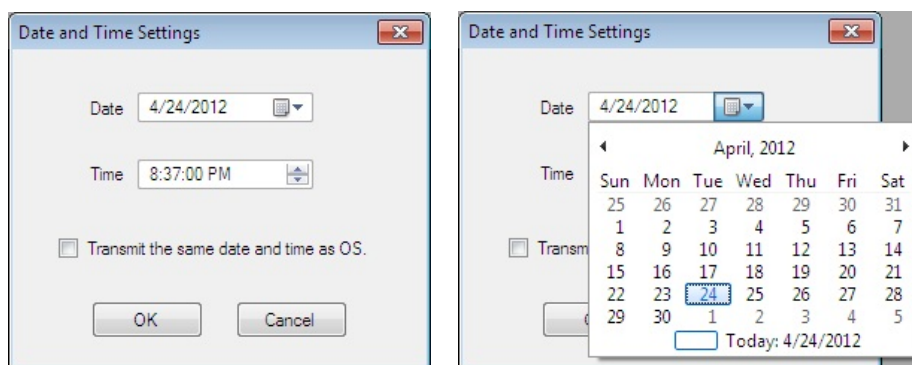
Allow the setting of the date and time of the inverter from the loader. Select the [Setup] → [Date time], then setting dialog is opened.



Setting the date and time, perform from the following dialog.



* If you check the ☒ mark of "send the date and time of the OS", the date and time which is managed by OS are sent to the inverter.



* If you remove the ☒ mark of "Send the date and time of the OS", any date and time are sent to the inverter.

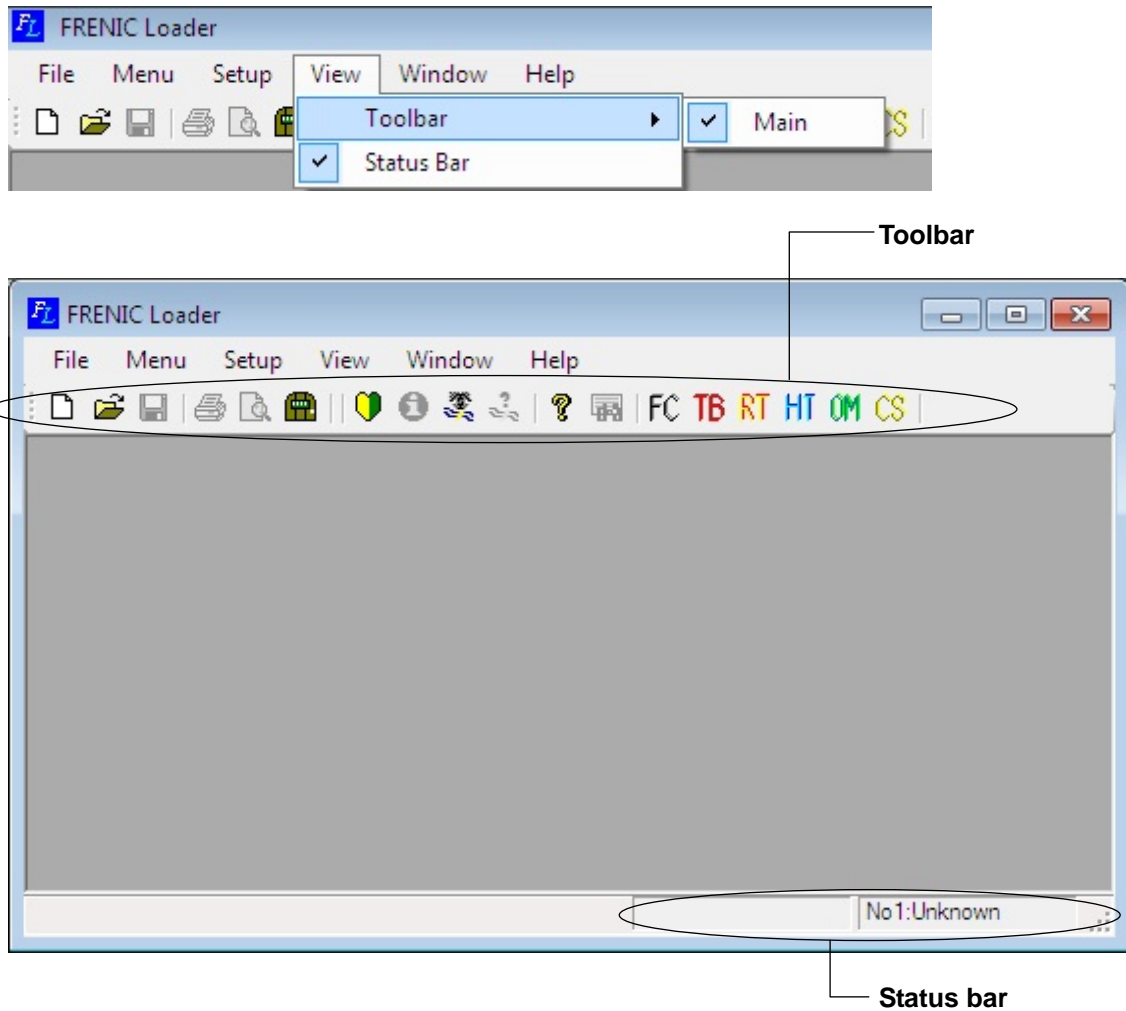


After mounting a memory backup battery (option for inverters of 22 kW or below, attached as standard for those of 33 kW or above), set the date and time. When a memory backup battery is not mounted, the calendar clock does not work correctly. For more information about the battery for memory backup, refer to the inverter's (FRN-VG1) instruction manual "7.4.2 Battery".

2.5. View

Selecting **View | Toolbar | Main** shows or hides the toolbar.

Selecting **View | Status Bar** shows or hides the status bar.



2.5.1. Toolbar

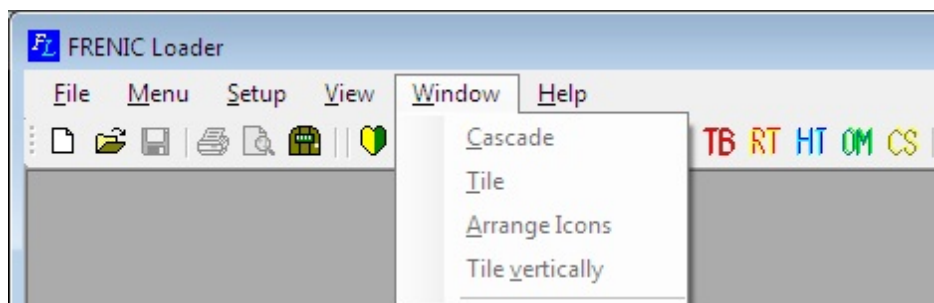
The toolbar, which is usually located at the top of the Loader window, contains program icons and allows you to access the desired function (program) with a single click.

2.5.2. Status bar

The status bar, which is usually located at the bottom of the Loader window (as shown above), shows the running status of the currently selected inverter and the program execution status.

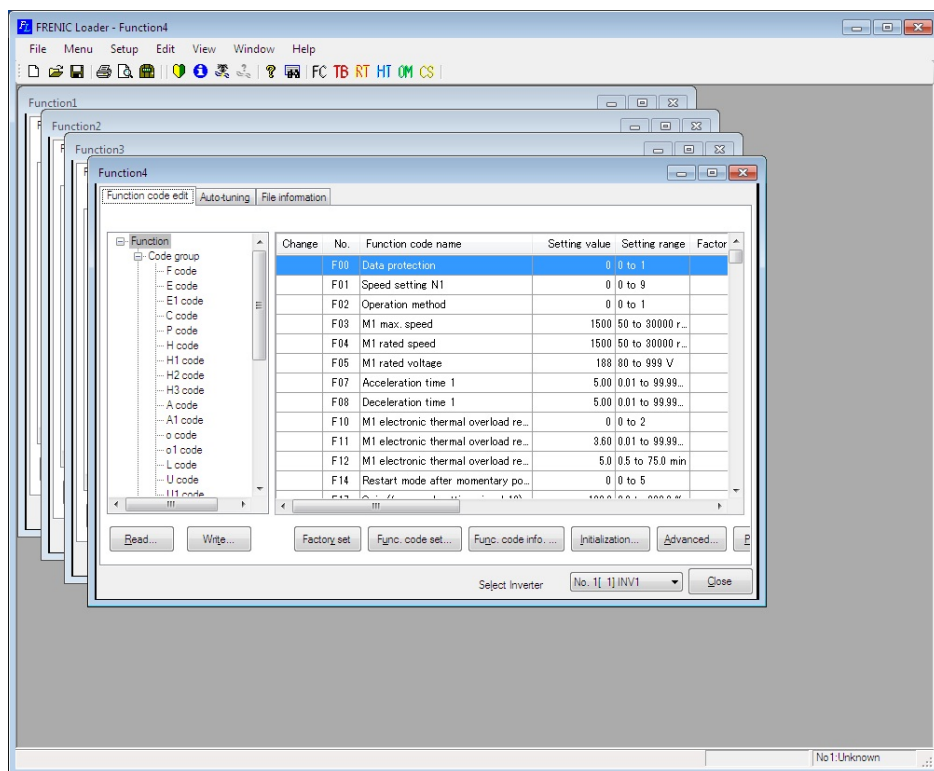
2.6. Window

Specify how to display the Loader windows on the Loader top window. This facility becomes active only if any window is opened on the top window.



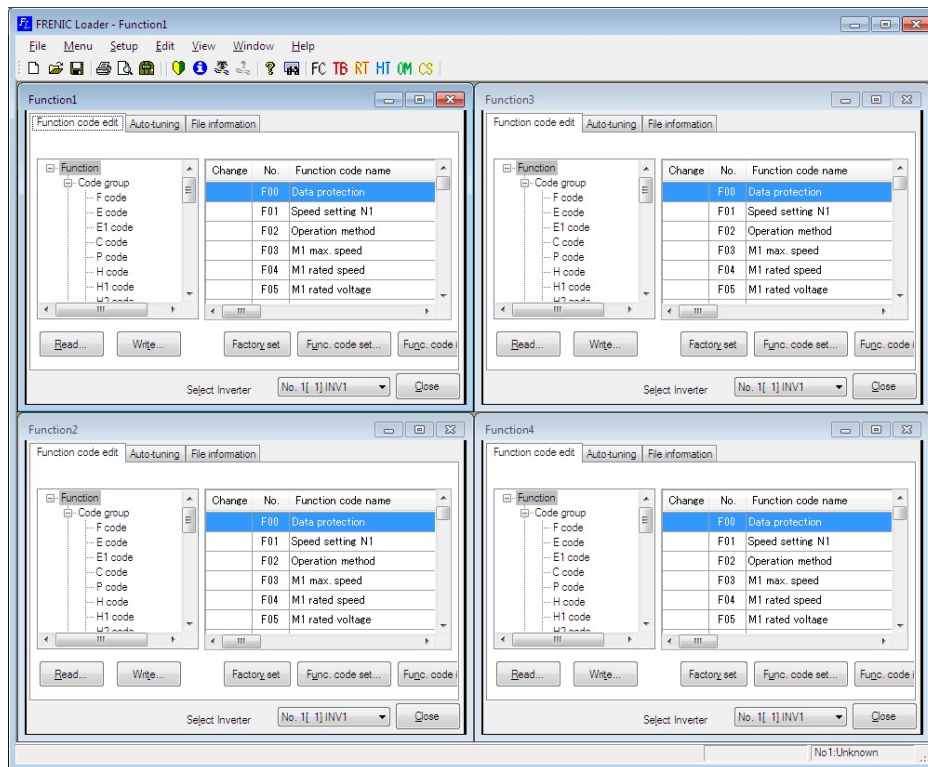
2.6.1. Cascade windows

Selecting Window | Cascade arrange multiple windows, overlapping each other. You can call an inactive window up by clicking its title bar.



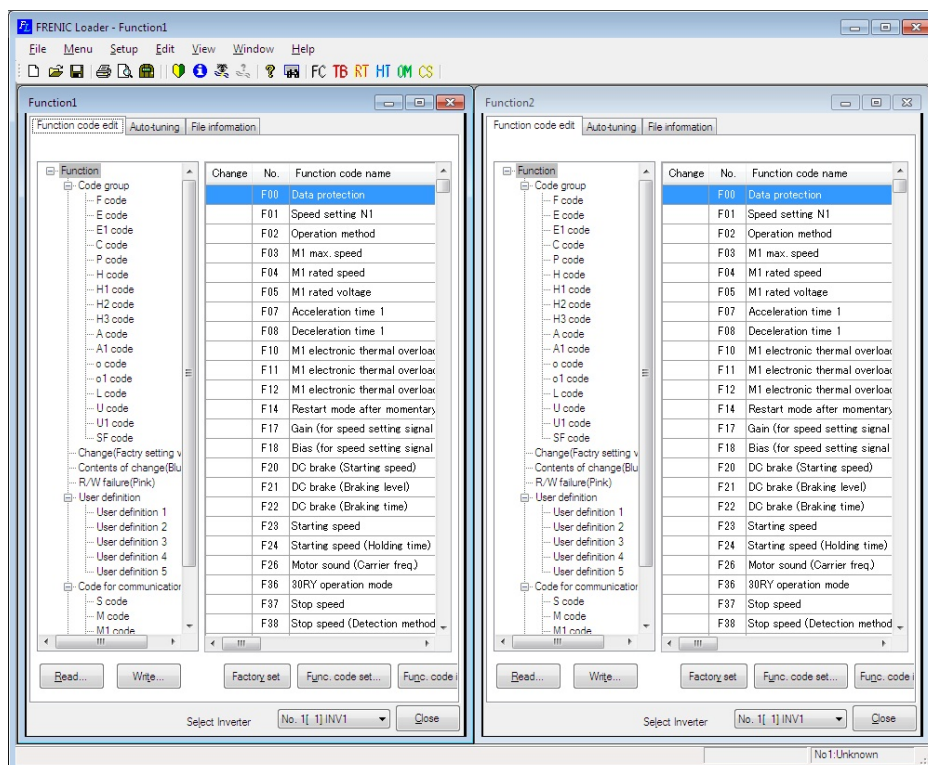
2.6.2. Tile windows

Selecting **Window | Tile** tiles multiple windows so that all windows are seen together.



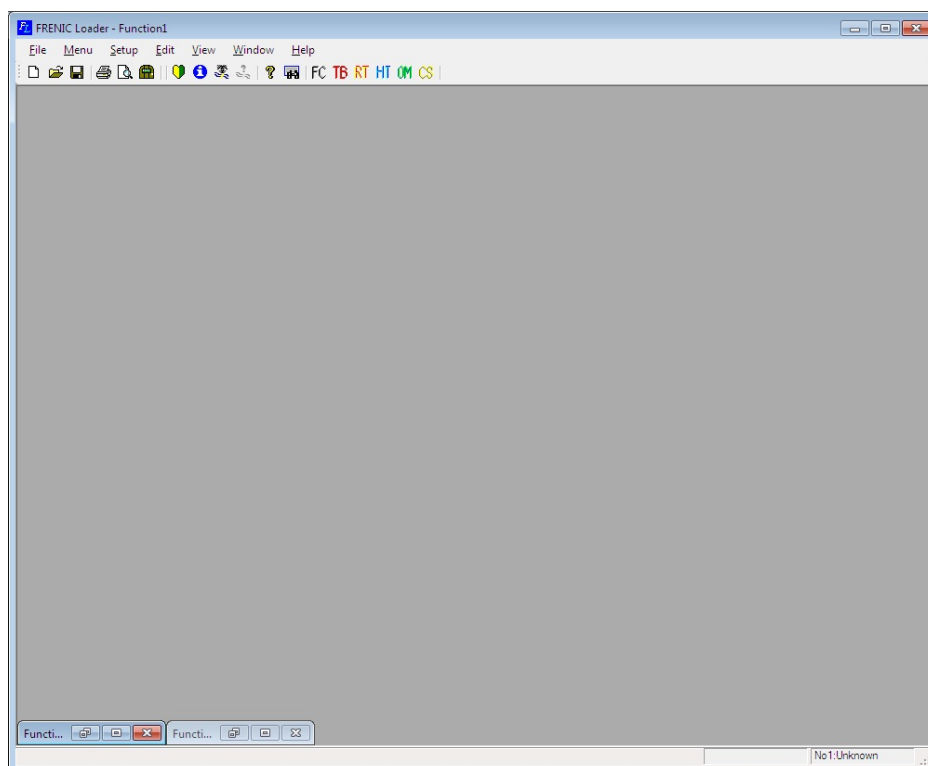
2.6.3. Tile windows vertically

Selecting **Window | Tile vertically** tiles multiple windows vertically.



2.6.4. Arrange icons

Selecting **Window | Arrange Icons** arranges icons of the active windows or programs at the bottom of the Loader top window.



2.7. Help

2.7.1. Version Information

Version Information shows the Loader version, copyright.



Chapter 3 Frequently asked questions (FAQ)

3.1.1. Cannot communicate with inverter (Failed to get inverter information)

3.1.1.1. Message Manager not installed correctly

Message Manager is software that manages communication between the PC and inverter.

If Message Manager has not been installed correctly, your PC cannot communicate with the inverter. The installation state can be checked in the task bar of Windows OS (see the Message Manager icon sample given below). If no Message Manager icon is displayed in the task bar, Message Manager has not been installed correctly.

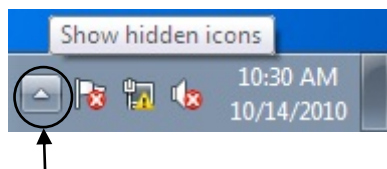
Delete the folder (including its contents) named Fuji Electric Shared in the file path as shown below, and then **Uninstall Loader**.

`C:\Program Files\Common Files\Fuji Electric Shared`

(In the file path shown above, "C" represents the drive letter of the partition or hard disk where Windows is installed. If Windows is installed on a different drive in your system, replace "C" with the letter corresponding to that drive.)

Message Manager icon sample

[1] Windows 7



Click here to show the hidden icon.



[2] Windows Vista/ Windows XP/ Windows 2000

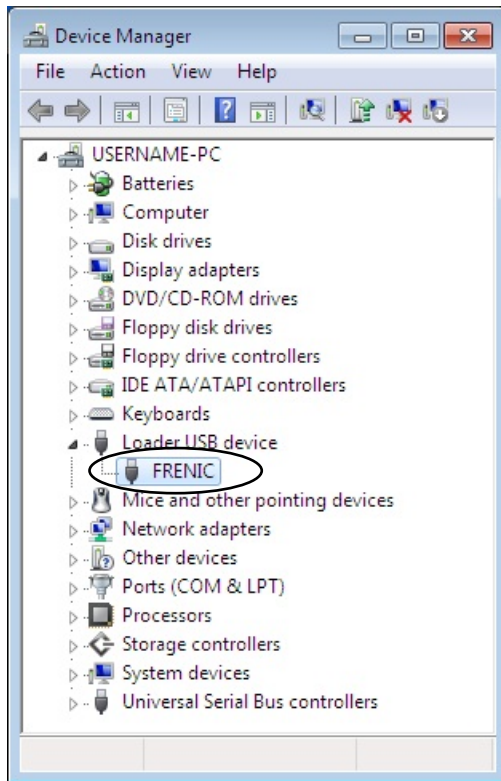


3.1.1.2. USB driver not installed correctly

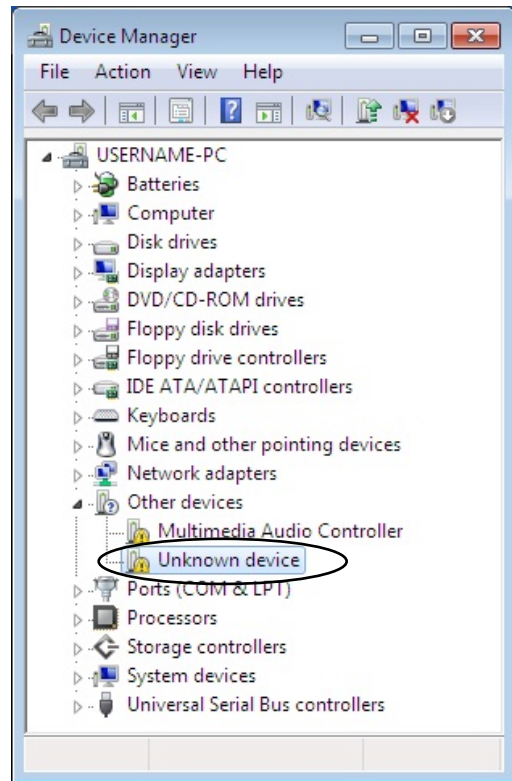
To communicate with the inverter via the USB connector, the USB driver (Loader USB device) should be installed.

If the USB driver has not been installed correctly, **Unknown device** appears as shown below.

Installation finished successfully



Installation failed

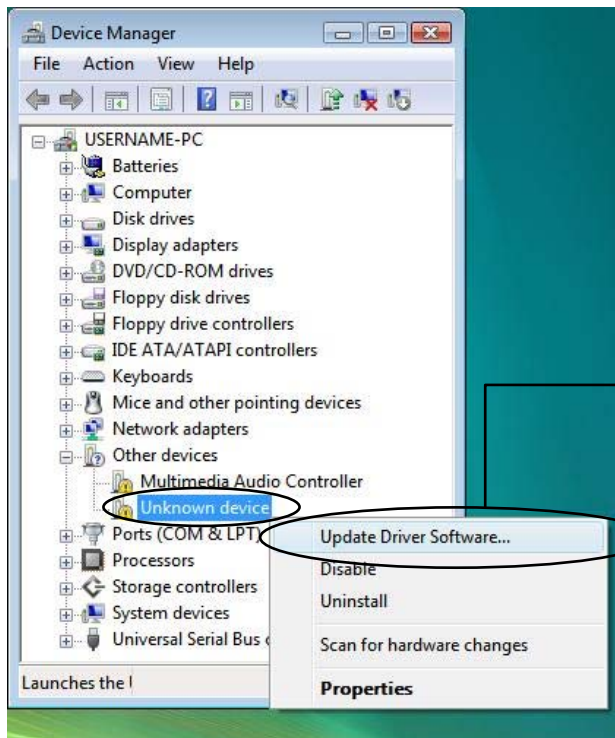


[1] Windows 7

Refer to Section 1.3.1.3. "Installing the USB driver, [1] Windows 7."

[2] Windows Vista

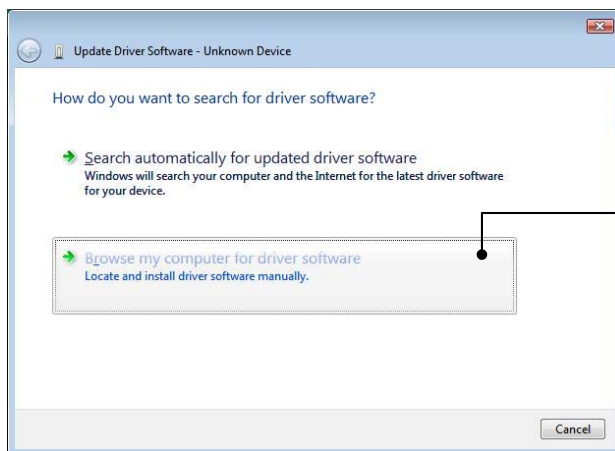
Follow the wizard and install the USB driver as shown below.



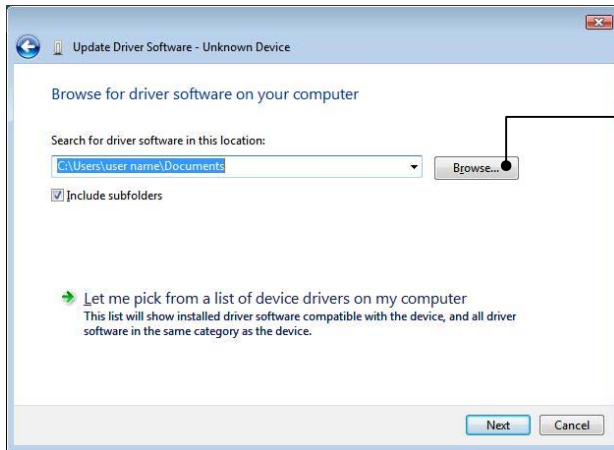
From the **Start** menu, select **Control Panel** | **Hardware and Sound** | **Device Manager** to open Device Manager as shown at left.

Right-click **Unknown device** to show the drop-down list.

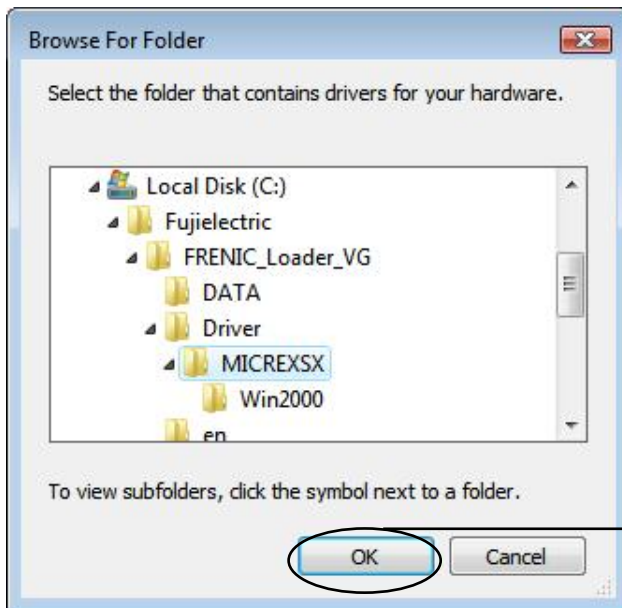
Click **Update Driver Software...** to proceed.



Click **Browse my computer for driver software**.

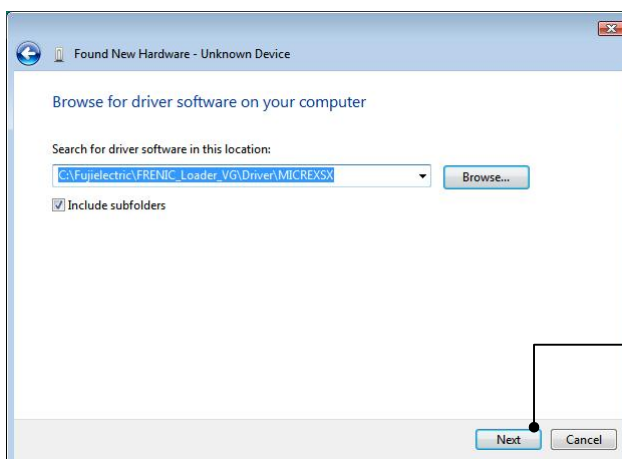


Click **Browse....**

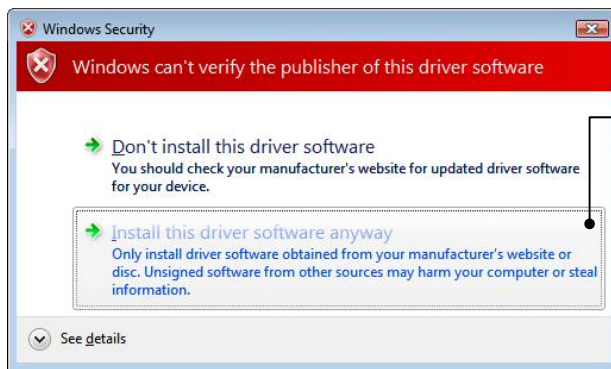


In the folder in which FRENIC Loader has been installed, select ¥Driver¥MICREXSX and then click **OK**.

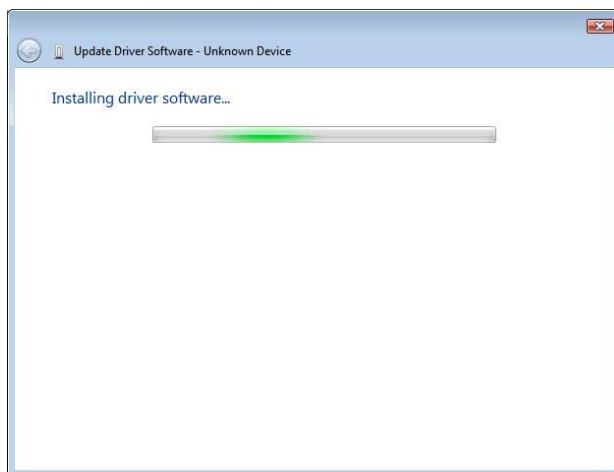
The default folder is C: ¥Fuji Electric ¥FRENIC Loader3 EN¥Driver¥MICREXSX when the OS drive is C.



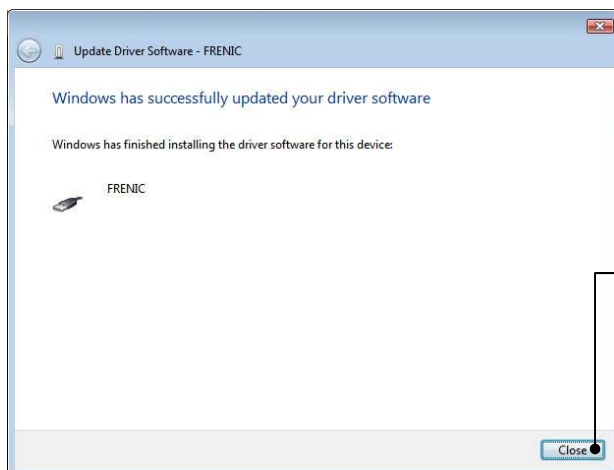
To continue, click **Next**.



Click **Install this driver software anyway**.



Installation starts.

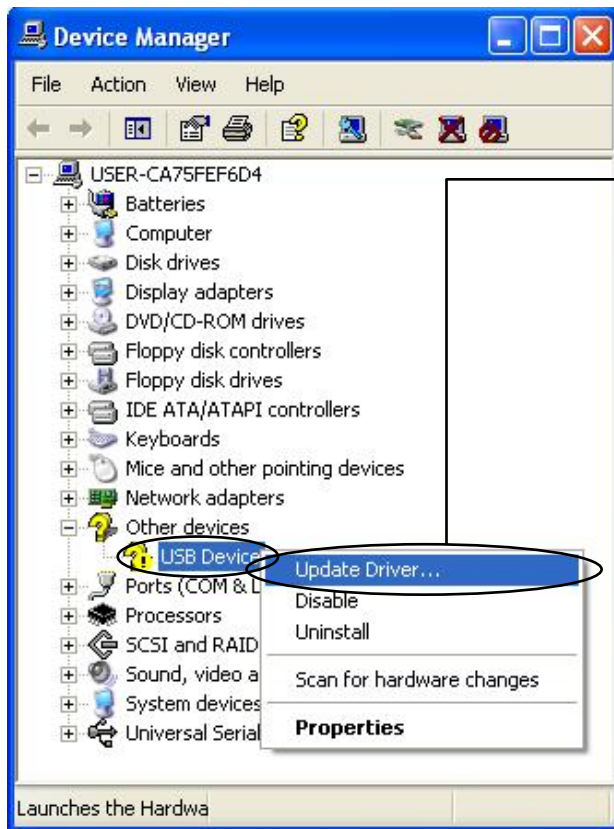


Upon completion of the installation, the screen at left appears.

To exit the installation wizard and return to Windows, click **Close**.

[3] Windows XP

Follow the wizard and install the USB driver as shown below.



From the **Start** menu, select **Control Panel** | **System** | **Hardware** | **Device Manager** to open Device Manager as shown at left.

On the sub-tree of **Other devices**, right-click **USB Device** to show the drop-down list.

Click **Update Driver...** to start the update wizard of the hardware. Install the USB driver, referring to Section 1.3.1.3. "Installing the USB driver."

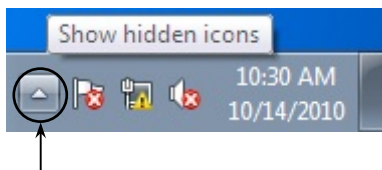
3.1.1.3. USB driver installed correctly

Although the USB driver has been installed correctly, Loader cannot communicate with the inverter. This problem is considered to be caused by installing the USB driver when Message Manager is running.

In this case, Message Manager is no longer able to recognize the USB driver, so it is necessary to quit both Loader and Message Manager and then start Loader again.

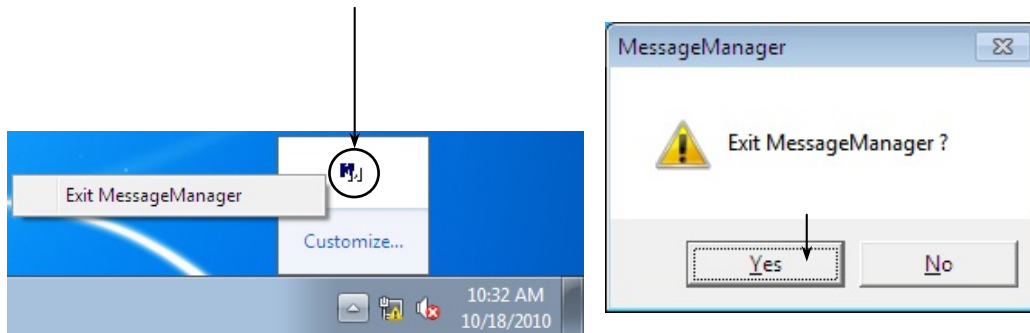
Quitting Message Manager

[1] Windows 7



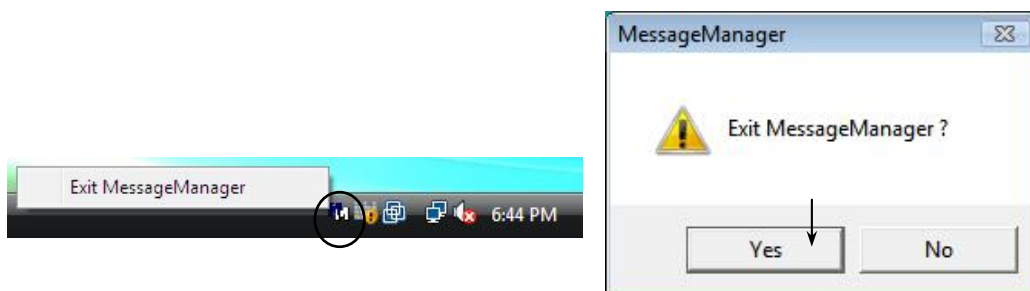
Click this to display the hidden icons as shown below.

Right-click this icon to display **Exit MessageManager**, then click it. The confirmation window appears. Click **Yes** to quit Message Manager.



[2] Windows Vista / Windows XP

Right-click the Message Manager icon to display **Exit MessageManager**, then click it. The confirmation window appears. Click **Yes** to quit Message Manager.



3.1.1.4. USB communication impossible after the PC has gone standby or to sleep)

If Windows 7 or Windows Vista goes standby or to sleep, Loader cannot recognize the USB driver so that it cannot communication with the inverter. Follow the instructions given below.

[1] Windows 7

Turn the PC power OFF and ON, then restart Loader.

Note: Unplugging and plugging the USB connector cannot enable the OS to recognize the USB driver again.

[2] Windows Vista / Windows XP

Unplug and plug the USB connector, then restart Loader.

Note: Unplugging and plugging the USB connector enables the OS to recognize the USB driver again.

Chapter 4 Specifications

Item		Specifications	Remarks
Name of software		FRENIC Loader VG	
Supported inverter		FRENIC-VG, FRENIC-VG7	
No. of supported inverters		For USB connection: Only one inverter For RS-485 connection: Up to 31 inverters	
Recommended cable		USB : USB cable (mini B connector) RS-485 : Shielded twisted pair cable for long distance transmission	Refer to Section 1.2.3.2 "Communications support devices for RS-485"
Operating environment	OS *	Microsoft Windows XP(SP2 or later) Microsoft Windows Vista Microsoft Windows 7	***
	Memory	512MB or more RAM	2GB or more is recommended
	Hard disk	8.5MB MB or more free space	
	COM port	RS-232C or USB	Conversion to RS-485 communications required to connect inverters
	Monitor resolution	800 × 600 or higher	XGA (1024 × 768)/32-bit color is recommended
Transmission requirements	COM port **	<u>COM1</u> to COM255	PC COM ports assigned to Loader
	Transmission rates **	USB connection : Fixed at 12 Mbps RS-485 connection : <u>38400</u> , 19200, 9600, 4800 and 2400 bps	38400bps or more is recommended.
	Character length	8 bits	Prefixed
	Stop bit length	1 bit	Prefixed
	Parity	Even	Prefixed
	No. of retries **	None or 1 to <u>3</u> to 10	No. of retry times before detecting communications error
	Timeout setting **	100ms, 300ms, 500ms, <u>1.0s</u> to 1.9s, 2.0 to 9.0s, 10.0 to 60.0s	This setting should be longer than the response interval time specified by the function code H39.

* Use on the PC downgraded to Windows XP from Windows7 or Windows Vista is not recommended.

** **Bolded, underlined** values are factory defaults.

*** Only support 32bit version of Windows XP, Windows Vista.
Support both 32bit and 64bit version of Windows 7.

Inverter Support Software
FRENIC Loader VG
(WPS-VG1-STR)

Instruction Manual

First Edition, August 2012
3rd Edition, June 2013

Fuji Electric Co., Ltd.

The purpose of this instruction manual is to provide accurate information in handling, setting up and operating of the FRENIC-VG series of inverters. Please feel free to send your comments regarding any errors or omissions you may have found, or any suggestions you may have for generally improving the manual.

In no event will Fuji Electric Co., Ltd. be liable for any direct or indirect damages resulting from the application of the information in this manual.

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