

Inverter Support Software FRENIC-HVAC/AQUA Loader

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

• This manual provides all the information on Fuji's inverter support software FRENIC Loader FRENIC-HVAC/AQUA.

Read this manual carefully for correct use of FRENIC Loader FRENIC-HVAC/AQUA

- 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.

Fuji Electric Co., Ltd.

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Preface

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

Read this manual carefully for correct use of FRENIC-HVAC/AQUA Loader.

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

These materials are subject to change without notice. Be sure to obtain the latest editions for use. We plan to make the latest edition available for download from the following URL:

(URL) http://www.fe-frontrunners.eu/inverter/en/index1.htm

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.

Failure to heed the information indicated by this symbol may result in death or serious injury.
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 Se 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.

When connecting an RS-485 communications cable to the RJ-45 connector on the inverter, be sure to check the pin assignment of the device to be connected. For details, refer to Chapter 1, Section 1.2.3. " Configuring an RS-485 communications network."
 An trouble could occur.

Operation

 Resetting an alarm with a run command being ON will cause the inverter to run the motor unexpectedly.

An accident could occur.

WARNING Loader or OS freezes or is forced to quit when Loader is operating the inverter(s) from the Test run window, the connected inverter(s) cannot be stopped from Loader. If it happens, perform any of the following operations to stop the inverter(s). An accident could occur. 1) Prepare a separate emergency stop switch and use it to stop the inverter. 2) Turn off the power to the inverter. 3) Turn off the external run command at the inverter side and switch the command source from "Via communications line" to "From inverter" by doing one of the following: Turn off the terminal which the *LE* command is assigned to. Set function code y99 data (Link support function) to "0 "using the keypad. Set function code H30 data (Link function) to "0" using the keypad. When operating the inverter(s) from the Test run window, never disconnect the RS-485

communications cable, USB cable, or keypad. Doing so makes it impossible to stop the inverter(s) from Loader. It is dangerous.

An accident could occur.

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Chapter 1 Before Using FRENIC-HVAC/AQUA Loader

This chapter gives an overview of the inverter support software FRENIC-HVAC/AQUA Loader 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.
	document.

1.2. Connecting Inverters to a PC

1.2.1. Connection

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

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

Note	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. "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.

• 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. "Communication settings"



Figure 1.2.2.1. USB Network Using a USB Cable (mini B)

Table 1.2.2.1.	Specifications c	of USB Network
----------------	------------------	----------------

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



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.

1.2.2.2. USB Connector on Control PCB

The USB port (CN10^{*}) is located on the upper right of the control printed circuit board (control PCB) as shown below. To connect the USB cable to CN10, remove the front cover so that you can see the control PCB.

*miniB connector, Version 2.0 compliant



Figure 1.2.2.2 Location of USB Connector

1.2.3. Configuring an RS-485 communications network

1.2.3.1. Example of networking(COM port1)

For connecting inverters in multi-drop connection, use the branch adapters for multi-drop connection as shown below.



Figure 1.2.3.1. RS-485 Multi-drop Network (Terminal Block Connections)

- Note Pins 1, 2, 7, and 8 on the RJ-45 connector are exclusively assigned to power supply and grounding for keypads. When connecting other devices to the RJ-45 connector, take care not to use those pins. Failure to do so may cause a short-circuit hazard. Use pins 4 and 5 only.
 - When selecting additional devices to prevent the damage or malfunction of the control PCB caused by external noises or eliminate the influence of common mode noises, be sure to refer to Section 1.2.3.3. "Communications support devices for RS-485"
 The maximum wiring length must be 500 m.
 - Use cables and converters meeting the specifications for proper connection. (Refer to [2]"Requirements for the cable (COM port 1: for RJ-45 connector)"

1.2.3.2. Example of networking(COM port2)

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 *Note* below.)



Figure 1.2.3.2. Multi-drop Connection Diagram (Connecting to the Terminal Block)



• Use cables and converters meeting the specifications for proper connection. (Refer to [3] "Requirements for the cable (COM port 2: for RS-485 connector)" in Section 1.2.3.3. "Communications support devices for RS-485")

•The maximum wiring length must be 500 m.

1.2.3.3. Communications support devices for RS-485

This section describes the devices required for connecting the inverter to a PC having no RS-485 interface or for connecting two or more inverters in multi-drop network.

[1] Converter

Usually PCs are not equipped with an RS-485 communications port but with an RS-232C port. To connect inverters to a PC, therefore, you need an RS-232C–RS-485 converter or a USB–RS-485 converter. To run the FRENIC-HVAC correctly, use a converter satisfying the requirements given below.

Recommended converter spec

Send/receive switching:	Auto-switching by monitoring of send/receive data status at the PC
	(RS-232C)
Electric isolation:	Electrically isolated from the RS-485 port
Fail-safe:	Fail-safe facility*
Other requirements:	Superior noise immunity

* The fail-safe facility refers to a feature that ensures the RS-485 receiver's output at "High" (logical value = 0) even if the RS-485 receiver's input is opened or short-circuited or all the RS-485 drivers are inactive.

Send/receive switching system

The RS-485 communications system of the inverter acts in half-duplex mode (2-wire) so the converter must feature a send/receive switching circuitry. Generally, the switching system may be either one of the following.

- (1) Auto-switching by monitoring of send/receive data
- (2) Switching by RS-232C control signal of RTS or DTR (hardware flow control system)



RS-232C- RS-485 converter

FRENIC-HVAC (two-wire system)

Figure 1.2.3.3. Communications Level Conversion

Recommended converter

System Sacom Sales Corporation (Japan):KS-485PTI(RS-232C - RS-485 converter) :USB-485I RJ45-T4P(USB - RS-485 converter)

[2] Cable for RJ-45 connector (COM port 1)

Use a standard 10BASE-T/100BASE-TX LAN cable (US ANSI/TIA/EIA-568A category 5 compliant, straight type).

Note

The RJ-45 connector (COM port 1) has power source pins (pins 1, 2, 7 and 8) exclusively assigned to keypads. When connecting other devices to the RJ-45 connector, take care not to use those pins. Using them will cause a short-circuit hazard. Use pins 4 and 5 only.

[3] Cable for RS-485 connector (COM port 2)

To ensure the reliability of connection, use twisted pair shield cables for long distance transmission AWG 16 to 26.

Recommended LAN cable Manufacturer: FURUKAWA Electric Co., Ltd. AWM2789 Cable for long distance connection Type (Product code): DC23225-2PB

[4] Branch adapter for multi-drop

An RS-485 communications network for inverters utilizes 2-wire 10BASE-T LAN cables fitted with an RJ-45 connector at both ends. To connect those inverters to the network in multi-drop mode, use branch adapters for multi-drop.

Recommended branch adapter SK Koki (Japan): MS8-BA-JJJ

1.2.3.4. 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.



wind the ferrite core with the wiring a few times

Figure 1.2.3.4. 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)
Hard disk space	Free space of approx. 20MB or more
Other applications	Terminate all the applications being in execution.

[FRENIC-HVAC_AQUA Loader_1000_setup.exe] and [MsgMgr USB Setup. exe] are contained in the CD that comes with Fuji Inverter FRENIC- HVAC/AQUA. Copy these setup files to any folder.

Note

To use FRENIC-HVAC/AQUA Loader, you need to install two setup files: the loader software main program [FRENIC-HVAC_AQUA Loader_1000_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.

Installing software, macthing with using OS

Windows 7	See page 9
Windows XP	See page 20
Windows Vista	See page 29

1.3.1.1. Installing Windows 7

[1] Installing loader

Follow the wizard and install Loader as shown below.





🔂 FRENIC-HVAC_AQUA Loader - InstallShield Wizard 🛛 🛛 🔀	
License Agreement Please read the following license agreement carefully.	Carefully read the license agreement.
Software End User License Agreement This Software End User License Agreement (this "Agreement") is between you (both the individual installing the Software and any single legal entity on behalf of which such individual is acting) ("Licensee") and Fuji Electric Co.,Ltd. ("Fuji").	
IT IS IMPORTANT THAT YOU READ CAREFULLY AND UNDERSTAND THIS AGREEMENT. BY CLICKING THE "I ACCEPT" BUTTON LOCATED ON THIS PAGE, LICENSEE AGREES TO BE BOUND BY THIS AGREEMENT.	— If you agree, click Next to proceed.

뤻 FRENIC-HVAC_AQUA Loader - InstallShield Wizard	×
Customer Information Image: Customer Information Image	
User Name: USER • Organization: USER CAMPANYI	Enter your user name and company name.
	After entry, click Next to proceed.
InstallShield	

FRENIC-HVAC_AQUA Loader - InstallShield Wizard	Select the destination folder to install. A default folder has appeared.
Click Next to install to this folder, or click Change to install to a different folder. Install FRENIC-HVAC_AQUA Loader to: C:¥Fujielectric¥FRENIC-HVAC_AQUA Loader¥ Change	In the case of OS drive is "C", a default folder is "C:¥¥Fujielectric¥FRENIC- HVAC_AQUA Loader".
	— To select a different folder, click Browse .
InstallShield	Click Next to proceed.
FRENIC-HVAC_AQUA Loader - InstallShield Wizard Ready to Install the Program The wizard is ready to begin installation.	The screen confirming your selection appears.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. Current Settings:	
Setup Type: Typical	
Destination Folder: C:¥Fujielectric¥FRENIC-HVAC_AQUA Loader¥	
User Information: Name: USER Company: USER CAMPANY	 Click Install to proceed.
InstallShield	
😵 User Account Control	
Do you want to allow the following program from an unknown publisher to make changes to this computer?	
Program name: C:\Users\USER NAME\AppData\Local\Downloaded Installations\{0536319F-9DA7\FRENIC-HVAC_AQUA Loader.msi	
Publisher: Unknown File origin: Hard drive on this computer	To continue olist. V
Show details	— IO CONTINUE, CIICK YES.
Change when these notifications appear	



[2] Installing Message Manager

Follow the wizard and install Message Manager as shown below.



Aessage Manager - InstallShield Wizard	
License Agreement Please read the following license agreement carefully.	Carefully read the lice
Press the PAGE DOWN key to see the rest of the agreement.	
Software End User License Agreement This Software End User License Agreement (this "Agreement") is between you (both the individual installing the Software and any single legal entity on behalf of which such individual is acting) ("Licensee") and Fuji Electric Co.,Ltd. ("Fuji"). IT IS IMPORTANT THAT YOU READ CAREFULLY AND UNDERSTAND THIS AGREEMENT. BY CLICKING THE "I ACCEPT" BUTTON LOCATED ON THIS PAGE, LICENSEE AGREES TO BE BOUND BY THIS AGREEMENT. Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install Message Manager, you must accept this agreement.	– Click Yes to proceed.

Message Manager - InstallShield Wizard

Select folder where setup will install files.

Setup will install Message Manager in the following folder.

C:\...\Fuji Electric Shared\Message Manager

To install to this folder, click Next. To install to a different folder, click Browse and select another folder.

Choose Destination Location

Destination Folder

InstallShield -

refully read the license agreement.

Select the destination folder to install.

A default folder has appeared.

X

Browse.

Cancel

In the case of OS drive is "C", a default folder is "C:¥Program Files ¥Common Files¥Fuji Electric Shared¥Message Manager".

To select a different folder, click Browse...

Click Next to proceed.

1essage Manager - InstallShield Wizard		2
Select Program Folder		
Please select a program folder.		
Setup will add program icons to the Program Fold name, or select one from the existing folders list.	der listed below. You may type a ne Click Next to continue.	w folder
Program Folder:		
Message Manager		
Existing Folders:		
Administrative Tools		
Maintenance		
Startup		
		- 6
istallShield		
r		
	< Back Next >	Cancel

< Back

●Next >

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

After entry, click Next to proceed.

/lessage Manager - InstallShi	eld Wizard	
Start Copying Files		The screen confirming your selection
Review settings before copy	ing files.	appoars
Setup has enough informatic change any settings, click B copying files. Current Settings:	in to start copying the program files. If you want to review or ack. If you are satisfied with the settings, click Next to begin	αμμεαις.
Destination Folder		
C:\Program Files\	Common Files\Fuji Electric Shared\Message Manager	
Destination Program Folder	sr	
message manage	21	
	-	Click Next to proceed
*		
tallShield		2
	< Back Next > Cancel	
]
1essage Manager - InstallShi	eld Wizard	
	InstallShield Wizard Complete	Lipon completion of the installation
		the screen at left appears
	The InstallShield Wizard has successfully installed Message	the selectriat left appears.
	Manager. Ulick Finish to exit the wizard.	
and the second se		_
	K Back Finish Cancel	

[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.



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.

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.







[4] Checking the installation of the USB driver

To check whether the USB driver has been installed correctly, select Windows "Start" \rightarrow "Control panel",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



1.3.1.2. Installing Windows XP

[1] Installing loader

Follow the wizard and install Loader as shown below.



Double-click the RENIC-HVAC_AQUA Loader_1000_setup. exe icon. The exe automatically starts the installation wizard.



To continue, click Next.

🔀 FRENIC-HVAC_AQUA Loader - InstallShield Wizard 🛛 🔀		
License Agreement Please read the following license agreement carefully.		
Software End User License Agreement		
This Software End User License Agreement (this "Agreement") is between you (both the individual installing the Software and any single legal entity on behalf of which such individual is acting) ("Licensee") and Fuji Electric Co.,Ltd. ("Fuji").		
IT IS IMPORTANT THAT YOU READ CAREFULLY AND UNDERSTAND THIS AGREEMENT. BY CLICKING THE "I ACCEPT" BUTTON LOCATED ON THIS PAGE, LICENSEE AGREES TO BE BOUND BY THIS AGREEMENT.		
I accept the terms in the license agreement Print I do not accept the terms in the license agreement		
InstaliShield		

Carefully read the license agreement.

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

FRENIC-HVAC_AQUA Loader - InstallShield Wizard Customer Information Please enter your information.	
User Name: USER Organization: USERCOMPANY	Enter your user name and company name.
	— After entry, click Next to proceed.
InstallShield	
FRENIC-HVAC_AQUA Loader - InstallShield Wizard Destination Folder Click Next to install to this folder, or click Change to install to a different folder.	Select the destination folder to install. A default folder has appeared.
Install FRENIC-HVAC_AQUA Loader to: C:¥Fujielectric¥FRENIC-HVAC_AQUA Loader¥	In the case of OS drive is "C", a default folder is "C:¥¥Fujielectric¥FRENIC- — HVAC AQUA Loader".
	To select a different folder, click Browse .
InstallShield	— Click Next to proceed.
Image: Second system Image: Second system Ready to Install the Program The wizard is ready to begin installation.	The screen confirming your selection appears.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard. Current Settings:	
Setup Type:	
l ypical	
Destination Folder: C:¥Fuijelectric¥FRENIC-HVAC_AOUA Loader¥	
User Information:	
Name: USER	When it is ready to restart, click Yes

When it is ready to restart, click Yes Install.

Company: USERCOMPANY

< <u>B</u>ack

Install

Cancel

InstallShield



[2] Installing Message Manager

Follow the wizard and install Message Manager as shown below.



Message Manager - InstallShield Wizard	
License Agreement	Carefully read the license agreement.
Please read the following license agreement carefully.	
Press the PAGE DOWN key to see the rest of the agreement.	
Software End User License Agreement	
This Software End User License Agreement (this "Agreement") is between you (both the individual installing the Software and any single legal entity on behalf of which such individual is acting) ("Licensee") and Fuji Electric Co.,Ltd. ("Fuji").	
IT IS IMPORTANT THAT YOU READ CAREFULLY AND UNDERSTAND THIS AGREEMENT. BY CLICKING THE "I ACCEPT" BUTTON LOCATED ON THIS PAGE, LICENSEE AGREES TO BE BOUND BY THIS AGREEMENT.	
Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install Message Manager, you must accept this agreement.	— Click Yes to proceed.
< <u>B</u> ack <u>Y</u> es <u>N</u> o	
Message Manager - InstallShield Wizard	Select the destination folder to install
Choose Destination Location	A default folder has appeared.
Select folder where setup will install files.	In the case of OS drive is "C", a default
Setup will install Message Manager in the following folder.	folder is "C:¥Program Files
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.	¥Common Files¥Fuji Electric Shared¥Message Manager".
	Select the destination folder to install
	A default folder has appeared.
Destination Folder C:\\Fuii Electric Shared\Message Manager Browse	
< Back Net> Cancel	— Click Next to proceed.
Message Manager - InstallShield Wizard	Solast the start many folder that the
Please select a program folder.	shortcut to FRENIC Loader is to be added to
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.	
Program Folder:	
Existing Folders:	
Administrative Tools	
Games Maintenance	
Startup Tablet PC	After entry click Next to proceed
	- Alter entry, click Next to proceed.
< Back Next > Cancel	

4essage Manager - InstallShie	ld Wizard 🗾	
Start Copying Files Review settings before copying	ng files.	The screen confirming your selection appears.
Setup has enough information change any settings, click Ba copying files.	to start copying the program files. If you want to review or ck. If you are satisfied with the settings, click Next to begin	
Current Settings:		
Destination Folder C:\Program Files\C Destination Program Folder Message Manager	Common Files\Fuji Electric Shared\Message Manager 🔺	
4	*	
stallShield —	< Back Next > Cancel	Click Next to proceed.
Aessage Manager - InstallShie	ld Wizard	
	InstallShield Wizard Complete The InstallShield Wizard has successfully installed Message Manager. Click Finish to exit the wizard.	Upon completion of the installation, the screen at left appears.
		Click Finish.
	< Back Finish Cancel	

[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.



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.



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

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

Found New Hardware W	izard	
round New Hardware W	Welcome to the Found Now	
	Hardware Wizard	
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>	
	Can Windows connect to Windows Update to search for software?	
	 Yes, this time only Yes, now and every time I connect a device No. not this time 	
	Click Next to continue.	Wait for this screen to appear, select Yes, now and every time I connect a device, then click Next.
	< Back Next > Cancel	
Found New Hardware Wi	zard	
	This wizard helps you install software for:	
	USB Device	
	If your hardware came with an installation CD or floppy disk, insert it now.	
	What do you want the wizard to do?	
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced) 	
	Click Next to continue.	Select Install from a list or specific
	< Back Next > Cancel	location (Advanced), then click Next.
		_
Found New Hardware Wize	ard	
Please choose your searc	ch and installation options.	
 Search for the best driv 	ver in these locations.	
Use the check boxes b paths and removable m	elow to limit or expand the default search, which includes local	
Search removable II	le media (floppu, CD-BOM,)	Select Search for the best driver in
Include this loca	tion in the search:	these locations and the Include
D:\ENGLISH\W	/INXP_VLP\32BIT\PRO_WITH_SP 🗸 Browse	this location in the search check
ODon't search Lwill cho	ose the driver to install	box, then click Browse
Choose this option to s	elect the device driver from a list. Windows does not guarantee that	box, then eller Dromsen .
the driver you choose v	vill be the best match for your hardware.	

< Back Next > Cancel



[4] Checking the installation of the USB driver

To check whether the USB driver has been installed correctly, select Windows" Start" \rightarrow "My computer", select "property" with right-click, open "Hard ware" \rightarrow "Device Manager" with left-click. If "**FRENIC**" is added to the sub-tree of Loader USB device, the driver has been installed correctly.







1.3.1.3. Installing Windows Vista

[1] Installing loader

Follow the wizard and install Loader as shown below.





FRENIC-HVAC_AQUA Loader - InstallShield Wizard License Agreement Please read the following license agreement carefully.	Carefully read the license agreement
Software End User License Agreement This Software End User License Agreement (this "Agreement") is between you (both the individual installing the Software and any single legal entity on behalf of which such individual is	
acting) ("Licensee") and Fuji Electric Co.,Ltd. ("Fuji"). IT IS IMPORTANT THAT YOU READ CAREFULLY AND UNDERSTAND THIS AGREEMENT. BY CLICKING THE "I ACCEPT" BUTTON LOCATED ON THIS PAGE, LICENSEE AGREES TO BE BOUND BY THIS AGREEMENT. I accept the terms in the license agreement; Print	
○ I <u>do</u> not accept the terms in the license agreement InstallShield < <u>Back</u> < <u>Cancel</u>	Click Next to proceed.
🛱 FRENIC-HVAC_AQUA Loader - InstallShield Wizard	

Customer Information Please enter your information.		L	
User Name: USER	•		Enter your user name and company name.
USER CAMPANY	•		— After entry, click Next to proceed.
InstallShield			
(< Back Next >	Cancel	

FRENIC-HVAC_AQUA Loader - InstallShield Wizard Destination Folder Click Next to install to this folder, or click Change to install to a different folder.	Select the destination folder to install. A default folder has appeared. In the case of OS drive is "C", a
Install FRENIC-HVAC_AQUA Loader to: C:¥Fujielectric¥FRENIC-HVAC_AQUA Loader¥	is "C:¥¥Fujielectric¥FRENIC-
	HVAC_AQUA Loader"
	To select a different folder, click Browse .
InstallShield	[—] Click Next to proceed.
FRENIC-HVAC_AQUA Loader - InstallShield Wizard Ready to Install the Program The wizard is ready to begin installation.	The screen confirming your selection appears.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.	
Current Settings:	
Secup Type: Typical	
Destination Folder:	
C:¥Fujielectric¥FRENIC-HVAC_AQUA Loader¥	
User Information:	 Click Install to proceed.
Company: USER CAMPANY	
To also life to all	
Inscalphield < <u>Back</u> Install Cancel	
User Account Control	
unknown publisher to make changes to this computer?	
Program name: C:\Users\USER NAME\AppData\Local\Downloaded Installations\{0536319F-9DA7\FRENIC-HVAC_AQUA Loader.msi	
Publisher: Unknown File origin: Hard drive on this computer	
rile origin: Hard drive on this computer	— To continue, click Yes .
Show details	
Change when these notifications appear	



[2] Installing Message Manager

Follow the wizard and install Message Manager as shown below.



essage Manager - InstallShield V	/izard	×	
	Welcome to the InstallShield Wizard for Message Manager The InstallShield Wizard will install Message Mar your computer. To continue, click Next.	nager on	
	< Back Next >	Cancel	— To continue, click Next .
ssage Manager - InstallShield V .icense Agreement Please read the following license Press the PAGE DOWN key to sr	/izard agreement carefully. ee the rest of the agreement.		Carefully read the license agreement
Software End User License Agre This Software End User License you (both the individual installing entity on behalf of which such in Fuji Electric Co.,Ltd. ("Fuji").	ement Agreement (this "Agreement") is between the Software and any single legal lividual is acting) ("Licensee") and		
IT IS IMPORTANT THAT YOU F AGREEMENT. BY CLUCKING TH PAGE, LICENSEE AGREES TO Do you accept all the terms of the select No, the setup will close. T accept this agreement. IShield	EAD CAREFULLY AND UNDERSTAND THIS IE "I ACCEPT" BUTTON LOCATED ON THIS BE BOUND BY THIS AGREEMENT. preceding License Agreement? If you o install Message Manager, you must	+	_ If you agree, click Yes to proceed.
	< <u>Back</u> Yes	No	

hoose Destination Location	And a state of the
Select folder where setup will install files.	Contraction of the local division of the loc
Setup will install Message Manager in the following folder.	
To install to this folder, click Next. To install to a different folder, click Br another folder.	owse and select
Destination Folder	
C:\\Fuji Electric Shared\Message Manager	Browse.
C:\\Fuji Electric Shared\Message Manager	Browse.
C:\\Fuji Electric Shared\Message Manager	

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

In the case of OS drive is "C", a default folder is "C:¥Program Files ¥Common Files¥Fuji Electric Shared¥Message Manager"

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

Click Next to proceed.

Message Manager - InstallShield Wizard Select Program Folder Please select a program folder.	Select the start menu folder that the shortcut to FRENIC Loader is to be added to.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue. Program Folder: Message Manager Existing Folders:	
Accessories Administrative Tools Games Maintenance Startup Tablet PC	
InstallShield	After entry, click Next to proceed.
Message Manager - InstallShield Wizard Start Copying Files Review settings before copying files.	Select the start menu folder that the shortcut to FRENIC Loader is to be
Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click Next to begin copying files. Current Settings: Destination Folder	added to.
Destination Program Folder Message Manager	Olisk Next to proceed
InstallShield	
Message Manager - InstallShield Wizard	
InstallShield Wizard Complete The InstallShield Wizard has successfully installed Message Manager. Click Finish to exit the wizard.	Upon completion of the installation, the screen at left appears.
	Click Finish .
< Back Finish Cancel	

[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.



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.



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

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









[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.

🚔 Dev	/ice Manag	jer	E	
File	Action	View Help	p	
<pre></pre>) 🖬 🛛	5 🛛 🗖	🙇 !	lir 🙀 🐻
4.4	USERNAN	ME-PC		
⊳	凄 Batter	ies		
⊳	🚛 Comp	outer		
Þ	👝 Disk d	lrives		
Þ	📲 Displa	y adapters		
Þ	- DVD/	CD-ROM dri	ves	
Þ	- Flopp	y disk drives	;	
Þ	E Flopp	y drive cont	rollers	
Þ	IDE A	TA/ATAPI co	ontrollers	
Þ	- Keybo	bards		
4	- 🖉 Loade	er USB device	e	
	FR			
Þ	- Mice	and other po	ointing de	vices
Þ	📲 Netwo	ork adapters		
⊳	Other	devices	1272	
Þ	Ports	(COM & LP	Т)	
⊳	Proce	ssors		
⊳	Storag	ge controller	rs	
₽	Syster	n devices		
⊳	📲 Unive	rsal Serial Bu	us controll	ers

Installation finished successfully

Installation failed



1.3.2. Uninstallation

1.3.2.1. Uninstalling Windows 7

[1] Uninstalling loader

From Windows "Start", select All Programs [FRENIC-HVAC_AQUA Loader | [FRENIC-HVAC_AQUA Loader Uninstall





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

In the above procedure, perform the uninstallation.

[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



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



[3] Uninstalling Message Manager

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



In the above procedure, perform the uninstallation.



1.3.2.2. Uninstalling Windows XP

[1] Uninstalling loader

From the Start menu, select All Programs | FRENIC-HVAC_AQUA Loader | FRENIC-HVAC_AQUA Loader Uninstall.



Windows Installer	
A	
Are you sure you want to uninstall this product?	
Yes • No	

The uninstallation confirmation screen appears as shown left.

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



In the above procedure, perform the uninstallation.

[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

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



[3] Uninstalling Message Manager

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



In the above procedure, perform the uninstallation.



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

1.3.2.3. Uninstalling Windows Vista

[1] Uninstalling loader

From the Start menu, select All Programs | FRENIC-HVAC_AQUA Loader | FRENIC-HVAC_AQUA Loader Uninstall.



FRENIC-HVAC_AQUA Loader
Please wait while Windows configures FRENIC-HVAC_AQUA Loader
Gathering required information
Cancel

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

In the above procedure, perform the uninstallation.

[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

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



[3] Uninstalling Message Manager

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



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
y01/y11	Station address	1~255	1
y04/y14	Baud rate	0 : 2400 bps 1 : 4800 bps 2 : 9600 bps 3 : 19200 bps 4 : 38400 bps 3 : 19200 bps	4
y 10/y20	Protocol	 0 : Modbus RTU protocol 1 : SX protocol (Loader protocol) 2 : Fuji general-purpose inverter protocol 3 : Metasys N2 protocol 5 : BACnet protocol (AQUA/y20 only) 	1

y01/y11 : Station address

Set the H31 data to the same value as the RS-485 Station address. setting made in Loader's Device connection list.

y04/y14 : Baud rate

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

y10/y20 : Protocol

Set the y10/y20 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 \bigoplus 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-HVAC_AQUA** Loader | **FRENIC-HVAC_AQUA Loader Start** from the **Start** menu starts Loader.



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



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.

Connect Loader	- Directly to Inve	rtor !		
C Communicate vi	a <u>M</u> ICREX-SX	S <u>X</u> bus	address [1	Y
Port				
C RS <u>4</u> 85				
<u>C</u> OM port	COM1	-		
<u>B</u> aud rate	19200[bps]	Ψ.		
<u>F</u> low control	RTS	w.		
<u>D</u> ata length	8bit	Ŧ		
<u>P</u> arity	Even	Ψ.		
<u>S</u> top bit	1bit	-		
⊙ <u>U</u> SB	Data in Inve	erter	Ŧ	
C Communication	board			
Type	Ethernet	Ŧ		
Parameter				
Port <u>n</u> umber	<u> </u>			
Communication Co	nditions	-	2	
<u>R</u> etry count	1 time	-	Connection	n settin <u>e</u>
Timeout	2.0 [s]	•	0	(
	a.		Com	-

[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.)

[2] Port

You can do settings on communications. (Since the original setting match with COM setting of inverter, communication can fix without any change in the original condition.)

<u>RS-485</u>

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 : No setting
- Parity : No setting
- · Stop bit : No setting

<u>USB</u>

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

Communication board

No setting "Communicate via MICREX-SX"

- Type : No setting
- •Parameter: No setting
- Port number : No setting

[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.

N	0.	Status	Model	Equipment	Address
Z	1	Unknown	Unknown Model	INV1	1

Selection of inverters to be monitored

To make an inverter enable to be monitored, put a check mark (\checkmark) 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.

Inveret No.	No.1
Equipment name	INV1
<u>R</u> S485 station adress	1
OK	Cancel

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.

	No.	Status	Model	Equipment	Address	
V	1	Unknown	Unknown Model	INV1	1	1
	2	Unknown	Unknown Model	INV2	2	-
	3				S	-
	4					
<u></u>	5					
	6					1
	7					-
	8					-
	9					1
	10					1
	11					-
	12	38				
(111			ł

Selection of inverters to be monitored

To make an inverter enable to be monitored, put a check mark (\checkmark) 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 \checkmark) 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**.

Advanced	
Inveret No.	No.1
Equipment name	INV1
<u>R</u> S485 station adress	1
ОК	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.

Inverter Support Software FRENIC-HVAC/AQUA Loader

Instruction Manual

First Edition, October 2012

Fuji Electric Co., Ltd.

The purpose of this instruction manual is to provide accurate information in handling, setting up and operating of the FRENIC-HVAC/AQUA 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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