Inverter Support Software FRENIC Loader 3.3

(FRENIC-Mini(C1S/C2S)/Eco/Multi/Ace/MEGA/HF)

Instruction Manual

Copyright © 2008-2014 Fuji Electric Co., Ltd.

No part of this publication may be reproduced or copied without prior written permission from Fuji Electric Co., Ltd.

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States. All other products and company names mentioned in this manual are trademarks or registered trademarks of their respective holders.

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 and the related communications protocols and devices supporting its operations.

Read this manual carefully for correct use of FRENIC Loader.

This manual does not contain information on the inverter itself and RS-485 communication. Read the inverter user's manual, instruction manual, and RS-485 communication user's 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.

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

• 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.

• When connecting an RS-485 communications cable to the RJ-45 connector on the inverter or communication card, be sure to check the pin assignment of the device to be connected. For details, refer to Chapter 1, Section 1.2.3.2 "Pin assignment for RS-485 port (RJ-45 connector)."

An accident or mechanical failure could occur if this warning is not heeded.

Operation

• Resetting an alarm with a run command being ON will cause the inverter to run the motor unexpectedly. An accident or injury could occur.

- If 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).
 - 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 or injury could occur if this warning is not heeded.

Contents

Safety Precautions iii Contents iiii Chapter 1 Before Using FRENIC Loader iiii 11 Overview 1-1 1.1.1 Features 1-1 1.1.2 Loader functions 1-1 1.1.3 Warranty 1-2 1.2 Connection 1-3 1.2.1 Connection 1-3 1.2.2 Configuring a USB network. 1-4 1.2.3 Configuring a RS-485 communications network 1-5 1.2.3.1 Example of networking. 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communication port 2 (FRENC-Ace only) 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communication port 2 (FRENC-Ace only) 1-7 1.3.3 Installation 1-9 1.3.3 Koise suppression 1-9 1.3.4 Noise suppression 1-9 1.3.2 Installation of FRENC Loader 3.x 1-10 [1] Windows XP-Windows Vista 1-17 [2] Windows Vista 1-17 [3] Windows XP-Windows 2000 1-14 1.3.2.1 Installation of FRENC Loader 3.x <th>Preface</th> <th>i</th>	Preface	i
Contents iii Chapter 1 Before Using FRENIC Loader 1.1 1.1 Overview. 1.1 1.1 Features. 1.1 1.1 Features. 1.1 1.1 Cander functions 1.1 1.1 Suadar functions 1.2 1.2 Connecting Inverters to a PC. 1.3 1.2.1 Connection 1.3 1.2.2 Configuring a USB network. 1.4 1.2.3 Configuring an RS-485 communications network 1.5 1.2.3.1 Example of networking. 1.4 1.2.3 Configuring an RS-485 communications network. 1.5 1.2.3.2 Communication port 2 (FRENIC-Ace only) 1.6 [1] Communication support devices for RS-485 communication 1.6 [2] Requirements for the cable. 1.9 [3] Branch adapter for multi-drop. 1.9 1.3.1 Installation 1.10 [1] Windows 7/Windows Vista. 1.11 [2] Windows 7/Windows 2000. 1.41 [3] Windows Vista. 1.11 [1] Windows 7. 1.21 [3] Windows Vista. 1.11 [3] Windows Vista. 1.21	Safety Precautions	i
Chapter 1 Before Using FRENIC Loader 1.1 Overview 1-1 1.1.1 Features 1-1 1.1.2 Loader functions 1-1 1.1.3 Warrany 1-2 1.2 Connecting Inverters to a PC 1-3 1.2 Configuring a USB network 1-4 1.2.2 Configuring a USB network 1-4 1.2.2 Configuring a USB network 1-4 1.2.3 Configuring a NE-485 communications network 1-5 1.2.3.1 Example of networking 1-5 1.2.3.2 Pin assignment for RS-485 port (RU-45 connector) 1-6 [1] Communication port 1 (RU-45 connector) 1-6 [2] Communications pert devices for RS-485 communication 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 [3] Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-17 [2] Windows VWindows 2000 1-14 [3] Windows 7. 1-25 [4] Windows 7. 1-21 [3] Windows 7. 1-25 [4] Windows 7.		
1.1 Overview 1-1 1.1.1 Features. 1-1 1.1.2 Loader functions 1-1 1.1.3 Waranty 1-2 1.2 Connecting Inventers to a PC. 1-3 1.2.1 Connection 1-3 1.2.2 Configuring a USB network 1-4 1.2.3 Configuring a IUSB networking. 1-4 1.2.4 Configuring a RS-485 communications network 1-5 1.2.3 Configuring a NS-485 port (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [2] Communications support devices for RS-485 communication. 1-6 [1] Communications support devices for RS-485 communication. 1-6 [1] Communications support devices for RS-485 communication. 1-8 [1] Communications support devices for RS-485 communication. 1-8 [1] Communications support devices for RS-485 communication. 1-8 [1] Communications for the cable. 1-9 [3] Installation of FRENIC Loader 3.x 1-10 [1] Windows ZWindows 2000. 1-14 [1] Windows Vista 1-17 [1] Windows Vista 1-21 [3] Nindows Vista 1-21 [3] Windows Vista 1-31 [4]		
1.1.1 Features 1-1 1.1.2 Loader functions 1-1 1.1.3 Warranty 1-2 1.2 Connecting Inverters to a PC. 1-3 1.2.1 Connection 1-3 1.2.2 Configuring a USB network 1-4 1.2.1 Example of networking 1-4 1.2.2 Example of networking 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [2] Communication port 1 1-6 [2] Communications support devices for RS-485 communication 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation 1-10 [1] Windows 7/Windows 2000 1-14 1.3.2.1 Installation 1-17 1.3.2.2 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows 2000 1-27 1.3.3.1 Installation of USB driver <td>Chapter 1 Before Using FRENIC Loader</td> <td></td>	Chapter 1 Before Using FRENIC Loader	
1.12 Loader functions 1-1 1.1.3 Warranty 1-2 1.2 Connection 1-3 1.2.1 Connection 1-3 1.2.1 Connection 1-3 1.2.1 Configuring a USB network. 1-4 1.2.2 Configuring a USB network. 1-4 1.2.3 Configuring an RS-485 communications network. 1-5 1.2.3.1 Example of networking 1-6 [1] Communication port 1 1-6 [1] Communication port 2 (FRENIC-Ace only) 1-7 1.2.3.2 Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-7 1.2.3.4 Noise suppression 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows XPMindows Vista 1-17 [3] Windows XPNWindows 2000 1-77	1.1 Overview	1-1
1.1.3 Warranty 1-2 1.2 Connecting Inverters to a PC 1-3 1.2.1 Connection 1-3 1.2.2 Configuring a USB network. 1-4 1.2.2 Configuring a St-485 communications network. 1-4 1.2.3 Example of networking. 1-5 1.2.3.1 Example of networking. 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [2] Communication port 2 (FRENIC-Ace only) 1-7 1.2.3.3 Communications level converters 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop. 1-9 [13] Installation 1-10 [14] Windows XPWindows Vista 1-11 [21] Windows XPWindows 2000 1-14 [13] Installation of USB driver 1-17 [14] Windows XP 1-25 [14] Windows XP 1-25 [14] Windows XP 1-25 [14] Windows XP	1.1.1 Features	1-1
1.2 Connection 1-3 1.2.1 Connection 1-3 1.2.2 Configuring a USB network. 1-4 1.2.2.1 Example of networking 1-4 1.2.2.1 Example of networking 1-4 1.2.2.1 Example of networking 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [1] Communication port 2 (FRENIC-Ace only) 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-17 [2] Windows Vista 1-17 [3] Windows XPA 1-17 [4] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows Vista 1-31 [13] Windows Vista 1-32 [14] Windows Vista 1-32 [15] Windows Vista 1-32	1.1.2 Loader functions	1-1
1.2.1 Configuring a USB network. 1-3 1.2.2 Configuring a USB network. 1-4 1.2.3 Configuring an RS-485 communications network 1-5 1.2.3.1 Example of networking. 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector). 1-6 [1] Communication port 1 1-6 [2] Communication support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop. 1-9 1.3.1 Installation of FRENIC Loader 3.x. 1-10 [1] Windows YNWindows Vista. 1-11 [2] Windows ZPAWindows 2000 1-14 1.3.2 Installation of FRENIC Loader 3.x. 1-17 [1] Windows XPAWindows 2000 1-25 [4] Windows XP 1-25 [4] Windows XP 1-25 [4] Windows XP 1-25 [4] Windows	1.1.3 Warranty	1-2
1.2.2 Configuring a USB network	1.2 Connecting Inverters to a PC	1-3
1.2.1 Example of networking. 1-4 1.2.3 Configuring an RS-485 communications network. 1-5 1.2.3.1 Example of networking. 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communications port 1 1-6 [2] Communications port 2 (FRENIC-Ace only) 1-7 1.2.3.2 Communications support devices for RS-485 communication 1-8 [1] Communications level converters. 1-8 [1] Communications level converters. 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop. 1-9 1.3.1 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-11 [2] Windows 7Windows Vista 1-17 [3] Windows 7. 1-17 [1] Windows 7. 1-17 [1] Windows 7. 1-17 [2] Windows 2000 1-14 1.3.2 Installation of FRENIC Loader 3.x 1-17 [3] Windows 2000 1-25 <		
1.2.3 Configuring an RS-485 communications network 1-5 1.2.3.1 Example of networking 1-5 1.2.3.2 Pin assignment for RS-485 pott (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [2] Communications support devices for RS-485 communication 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7Windows Vista 1-17 1.3.2.1 Installation of USB driver 1-17 1.3.2.1 Installation of USB driver 1-17 [2] Windows 7 1-17 [3] Windows Vista 1-25 [4] Windows 7 1-17 [2] Windows 7 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3.1 Before uninstallation of the USB driver 1-31 1.3.3.1 Uninstallation of TRE	• •	
1.2.3.1 Example of networking. 1-5 1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [1] Communication port 2 (FRENIC-Ace only) 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation 1-10 [1] Windows 7/Windows Vista 1-10 [1] Windows 7/Windows 2000 1-14 [2] Windows XP/Windows 2000 1-17 [3] Unitallation of USB driver 1-17 [1] Windows XP 1-25 [4] Windows XP 1-25 [4] Windows XP 1-25 [4] Windows XP 1-25 [4] Windows XP/Windows 2000 1-31 [3.3.1 Before uninstallation of the USB driver 1-31 [3.3.4 Before uninstallation of the USB driver 1-31 [3.3.5<		
1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector) 1-6 [1] Communication port 1 1-6 [2] Communications support devices for RS-485 communication 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications support devices for RS-485 communication 1-8 [2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 1.3.1 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows XP/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 [3] Windows XP 1-17 [1] Windows Vista 1-21 [3] Windows XP 1-21 [3] Windows XP 1-22 [4] Windows XP 1-21 [3] Windows XP 1-22 [4] Windows XP 1-21 [3] Windows XP 1-22 [4] Windows XP		
[1] Communication port 1. 1-6 [2] Communication support devices for RS-485 communication 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications level converters. 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop 1-9 [3] Branch adapter for multi-drop 1-9 [1.3.1 Installation 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows ZPM/Indows Vista 1-11 [3] Unindows ZPM/Indows Vista 1-11 [4] Windows ZPM/Indows Vista 1-17 [5] Windows XP 1-17 [6] Windows Vista 1-17 [7] Windows Vista 1-21 [8] Windows XP 1-25 [4] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows Vista/Windows 2000 1-31 [13.3.1 Before uninstallation of the USB driver 1-31 [14] Windows 7 1-31 [15] Windows Vista/Windows XP/Windows 2000 1-32 [16] Windows Vista/Windows XP/Windows 2000 1-31 [27] Tom Start menu Windows 7/Windows 2000 1-32 <td>· •</td> <td></td>	· •	
[2] Communication port 2 (FRENIC-Ace only) 1-7 1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop 1-9 [3] Isranch adapter for multi-drop 1-9 [1] Windows T/Windows Vista 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.1 Installation of USB driver 1-17 [1] Windows 7 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows Vista 1-22 [4] Windows Vista 1-21 [3] Windows XP 1-22 [4] Windows Vista 1-31 [1] Torm Statllation of the USB driver 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 [3] Windows 7/Windows XP/Windows 2000 1-32 [3] Form Statt menu 1-32 [4] From Stup icon 1-32 <t< td=""><td></td><td></td></t<>		
1.2.3.3 Communications support devices for RS-485 communication 1-8 [1] Communications level converters 1-8 [2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 1.2.3.4 Noise suppression 1-9 1.3.1 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows XP/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows Vista 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Uninstallation of TRENIC Loader 3.x 1-31 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 1.3.3.2 Un		
[1] Communications level converters. 1-8 [2] Requirements for the cable. 1-9 [3] Branch adapter for multi-drop 1-9 [13] Israch adapter for multi-drop 1-9 [13] Installation 1-9 [13] Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows 7/Windows 2000 1-14 1.3.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-17 [2] Windows Vista 1-21 [3] Windows 2000 1-25 [4] Windows 2000 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows 2000 1-32 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows 2000 1-32 1.3.3.1 Form Start menu 1-30 [3] From Start menu Windows 7/Windows Vista		
[2] Requirements for the cable 1-9 [3] Branch adapter for multi-drop 1-9 [3] Branch adapter for multi-drop 1-9 1.2.3.4 Noise suppression 1-9 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.2.1 Installation of USB driver 1-17 1.3.2.1 Installation of USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 200 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 [1] Windows 2000 1-27 1.3.3.1 Before uninstallation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3 Uninstalling Loader 1-32 [3] From Start menu Windows 7/Windows Vista 1-32 [4] From Start menu Windows 7/Windows Vista 1-32 [5] From Start menu Windows XP/Windows 2000		
[3] Branch adapter for multi-drop 1-9 1.2.3.4 Noise suppression 1-9 1.3 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 2000 1-34 [3] From setup icon <	• •	
1.2.3.4 Noise suppression 1-9 1.3 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows 7/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows Vista 1-21 [3] Windows Vesta 1-21 [4] Windows Vesta 1-21 [3] Windows Vesta 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 [1] Windows 7 1-30 1.3.3 Uninstallation of Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows 7/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [3]		
1.3 Installation 1-10 1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-17 [3] Windows 7 1-17 [3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows 2000 1-34 [3] From Start menu Windows XP/Windows 2000 1-37 1.4.1 Configuring the Settings for Inverter(s) and Loader 1-39 [4] From Start menu Windows XP/Windows 2000 1-37 1.4.2 Checking the COM port 0. 1-37 1.4.3 Configur		
1.3.1 Installation of FRENIC Loader 3.x 1-10 [1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1.14 1.3.2 Installation of USB driver 1.17 [1] Windows 7 1.17 [1] Windows Vista 1.17 [2] Windows Vista 1.21 [3] Windows Vista 1.21 [3] Windows XP 1.25 [4] Windows 2000 1.27 1.3.2.2 Checking the installation of the USB driver 1.30 1.3.3 Uninstallation of FRENIC Loader 3.x 1.31 1.3.3 Installation of FRENIC Loader 3.x 1.31 [1] Windows 7 1.31 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1.31 [1] Windows 7 1.31 [2] Windows 7/Windows 2000 1.32 1.3.3.2 Uninstallation of Windows 7/Windows 2000 1.32 [3] From Start menu Windows Vista 1.32 [4] From Setup icon Windows XP/Windows 2000 1.34		
[1] Windows 7/Windows Vista 1-11 [2] Windows XP/Windows 2000 1-14 1.3.2 Installation of USB driver 1-17 1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 2000 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Uninstallation of FRENIC Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 [3] From Start menu Windows 7/Windows Vista 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows Vista 1-34 [3] From setup icon Windows 7/Windows Vista 1-35 [4] From Start menu Windows XP/Windows 2000 1-34 [3] From setup icon Windows XP/Windows 2000 1-34 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1		
[2] Windows XP/Windows 2000		
1.3.2 Installation of USB driver 1-17 1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows Vista/Windows XP/Windows 2000 1-32 [2] Windows Vista/Windows XP/Windows 2000 1-32 [3] From Start menu Windows Vista 1-32 [4] From Start menu Windows 2000 1-32 [3] From Start menu Windows 2000 1-32 [4] From Setup icon Windows Vista 1-32 [4] From Setup icon Windows XP/Windows 2000 1-33 [4] From Setup icon Windows XP/Windows 2000 1-34 [3] From Setup icon Windows XP/Windows 2000 1-35 [4] From Set	• •	
1.3.2.1 Installing the USB driver 1-17 [1] Windows 7 1-17 [2] Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows XP/Windows 2000 1-32 1.3.2.2 Uninstalling Loader 1-32 [3] From Start menu Windows 7/Windows 2000 1-32 [4] From Start menu Windows 7/Windows 2000 1-32 [5] From Start menu Windows Vista 1-32 [4] From Setup icon Windows Vista 1-33 [4] From Setup icon Windows 2000 1-37 1.4 Configuring communication-related function codes in the inverter(s) 1-39 [4] From Setup icon Windows 2000 1-37 1.4.1 Configuring communication port 1	•••	
[1] Windows 7		
1 Windows Vista 1-21 [3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Dinstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows 2000 1-32 [2] From Start menu Windows 7/Windows 2000 1-34 [3] From Setup icon Windows 7/Windows 2000 1-34 [4] From Setup icon Windows XP/Windows 2000 1-34 [5] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 [4] From Setup icon Windows 2000 1-37 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39		
[3] Windows XP 1-25 [4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Uninstallation of FRENIC Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows Vista 1-32 [3] From setup icon Windows XP/Windows 2000 1-34 [3] From Setup icon Windows XP/Windows 2000 1-34 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 [1] Communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 [1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
[4] Windows 2000 1-27 1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x 1-31 1.3.3 Uninstallation (Quitting Loader and Message Manager) 1-31 1.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows 2000 1-34 [3] From setup icon Windows 7/Windows 2000 1-34 [4] From Setup icon Windows 7/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 [1] Communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 [4] Configuring to PC (when using a communications level converter) 1-40 1.4.3 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.3.2.2 Checking the installation of the USB driver 1-30 1.3.3 Uninstallation of FRENIC Loader 3.x. 1-31 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000. 1-32 1.3.2.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows 2000 1-34 [3] From setup icon Windows XP/Windows 2000 1-34 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 [1] Communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 [3] For connection port 2 1-39 [4] For connection port 2 1-39 [1] Communication port 2 1-39 [2] Communications parameters 1-41 1.4.3		
1.3.3 Uninstallation of FRENIC Loader 3.x. 1-31 1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows 2000 1-34 [3] From setup icon Windows 7/Windows Vista 1-35 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.3.3.1 Before uninstallation (Quitting Loader and Message Manager) 1-31 [1] Windows 7 1-31 [2] Windows Vista/Windows XP/Windows 2000 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows 7/Windows 2000 1-32 [2] From Start menu Windows XP/Windows 2000 1-34 [3] From setup icon Windows XP/Windows 2000 1-34 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 1.4.1 Configuring communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44	-	
[1] Windows 7		
[2] Windows Vista/Windows XP/Windows 2000. 1-32 1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows XP/Windows 2000 1-34 [3] From setup icon Windows XP/Windows Vista 1-35 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring communications parameters 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.3.3.2 Uninstalling Loader 1-32 [1] From Start menu Windows 7/Windows Vista 1-32 [2] From Start menu Windows XP/Windows 2000 1-34 [3] From setup icon Windows 7/Windows Vista 1-35 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 [1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring communications parameters 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44	•••	
[1] From Start menuWindows 7/Windows Vista1-32[2] From Start menuWindows XP/Windows 20001-34[3] From setup iconWindows 7/Windows Vista1-35[4] From Setup iconWindows XP/Windows 20001-371.4 Configuring the Settings for Inverter(s) and Loader1-391.4.1 Configuring communication-related function codes in the inverter(s)1-39[1] Communication port 11-39[2] Communication port 21-391.4.2 Checking the COM port on the PC (when using a communications level converter)1-401.4.3 Configuring Loader1-411.4.3.1 Configuring communications parameters1-43[1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only)1-44		
[2] From Start menu Windows XP/Windows 2000 1-34 [3] From setup icon Windows 7/Windows Vista 1-35 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
[3] From setup icon Windows 7/Windows Vista 1-35 [4] From Setup icon Windows XP/Windows 2000 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
[4] From Setup icon Windows XP/Windows 2000. 1-37 1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1. 1-39 [2] Communication port 2. 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters. 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only). 1-44	•••	
1.4 Configuring the Settings for Inverter(s) and Loader 1-39 1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.4.1 Configuring communication-related function codes in the inverter(s) 1-39 [1] Communication port 1 1-39 [2] Communication port 2 1-39 1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
[1] Communication port 1		
[2] Communication port 2		
1.4.2 Checking the COM port on the PC (when using a communications level converter) 1-40 1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.4.3 Configuring Loader 1-41 1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
1.4.3.1 Configuring communications parameters 1-43 [1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only) 1-44		
[1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only)		
	· · ·	

1.4.3.2 Configuring connection settings	1-48
[1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only)	1-48
[2] For connection to RS-485 port	1-50
1.4.3.3 Communication log file	1-51

Chapter 2 Functions of FRENIC Loader

2.1	Тор	Winc	low of FRENIC Loader 3.x	2-1
2.2	File.			
2	2.2.1	New	·	
2	2.2.2	Ope	n	2-2
2	2.2.3	Print	setup	2-3
2	2.2.4	Exit		
2.3	Men	u		2-4
2	2.3.1	Fund	ction code setting	2-4
	2.3.	.1.1	Function code edit	2-5
		[1]	Reading function code data stored in the inverter	
		[2]	Changing the function code data	
		[3]	Writing function code data into the inverter from Loader	2-9
		[4]	Notes in writing function code data into inverters whose rated power inputs or capacities different from each other	
		[5]	Saving function code data into the PC	2-11
		[6]	Initializing the function code data stored in the inverter	2-12
		[7]	Printing the function code data list	2-13
		[8]	Displaying user-selected function codes only (User definition)	2-14
		[9]	Searching for a character string in function code names	2-16
	2.3.	.1.2	Auto-tuning	2-17
	2.3.	.1.3	Comparison	2-18
	2.3.	1.4	File information	2-19
		[1]	Changing the region	2-20
		[2]	Changing the input power supply voltage	2-20
		[3]	Changing the inverter capacity	2-20
		[4]	Changing the current definition file	2-21
	2.3.	.1.5	Function code (customizable logic) setting	2-23
		[1]	Function code edit	2-24
		[2]	Comparison	2-25
		[3]	File information	2-25
2	2.3.2	Ope	ration monitor	2-26
	2.3.	.2.1	I/O monitor (for control terminal input/output signal status of the inverter)	2-26
	2.3.	.2.2	System monitor (for current setup info and maintenance info of inverter)	2-26
	2.3.	.2.3	Alarm monitor	2-27
	2.3.	.2.4	Meter display (Showing the inverter running states)	2-28
		[1]	Changing data to be displayed on meters	2-28
		[2]	Changing the advanced settings for analog meters	2-30
	2.3.	.2.5	Saving data in CSV format (on operation status monitors)	2-31
2	2.3.3	Mult	i-monitor (for the running status of more than one inverter)	2-32
		[1]	Adding/deleting the monitor items to be listed	2-32
2	2.3.4	Test	-running	2-34
	2.3.	.4.1	Setting up the inverter and running the motor from Loader	2-35
	2.3.	4.2	Monitoring the inverter operation from Loader	2-38
	2.3.	.4.3	Recovering Loader whose Test run window cannot monitor inverter status	2-39
2	2.3.5	Trac	e (Showing the inverter operation status in waveforms)	2-41
	2.3.	.5.1	Starting/stopping monitoring	2-42
	2.3.	.5.2	Saving trace data	2-43
	2.3.	5.3	Making a copy of the waveform monitor	2-44
	2.3.	5.4	Sub-panes	2-45
		[1]	Cursor	2-45
		[2]	Graph Position adjustment	2-46

2.3	5.5 Advanced waveform settings	
	[1] Channel configuration	
	[2] Ch1 to Ch4 (Analog channels)	
	[3] Ch1 to Ch8 (Digital channels)	2-51
	[4] Channel check	
	[5] Other settings	2-53
2.3	5.6 Optimizing Y-axis of the graph	
2.3.6	Quick access menu	2-58
2.3.7	Option	
2.4 Viev	V	
2.4.1	Toolbar	
2.4.2	Status bar	
2.5 Win	dow	
2.5.1	Cascade windows	
2.5.2	Tile windows	
2.5.3	Tile windows vertically	2-61
2.5.4	Arrange icons	2-61
2.6 Help)	
2.6.1	About FRENIC Loader	

Chapter 3 Reference Information

3.1	Troubleshooting	3-1
3.2	Frequently asked questions (FAQ)	3-3
3	3.2.1 Cannot communicate with inverter (Failed to get inverter information)	3-3
	3.2.1.1 Message Manager not installed correctly	3-3
	[1] Windows 7	3-3
	[2] Windows Vista/ Windows XP/ Windows 2000	
	3.2.1.2 USB driver not installed correctly (for FRENIC-MEGA/HF/Mini(C2S)/Ace)	3-4
	[1] Windows 7	3-4
	[2] Windows Vista	
	[3] Windows XP	
	[4] Windows 2000	3-8
	3.2.1.3 USB driver installed correctly (for FRENIC-MEGA/HF/Mini(C2S)/Ace)	3-9
	[1] Windows 7	
	[2] Windows Vista/Windows XP/Windows 2000	3-9
	3.2.1.4 USB communication impossible after the PC has gone standby or to sleep)	3-10
	[1] Windows 7	
	[2] Windows Vista/Windows XP/Windows 2000	3-10
	3.2.1.5 If "1:loader protocol" is set in both function code y10 and y20 "RS-485 setting (protocol selection)"	3-10
3	3.2.2 Cannot read or write function code data from/to the inverter	3-11
3	3.2.3 Cannot open saved files (The specified file did not exist)	3-13
	3.2.3.1 How to open the function code data saved without the specified files	3-13
	3.2.3.2 How to open the function code data saved by the previous version 1.1.0.0	3-14
3	3.2.4 Cannot find saved files (Windows 7/Windows Vista)	3-15
3	3.2.5 Notes on updating Loader	3-16
3.3	Specifications of FRENIC Loader 3.x	3-18

vi

Chapter 1

Before Using FRENIC Loader

This chapter gives an overview of the inverter support software FRENIC 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 run/stop the motor, monitor operation status of the inverter, and to manage and set the function code data for the inverter.
- Real-time trace allows you to monitor operation status of the inverters real-time in a graph chart format with data lists, and to save the monitored result in a file that is useful to analyze operation of a system configured with inverters.

1.1.2 Loader functions

Function			Overview	
	Function code edit	Displaying Function codes	Shows the function codes by categoryall, in groups (F, E, C, etc.), those whose data settings differ from factory defaults, those selected by the user to show, communications codes, results of comparison, or searching result of the function codes.	
			 The function code files listed and edited in the Function code edit window are one of the following: Newly created. Read data set in the inverter. Read data stored in the PC. 	
SS		Writing the changed data	Edits the function code data read from the inverter and overwrites new function code data to the inverter.	
Function code settings		Writing data changed from factory defaults	Overwrites only the function code data changed from those set in the inverter as factory defaults.	
on c		Writing all	Overwrites all data to the inverter unconditionally.	
Functio		Help (information on function codes)	Shows the meaning of function code data for each code.	
		Saving data	Saves the function code data currently listed in the file.	
		Printing data	Prints a list of function codes.	
		Initialization	Initializes all function code data set in the inverter(s) managed by Loader or currently being edited by Loader.	
	Auto-tuning	Obtains motor parameters (%R1, %X, no-load current, etc.) and save them in the inverter.		
	Comparison	Compares the editing code data with those saved in the selected file or set in the selected inverter.		
	File information	Displays and modifies information such as model and comments related to the file used to save the function code data.		
tor	I/O monitor	Indicates the I/O terminal status of the selected inverter.		
ation Moni	System monitor	Indicates the inverter ROM version, maintenance information, etc.		
Operation Status Monitor	Alarm monitor	Indicates the inverter status during alarm mode.		
	Meter display	Indicates the inverter running status in analog meter format.		
Multi-monitor		Lists the operation status of inverter(s).		
Test run		Enables the user to run/stop the inverter or set the frequency command and the terminal assignment, and shows the output frequency, drive current and status of programmable I/O terminals.		
Real-	time trace	Shows the running status of inverters graphically in real-time.		
Historical trace		Shows the running status records saved in the inverters graphically.		

The table below provides an overview of the Loader functions.

1.1.3 Warranty

1.2 Connecting Inverters to a PC

1.2.1 Connection

PC : Inverters	On PC	On inverter	Connection
	USB	USB	Using a USB cable
1:1	USB	RS-485	Via a USB-RS-485 converter
1.1	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.
1.11	COM port (RS-232C)	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.

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 1.2.3.3, [1] "Communications level converters."

- (2) For LAN cables with an RJ-45 connector, refer to Section 1.2.3.3, [2] "Requirements for the cable."
- (3) For details about branch adapters for multi-drop connection, refer to Section 1.2.3.3 [3] "Branch adapter for multi-drop connection."
- 4) To use the RJ-45 connector on the inverter for RS-485 communication, it is necessary to remove the keypad.
- 5) To minimize the effects of noise, separate the signal lines from the power lines. Refer to Section 1.2.3.4 "Noise suppression."
- 6) 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.
- 7) 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.

• When connecting an RS-485 communications cable to the RJ-45 connector on the inverter or communication card, be sure to check the pin assignment of the device to be connected. For details, refer to Chapter 1, Section 1.2.3.2 "Pin assignment for RS-485 port (RJ-45 connector)."

An accident or mechanical failure could occur if this warning is not heeded.

Chap. 1

1.2.2 Configuring a 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 1.4.3.1 "Setting up communications parameters."

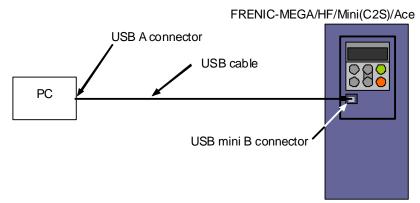


Figure 1.1 USB Network Using a USB Cable (mini B)

Specifications	USB 1.1 compliant	
Transmission speed	12M bps	
Wiring length	Max. 5 m	
Connector	USB mini B connector	
Power supply	When connected to the inverter: Self-powered	
	When connected to the keypad: Bus-powered	

Table 1.1 Specifications of USB Network



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.

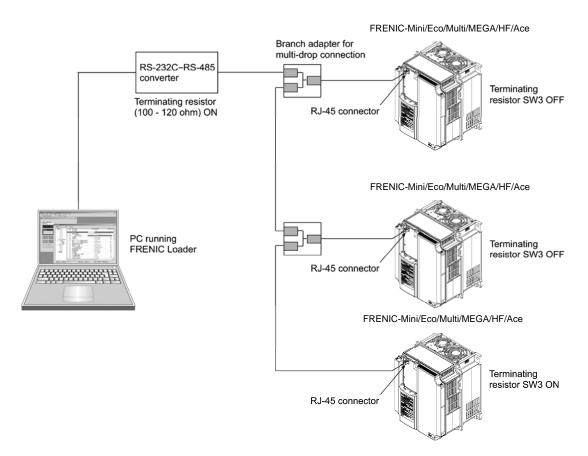
1.2.3 Configuring an RS-485 communications network

1.2.3.1 Example of networking

To configure an RS-485 communications network connecting inverters and a Loader-running PC, use a LAN cable having an RJ-45 connector at both ends. Refer to Section 1.2.3.3, [2] "Requirements for the cable." (See Note below.)

Multi-drop network using the RJ-45 connector

For multi-drop connection of inverters, use a branch adapter(s) for multi-drop connection and RS-485 communications network as shown below. For connection via the RS-485 port, refer to Section 1.4.3.1 "Setting up communications parameters."





- The RJ-45 connector on the inverter has pins to which the keypad power is assigned for remote keypad operation. Do not use these pins when connecting any other equipment to the RJ-45 connector. (See Figure 1.3 on the next page.)
 - 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 Section 1.2.3.3 "Communications support devices for RS-485 communication."
 - The maximum cable length on the RS-485 communications network is 500 m.

1.2.3.2 Pin assignment for RS-485 port (RJ-45 connector)

There are two communication ports of RJ45 connector.

Communication port 1: Keypad loading slot

Communication port 2: Terminal stand loading slot (only FRENIC-Ace)

[1] Communication port 1

For ease of connection to a standard <u>RS-232C–RS-485</u> converter, the inverter's RS-485 port is designed to be compliant with the standard 4 pairs signal line pin assignment for the RJ-45 connector, where a pair of signal lines DX- and DX+ are assigned to #4 and #5 pins as shown in Figure 1.3.

Note The power feed lines to the keypad occupy #1, #2, #7 and #8 pins. Do not use these pins when connecting equipment other than the keypad to this port.

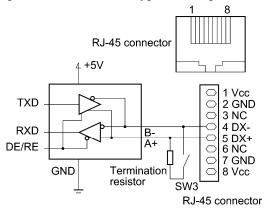


Figure 1.3 Standard RS-485 Port and RJ-45 Connector of the communication port 1 Pin Assignment

Pin #	Assignment	Remarks	
1	Vcc (+5 V)	Using these pins may cause a short-circuit between the Vcc and	
2	GND	GND lines.	
3	NC	No connection.	
4	DX-	A pair of RS-485 communications lines	
5	DX+		
6	NC	No connection.	
7	GND	Using these pins may cause a short-circuit between the Vcc and GND lines.	
8	Vcc (+5 V)		

Table 1.2 RJ-45 of the communication port 1 Pin Assignments on the FRENIC Series of Inverters

[2] Communication port 2 (FRENIC-Ace only)

This communication port is not available in FRENIC-Ace "-C" model.

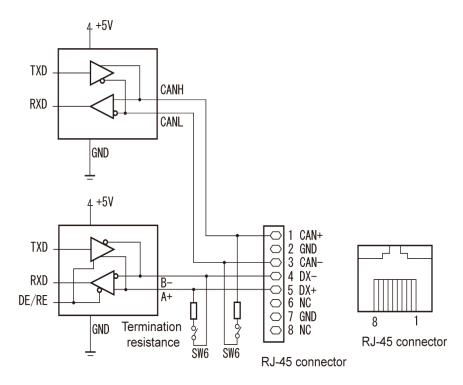


Figure 1.3 Standard RS-485 Port and RJ-45 Connector of the communication port 2 Pin Assignment

-					
Pin #	Assignment	Remarks			
1	CAN+	For the CAN communication data (+) terminals (It is not used in a loader.)			
2	GND				
3	CAN-	For the CAN communication data (-) terminals (It is not used in a loader.)			
4	DX-				
5	DX+	 A pair of RS-485 communications lines 			
6	NC	No connection.			
7	GND				
8	NC	No connection.			

Table 1.3 RJ-45 of the communication port 2 Pin Assignments on the FRENIC Series of In-	verters
	1011010

1.2.3.3 Communications support devices for RS-485 communication

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

[1] Communications level converters

Usually PCs are not equipped with an RS-485 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 Loader correctly, use a converter satisfying the requirements given below.

* The USB–RS-485 converter should be a product that is compatible with the conventional COM port by emulation of a virtual COM port device driver.

Requirements for re	ecommended communications	level converters
<u>Itter an office reference</u>		

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. Refer to Figure 1.4.

Recommended converters

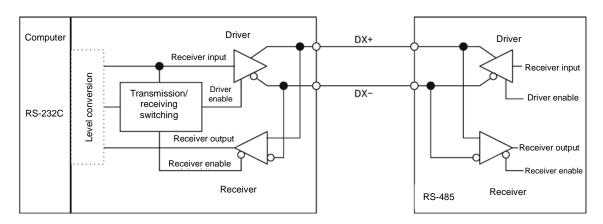
System Sacom Corporation (Japan)

: KS-485PTI (RS-232C–RS-485 converter) : USB-485I RJ45-T4P (USB–RS-485 converter)

Send/receive switching system

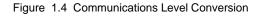
The RS-485 communications system of the inverter acts in half-duplex mode (2-wire) so the converter must feature a send/receive switching circuitry. Generally, the switching system may be either one of the following.

- (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-MEGA (two-wire system)



[2] Requirements for the cable

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



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. <u>Use pins 4 and 5 only.</u>

[3] Branch adapter for multi-drop

An RS-485 communications networks for the 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

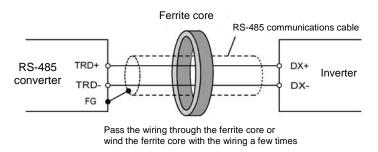
1.2.3.4 Noise suppression

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.

Refer to the RS-485 Communication User's Manual, Chapter 2, Section 2.2.4 "Noise suppression" for details.

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.





1.3 Installation

1.3.1 Installation of FRENIC Loader 3.x

Before installation

Before installing Loader, check your PC, following the table below.

Check items	Requirements
Windows OS	Microsoft Windows 2000, XP, Vista (32-bit or 64-bit), or 7 (32-bit or 64-bit)
Hard disk space	Free space of approx. 9 MB or more
Other applications	Terminate all the applications being in execution.
Earlier version of Loader	If any earlier versions of Loader and Message Manager have been installed on your PC, uninstall both of them.

Download the "FRENIC Loader3_x V7xxx x with MM Setup.exe" file from the Fuji Electric website or get it in any media. Then copy it into an appropriate folder (e.g., C:\Documents and Settings\User\My Documents\FRN_Loader in this manual).

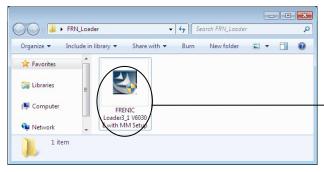
- Note Installing the "FRENIC Loader3_x V7xxx x with MM Setup.exe" installs both Loader software and Message Manager that manages communication at a time. No separate installation of Message Manager "MsgMgr Setup.exe" is required.
 - Note The loader software may fail to set up with inadequate named folder which the software is copied.

If the setup fails, the software file is recommended to create and copy to temporary folder like as "C:\Temp\". (e.g. C:\temp\FRENIC Loader3_x V7xxx J with MM Setup.exe) After the setup is succeeded to finish, you can remove the temporary folder.

Installing Loader

[1] Windows 7/Windows Vista

Follow the wizard and install Loader as shown below.

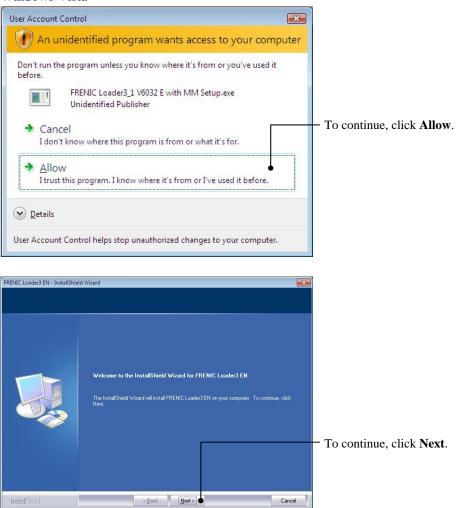


Double-click the FRENIC Loader3_x V7xxx E with MM Setup.exe icon. The exe automatically starts the installation wizard.

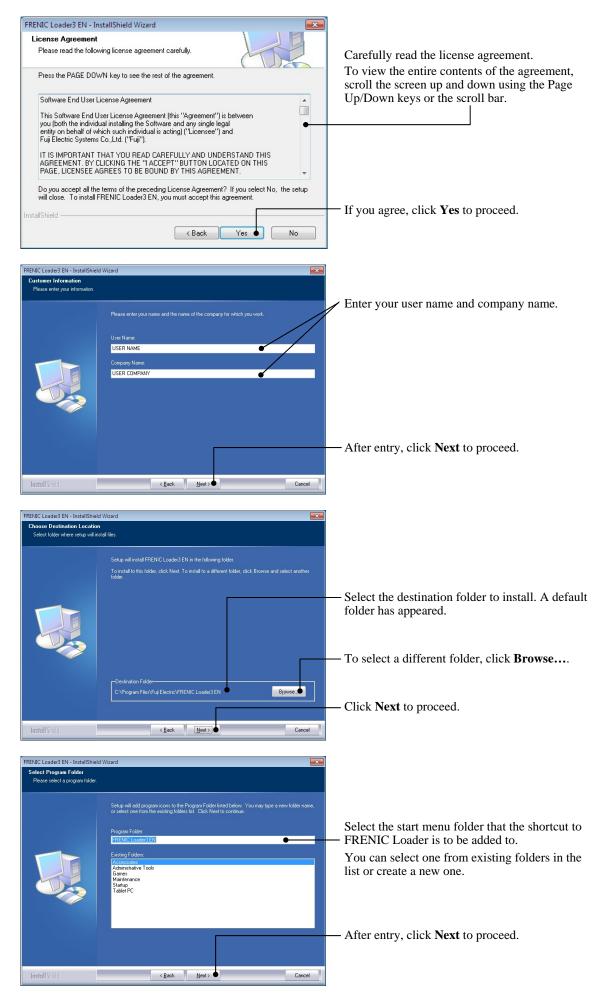
Windows 7

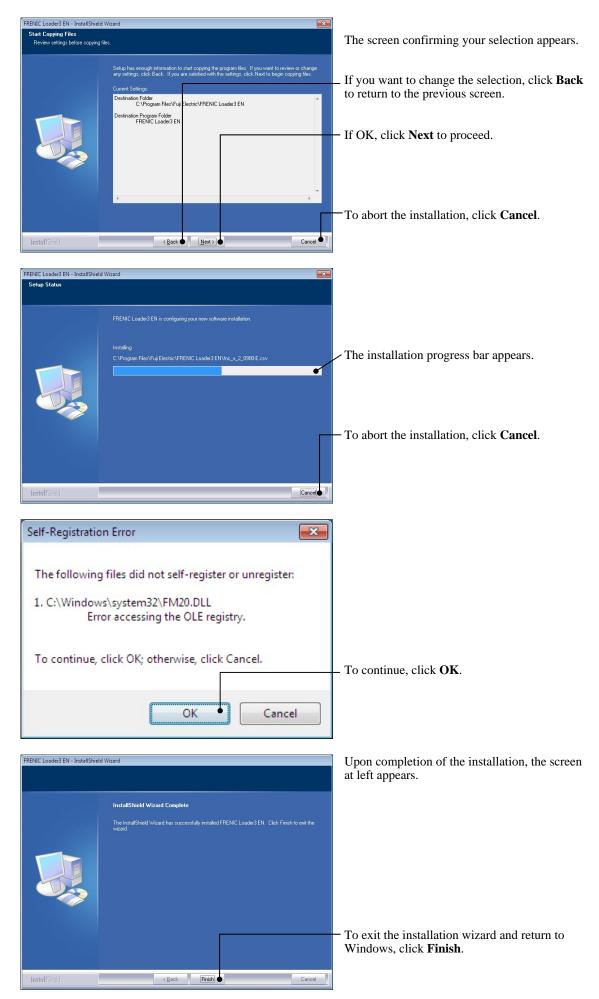


Windows Vista



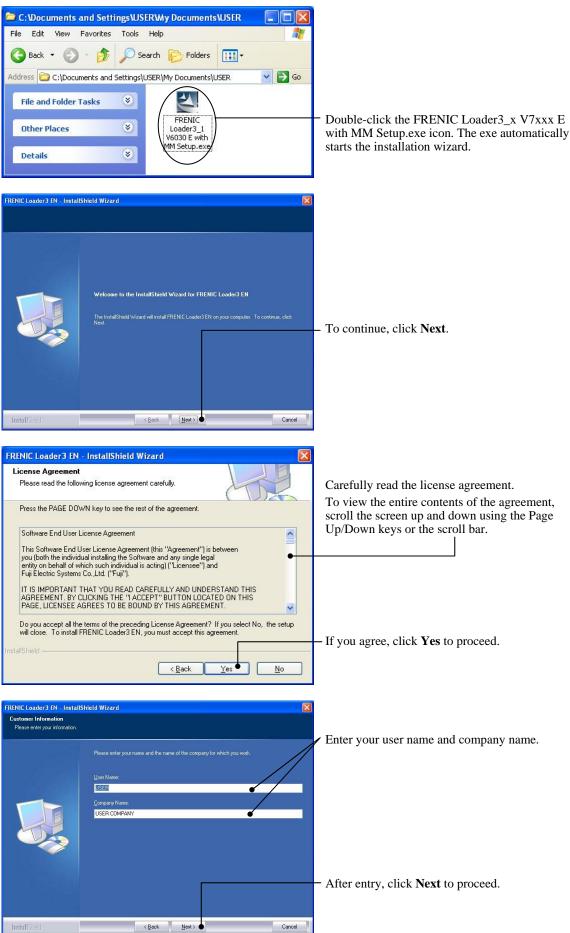
Chap. 1

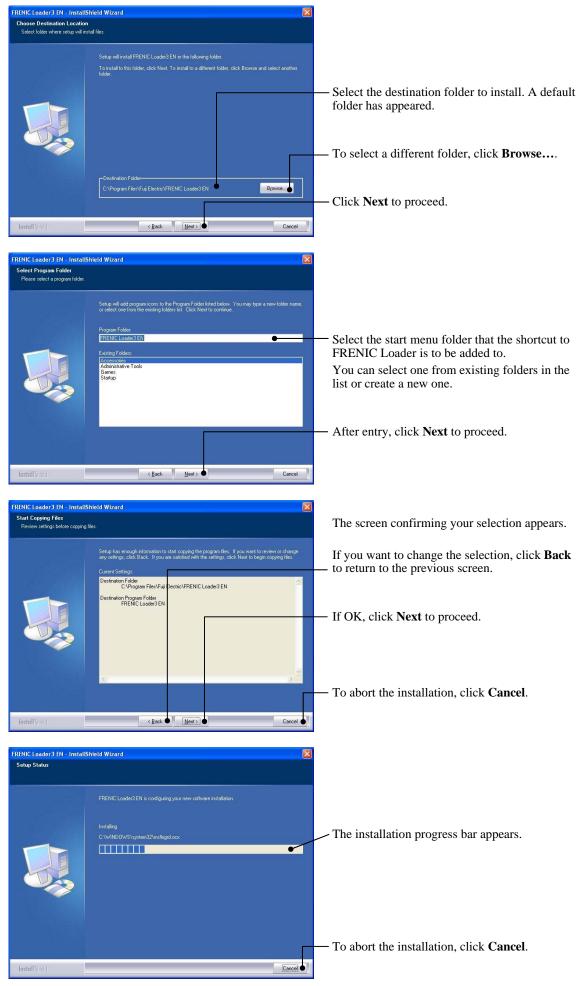


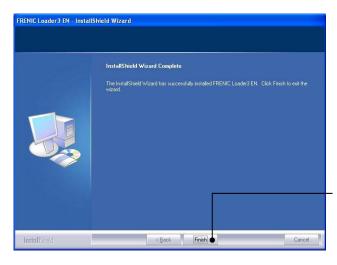


[2] Windows XP/Windows 2000

Follow the wizard and install Loader as shown below.







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

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

Installation of USB driver 1.3.2

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.

1.3.2.1 Installing the USB driver

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.

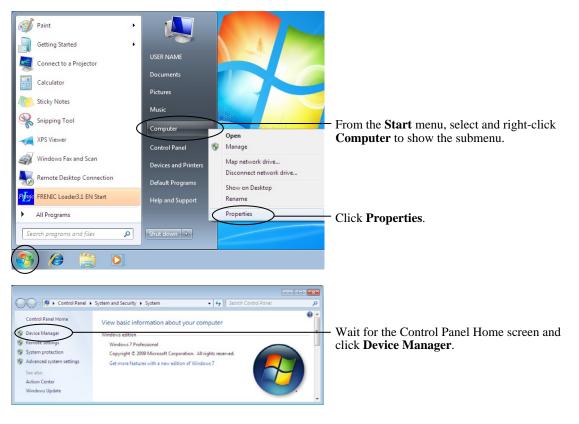
Before installation of the USB driver, install Loader and Message Manager. Refer to Section Note ((1.3.1 "Installation of FRENIC Loader 3.x" for details.

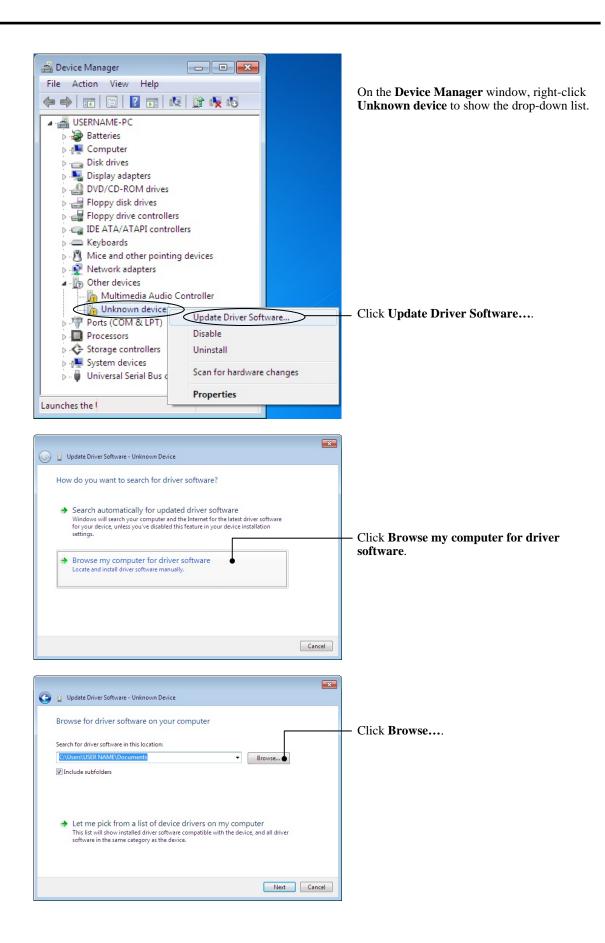
[1] Windows 7

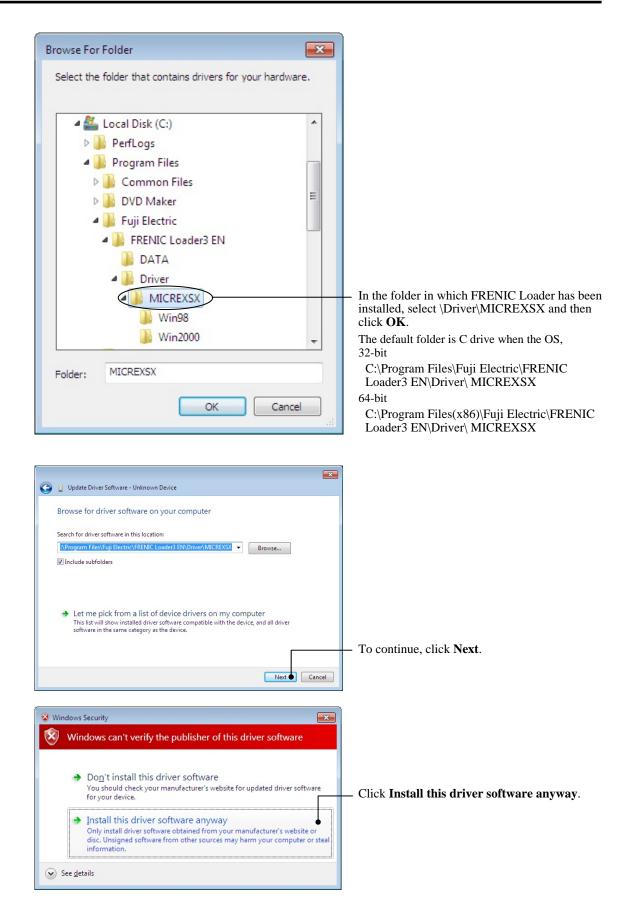
When the OS finds a USB device of the Loader, it displays the following.



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



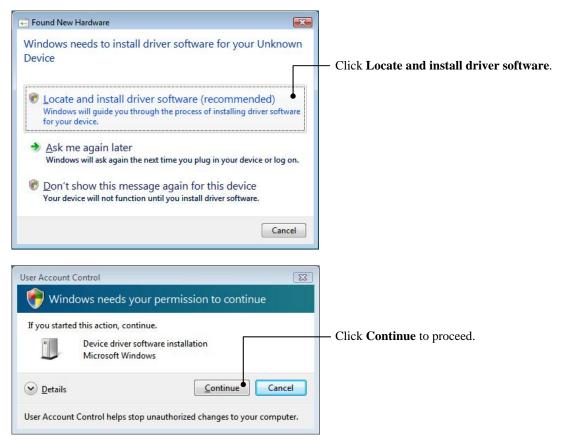


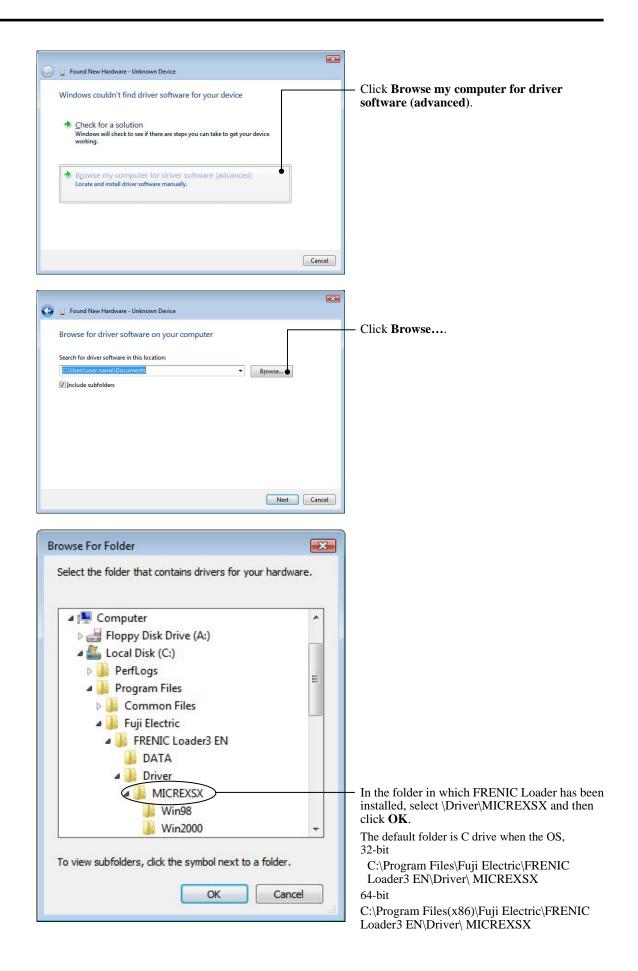


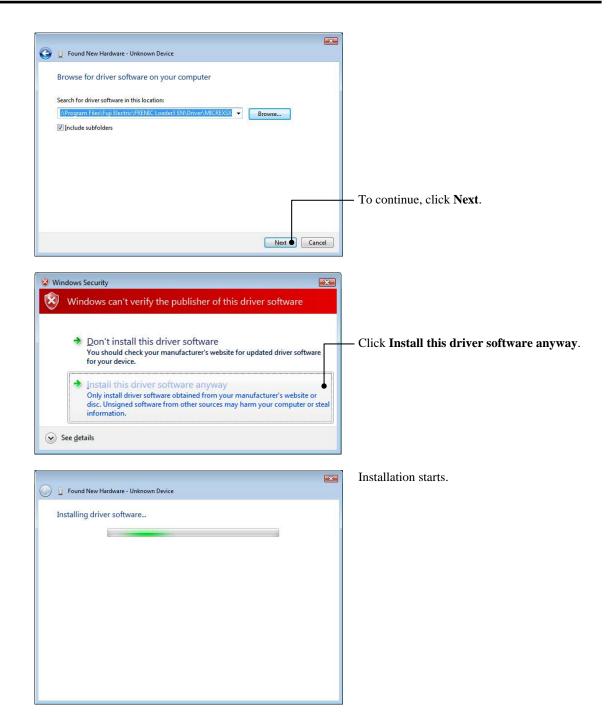
💽 🐊 Update Driver Software - Unknown Device	Installation starts.
Installing driver software	
🕞 🖉 Update Driver Software - FRENIC	Upon completion of the installation, the screen at left appears.
Windows has successfully updated your driver software	
Windows has finished installing the driver software for this device:	
	 To exit the installation wizard and return to Windows, click Close.
Close	

[2] 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.









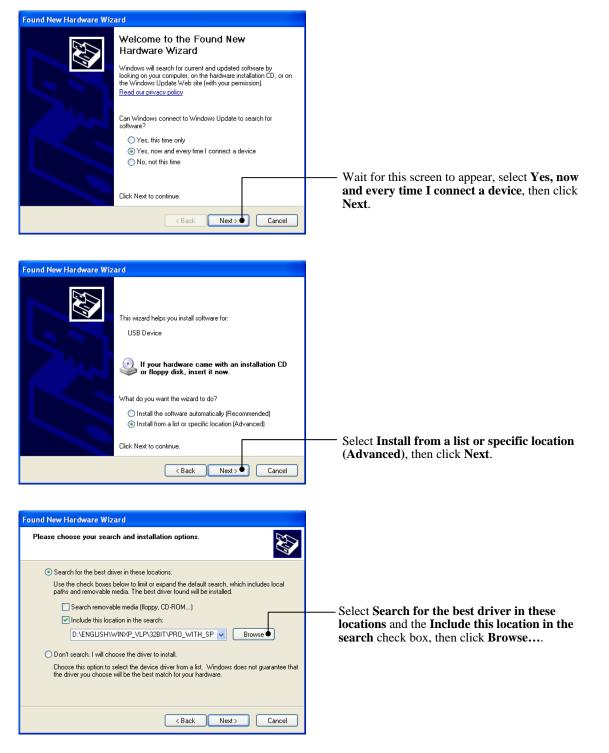
Upon completion of the installation, the screen at left appears.

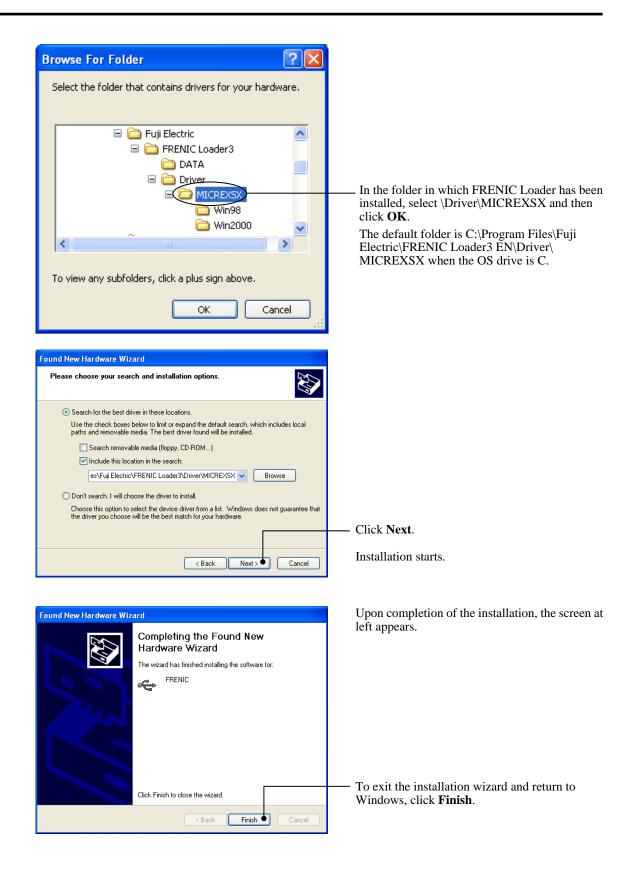
To exit the installation wizard and return to Windows, click **Close**.

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

[3] 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.





[4] Windows 2000

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



Locate File	
Look in: 🔄 MICREXSX 🔽 🗲 🖻 💣 📰 -	
History Wy Documents My Network Places File name: SxUsb.inf Dpen	In the folder in which FRENIC Loader has been installed, select \Driver\MICREXSX and then click OK. The default folder is C:\Program Files\Fuji
My Network P Files of type: Setup Information (*inf)	Electric\FRENIC Loader3 EN\Driver\ MICREXSX if Windows is installed in drive C.
Locate File	
Look in: 🔁 MICREXSX 🔽 🗲 🖻 📸 📰 -	
History Esktop	— Select SxUsb.inf and then click Open .
My Documents	
File name: SxUsb.inf _ Open	
My Network P Files of type: Setup Information ("inf) Cancel	
Found New Hardware Wizard	Click OK .
selected, and then click OK.	
Copy manufacturer's files from: \Fuji Electric\FRENIC Loader3\Driver\MICREXSX Browse Browse	
Found New Hardware Wizard	
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.	
The wizard found a driver for the following device:	
USB Device	
Windows found a driver for this device. To install the driver Windows found, click Next.	
c:\program files\fuji electric\frenic loader3\driver\micrexsx\sxusb.inf	
	Click Next .
	Installation starts.

Found New Hardware Wizard		Upon completion of the installation, the screen at
	Completing the Found New Hardware Wizard FIENIC Windows has finished installing the software for this device.	left appears.
	To close this wizard, click Finish.	— To exit the installation wizard and return to Windows, click Finish .

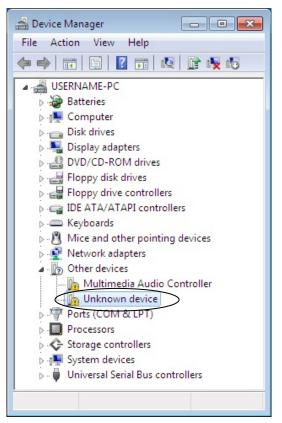
1.3.2.2 Checking the installation of the USB driver

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.

- • **·** 📇 Device Manager File Action View Help 🗢 🔿 📅 🛄 📔 🖬 🕺 🙀 📢 ▲ → USERNAME-PC Batteries ▷ - 🖳 Computer Disk drives Display adapters DVD/CD-ROM drives Floppy disk drives Floppy drive controllers D - IDE ATA/ATAPI controllers > - Keyboards 🖌 🏺 Loader USB device FRENIC Mice and other pointing devices Network adapters D- D Other devices Ports (COM & LPT) Processors Storage controllers ▷ 📲 System devices Universal Serial Bus controllers

Installation finished successfully

Installation failed



1.3.3 Uninstallation of FRENIC Loader 3.x

1.3.3.1 Before uninstallation (Quitting Loader and Message Manager)

Before uninstalling Loader, 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.)

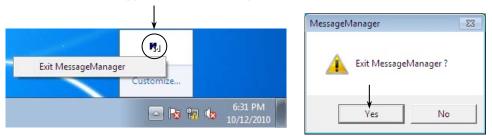
Quitting Message Manager

[1] Windows 7



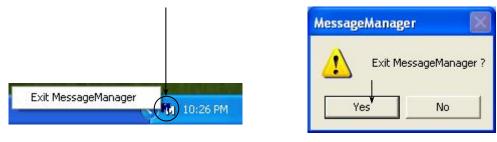
Click this to display the hidden icons as shown below.

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



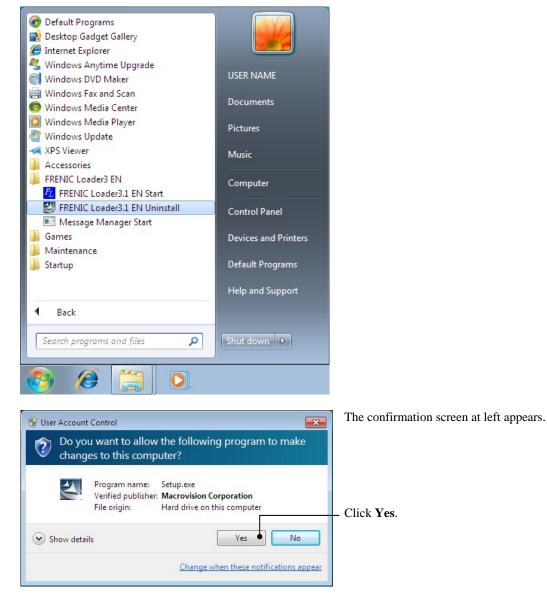
[2] Windows Vista/Windows XP/Windows 2000

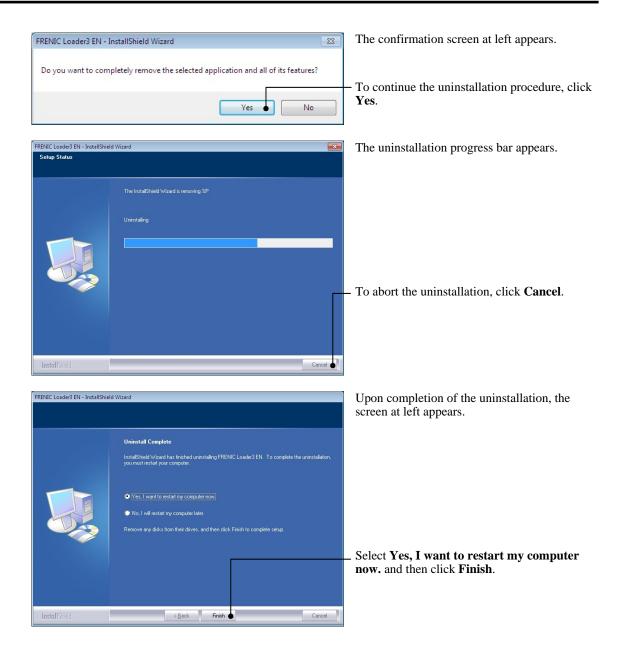
Right-click the Message Manager icon to display **Exit MessageManager**, then click it. The confirmation window appears. Click **Yes** to quit Message Manager.



1.3.3.2 Uninstalling Loader

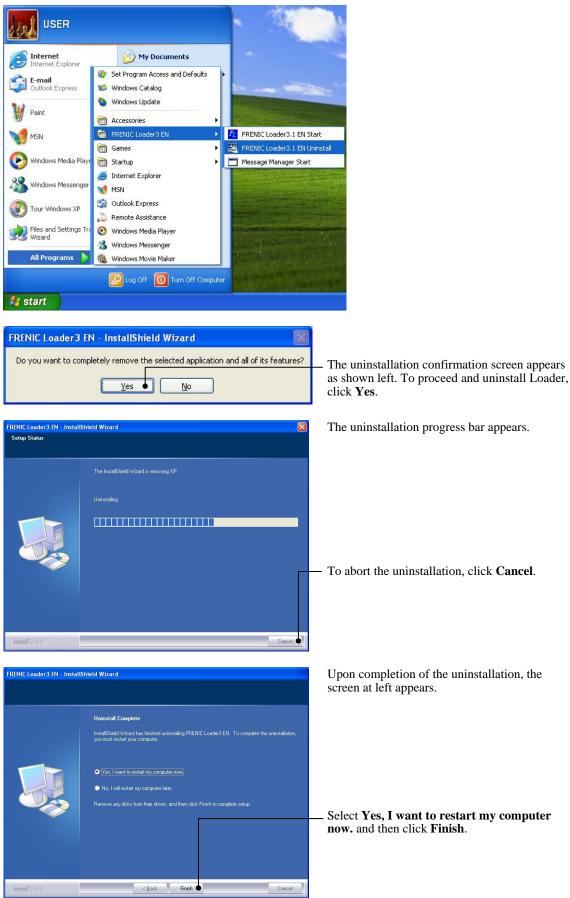
- [1] From Start menu Windows 7/Windows Vista
- (1) From the Start menu, select All Programs | FRENIC Loader3 EN | FRENIC Loader3.x EN Uninstall.





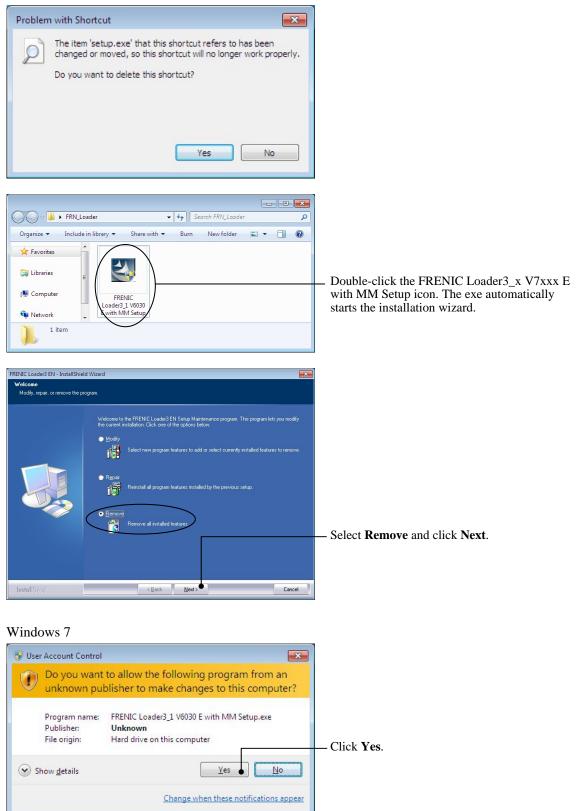
[2] From Start menu Windows XP/Windows 2000

From the Start menu, select All Programs | FRENIC Loader3 EN | FRENIC Loader3.x EN Uninstall.

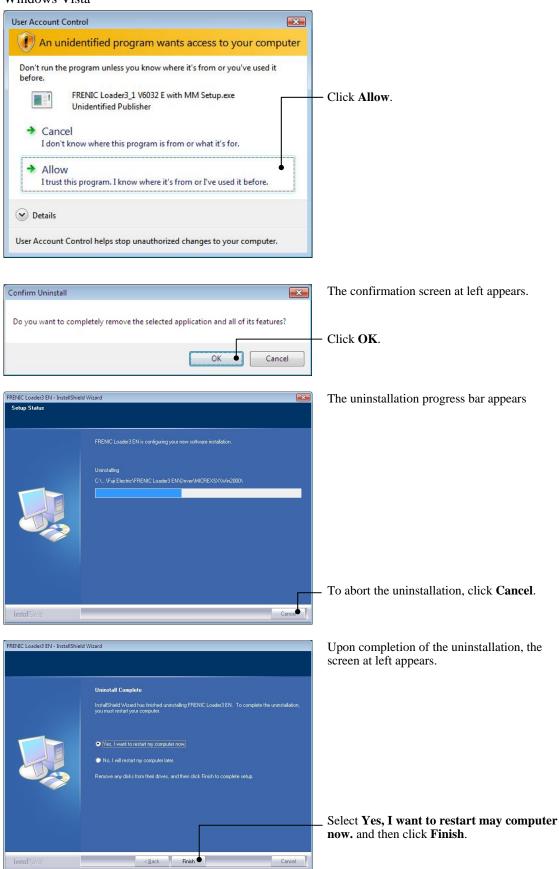


[3] From setup icon Windows 7/Windows Vista

If uninstalling from the Start menu cannot start and the Problem with Shortcut dialog appears as shown below, uninstall Loader from the setup icon "FRENIC Loader3_x V7xxx E with MM Setup."

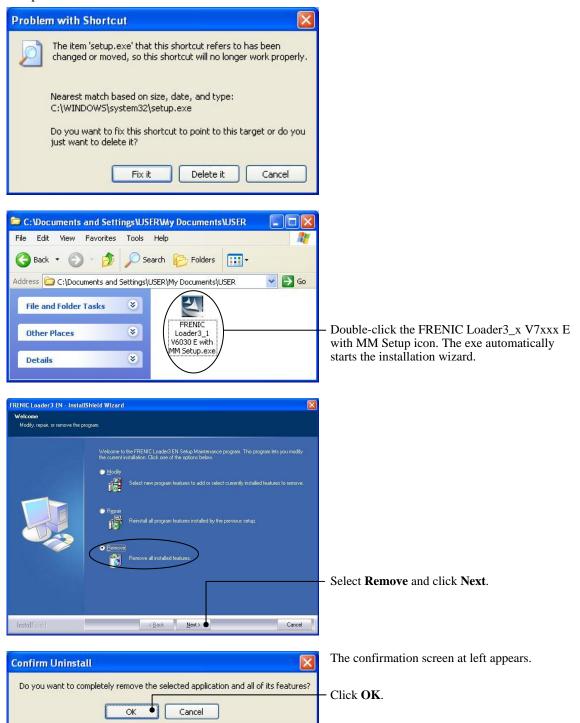


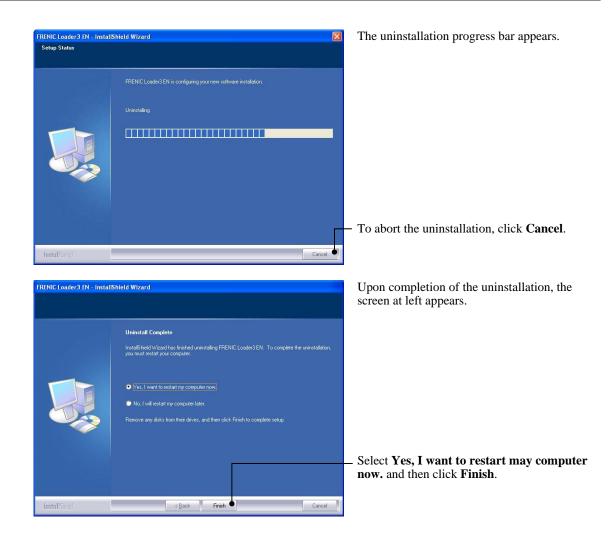
Windows Vista



[4] From Setup icon Windows XP/Windows 2000

If uninstalling from the Start menu cannot start and the Problem with Shortcut dialog appears as shown below, uninstall Loader from the setup icon "FRENIC Loader3_x V7xxx E with MM Setup.exe."





1.4 Configuring the Settings for Inverter(s) and Loader

This section describes the inverter and Loader settings to be configured before the use of Loader.

1.4.1 Configuring communication-related function codes in the inverter(s)

[1] Communication port 1

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	RS-485 Communication 1 (Station address)	1 to 255	1
y04	(Baud rate)	0: 2400 bps 1: 4800 bps 2: 9600 bps 3: 19200 bps 4: 38400 bps	3
y10	(Protocol)	0: Modbus RTU protocol <u>1: FRENIC Loader protocol (SX protocol)</u> 2: Fuji general-purpose inverter protocol	1

y01: Station address	Set the y01 data to the same value as the RS-485 No. setting made in Loader's Device connection list (see Section 1.4.3.2, [2]).
y04: Baud rate	Set the y04 data to the same value as the baud rate setting made in Loader's Communication Setting window (see Section 1.4.3.1, [2]).
y10: Protocol	Set the y10 data to "1" (FRENIC Loader protocol).

[2] Communication port 2

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
Y11	RS-485 Communication 1 (Station address)	1 to 255	1
Y14	(Baud rate)	0: 2400 bps 1: 4800 bps 2: 9600 bps 3: 19200 bps 4: 38400 bps	3
Y20	(Protocol)	0: Modbus RTU protocol 1: FRENIC Loader protocol (SX protocol) 2: Fuji general-purpose inverter protocol	0

y11: Station address Set the y11 data to the same value as the RS-485 No. setting made in Loader's Device connection list (see Section 1.4.3.2, [2]).

- y14: Baud rate Set the y14 data to the same value as the baud rate setting made in Loader's Communication Setting window (see Section 1.4.3.1, [2]).
- y20: Protocol Set the y20 data to "1" (FRENIC Loader protocol).

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.

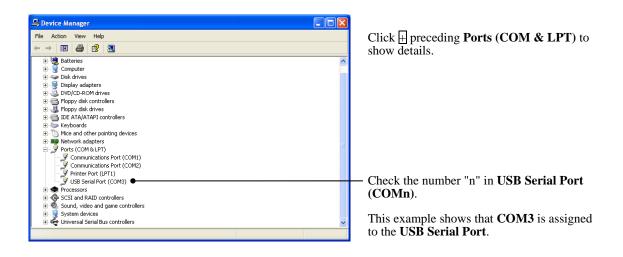
To use the USB interface, select a **USB-RS-485 converter** that functions as a virtual RS-232C communications port (COM). When a USB-RS-485 converter is connected, Windows automatically assigns a free COM port on the PC to the converter. To check the assignment, follow the procedure below.

Windows 7/Windows Vista

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

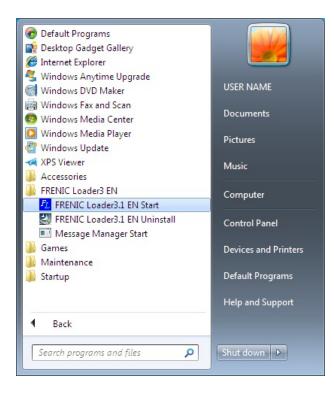
Windows XP/Windows 2000

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



1.4.3 Configuring Loader

When Loader has been installed on your PC, selecting **All Programs** | **FRENIC Loader3 EN** | **FRENIC Loader3.x EN Start** from the **Start** menu starts Loader.

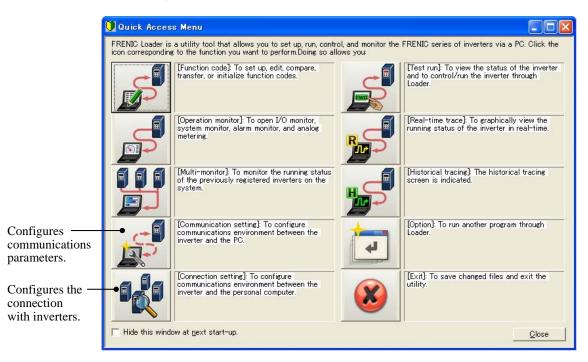


If Loader starts, the Quick Access Menu first appears as shown below.

This menu contains the 10 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. Set.**) and the interface with the inverter(s) (**Connect**).

Click either the **Com. Set.** or **Connect** icon to open the **Communication Setting** dialog or **Device connection list** window, respectively.



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.



Note • If USB: Data in keypad has been selected in the Communication Setting window (see Section 1.4.3.1), [Multi-monitor], [Real-time trace], or [Historical tracing] cannot be selected.

1.4.3.1 Configuring communications parameters

Clicking the **Com. Set.** icon in the left row of the **Quick Access Menu** calls up the **Communication Setting** window (shown below) which provides a choice of ports (USB and RS-485), target memory to access (inverter memory and keypad memory), and communications conditions.

The **Communication Setting** window can also be called up from the menu bar on the Loader top window (shown in Section 2.1) by selecting **Setup** | **Communication Setup**...

Targel USB:D)ata in Inverter	-	Connection list
USB			
C RS-485			ОК
Port	COM1	-	Cancel
Baud rate	19200 [bps]	-	
Flow control	RTS	-	
Retry times	1 time	•	
Timeout	1.5 [s]	•	

About "Target"

The inverter holds various data in its memory to control itself.

The keypad itself has also a memory that can be used to back up the data held in the inverter memory.

Loader can access data in both of the inverter memory and keypad memory as shown below.

The **Target** combo box provides a choice of three combinations of a port and target memory to access.

The following three combinations are provided in the **Target** combo box.

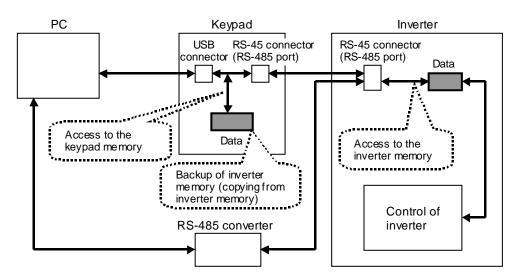
• USB: Data in inverter (FRENIC-MEGA/HF/Mini(C2S)/Ace only)

Selecting this combination uses the USB port and accesses function code, running status monitor, real-time trace, and other data to be used in the inverter memory.

• USB: Data in keypad (FRENIC-MEGA/HF/Mini(C2S) only) Selecting this combination uses the USB port and accesses function code, running status monitor, and other data held in the keypad memory.

• RS-485: Data in inverter

Selecting this combination uses the RS-485 port and accesses function code, running status monitor, real-time trace, and other data to be used in the inverter memory.



Ports and Target Memory to Access

[1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only)

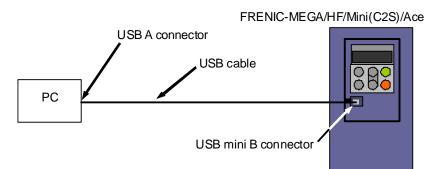
Target

Select the desired combination of the port and memory to access.



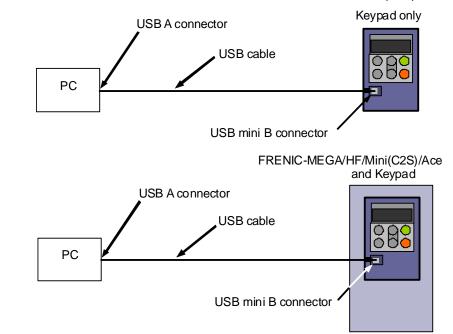
- USB: Data in inverter

Select this choice to connect the PC to the USB port and access data in the inverter memory.



- USB: Data in keypad

Select this choice to connect the PC to the USB port and access data in the keypad memory.



FRENIC-MEGA/HF/Mini(C2S)/Ace

Note

- Selecting USB: Data in keypad in the Communication Setting window disables [Multi-monitor], [Real-time trace], and [Historical tracing].
 - When dealing with data via USB connection by "Data in the Keypad", the firmware version of TP-E1U is required to be 1600 or later in FRENIC-Ace series.
 - To edit the function code relating to customizable logics, select [E2S Custom] button from "New" menu and open the editing window (Only available for FRENIC-Ace).

USB

Selecting "USB: Data in inverter" or "USB: Data in keypad" in the **Target** combo box automatically selects the USB radio button.

Communication	Setting		
Targel USB:[)ata in Inverter	•	Connection list
OSB			ОК
C RS-485-			
Port	COM1	Ŧ	Cancel
Baud rate	19200 [bps]	-	
Flow control	RTS	-	
Retry times	1 time	•	
Timeout	1.5 [s]	•	
Connected (check		

Retry times

Select the number of times for retry upon failure of a transmission. If a large number is selected, the feasibility of successful transmission may be high.

Note that, however, it may take a long time to show failure of the transmission after retrying.

The recommended setting is one or more.

Timeout

If Loader receives no response from the inverter within the time specified in this box, the communications error dialog automatically opens.

The shorter the timeout setting, the faster the dialog will open. Setting a too short timeout, however, may result in a false transmission error due to the long internal processing time of the inverter although the transmission itself is successful.

The recommended setting is 1.5 seconds.

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

Port Baud rate Flow control

When **USB** is selected, these settings are invalid.

Connected check

This feature always monitors the communications status between Loader and inverter(s) registered by the Device connection list and displays the status on the status bar of the Loader top window.

Select the check box to enable this feature.

If Loader cannot communicate with the registered inverter due to a wire break, for example, the response time becomes very long.

[2] For connection to RS-485 port

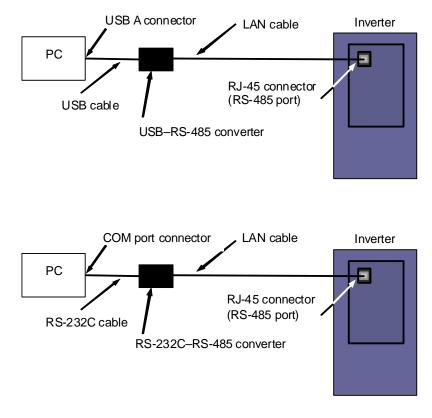
Target

Select the desired combination of the port and memory to access.



- RS-485: Data in inverter

Select this choice to use the RJ-45 connector (RS-485 port) on the inverter via an RS-232C–RS-485 or USB–RS-485 converter and access data in the inverter memory.



Note To connect the PC to the RJ-45 connector (RS-485 port) on the inverter, remove the keypad from the inverter.

■ RS-485

Selecting "RS-485: Data in inverter" in the **Target** combo box automatically selects the RS-485 radio button.

Communication	Setting		
Iargel RS485	i:Data in Inverter	•	Connection list
Port Baud rate Flow control	COM1 19200 (bps) RTS	•	Cancel
<u>R</u> etry times Time <u>o</u> ut	1 time 1.5 [s] sheck	•	

Retry times

Select the number of times for retry upon failure of a transmission. If a large number is selected, the feasibility of successful transmission may be high.

Note that, however, it may take a long time to show failure of the transmission after retrying.

The recommended setting is one or more.

Timeout

If Loader receives no response from the inverter within the time specified in this box, the communications error dialog automatically opens.

The shorter the timeout setting, the faster the dialog will open. Setting a too short timeout, however, may result in a false transmission error due to the long internal processing time of the inverter although the transmission itself is successful.

If Loader is managing a single inverter, the recommended setting is 1.5 seconds; if it is managing two or more inverters, the setting is "1.5 x number of inverters."

Port

Select the PC's COM port to which the RS-232C–RS-485 converter is connected. (See Section 1.4.2 "Checking the COM port on the PC.")

Baud rate

The rate should be identical to that of the inverter. The recommended rate is 19200 bps. If the transmission between the PC and inverter is erratic due to noise or other factors, however, you will need to slow down the rate.

Flow control

As Loader does not support flow control, no setting is required. Flow control refers to a system using the RS-232C hardware control signal to switch send/receive of RS-485 signals. Refer to Section 1.2.3.3, "[1] Communications level converters" for details.

Connected check

This feature always monitors the communications status between Loader and inverter(s) registered by the Device connection list and displays the status on the status bar of the Loader top window.

Select the check box to enable this feature.

If Loader cannot communicate with any one of registered inverters due to a wire break, for example, the response time becomes very long. If it happens, remove such an inverter from the Device connection list, referring to Section 1.4.3.2.

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

1.4.3.2 Configuring connection settings

Clicking the **Connect** icon in the left row of the **Quick Access Menu** calls up the **Device connection list** window (shown below) which provides information on equipment (such as inverters and keypad) available.

The **Device connection list** window can also be called up from the menu bar on the Loader top window (shown in Section 2.1) by selecting **Setup** | **Connection Setup...**.

[1] For connection to USB port (FRENIC-MEGA/HF/Mini(C2S)/Ace only)

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 No. (station address) are correct, click the **Browse** button to monitor the current communications link status. If they are not correct, double-click the row (or use the **Advance...** button) to call up the **Advanced** dialog shown below and modify the contents.

)evice c	onnection lis	t	
No.	Status	Equipment name	RS485 No.
1	Unknown	INV1	1

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.

1

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

Note The **RS-485** No. (station address) should be the same as the data of function code y01.

When "USB: Data in keypad" is selected

Only a single line appears as shown below. After making sure that the equipment name and KP No. are correct, click the **Browse** button to monitor the current communications link status. If they are not correct, double-click the row (or use the **Advance...** button) to call up the **Advanced** dialog shown below and modify the contents.

D	evice c	onnection lis	t		\mathbf{X}
	No.	Status	Equipment name	KP No.	
	1	Unknown	KP1	1	
	Brow	se	OK Cance	Advance	

Browse

Clicking this button checks whether a link between Loader and the keypad 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.

dvanced		×
Select Keypad No.	No.1	
Equipment name	KP1	
KP No.	1	
0	K Cancel	

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

Note The **KP No.** should be set to "1." Do not specify any other number.

[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.

D	evice co	nnection list			×
	No.	Status	Equipment name	RS485 addre 🔨	j
	✓ 1	Unknown	INV1	1	
	✓ 2	Unknown	INV2	2	
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13			~	
	<		III	>	
	Browse	e Delete	OK Cance	Advance	

No. Status Equipment name RS485 addre Image: Connecting INV1 1 Image: Connected INV2 2 3 Image: Connected INV2

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.

The following buttons allow you to perform advanced settings.

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**.

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

Advanced	
Select inverter No.	No.1
Equipment name	INV1
RS485 address	1 .
ОК	Cancel

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

1.4.3.3 Communication log file

Communication log file "SLOADER.TXT" is stored in the loader installed folder.

File Edit View Favorite	s Tools	Help			
🕞 Back 🝷 🕥 🕤 💋	5 🔎 Se	earch 😥 Folders 🛄 🕇			
ddress 🛅 C:\Program Files	Fuji Electric	:\FRN_Loader EN			🗸 🔁 Go
-		Name 🔺	Size	Туре	Date Mo
File and Folder Tasks	۲	🖬 SIM.DAT	51 KB	DAT File	10/23/20
		SLOADER.TXT	8 KB	Text Document	10/23/20
Other Places	8	TargetFunc.INI	1 KB	Configuration Settings	10/23/20
		🔊 XCommMg. dll	68 KB	Application Extension	10/23/20
Details	۲	🖬 XINV.CON	1 KB	CON File	10/23/20
Decails	Ŭ	💁 XLoader.INI	9 KB	Configuration Settings	10/23/20
		🔊 Xoncapi.dll	124 KB	Application Extension	10/23/20

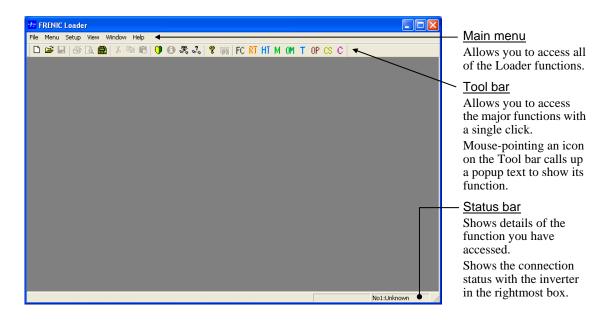
Chapter 2

Functions of FRENIC Loader

This chapter contains descriptions of typical functions of FRENIC Loader 3.x.

2.1 Top Window of FRENIC Loader 3.x

When Loader starts, first the top window shown below appears which normally contains **Quick Access Menu** (shown on page 1-23). (In the example below, the **Quick Access Menu** is omitted.)



<u>Main menu</u>

The main menu contains six commands. File, Menu, Setup, View and Help are active even if there is nothing displayed in the window. Window will be active only when any window is opened. These commands except Setup are detailed in Sections 2.2 through 2.6. For details about Setup, see Sections 1.4.3.1 and 1.4.3.2.

<u>Tool bar</u>

Using the tool bar easily accesses frequently used functions. To open a function code file stored in the PC from the toolbar, for example, just click the \cong icon, while two actions--Menu | Open--are required to open the file from the main menu.

Status bar

The status bar shows the running status of Loader at all times. Also, to find out what an icon or menu means, simply place the mouse cursor over it and a text explaining it will pop up in the left part of the status bar.

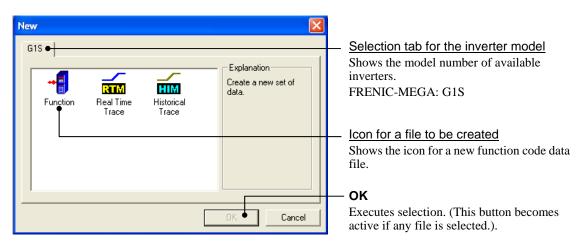
When **Connected check** (shown in Section 1.4.3) is selected, the box at the right end of the status bar shows the connection status with inverters at all times.

2.2 File

This section describes main commands contained in the File menu.

2.2.1 New

Creates a new file of function code data.



Selecting File | New opens a function code data file that Loader has by default, in the function code edit list format. You can edit the function code data even if the communications link between Loader and inverter is not established.

2.2.2 Open

Reads out the selected one of the existing data files (e.g., function code data, real-time trace data, historical trace data) saved in the PC and opens the edit window.

<mark>v</mark> Open			—	
Look in: 🚺 Documents	• •	টি 📩 률+		Look in
Name	Date modified	Туре	Size	Selects folder location of the file.
Function1.FNB	5/31/2013 2:22 PM	FNB File	271 KB	— File name
E Function1.FNC	5/31/2013 2:22 PM	FNC File	81 KB	Shows the name of selected file. You c
Historical trace.HIM	5/31/2013 2:29 PM	HIM File	10 KB	also type a new file name.
Real time trace.RTM	5/31/2013 2:29 PM	RTM File	2 KB	also type a new me name.
				— Open
				Opens the file selected.
ile name:	ė.		Open •	1 A A A A A A A A A A A A A A A A A A A
iles of type: All PC loader files			Cancel	 Files of type
All PC loader files		• <u> </u>		Selects the file type (extension). To she
			The second se	all the files, select All PC loader files.

File extensions

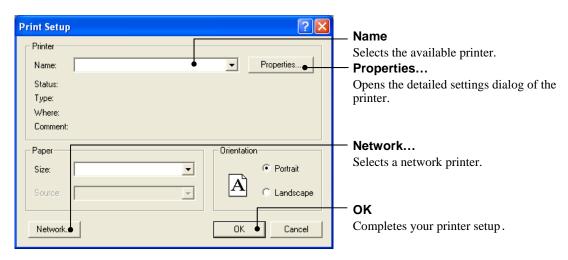
- Function code data file (Customized logic) *.FNB:
- Function code data file *.FNC:
- Historical trace data file *.HIM:
- *.RTM: Real-time trace data file



Note Do not select the connection setting item "USB:Data in Keypad" at reading the trace data (HIM / RTM) file.

2.2.3 Print setup

Specifies the available printer, paper size, print orientation and other features needed to print the data.



2.2.4 Exit

Exits Loader.

2.3 Menu

This menu provides the following commands:

- Trace (Section 2.3.5)
- Multi-monitor (Section 2.3.3)
- Operation monitor (Section 2.3.2)
- Function code setting (Section 2.3.1)
- Test-run (Section 2.3.4)
- Quick access menu (Section 2.3.6)
- Options (Section 2.3.7)

2.3.1 Function code setting

Selecting **Menu** | **Function code setting** calls up the **Editing data** window (shown below) where you select the target data--New file, File saved in the PC, or File configured in the inverter.

Selecting the target data and clicking **OK** opens the target function code data file that has the four tabs--**Function code edit**, **Auto-tuning**, **Comparison**, and **File Information** as shown on the next page.

Editing data	
Data editing selection:	New Creates a new function code data file.
C New Property Files Model G1S	 Property Files Select Property File corresponding to inverter ROM version when creating a new function code data file.
Read from the file Read from the INV Function code property	• Model Specifies the series or type of inverter when New is selected.
Select inverter No. 1[1] INV1	Read from the file Opens a function code data file saved in the PC.
OK Cancel	Function code property Selects the function code group(s) to be read from the inverter.
Read from the INV Reads the function code data configured in the inverter.	Select inverter Selects the inverter from which the function code data should be read.

Selecting **New** in the above window opens a function code data file that Loader has by default, in the function code edit list format. You can edit the function code data even if the communications link between Loader and inverter is not established.

Note

To edit the function code relating to customizable logics, select [E2S Custom] button from "New" menu and open the editing window.

2.3.1.1 Function code edit

In the **Function code edit** window showing the function code data, its setting range, and other attributes, you can edit the function codes. Descriptions for button and combo-box functions in the window are given below.

Change from fa		Lists function codes by Lists function codes wh factory defaults. (Excep	ose data has been char				
Contents of cl	hange (in red):	Lists edited function co			<i>,</i>)		
Code for co	ommunication: parison result:	inverter. Lists function codes de Lists function codes use Lists only comparison r stored in the inverter or Lists only search result	ed for communication. results with function co saved in Loader.	odes	Selec data l drop-	ng value et function listed in the down men dit window	e nu in
-Function1							
Function code edit Auto	tuning Comparison File	Information					
E Function	Change Function co	ode No. Function code name	Setting value Range of setting	Factory setting	yalue Data	cannot change in	opi
E Code group	F00		0 0 to 3		0	Enable	
- Fcode	* F01		1 : Voltag 💌 0 to 12		0	Disable	
- Ecode	* F02		0 : Up or Down keys on keypad				
- Ccode	F03		1 : Voltage input to Terminal [12] (-1	0 to +10V DC)			
- Pcode	F04	the second se	2 : Current inputto Terminal [C1] (4 t		The second second	and the second second	
- Hcode	F05		3 : Sum of voltage and current input			21 function)	
- Acode - bcode	F06		5 : Voltage input to terminal [C1] (V2		10 VDC)		
- rcode	F07		7 : Terminal command UP / DOWN 8 : Up or Down keys on keypad	control			
Jcode	F08		11 :DI option card				
- dcode	F09		12 : PG/SY card				
ycode	F10				1	Enable	_
- Change (Factory	F10				2 30	Enable	
- Contents of char	F12				1.11		×
🖃 User definition							
- User definitio			F01: Frequency command 1			1	
- User definitio			Establishment range: 0 to 12	1			
User definitio	12		0 : Up or Down keys on keypad				
E Code for commu	110		1 : Voltage input to Terminal [12]				
- M code	F20						
- W code	F21		3 : Sum of voltage and current in function)	puts to termina	is [12] and [C	alter	
-X code	F22		5 : Voltage input to terminal [C1]	(V2 function) (-	10 to 10 VDC)	6	
Z code	F23		7 : Terminal command UP / DOW		,	10	
- Comparison resu	ll F24	Starting frequency 1 (Holding time	8 : Up or Down keys on keypad				
Search result	F25	Stop frequency	11 :DI option card				
	* F26		12 : PG/SY card				
	F97	Motor sound (Tone)	P	-			>
		111					
BEAD WRITE	F01 0 Fac	tory set Func. code set Func. code info	Initialaization Advanced Print	1			
IICAD WIIIIC		logiy ser Tighe, code set Tighe, code mio		1			
				Se <u>l</u> ect invert	er No. 1[1	1] INV1 💽	<u>C</u> lose
	READ.	.: Reads the data from	the inverter selected in) Select ii	verter		
	WRITE	: Writes data saved in	Loader into the invert	er selecte	d in Sel e	ect	
		inverter.					
	Factory se	et: Reverts the data of the	he selected function co	ode to the	factory		
	•	default.			-		
_	_						
Fun	c. code set	Shows the data of th	e selected function coo	le in the e	dit wind	low.	
F	ande lafe						
Func	. code info.	Shows information of the second se	of the selected function	n code in t	ne wind	.ow.	
Ir	nitialization.	· Initializes all function	on code data in the inve	artar calas	tod at C	alact	
		initianizes an ranetto	in coue uata ili ule ilive	selec	icu at S		
		inverter.					
	Advanced.	· Colle up the Advene	ad aatting dialog for D	icplay ita	-		
	Auvaliceu.		ed setting dialog for D		ms,		
		Function code attri	bute, and Print settin	g			
	Drint			0	1 1 0		
	Print.	Prints function codes	s selected in the hierarc	eny tree in	the left	pane.	
					a 1		
			Select inv	verter:		he inverter	
					which th	he data is t	o be
					sent.		
				. .	Sent.		

	sent.
Close:	Closes the Function
	code edit window.

[1] Reading function code data stored in the inverter

To read out function code data from an inverter first time after Loader starts

In the Editing data dialog (shown below) called up by selecting Menu | Function code setting, select Read from the INV and click OK.

Editing data	
Data editing selection:	
C New	Property Files
Model	G1S 🔽
C Read from the file.	
Read from the INV	Function code property
Select inverter	No. 1[1] INV1
ОК	Cancel

To update the function code data already read from the inverter

Click the **READ...** button at the bottom of the **Function code edit** window to call up the dialog below. Clicking **OK** starts reading the function code data from the inverter.

Read out function code data	×
Do you want to read out function code data from the inverter?	
✓ Read also function code attributes.	
OK Cancel	



Note Data reading command is not accepted when the selected inverter model is different from the target model.

To read out the function code together with its attribute

If you place the \checkmark mark in the head-box of **Read also function code attributes** in the dialog above, Loader reads the function code data altogether its default setting, minimum value, maximum value and other attributes from the inverter.

To specify what is the function code group you want to read the function code attributes, first call up the **Advanced...** dialog shown below by clicking **Advanced...** at the bottom of the **Function code edit** window. Then click **Func. code attributes...** in the dialog to open the **Function code property** dialog.

Place the \checkmark mark(s) in the head-box(es) of the function code(s) you want to read the code(s) with its attribute(s). To do so for all function codes, place the \checkmark mark in the head-box of **All function codes**.

	dvanced					
*	in an					
	Select		Select the items to be displayed on the editing list.			
Func. code attributes		ributes	Select the function code group from which data (default, maximum, minimum, etc) is to be read.			
	Printer setup		Set printer parameters for easy printing.			
	Close					
		Select th function	E			
			OK Cancel			

[2] Changing the function code data

The function code data change procedure differs depending upon the property of function codes, as shown below.

(1) For function codes whose data is a numeric value such as frequency, time, or voltage, double-click the Range of setting column of the listed function code. The Range of setting dialog will appear. Enter a numeric value directly or select it by clicking the list box handles in the dialog.



(2) For function codes whose data specifies the inverter function -- for example, F00 (1: Protect data)/01 (1: Frequency setting by voltage input)/02 (0: Run/stop by keypad), click the Setting value column of the listed function code. A combo-box will appear. Click ▼ to show the data you can select in the dropdown menu.

Setting value	Range of setting	Factory setting value	Data cannot change i			
0	0 to 3	0	Enable			
1 : Voltag 💌	0 to 12	0	Disable			
0 : Up or Dow	n keys on keypad					
1 : Voltage in	out to Terminal [12] (-10	to +10V DC)				
2 : Current in	2 : Current inputto Terminal [C1] (4 to 20mA DC)					
	3 : Sum of voltage and current inputs to terminals [12] and [C1] (C1 function)					
5 : Voltage in	5 : Voltage input to terminal [C1] (V2 function) (-10 to 10 VDC)					
7 : Terminal c	7 : Terminal command UP / DOWN control					
8: Up or Dow	8 : Up or Down keys on keypad					
11 :DI option	card					
12 : PG/SY ca	rd					

(3) In the **Function code edit** window, clicking the **Func. Code info.** button or double-clicking the function code name on the function code row calls up a popup text below, which gives you more detail information of the function code. Furthermore, just clicking another row switches contents of the text for the new function code while this text is shown.

Function code information	X
F01: Frequency command 1	^
Establishment range: 0 to 12	٦
0 : Up or Down keys on keypad	
1 : Voltage input to Terminal [12] (-10 to +10V DC)	
2 : Current inputto Terminal [C1] (4 to 20mA DC)	
3 : Sum of voltage and current inputs to terminals [12] and [C1] (C1 function)	
5 : Voltage input to terminal [C1] (V2 function) (-10 to 10 VDC)	
7 : Terminal command UP / DOWN control	
8 : Up or Down keys on keypad	
11 :DI option card	
12 : PG/SY card	
	<u> </u>

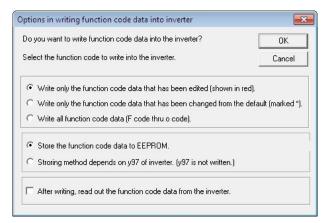


Selected data that has not been written into the inverter is shown in red on the list.

Note If the selected data differs from the factory default, it will be marked with an asterisk (*) in the first column of the list.

[3] Writing function code data into the inverter from Loader

Click the **WRITE...** button at the bottom of the **Function code edit** window to call up the following window. Follow the instructions on the window.





Data writing command is not accepted when the selected inverter model is different from the target model.

Note Function code data not written into the inverter successfully is displayed in pink. The possible causes of the failure are listed below.

- Attempting to write to function codes not allowed to be changed during running
- Attempting to write to read-only function codes
- Attempting to write to function codes that cannot be written via the communications link
- Editing via the communications link not allowed (e.g., writing S codes when H30 = 0)
- Note In case 'Store the function code data to EEPROM', after writing function code data , the settings are stored to EEPROM in the inverter. At the condition that y97 is written , y97 setting is also stored in EEPROM.
 - In case 'Storing method depends on y97 of inverter', after writing function code data, it is determined depending on y97 of inverter whether store the data to EEPROM. Regardless of the writing method, y97 setting is not written.
 - At the model in which y97 does not exist, the function code data settings are stored to EEPROM.

[4] Notes in writing function code data into inverters whose rated power inputs or capacities are different from each other

Note It is impossible for the inverters whose rated power inputs are different each other to write the identical data of function code with the data-copy attribute of "1." Further, also impossible for the inverters whose rated power inputs or capacities are different each other to write the identical data of function code with the data-copy attribute is "2."

For function codes with the data-copy attribute is "0" the identical data set is written into any inverters unconditionally.

Data copy attributes

Numeric in Data Copy column	Description
0	Writes the copied data into the inverter unconditionally.
1	Does not write the data into the inverter whose rated input differs from original one's.
2	Does not write the data into the inverter whose rated input or rated capacity differs from original one's.

Example:

Change	Function code No.	Function code name	Setting value	Data Copy
	F00	Data protection	0	0
	F01	Frequency command 1	0	0
	F02	Operation method	2	0
	F03	Maximum frequency 1	60.0	0
	F04	Base frequency 1	50.0	0
	F05	Rated voltage at base freqency 1	200	1
	F06	Maximum output voltage 1	200	1
	F07	Acceleration time 1	6.00	0
	F08	Deceleration time 1	6.00	0
	F09	Torque boost 1	4.9	0
	F10	Electronic thermal overload protec	1	0
	F11	Electronic thermal overload protec	22.50	2
	F12	Electronic thermal overload protec	5.0	0

[5] Saving function code data into the PC

To save the function code data listed in the Loader window or dialog into the PC's file, select **File** | **Save** or **File** | **Save As...**



At the time of first data saving, even selecting **File** | **Save** calls up the **Save As...** dialog shown below. Select a folder in the **Save In** box and type a filename in the **File name** box, and then click the **Save** button.

Save As	? 🛛
Save in: 🗀 DATA	
File name: Function1	Save
Save as type: Function Data (*.	FNC) Cancel

In addition to the folder selection and filename entry as above, in order to change the file type (filename extension), click the arrow next to **Save as type** to show the pull-down list, then click the desired type as shown below.

Save As			? 🛛
Save in: 🔯	DATA	• 🔁 🔹	* 📰 •
File name:	Function1		Save
Save as type:	Function Data (*.FNC)	-	Cancel
	Function Data (*.FNC)	_	/
	CSV format(*.CSV) All files		

- *.FNC: File format exclusive to Loader. This can be opened only by the general-purpose inverter loader.
- *.CSV: Comma-separated values format. This can be opened by Microsoft Excel and others, but cannot be opened by the general-purpose inverter loader.

[6] Initializing the function code data stored in the inverter

To initialize the function code data stored in the inverter currently selected, click the **Initialization...** button at the bottom of the **Function code edit** window. The **Function code initialization** dialog appears as shown below. Click \checkmark in the Function code combo box, select the target code, and click **OK**.

Refer to manual for details.

r'ou are about to	initialize function code data in the inverter.
Select the function	on code to be initialized.
Function code	H03=1 Initialization (factory setting value)
	H03=1 Initialization (factory setting value)
	H03=2 Initialization of motor parameter
	H03=3 Initialization of the second motor parameter
	H03=4 Initialization of the third motor parameter
	H03=4 Initialization of the third motor parameter H03=5 Initialization of the fourth motor parameter H03=11 Initialization except communication codes

Select	То
H03 = 1 Initialization (factory setting value)	Initialize all function codes to factory defaults.
H03 = 2 Initialization of motor 1 parameters	Initialize P codes to factory defaults, except P02 (Rated capacity) and P99 (Motor 1 selection).
H03 = 3 Initialization of motor 2 parameters	Initialize A codes to factory defaults, except A16 (Rated capacity) and A39 (Motor 2 selection).
H03 = 4 Initialization of motor 3 parameters	Initialize b codes to factory defaults, except b16 (Rated capacity) and b39 (Motor 3 selection).
H03 = 5 Initialization of motor 4 parameters	Initialize r codes to factory defaults, except r16 (Rated capacity) and r39 (Motor 4 selection).
H03 =11 Initialization except communication codes	Limited initialization (initialization other than communications function codes): Communication can be continued after initialization. (Only Ace)
H03 =12 Initialization of Customizable logic	Limited initialization (initialization of customizable logic function U codes only) (Only Ace)

[7] Printing the function code data list

Click **Function** or **Code group** in the hierarchy tree in the left pane of the **Function code edit** window to show function code/code group of F, E, C,

To print a function code list, select **File** | **Print...** in the main menu of Loader top window or click the **Print** button at the bottom of the **Function code edit** window. The **Print** dialog shown below appears.

? ×

÷

Cancel

Properties...

Print to file

1

Copies

Number of copies

0K

Specify the printer to use, the print range ar	ıd
the number of copies, and then click OK .	

To check or reconfigure the printer shown in the **Name** combo box, click **Properties...**.

To quick-print

Print Printer

Name

Status:

Type: Where:

Comment

Print range

🖲 All

C

MS Publisher Color Pr

MS Publisher Color Printer

to:

Ready

LPT1:

Pages from: 1

To print only the function codes (F. No.) and their setting data out of the items listed in the **Function** code edit window, click the **Advance...** button at the bottom of the window to call up the **Advanced...** dialog shown below.

Advanced		×
Select	Select the items to be displayed on the editing list.	
Func. code attributes	Select the function code group from which data (default, maximum, minimum, etc) is to be read.	
Printer setup	Set printer parameters for easy printing.	
Close		

Click **Printer setup...** to call up the **Print setting** window shown below.

olified way
Cancel

In the window shown above, place the \checkmark mark at **Prints in simplified way** and click **OK**. Note that this action only specifies a print format and does not start printing.

Print preview

To preview what to print before actual printing, select File | Print preview in the Loader main menu.

[8] Displaying user-selected function codes only (User definition)

In the **Function code edit** window, select the desired function code and right-click on it to show the user definition menu as shown below. Left-click on the desired user definition group (1, 2, or 3), and the function code is registered as an item of the selected user-definition group.

Function	Change	Function code No.	Function code name	Setting value Range of	setting	Factory setting value	Data cannot change in ope
E Code group		F00	Data protection	0 0 to 3			Enable
- Fcode	*	F01	Frequency command 1	Initialization value		0	Disable
Ecode	*	F02	Operation method -	Thiualization value		2	Disable
Ccode Pcode		F03	Maximum frequency 1	User definition 1	0 Hz	60.0	Disable
- Pcode		F04	Base frequency 1	User definition 2	0 Hz	50.0	Disable
- Acode	-	F05	Rated voltage at base fregency 1	User definition 3	0 V ; 160 to	200	Disable
- bcode		F06	Maximum output voltage 1	User definition release	: 160 to 50	200	Disable
rcode		F07	Acceleration time 1	6.00 0.00 to 6(100 s	6.00	Enable
Jcode		F08	Deceleration time 1	6.00 0.00 to 6		6.00	Enable
- dcode		F09	Torque boost 1	7.1 0.0 to 20.		7.1	Enable
- ycode		F10	Electronic thermal overload protect			1	Enable
- Change (Factory		F11	Electronic thermal overload protect		1 to 2000 A	2.30	Enable
Contents of chan		F12	Electronic thermal overload protect			5.0	Enable
User definition		F14	Restart mode after momentary po			1	Enable
User definition		F15	Frequency limiter (High)	70.0 0.0 to 50(10Hz	70.0	Enable
User definition		F16	Frequency limiter (Low)	0.0 0.0 to 50(1 0 Hz	0.0	Enable
- Code for commun	-	F18	Bias (Frequency command 1)	0.00 -100.00 t		0.00	Enable
- S code	-	F20	DC Braking 1 (Braking starting fre			0.0	Enable
- M code		F21	DC Braking 1 (Braking level)	0 0 to 1009		0	Enable
- W code		F22	DC Braking 1 (Braking time)	0.00 0.00 ; 0.0		0.00	Enable
-X code		F23	Starting frequency 1	0.5 0.0 to 60.		0.5	Enable
Z code Comparison result		F24	Starting frequency 1 (Holding time			0.00	Enable
Search result		F25	Stop frequency	0.2 0.0 to 60.		0.2	Enable
Sedicificada	*	F26	Motor sound (Carrier frequency)	16 0 to 16	0112	2	Enable
		F 27	Motor sound (Tone)	0 0 to 3		0	Enable
	<						>

In the hierarchy tree in the left pane of the **Function code edit** window, click any of **User definition 1** to **3**, and the function codes that have been registered appear.

Function	Change	Function code No.	Function code name	Setting value	Range of setting	Factory setting value	Data cannot change in ope
😑 Code group	*	F01	Frequency command 1	1	0 to 12	0	Disable
Fcode		F07	Acceleration time 1	6.00	0.00 to 6000 s	6.00	Enable
- Ecode - Ccode	*	F26	Motor sound (Carrier frequency)	16	0 to 16	2	Enable
- Pcode		E01	Terminal [X1] Function	0	0 to 77 (1000 to 1077)	0	Disable
Hcode	*	C05	Multi-Frequency 1	10.00	0.00 to 500.00 Hz	0.00	Enable
Acode		H09	Starting Mode (Auto search)	0	0 to 2	0	Disable
- dcode - ycode - Change (Factory - Contents of chan - User definition							
ycode Change (Factory Contents of chan							

To deregister a function code from a user definition group (1, 2, or 3), select the target function code and right-click on it to show the user definition menu as shown below. Left-click on the **User definition release**, and the function code is deregistered from the function code group.

∃ Function	Change	Function code No.	Function code name	Setting value Range	of setting	Factory setting value	Data cannot change in oper
E Code group	*	F01	Frequency command 1	Initialization value	1	0) Disable
- Fcode - Ecode		F07	Acceleration time 1		— 00 s	6.00) Enable
- Ccode	*	F26	Motor sound (Carrier frequency	User definition 1		2	2 Enable
Pcode		E01	Terminal [X1] Function	User definition 2	000 to 1077)	0) Disable
Hcode	*	C05	Multi-Frequency 1	User definition 3	0.00 Hz	0.00) Enable
Acode		H09	Starting Mode (Auto search)	User definition release		0) Disable
ycode Change (Factory 							
Change (Factory Contents of chan User definition User definition User definition User definition Gode for commun S code M code X code X code Z code Comparison result	<						

[9] Searching for a character string in function code names

When the **Function code edit** window is displayed, select **Edit** | **Search** from the main menu. The **Search** dialog shown below appears.

Search	X
Input the character string to search.	
Current Motor	
← AND ← OR ← Capital letter/small letter is distinguished.	OK Cancel
The delimiter uses half angle space. Please enclose it with a double quotation when you retriev half angle space.	e it including

In the **Input the character string to search** box, enter a string (keyword) you want to search for, e.g., frequency, current, and voltage. In the example shown at the left, "current" is entered. Then click **OK**.

If function codes including the keyword are found, Loader automatically switches to **Search result** in the hierarchy tree in the left pane and lists function codes whose names contain the keyword in the right pane.

unction1 Search		e l			
E- Code group	ning Comparison File Inform		Setting value	Range of setting	Factory setting value Data ca
Fcode	P03	Motor 1 (Rated current)	-	0.00 to 2000 A	22.50
Ecode	P06	Motor 1 (No-load current)		0.00 to 2000 A	11.00
Ccode	P55	Motor 1 (Torque current under vec		0.00 to 2000 A	18.68
- Pcode	H80	Output Current Fluctuation Dampi		0.00 to 0.40	0,20
Hcode	A17	Motor 2 (Rated current)		0.00 to 2000 A	22.50
Acode	A20	Motor 2 (No-load current)		0.00 to 2000 A	11.00
bcode rcode	A41	Output Current Fluctuation Dampi		0.00 to 0.40	0.20
Jcode	A55	Motor 1 (Torque current under vec		0.00 to 2000	18.68
dcode	b17	Motor 3 (Rated current)		0.00 to 2000 A	22.50
ycode	b17	Motor 3 (No-load current)		0.00 to 2000 A	11.00
ocode	b20	Output Current Fluctuation Dampi		0.00 to 0.40	0.20
- Change (Facto	b55	Motor 3 (Torque current under vec		0.00 to 2000	18.68
- Contents of ch	r17	Motor 4 (Rated current)		0.00 to 2000 A	22.50
User definition	r20	Motor 4 (No-load current)		0.00 to 2000 A	11.00
	r41	Output Current Fluctuation Dampi		0.00 to 0.40	0.20
User defini	r55	Motor 4 (Torque current under vec		0.00 to 2000	18.68
Code for comm	155	Motor 4 (Torque current under vec	10.00	0.00102000	10.00
S code M code X code Z code Comparison rec Search result MRILE		set <u>Fu</u> nc. code set <u>Func</u> . code info.	. Initialaization.		

Note

Target fields for search include all items such as Change, Function code No., Function code name, Range of setting, etc. They also include items hidden by Advanced | Display items.
The content of Func. code info... are not included in target fields for search.

2.3.1.2 Auto-tuning

Selecting the Auto-tuning tab displays the window shown below.

Auto-tuning automatically measures motor parameters for motors 1 to 4 and saves them as data of the corresponding function codes, using function codes P04 (Motor 1, Auto-tuning), A18 (Motor 2, Auto-tuning), b18 (Motor 3, Auto-tuning), and r18 (Motor 4, Auto-tuning).

Selecting Motor Select any of motors M1 to M4 whose parameters are to be auto-tuned. (See below for details.)	Selecting motor t Select the motor auto-tuned.		- /	 Processing status This shows the current status of auto-tuning in progress.
Function code edit Auto-tuning Comparison File Information				
Matar tuning (Select)	Tuned results			
1 : Tune while the motor stops.	Function name	Before After		
	P06 No-load current	1,66	1.66	
Motor Now doing:	P07 %R1	10.20	8.31	
	P08 %X	13.66	13.95	
M1 b 🔄 Tuning end	P12 Rated slip	2.40	2.36	
Note	P13 Iron loss factor 1	9.88	9.88	
Operating procedure	P14 Iron loss factor 2	0.00	0.00	
1. Select the inverter to be tuned. 2. Specify tuning operation.	P15 Iron loss factor 3	0.00	0.00	
3. Select the rotation direction of the motor.	P16 Magnetic saturation factor 1	88.7	88.7	- Motor parameters
(Tuning will not start unless any run command is input to the inverter.)	P17 Magnetic saturation factor 2	81.3	81.3	This shares the
Upon completion, the result of tuning will be displayed.	P18 Magnetic saturation factor 3	67.0	67.0	This shows the
	P19 Magnetic saturation factor 4	55.2	55.2	motor parameters
	P20 Magnetic saturation factor 5	43.8	43.8	A
Betation direction Motor parameter	P21 Magnetic saturation factor a	112.1	112.1	stored in the target
C Local command Wumber of motor poles 4 poles	P22 Magnetic saturation factor b	126.5	126.5	inverter.
	P23 Magnetic saturation factor c	144.3	144.3	
Fw/D (Loader) Motor capacity 0.40 kW	P53 %X correction factor 1	100	136	
C REV (Loader) Motor rated current 2.30 A	P54 %X correction factor 2	100	300	
Monou select 0				
Output frequency Auto-tuning				
(0.00 Hz) START				- Auto-tuning control
				Start the auto-tuning
\\				
	Select	inverter No. 1[1] INV1	● <u>C</u> lose	
Output frequency <u>Rotation direction</u>	on	Sele	t inverter	
			•	
	ion direction of the mo		U	t inverter to auto-tune
output frequency of the (See below for	details.)	the	motor.	

Motor tuning (Select) of FRENIC-MEGA is shown below. Other than FRENIC-MEGA, please refer to User Manual of the inverter.

Motor tuning (Select)

0: Disable

inverter.

- 1: Tune while the motor stops (Tune %R1, %X, and rated slip frequency.)
- 2: Tune while the motor is rotating under V/f control (Tune %R1, %X, rated slip frequency, no-load current, magnetic saturation factors 1 to 5, and magnetic saturation extension factors "a" to "c.")
- 3: Tune while the motor is rotating under vector control (Tune %R1, %X, rated slip frequency, no-load current, magnetic saturation factors 1 to 5, and magnetic saturation extension factors "a" to "c." Available only when the vector control is enabled.)

Rotation direction

Local command: Follow the external terminal command FWD or REV. (Available only when F02 = 1 (External digital signal input).)

FWD (Loader):Run the motor forward. (Available only when Loader can run the inverter.)REV (Loader):Run the motor reverse. (Available only when Loader can run the inverter.)

- Note Selecting FWD or REV forces you to choose "2" or "3" for the frequency/run command in Test-running. (See Section 2.3.4 "Test-running.")
 - Auto-tuning tab is not displayed with FRENIC-Mini.

2.3.1.3 Comparison

To compare the function code data currently being edited with those configured in the selected inverter or with those saved in the specified file, click the **Comparison** tab in the **Function code edit** window.

-f Function1	
Function code edit Auto-tuning Comparison File Information Compared with inverter. Compared with file. New function code data and the function code data of the inverter are compared. Go	Compared with inverter Compares the function code data being edited on Loader with those configured in the inverter. Go Runs the comparing program.
Function1 Function code edit Auto-tuning Comparison File Information Compared with inverter. Compared with file New function code data and the function code data stored in the file are compared. File name	<u>Compared with file</u> Compares the function code data being edited on Loader with those stored in the file on the PC.
Go Browse	Browse Browses the directory of the file.

Before stating comparison, click 🔽 of the **Select inverter** combo-box at the bottom of the Function code edit window to show all inverters available in the dropdown menu, and select one.

Loader lists the comparison result, which includes only those function code data that differ each other, in the **Comparison** window shown below.

	21	
pplicable comparative data : FRN0.4G1S	-2J	
Function name	Data during editi	Applicable 🔨
F01: Frequency Command 1	0	1
F02: Operation Method	2	1
F05: Rated Voltage at Base Frequency 1	230	200
F06: Maximum Output Voltage 1	230	200
F09: Torque Boost 1	4.9	7.1
F11: Electronic Thermal Overload Prot	21.25	2.30
F14: Restart Mode after Momentary Po	0	1
F26: Motor Sound (Carrier frequency)	15	2
F34: Analog Output [FM 2] (Voltage adj	100	0
E07: Terminal [X7] Function	8	6 📷
21. Fraguency Distoction 1 (Lough	50.0	en n 🛁
		>

How to update the comparison result

To update the comparison result when this window is displayed, click **Re-compare**.

Even after the above **Comparison** window is closed, selecting **Comparison result** in the hierarchy tree in the **Function code edit** window shows the comparison result as shown below.

	Change Function code No.	Function code name	Comparison source	Comparison destination	Range of setting
E Code group	F01	Frequency Command 1	0	1	0 to 12
- Change (Factory s	F02	Operation Method	2	1	0 to 3
Contents of chang	F05	Rated Voltage at Base Frequency	230	200	0;80 to 240 V;160 to 500 V
Code for communi	F06	Maximum Output Voltage 1	230	200	80 to 240 V ; 160 to 500 V
Comparison result	F09	Torque Boost 1	4.9	7.1	0.0 to 20.0 %
Search result	F11	Electronic Thermal Overload Prote	21.25	2.30	0.00 ; 0.01 to 2000 A
	<)į	0

2.3.1.4 File information

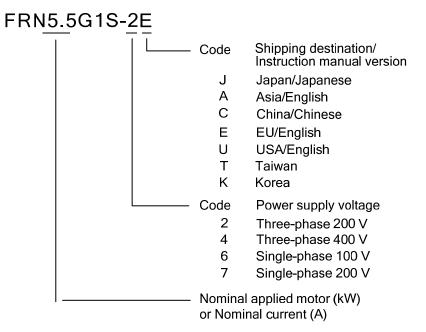
Click the **File information** tab in the **Function code edit** window displays information that affects function code data. In this window, you can arbitrarily change **Region spec.**, **Voltage**, **Capacity**, and **Current definition file**.

- If **Read from the INV** is selected in the **Editing data** window, this **File information** window shows the inverter's data.
- If **New** is selected in the **Editing data** window, this window shows default data for the inverter type.

- 1	Function1				
File name	Function				
Model	G1S				
Region spec.	J:JAPAN 💌				
Voltage	3phase 200V				
Capacity	5.5 💌				
Read date	11/13/2007 - 14:47:47 PM				
Current definit	tion file fnc_x_3_0500.csv	Change			
Definition file	saved			-	
lote) Even if th	e 'Region spec.', the 'voltage', an besn't write it in the inverter/Keypa	d 'capacity' are changed	lon		

TYPE: Type of inverter (e.g.: In the case of FRENIC-MEGA.

The example below is different from the format of the actual product type.)



2-19

Note

'S' of "G1S" is fixed display (example above) since the FRENIC-loader can not identify the model with built-in EMC filter or the model without one.

[1] Changing the region

You can change the region (shipping destination) of the inverter whose function code data is currently listed in the **Function code edit** window. Changing the region automatically modifies the factory default, minimum, and maximum values of function codes to the values suited for the region.

For details of function codes whose data differs depending on the region, refer to the inverter's instruction manual prepared for each region.



Note

• As shown in the dialog box above, changing the region initializes all function code data--even those that have been changed from the factory defaults. Save the current data before changing the region, if necessary.

• Do not select the item "-" which indicates to the unsupported region.

[2] Changing the input power supply voltage

You can change the input power supply voltage of the inverter whose function code data is currently listed in the **Function code edit** window.

Changing the voltage automatically modifies the factory default, minimum, and maximum values of function codes whose data copy attribute is "1" accordingly.

	FRENIC Loader 3
Voltage 3phase 200V 1phase 100V 1phase 200V Capacity 3phase 200V 3phase 400V	Are you sure you want to change the voltage setting? Changing it automatically reverts the related function code data to factory defaults



As shown in the dialog box above, changing the voltage initializes all function code data that depend on the voltage. Save the current data before changing the voltage, if necessary.

[3] Changing the inverter capacity

You can change the capacity of the inverter whose function code data is currently listed in the **Function code edit** window.

Changing the capacity automatically modifies the factory default, minimum, and maximum values of function codes whose data copy attribute is "2" accordingly.

(Some models are displayed with a nominal current value in parentheses for its own capacity. e.g., 11 kW (0022))

Capacity	5.5 🔹	FRENIC Loader 3
Read date	0.75 1.5 2.2	Are you sure you want to change the capacity setting? Changing it automatically reverts the related function code data to factory defaults
Current definiti	3.7 5.5 7.5	OK Cancel

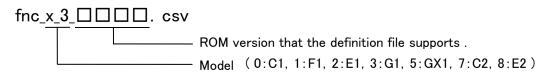
Note As shown in the dialog box above, changing the capacity initializes all of the capacity-related function code data. Save the current data before changing the capacity, if necessary.

[4] Changing the current definition file

The **Current definition file** indicates the name of the definition file corresponding to the inverter ROM version.

- If **Read from the INV** is selected in the **Editing data** window, Loader automatically selects the definition file corresponding to the inverter ROM version.
- If **New** is selected in the **Editing data** window, Loader automatically selects the latest definition file.
- If **Read from the file** is selected in the **Editing data** window, Loader selects the definition file last automatically saved.

Definition file name (FRENIC-MEGA)



To read or write function code data from/to the inverter, It is necessary to perform as follows relation between a definition file and an inverter ROM version.

Definition file	Inverter ROM version
fnc_x_3_00000.csv	0000 to 0499
fnc_x_3_0500e_EN.csv	0500 to 0999
fnc_x_3_1000a_EN.csv	1000 to 1999
fnc_x_3_2000_EN.csv	2000 to 2999
fnc_x_3_3000a_EN.csv	3000 to 3599
fnc_x_3_3600_EN.csv	3600 or 3799
fnc_x_3_3800_EN.csv	3800 or later

Note

If the ROM version of the current definition file and that of the inverter do not match, Loader cannot read or write function code data from/to the inverter.

FRENIC Lo	ader3 EN	×
4	Definition file version mismatch. Check the definition file.	
	ОК	

To check the inverter ROM version, select **Operation Monitor** | **System Monitor** from the **Quick Access Menu**. On the System Monitor window, see the Main control CPU field in the ROM Ver. area.

Operation	Status Mo	nitor
I/O monitor	System mo	Alam monitor
ROM Ver.	2011	
Main contr	ol CPU	2000
Motor cont	trol CPU	0000

This screen shows that the ROM version of the connected inverter is 2000.

To change the current definition file, click **Change**. In the Open window, select the desired definition file that supports the inverter's ROM version.

Function2.FNC	
Function code exit Auto-kuring Comparison File Information Property File name Function 2.FIXC File name Function 2.FIXC Model G15 File name Function 2.FIXC File name Function 2.FIXC Votage Sphase 2007 Image:	
Current definition file (fnc_x_3_0500e_EN.csv) Change Definition file saved fnc_x_3_0500e_EN.csv	 The current definition file supports the inverter ROM version 0500 to 0999. It is necessary, therefore, to change the file to the one that supports version 2000 or later. Click Change to display the Open window as shown below.
✓ Open Look in: FRENIC Loader3 EN ✓ ← DATA fnc_x_3_1000_EN_sample1. Driver fnc_x_3_0000m.csv fnc_x_3_00000.csv fnc_x_3_2000_EN.csv fnc_x_3_0500e_EN.csv fnc_x_3_3000_EN.csv Fnc_x_3_0850_EN.csv fnc_x_3_000_EN.csv File name: fnc_x_3_2000_EN Files of type: Parameter files	
Current definition file finc_x_3_2000_EN.csv Change	Check that the current definition file is "fnc_x_3_2000_EN.csv."

Note On the function code information list (shown on page 2-8), function code data that has been changed but not yet written into the inverter is shown in red. Changing the current definition file as described above cannot preserve the red display so that such function code data turns blue.

Changing the current definition file also clears entries in the Comment area.

a

2.3.1.5 Function code (customizable logic) setting

Only FRENIC-Ace series supports this function.

There are two kind of way to open edit window.



The window is opened by [**Function code**] of the above-mentioned easy menu, or **FC** [**Functions**] of a menu bar.

Please select New and [E2S Custom] as a inverter model.

Editing data		New
Data editing selection	ın:	Creates a new function code data file.
• New	Property Files	Model Please select the type of [E2S
Model	C1S 🗨	Custom] as an object model.
C Read from the file.	E1S G1S GX1S	
C Read from the INV	HF C2S E2S	
Select inverter	E2S Custom	
OK	Cancel	

The window is opened by selecting **File** | **New**, or \Box [**New window**] of a menu bar. [**E2S Custom**] of the selection tab should be selected as a inverter model.

New	X
F1S E1S G1S GX1S HF	C2S E2S E2S Custom
	OK Cancel

Note To edit the function code relating to customizable logics, select [E2S Custom] button from "New" menu and open the editing window.

[1] Function code edit

Please refer to Chapter 2.3.1.1, when you perform the reading, change, and the writing of a function code.

	Function code No.	Function code name		Setting value	Range of setting
UEcode	U00	Customizable Logic (Mode selection)	0	″0 to 1
UFcode	U01	Customizable Logic S	Step 1 (Logic circu	0	0 to 6101
UGcode	U02	Customizable Logic S		100	0 to 9007
UHcode	U03	Customizable Logic S	Step 1 (Input 2)	100	0 to 9007
Ulcode	U04	Customizable Logic S	Step 1 (Function 1)	0.00	-9990.00 to 0.00 to 9990.
UJcode	U05	Customizable Logic S	Step 1 (Function 2)	0.00	-9990.00 to 0.00 to 9990.
nange (Facto	U06	Customizable Logic S	Step 2 (Logic circu	0	0 to 6101
	U07	Customizable Logic S	Step 2 (Input 1)	100	0 to 9007
ontents of ch	U08	Customizable Logic S	Step 2 (Input 2)	100	0 to 9007
er definition	U09	Customizable Logic S	Step 2 (Function 1)	0.00	-9990.00 to 0.00 to 9990.
User defin	U10	Customizable Logic S	Step 2 (Function 2)	0.00	-9990.00 to 0.00 to 9990.
- User defin	U11	Customizable Logic S	Step 3 (Logic circu	0	0 to 6101
User defin	U12	Customizable Logic S	Step 3 (Input 1)	100	0 to 9007
de for comr	U13	Customizable Logic S	Step 3 (Input 2)	100	0 to 9007
WA code =	U14	Customizable Logic S	Step 3 (Function 1)	0.00	-9990.00 to 0.00 to 9990
- WB code	U15	Customizable Logic S	Step 3 (Function 2)	0.00	-9990.00 to 0.00 to 9990
WC code	U16	Customizable Logic S	Step 4 (Logic circu	0	0 to 6101
WD code	U17	Customizable Logic S	Step 4 (Input 1)	100	0 to 9007
WE code	U18	Customizable Logic S	Step 4 (Input 2)	100	0 to 9007
WF code	U19	Customizable Logic S	Step 4 (Function 1)	0.00	-9990.00 to 0.00 to 9990
WG code	U20	Customizable Logic S			-9990.00 to 0.00 to 9990
WH code	U21	Customizable Logic S	Step 5 (Logic circu	0	0 to 6101
WI code	U22	Customizable Logic S	Step 5 (Input 1)	100	0 to 9007
WJ code	U23	Customizable Logic S	Step 5 (Input 2)	100	0 to 9007
	U24	Customizable Logic S	Step 5 (Function 1)	0.00	-9990.00 to 0.00 to 9990.
arison re 🔨 🖌	LINE				
WRITE	Factory	set Func. code set	Func, code info	Initialaization	Advanced Print
WRI <u>T</u> E	Factory	set Func. code set	Func. code info	<u>Initialaization</u>	<u>A</u> dvanced <u>P</u> rint
			S	elect inverter	No. 1[1] INV1 🔹

WINIT L	inverter.
Factory set:	Reverts the data of the selected function code to the factory default.
Func. code set:	Shows the data of the selected function code in the edit window.
Func. code info:	Shows information of the selected function code in the window.
Initialization:	Initializes all function code data in the inverter selected at Select inverter .
Advanced:	Calls up the Advanced setting dialog for Display items , Function code attribute , and Print setting .
Print:	Prints function codes selected in the hierarchy tree in the left pane.

Select inverter:	Select the inverter to which the data is to be sent.
Close:	Closes the Function code edit window.

Note Notes for editing the function codes relating to the customizable logic

Edit not the function codes Us(U01 to U70) but UAs(UA00 to UA69).

The function codes Us are automatically copied to UAs in the inverter. FRENIC-Loader writes to the function order. The function codes UAs are written after Us. So the function codes Us are overwritten by UAs in the inverter.

Monitor function code [WA] to [WJ] are not displayed, if the communication setting is selected to "USB: Data in keypad".

[2] Comparison

The function code setting data under present edit can be compared with the data saved at the file, or the setting data of the inverter selected with the [object inverter]. For details, please refer to Chapter 2.3.1.3.

[3] File information

Information, including "**Region spec**", "**Voltage**", "**Capacity**", "**Current definition file**", etc., is displayed on file information.

For details, please refer to Chapter 2.3.1.4.

2.3.2 **Operation monitor**

Selecting Menu | Operation monitor calls up the Operation Status Monitor window (shown below) which monitors the running status of the inverter.

I/O monitor (for control terminal input/output signal status of the 2.3.2.1 inverter)

The I/O monitor allows you to monitor the ON/OFF states of the programmable terminals--digital inputs, transistor outputs and relay contact outputs of the selected inverter.

	operation St	tatus Monitor				
Normaly Normaly X1 Select multifreq. [SS1] X2 Select multifreq. [SS2] X3 Select multifreq. [SS8] Open X5 X4 Select multifreq. [SS8] Open X5 Select ACC/DEC time [RT1] Open X6 Select ACC/DEC time [RT2] Open Open X7 3-wise operation stop command [BC] Open X8 Casett-ostop command [BC] Open X9 Reset alam [RST] Open X9 Reset alam [RST] Open X9 Revets operation command [FkV] Open Revet alam [RST] Open X9 Revets operation command [FkV] Open Revet availing [RUN] Open Y1 Inverter numing [RUN] Open Y2 Freq. arrival signal [FAP] Open Y4 Motor ovelocad early warning [OL] Open Y5 Audiary terminal [AX] Open Y6 Availary terminal [AX] Open Y5 Audiary terminal [AX] Open <t< th=""><th>1/O monitor Sys</th><th>stem monitor Alarm monitor Meter display</th><th></th><th></th><th></th><th></th></t<>	1/O monitor Sys	stem monitor Alarm monitor Meter display				
X1 Select multi-freq. [SS1] Open X2 Select multi-freq. [SS2] Open X3 Select multi-freq. [SS3] Open X4 Select Multi-freq. [SS3] Open X5 Select ACC/DEC time [RT1] Open X6 Select ACC/DEC time [RT2] Open X7 3-wire operation stop command [HLD] Open X8 Coast-to-stop command [FV] Open X9 Reset alam [R51] Open X9 Reset alam [R51] Open X9 Reverse operation command [FV] Open X1 Inverter running [RUN] Open X1 Select for 1 Open X2 Freq. arival signal [FAR] Open X1 Select for 1 Open X2 Freq. arival signal [FAR] Open Y1 Inverter running [RUN] Open Y2 Freq. arival signal [FAR] Open Y13 Ausilary terminal [AX] Open Y14 Motor overload early warning [OL] Open Y15 Ausilary terminal [AX] Open	Assign an inpu	ıt signal				
X2 Select multifreq. [SS2] Open X3 Select multifreq. [SS4] Open X4 Select multifreq. [SS8] Open X5 Select ACC/DEC time [RT1] Open X6 Select ACC/DEC time [RT2] Open X7 3-wire operation stop command [HLD] Open X8 Coast-to-stop command [RX] Open X9 Reset alam [RS1] Open X9 Reset alam [RS1] Open X9 Fever seperation command [FVD] Open X9 Fever seperation command [FVD] Open X11 Invester unning [RUN] Open X12 Freq. atival signal [FAP] Open X13 Freq. detected [FD1] Open Y14 Motor oveload eatly warning [OL] Open Y15 Audiagy terminal [AX] Open Y16 Alam relay output (tor any alam) [ALM] Open Y15 Audiagy terminal [AX] Open Y16 Alam relay output (tor any alam) [ALM] Open	O X1	Select multi-freg. [SS1]		CSV Save Setting		
X4 Select multifreq [SS8] Open X5 Select ACC/DEC time [RT1] Open X6 Select ACC/DEC time [RT2] Open X7 3wire operation stop command [HD] Open X8 Coast-o-stop command [BX] Open X9 Reset alam [RST] Open X9 Preset alam [RST] Open REV Reverse operation command [RVD] Open X1 Inverter numing [RUN] Open Y1 Inverter numing [RUN] Open Y2 Freq. arrival signal [FAP] Open Y4 Motor overduce aeity warning [OL] Open Y4 Motor overduce aeity warning [OL] Open Y5 Audiagy terminal [AX] Open Y6 Audiagy terminal [AX] Open Y6 Audiagy terminal [AX] Open Y6 Audiagy terminal [AX] Open Y						
X5 Select ACC/DEC time [RT1] Open X6 Select ACC/DEC time [RT2] Open X7 3wire operation stop command [RLD] Open X8 Coast-to-stop command [RX] Open X9 Peet alam [RST] Open X9 Forward operation command [RVD] Open REV Reverse operation command [REV] Open Assign an output signal Normally Y1 Invester unning [RUN] Open Y2 Freq. atrival signal [RAT] Open Y4 Motor overload carly warning [OL] Open Y4 Motor overload carly warning [OL] Open Y4 Alam relay output (for any alam) [ALM] Open Y5 Auditagy terminal [AX] Open Y6 Alam relay output (for any alam) [ALM] Open	🔘 X3	Select multi-freq. [SS4]	Open			
X6 Select ACC/DEC time [RT2] Open X7 3-wire operation stop command [HLD] Open X8 Coast-to-stop command [BX] Open X9 Reset alam [RST] Open Fw/D Forward operation command [PWD] Open REV Reverse operation command [REV] Open Assign an output signal Normally Y1 Inverter running [RUN] Open Y2 Freq. atrival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [OL] Open Y5 Ausliagy terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open	🔘 ×4	Select multi-freq. [SS8]	Open			
X77 3-wire operation stop command [HLD] Open X8 Coast-to-stop command [BX] Open X9 Reset alam [RST] Open Pw/D Forward operation command [PWD] Open REV Reverse operation command [PKD] Open Assign an output signal Normally Open Y1 Inverter running [RUN] Open Y2 Freq. atrival signal [FAP] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [DL] Open Y5 Ausiliary terminal [AX] Open Y5 Ausiliary terminal [AX] Open Y5 Alarm relay output (for any alarm) [ALM] Open	🔘 ×5	Select ACC/DEC time [RT1]	Open			
X8 Coast-to-stop command [BX] Open X9 Reset alarm [RST] Open PwD Forward operation command [PWD] Open REV Reverse operation command [PEV] Open Assign an output signal Normally Open Y1 Invester running [RUN] Open Y2 Freq. atrival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [OL] Open Y5 Ausiliany terminal [AX] Open 30Ry Alarm relay output (for any alarm) [ALM] Open	🙆 ×6	Select ACC/DEC time [RT2]	Open			
X3 Reset alam [RST] Open PrvD Forward operation command [FWD] Open REV Reverse operation command [FW] Open Assign an output signal Normally Open Y1 Invester running [RUN] Open Y2 Freq. atrival signal [FAP] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warring [DL] Open Y5 Ausilary terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open	🔍 ×7	3-wire operation stop command [HLD]	Open			
PrvD Forward operation command [FWD] Open REV Reverse operation command [REV] Open Assign an output signal Normally Open Y1 Invester running [RUN] Open Y2 Freq. arrival signal [FAR] Open Y3 Freq. arrival signal [FAR] Open Y4 Motor overload eastly warning [DL] Open Y5 Ausiliary terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open	🙆 X8	Coast-to-stop command [BX]	Open			
REV Reverse operation command [REV] Open Assign an output signal Normally Open Y1 Invester running [RUN] Open Y2 Freq. arrival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overload eatly warning [OL] Open Y5 Ausilary terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open	🙆 X9	Reset alarm [RST]	Open			
Assign an output signal Y1 [Invetter nurning [RUN] Open Y2 Freq. arrival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overdad early warning [OL] Open 30Ry Alam relay output (for any alam) [ALM] Open 30Ry Alam relay output (for any alam) [ALM] Open	🖸 FWD	Forward operation command [FWD]	Open			
Normally Y1 Inverter running [RUN] Open Y2 Freq. arival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [DL] Open Y5 Auxiliary terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open Selects the inverter to	REV	Reverse operation command [REV]	Open			
Y1 Inverter numing [RUN] Open Y2 Freq. arrival signal [FAR] Open Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [OL] Open Y5 Auxiliary terminal [AX] Open 30Ry Alarm relay output (for any alarm) [ALM] Open	Assign an outp	out signal				
Y2 Freq. arrival signal (FAR) Open Y3 Freq. detected (FD1) Open Y4 Motor overload early warning (DL) Open Y5 Auxiliary terminal (AX) Open 30Ry Alarm relay output (for any alarm) (ALM) Open	-					
Y3 Freq. detected [FDT] Open Y4 Motor overload early warning [OL] Open Y5 Auxiliary terminal [AX] Open 30Ry Alarm relay output (for any alarm) [ALM] Open						
Y4 Motor overload early warning [DL] Open Y5 Auxiliary terminal [AX] Open 30Ry Alam relay output (for any alam) [ALM] Open Selects the inverter to Selects the inverter to		Freq. arrival signal [FAR]	Open			
Y5 Auxiliary terminal [AX] Open 30Ry Alarm relay output (for any alarm) [ALM] Open Selects the inverter to	🙍 Y3	Freq. detected [FDT]	Open			
30Ry Alam relay output (for any alam) [ALM] Dpen Select inverter Selects the inverter to	🙆 Y4	Motor overload early warning [OL]	Open			
Selects the inverter to	🔘 Y5	Auxiliary terminal [AX]	Open			
	30Ry	Alarm relay output (for any alarm) [ALM]	Open			
	Connected		Polo	ct inverter No. 1[1] INV1 • -	Close	Selects the inverter to be
Connected Seject inverter No. 1[1] INV1 • monitored.			Seiel		<u></u>	monitorea.

CSV Save -

Saves the I/O monitor data in CSV format.

System monitor (for current setup info and maintenance info of 2.3.2.2 inverter)

The System monitor allows you to check the inverter ROM version, inverter type, current setup information, and maintenance information of the selected inverter.

Operation Status Monitor				
I/O monitor System monitor Alarm monitor M	vleter display			
ROM Ver. Main control CPU 0500 Motor control CPU 0000 KEYPAD 1300 Option 1 0 Option 2 0 Option 3 0 Option 4	Existing setup Mode Operation order : Speed order : Parameter set : Motor selection : Motor output ;	External signal Fxternal signal Voltage input[12] 0 to +10Vdc 1 2 3 4 M1 M2 M3 M4 KW		
Maintenance information Accumulated operation time (h) Accumulated time of PC board mounted CAP(1 Accumulated operation time of cooling fan (10 Accumulated operation (number of times) Accumulated operation (number of times)	1566 10h) 9999 h) 9999 47227	Main capacitors (%) Max RMS current (A) Highest TMP inside INV (deg C)	100.0 2.68 39 34 0.000	
CSV Save Setting		Select inverter No. 1[1]		 Select inverter Selects the inverter to be monitored.

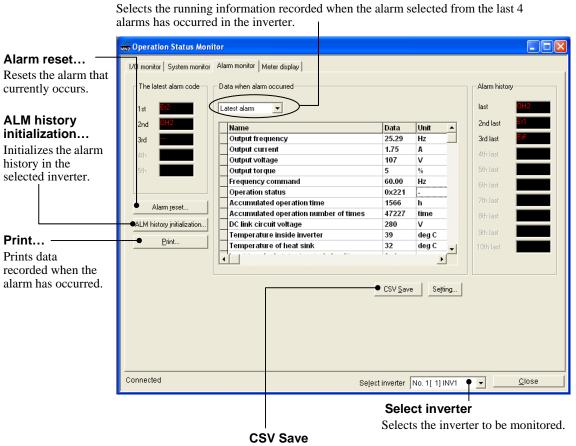
- CSV Save

Saves the system monitor data in CSV format.

2.3.2.3 Alarm monitor

The **Alarm monitor** shows the alarm status of the selected inverter. In this window, you can check the content of the current alarm and the various running information recorded when the alarm has occurred.

Select the running info recorded when an alarm has occurred



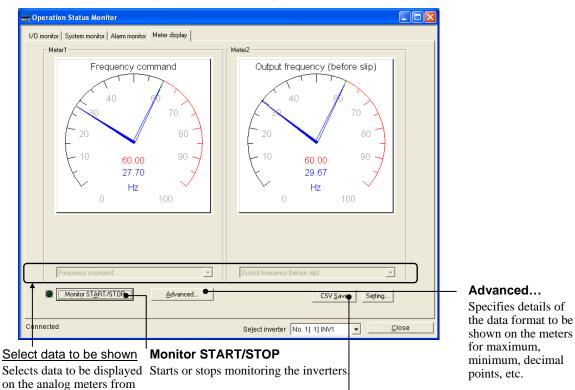
Saves the alarm data in CSV format.

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

An accident or injury could occur.

2.3.2.4 Meter display (Showing the inverter running states)

The **Meter display** shows analog data including inverter's output frequency on the analog meters as shown below. The hollow pointers indicate the peak values if the Peak-hold is checked.



CSV Save

Saves the displayed data in CSV format.

[1] Changing data to be displayed on meters

the combo boxes.

Click the volume button in each of the combo boxes provided at the bottom of meter panes, select an item listed there. The table below lists data on the analog meter.

Inverter information	Mini (C1S)	Mini (C2S)	Eco	Multi	Ace	MEGA	HF
Frequency command	Y	Y	Y	Y	Y	Y	Y
Output frequency (before slip compensation)	Y	Y	Y	Y	Y	Y	Y
Output frequency (after slip compensation)	Y	Y	N	Y	Y	Y	Ν
Output current	Y	Y	Y	Y	Y	Y	Y
Output voltage	Y	Y	Y	Y	Y	Y	Y
Output torque	Ν	Ν	Y	Y	Y	Y	Ν
Motor speed (Rotation speed)	Ν	N	Y	Y	Y	Y	Y
Load shaft speed	Y	Y	Y	Y	Y	Y	Y
Line speed	Y	Y	Ν	Y	Y	Y	Y
PID command	Y	Y	Y	Y	Y	Y	Ν
PID feedback value	Y	Y	Y	Y	Y	Y	Ν
PID output value	Ν	Y	Y	Y	Y	Y	Ν
DC link bus voltage	Y	Y	Y	Y	Y	Y	Y
Input power	Y	Y	Y	Y	Y	Y	Ν
Load factor	Ν	Ν	Y	Y	Y	Y	Ν
Motor output power	Ν	Ν	Y	Y	Y	Y	Ν
Motor temperature	Ν	N	Ν	Ν	Y	Y	Ν

Y: Available, N: Not available

Inverter information	Mini (C1S)	Mini (C2S)	Eco	Multi	Ace	MEGA	HF
Temperature inside inverter	Ν	Ν	Y	Ν	Y	Y	Y
Heat sink temperature	Y	Y	Y	Y	Y	Y	Y
Input voltage on terminal [12]	Y	Y	Y	Y	Y	Y	Y
Input current on terminal [C1]	Y	Y	Y	Y	Y	Y	Y
Input voltage on terminal [V2]	Ν	Ν	Y	Y	Y	Y	Y
Analog input monitor	Ν	Ν	Y	Y	Y	Y	Ν
Output voltage on terminal [FMA]	Y	Y	Y	Y	N	Y	Ν
Output current on terminal [FMA]	Ν	Ν	Y	Y	N	Y	Ν
Output voltage on terminal [FMP]	Ν	Ν	Y	N	N	Y	Ν
Output pulse rate on terminal [FMP]	Ν	Ν	Y	Y	N	Y	Ν
Output voltage on terminal [FM1]	Ν	Ν	N	N	Y	Ν	Y
Output current on terminal [FM1]	Ν	Ν	Ν	Ν	Y	Ν	Y
Output voltage on terminal [FM2]	Ν	Ν	М	Ν	Y (-C only)	Ν	Y
Output pulse rate on terminal [FM2]	Ν	Ν	Ν	N	Y (-C only)	Ν	Y
PG pulse rate (A/B phase signal from reference PG)	Ν	N	N	Y	Y	Y	N
PG pulse rate (Z phase signal from reference PG)	Ν	Ν	N	Y	Y	Y	Ν
PG pulse rate (A/B phase signal from slave PG)	Ν	Ν	Ν	Y	Y	Y	Ν
PG pulse rate (Z phase signal from slave PG)	Ν	Ν	Ν	Y	Y	Y	Ν
Pulse input monitor on terminal [X7] or [X5] (X7:MEGA, X5:Ace)	Ν	N	N	N	Y	Y	N
Detected speed	Ν	Ν	Ν	Ν	Y	Y	Ν
Torque command	Ν	Ν	Ν	Ν	Y	Y	Ν
Torque current command	N	Ν	Ν	N	Y	Y	Ν
Torque current	Ν	Ν	Ν	N	Y	Y	N
Positional deviation in synchronous operation	Ν	Ν	Ν	Ν	Y	Y	Ν

Y: Available, N: Not available

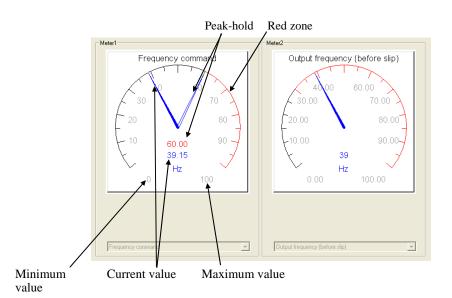


Note Selected item may be invalid according to the inverter model or version. Please check that the item is valid or not in the inverter manual.

[2] Changing the advanced settings for analog meters

Click Advanced in the analog meter pane to call up the dialog below.

Advanced settings of the Meter disp	lay 🛛 🔀
Meter1	Meter2
Minimum 0	Minimum 0
Maximum 100 🔹	Maximum 100
Decimal places of 2	Decimal places of 0
Decimal places of 0	Decimal places of 2
🔽 Peak hold	🔲 Peak hold
Red Zone 60 % (1%-100%)	Red Zone 30 % (1%-100%)
<u>ок</u>	Cancel



- Minimum value: Specify the minimum value at the low end point of the meter scale.
- Specify the maximum value at the high end point of the meter scale. • Maximum value:
- Decimal places of the display: Specify the number of decimal places for the current and peak-hold display. (Digital display precision)
- Specify the number of decimal places for the analog meter dial. • Decimal places of the range:
- Peak-hold:
- Enable/disable the peak-hold that makes the meter hold the measured peak value.
- Red zone: Specify the red colored scale ratio to the meter full scale.

2.3.2.5 Saving data in CSV format (on operation status monitors)

Clicking the **CSV Save** button on each operation status monitor saves the currently monitored data in CSV format.

CSV Save Setting

Clicking the **CSV Save** button creates a CSV file automatically in the directory as shown below for each monitor item.

Example: I/O monitor data

C:\Program Files\Fuji Electric\FRENIC Loader3 EN\DATA\IO monitor.csv

After specifying the directory to save the CSV file, click the Setting... button.

CSV Sav	9		
File:	Files\Fuji Electric\F	RENIC Loader3\D/	ATANO monitor.csv
	Browse	ОК	Cancel

To save the data into any other folder, click **Browse** and select a desired folder.

Given below are sample files saved in CSV format for each monitor item.

I/O monitor

	A	В	С	D	E	F	G	Н	
1	Date	Select inverter	X1	Value	Normally	X2	Value	Normally	X3
2	11/14/2007 13:56	No. 1[-1] INV1	Select multi-freq. [SS1]	OFF	Open	Select multi-freq. [SS2]	OFF	Open	Se
3	11/14/2007 14:01	No. 1[-1] INV1	Select multi-freq. [SS1]	ON	Open	Select multi-freq. [SS2]	ON	Open	Se
4	11/14/2007 14:02	No. 1[1] INV1	Select multi-freq. [SS1]	ON	Open	Select multi-freq. [SS2]	OFF	Open	Se
E									

System monitor

	A	В	С	D	E	F	G	Н		~
1	Date	Select inverter	Main control CPU	Motor control CPU	KEYPAD	Option 1	Option 2	Option 3	Option 4	F
2	11/14/2007 14:14	No. 1[-1] INV1	500	0	1300	0	0	0		
3	11/14/2007 14:14	No. 1[-1] INV1	500	0	1300	0	0	0		
4										

Alarm monitor

	A	В	С	D	E	F	G	Н	I	J	k 🔨
1	Date	Select inverter	1st	2nd	3rd	4th	5th	Data when alarm occurred	Output frequency	Unit	Output c 👘
2	11/14/2007 14:22	No. 1[-1] INV1	Er2	OH2				Latest alarm	25.29	Hz	
3	11/14/2007 14:22	No. 1[-1] INV1	Er2	OH2				Last alarm	25.29	Hz	
4	11/14/2007 14:22	No. 1[-1] INV1	Er2	OH2				2nd last alarm	0	Hz	
5	11/14/2007 14:22	No. 1[-1] INV1	Er2	OH2				3rd last alarm	25.29	Hz	
R											

Meter display

		А	В	С	D	E	F	G	н
1	1	Date	Select inverter	Meter1	Value	Unit	Maximum value	Unit	Meter2
2	/	11/14/2007 14:34	No. 1[-1] INV1	Frequency command	38.78	Hz	38.78	Hz	Output frequency (before slip)
3	3	11/14/2007 14:34	No. 1[-1] INV1	Frequency command	29.81	Hz	60	Hz	Output frequency (before slip)
1	1								

2.3.3 Multi-monitor (for the running status of more than one inverter)

Selecting **Menu** | **Multi-monitor** calls up the **Multi-monitor** window (shown below) which lists the running status of more than one inverter on the network.

بعلا	Equipment name	RS485 address		Capacity	Operation status	Frequency corr		Ctatus manitar itama
1	INV1	1	G1S 3phase 200V	0.4	FWD	38.84	38	<u>Status monitor items</u>
2	HNV2	2	G1S 3phase 200V	0.4	STOP	9.17	0.0	Lists status monitor items
3								
4								inverters listed in the
5				Ĭ.	1			equipment name column.
6								1 1
7								
8					2			
9								
10								
11								
12					2			
13								
14				-				
15								
16		-			0			
17						-		Selection
18			-	-	-			Selection
19								Adds or deletes status
20								monitor items.
4	1							monitor items.
4							•	

[1] Adding/deleting the monitor items to be listed

Click the **Selection...** button to call up the following window that lists monitor items available.

Selection of display item
Multi monitor display item
Inverter model name
✓Capacity
Operation status
State of braking
Latest alarm code
✓ Frequency command
Cutnut frequency (before slip compensation)
Caution: This setting is common to all the multi-monitor
OK Cancel

To add an item to be listed in the table, place a check mark (\checkmark) in the box at the left of that item.

Click the box again to remove the \checkmark mark.

After completion of your selection, click **OK**.

Any items without a \checkmark mark will not be shown in the **Multi-monitor** window.

Monitor items	Mini (C1S)	Mini (C2S)	Eco	Multi	Ace	MEGA	HF
Equipment name	Y	Y	Y	Y	Y	Y	Y
RS-485 address	Y	Y	Y	Y	Y	Y	Y
Inverter model name (Inverter type)	Y	Y	Y	Y	Y	Y	Y
Capacity	Y	Y	Y	Y	Y	Y	Y
Operation status	Y	Y	Y	Y	Y	Y	Y
Brake signal	Ν	N	Y	Y	Y	Y	Y
Latest alarm information	Y	Y	Y	Y	Y	Y	Y
Frequency command	Y	Y	Y	Y	Y	Y	Y
Output frequency (before slip compensation)	Y	Y	Y	Y	Y	Y	Y
Output frequency (after slip compensation)	Y	Y	Ν	Y	Y	Y	Ν
Output current	Y	Y	Y	Y	Y	Y	Y
Output voltage	Y	Y	Y	Y	Y	Y	Y
Motor speed (Rotation speed)	Ν	Ν	Y	Y	Y	Y	Y
Load shaft speed	Y	Y	Y	Y	Y	Y	Y
Line speed	Y	Y	N	Y	Y	Y	Y
PID command	Y	Y	Y	Y	Y	Y	Ν
PID feedback value	Y	Y	Y	Y	Y	Y	Ν
PID output value	Ν	Y	Y	Y	Y	Y	Ν
Torque command	Ν	N	Ν	N	Y	Y	Ν
Output torque	Ν	Ν	Y	Y	Y	Y	Ν
Torque current command	Ν	Ν	Ν	N	Y	Y	Ν
Torque current	Ν	N	Ν	N	Y	Y	Ν
DC link bus voltage	Y	Y	Y	Y	Y	Y	Y
Input power	Y	Y	Y	Y	Y	Y	Ν

The table below lists the monitor items available.

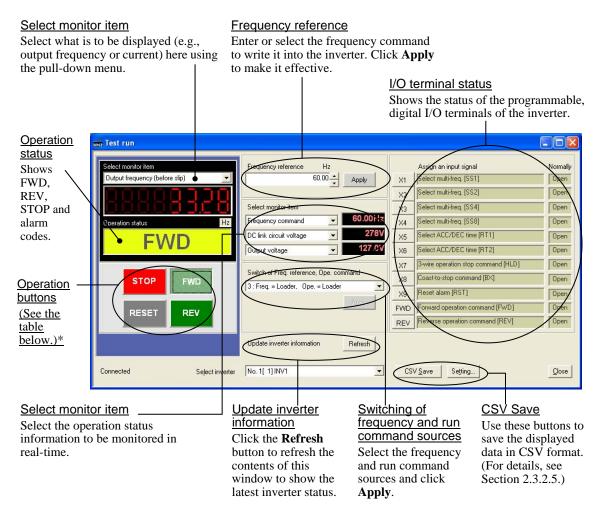
Y: Available, N: Not available

Note Selected item may be invalid according to the inverter model or version. Please check that the item is valid or not in the inverter manual.

a

2.3.4 Test-running

Selecting **Menu** | **Test-running** calls up the **Test run** window (shown below) which allows you to test-run the motor in the forward or reverse direction while monitoring the running status of the selected inverter.



* The details of the operation buttons are described in the table below.

Button	Use to
STOP	Stop the motor.
FWD	Run the motor forward. (The indented appearance of the button indicates that the button is active and the motor is running.)
REV	Run the motor reverse. (The indented appearance of the button indicates that the button is active and the motor is running.)
RESET	Reset all alarm information saved in the selected inverter.

To proceed test-running, select an inverter by clicking the **v** mark in the **Select inverter** combo box.

When the **Test run** window is first opened, the **Switch of freq. command**, **Ope. command** is set at [0: Freq. = Inverter, Ope. = Inverter] so that you cannot modify the frequency command or run/stop the inverter per Loader. The operation buttons **STOP/REV/STOP** (except **RESET**) and input signal assignment buttons for [X1] to [X9], [FWD] and [REV] are disabled. These buttons are enabled only when the [Ope. = Loader] is specified.

The monitors in this window display the running status of the selected inverter.

Note Never change the selected inverter when the motor is running; doing so loses the means for stopping the motor. For safety, first stop the inverter operation, change the selected inverter, and then start running the newly selected inverter. To test-run two or more inverters concurrently, open the **Test run** windows for individual inverters.

2.3.4.1 Setting up the inverter and running the motor from Loader

Click \checkmark of the **Switch of freq. command**, **Ope. command** combo box and select any of [1: Freq. = Loader, Ope. = Inverter], [2: Freq. = Inverter, Ope. = Loader] and [3: Freq. = Loader, Ope. = Loader] depending upon the commands to be issued from Loader. See the table below for details.

Switch of Freq. reference, Ope. command	
0 : Freq. = Inverter, Ope. = Inverter	•
0 : Freq. = Inverter, Ope. = Inverter 1 : Freq. = Loader, Ope. = Inverter 2 : Freq. = Invertet, Ope. = Loader 3 : Freq. = Loader, Ope. = Loader	

Commands to be issued from Loader	Setting in the Switch of freq. command, Ope. command combo box	Frequency reference box	Operation buttons (STOP , FWD and REV)	Input signal assignment buttons for [X1] to [X9], [FWD] and [REV]
None	[0: Freq. = Inverter, Ope. = Inverter] (Factory defaults)	Disabled	Disabled	Disabled
Frequency command	[1: Freq. = Loader, Ope. = Inverter]	Enabled	Disabled	Disabled
Run command	[2: Freq. = Inverter, Ope. = Loader]	Disabled	Enabled	Enabled
Frequency command and run command	[3: Freq. = Loader, Ope. = Loader]	Enabled	Enabled	Enabled

Given below is a sample procedure for issuing both frequency and run commands from Loader.

(1) Select [3: Freq. = Loader, Ope. = Loader] in the Switch of freq. command and Ope. command combo box and click Apply.

Switch of Freq. reference, Ope. command
3 : Freq. = Loader, Ope. = Loader 🗾 💌
Apply

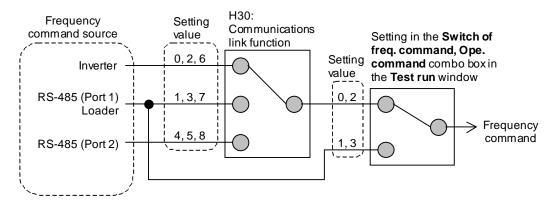
- (2) All of the Frequency reference combo box, operation buttons STOP, FWD and REV (except RESET), and input signal assignment buttons for [X1] to [X9], [FWD] and [REV] become enabled.
- (3) Enter a desired frequency in the Frequency command combo box and click Apply. To run the motor in the forward direction, click FWD; to run it in the reverse direction, click REV. To stop the motor, click STOP.

Frequency reference	Hz	
	60.00	Apply

<u>Relationship between the setting in Switch of freq. command, Ope. command combo box and function code H30 data</u>

The setting selected in the **Switch of freq. command**, **Ope. command** combo box in the **Test run** window may be affected by the function code H30 data. The relationship between those settings for each of the frequency and run commands is shown below.

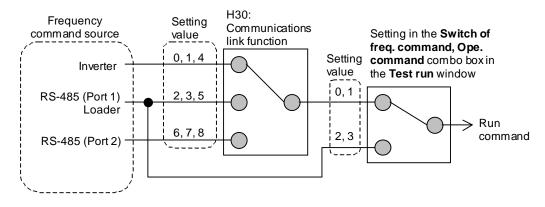
< Signal flow of frequency command >



If the setting selected in the **Switch of freq. command**, **Ope. command** combo box is "0" or "2," the frequency command is determined by the H30 data; if it is "1" or "3," the frequency command from Loader is always effective.

Data for H30 (Communications link function)	Setting in the Switch of freq. command , Ope. command combo box	Frequency command source
0: Frequency command = F01/C30, Run command = F02		
2: Frequency command = F01/C30, Run command = RS-485 (Port 1)		Inverter
6: Frequency command = F01/C30, Run command = RS-485 (Port 2)		
1: Frequency command = RS-485 (Port 1), Run command = F02		
3: Frequency command = RS-485 (Port 1), Run command = RS-485 (Port 1)	[0: Freq. = Inverter, Ope. = Inverter][2: Freq. = Inverter, Ope. = Loader]	Loader
7: Frequency command = RS-485 (Port 1), Run command = RS-485 (Port 2)		
4: Frequency command = RS-485 (Port 2), Run command = F02		
5: Frequency command = RS-485 (Port 2), Run command = RS-485 (Port 1)		RS-485 communications link (Port 2)
8: Frequency command = RS-485 (Port 2), Run command = RS-485 (Port 2)		
Not applicable	[1: Freq. = Loader, Ope. = Inverter]	Loader
	[3: Freq. = Loader, Ope. = Loader]	

< Signal flow of run command >

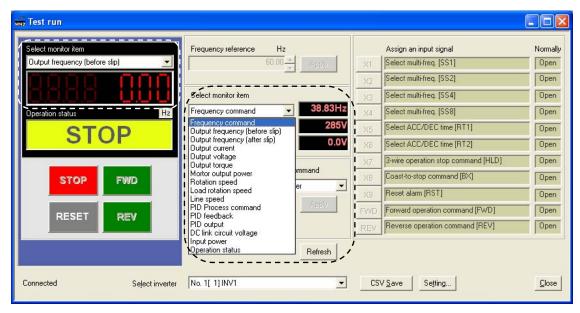


If the setting selected in the **Switch of freq. command**, **Ope. command** combo box is "0" or "1," the run command is determined by the H30 data; if it is "2" or "3," the run command from Loader is always effective.

Data for H30 (Communications link function)	Setting in the Switch of freq. command , Ope. command combo box	Run command source	
0: Frequency command = F01/C30, Run command = F02			
1: Frequency command = RS-485 (Port 1), Run command = F02		Inverter	
4: Frequency command = RS-485 (Port 2), Run command = F02			
2: Frequency command = F01/C30, Run command = RS-485 (Port 1)	[0: Freq. = Inverter, Ope. = Inverter]		
3: Frequency command = RS-485 (Port 1), Run command = RS-485 (Port 1)	[1: Freq. = Loader, Ope. = Inverter]	Loader	
5: Frequency command = RS-485 (Port 2), Run command = RS-485 (Port 1)			
6: Frequency command = F01/C30, Run command = RS-485 (Port 2)			
7: Frequency command = RS-485 (Port 1), Run command =RS-485 (Port 2)		RS-485 communications link (Port 2)	
8: Frequency command = RS-485 (Port 2), Run command =RS-485 (Port 2)		mik (1 011 2)	
Not applicable	[2: Freq. = Inverter, Ope. = Loader]	Loader	
Not applicable	[3: Freq. = Loader, Ope. = Loader]	LUauei	

2.3.4.2 Monitoring the inverter operation from Loader

Loader always monitors the running status of the inverter(s) in the **Test run** window. The monitor items listed in the dropdown menu of the **Select monitor item** combo box in the monitor pane can be selected by clicking the \checkmark mark in the combo box, which are shown in the table below. Furthermore for important items, Loader displays the monitoring data in the enlarged format on the display box above the running status monitor box.



		1					
Inverter information	Mini (C1S)	Mini (C2S)	Eco	Multi	Ace	MEGA	HF
Frequency command	Y	Y	Y	Y	Y	Y	Y
Output frequency (before slip compensation)	Y	Y	Y	Y	Y	Y	Y
Output frequency (after slip compensation)	Y	Y	Ν	Y	Y	Y	Ν
Output current	Y	Y	Y	Y	Y	Y	Y
Output voltage	Y	Y	Y	Y	Y	Y	Y
Output torque	Ν	Ν	Y	Y	Y	Y	Ν
Motor speed (Rotation speed)	N	Ν	Y	Y	Y	Y	Y
Load shaft speed (Load rotation speed)	Y	Y	Y	Y	Y	Y	Y
Line speed	Y	Y	Ν	Y	Y	Y	Y
PID process command	Y	Y	Y	Y	Y	Y	Ν
PID feedback value	Y	Y	Y	Y	Y	Y	Ν
PID output value	Ν	Y	Y	Y	Y	Y	Ν
DC link bus voltage	Y	Y	Y	Y	Y	Y	Y
Input power	Y	Y	Y	Y	Y	Y	N
Motor output power	Ν	Ν	Y	Y	Y	Y	N
Operation status	Y	Y	Y	Y	Y	Y	Y

The table below lists the monitor items that can be displayed.

Y: Available, N: Not available



Selected item may be invalid according to the inverter model or version. Please check that the item is valid or not in the inverter manual.

2.3.4.3 Recovering Loader whose Test run window cannot monitor inverter status

When a communications error occurs between Loader and the inverter(s) so that the communications error dialog pops up, clicking the **Cancel** button on the dialog can recover Loader from the error state; however, Loader cannot automatically relink the inverter(s).

In this case, to recover Loader operation, call up the **Device connection list** window (see Section 1.4.3.2), click **Browse**, and check the current communications state.

D	evice co	onnection list			×
	No.	Status	Equipment name	RS485 address	^
	✓ 1	Unknown	INV1	1	
	✓ 2	Unknown	INV2	2	
	3				
	4				
	5				
	6				_
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				Y
	Brows	e e Delete	OK	Cancel Advance.	

Click Browse.

If the status is "Connected" as shown below, Loader relinks the inverter (INV1) and restarts monitoring the inverter, making the **Test run** window reflect the running status.

Device connection list				
_ Nr	Otation	F anding and a surge	DO 105 e delas e a	
No.	Status	Equipment name	RS485 address	
✓ 1	Connected 🛉	INV1	1	
✓ 2	Disconnected	INV2	2	
3				=

Check that the status is "Connected."

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

An accident or injury could occur.

- If 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). (See **IMPORTANT!** below.)
 - 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 or injury could occur if this warning is not heeded.

IMPORTANT!

Even after the inverter is stopped by one of the operations described above, it still retains the data of the communications-related function codes--S05 (frequency command), S06 (run command) and y99 (link support).

With those function code data being retained, attempting to run the inverter may run the motor unexpectedly. For your safety, reset the data of those function codes (S05, S06, and y99) to "0" using the following procedure before restarting operation.

- 1) Turn the power to the inverter off. After making sure that the inverter completely stops, turn the power on again.
- 2) Set the y99 data to "0" using the keypad on the inverter. After that, restart Loader, call up the **Function code edit** window, and set the S05 and S06 data to "0".

2.3.5 Trace (Showing the inverter operation status in waveforms)

Selecting **Menu** | **Trace** calls up the **Real time trace** window (shown below) which provides the following two types of trace functions.

• Real-time trace: Suitable for monitoring for long hours

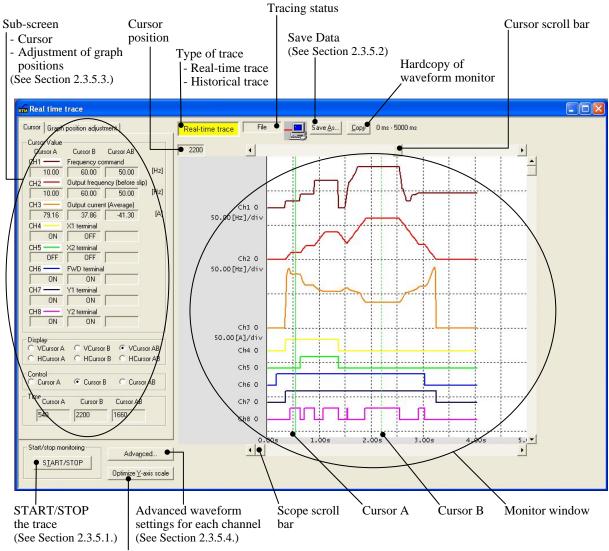
(Continuous waveform capturing capability: Max. 15,360 samples/channel)

• Historical trace: Suitable for monitoring short-period samples (Waveform capturing capability: Max. 500 samples/channel)

Note

Historical trace corresponds only to MEGA, HF and Ace.

Each trace function can simultaneously monitor the inverter operation status with a total of eight channels (maximum of four channels of analog data and maximum of eight channels of digital data) in seamless waveform format.



Optimize Y-axis origin of the channels

Note While tracing is in progress, the following cannot be changed.

- RS-485 station address
- Advanced waveform settings

Resizing the trace window automatically changes the waveform monitor window size.

2.3.5.1 Starting/stopping monitoring

To start monitoring each trace, click the **START/STOP** button at the bottom left of the screen. To stop it, click the button again.



Upon start of monitoring, the "Type of trace" box (Real-time trace or Historical trace) at the top center of the screen flashes.

,

The "Tracing status" box at the top center of the screen also changes as shown below.



Tracing status display	Meaning
Stop	Tracing stopped.
Pre Trigger	In tracing. Loader is loading data preceding the trigger point. Note: In this state, Loader does not detect a trigger.
Wait Trigger	In tracing. Loader is waiting for a trigger to be detected.
Running	In tracing. Loader has detected a trigger and displayed the data on the screen.

2.3.5.2 Saving trace data

To save trace data, click the **Save As...** button at the top of the screen or select **File** | **Save As...**

Save As...

At the time of first data saving, even selecting **File** | **Save** calls up the **Save As...** dialog shown below. Select a folder in the **Save In** box, select a file type in the **Save as type** box, type a filename in the **File** name box, and then click the Save button.

Save As		? 🔀
Save in: 뎌	DATA 💽 🗲 🖻) 💣 🎟 -
Tistorical ti		
File name:	Real time trace	Save
Save as type:	All files	Cancel
	Real Time Trace Data (*.RTM) CSV format(*.CSV) All files	

The real-time trace data is saved as an *.RTM file, and the historical trace data, as an *.HIM file. To save data in comma-separated format (*.CSV), select *.CSV in Save as type.

If data is saved in comma-separated format (*.CSV), Loader no longer loads it. Note

It is possible to open the trace data file by selecting **File** | **Open** on the Loader top window (see Section 2.2.2 "Open") and analyze the data at an arbitrary sampling point with the screen scroll bar and the cursor.

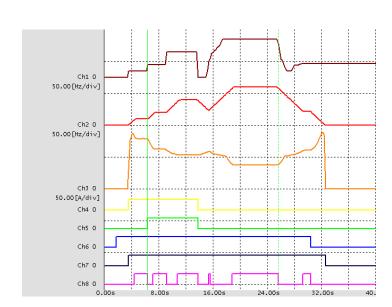


Note If tracing operation has not been finished successfully due to communication break, etc., the trace data cannot be saved even if the waveform data displays on the screen.



2.3.5.3 Making a copy of the waveform monitor

To make a copy of the waveform monitor, click **Copy** at the top of the screen. The graph only is copied to Clipboard. Paste it to desired documents.

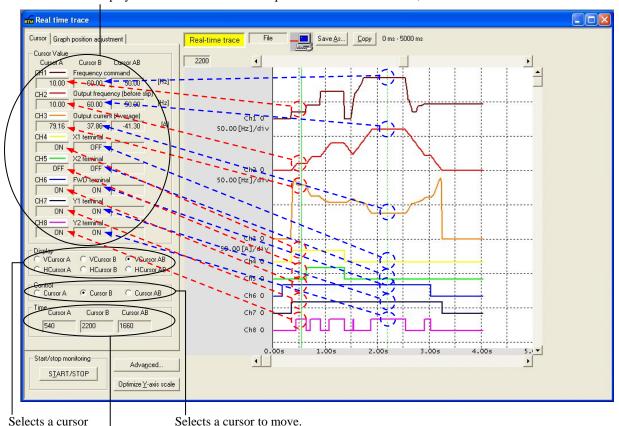


<u>С</u>ору

2.3.5.4 Sub-panes

[1] Cursor

Each box in this pane shows the measured numerical data or ON/OFF state at the point where each cursor lies.



Displays the monitored value at the point where each cursor lies, on the waveform-traced channel.

type to display.

Displays the time at the point where the cursor lies on the graph.

Use the scroll bar and move the opened trace screen to the sampling time frame to be analyzed, and click a point on the trace line to place the cursor here. The cursor moves to the sampling point (time) nearest to the clicked point. The trace data on the cursor on all channels will be shown in the corresponding boxes in the cursor pane.

It is possible to move the cursor by dragging the cursor scroll bar or the cursor itself. During tracing in progress, however, both the waveform monitor and cursor cannot be moved.

[2] Graph Position adjustment

Use this pane to position the graphs in each monitor channel.

Cursor Graph position adjustment	Select channel Select a channel whose graph position is to be customized.
Select CH-1 Channel Position 90	<u>Position</u> Customize the graph display position on the y-axis for the selected channel. The top of the waveform monitor window is regarded as zero (0). The grid lines are drawn at intervals of 60 dots.
Amplitude 1	<u>Amplitude</u> Set a multiplier to magnify the waveform amplitude on the selected channel.
100 + / 1000 Reset positioning	<u>Scale</u> Specify the measuring scale for the selected monitor channel. Full scale is at 1000. (This feature is only applicable to analog channels.)
Style line	<u>Reset positioning</u> Revert the Position, Amplitude and Scale settings to the factory defaults.
Timeframe per window	Style line Specify the trace line style on the selected channel.
Background color	<u>Timeframe per window</u> Specify the timeframe per waveform monitor window in seconds.
	Background color

Select the background color of the waveform monitor.

2.3.5.5 Advanced waveform settings

[1] Channel configuration

This window allows you to configure the trace windows for the analog and digital channels. See [2] to [5] for details.

Advanced settings of	f real time trace				×
Configuration Ch1	Ch2 Ch3 Ch4	Ch5 Ch6	Ch7 Ch8	Channel check Other	<u> </u>
Analog C 4	Digital	Not available			
Analog © 3	Digital C Disabled C 1 C 5	C 2 C	3 0 4		
Analog C 2	C Disabled C 1 C Disabled C 1 C 5	C 2 C C 6	03 0 4		
Analog C 1	C Disabled C 1 C Disabled C 5	C 2 C C 6 C	03 0 4 07		
Analog O Disabled	Digital O Disabled O 1 O 5	C 2 C C 6 C			
				OK Cancel	Apply

[2] Ch1 to Ch4 (Analog channels)

Selecting analog channels in the **configuration** window in [1] in this section and selecting any of **Ch1** to **Ch4** tabs displays the following window that is used for advanced setup of the analog channels.

Channel	-Waveform=Analog		
Waveform	Filter	Trigger	Trigger
Analog	C Off	C Disabled	C Disabled
	Manual filter	Ch1	C Low level
Select signal block	C Peak waveform	C Ch2	C High level
_	(within a sampling time)	C Ch3	C Rising edge
Select Frequency command	C Automatic filter	C Ch4	C Falling edge
Style line	Select time constant for manual filter 50ms	Level (%)	
Select inverter		0)- 0.00 Actual 50.00 - [Hz]	
		Edge G UP C DOWN	

Select inverter

Select the inverter number that has been registered in the connection setting.

(Note This item does not apply to the historical trace.

Choose the inverter of the same model. The right waveform may be unable to be displayed if two or more models are intermingled.

Channel

This box shows the channel type that has been selected in the **Configuration** window.

Select (signal item)

Listed below are items that can be real-time traced for inverters.

Inverter information	Mini (C1S)	Mini (C2S)	Eco	Multi	Ace	MEGA	HF
Frequency command	Y	Y	Y	Y	Y	Y	Y
Output frequency (before slip compensation)	Y	Y	Y	Y	Y	Y	Y
Output frequency (after slip compensation)	Y	Y	Ν	Y	Y	Y	Ν
Output current (average)	Y	Y	Y	Y	Y	Y	Y
Output voltage	Y	Y	Y	Y	Y	Y	Y
Motor speed (Rotation speed)	N	N	Y	Y	Y	Y	Y
Load shaft speed (Load rotation speed)	Y	Y	Y	Y	Y	Y	Y
Line speed	Y	Y	Ν	Y	Y	Y	Y
Detected speed	Ν	Ν	Ν	Ν	Y	Y	Ν
PID command	Y	Y	Y	Y	Y	Y	Ν
PID feedback value	Y	Y	Y	Y	Y	Y	Ν
PID output value	Ν	Y	Y	Y	Y	Y	Ν
Torque command	Ν	Ν	Ν	Ν	Y	Y	Ν
Output torque	Ν	Ν	Y	Y	Y	Y	Ν
Torque current command	Ν	Ν	Ν	Ν	Y	Y	Ν
Torque current	Ν	Ν	Ν	Ν	Y	Y	Ν
Magnetic flux command	Ν	Ν	N	N	Y	Y	Ν
DC link bus voltage	Y	Y	Y	Y	Y	Y	Y
Input power	Y	Y	Y	Y	Y	Y	Ν
Accumulated electric power	Ν	Ν	Y	Y	Y	Y	N
Load factor	Ν	Ν	Y	Y	Y	Y	Ν
Motor temperature	Ν	Ν	N	N	N	Y	Ν
Temperature inside inverter	Ν	Ν	Y	Ν	Y	Y	Y
Heat sink temperature	Y	Y	Y	Y	Y	Y	Y
Output current	Ν	Ν	N	N	Y	Y	Y
Motor output power	Ν	Ν	Y	Y	Y	Y	Ν
Input voltage on terminal [12]	Y	Y	Y	Y	Y	Y	Y
Input current on terminal [C1]	Y	Y	Y	Y	Y	Y	Y
Input voltage on terminal [V2]	Ν	N	Y	Y	Y	Y	Y
Position deviation in synchronous operation	Ν	N	N	N	Y	Y	Ν

Y: Available, N: Not available



Note Selected item may be invalid according to the inverter model or version. Please check that the item is valid or not in the inverter manual..

Filter

Specify the filter for each channel as shown below.

Filter Disabled Manual filtering Peak waveform (within a sampling time) Automatic filtering Select time constant for manual filtering 1ms Ŧ 1ms 2ms 5ms 10ms 20ms 50ms 100ms

Disabled

Select this option when using no filter.

Manual filtering

Selecting this uses the low-pass filter (lpf) with a filter time constant arbitrarily specified.

Select time constant for manual filtering

Select the filter time constant from the following: Historical trace: 5, 10, 20, 50, 100 ms Real-time trace: 50, 100 ms

Peak waveform (within a sampling time)

Selecting this displays the maximum monitored value in the sampling cycle.

Automatic filtering

Selecting this performs anti-aliasing, corresponding to the sampling cycle.

Filter time constant = lpf with "sampling cycle x 3.2"

(Example) When the sampling time is set at 1 ms: Filter time constant = 3.2 ms

<u>Trigger</u>

Specify the trigger for each channel as shown below.

Trigger O None Ch1 C Ch2 C Ch3 C Ch4 Level (%) 500.00 100 10 0 0.00 Actual 50.00 [H7] value Edge O UP C DOWN

Trigger

Select a channel for which the trigger is to be specified. For an analog channel, only one trigger can be specified.

Level

Use the slide bar to specify the level in %.

Use the **Actual value** box to specify the data amount of monitor item selected for each channel.

Edge

Select either the rising edge (\uparrow) or trailing edge (\downarrow) of the trigger.



To customize the filter or the trigger for real-time trace, it is necessary to select the "Use reserved communication commands" check box of the Communication command on the Others window called up by selecting **Advanced...** | **Others**.

Style line

Clicking the Advance... button calls up the Style line dialog shown below.

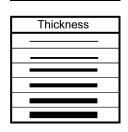
Style line	
Color	
Type of line	
Thickness	
Caution : Da	ished line is a thin line.
0K	Cancel

In this dialog, you can style a trace line for each selected channel. **Color**

Click the **Color** box to call up the **Color** dialog shown below.

Type of line

Type of line Select the desired type of a trace line using the pull-down menu.



Thickness

Select the desired thickness of a trace line using the pull-down menu.



Select the desired color for a trace line and click **OK**.

[3] Ch1 to Ch8 (Digital channels)

Selecting digital channels in the **configuration** window in [1] in this section and selecting any of **Ch1** to **Ch8** tabs displays the following window that is used for advanced setup of the digital channels.

Advanced settings of real time trace
Configuration Ch1 Ch2 Ch3 Ch4 Ch5 Ch6 Ch7 Ch8 Channel check Dther Channel Waveform digital Trigger © Disabled © Low level © Low level © High level © High level © Falling edge © Falling edge © Falling edge © Falling edge © Style line Select inverter No. 1[1] INV1 •
OK Cancel Apply

Subject inverter

Select the inverter number that has been registered in the connection setting.

(Note This item does not apply to the historical trace.

<u>Channel</u>

This box shows the channel type that has been selected in the Configuration window.

Select signal block--Control signal input terminals

Listed below are items that can be real-time traced for inverters.

Signal input terminals	Mini (C1S)(C2S)	Eco	Multi	Ace	MEGA	HF
X1	Y	Y	Y	Y	Y	Y
X2	Y	Y	Y	Y	Y	Y
X3	Y	Y	Y	Y	Y	Y
X4	Ν	Y	Y	Y	Y	Y
X5	Ν	Y	Y	Y	Y	Y
X6	Ν	Ν	Ν	Ν	Y	Y
X7	Ν	Ν	Ν	Ν	Y	Y
X8	Ν	Ν	Ν	Ν	Y	Ν
X9	Ν	Ν	Ν	Ν	Y	Ν
EN	Ν	Ν	Ν	Y	Y	Y
FWD	Y	Y	Y	Y	Y	Y
REV	Y	Y	Y	Y	Y	Y

Y: Available, N: Not available

Select (signal item)--Signal output terminals

Signal output terminals	Mini (C1S)(C2S)	Eco	Multi	Ace	MEGA	HF
Y1	Y	Y	Y	Y	Y	Y
Y2	Ν	Y	Y	Y	Y	Y
Y3	Ν	Y	Ν	Ν	Y	Y
Y4	Ν	Ν	Ν	Ν	Y	Y
Y5	Ν	Y	Ν	Ν	Y	Y
30A/B/C	Y	Y	Y	Y	Y	Y

Listed below are items that can be real-time traced for inverters.

Y: Available, N: Not available



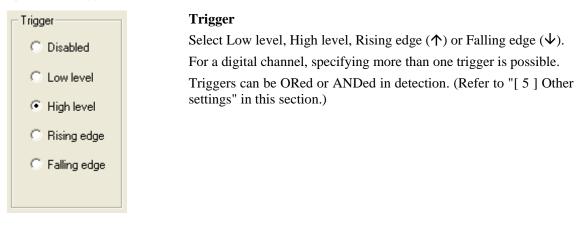
Note Selected item from input or output terminals may be invalid according to the inverter model or version. Please check that the item is valid or not in the inverter manual.

Style line

Style a trace line in the same way as for analog signals. (Refer to "[2] Ch1 to Ch4 (Analog channels)" in this section.

<u>Trigger</u>

Specify the trigger for each channel as shown below.



To customize the trigger for real-time trace, it is necessary to select the "Use reserved Note communication commands" check box of the Communication command on the Others window called up by selecting Advanced... | Others.

[4] Channel check

Selecting the **Channel check** tab displays the following window that allows you to confirm your real-time trace channel setup. To make your setting effective, press **OK**; to cancel it, press **Cancel**.

Wavefor			
	Filter	Trigger	INV No.
ch1 — Analog wave Frequency command	None	Unused	1
ch2 — Analog wave Output frequency (before slip compensation) None	Unused	1
ch3 — Analog wave Output current	None	Unused	1
ch4 — Digital wave X1 terminal	None	Unused	1
ch5 — Digital wave X2 terminal	None	Low level	1
ch6 — Digital wave FWD terminal	None	High level	1
ch7 — Digital wave Y1 terminal	None	Up edge	1
ch8 — Digital wave Y2 terminal	None	Down edge	1

[5] Other settings

Selecting the **Other** tab displays the following window that allows you to customize your real-time trace waveform configuration in details.

Advanced settings					
Configuration Ch1 Ch2 Ch3 Ch4 Ch5	Ch6 Ch7 Ch8 Channel check Other				
Sampling Time Time 50ms 💌	Set starting time date ✓ Start at specified time Time 12:00:00 AM →				
Trigger position	Date 1/ 1/2008 -				
Save waveform info into a file	After sampling ends, data is preserved automatically. File name C:\Program Files\Fuiji Electric\FRENI Browse				
Current	Note: This setting does not take effect if trace window is not open.				
Grid Grid Horizontal C Vertical Advance	Communication command				
Detection conditions C Detects on DR conditions of Ch which set up the trigger C Detects on AND conditions of Ch which set up the trigger					
/	OK Cancel Apply				

Sampling time

Specify the sampling time, referring to the table below.

Sampling Time	
Time	1ms 💌
	1ms 2ms
	5ms 10ms
Trigger position	20ms
0	50ms 100ms
г	200ms

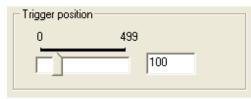
Sampling time	Real-time trace	Historical trace
1 ms	Ν	Y
2 ms	N	Y
5 ms	Ν	Y
10 ms	N	Y
20 ms	Y (Note)	Y
50 ms	Y	Y
100 ms	Y	Y
200 ms	Y	Y

Y: Available, N: Not available

Note When selecting 20 ms for real-time trace, select the RS-385 connection and 38400 bps; otherwise, the graph display may be intermissive.

Trigger position

Specify the number of sampling points preceding the trigger point.



Detection conditions

Specify the trigger detection conditions--"OR" or "AND."

Analog: Only one channel Digital: Channels 1 to 8

- Detection conditions-

- O Detects on OR conditions of Ch which set up the trigger
- Detects on AND conditions of Ch which set up the trigger

Note

To customize the sampling time, trigger position, or trigger detection conditions for real-time trace, it is necessary to select the "Use reserved communication commands" check box of the Communication command on the Others window called up by selecting Advanced... | Others.

<u>Grid</u>

Clicking the Advance... button calls up the Style line dialog shown below.

Grid	
Horizontal	
C Vertical	Advance

Style line	
Color	
Type of line	
Thickness	
Caution : Da	ished line is a thin line.
ОК	Cancel

In this dialog, you can style a grid line for each selected channel.

Color

Click the Color box to call up the Color dialog shown below.

Type of line

Type of line

Select the desired type of a grid line using the pull-down menu.

Thickness	-
	-

Thickness

Select the desired thickness of a grid line using the pull-down menu.

Color ?X
Basic colors:
Custom colors:
Define Custom Colors >>
Denne Cus(OM Colors >>
OK Cancel

Select the desired color for a grid line and click **OK**.

Save waveform info into a file

Specify the range of a waveform to be saved into a file.

Save waveform info into a file
C Current

Set trace start date and time

Set the date and time to start tracing.

Set trace start time and <u>d</u> ate					
✓ Start al	t specified time and date				
Time	12:00:00 AM				
<u>D</u> ate	1/ 1/2008 🗸				

Auto Save

Select this option to automatically save trace data.

Auto Save		
🔽 Save dat	a automatically after detecting the trigger	
File name	C:\Program Files\Fuji Electric\FRENI	Browse
Note: This se	atting does not take effect if trace window	is not open.

Communication command

Select this option to use data saved in the inverter memory during real-time tracing.



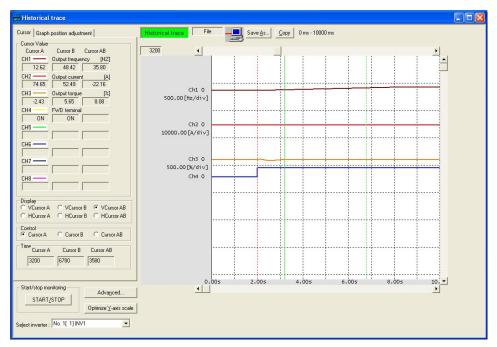
- Note Without selecting this option, the sampling time, trigger position, trigger detection conditions, trace start date and time, or auto save for real-time trace cannot be customized.
 - Historical trace does not support this option.
 - FRENIC-Mini (C1S) [FRN-C1S] /-Eco[FRN-F1S] /-Multi [FRN-E1S] do not support the selection of communication command.

2.3.5.6 Optimizing Y-axis of the graph

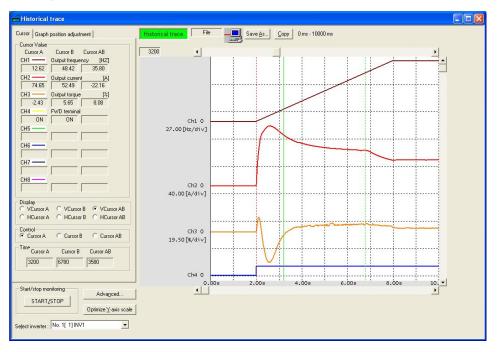
Clicking the **Y** Cursor Adjust button at the bottom of the screen automatically optimizes the position and measuring scale of the Y-axis for monitored data of each channel.

Optimize <u>Y</u>-axis scale

Before optimization



After optimization



2.3.6 Quick access menu

The **Quick Access Menu** enables an access to any of the 10 most frequently used functions (programs) with a single click of the mouse.

B	[Function code]: To set up, edit, compare, transfer, or initialize function codes.	[Test run]: To view the status of the inverter and to control/run the inverter through Loader.
S	[Operation monitor]: To open I/O monitor, system monitor, alarm monitor, and analog metering.	[Real-time trace]: To graphically view the running status of the inverter in real-time.
	[Multi-monitor]: To monitor the running status of the previously registered inverters on the system.	[Historical tracing]: The historical tracing screen is indicated.
	[Communication setting]: To configure communications environment between the inverter and the PC.	[Option]: To run another program through Loader.
	[Connection setting]: To configure communications environment between the inverter and the personal computer.	[Exit]: To save changed files and exit the utility.
☐ Hide this wir	dow at <u>n</u> ext start-up.	Close

🗅 🚅 🖬 🎒 🖪 📾 🕺 X 🖻 🖻 🗘 🎔 🕄 🎘 🐛 💡 🖬 FC RT HT M OM T OP CS C

Note • If "USB: Data in keypad" has been selected in communications setting, the [Multi-monitor], [Real-time trace], or [Historical tracing] cannot be selected.

2.3.7 Option

Selecting **Menu** | **Option** calls up the **option** window (shown below) which is used to open a file or program related or unrelated to Loader.

Option	X
Input the name of the program or document that you wants to open.	Name
Name SProgram Files\Fuji Electric\ists\PID Tuning\PIDTun.exe	Enter or select the name of an object (a file or program) to be opened.
OK Cancel Browse •	Browse Open the dialog to browse for the location containing the file or program to be opened.

If you have typed in or chosen a file or a program name in the Name combo box, click OK to open it.

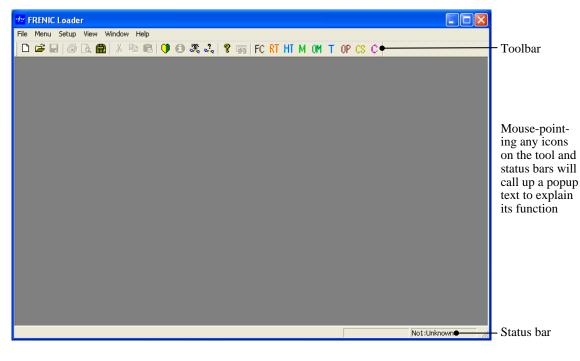
2.4 View

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



2.4.1 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.



2.4.2 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.

2.5 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.

2.5.1 Cascade windows

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

-					
T and	est run				
	Function1				
	(English and a daily a second	In Inc	a 1		
	Function code edit Auto-ti	tuning Comparison File Informa	ation		1
	E Function			Setting value Range of setting	Factory setting value
	Code group	F00	Data protection	0 0 to 3	
	Ecode	F01	Frequency command 1	0 0 to 12	(🗐
	- Ccode	F02	Operation method	2 0 to 3	
	- Pcode	F03	Maximum frequency 1	60.0 25.0 to 500.0 Hz	60.(=
	Hcode	F04	Base frequency 1 Rated voltage at base fregency 1	50.0 25.0 to 500.0 Hz	50.0
	Acode	F05 F06		200 0;80 to 240 V;160 to	20(
ш	bcode	F07	Maximum output voltage 1 Acceleration time 1	200 80 to 240 V; 160 to 50 6.00 0.00 to 6000 s	20(
ш	Jcode	F08	Deceleration time 1	6.00 0.00 to 6000 s	6.0(
	dcode	F09	Torque boost 1	4.9 0.0 to 20.0 %	4.5
ш	- ycode	F10	Electronic thermal overload protect		
ш	- Change (Fact	F11	Electronic thermal overload protect		22.5(
ш	Contents of cl		Electronic thermal overload protect		5.(
	🖃 User definitior 🗸			4 04-7	, <u> </u>
		<			
17	READ WRITE	Factory se	t Func. code set Func. code info	Initialaization Advanced Print	
		1.0000/00			
				Select inverter No. 1[1] INV1

2.5.2 Tile windows

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

😎 FRENIC Loader - Function1							
File Menu Setup Edit View Wi	ndow Help						
🗅 😂 🖬 🖨 🔃 🖷 🐰 🗉	h 🖻 🚺 🔂 🎘 🕹	😵 🙀 FC RT HT M OM T	OP CS C				
-FI Function1							
Function code edit Auto-tuning	Comparison File Informatio	n					
E-Function 🔼 Cha	ange Function code No.	Function code name	Setting value	e Range of setting	Factory setting value	Data cannot change in o	pe 🔼
E Code group	F00	Data protection	1	0 to 3	0	Enable	
Fcode	F01	Frequency command 1		0 to 12	0	Disable	
- Ccode		Operation method		2 0 to 3	2		
Pcode		Maximum frequency 1		25.0 to 500.0 Hz	60.0	Disable	_
Hcode		Base frequency 1		25.0 to 500.0 Hz	50.0	Disable	_
Acode		Rated voltage at base freqency 1		0;80 to 240 V;160 to	200	Disable	
k boode M	F06	Maximum output voltage 1	20	0 80 to 240 V : 160 to 50	200	Disable	>
Test run			Ū			-	
Select monitor item	Frequence	y reference Hz		Assign an input signal	Norm	ally	
Output frequency (before slip)	•	0.00 Apply	X1	Select multi-freq. [SS1]	Ope	en	
0000 6			X2	Select multi-freq. [SS2]	Оре	en	
		onitor item		Select multi-freq. [SS4]	Оре	_	
Operation status		y command	X4	Select multi-freq. [SS8] Select ACC/DEC time [RT1]	Ope		
STOP	DL link c			Select ACC/DEC time [RT1]	0pe	_	
				. ,	, · ·		
	Switch of	Freq. reference, Ope. command		3-wire operation stop comma	nd (HLD) Ope	en	
STOP FW		= Inverter, Ope. = Inverter	-	Coast-to-stop command [BX]	Ope	en	
	- The		X9	Reset alarm [RST]	Ope	en	
DESET DE		Apply	FWD	Forward operation command	[FWD] Ope	en	~
						No1:Unkn	OIMD

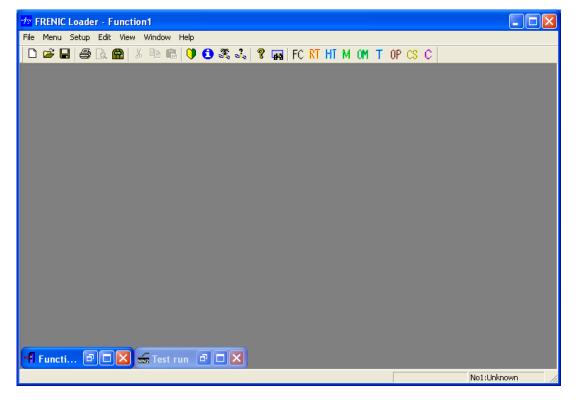
2.5.3 Tile windows vertically

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

Function1			📻 Test run			
E- Function	ing Comparison File Informati Change Function code No. F00	Function code name	Select monitor item Output frequency (befo	re slip)	Frequency reference	Hz IO AB
Fcode Ecode Ccode Pcode	F01 F02 F03 F04	Frequency command 1 Operation method Maximum frequency 1	Operation status	Hz	Select monitor item Frequency command	38
Hcode Acode bcode rcode	F04 F05 F06 F07	Base frequency 1 Rated voltage at base frequency Maximum output voltage 1 Acceleration time 1	ST	OP	DC link circuit voltage Output voltage	•
Jcode dcode ycode Change (Factory Contents of chan	F08 F09 F10 F11 F12	Deceleration time 1 Torque boost 1 Electronic thermal overloac Electronic thermal overloac	STOP	FWD	Switch of Freq. reference, 0 0 : Freq. = Inverter, Ope. =	
 User definition User definition User definition User definition User definition User definition 	F12 F14 F15 F16 F18	Restart mode after momer Frequency limiter (High) Frequency limiter (Low) Bias (Frequency commanc	RESET	REV	Update inverter information	Refr
S code M code W code X code	F20 F21 F22	DC Braking 1 (Braking star DC Braking 1 (Braking leve DC Braking 1 (Braking time	Connected	Select inverter	No. 1[1] INV1	
Z code Comparison result Search result	F23 F24 F25 F26 F27	Starting frequency 1 Starting frequency 1 (Holdii Stop frequency Motor sound (Carrier frequ Motor sound (Tone)				
BEAD WRIIE	Factory set	Func. code set Func. code info				

2.5.4 Arrange icons

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



2.6 Help

2.6.1 About FRENIC Loader

Selecting Help | About Loader shows the FRENIC Loader version, copyright, and license information.

Version	information	
Franje	FRENIC Loader3.3 Version 7.3.3.0 E Copyright (C) 2002–2013 Fuji Electric Co., Ltd. All rights reserved. This software is licensed to	
	Company name : USER COMPANY User : USER NAME	t.
	<u>OK</u>	

Chapter 3

Reference Information

This chapter contains troubleshooting and major specifications of FRENIC Loader 3.x.

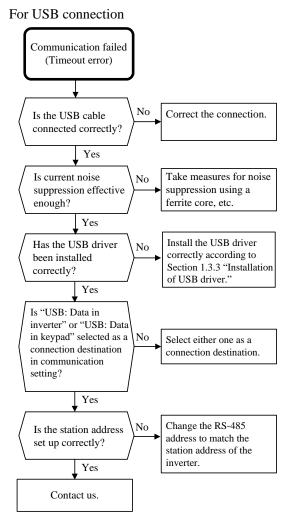
Chap. 3

Reference Information

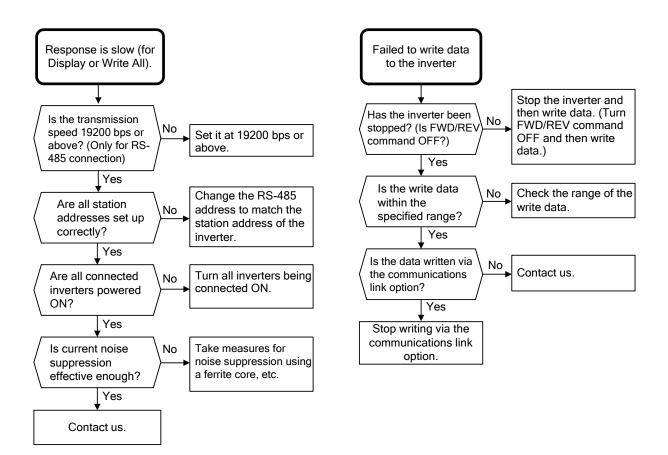
3.1 Troubleshooting

If any problem occurs during Loader operations, follow the steps listed in the troubleshooting chart shown below.

For RS-485 connection



Communication failed (Timeout error) Is the inverter(s) No Correct the connection. connected to the PC correctly? Yes Is a host device other Yes Disconnect the device. than a PC connected? No In the case of multi-drop No Mount the terminators connection, are the terminators mounted correctly. correctly? Yes Does the cable Use a cable that meets the connecting the PC with No specifications of the the communications communications level level converter meet converter. specifications? Yes Set up the converter Is configuration of the No referring to its manual. communications level converter correct? Yes Is current noise Take measures for noise No suppression effective suppression using a ferrite enough? core, etc. Yes Make one free. (Check it No Is any COM port of using the control panel of the PC free? Windows.) Yes Is the "RS-485: Data in Select the "RS-485: Data inverter" selected as No in inverter" as a connection a destination? connection destination. Yes In the communications Reconfigure the port to No setup, is the COM port match the PC's COM number in Loader port. configured correctly? Yes Do the communications Reconfigure the PC's No conditions match the COM port to match the inverter? inverter's one. Yes Change the RS-485 address Is the station address No to match the station address set up correctly for all of the inverter. the inverters ? Yes Contact us.



3.2 Frequently asked questions (FAQ)

3.2.1 Cannot communicate with inverter (Failed to get inverter information)

3.2.1.1 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.

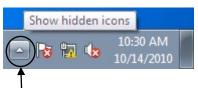
Delete the folder (including its contents) named Fuji Electric Shared in the file path as shown below, and then <u>reinstall Loader</u>.

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



3.2.1.2 USB driver not installed correctly (for FRENIC-MEGA/HF/Mini(C2S)/Ace)

To communicate with the inverter via the USB connector provided on the FRENIC-MEGA/HF keypad, the USB driver (Loader USB device) should be installed.

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

Target models:

- > MEGA
- > HF
- > Mini(C2S)(Option:TP-E1U)
- > Ace(Option:TP-E1U)

Installation finished successfully



Installation failed

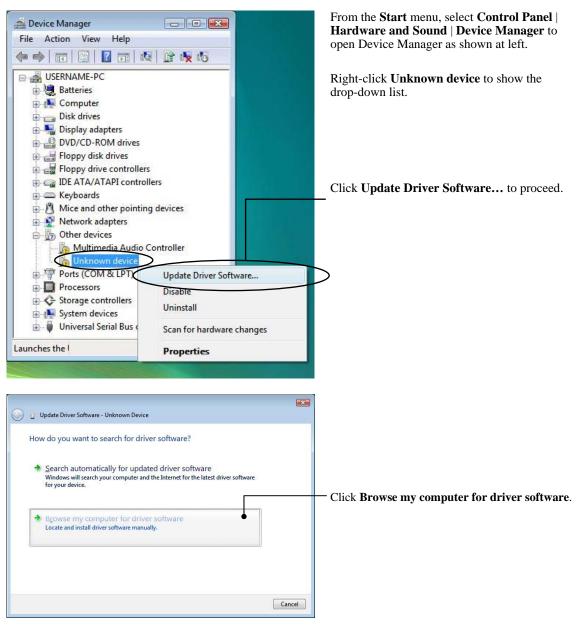


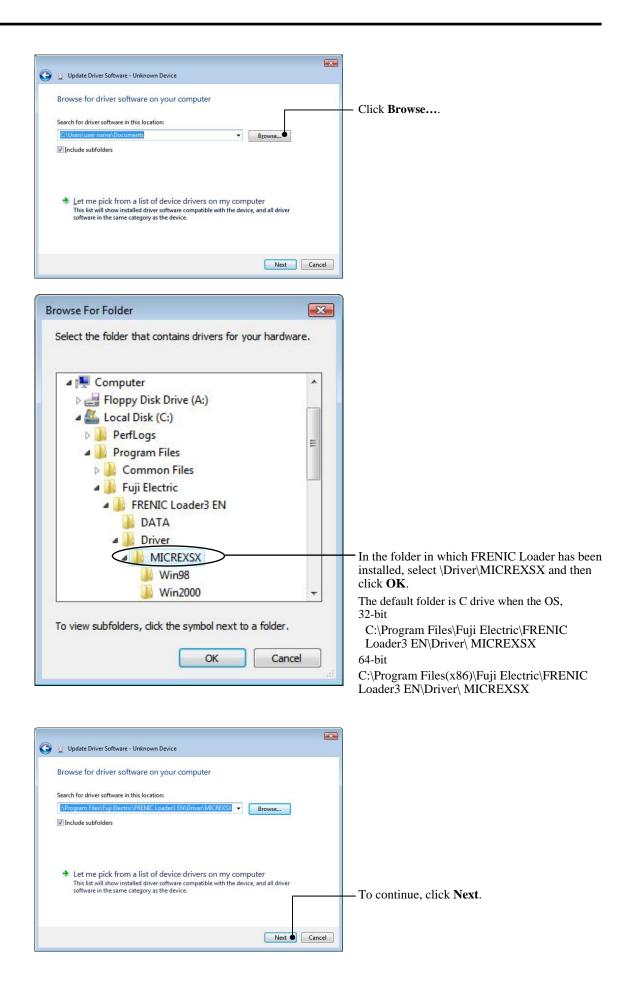
[1] Windows 7

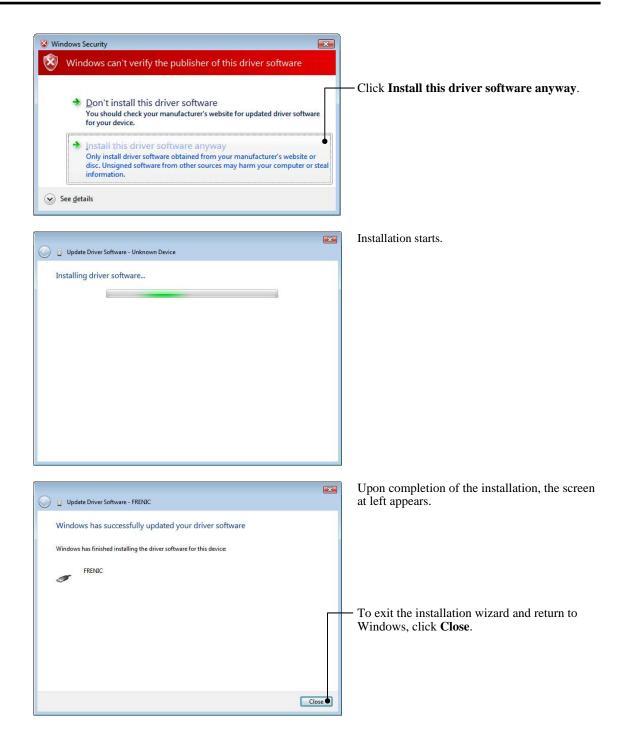
Refer to Section 1.3.2.1 "Installing the USB driver, [1] Windows 7."

[2] Windows Vista

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

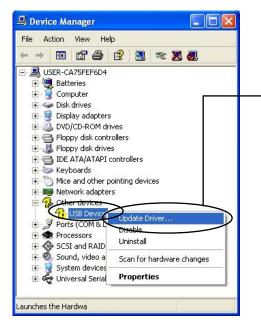






[3] Windows XP

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

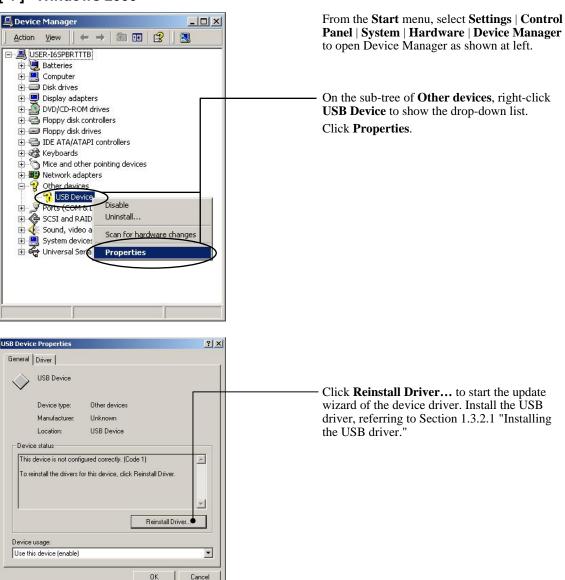


From the **Start** menu, select **Control Panel** | **System** | **Hardware** | **Device Manager** to open Device Manager as shown at left.

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 1.3.2.1 "Installing the USB driver."

[4] Windows 2000



3.2.1.3 USB driver installed correctly (for FRENIC-MEGA/HF/Mini(C2S)/Ace)

Target models:

- > MEGA
- > HF
- > Mini(C2S)(Option:TP-E1U)
- > Ace(Option:TP-E1U)

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.

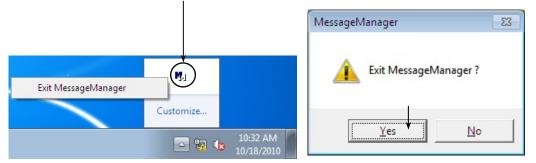
In this case, Message Manager is no longer able to recognize the USB driver, so it is necessary to quit both Loader and Message Manager and then start Loader again.

Quitting Message Manager



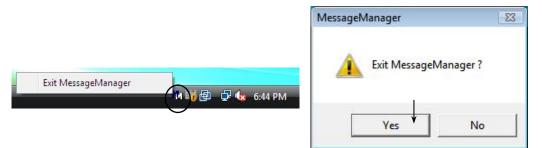
Click this to display the hidden icons as shown below.

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/Windows 2000

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



3.2.1.4 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 <u>cannot</u> enable the OS to recognize the USB driver again.

[2] Windows Vista/Windows XP/Windows 2000

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.

3.2.1.5 If "1:loader protocol" is set in both function code y10 and y20 "RS-485 setting (protocol selection)"

Target models:

> MEGA(ROM version : 3900 or later)

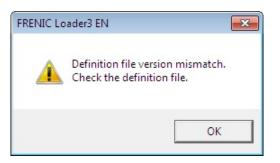
> Ace

If the function code y20 and y10 are set to the same value "1:SX protocol (protocol loader)", the priority of the connection is as follows.

(RS-485 Ch1 < RS-485 Ch2 < USB)

Ch of priority higher can be connected.

3.2.2 Cannot read or write function code data from/to the inverter



Definition file refers to a form describing information on function codes.

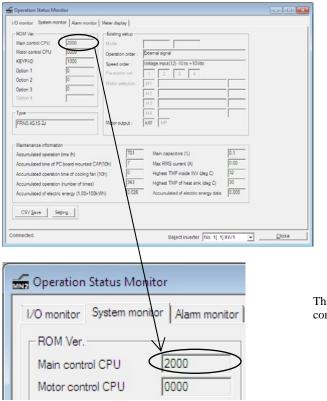
If the ROM version of the current definition file and that of the inverter do not match, Loader cannot read or write function code data from/to the inverter.

To read or write function code data from/to the inverter, it is necessary to perform as follows relation between a definition file and an inverter ROM version.

Definition file	Inverter ROM version
fnc_x_3_00000.csv	0000 to 0499
fnc_x_3_0500e_EN.csv	0500 to 0999
fnc_x_3_1000a_EN.csv	1000 to 1999
fnc_x_3_2000_EN.csv	2000 to 2999
fnc_x_3_3000a_EN.csv	3000 to 3599
fnc_x_3_3600_EN.csv	3600 or 3799
fnc_x_3_3800_EN.csv	3800 or later

Example (FRENIC-MEGA)

To check the inverter ROM version, select **Operation Monitor** | **System Monitor** from the **Quick Access Menu**. On the System Monitor window, see the Main control CPU field in the ROM Ver. area.



This screen shows that the ROM version of the connected inverter is 2000.

To change the current definition file, click Change. In the Open window, select the desired definition file that supports the inverter's ROM version.

- Function2.FNC	
Function code edt Auto-tuning Comparison File Information	1
File name Function2/FNC	
Model G15	
Region spec. EEUROPE	
Voltage 3phase 200V 💌	
Capacity 5.5 kW	
Read date 10/18/2010 - 11:03:09 AM	
Current definition file (nc. x.3,0500e_EN.cov Orange	
Definition file saved Inc.x_3_0500_EN.cov	
Note) Even if the 'Region spec', the 'vallage' and 'capacity' are changed on this screen, it doesn't write it in the 'rivering 'Keypad.	
Note) Match capacity to the inventer/Keypig before changing the voltage.	
Seject inverter No. 1[1] INV1	
\sim	
Current definition file nc_x_3_0500e_EN.csv Change	The current definition file supports the
	inverter ROM version 0500 to 0999. It is
Definition file saved fnc_x_3_0500e_EN.csv	necessary, therefore, to change the file to
	the one that supports version 2000 or
	later.
	- Click Change to display the Open window as shown below.
	window as snown below.
\Downarrow	
🗾 Open	
Look in: 🕌 FRENIC Loader3 EN 🔄 🔶 🖆 🖽 🗸	
DATAfnc_x_3_1000_EN_sample1.<	Select the definition file
Driver fnc_x_3_0000m.csv fnc_x_3_0000m.csv fnc_x_3_0000m.csv	"fnc_x_3_2000_EN.csv" that supports
fnc_x_3_00000.csv	the inverter ROM version 2000, then click
fnc_x_3_0500e_EN.csv	– Open.
fnc_x_3_0850_EN.csv	
File name: fnc_x_3_2000_EN Open	
Files of type: Parameter files Cancel	
¥	
Current definition file finc_x_3_2000_EN.csv Change	Check that the current definition file is
	"fnc_x_3_2000_EN.csv."
Definition file saved fnc_x_3_0500e_EN.csv	

(Note In the Open window above, the definition file to be changed is marked with red. After change, the newly selected file is marked with blue as shown above and the entries in the Comment area disappear.

3.2.3 Cannot open saved files (The specified file did not exist)

3.2.3.1 How to open the function code data saved without the specified files.

If the function code data file(*. fnc) which is saved by the newer loader is opened by previous loader, it may not be able to open and displayed the following message. How to open the function code data saved without the specified files.

Version 7.2.x.x. or ear

FRENIC	Loader3 EN 🛛 🔀	
♪	A specified file didn't exist.	
File ope	n error	
Ų.	The kind of the file can't be limi	ted from the file extension.

Version 7.3.x.x. or later

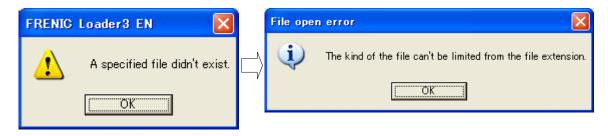
FRENIC	Loader3	
<u>.</u>	A specified file didn't exist. C¥Program Files¥Fuji Electric¥FRENIC Loader3 EN¥fnc_x_3_390	0EN.csv
File ope	n error	
(į)	The kind of the file can't be limited from the file extension.	

Countermeasures

Upgrade to the latest version.

3.2.3.2 How to open the function code data saved by the previous version 1.1.0.0

When opening the function code data (*. fnc) of FRENIC-Mini (C1S) saved by the version 1.1.0.0 of the loader, the following messages are displayed and it may be unable to open. It may not have opened since version 6.0.0.0.



Deterrence method

Open the saved function code data (*. fnc) of FRENIC-Mini (C1S) on a Notepad etc., and do the following work.

- 1) The saved function code data (*. fnc) is copied, and a name is changed and saved.
- 2) The copied function code data (*. fnc) is opened by text editors (Notepad etc.).
- 3) It checks that anything does not have description in the part enclosed with the following circle.

Function1_V1100_C1S.FNC - 乄モ帳	
ファイル(E) 編集(E) 書式(Q) 表示(⊻) ヘルプ(H)	
NO,設定値,初期値,最大値,最小値,詳細情報,変更 1, 0, 0, 1, 0, 0, 2, 4, 4, 4, 4, 0, 0, 3, 2, 2, 3, 0, 0, 4, 60.0, 60.0, 400.0, 25.0, 0,	0000,0000,0000,0000,0000,0000,0000,00

4) It is described as ", $fnc_x_0_{0300.csv}$ " in the part enclosed with the following circle.

/ Function1_V1100_C1S_変更.I	.FNC - メモ帳	
ファイル(E) 編集(E) 書式(O)	□表示(ビ) ヘルプ(出)	
[INVERTER, X-0, -,2010/11, 10:09:54,0000,0000,0000,0000 N0,設定値,初期値,最大値 1, 0, 0, 2, 4, 4, 3, 2, 2, 4, 60.0, 60.0, 5, 60.0, 60.0,	1/22 - ,0000,0000,0000,0000,0000,0000,0000,0)_0300.csv

- 5) The function code data (*. fnc) is saved.
- 6) The copied function code data (*. fnc) is opened by the loader of a version (Ver 6.0.0.0 or later).

3.2.4 Cannot find saved files (Windows 7/Windows Vista)

In Windows 7/Windows Vista, Loader saves function code data and trace waveform data in the directory, C:\Program Files\Fuji Electric\FRENIC Loader3 EN\DATA. If you use Explorer or the like to check the content of the DATA folder in the directory, however, no saved files are found.

@	Computer	· ► Local [Disk (C:) 🕨 F	Program Files 🕨 Fuji I	Electric 🕨 FRENI	C Loader3 EN 🕨 D	ATA		rch DATA	
Organize •	Include in	library 🔻	Share wit	h 🔻 Compatibilit	y files New 1	folder				?
🔆 Favorites	Â	Name	^	Date modified	Туре	Size				
🍃 Libraries	=					This folder is	empty.			
🖳 Computer										
🙀 Network	-									
0 ite	ms									

To find saved files, select File | Open and access the DATA file.



Saved files are stored in the following directory.

 $Computer\Local disk (C:)\Users\(Log-in name)\AppData\Local\VirtualStore\Program Files\Fuji Electric\FRENIC Loader3 EN\DATA$

rganize 🔻	Open	Share with 👻 🛛 Burn 🛛 New 1	folder			= • 🔳 (
Favorites	^	Name	Date modified	Туре	Size	
		Function2.FNC	10/18/2010 11:04	FNC File	72 KB	
🚽 Libraries	E					
📮 Computer						
Vetwork	-					

Note: The \AppData is usually hidden. To show it, refer to Section 3.1.1.4 "Notes on updating Loader," <u>Showing the hidden \AppData folder</u>.

3.2.5 Notes on updating Loader

To update Loader from old version to new version in Windows 7/Windows Vista, follow the procedure given below.

- (1) Uninstall the old version.
- (2) Delete the folder in the following directory.

 $Computer\Local disk (C:)\Users\(Log-in name)\AppData\Local\VirtualStore\Program Files\Fuji Electric\FRENIC Loader3 EN\DATA$

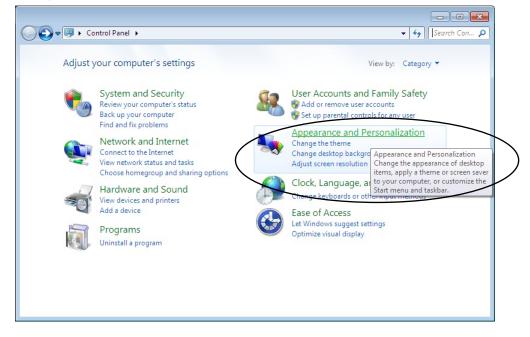
To show the AppData folder usually hidden, refer to Showing the hidden \AppData folder below.

(3) Install a new version.

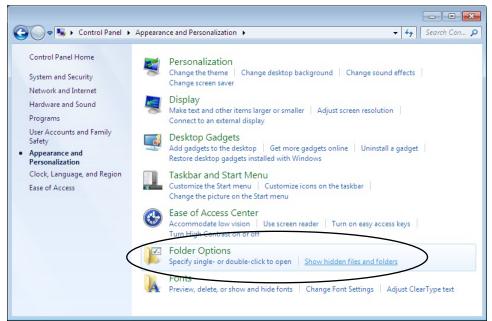
Showing the hidden \AppData folder

Show the hidden \AppData folder using the following procedure.

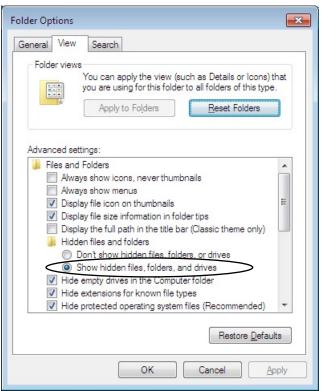
1) Open Control Panel and click Appearance and Personalization.



2) Click Folder Options.



3) Select View | Advanced settings | Hidden files and folders | Show hidden files, folder, and drives, then click OK.



4) Delete the folder that is shown in the following directory.

 $Computer\Local disk (C:)\Users\(Log-in name)\AppData\Local\VirtualStore\Program Files\Fuji Electric\FRENIC Loader3 EN\DATA$

ganize 🔻 Include	in library 🔻 Share w	ith ▼ Burn Ne	ew folder			8≡ - □ (
Documents	Name	*	Date modified	Туре	Size 💌	
🎝 Music 🔄 Pictures 🛛 <	📕 FRENIC Loader3	EN	10/18/2010 11:04	File folder	$ \rightarrow $	
Videos						
Computer						

3.3 Specifications of FRENIC Loader 3.x

Listed below are the standard specifications of FRENIC Loader 3.x.

Item		Specifications	Remarks
Name of software		FRENIC Loader 3.x	
Supported inverter		FRENIC-Mini/Eco/Multi/Ace/MEGA/HF	(See Note 1.)
No. of supported inverters		For USB connection: Only one inverter For RS-485 connection: Up to 31 inverters	
Recommended cable		10BASE-T cable with RJ-45 connectors compliant with EIA568	For RS-485 connection
Operating environment	CPU	Intel Pentium III 600 MHz or higher	(See Note 2.)
	OS	Microsoft Windows 2000 Microsoft Windows XP (SP2 or later) Microsoft Windows Vista Microsoft Windows 7	2000 and XP 32-bit version only.
	Memory	32 MB or more RAM	64 MB or more is recommended
	Hard disk	33.7 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 $(1024 \times 768)/16$ -bit color is recommended
Transmission requirements	COM port**	<u>COM1</u> to COM255	PC COM ports assigned to Loader*
	Transmission rates**	USB connection: Loader – keypad: Fixed at 12 Mbps Keypad – inverter: Fixed at 19200 bps RS-485 connection: 38400, <u>19200</u> , 9600, 4800 and 2400 bps	19200 bps or more is recommended.
	Character length**	<u>8 bits</u>	Prefixed
	Stop bit length**	<u>1 bit</u>	Prefixed
	Parity**	Even	Prefixed
	No. of retries**	None or <u>1</u> to 10	No. of retry times before detecting communications error
	Timeout setting**	(100 ms, 300 ms, 500 ms), (1.0 s to <u>1.5 s</u> to 1.9 s, 2.0 to 9.0 s) or (10.0 to 60.0 s)	This setting should be longer than the response interval time specified by the function code y09.

Bolded, underlined values are factory defaults.

(Note 1) FRENIC Loader cannot be used with inverters that do not support SX protocol (Loader protocol).

With special order-made inverters, FRENIC Loader may not be able to display some function codes normally.

(Note 2) Use a PC with as high a performance as possible since some slower PCs may not refresh the **Operation Status Monitor** window and **Test run** window correctly.

Inverter Support Software FRENIC Loader 3.3

Instruction Manual

First Edition, October 2010 Fifth Edition, April 2014 Fuji Electric Co., Ltd.

The purpose of this manual is to provide an operation guide to FRENIC Loader for the FRENIC 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 damage resulting from the application of the information in this manual.