



FL-PR4

User's Manual

NAITO DENSEI MACHIDA MFG. CO., LTD.
Date Published June 2004 (4th edition)

URL <http://www.ndk-m.co.jp/asmis/>

EEPROM is a trademark of NEC Electronics Corporation

PC/AT is a trademark of International Business Machines Corporation.

Windows and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Pentium is a trademark of Intel Corporation.

- The information in this document is subject to change without notice.
- No part of this document may be copied or reproduced in any form or by any means without the prior written consent of Naito Densai Machida. Naito Densai Machida assumes no responsibility for any errors that may appear in this document.
- Naito Densai Machida does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from the use of Naito Densai Machida products listed in this document or any other liability arising from the use of such products. No license, express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of Naito Densai Machida or others.
- Descriptions of circuits, software and other related information in this document are provided for illustrative purposes in semiconductor product operation and application examples. The incorporation of these circuits, software and information in the design of a customer's equipment shall be done under the full responsibility of the customer. Naito Densai Machida assumes no responsibility for any losses incurred by customers or third parties arising from the use of these circuits, software and information.
- While Naito Densai Machida endeavors to enhance the quality, reliability and safety of Naito Densai Machida products, customers agree and acknowledge that the possibility of defects thereof cannot be eliminated entirely. To minimize risks of damage to property or injury (including death) to persons arising from defects in Naito Densai Machida products, customers must incorporate sufficient safety measures in their design, such as redundancy, fire-containment and anti-failure features.

(Note)

- (1) "Naito Densai Machida" as used in this statement means Naito Densai Machida Mfg. Co., Ltd. and also includes its majority-owned subsidiaries.
- (2) "Naito Densai Machida products" means any product developed or manufactured by or for Naito Densai Machida (as defined above).

General Precautions on Handling This Product

1. Circumstances not covered by product guarantee

- If the product was disassembled, altered, or repaired by the customer
- If it was dropped, broken, or given another strong shock
- Use at overvoltage, use outside guaranteed temperature range, storing outside guaranteed temperature range
- If power was turned on while the AC adapter, USB interface cable, or connection to the target system was in an unsatisfactory state
- If the cable of the AC adapter, the USB interface cable, the emulation probe, or the like was bent or pulled excessively
- If an AC adapter other than the supplied product was used
- If the product got wet
- If GND of this product was not connect to GND of the target system
- If a connector or cable was connected or disconnected while power was being supplied to the product
- If an excessive load was applied to a connector or cable

2. Safety precautions

- If used for a long time, the product may become hot (50 to 60°C). Be careful of low temperature burns and other dangers due to the product becoming hot.
- Be careful of electrical shock. There is a danger of electrical shock if the product is used as described above in **1 Circumstances not covered by product guarantee.**

PREFACE

Target Readers This manual is intended for users who use the FL-PR4 when designing and developing a system using an NEC Electronics on-chip flash memory microcontroller.

Purpose This manual is intended to give users an understanding of the basic specifications and correct use of the FL-PR4.
By using the FL-PR4, programs can be easily erased from or written to the flash memory of an NEC Electronics on-chip flash memory microcontroller, or can be verified on Windows™ screens, while the microcontroller is mounted on the user board.

Organization This manual includes the following sections.

- Overview
- Hardware installation
- Software installation
- FP4 operation using GUI software
- Sample programming session using GUI software
- FP4 operation in standalone mode
- Connectors and cables
- Notes on target systems
- Target system interface circuits
- Error messages

How to Read This Manual To understand the overall functions and usage of the FL-PR4, read this manual in the order of the CONTENTS.

Be sure to read **CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE** because this chapter presents important information for using the FL-PR4.

It is assumed that the readers of this manual have general knowledge of electricity, logic circuits, and microcontrollers.

In the explanations of the operation of the applications, it is also assumed that the readers have sufficient knowledge of Windows.

For the usage and terminology of Windows 95, Windows 98, Windows NT™, Windows Me, Windows 2000, and Windows XP, refer to each Windows manual.

The mark ★ shows major revised points.

Conventions **Note:** Footnote for item marked with **Note** in the text.

Caution: Information requiring particular attention

Remark: Supplementary information

Numeral representation: Binary ... xxxx or xxxxB

Decimal ... xxx

Hexadecimal ... 0xxxxH or xxxH

“ ”: Any character or item on screen

: Name of button

[: Menu
< >: Dialog box name

Terminology

The meanings of the terms used in this manual are as follows.

Term	Meaning
FP4	Abbreviation of flash memory programmer FL-PR4
GUI software	Windows application to operate FL-PR4 using GUI software
Target device	NEC Electronics on-chip flash memory microcontroller
Target system	User-designed board on which NEC Electronics on-chip flash memory microcontroller is mounted
FA adapter	Adapter board to write programs to NEC Electronics on-chip flash memory microcontroller

CONTENTS

CHAPTER 1 OVERVIEW	8
1.1 Features	8
1.2 FP4 Configuration in Graphical User Interface (GUI) Mode	8
CHAPTER 2 HARDWARE INSTALLATION	10
2.1 System Requirements	10
2.2 Package Contents	10
2.3 System Configuration and Components	11
2.3.1 Host computer	11
2.3.2 FP4 control panel and connectors	12
2.3.3 Target system	13
2.3.4 Power supply	13
2.3.5 RS-232C host connection	13
2.3.6 Parallel host connector	13
2.3.7 USB port	14
2.3.8 Target cable	14
2.3.9 I ² C adapter	14
CHAPTER 3 SOFTWARE INSTALLATION	16
3.1 Graphical User Interface	16
3.1.1 GUI software installation	16
3.1.2 USB driver installation	22
3.1.3 GUI software uninstallation	27
3.2 Firmware and GUI Software Update Installation	28
3.2.1 Firmware update installation	29
CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE	30
4.1 Introduction	30
4.2 Starting up the GUI Software	31
4.3 Toolbar	33
4.4 Menus	33
4.4.1 [File] menu	33
4.4.2 [Programmer] menu	40
4.4.3 [Device] menu	44
4.4.4 [Help] menu	61
CHAPTER 5 SAMPLE PROGRAMMING SESSION USING GUI SOFTWARE	62
CHAPTER 6 FP4 OPERATION IN STANDALONE MODE	73
6.1 FP4 Operation Menu	74
6.1.1 [Commands] menu	74
6.1.2 [Type Setting] menu	76
6.1.3 [Option Setting] menu	77
6.1.4 [Voltage Setting] menu	79
6.1.5 [Utility/Misc.] menu	80

CHAPTER 7 CONNECTORS AND CABLES	81
7.1 Power Supply Connector	81
7.2 HD-Sub 9 Serial Host Connector	82
7.2.1 RS-232C cable (crossed)	82
7.3 HD-Sub 15 Target Interface Connector	83
7.4 Target Cable Specifications.....	84
7.5 Parallel Host Connector	86
7.6 USB Port	87
CHAPTER 8 NOTES ON TARGET SYSTEMS.....	88
CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS	95
9.1 SO/TxD, RESET	95
9.2 SCK.....	96
9.3 SI/RxD, H/S	97
9.4 CLK.....	97
9.5 FLMD0, FLMD1	98
9.6 V_{DD}, V_{DD2}.....	98
9.7 V_{PP}	99
CHAPTER 10 ERROR MESSAGES	100
10.1 Error Messages of FP4 in Standalone Mode.....	100
10.2 GUI Software Fatal Error Messages.....	102
10.3 GUI Software Error Messages	105
10.4 GUI Software Information Messages	108
APPENDIX A REVISION HISTORY	110

CHAPTER 1 OVERVIEW

The FP4 is a tool that erases, writes, and verifies programs on an NEC Electronics on-chip flash memory single-chip microcontroller on the target board or FA adapter board. This product can be used in graphical user interface (GUI) mode using a host computer or in standalone mode.

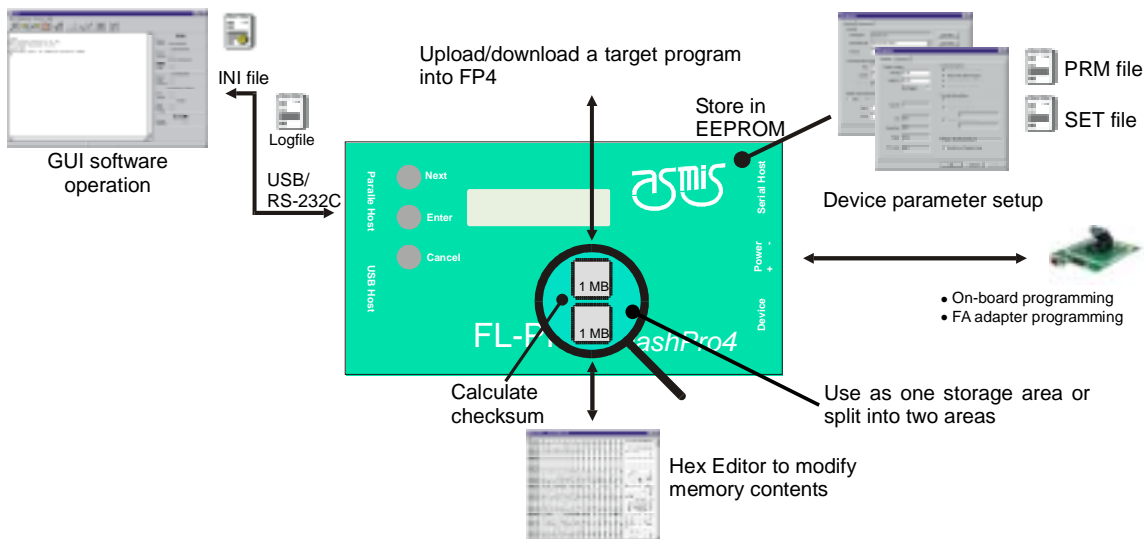
1.1 Features

- The FP4 allows on-board programming without removing the target device from the target system.
- The user program is stored in the internal 2 MB flash memory of the FP4 and parameters for programming are stored in 8 KB EEPROM™, so that the target device can be rewritten in the standalone mode, without having to connect the FP4 to a host.
- Serial interface connection (RS-232C) to host systems, parallel interface for optional fast program download and a USB interface are available.
- CSI, CSI+HS, UART, I²C and PORT interfaces are supported for data transfer to the target device.
- Programming voltage V_{PP} can be selected from between 0 and 12 V.
- The FP4 can supply 0 to 6 V on the V_{DD} line (200 mA max.).

1.2 FP4 Configuration in Graphical User Interface (GUI) Mode

The configuration of the FP4 in GUI software mode is shown in the diagram below.

Figure 1-1. FP4 Configuration in GUI Software Mode



The graphical user interface (GUI) of the FP4 supports the device commands necessary for downloading and uploading user programs, setting parameters necessary for writing the device, setting and selecting a writing environment by the user, changing the user program downloaded to the FP4, and calculating and rewriting the memory checksum.

The parameters necessary for writing the device are saved to a parameter file (PRM file) and the setting of the user's writing environment is saved to a customized setup file (SET file). These files are downloaded to the FP4 and stored in the internal EEPROM, so that the downloaded data can be used even in the standalone mode. The GUI software is executed using the parameters that have been set last. Changed settings are saved to an INI file. Communication between the GUI software and the FP4 is recorded in an ASCII file.

The internal memory of the FP4 is configured as a 2 MB flash memory and holds the user program that is written to the target device. This memory's area (progarea) can be divided into two 1 MB memory areas. Therefore, the FP4 can download two different user programs and select either of them as the valid user program.

CHAPTER 2 HARDWARE INSTALLATION

2.1 System Requirements

Host PC	A PC supporting Windows 95, Windows 98, Windows NT 4.0, Windows Me, Windows 2000, or Windows XP is required to run the FP4 in the graphical user interface (GUI) mode. About 8 MB of free hard disk space is required to install the GUI software.
Host machine	Any of the following can be used: <ul style="list-style-type: none">• PC-9800 series• PC-98NX series• IBM PC/AT™ or compatible CPU Pentium™ 100 MHz or more RAM 32 MB or more
Host interface	Serial interface (RS-232C) capable of handling communication at 9,600 (minimum) baud up to 115,200 baud. A parallel port may be used in addition to the serial interface to enable fast data download to the FP4. Alternatively, a USB port (Rev 1.1) is available.
File formats	Program files can be used in Motorola S file format or Intel HEX file format.

2.2 Package Contents

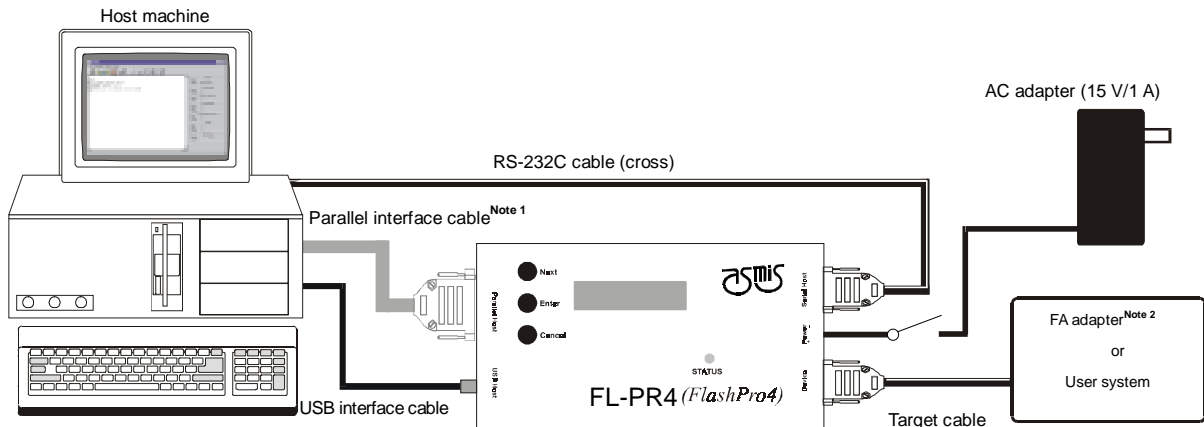
Please verify that you have received all the parts listed in the package contents list included with the FP4 package. If any part is missing or seems to be damaged, please contact an NEC Electronics sales representative or distributor.

2.3 System Configuration and Components

The FP4 system configuration is as given in the diagram below.

★

Figure 2-1. FP4 System Configuration



Notes 1. The parallel interface cable is not included in the FP4 package.

2. The FA adapter board is a product of Naito Densai Machida Mfg. Co., Ltd.

The FP4 is connected to the host system via an RS-232C serial interface cable or a USB interface cable. By using the serial interface in combination with the optional parallel interface, the user program can be quickly downloaded to the FP4.

The FP4 is connected to the user system by the target cable. For the detailed specifications of the target cable, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

2.3.1 Host computer

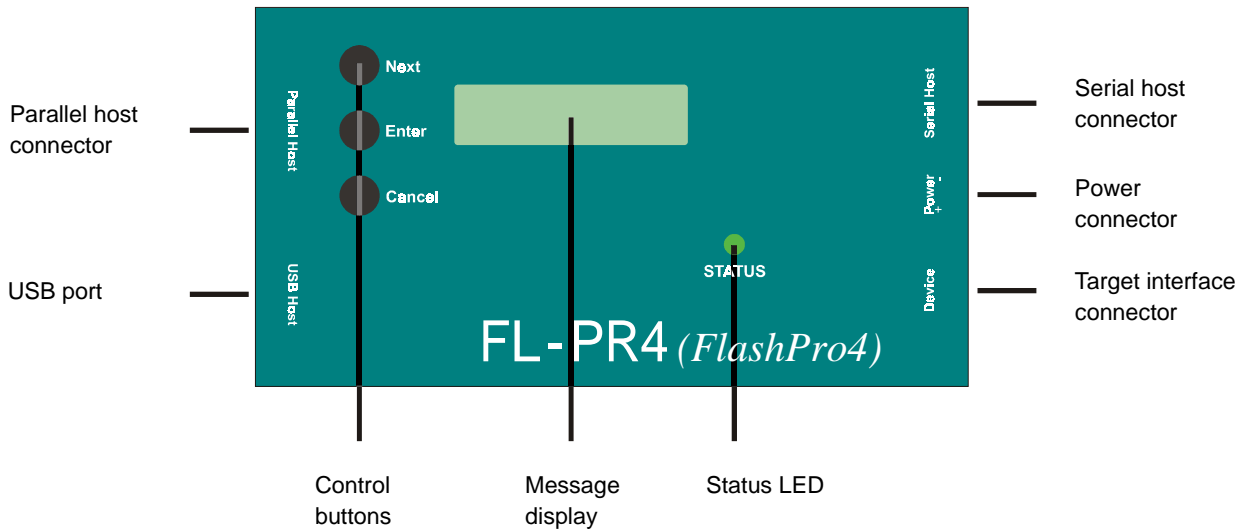
A PC is used to communicate with the FP4. Windows 95, Windows 98, Windows NT, Windows Me, Windows 2000, or Windows XP is required for GUI software operation of the FP4.

It also must be equipped with a serial interface or a USB port. An optional parallel interface may be used for fast program download to the FP4.

Remark USB support is not available on Windows 95 and Windows NT.

2.3.2 FP4 control panel and connectors

Figure 2-2. FP4 Top View



The control buttons are used in the standalone mode of the FP4.

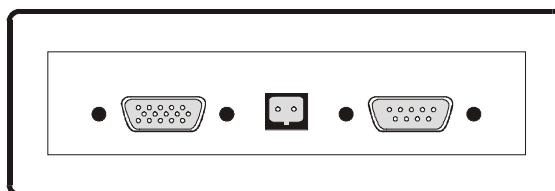
- Next** button Proceeds to the next menu item in sequence.
- Enter** button Selects the item shown in the message display.
- Cancel** button Cancels the current selection and returns to the previous menu item.
- Message display A 16 × 2-character LCD display indicates the operating mode. It is mainly used for the FP4's standalone mode.
- Status LED The LED shows the FP4 operating status, indicated by the colors green for **OK**, red for **Error** or orange for **Operating**.

(1) FP4 connectors

The serial host connector, the target interface connector and the power connector are located on the right side of the FP4.

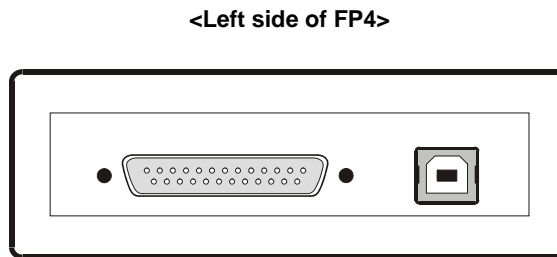
Figure 2-3. FP4 Target Interface/Power/Serial Host Connectors

<Right side of FP4>



The parallel host connector and USB port are located on the left side of the FP4. The parallel host connector can be used for high-speed downloading of a program as a Centronics interface.

Figure 2-4. FP4 Parallel Host Connector/USB Port Interface



2.3.3 Target system

The target system must be equipped with a device interface that complies with the target cable specifications. For details, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

2.3.4 Power supply

The power supply is equipped with a 2.1 × 55 × 14 DC plug and may be connected to the mains using one of the AC plugs available in the USA and Japan.

For the power supply specifications, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

Caution Do not use any other AC adapter. Connect only the provided AC adapter to the power supply jack.

2.3.5 RS-232C host connection

The RS-232C host interface enables communication to the FP4. Windows 95, Windows 98, Windows NT 4.0, Windows Me, Windows 2000, or Windows XP may be used to operate the FP4, which is connected to the serial port. The RS-232C data transfer conditions are 9,600 baud, 8 data bits, 1 stop bit, no parity and selectable hardware handshake.

The baud rate may be selected from 9,600 bps (default), 19,200 bps, 38,400 bps, 57,600 bps or 115,200 bps.

For detailed specifications of the host interface, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

2.3.6 Parallel host connector

The parallel host connector may be configured as follows.

Centronics interface configuration

Program data can be downloaded to the FP4 via a high-speed parallel port from the host system.

For detailed specifications of the parallel interface, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

2.3.7 USB port

The USB port conforms to Rev 1.1. It supports a communication speed of 12 Mbps on a USB type B connector.

Caution USB support is not available on Windows 95 and Windows NT.

2.3.8 Target cable

The target cable is compatible with the FA adapters of Naito Densai Machida Mfg. Co., Ltd.

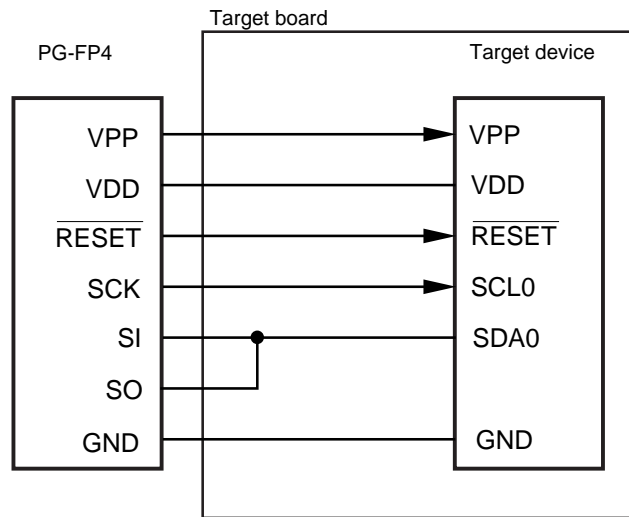
- ★ There are two types of target cables: type A (16 pins), which is used for both single- and two-power-supply flash memories; and type B (10 pins), which is a dedicated cable for two-power-supply flash memories.

For detailed specifications of the target cable, refer to **CHAPTER 7 CONNECTORS AND CABLES**.

2.3.9 I²C adapter

The SI and SO pins of the FP4 must be shorted on the target board when the I²C communication mode is used.

Figure 2-5. Connection Diagram



When using an I²C adapter, the SI and SO pins do not have to be shorted on the target board.

Figure 2-6. I²C Adapter

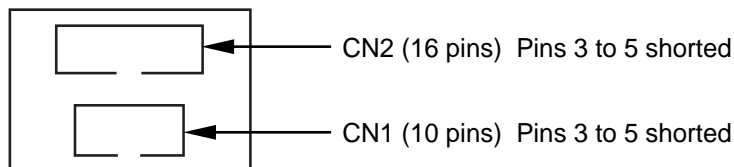
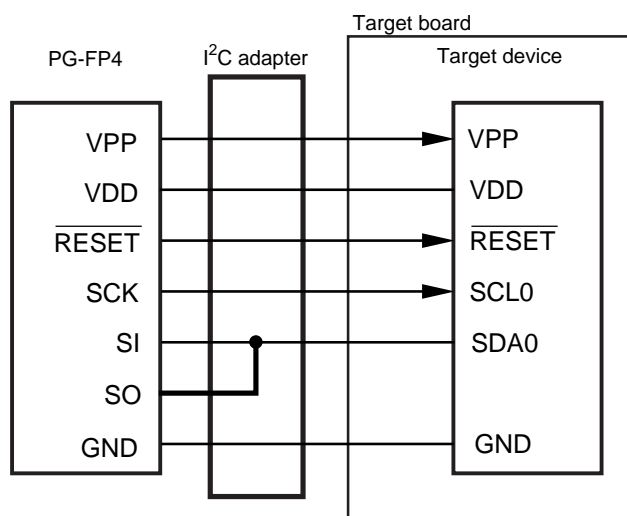


Figure 2-7. Connection Diagram When Using I²C Adapter**<Usage when writing two-power-supply flash memory microcontroller>**

- <1> Connect the FA adapter and the type B target connector of the target cable (10 pins).
- <2> Connect the type A target connector (16 pins) and the I²C adapter (CN2) of the target cable.

<Usage when writing single-power-supply flash memory microcontroller>

- <1> Connect the FA adapter and the type A target connector of the target cable (16 pins).
- <2> Connect the type B target connector (10 pins) and the I²C adapter (CN1) of the target cable.

CHAPTER 3 SOFTWARE INSTALLATION

3.1 Graphical User Interface

The graphical user interface (GUI) software allows easy and comfortable access to all features of the FP4 flash programmer.

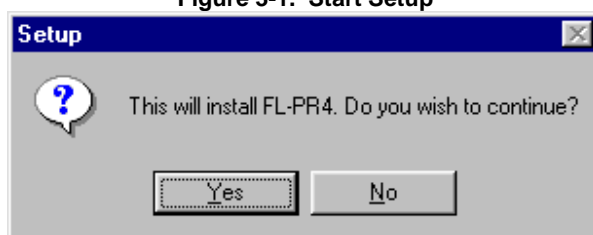
3.1.1 GUI software installation

The installation program is located on the CD-ROM, which is delivered with the FP4 package.

To install the GUI software, perform the following steps:

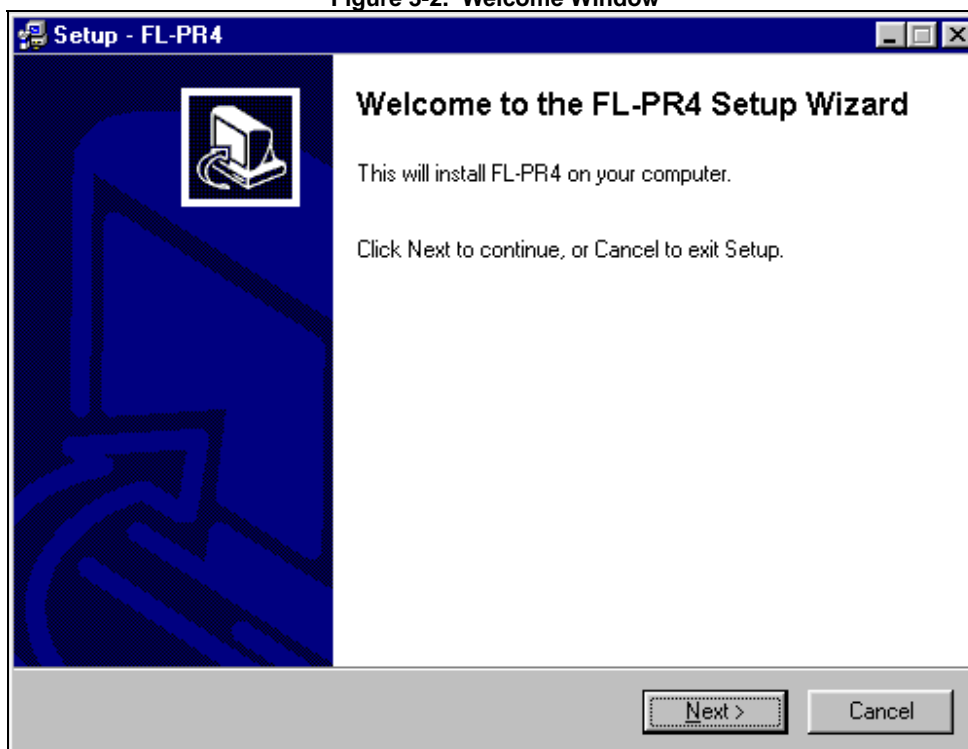
First, insert the CD-ROM into your CD-ROM drive. Double click "Setup.exe" in the CD-ROM.

Figure 3-1. Start Setup



Click the button to start the Setup wizard and Welcome window appears.

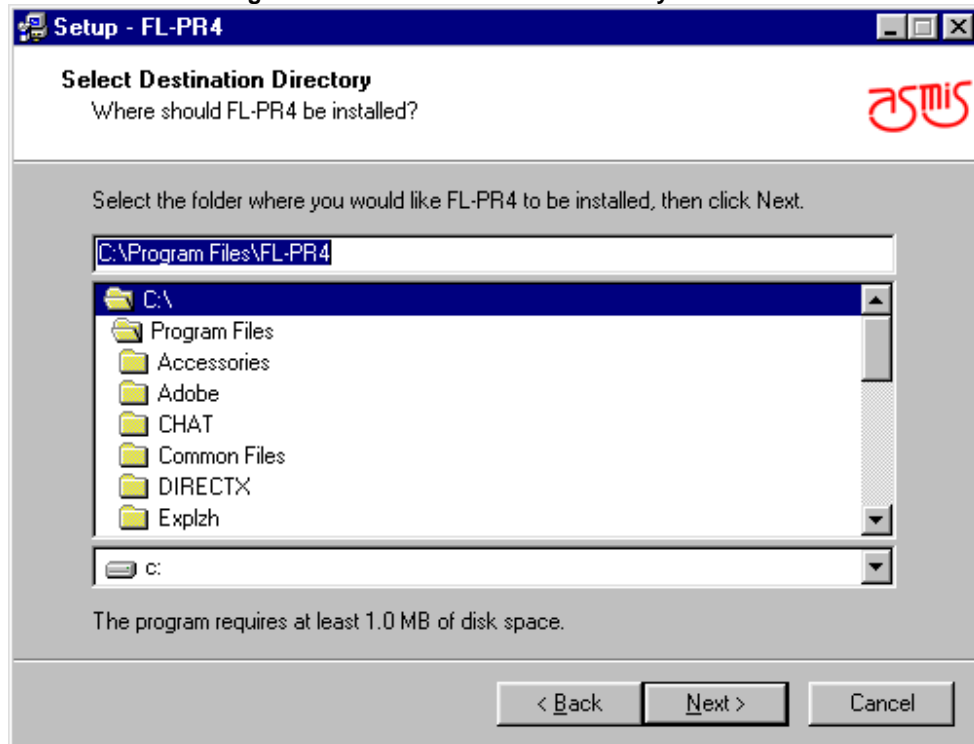
Figure 3-2. Welcome Window



Click to continue the installation.

Next, a window for selecting destination directory will be opened.

Figure 3-3. Select Destination Directory Window



Here, specify the destination path and folder name for installing GUI software.

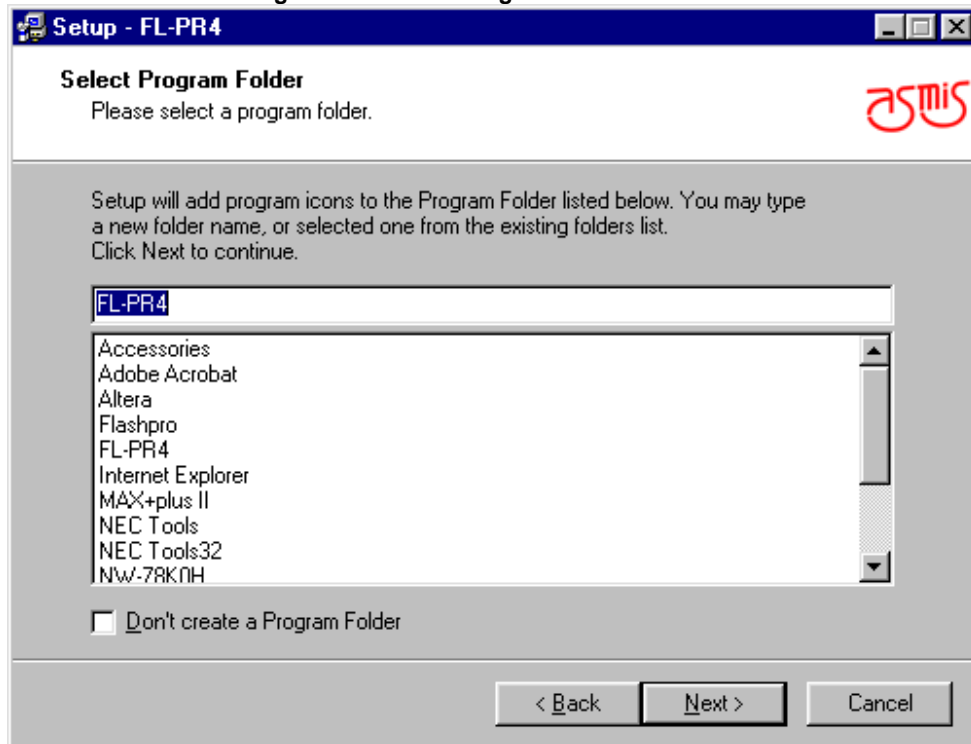
Default destination path is “\Program Files\FL-PR4”.

Enter a destination path directly, or refer to a directory tree when you want to change it.

When you set a destination path, Click **Next >**.

Next, “Select Program folder Windows” appears.

Figure 3-4. Select Program Folder Window



It selects the program folder of a start menu whether shortcut is created.

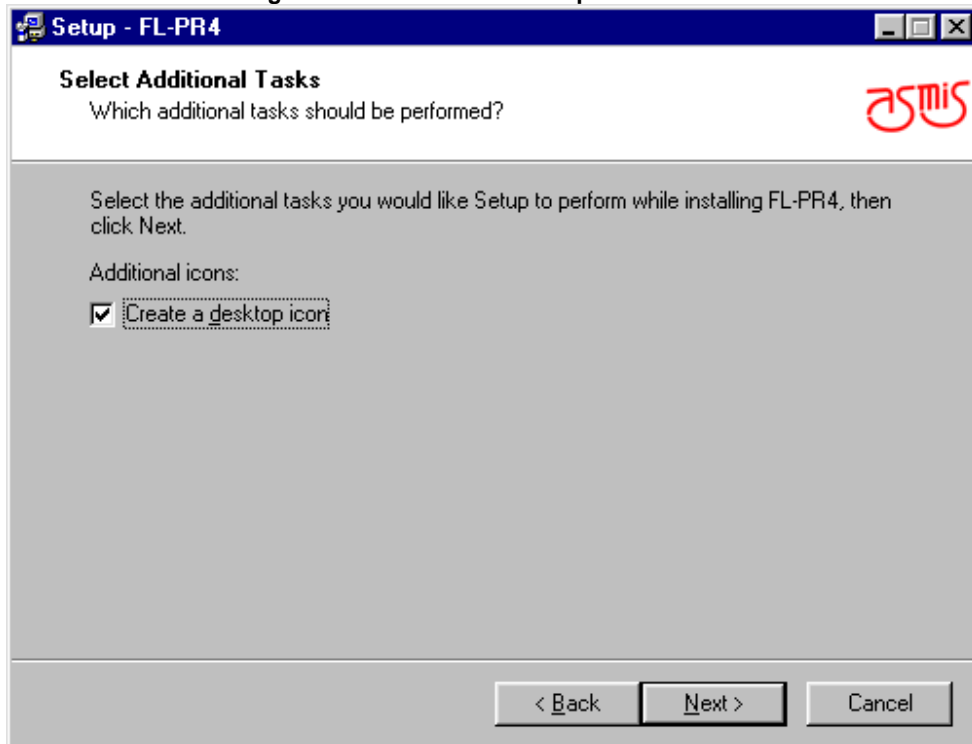
Default program folder name is "FL-PR4".

If you want to change the folder name, Enter the directly, or select the existing folder.

If shortcut isn't necessary on the program folder, Check "Don't create a Program Folder".

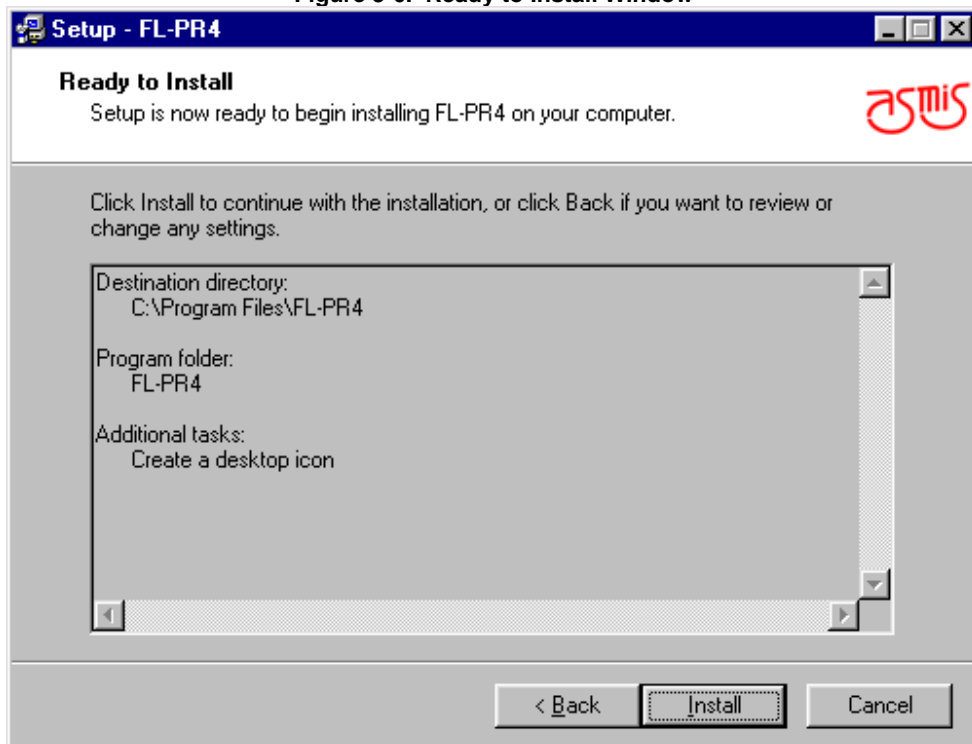
Click **Next >**, Additional desk top icon window will opened.

Figure 3-5. Additional Desktop Icon Window



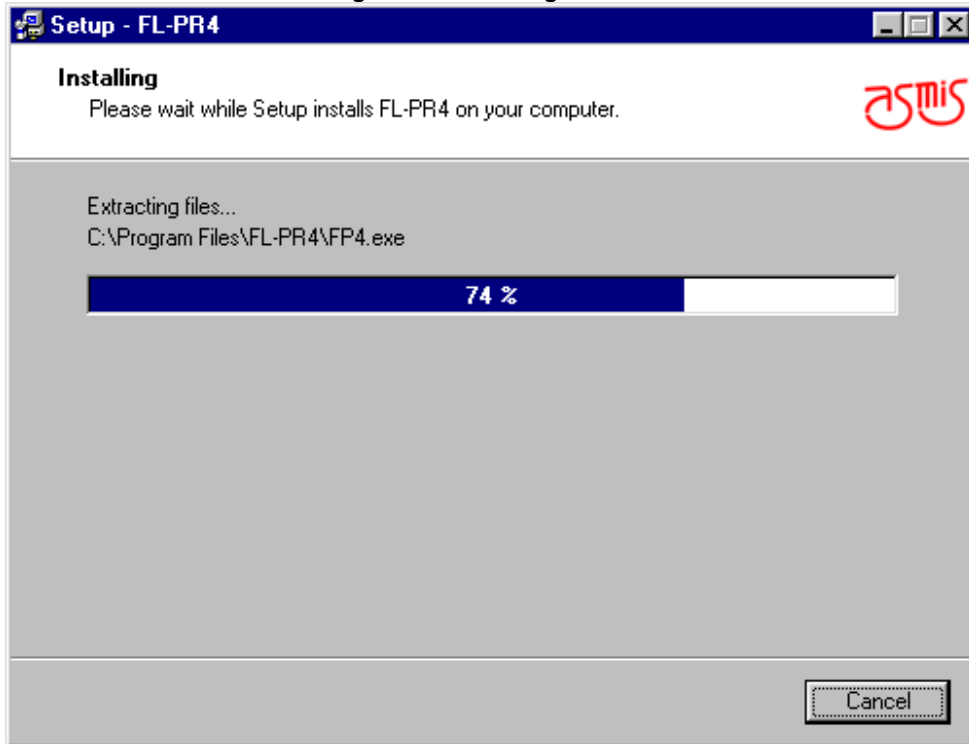
When it isn't necessary on desktop that short cut of the GUI software, Check off "Create a desktop icon". Click **Next >**, Ready to Install window will opened.

Figure 3-6. Ready to Install Window



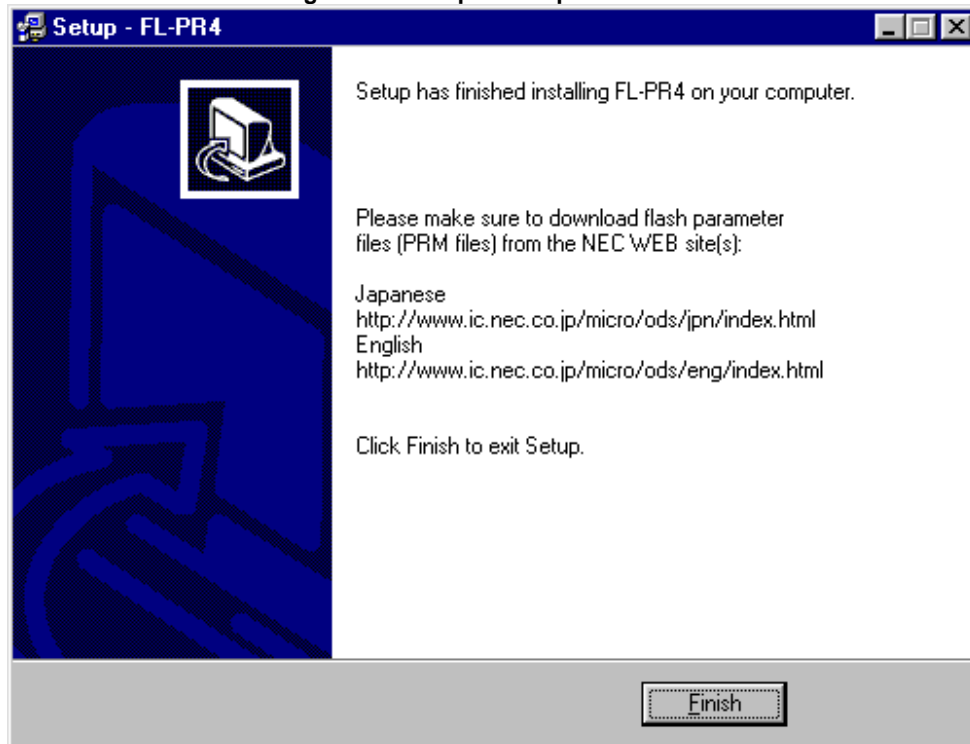
When you want to change installing setup, Click

Figure 3-7. Installing Window



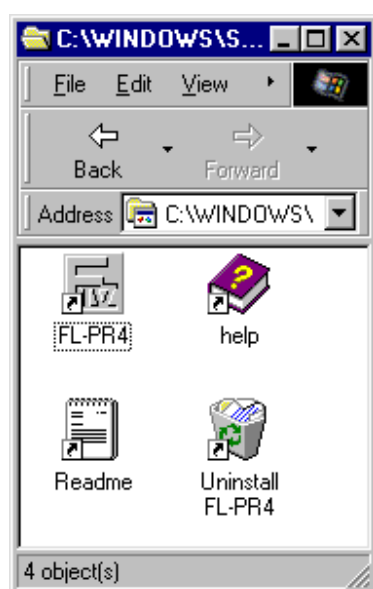
Installation can be always stopped by clicking 20





Figure 3-8. Setup is Complete Window



Click the **Finish** button to exit installation.

Figure 3-9. Program Folder After Installation



- 
Starts the FP4 GUI software
- 
Opens the README file for the FP4
- 
Starts the FP4 online help
- 
Uninstalls the FP4 from the computer

The setup program installs following files on your hard disk.

C:\...\FL-PR4		
README.TXT		Latest information
FP4.EXE		GUI software
FP4.HLP		Online help file (Online help function is not available.)
FP4COM.DLL		Communication DLL
C:\...\FL-PR4\drivers		
USBIOWIZ.INF		Setup information file for OS
USBIO.SYS		USB driver
C:\...\FL-PR4\prm		
<empty>		Storage place for parameter file for target device
C:\...\FL-PR4\set		
<empty>		Storage place for customized setup files.

Caution The parameter file for the target device must be downloaded separately from the NEC Electronics Website at <http://www.necl.com/micro/ods/eng/index.html>.

3.1.2 USB driver installation

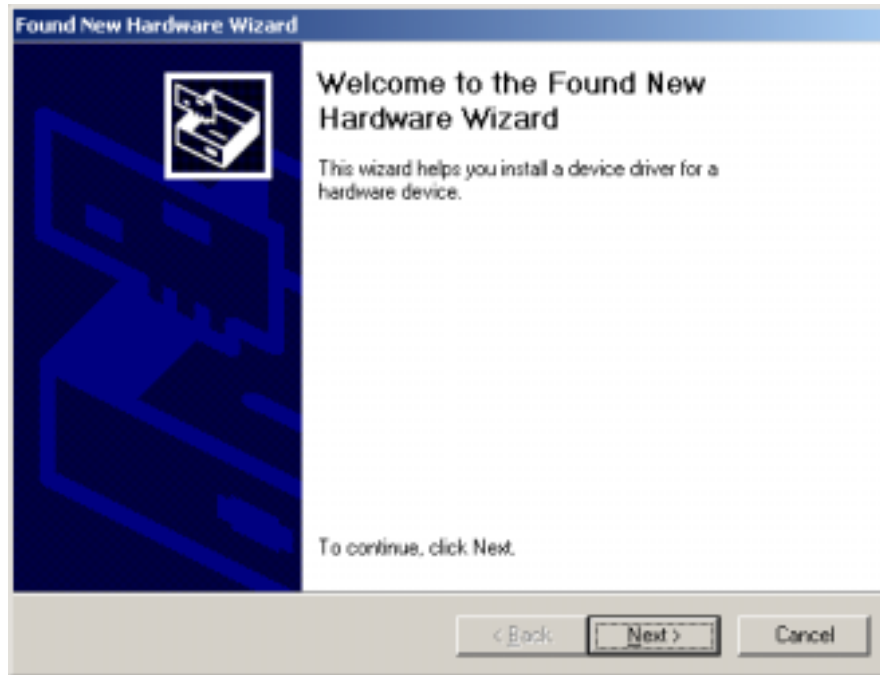
When the FP4 is connected via the USB interface for the first time, Windows 98, Windows Me, Windows 2000, and Windows XP automatically detect the FP4. Then the wizard for searching the new hardware will start.

Caution USB support is not available on Windows 95 and Windows NT.

Figure 3-10. When Connection of FP4 to USB Port Is Detected



Figure 3-11. Welcome to the Found New Hardware Wizard Window



You can exit the installation by clicking the **C**ancel button.

Click the **N**ext> button to install a USB driver.

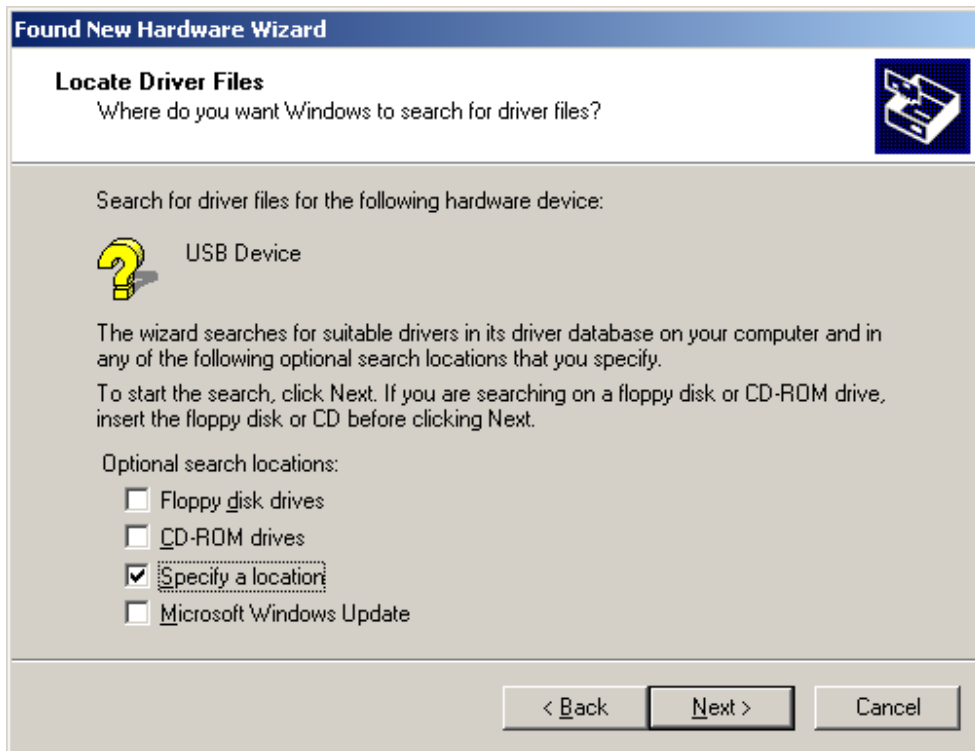
Next, the Install New Hardware Wizard window will be opened.

Figure 3-12. Install New Hardware Wizard Window



Select “**S**earch for a suitable driver for my device [recommended]” under “What do you want the wizard to do?” and click the **N**ext > button. The Locate Driver Files window will be displayed.

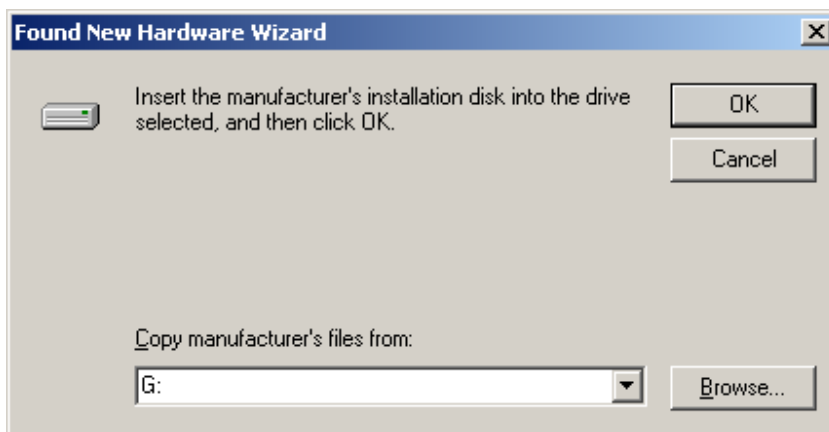
Figure 3-13. Locate Driver Files Window



Check "Specify a location" and click the **Next >** button.

The window for specifying the USB driver files to be copied will be opened.

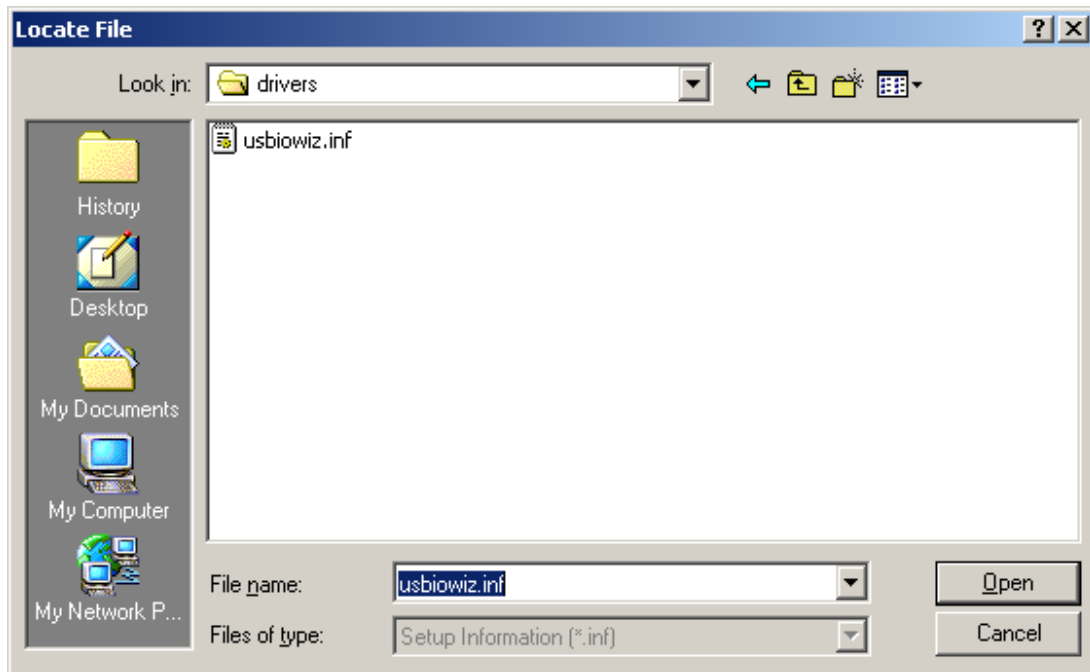
Figure 3-14. Window for Specifying Driver Files to Be Copied 1



Specify the directory where the driver exists and click **OK**.

You can specify the directory from the Locate File window after clicking **Browse...**

Figure 3-15. Locate File Window



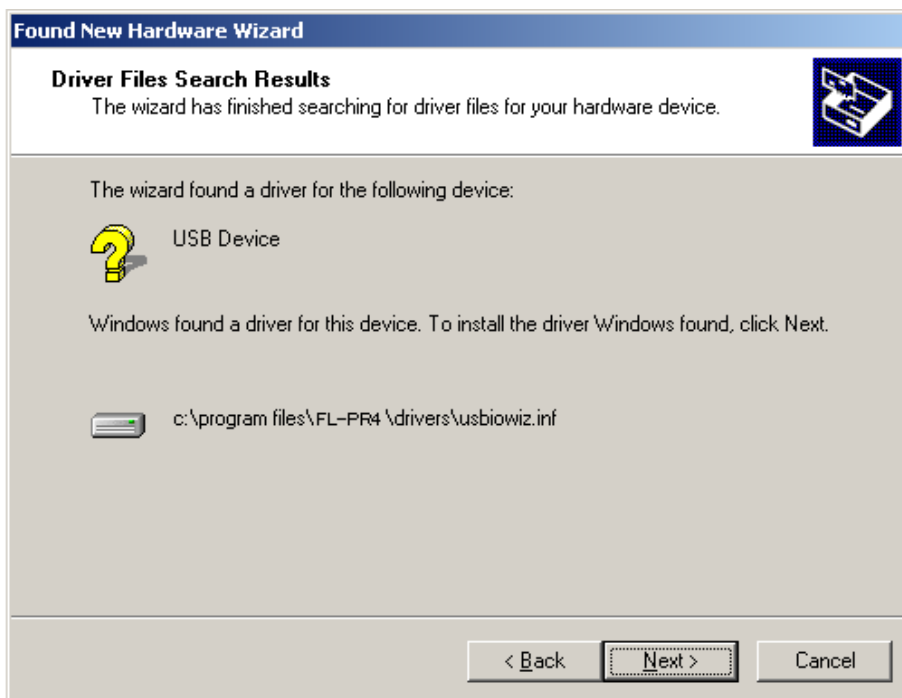
Select `usbioviz.inf` in the `drivers` directory created under the FP4 install directory and click **Open**. The specified location is shown in the window used to specify the copy source of the USB driver file.

Figure 3-16. Window for Specifying Driver Files to Be Copied 2



When you click **OK**, the driver file will be searched. The driver file search window is displayed.

Figure 3-17. Driver Files Search Results Window



Click **Next >**, to start installation.

When the installation is complete, the following window will be displayed.

Figure 3-18. Completing the Found New Hardware Wizard Window



Now that the USB driver has been installed, the FP4 is ready to communicate using the USB port. To complete the installation, click **Finish**.

3.1.3 GUI software uninstallation

(1) Uninstallation using “Uninstall FL-PR4” icon

After all components of the GUI software have been installed, clicking the “FL-PR4 unInst” icon will start the uninstallation procedure.



All files installed during setup will be removed from your hard disk except the parameter files (.PRM) and customized setup files (.SET).

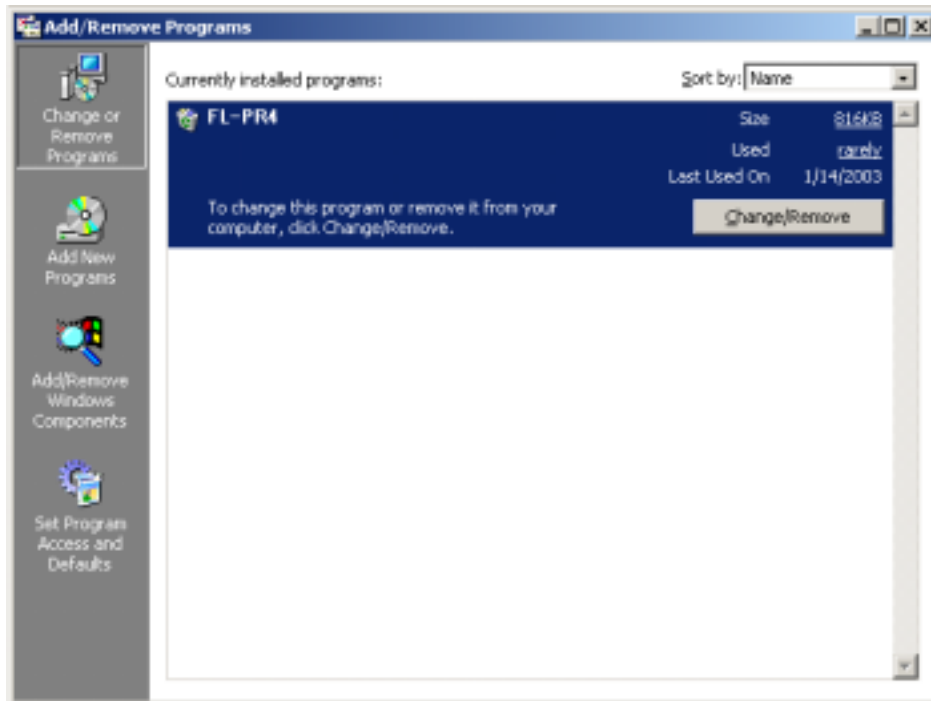
(2) Uninstallation using “Add/Remove Programs”.

Start “Add/Remove Programs” in the Windows Control Panel.



Select “FL-PR4” in “Change or Remove Programs”, then click Change/Remove to start uninstallation.

Figure 3-19. Add/Remove Programs Window



All files installed during setup will be removed from your hard disk except the parameter files (.PRM) and customized setup files (.SET).

3.2 Firmware and GUI Software Update Installation

In order to guarantee proper operation of the FP4 programmer, it is mandatory that the correct firmware version be available in the programmer's internal memory.

Be sure to follow the procedure below when updating the firmware.

<Procedure>

- (1) Upgrade the GUI software.
- (2) Update the firmware using the new GUI software.

The GUI software will perform a crosscheck of software versions between the installed GUI software and the firmware in the FP4. If the GUI software is not the latest, the following a warning message will appear.

Figure 3-20. Warning About Old GUI Software Version



If the firmware is not the latest, the following warning message will be displayed.

Figure 3-21. Warning About Old Firmware Version



In both cases, update the software to the latest version.

Check the ASMIS Website at <http://www.ndk-m.co.jp/eng/>. and download the necessary software update packages.

3.2.1 Firmware update installation

The new firmware can be installed using the GUI software. Before this process starts, download the new firmware onto the hard disk of the PC from the ASMIS Web site at <http://www.ndk-m.co.jp/eng/>.

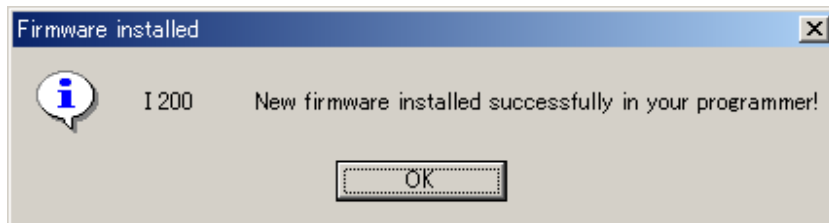
A typical name of the firmware program file is FP4_VUP_xxxx.REC, where xxxx is the version number of this firmware.

(1) Firmware update from warning message

The firmware update procedure starts when you click the **Yes** button in the firmware update error message (refer to **Figure 3-25**). From the <File open> dialog box that appears, select the firmware update program file FP4_VUP_xxxx.REC. Several commands will be sent to the FP4 and a progress indicator will inform you of the download progress.

As soon as the firmware update is complete, a message will appear.

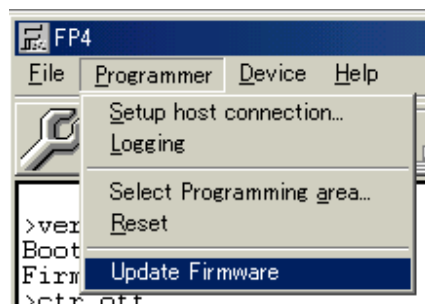
Figure 3-22. Firmware Update Complete Message



(2) Firmware update from menu bar

The <Update Firmware> dialog box shown in Figure 3-25 is opened by selecting [Update Firmware] from [Programmer] on the menu bar. Hereafter, follow the procedure in the **(1) Firmware update installation from warning message** above.

Figure 3-23. [Update Firmware] Menu



The FP4 is now ready for operation.

4.1 Introduction

Before you start using the FP4, download the parameter file for the target device (.PRM) to the PRM folder.

<Downloading the parameter file>

The PRM file is not part of the FP4 software package.

It has to be downloaded from the NEC Electronics Website at <http://www.necel.com/micro/ods/eng/index.html>.

The PRM file downloaded from the NEC Electronics Website must be copied into the sub-directory <FP4 install path>\PRM which was created during GUI software setup (see **CHAPTER 3 SOFTWARE INSTALLATION**). If no PRM file has been installed before, the GUI software will report a fatal error and it will not startup.

Figure 4-1. Fatal Error: No Parameter File Installed



4.2 Starting up the GUI Software

- System connection

After installing the parameter file, connect the supplied RS-232C cable or USB cable to the computer in which the FP4 is used. After connecting the cable, switch the FP4 on. When it is started up correctly, the message display shows the 'Commands >' prompt, and the status LED is switched off.

If the above does not happen, the FP4 may be faulty. In this case, contact an NEC Electronics sales representative or distributor.

- GUI software startup

To start the FP4 GUI software, select FP4.EXE or double-click the shortcut if it has been created. The FP4 starts communicating using the most recently used communication parameters stored in its internal EEPROM. The default communication speed is 9,600 bps.

The GUI software establishes a connection with the FP4 using the [GUI] section parameters in the FP4.INI file, HostConnectionSpeed, HostConnectionPort, and HostDownloadPort. When no FP4.INI file exists (this is the case when starting the GUI software for the first time), the GUI software scans the connection via COM1 to COM6 in each port at 9,600 bps, 19,200 bps, 38,400 bps, 57,600 bps, and 115,200 bps to establish communication with the FP4 using the USB.

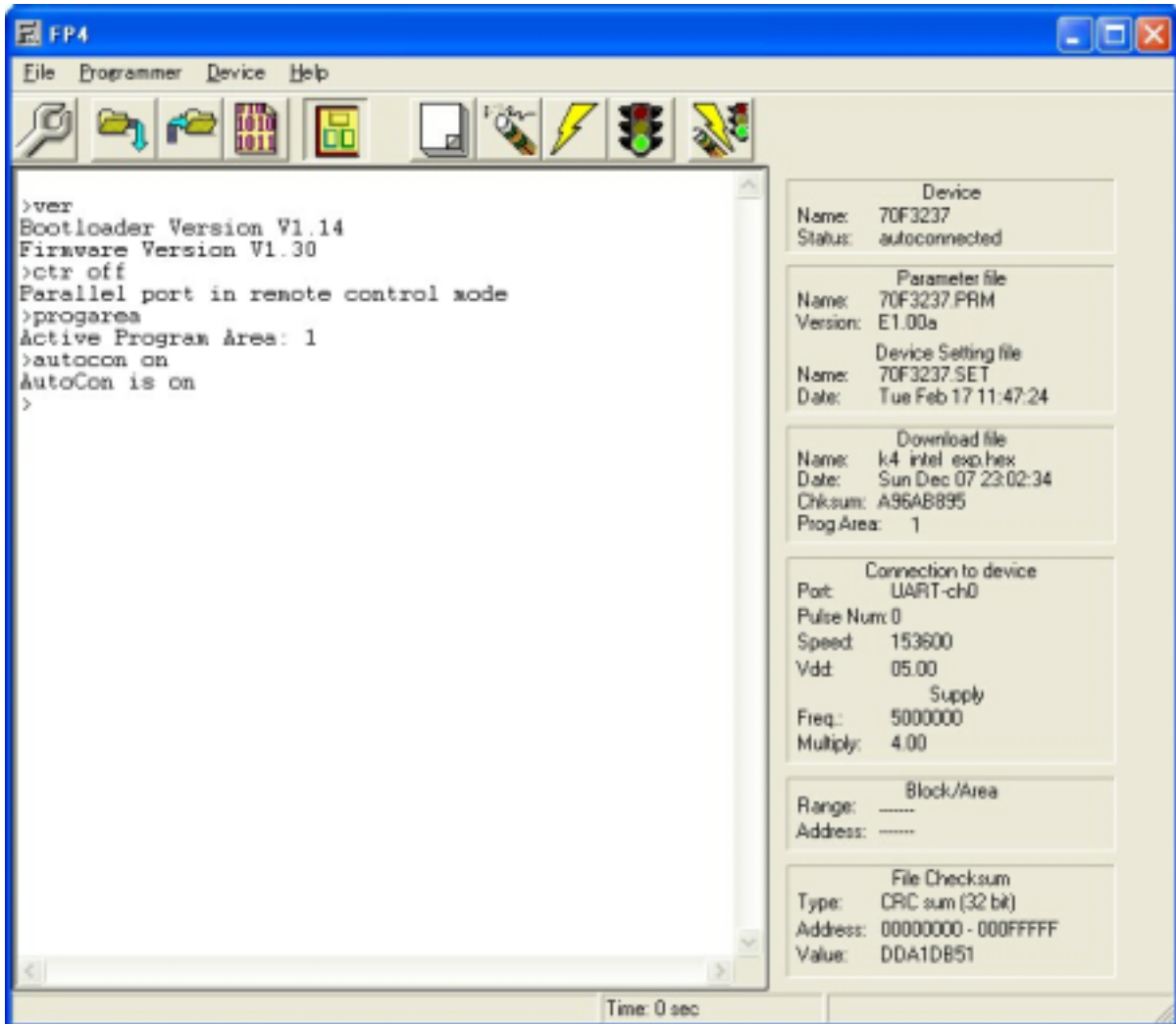
Figure 4-2. Port Scanning at Startup of GUI Software



You may interrupt this operation by clicking **ABORT** and select the correct communication parameters from the [Programmer] → [Setup host connection...] menu.

As soon as communication is established and the GUI software is started correctly, the following screen appears.

Figure 4-3. GUI Software Main Window



This window consists of the following items.

- Menu bar (displayed on top): Displays executable menus of the FP4
- Toolbar (displayed below the menu): Displays frequently used commands as icons
- Communication log window (displayed below the toolbar): Displays all commands transmitted to the FP4 and messages returned from the FP4
- Programmer parameter window (displayed on the right side of the communication log window): Displays programming parameter settings

Caution The Programmer Parameter window shows the parameter information previously set from the PC. This information may differ from the settings of the programmer currently connected.

4.3 Toolbar

The toolbar contains buttons to start the most important procedures of the FP4.

Table 4-1. Toolbar Buttons

	[Device] – [Setup...] button		[Device] – [Erase] button
	[File] – [Download...] button		[Device] – [Program] button
	[File] – [Upload...] button		[Device] – [Verify] button
	[Hex Editor ...] button		Device Erase → Program → Verify (Autoprocedure (EPV)) button
	[Device] – [Blank check] button ^{Note}		[Programmer] – [Select Programming area...] button

Note Enabled only for single-power-supply flash memory microcontrollers.

4.4 Menus

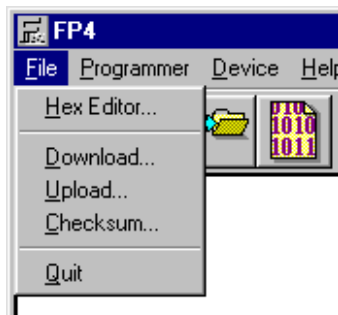
Depending on the actual device status or device type, some menu items may be enabled or disabled. For example, the [Device] – [Blank check] button is enabled only for single-power-supply flash memory microcontrollers.

4.4.1 [File] menu

After clicking the [File] menu, the following pull-down menu is displayed.

Commands related to file operation appear here.

Figure 4-4. [File] Menu

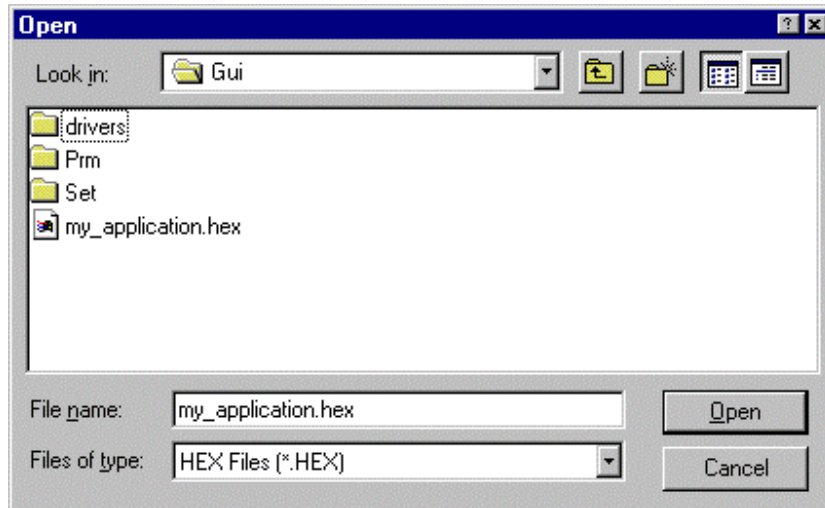


(1) [Hex Editor...] menu



The [Hex Editor...] menu allows you to edit a program file in Intel HEX file format or Motorola S-Record format. A HEX Editor window opens and the file to be edited can be specified in a “file open” dialog box.

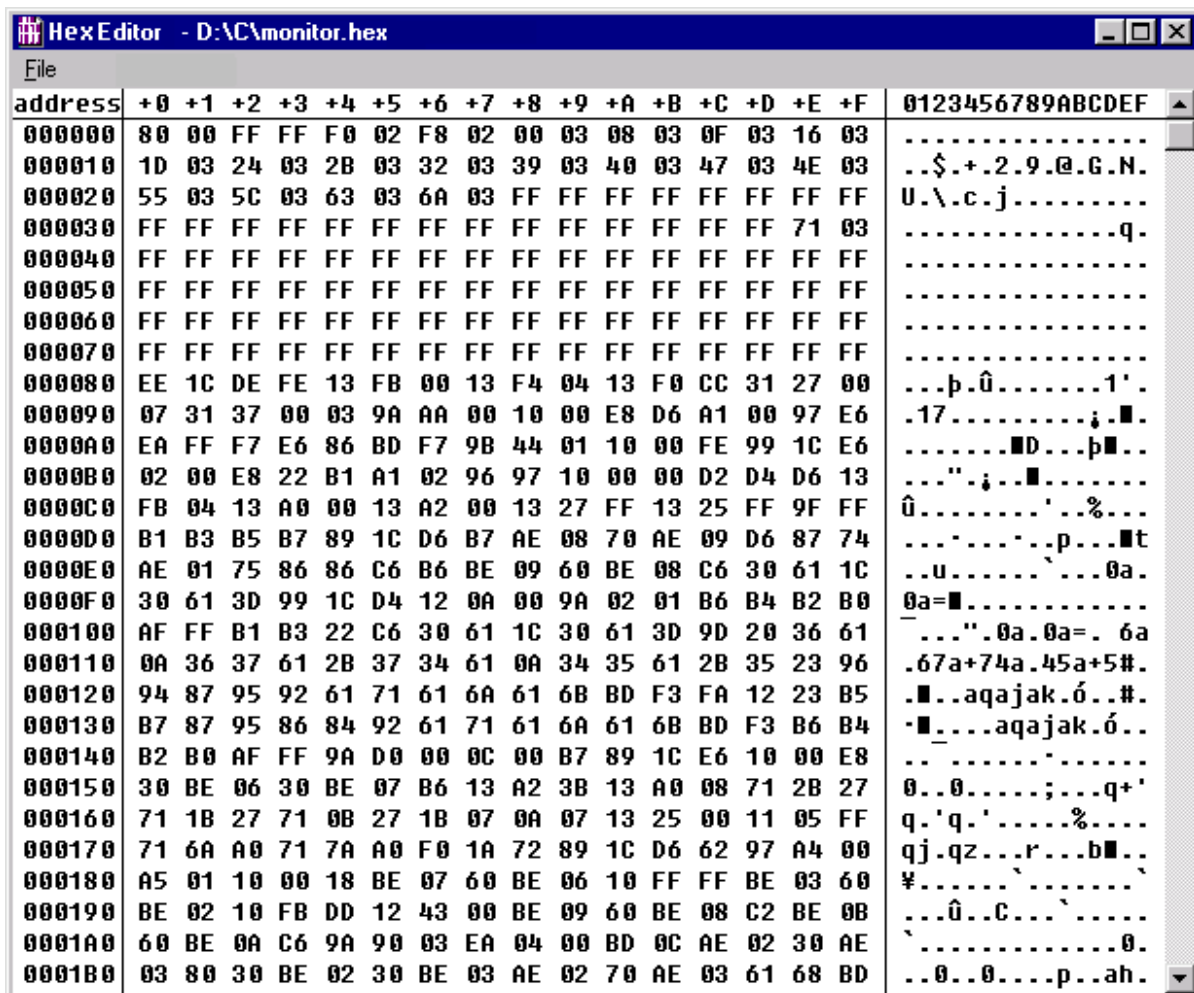
Figure 4-5. HEX Editor File Open Window



HEX Files or SREC Files may be selected from the Files of type list box.

After selecting a file to open, the HEX Editor main window loads the file and displays its contents as follows.

Figure 4-6. HEX Editor Main Window



The displayed file can be modified by placing the mouse cursor inside the HEX Editor main window. Data input via the keyboard is accepted for all shown memory locations.

The HEX Editor accepts data only in hexadecimal format, i.e. figures 0 - 9 and letters A - F. Any other data will be rejected.

The ASCII representation, if any, is shown at the right side of the main window. This area is for reference only. Data input is not possible in the ASCII window.

Use the scroll bar to move another address range into the visible area of the HEX Editor.

The address space shown in the HEX Editor window is limited to 4 MB.

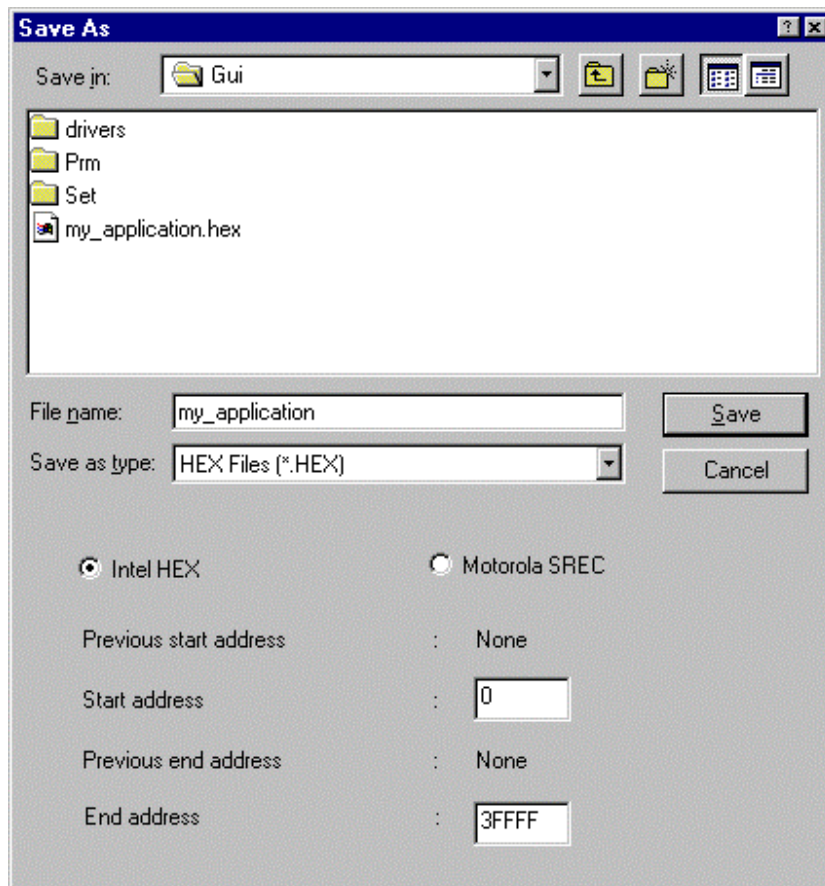
The following keys can be input using the keyboard.

Table 4-2. Key Functions That Can Be Input in HEX Editor Window

Key	Function
0 - 9, A - F	Data input
→	Move cursor in right direction
←	Move cursor in left direction
↑	Move cursor in up direction
↓	Move cursor in down direction
Tab	Move cursor to next input field

If any changes have been made to the edited file, the HEX Editor [File] → [Save] and [File] → [Save As...] menu items will be enabled to save the modified data.

Figure 4-7. HEX Editor <Save As...> Dialog Box

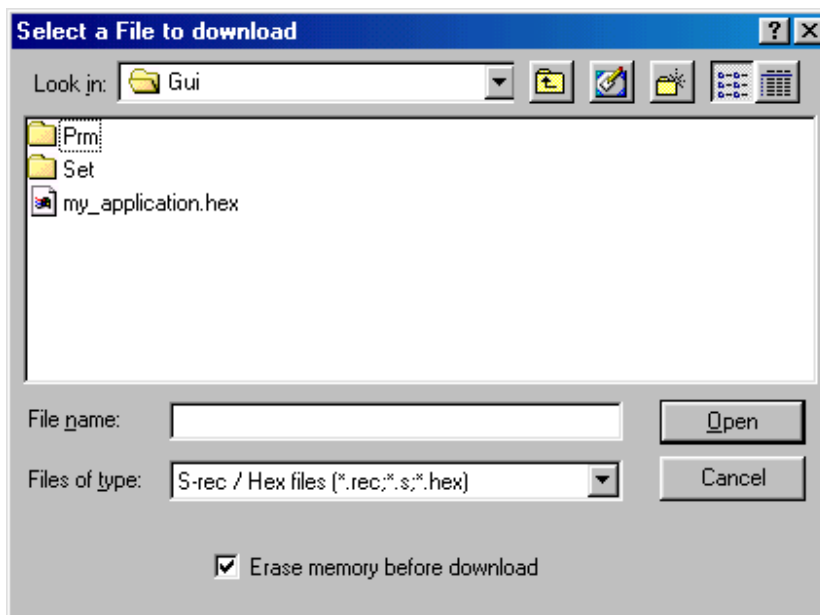


Besides the file name and directory location, <Save As...> allows selection of a different start address and a different end address for the new file. The original start address and end address are offered as the default selection. Click the file format button of the format in which to save the data. The file format cannot be changed with this selection.

(2) [Download] menu

The [Download] menu allows you to select and download a program file into the FP4 flash memory. The downloaded program file may be programmed into the device's flash memory by executing the Program command or EPV command.

Figure 4-8. File Selection Window for Program Download



The most recently used directory from which a file has been downloaded will be offered in this window as the default selection.

After downloading the user program, the checksum in the flash memory area of the FP4 valid in Progarea is calculated and the result is displayed in the programmer parameter window and communication log window.

[Open] button

Downloads the selected user program to the flash memory of the FP4.

Checksum data of the downloaded data is saved in the FileDownCrcSum key in the [Programmer] section in the FP4.INI file. This saved checksum data is used for comparison with the FP4 memory contents before executing the EPV command.

The downloaded user program is retained even after the power of the FP4 is switched off.

[Cancel] button

Closes the window without downloading the selected user program.

The directory names are saved in the FileDownloadDirectory key in the [Programmer] section in the FP4.INI file. The downloaded file names are saved in the FileDownFileName key in the [Programmer] section in the FP4.INI file.

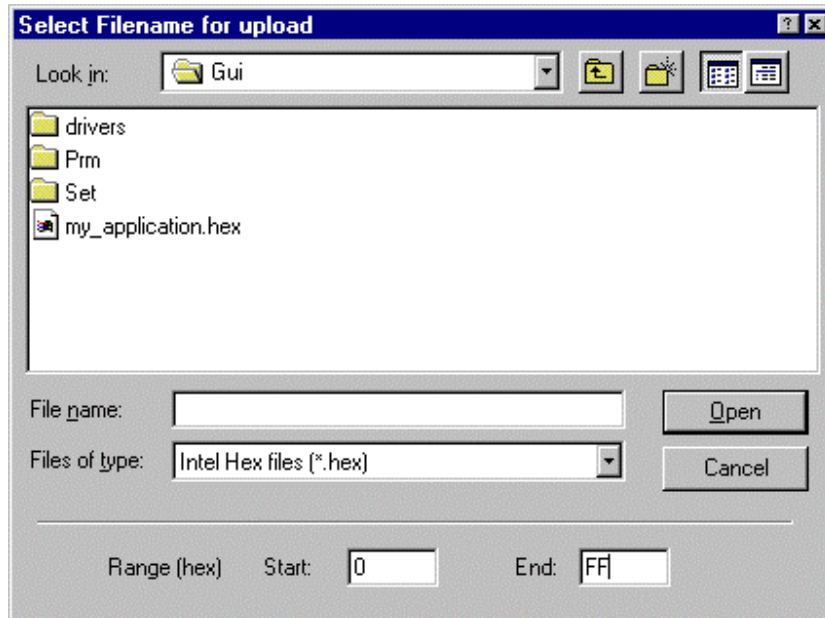
“Erase memory before download” can be used to select whether to erase the internal memory of FP4 before a new program is downloaded.

(3) [U]pload] menu



The [U]pload] menu allows you to specify and upload a program file from the FP4 flash memory to the host machine.

Figure 4-9. File Selection Window for Program Upload



In the appearing window you can:

- Select a program file for upload
- Select the upload file format (Intel HEX or Motorola S-Record format)
- Select the memory start and end addresses to upload

The most recently used directory from which a file has been uploaded will be shown in the [U]pload...] menu.

[O]pen button]

"Press <return> to start/continue output" appears in the Communication Log window when the Open (O) button is clicked. Click the Return button to start uploading.

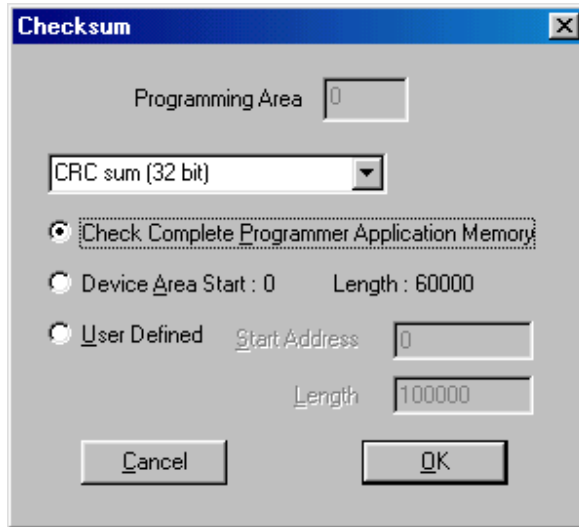
[C]ancel button]

Closes the window without uploading the program.

(4) [Checksum...] menu

The [Checksum...] menu may be used to verify that the FP4's flash memory area contains the correct download file.

Figure 4-10. Checksum Dialog Box 1



All the programming memory area (2 MB) or “Check Complete Programmer Application Memory”, in which 32-bit CRC calculations are performed in the FP4 programming memory area selected using the [Programmer] > [Select Programming area...] menu, is selected by default. The currently selected programming memory area is displayed in the “Programming Area” for reference.

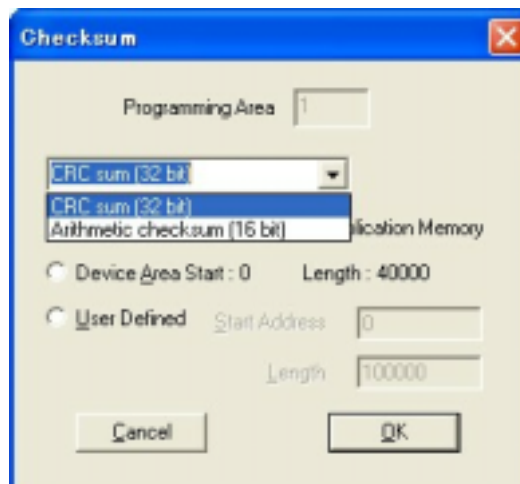
Select the “Device Area” to calculate the checksum of the flash memory area of the target device.

The target memory area accords with the information of the currently downloaded parameter file.


Select “User Defined” to calculate the checksum of any memory area. In this case, specify the “Start Address” and “Length”.

The checksum is displayed in the communication log window.

Figure 4-11. Checksum Dialog Box 2



(5) [Quit] menu

Terminates the FP4 GUI software. Clicking the  button on the right side of the task bar also terminates the FP4 GUI software.

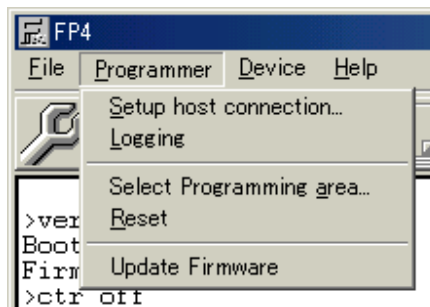
User settings are saved in the FP4.INI file so that the GUI software will start up next time with the same settings.

4.4.2 [Programmer] menu

Clicking the [Programmer] menu displays the following pull-down menu.

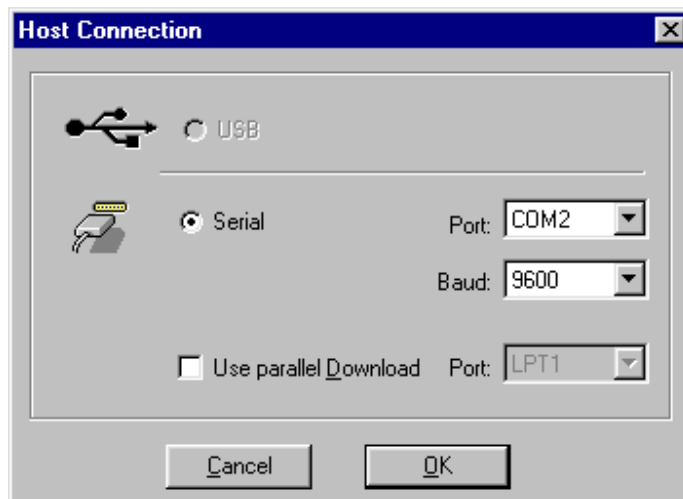
This pull-down menu consists of program setting commands.

Figure 4-12. [Programmer] Menu

**(1) [Setup Host Connection...] menu**

The channel for communicating between the FP4 and PC can be selected and set in this dialog box.

Figure 4-13. <Host Connection> Dialog Box



You may select USB as the communication channel, if USB is supported on your PC.

If "Serial" is selected, the port and baud rate may be selected from the drop-down list boxes.

"Use parallel Download" can be selected in addition to the serial port. If parallel download is selected, data download to the FP4 is performed via the selected parallel interface.

Caution The parallel interface cable is not part of the FP4 package.

Check that the LPTx port is not used before using the parallel port.

USB communication is not supported on Windows 95 or Windows NT.

[OK] button]

The software tries to establish a connection between the FP4 and the PC using the selected communication parameters.

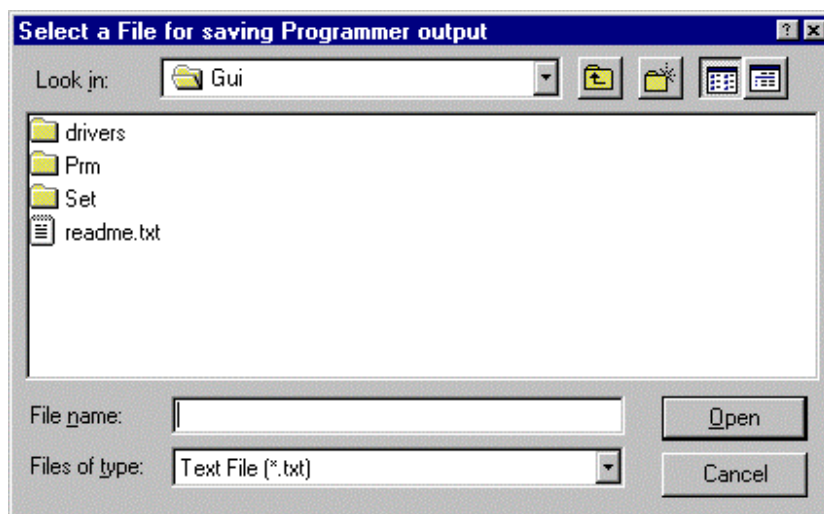
[Cancel] button]

Closes the window without making any changes.

(2) [Logging] menu

The [Logging] menu opens the log file dialog box to select the log file name. The log file will store the communication between the PC and the FP4 (data in the communication log window).

Figure 4-14. <Log File> Dialog Box



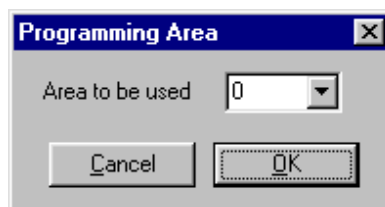
Once logging is enabled, a check mark in the [Logging] menu indicates that logging is active. Selecting the menu again will close the log file and stop any further communication logging.

(3) [Select Programming area...] menu



This menu item allows selection of one out of two different programming areas of the FP4 (1 MB each). This menu is valid when “Enable two Program Areas” on the Advanced tab of [Device] > [Setup] menu is checked.

Figure 4-15. Programming Area Selection



The FP4 internal memory area is split into two independent memory areas of 1 MB, each of which may hold two different application programs for flash programming. When opening this dialog box, the current programming area selection will be displayed.

(4) [Reset] menu

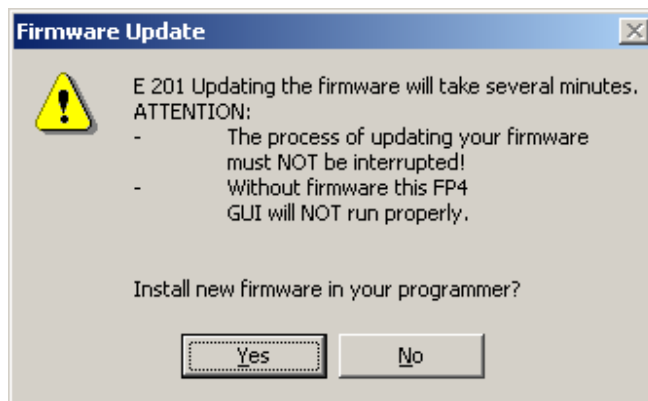
By clicking this menu item, you can execute a software reset of the programmer. The communication window will show the current version of the FP4 firmware after the reset.

(5) [Update Firmware] menu

Clicking this menu item updates the FP4. Before starting the update, download the necessary upgrade data from the NEC Electronics Website at <http://www.necel.com/micro/ods/eng/index.html>.

When the firmware update is started, the following confirmation message is displayed first.

Figure 4-16. Firmware Update Window

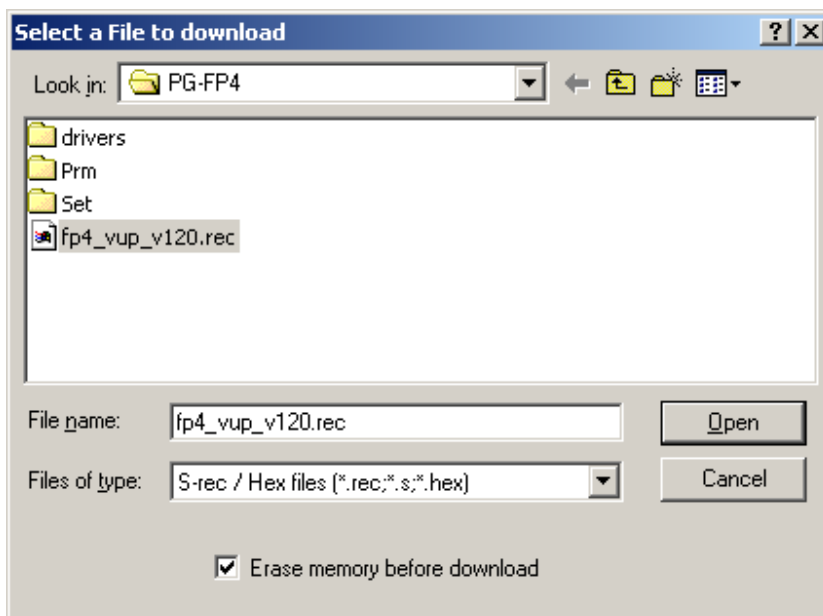


To continue the firmware update, click [Yes].

When [No] is clicked, the firmware update is canceled.

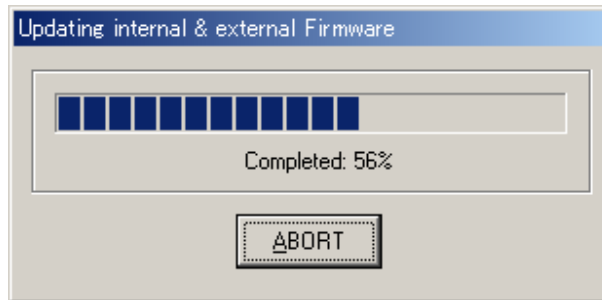
When [Yes] is clicked, <Select a File to download> will be displayed.

Figure 4-17. Select a File to Download Window



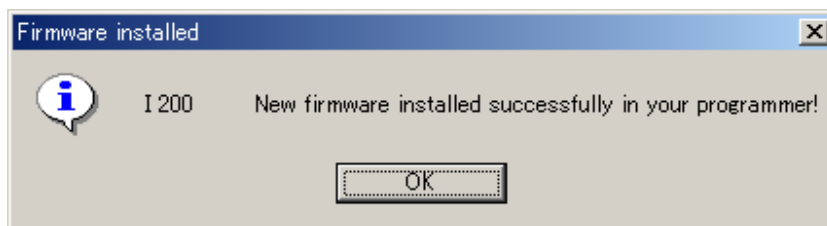
Select the firmware update program file "FP4_VUP_xxx.REC" and then click **Open**.
Some commands will be transferred to the FP4 and the update progress status will be displayed in the progress status display window.

Figure 4-18. Progress Status Display Window



When the firmware update is complete, the following message will be displayed.

Figure 4-19. Firmware Update Complete Message

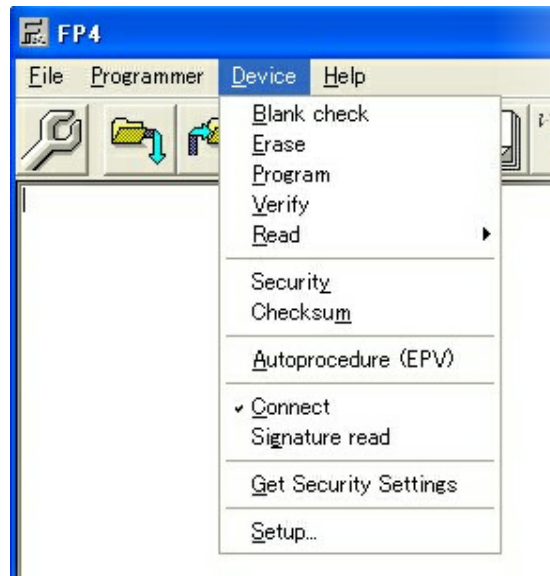


4.4.3 [Device] menu

Clicking the [Device] menu displays the following pull-down menu.

This pull-down menu mainly consists of commands for programming the target device, such as erase, program, and verify.

Figure 4-20. [Device] Menu



(1) [Blank Check] menu



The Blank Check command initiates a blank check of the target device connected to the FP4. If the flash memory of the target device is erased, the blank check terminates successfully. If the flash memory is not completely erased, an error message is displayed. Therefore, the flash memory has to be erased first before programming can start.

Caution The Blank Check command is available only for single-power-supply flash memory microcontrollers.

(2) [Erase] menu



The Erase command initiates the erase procedure for the target device connected to the FP4. While erasing the contents in the flash memory is in progress, the progress is displayed in the communication log window, indicating the operation of the programmer.

When a two-power-supply flash memory microcontroller is used, check the target device with the Blank Check command before executing the Erase command. If the device is already blank, the Erase command is not executed.

When a single-power-supply flash memory microcontroller is used, the Blank Check command that is executed before the Erase command is executed in accordance with the setting of 'Command options' on the Advanced tab of the [Device] > [Setup...] menu.

You may abort the erase procedure by pressing the Cancel button on the FP4.

After completing the Erase command, the GUI software displays the target device command execution result.

(3) [Program] menu

The Program command transmits the memory contents (user program) in the active programming area (0 or 1) of the FP4 and writes them to the flash memory. In addition, it also executes verification to check if the write level is secured after the user program has been written.

After execution of the Program command, Verify, which detects a communication error of the user program while it is being transmitted from the FP4 to the target device, is executed in accordance with the setting of 'Command options' on the Advanced tab of the [Device] > [Setup...] menu.

While programming is in progress, the progress is displayed in the communication log window, indicating the operation of the programmer. This progress indicates the progress of programming the target device as a percentage.

You may abort the programming procedure by pressing the Cancel button on the FP4.

After completing the Program command, the GUI software displays the target device command execution result.

(4) [Verify] menu

The Verify command transmits the memory contents in the active programming area (0 or 1) of the FP4 to the target device connected to the FP4 and verifies these contents against the data written to the flash memory of the target device.

This command does not check the write level. Use it to check if data communication between the FP4 and target device has been correctly performed.

While the Verify command is being executed, the progress is displayed in the communication log window, indicating the operation of the programmer. This progress indicates the progress of verifying the target device as a percentage.

You may abort the verification procedure by pressing the Cancel button on the FP4.

After completing the Verify command, the GUI software displays the target device command execution result.

(5) [Read] menu

The [Read] menu is used to read the flash memory of the target device connected to the FP4. When [View] is selected from the [Read] menu, 4 KB read data is displayed in the log window each time the Enter key is pressed. When [Write Intel HEX File] or [Write Motorola SREC File] is selected from the [Read] menu, the read data can be saved in the Intel HEX-format or Motorola HEX-format.

(6) [Security] menu

The Security command initiates the programming of the security flag of the target device connected to the FP4. Setting of the security flag is specified by Security flag settings on the Advanced tab of the [Device] > [Setup] menu.

Caution The security command can be specified only when a single-power-supply flash memory microcontroller is used.

(7) [Checksum] menu

The Checksum command initiates the reading of the checksum value of the target device connected to the FP4. The checksum value in the flash memory area selected in Operation Mode on the Standard tab of the [Device] > [Setup] menu is read.

Caution The Checksum command is available only when using a single-power-supply flash memory microcontroller or two-power-supply flash memory microcontroller that supports the Checksum command.

(8) **[Autoprocedure [EPV]] menu**



The EPV command compares the checksum value when the user program is downloaded with the checksum value in the user program area of the FP4 subject to EPV. If the two values are the same, it sequentially executes the Erase and Program commands explained above.

When the Program command is executed, whether the write level is secured is verified after the program has been written. Note, however, that this verification does not detect a communication error of the user program that is transmitted from the FP4 to the target device.

To transmit the memory contents of the FP4 to the target device to compare them with the data written to the flash memory of the target device because a communication error of the user program was detected, specify automatic execution of the Verify command after execution of the Program command, by using the Command options on the Advanced tab of the [Device] > [Setup...] menu.

During EPV, the progress is displayed in the communication log window, indicating the operation of the programmer. For the selected command, and its execution operation and message, refer to **CHAPTER 5 SAMPLE PROGRAMMING SESSION USING GUI SOFTWARE**.

You may abort the EPV procedure by pressing the Cancel button on the FP4.

After completing the EPV command, the GUI software displays the target device command execution result.

(9) **[Signature read] menu**

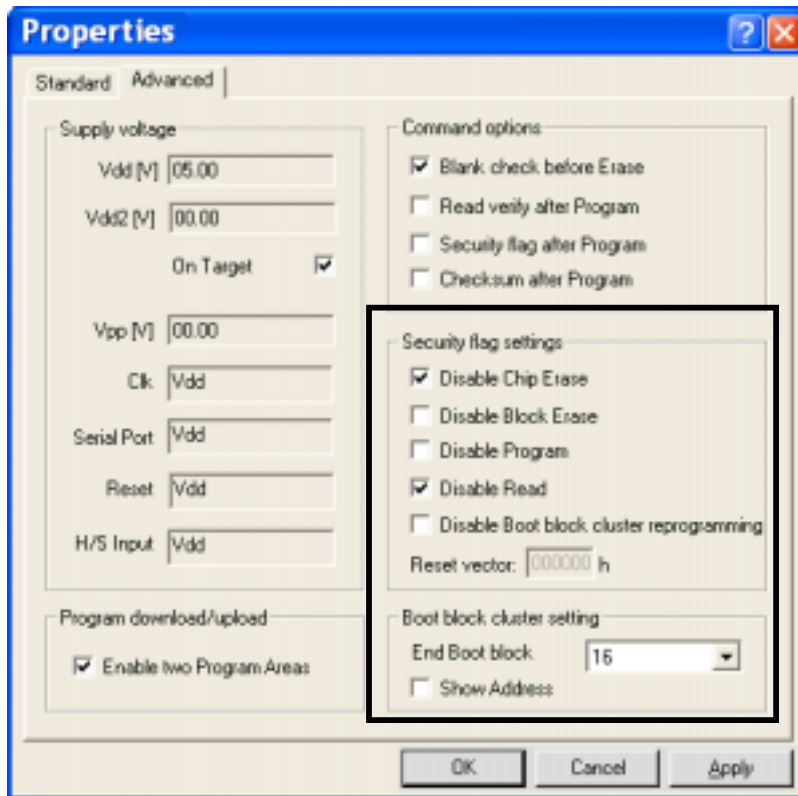
The Signature Read command is used to read the signature information of the target device (such as the device name and flash memory information).

(10) **[Get Security Settings] menu**

The [Get Security Settings] menu is used to read information on the security flag or boot area setting of the target device connected to the FP4, and reflect the result in the Advanced Setup menu.

When this menu is specifiable, be sure to confirm the security status and the boot area by executing the Get Security Settings menu before executing a security command, and then add the security specification.

Figure 4-21. [Get Security Settings] Menu

**(11) [Setup...] menu**

The [Setup...] menu is used to perform flash memory writing settings in accordance with the user environment, and command option settings. Each time the GUI software is started, the parameter file (.PRM) and customized setup file (.SET) that were used last are read, and their setting contents are displayed. On the [Setup...] menu, settings can be changed in accordance with the user environment, except for the parameters that are dimmed. In addition, new settings can be saved to the customized setup file (the data of the parameter file cannot be changed).

(a) Parameter file and customized setup file

The parameter file and customized setup file have the setting information necessary for rewriting the flash memory of the target device.

- Parameter file

This file stores the timing and parameter data necessary for rewriting the flash memory of the target device. Do not change the data of the parameter file as it guarantees the rewrite data.

The parameter file is protected by a checksum. If the checksum is illegal, the FP4 does not accept the parameter file.

- Customized setup file

Save the values of settings that have been made in accordance with the user environment to the customized setup file after downloading the parameter file. The customized setup file saves the settings of the [Setup...] menu, including the corresponding parameter file name, so that a new environment can be set by downloading the customized setup file when the environment is started next time.

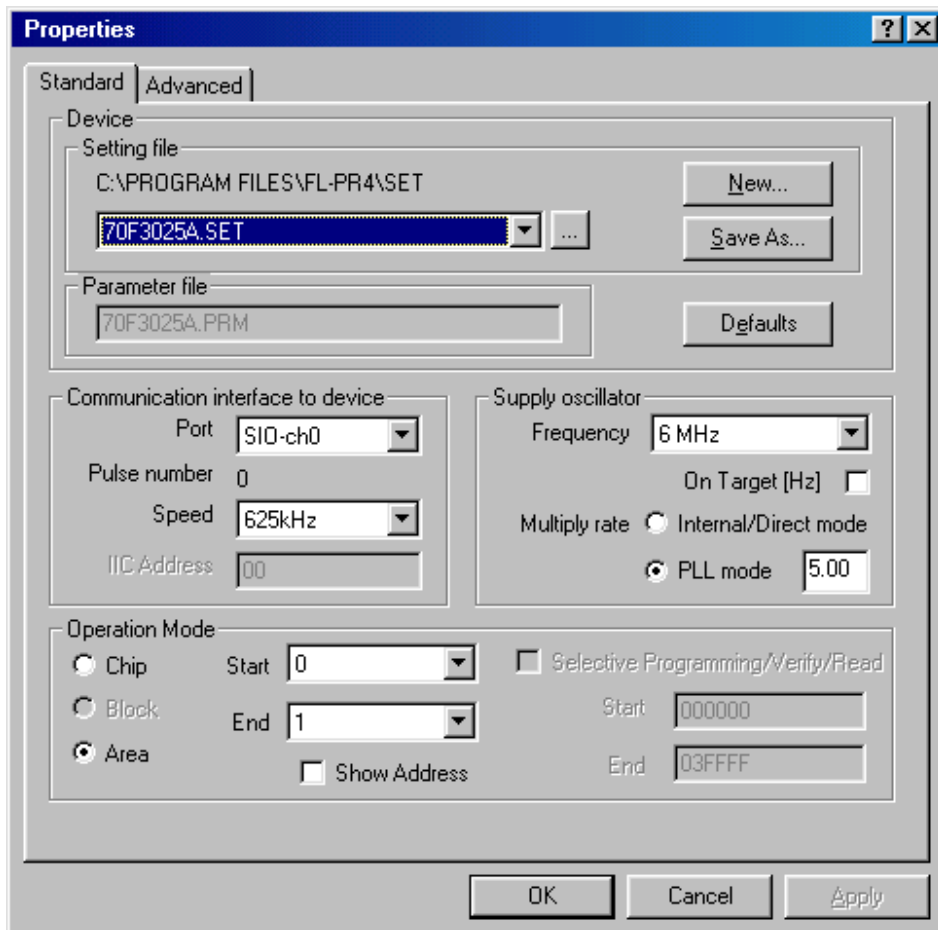
(b) Standard setup

This menu is used to set the rewriting environment of the target device's flash memory.

The mode of communication with the target device and the operating clock of the device differ depending on the device used. For details, refer to the manual of the device used.

The following window opens.

Figure 4-22. Device Setup Window – Standard Menu



This window shows all basic options that can be set in accordance with the user environment and target device.

[OK button]

Clicking the **[OK]** button saves the setting contents on the Standard and Advanced menus to the customized setup file (.SET) and downloads them to the FP4 with a specified parameter file (.PRM).

[Apply button]

This button is valid if settings have changed on the Standard or Advanced menu.

Clicking the **[Apply]** button saves the contents of new setting to the customized setup file (.SET). Note that this button only saves the settings to the file; it does not download them to the FP4.

[Cancel] button

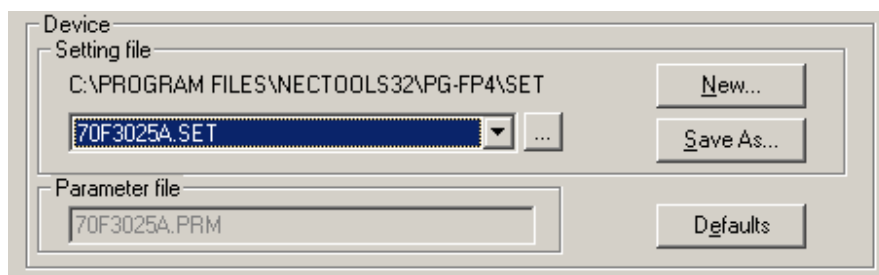
When the **[Cancel]** button is clicked, the contents set on the Standard and Advanced menus are not downloaded to the FP4, nor are they saved to the customized setup file; the current dialog box is just closed.

However, the settings that have already been saved to the customized setup file and downloaded to the FP4 are not reset by this button.

<1> Device

The parameter file holds the set values of the basic parameters necessary for rewriting the flash memory of the target device. This file is downloaded along with the customized setup file that saves changes in settings in accordance with the user environment.

Figure 4-23. Setup Window – Device Selection

**[Setting file list box]**

Displays the customized setup file saved to <FP4 install path>\SET.
When using a saved customized setup file, select it here.

[...] button

Click this button to specify a customized setup file saved to other than <FP4 install path>\SET.
Clicking this opens a window for specifying a customized setup file. Specify the file and then click the **[Open]** button.

[Save As...] button

Displays a window in which to overwrite the current settings on the device setup window to the existing customized setup file or save them as a new file.

[Defaults] button

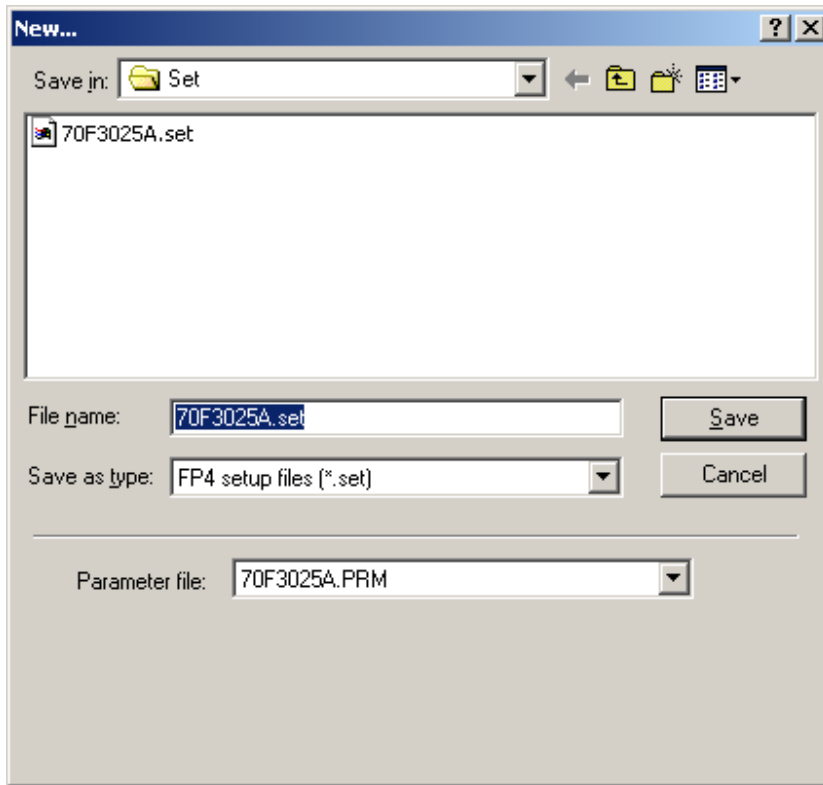
Returns all the displayed settings to the default values of the data in the parameter file (.PRM).

[New... button]

Creates a new customized setup file.

A window to create a new customized setup file appears.

Figure 4-24. Create New Customized Setup File Window



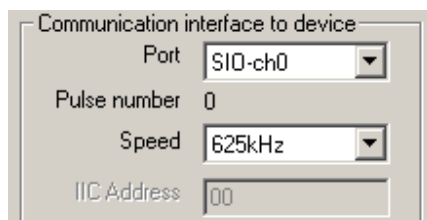
Parameter files saved to <FP4 install path>\PRM are shown in the parameter file list box. Select a parameter file for the target device.

After selecting the parameter file, enter the name of the customized setup file that is newly created, and then click the **[Save]** button.

<2> Communication interface to device

“Communication interface to device” selects the channel for communication between the FP4 and target device. For the communication port and communication rate that can be selected, refer to the user’s manual of the device used.

Figure 4-25. Setup Window – Communication Interface to Device

**[Port list box]**

Select the mode of communication between the FP4 and target device from the following.

The communication mode is determined by the number of V_{PP} or $FLMD0$ ^{Note} pulses output by the FP4.

The selectable communication mode differs depending on the target device. Refer to the user’s manual of the target device used and select a mode. With some devices, the number starts from ch1. In this case, ch0 of the parameter on the screen equals ch1 of the device, and the displayed channel number must be shifted accordingly.

Note When using a single-power-supply flash memory microcontroller.

Item on Screen	Description
SIO-ch0	SIO (3-wire clocked communication port) channel 0
SIO-ch1	SIO (3-wire clocked communication port) channel 1
SIO-ch2	SIO (3-wire clocked communication port) channel 2
SIO-H/S	SIO (3-wire clocked communication port, with handshake)
IIC-ch0	I ² C channel 0
IIC-ch1	I ² C channel 1
IIC-ch2	I ² C channel 2
IIC-ch3	I ² C channel 3
UART-ch0	UART (asynchronous communication port) channel 0
UART-ch1	UART (asynchronous communication port) channel 1
UART-ch2	UART (asynchronous communication port) channel 2
UART-ch3	UART (asynchronous communication port) channel 3
Port-ch0	Port (pseudo 3-wire) A
Port-ch1	Port (pseudo 3-wire) B
Port-ch2	Port (pseudo 3-wire) C

[Pulse number]

Displays the number of V_{PP} or FLMD0 pulses corresponding to the selected communication mode.

[Speed list box]

Select the communication rate of the selected communication channel from the following.

<When SIO-ch0, SIO-ch1, SIO-ch2, or SIO-H/S is selected>

2.4 kHz
9.8 kHz
39 kHz
156 kHz
625 kHz
2,500 kHz

<When IIC-ch0, IIC-ch1, IIC-ch2, or IIC-ch3 is selected>

10 k baud
20 k baud
50 k baud
100 k baud

<When UART-ch0, UART-ch1, UART-ch2, or UART-ch3 is selected>

9,600 baud
19,200 baud
31,250 baud
38,400 baud
57,600 baud
76,800 baud
115,200 baud
128,000 baud
153,600 baud

<When Port-ch0, Port-ch1, or Port-ch2 is selected>

100 Hz
200 Hz
300 Hz
400 Hz
500 Hz
600 Hz
800 Hz
1,000 Hz
1,200 Hz
1,500 Hz

[IIC Address]

If I²C is selected as the programming channel, input a slave address as a hexadecimal number. The valid range of input is 8 to 77H. Do not input a unit.

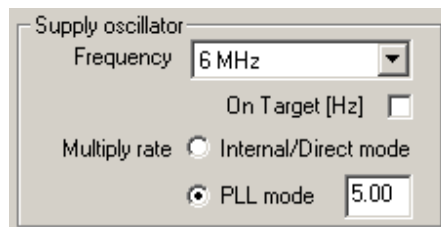
The slave address can be any value in the above range but must not be the same as the slave address of another device on the I²C.

This field cannot be accessed if the I²C port is not selected.

<3> Supply oscillator

“Supply oscillator” selects the oscillator that determines the programming, data transfer, and transfer rates.

Figure 4-26. Setup Window – Supply Oscillator

**[On Target check box]**

Specifies whether the clock signal is supplied from the FP4 or target device.

If this is checked, the clock of the target system is used.

If it is not checked, the clock of the FP4 is supplied to the target.

[Frequency list box]

Sets the oscillation frequency for signal generation.

When using the clock of the target system (when the On Target check box is checked), input the frequency to be used.

When using the clock of the FP4 (when the On Target check box is not checked), select a frequency from the following:

- 1 MHz
- 2 MHz
- 4 MHz
- 5 MHz
- 6 MHz
- 8 MHz
- 10 MHz
- 12 MHz
- 16 MHz
- 20 MHz

Note that the frequency range in which a device can operate differs depending on the device. Check the specifications of the device before setting the frequency.

[Multiply rate]

Specifies the division rate or multiplication rate of the target device.

If the target device has a PLL circuit, select the PLL mode and enter a division rate or multiplication rate in accordance with the environment used.

The selectable division rate or multiplication rate differs depending on the device. Confirm the specifications of the device before setting them.

If the target device does not have a PLL circuit, select the Internal/Direct mode.

In the initial screen, the default settings set by the parameter file are displayed.

<4> Operation Mode

Operation Mode may divide the flash memory of the target device into blocks or areas.

This menu is used to select the operation mode of the flash memory. Some devices do not have either or both division modes Block and Area. In this case, a mode that is not available cannot be selected.

Figure 4-27. Setup Window – Operation Mode

[When Chip is selected]

The entire flash memory area of the target device is subject to rewrite processing.

[When Block is selected]

Specify the Block number range subject to rewrite processing by using Start/End.

The Start/End list boxes display the Block number where the flash memory of the target device is configured. (Block cannot be selected with a two-power-supply flash memory microcontroller.)

[When Area is selected]

Specify the Area number range subject to rewrite processing by using Start/End.

The Start/End list boxes display the Area number where the flash memory of the target device is configured. (Area cannot be selected with a single-power-supply flash memory microcontroller.)

[Show Address check box]

Specifies whether numbers or addresses are displayed in the Start/End list boxes.

If this check box is checked, addresses are displayed.

If it is not checked, numbers are displayed.

[Selective programming]

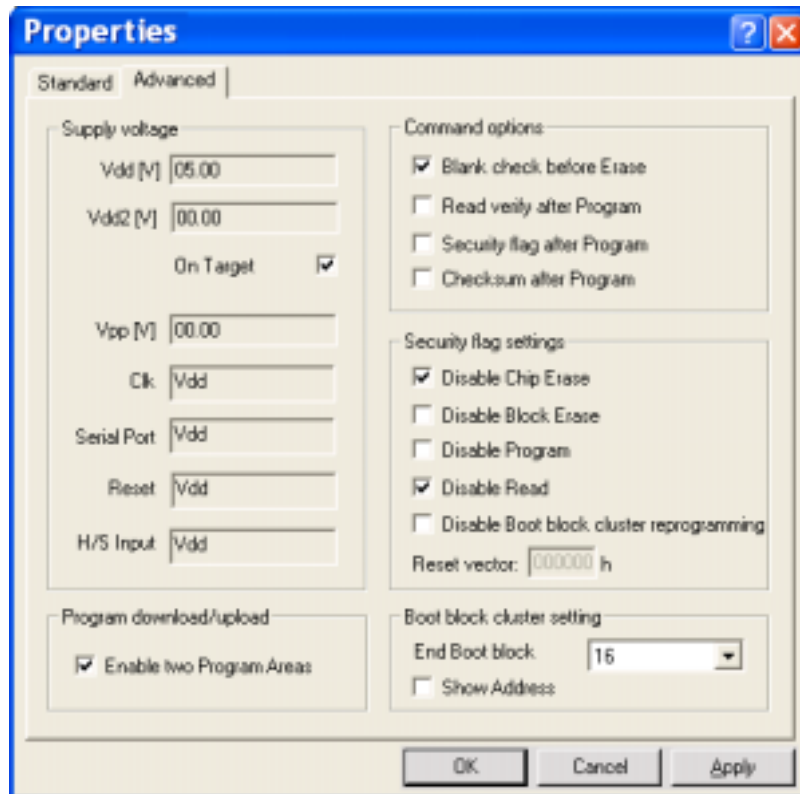
This cannot be used.

(c) Advanced setup

Advanced setup is used to specify the programming voltage for programming the target device, command options, and security flag setting.

When Advanced is clicked, the following window is displayed.

Figure 4-28. Device Setup Window – Advanced

**<1> Supply voltage**

The supply voltage section allows you to specify the voltage levels for target device programming. Depending on the target device type, one (V_{DD}) or two (V_{DD} and V_{DD2}) voltage levels need to be specified.

In general, V_{DD}/V_{DD2} voltages that are supplied when the target device is programmed should be supplied by the target system. Although they can be supplied by the FP4, the current flow is not large enough to operate the whole target system (maximum of 200 mA). Therefore, supply voltage via the FP4 only when a dedicated writing adapter such as an FA adapter is used.

Figure 4-29. Setup Window – Supply Voltage

The image shows a software window titled "Supply voltage". It contains the following elements from top to bottom:

- A text label "Supply voltage" followed by a small icon.
- An input field labeled "Vdd [V]".
- An input field labeled "Vdd2 [V]".
- A checkbox labeled "On Target" which is currently unchecked.
- An input field labeled "Vpp [V]".
- An input field labeled "Clk".
- An input field labeled "Serial Port".
- An input field labeled "Reset".
- An input field labeled "H/S Input".

[Vdd [V]]

Displays the default Vdd level set by the parameter file in volts (V).
This Vdd level can be changed by input.

[Vdd2 [V]]

Displays the default Vdd2 level set by the parameter file in volts (V).
If the specifications of the target device require two types of Vdd for writing the flash memory, Vdd2 specifies a low-level signal voltage. This voltage level can also be changed by input.

[On Target check box]

Check On Target if the V_{DD}/V_{DD2} voltages are supplied from the target system.
The power supply detection function of the V_{DD} pin differs depending on the setting of the On Target check box.

- When V_{DD} is set to be supplied from FP4 (On Target not checked)
If Target V_{DD} reaches 0.2 V before V_{DD} is supplied, the error message "Target power detected! Check Setup" is displayed in the communication Log window.
- When V_{DD} is set to be supplied from the target (On Target checked)
If V_{DD} is outside the range of $\pm 5\%$ of the V_{DD} set value just before communication starts, the error message "No VDD applied or Voltage is out of range" is displayed in the communication log window.

Caution Set the values of the V_{DD}/V_{DD2} voltages supplied by the target system as Vdd [V] and Vdd2 [V] before checking On Target. The target system may be damaged if proper values are not set.

[Vpp, Clk, Serial Port, Reset, H/S Input]

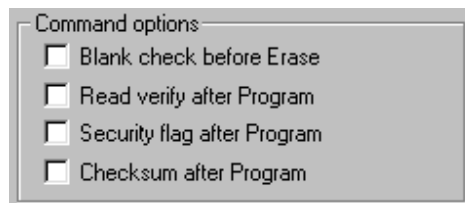
Display the default level of each pin set by the parameter file in volts (V).

The signal levels cannot be changed.

<2> Command options

This dialog box is used to specify the options of the FP4 flash processing commands.

Figure 4-30. Setup Window – Command Options

**[Blank check before Erase check box]**

If this check box is checked, a blank check is performed before execution of the Erase and EPV commands.

If the result of the blank check is OK, erase processing is not executed.

This option can be specified only when a single-power-supply flash memory microcontroller is used.

[Read verify after Program check box]

If this check box is checked, write data is transmitted from the programmer after execution of the Program and EPV commands, and verified against the data written to the flash memory.

[Security flag after Program check box]

If this check box is checked, automatic programming of the selected security flag is executed after execution of the Program and EPV commands.

This option can be specified only when a single-power-supply flash memory microcontroller is used.

[Checksum after Program check box]

If this check box is checked, the flash memory checksum value of the target device is read from the target device and displayed on the programmer after execution of the Program and EPV commands.

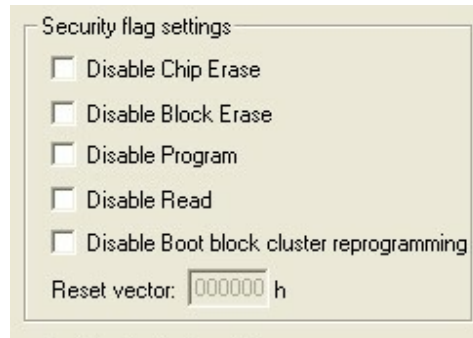
This option can be specified only when a single-power-supply flash memory microcontroller or a two-power-supply flash memory microcontroller that supports the Checksum command is used.

<3> Security flag settings

The <Security flag settings> dialog box is used to specify which security function is valid.

This function is valid only when a single-power-supply flash memory microcontroller is used.

Figure 4-31. Setup Window – Security Flag Settings

**[Disable Chip Erase check box]**

If this check box is checked, the Erase command becomes invalid in the entire flash memory area of the target device.

A warning message "1907 Caution: When 'Chip Erase' is disabled, chips can no longer be erased or programmed!" is displayed when **OK** is clicked in the Device Setup Window after checking this box.

Caution Be aware that if the security flag is set in the target device, neither erasing nor writing^{Note} to the device can be enabled afterward.

Note Since the Erase command is invalid, the data that differs from the data already written in the flash memory cannot be written.

[Disable Block Erase check box]

If this check box is checked, the Erase command becomes invalid in all the blocks of the flash memory selected under Operation Mode in the Standard Setup menu.

This setting is cleared by the Erase command when Chip was selected under Operation Mode.

[Disable Program check box]

If this check box is checked, the Program command becomes invalid, as does the Erase command in all the blocks of the flash memory selected under Operation Mode in the Standard Setup menu.

The Erase command for the entire flash memory area is valid.

This setting is cleared by the Erase command when Chip was selected under the Operation Mode.

[Disable Read check box]

If this check box is checked, the Read command becomes invalid.

This setting is cleared by the Erase command when Chip was selected under the Operation Mode.

[Disable Boot block cluster reprogramming check box]

If this check box is checked, the boot area is set regarding the boot block set by the Boot block cluster setting function as the last block.

Caution Be aware that if the security flag is set in the target device, writing to the boot area in the device cannot subsequently be enabled.

The following is the correspondence between the Erase and Program commands when the security functions of a single-power-supply flash memory microcontroller are valid.

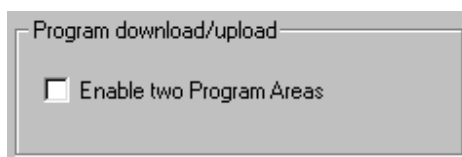
	CHIP Erase Command	Block Erase Command	Program Command	Read Command
Disable Chip Erase	Invalid	Invalid	Valid ^{Note1}	Valid
Disable Block Erase	Valid	Invalid	Valid	Valid
Disable Program	Valid	Invalid	Invalid	Valid
Disable Read	Valid	Valid	Valid	Invalid
Disable Boot block cluster reprogramming	Invalid	Valid ^{Note 2}	Valid ^{Note 2}	Valid

- Note1.** Since the Erase command is invalid, the data that differs from the data already written in the flash memory cannot be written.
- 2.** Valid only for an area not specified as the boot area.

<4> Program download/upload

The FP4 has 2 MB of flash memory as a user program area. This memory area can be used as a single 2 MB area, or as two independent 1 MB areas (Area 0 and Area 1). Different user programs can be downloaded to Area 0 and Area 1, and it can be selected which of the programs is to be written to the target device.

Figure 4-32. Setup Window – Program Download/Upload



[Enable two Program Areas check box]

If this check box is not checked, one 2 MB memory area is used as the user program area. If it is checked, one of two independent 1 MB memory areas (Area 0 and Area 1) are used as the user program area. For which area is to be used, refer to the [Programmer] → [Select Programming area...] menu. If a user program that exceeds 1 MB is downloaded, the error message "F410 Download failed" appears.

<5> Boot block cluster setting

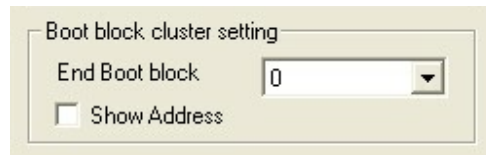
The Boot block cluster setting is used to specify the boot area.

This function is valid only when a single-power-supply flash memory microcontroller is used.

The specified boot area becomes valid after the Security command is executed.

The function differs depending on the target device. Only usable functions can be set.

Figure 4-33. Setup Window – Security Flag Settings



The blocks up to the end boot block can be used as the boot area. When the [Disable Boot block cluster reprogramming] check box under the Security flag settings menu is valid, the specified boot area becomes valid after the Security command is executed.

Caution Be aware that if the security flag is set in the target device, writing to the boot area in the device cannot subsequently be enabled.

4.4.4 [Help] menu

Clicking the [Help] menu displays the following pull-down menu.

Figure 4-34. [Help] Menu



(1) [Contents...] menu

The [Contents...] menu starts the Windows Help engine and opens the contents dialog box of the FP4 help file. The help function is not supported on this software.

(2) [About] menu

The [About] menu opens the following program entry window. The version displayed below the FP4 indicates the version of the GUI software. By clicking this window, the display can be exited.

Figure 4-35. About Window



★ CHAPTER 5 SAMPLE PROGRAMMING SESSION USING GUI SOFTWARE

This chapter explains a series of basic operations of the FP4 with the GUI software, taking a case where the μ PD70F3025A is used as the target device as an example. This chapter covers how to start the system, execute the EPV command, and program the target device.

For the other commands and applications, refer to **CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE**.

- Series of operations described in this chapter

Here are the operation conditions of this chapter:

HOST interface:	RS-232C interface
Target:	μ PD70F3025A (with FA adapter)
Communication interface:	SIO H/S 625 kHz
Supply oscillator:	In FP4, 6 MHz, multiplied by 5
Operation mode:	Chip
Supply voltage:	Supplied by FP4
Command options:	Read verify after Program check (Verification is executed after program command.)
Program download/upload:	No check (with user program 1 code only)

1. Installing GUI software

Install the FP4 GUI software in the PC you are using by referring to **CHAPTER 3 SOFTWARE INSTALLATION** (if the software has not been installed yet).

2. Installing parameter file

Copy the parameter file for the μ PD70F3025A to the hard disk and install it in <FP4 install path>\PRM.

Download the parameter file from the following:

<http://www.necel.com/micro/ods/eng/index.html>

3. Connecting system

<1> Connect the FP4 to the computer with the supplied RS-232C cable.

<2> Select an appropriate AC plug from those supplied with the FP4 (the USA and Japan) and connect it to the AC adapter to configure a FP4 power supply unit.

<3> Connect the FP4 power supply unit to the FP4 and the main power supply.

4. Starting system

<1> Turn on the switch of the power supply unit cable. Do not connect the FA adapter before turning on the switch.

Confirm that the Status LED of the FP4 remains dark and that 'Commands >' is displayed on the LCD, indicating that the FP4 is ready for operation.

If this does not happen, the chances are the FP4 is faulty. Consult an NEC Electronics sales representative or distributor.

<2> Connect the FP4 to the FA adapter^{Note} with the target cable.

Note This is a product of Naito Densai Machida Mfg. Co., Ltd.

<3> Start the GUI software.

The GUI software tries to establish a connection with the FP4 at 9,600 bps, using COM1.

If it is not successful, it scans other communication rates and ports.

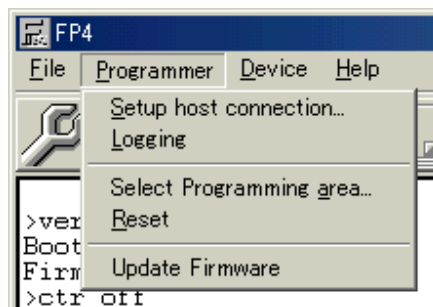
In this example, it is assumed that the FP4 is connected to COM1.

Figure 5-1. Connection Between GUI Software and FP4



<4> You may click the **ABORT** button and select the communication port from the [Programmer] → [Setup host connection...] menu directly.

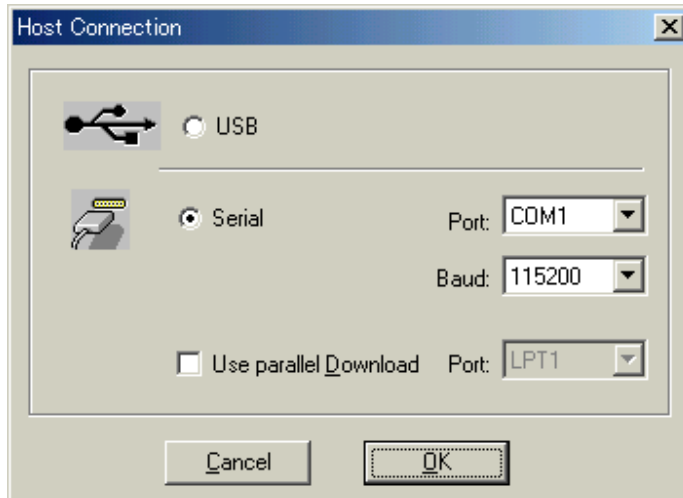
Figure 5-2. [Setup host connection...] Menu



<5> Select the appropriate port number to which the FP4 was connected.

The initial communication speed is set to 9,600 bps (factory setting of the FP4).

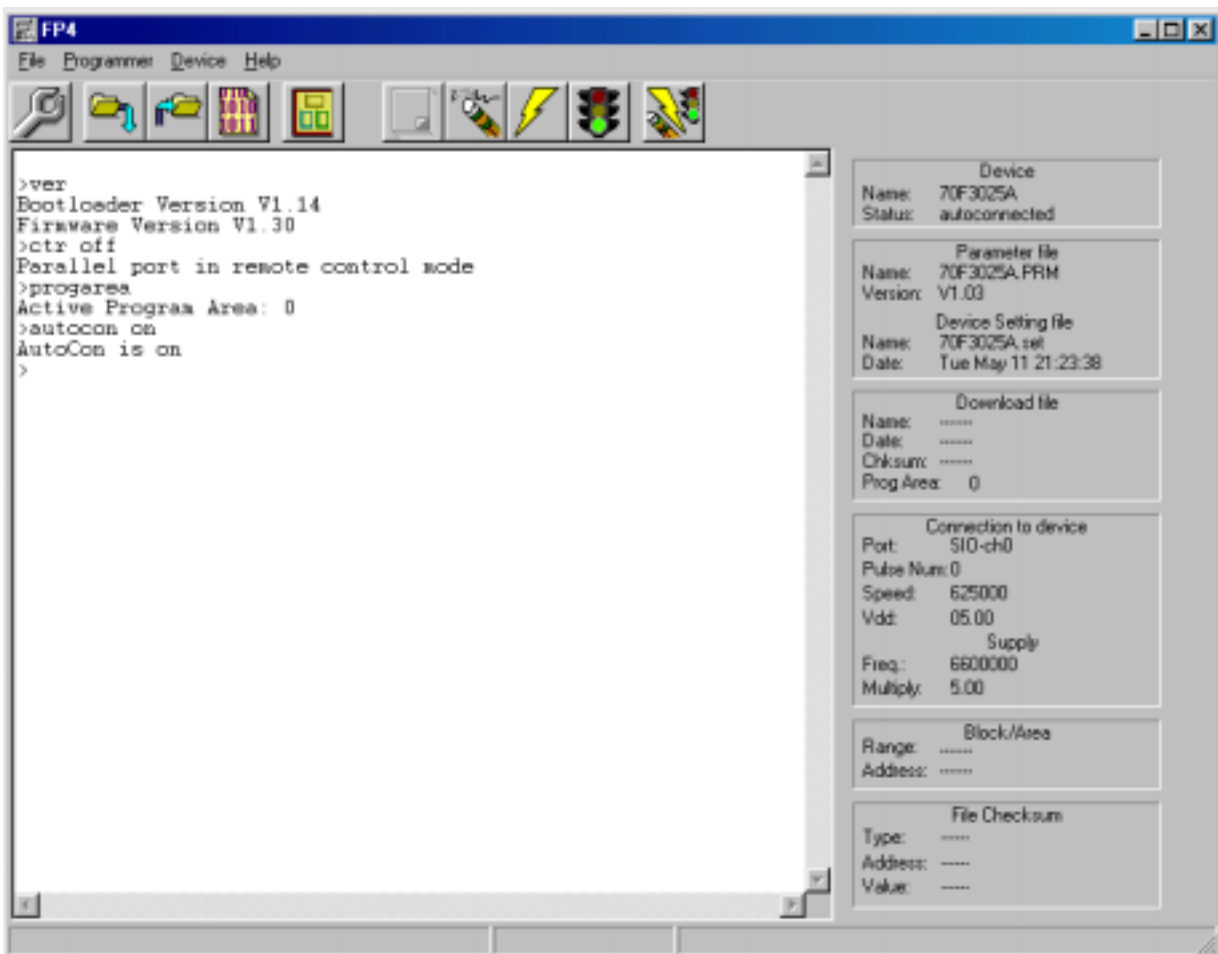
Figure 5-3. Setup Communication Parameters



<6> Select **OK** to activate the new port settings.

If the GUI software has been correctly started, the following screen is displayed.

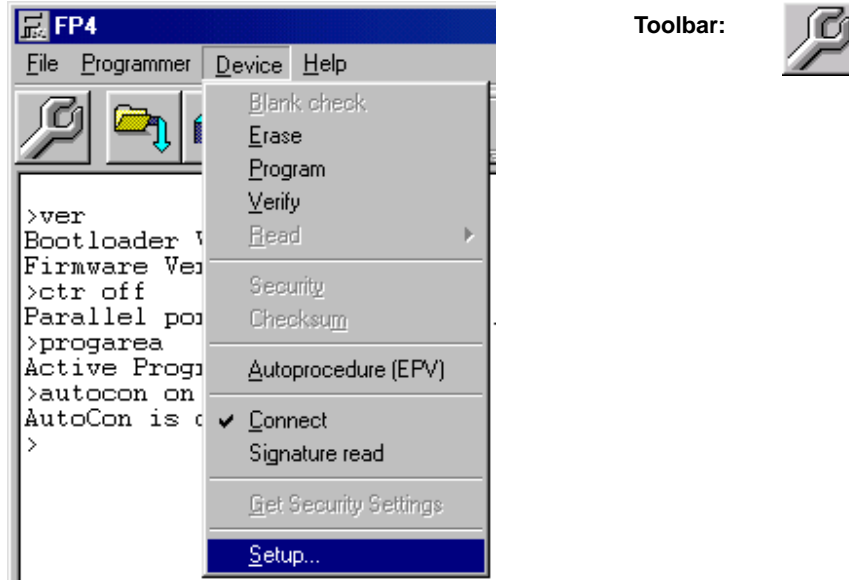
Figure 5-4. GUI Software Initial Screen



5. Programming environment setting

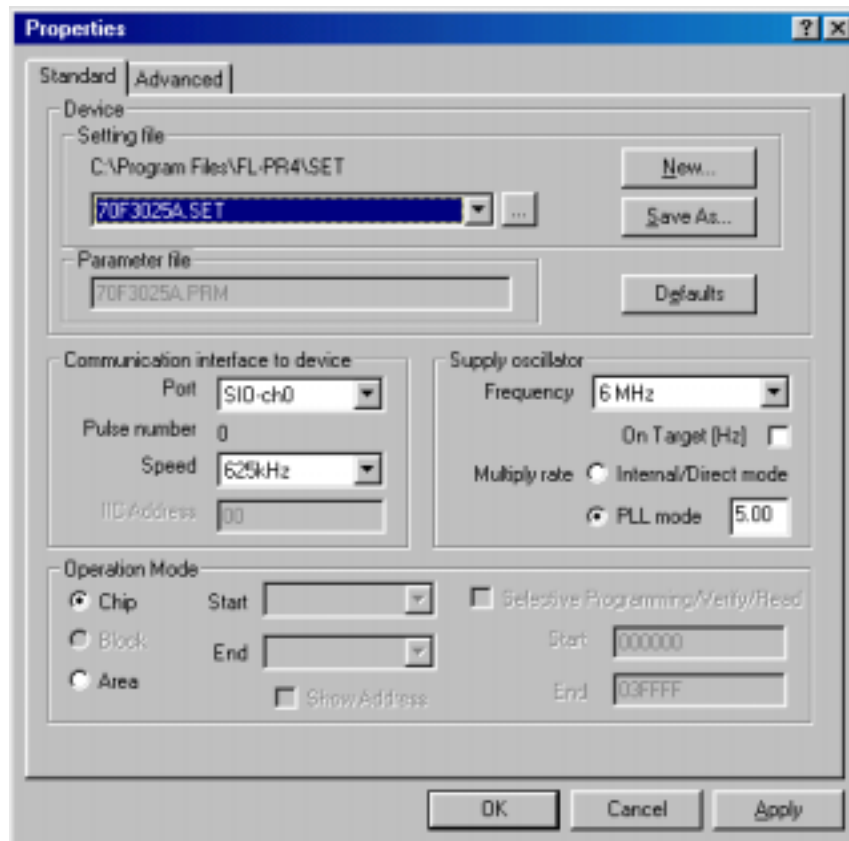
<1> Select the menu item [Device] → [Setup...] from the menu bar.

Figure 5-5. [Device] → [Setup...] Menu



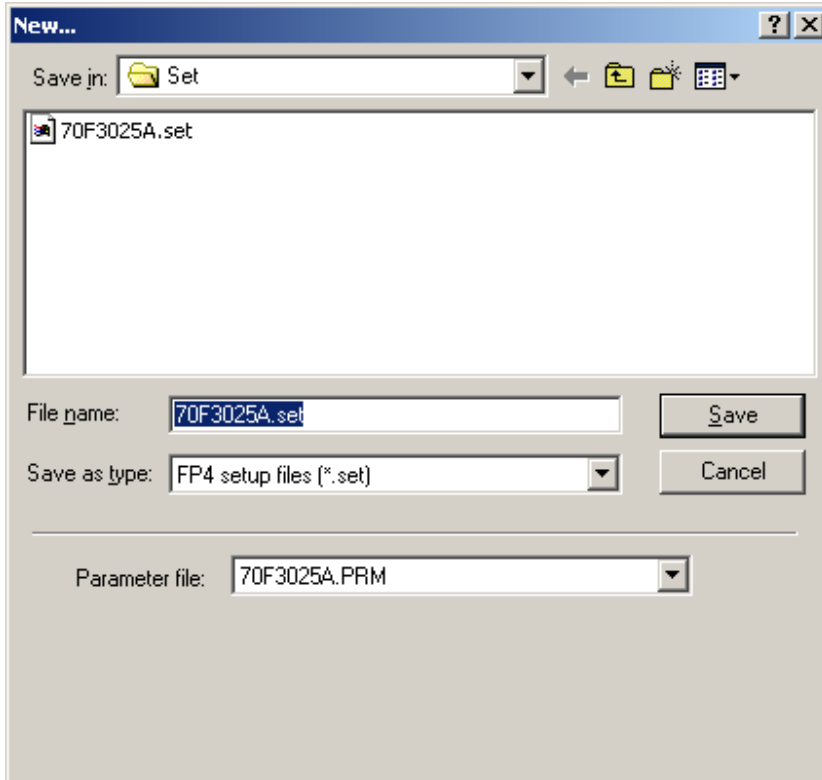
<2> The dialog box for standard device setup will be activated.

Figure 5-6. <Standard Device Setup> Dialog Box



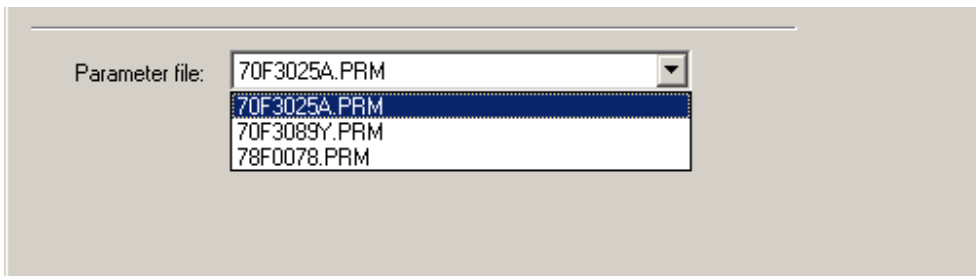
<3> Click the **New...** button to create a new customized setup file for the μ PD70F3025A.

Figure 5-7. Creating New Customized Setup File



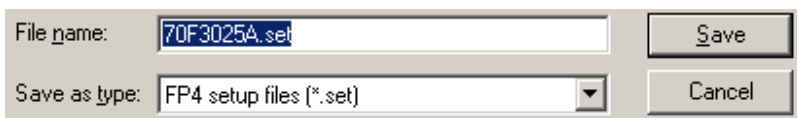
<4> Select 70F3025A.PRM from the “Parameter file” pull-down list.

Figure 5-8. Selecting Parameter File



<5> Enter the name of the newly created customized setup file and click the **Save** button.

Figure 5-9. Saving Customized Setup File



<6> Set the other items in accordance with your programming environment. Especially, set Communication interface to device and Supply oscillator in accordance with the specifications of the device selected. Specify a flash memory range to be manipulated as Operation Mode (the flash memory range that can be set is defined by the parameter file in accordance with the specifications of the device).

In this example, it is assumed that the following settings are made.

<Communication interface to device>

Port: SIO-H/S

Speed: 625 kHz

<Supply oscillator>

On Target: Not checked (The clock of the FP4 is supplied to the target.)

Frequency: 6 MHz

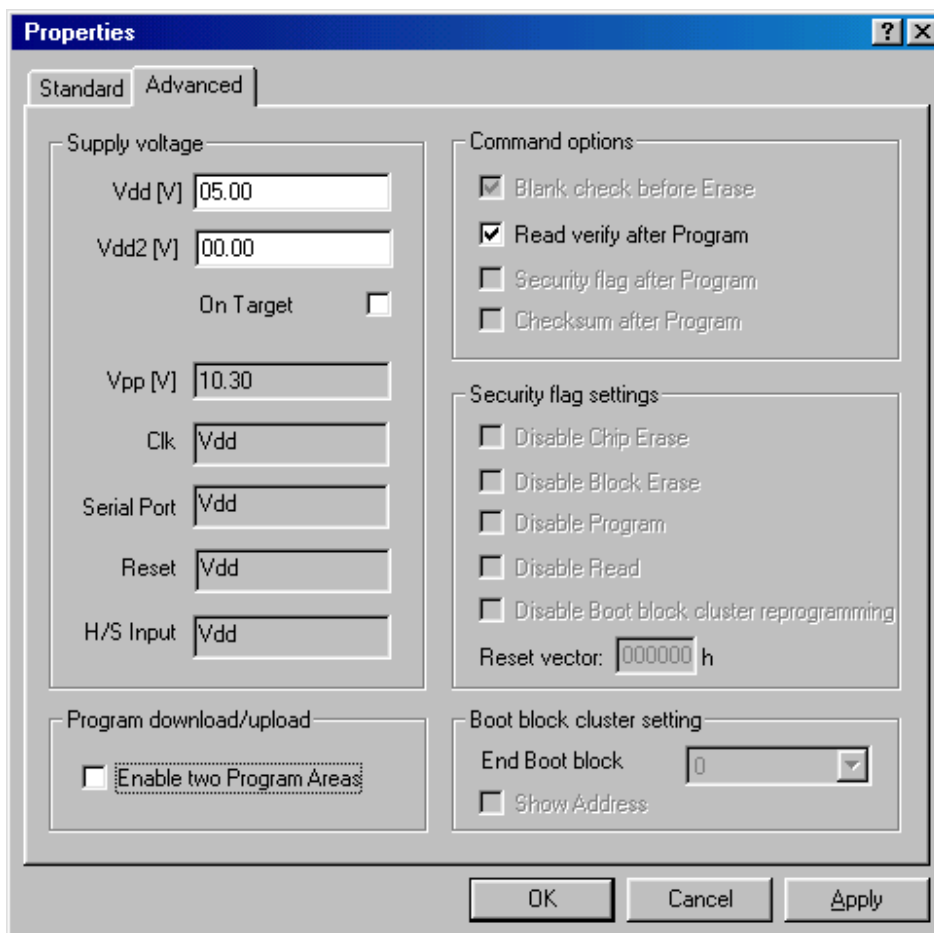
Multiply rate: 5

<Operation Mode>

Chip

<7> Next, display the Advanced dialog box.

Figure 5-10. <Advanced Device Setting> Dialog Box



Check the information of Supply voltage to confirm that the settings are in accordance with your programming environment.

To supply the target V_{DD} , enter the value of the target V_{DD} in Vdd [V] and Vdd2 [V], and check the On Target check box.

It is assumed that the following settings are made in this example.

<Supply voltage>

Vdd [V]: 5.00 V (in accordance with the set value of the parameter file)

Vdd2 [V]: 0.00 V (not used: in accordance with the set value of the parameter file)

On Target: Not checked (Vdd is supplied from the FP4 to the target.)

<Command options>

Blank check before Erase: Checked (fixed to default)

Read verify after Program: Checked

<Security flag settings>

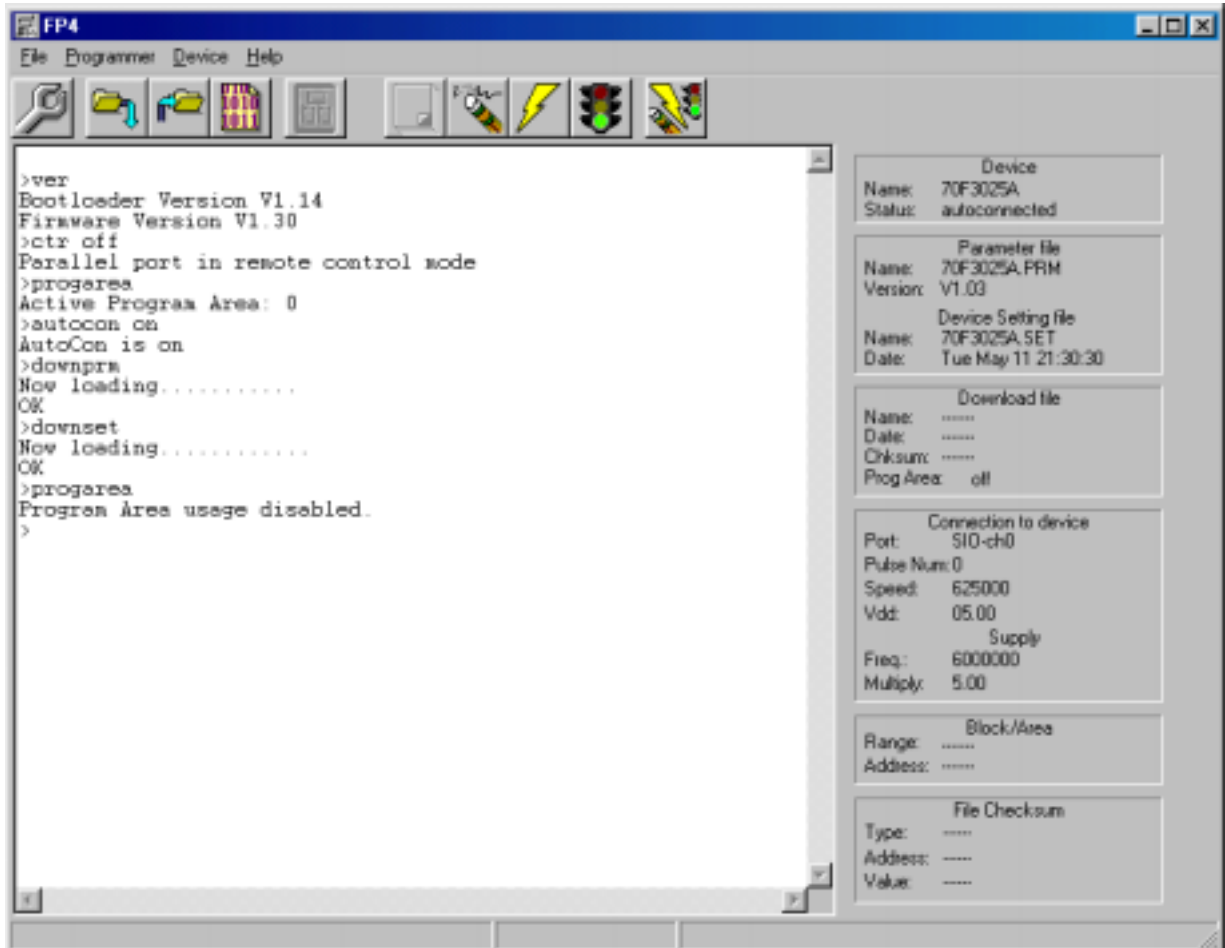
Not used

<Program download/upload>

Enable two Program Areas: Not checked

- <8> Click the **OK** button. The GUI software will load the parameter settings to the FP4. When the settings have been completed, the next screen is displayed.

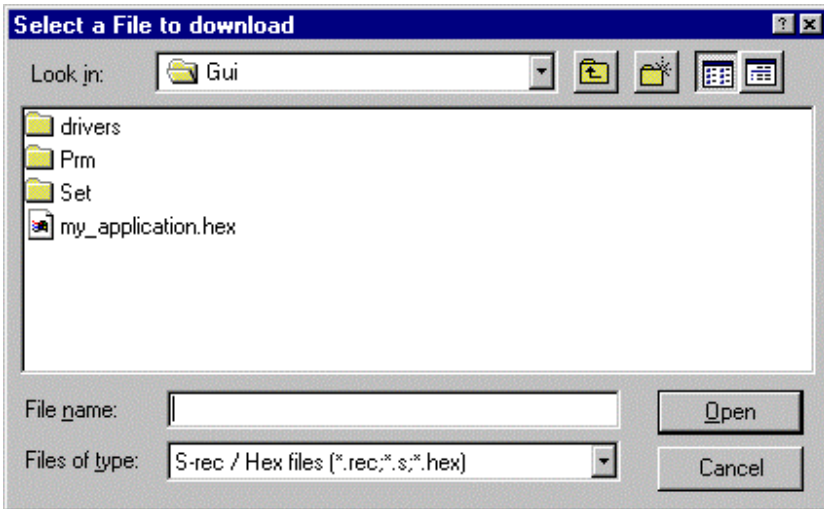
Figure 5-11. Completion of Parameter Settings



6. Downloading user program

- Select [File] → [Download...].

Figure 5-12. Opening Program File to Be Downloaded

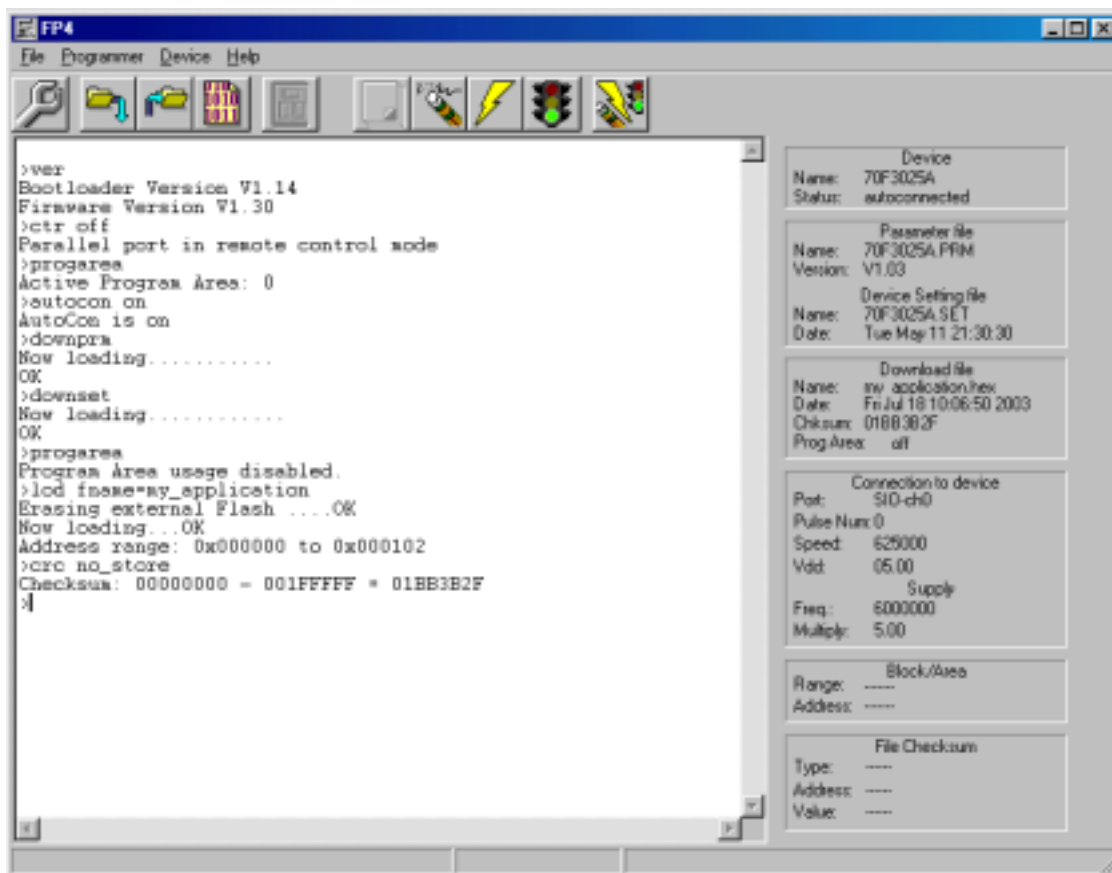


Toolbar:



<1> Select the name of the file to be downloaded, and click **Open** to start the downloading sequence. While the program is being downloaded, a window indicating the progress is displayed. When downloading is complete, the following screen is displayed.

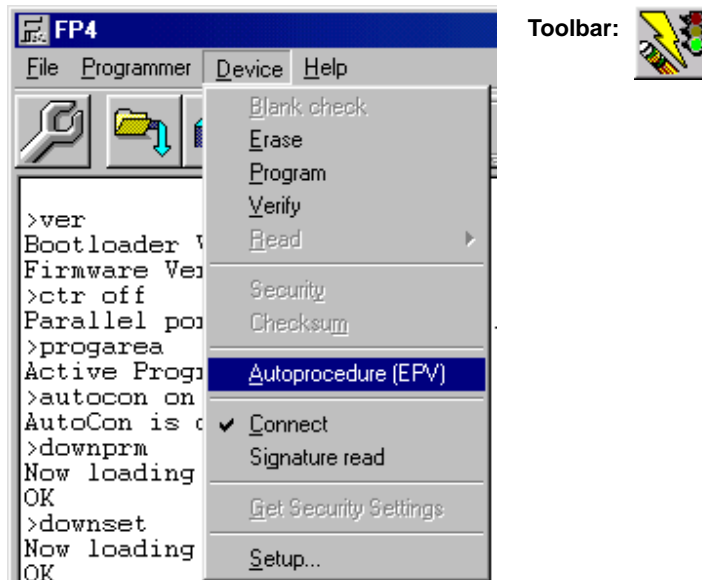
Figure 5-13. Completion of Downloading



7. Executing EPV command

Select [Device] → [Autoprocedure (EPV)].

Figure 5-14. Erase>Program>Verify (EPV) Menu



When the EPV command is executed, checking the checksum value of the user program, Blank check, Erase, Program, and Verify^{Note} are executed in that order on the μ PD70F3025A (if necessary, insert the device to be newly written in the FA adapter, and execute step 7). In this example, since Read verify after Program is checked whether the data communication between the FP4 and target device has been correctly performed after executing the EPV command is checked.

Note When the Program command is executed, whether the write level is secured is verified after the user program has been written. Note, however, that this verification does not detect a communication error of the user program that is transmitted from the FP4 to the target device. For details of this command, refer to 4.4.3 [Device] menu.

8. Terminating system

<1> If it is not necessary to program other devices, select [File] → [Quit] and terminate the GUI software.

All the settings made so far have been saved, so that they can be reused when the GUI software is restarted (all the settings are also saved to the internal EEPROM of the FP4).

<2> Remove the FA adaptor (target system) from the target cable.

<3> Turn off the switch of the power supply unit.

<4> Remove the power supply unit and either the RS-232C cable or USB cable from FP4.

Caution If the “E501 Operation failed” error occurs, check the following points.

- Check the wiring of the pins used for writing the target device on the target board and the processing of the other pins, by referring to the user’s manual of the target device.
- Check if the following set values match the actual writing environment, by selecting the [Device] → [Setup...] menu.
 - Clock supply source
 - V_{DD} supply source
 - Communication mode to be used
 - Parameter file, etc.
- Check to see if the CPU clock and communication clock are within the range of the specifications of the target device.
- When UART is used, communication may not be synchronized due to a baud rate error of the target device. In this case, change the CPU clock or baud rate, or change the communication mode to SIO.

CHAPTER 6 FP4 OPERATION IN STANDALONE MODE

The FP4 has a standalone mode in which the FP4 itself can execute the Erase, Program, and Verify commands without a host. This mode is useful for using the FP4 on the production line during mass production and for upgrading the version at a customer's site.

In the standalone mode, the FP4 uses the flash programming parameters stored in the internal EEPROM area. Therefore, a new device cannot be selected for flash programming, nor can the programming parameters be changed. Programming can be done only in the environment set last in the GUI software operation mode.

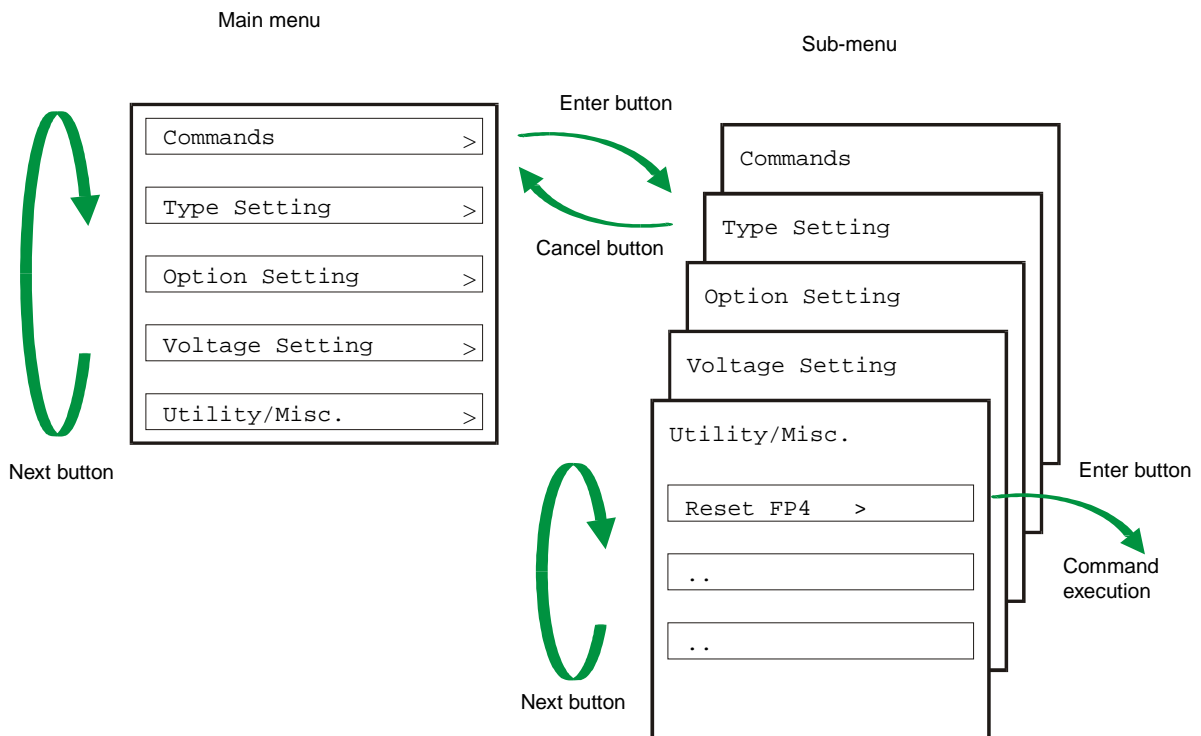
In the standalone mode, select and execute the command menu by using the control buttons "Next", "Enter", and "Cancel" at the upper part of the main unit of the FP4.

The command menu is displayed on the message display, and the result of executing a command is indicated by the message display and status LED.

The command menu consists of two levels of menus: a main menu and sub-menu.

The Next button is used to display the next menu of the same level. The Enter button selects or executes the menu item currently displayed. The Cancel button aborts the command under execution and restores the previous menu level.

Figure 6-1. Menu Status Transition by Key Input



On the main menu level, the FP4 will show the menu items that can be selected.

On the sub-menu level, the first line in the message display shows the menu item and the second line shows the response from the FP4, if any.




A command prompt '>' displayed at the end of a menu line indicates that the menu can be selected by the Enter button, or that the menu (command) can be executed.

If the command prompt '>' is not displayed at the end of a menu line, it means that the function is only displayed.

When power to the FP4 is turned on, the following message is displayed on the message display with the status LED remaining dark.

'Commands >'

The status LED indicates the status of communication with the device and the result of execution, as follows.

Status LED	Status
 Orange	The selected command is under execution. The details of the execution status will be displayed on the message display.
 Green	The selected command has been executed correctly. The command that has been correctly executed will be displayed on the message display.
 Red	The selected command has been terminated by an error. The details of the error will be displayed on the message display.

6.1 FP4 Operation Menu

In the standalone mode, the writing environment of the target device can be checked and rewritten by using the commands explained in this section.

6.1.1 [Commands] menu

The [Commands] menu offers various commands necessary for rewriting the target device. Select a command from this menu and press the Enter button. The FP4 will then execute the command to the target device.

For the details of command execution, refer to 4.4.3 [Device] menu.

[Commands >]

- Pressing the Next button displays the Type Setting menu.
- Pressing the Enter button displays the next command of the [Commands] menu that can be executed.
- The Cancel button is invalid.

[E.P.V >] When the Enter button is pressed next, the target device connected to the FP4 is erased, programmed, and verified^{Note}.

↓ Next button

Note Download a user program in advance in the GUI software mode.
 This is valid for the programming area (Chip, Block and Area) currently set for the FP4.

[Program >]	When the Enter button is pressed next, the target device connected to the FP4 is programmed ^{Notes 1, 3} .
↓ Next button	
[Erase >]	When the Enter button is pressed next, the target device connected to the FP4 is erased ^{Note 3} .
↓ Next button	
[Verify >]	When the Enter button is pressed next, the target device connected to the FP4 is verified ^{Notes 1, 3} .
↓ Next button	
[Security >]	When the Enter button is pressed next, the security flag of the target device connected to the FP4 is programmed ^{Note 2} .
↓ Next button	
[Checksum >]	When the Enter button is pressed next, the checksum value (entire flash memory area of the target device) of the target device connected to the FP4 is read. The read checksum value will be displayed on the message display ^{Notes 2, 3} .
↓ Next button	
[Blank check >]	When the Enter button is pressed next, blank check of the target device connected to the FP4 is executed ^{Note 3} .
↓ Next button	
[Signature >]	When the Enter button is pressed next, the signature of the target device connected to the FP4 is read. The device name is displayed on the message display. Display example Signature: D70F3025A
↓ Next button	
[Prog Area >]	When the Enter button is pressed next, the valid memory area (Area 0 or Area 1) is changed if the 2 MB user program area is used as two independent 1 MB memory areas (Area 0 and Area 1). <ul style="list-style-type: none"> • Display example (when Enter button is pressed) Commands Prog Area now: 0 (The valid memory area is changed from Area 1 to Area 0.) <p>If the 2 MB area is used as one user program area, the valid memory area cannot be changed by using this menu.</p> <ul style="list-style-type: none"> • Display example (when Enter button is pressed) Commands Prog Area (dis.) (The valid memory area cannot be changed.) <p>Check the memory area currently selected, by using Prog Area of Option Setting.</p>

- Notes**
1. Download the user program in advance in the GUI software mode.
 2. This command is valid only with a single-power-supply flash memory microcontroller. If any other microcontroller is used, this command is not displayed.
 3. This is valid for the programming area (Chip, Block and Area) currently set for the FP4.

6.1.2 [Type Setting] menu

The [Type Setting] menu is used to check the target device rewrite environment currently set for the FP4. All the values displayed were set during the last programming session.

The setting cannot be changed by this menu.

[Type Setting >]

- Pressing the Next key displays the [Option Setting] menu.
- Pressing the Enter key displays the following commands that can be executed from the [Type Setting] menu.
- Pressing the Cancel key displays the [Commands] menu again.

[Device Port] Device Port displays any of the following to indicate what is selected as an interface between the target device and the FP4.
SIO 0, SIO1, SIO 2, SIO H/S, IIC 0, IIC 1, IIC 2, IIC 3,
UART 0, UART 1, UART 2, UART 3, PORT 0, PORT 1, PORT 2

↓ Next button

[Multiply Rate] Multiply Rate displays the multiplication rate of the operating clock of the target device.

↓ Next button

[Serial CLK] Serial CLK displays the serial clock rate in Hz that is used to interface the target device and FP4.

↓ Next button

[CLK source] CLK source indicates either of the following as a source to supply the operation clock to the target device.

Programmer: Clock is supplied from the FP4.

Target: Clock is supplied on the user system.

↓ Next button

[PG CPU CLK] PG CPU CLK indicates the frequency of the clock supplied by the FP4 in MHz.

↓ Next button

[Target CPU CLK] Target CPU CLK indicates the frequency of the clock on the user system that is supplied to the target device, in MHz.

↓ Next button

[Mode] Mode indicates any of the following operation modes when the Blank Check, Erase, Program, Verify, or EPV command is executed.

chip, area, block

Display example

Mode

BEPV: chip

↓ Next button

[PRG Area] PRG Area indicates which of the areas of the target device connected to the FP4 is to be programmed. This menu is valid only when the operation mode is other than chip (only when area or block is displayed in the above mode).

Display example

PRG Area

0 to 1

*In the chip mode, the display is always as follows:

PRG Area

0 to 0

6.1.3 [Option Setting] menu

The [Option Setting] menu is used to check the command option and security flag currently set for the FP4. All the displayed values were set during the last programming session.

The setting cannot be changed on this menu.

[Option Setting >]

- Pressing the Next button displays the [Voltage Setting] menu.
- Pressing the Enter button displays the following commands that can be executed on the [Option Setting] menu.
- Pressing the Cancel button displays the [Commands] menu again.

[BLN before ERS] Displays the set status of the command option Blank check before Erase as either of the following.

on: Blank check is executed before execution of the Erase and EPV commands.

If the result of the blank check is OK, erasure processing is not executed.

off: Blank check is not executed before execution of the Erase and EPV commands.

↓ Next button

[VRF after PRG] Displays the set status of the command option Verify after Program as either of the following.

on: After execution of the Program and EPV commands, the write data is transmitted from the programmer and verified against the data written to the flash memory.

off: After execution of the Program and EPV commands, the data transmitted from the programmer is not verified against the data written to the flash memory.

↓ Next button

[SCF after PRG] Displays the set status of the command option Security flag after Program as either of the following^{Note}.

on: After execution of the Program and EPV commands, the security flag selected by Security flag settings is automatically set.

off: After execution of the Program and EPV commands, the security flag is not automatically set.

↓ Next button

[SUM after PRG] Displays the set status of the command option Checksum after Program as either of the following^{Note}.

on: After execution of the Program and EPV commands, the flash memory checksum value of the target device is read from the target device and displayed on the programmer.

off: After execution of the Program and EPV command, the flash memory checksum value of the target device is neither read nor displayed.

↓ Next button

(continued on next page)

Note This menu is displayed only when a single-power-supply flash memory microcontroller is used.

[Prog Area] Displays the valid memory area specified in the 2 MB user program area of the FP4 as either of the following.

- on (0): User program Area 0 (0x00000000 to 0x000FFFFF) is specified.
- on (1): User program Area 1 (0x00100000 to 0x001FFFFF) is specified.
- off: Entire 2 MB user program area is specified.

Display example

```
Prog Area
on (0)
```

↓ Next button

[Chip ERS dis.] Displays the set status of Disable Chip Erase of Security flag settings as either of the following^{Note}.

- on: The Erase command is invalidated on the entire flash memory area of the target device.
- off: The Erase command is executable.

↓ Next button

[Block ERS dis.] Displays the set status of Disable Erase block of Security flag settings as either of the following^{Note}.

- on: The Erase command is invalidated for a selected block in the flash memory of the target device.
- off: The Erase command is executable.

↓ Next button

[Block PRG dis.] Displays the set status of Disable Program Block of Security settings as either of the following^{Note}.

- on: The Program command is invalidated for a selected block in the flash memory of the target device.
- off: The Program command is executable.

↓ Next button

[dis. PRG Blk >] When the Enter button is pressed next, all the blocks prohibited from being programmed are listed^{Note}.

Display example

```
00, 01, 02, 04, 05 (Blocks 0, 1, 2, 4, and 5 are prohibited from being programmed.)
```

↓ Next button

[dis. ERS Blk >] When the Enter button is pressed next, all the blocks prohibited from being erased are listed^{Note}.

Display example

```
00, 01, 02, 04, 05 (Blocks 0, 1, 2, 4, and 5 are prohibited from being erased.)
```

Note This menu is displayed only when a single-power-supply flash memory microcontroller is used.

6.1.4 [Voltage Setting] menu

The [Voltage Setting] menu is used to check the voltage level setting when programming the target device currently connected to the FP4. All the displayed values were set by the parameter file during the last programming session.

This menu cannot be used to change the settings.

[Voltage Setting >]

- Pressing the Next button displays the Utility/Misc. menu.
- Pressing the Enter button displays the following commands that can be executed from the [Voltage Setting] menu.
- Pressing the Cancel button displays the [Commands] menu again.

[Vdd]	Vdd displays the value of V _{DD} supplied to the target device connected to the FP4 in volts.
↓ Next button	
[Vdd2]	Vdd2 displays the value of V _{DD2} supplied to the target device connected to the FP4 in volts.
↓ Next button	
[Vdd Source]	Vdd Source indicates the source of V _{DD} supplied by the target device as either of the following.
	VDD from PG: V _{DD} is supplied from the FP4.
	VDD from device: V _{DD} is supplied on the user system.
↓ Next button	
[Clk Level]	Clk Level indicates the voltage level of the clock signal as either of the following.
	VDD
	VDD2
↓ Next button	
[Ser Level]	Ser Level indicates the voltage level of the serial communication signal. The high level of the serial communication signal is indicated as either of the following.
	VDD
	VDD2
↓ Next button	
[Res Level]	Res Level indicates the voltage level of the reset signal. The high level of the reset signal is indicated as either of the following.
	VDD
	VDD2
↓ Next button	
[HS Level]	HS Level indicates the voltage level of the handshake signal. The high level of the handshake signal is indicated as either of the following:
	VDD
	VDD2
↓ Next button	
[Vpp]	Vpp indicates the value of V _{PP} supplied to the target device connected to the FP4 in volts.

6.1.5 [Utility/Misc.] menu

The [Utility/Misc.] menu is used to check the F/W version of the FP4 and the version of the parameter file downloaded. It is also used to execute RESET of the FP4.

This menu cannot be used to change settings.

[Utility/Misc. >]

- Pressing the Next button displays the [Commands] menu.
- Pressing the Enter button displays the following commands that can be executed on the [Utility/Misc.] menu.
- Pressing the Cancel button displays the [Commands] menu.

[Reset FP4 >]	When the Enter button is pressed next, the programmer is reset.
↓ Next button	
[FP4 F/W Version]	FP4 F/W Version displays the firmware version number of the FP4.
	Display example
	FP4 F/W Version
	V1.16
↓ Next button	
[PRM Name]	PRM Name displays the file name of the parameter file stored in the FP4.
	Display example
	PRM Name
	70F3025A
↓ Next button	
[PRM File Version]	PRM File Version displays the version of the parameter file stored in the FP4.
↓ Next button	
[HEX File Name]	HEX File Name displays the name of the downloaded file stored in the specified valid memory area in the user program area of the FP4.
	It displays "n.a." if the downloaded file is invalid.
	The file name is displayed after either of the following steps are executed.
	1. After downloading a user program into the user program area that is specified as a single memory area, use the user program as two independent memory areas (Area 0 and Area 1).
	2. After downloading a user program into either Area 0 or Area 1, switch the valid memory area to the other memory area.
↓ Next button	
[CRC Sum (FP4)]	CRC Sum (FP4) calculates and displays the checksum value of the valid memory area specified in the 2 MB user program area of the FP4.
	Display example
	CRC Sum (FP4)
	6AEDF4F4

CHAPTER 7 CONNECTORS AND CABLES

7.1 Power Supply Connector

The power supply connector is located on the right side of the FP4.

Figure 7-1. Power Supply Connector

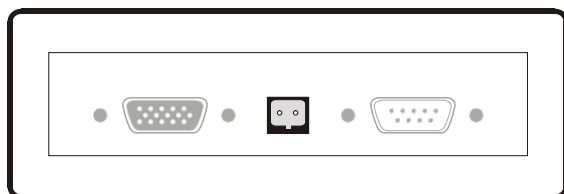
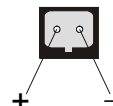


Figure 7-2. Pin Configuration of Power Supply Connector



The specifications of the power supply are:

AC input range: 100 V to 240 V, 47 Hz to 63 Hz

DC output: 15 V

Current consumption: 0.8 A max.

Caution Connect only the provided AC adapter to the power supply jack of the FP4.

7.2 HD-Sub 9 Serial Host Connector

The serial host connector is located on the right side of the FP4.

Figure 7-3. HD-Sub 9 Serial Host Connector

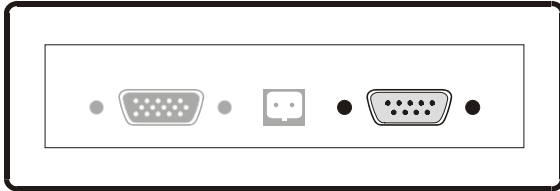


Figure 7-4. Pin Configuration of HD-Sub 9 Serial Host Connector

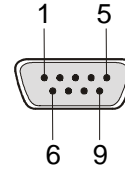


Table 7-1. Pin Configuration of HD-Sub 9 Serial Host Connector

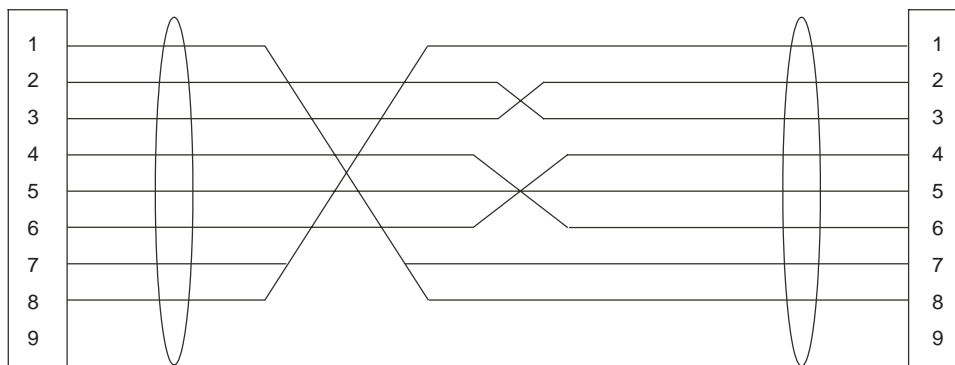
Serial Host	Signal Name of FP4
1	NC
2	RxD
3	TxD
4	NC
5	V _{ss}
6	NC
7	RTS
8	CTS
9	NC

7.2.1 RS-232C cable (crossed)

The host cable is a standard shielded RS-232C cable of 2-meter or 3-meter length. The connectors on both sides are D-SUB 9 pin connectors (female). Figure 7-3 shows the connection.

★

Figure 7-5. Host Cable Connections



7.3 HD-Sub 15 Target Interface Connector

The target interface connector is located on the right side of the FP4.

Figure 7-6. HD-Sub 15 Target Interface Connector

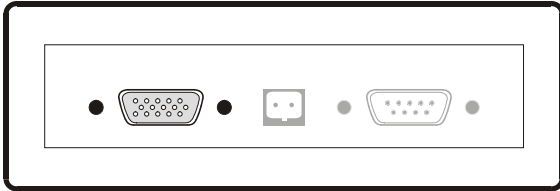


Figure 7-7. Pin Configuration of HD-Sub 15 Target Interface Connector

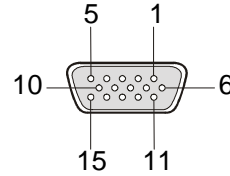


Table 7-2. Pin Configuration of HD-Sub 15 Target Interface Connector

PF-FP4 HD-Sub 15	Signal Name of FP4
1	SO/TxD
2	SI/RxD
3	SCK
4	RESET
5	V _{DD2}
6	FLMD1
7	H/S
8	V _{DD}
9	V _{DD}
10	RFU-1
11	V _{PP}
12	FLMD0
13	VDE
14	CLK
15	GND

HD-Sub 15 connector part number: HT1566G3 (PROVERTHA Steckverbinder GmbH)

★ 7.4 Target Cable Specifications

The target cable is equipped with two connectors for the FA adapter.

Figure 7-8. Target Cable Outline



Figure 7-9. Pin Configuration of HD-SUB 15

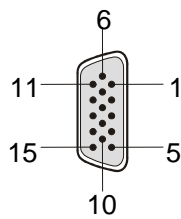


Figure 7-10. Target Connector Outline (View from Socket Side)

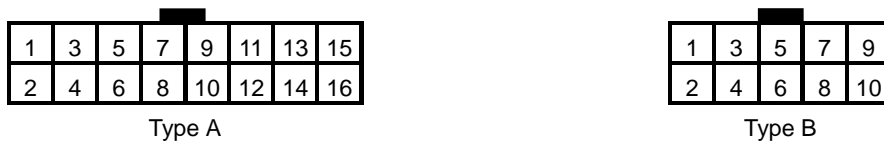


Table 7-3. Pin Configuration of Target Connector

Signal Name of FP4	FP4 Side Connector HD-SUB 15 (Male)	Target Connector Type A: Signal (16 Pin)	Target Connector Type B: Signal (10 Pin)
GND	15	1	1
RESET	4	2	2
SI/RxD	2	3	3
V _{DD}	8, 9	4	4
SO/TxD	1	5	5
V _{PP}	11	6	6
SCK	3	7	7
H/S	7	8	8
CLK	14	9	9
VDE	13	10	10
V _{DD2}	5	11	
FLMD1	6	12	
RFU-1	70	13	
FLMD0	12	14	
Not used		15	
Not used		16	
Remark		For both single- and two-power-supply flash memories	For two-power-supply flash memory

Connecting the following connectors as target connectors (type A and type B) is recommended.

Type A (16-pin): 7616-5002SC (Sumitomo 3M Limited)

Type B (10-pin): FAP-10-08#2-0BF (Yamaichi Electronics Co., Ltd.)

When using a self-made cable because the supplied cable cannot be used due to the specifications of the target, the cable length should be the same or shorter than the supplied cable. Also, the frequency characteristics of the cable material should be the same or higher than those of the supplied cable.

Note that communication may be performed at high speed according to the communication settings. Therefore, when a cable other than the supplied cable is used the system may not operate normally due to communication errors.

7.5 Parallel Host Connector

The parallel host connector can be configured as a centronics interface or as remote control port. Depending on the selection, one of the following signal settings is available.

Figure 7-11. HD-Sub 25 Parallel Host Connector

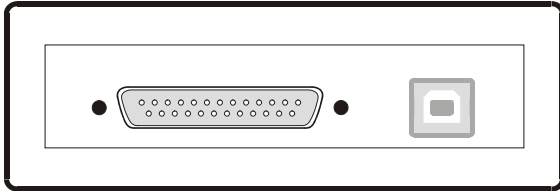


Figure 7-12. Pin Configuration of HD-Sub 25 Parallel Host Connector

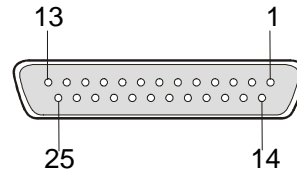


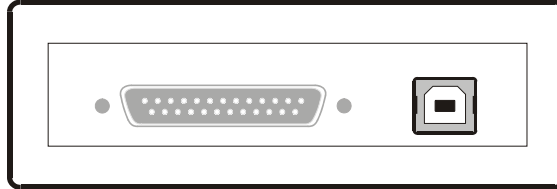
Table 7-4. Pin Configuration of HD-Sub 25 Parallel Host Connector

Pin Number	Signal	Centronics Mode	
1	IO3-0	/Strobe	In
2	IO1-0	D0	IO
3	IO1-1	D1	IO
4	IO1-2	D2	IO
5	IO1-3	D3	IO
6	IO2-0	D4	IO
7	IO2-1	D5	IO
8	IO2-2	D6	IO
9	IO2-3	D7	IO
10	IO3-2	/Ack	Out
11	IO3-1	Busy	Out
12	Vss		
13	Pull-up		
14	Pull-up		
15	Pull-up		
16	IO3-3	Not used	In
17	Pull-up		
18	Vss		
19	Vss		
20	Vss		
21	Vss		
22	Vss		
23	Vss		
24	Vss		
25	Vss		

7.6 USB Port

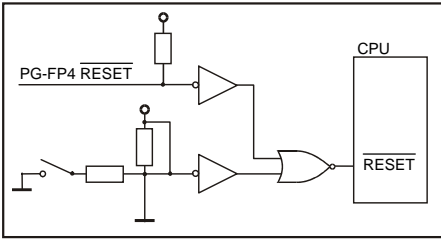
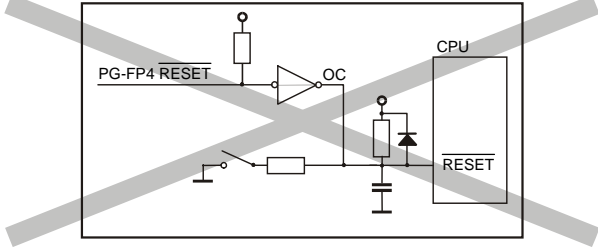
The USB port connection (Rev. 1.1) allows data transmission up to 12 Mbps on a USB type B connector.

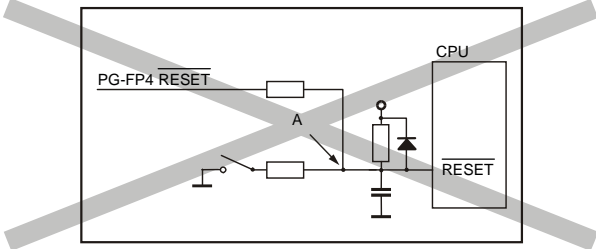
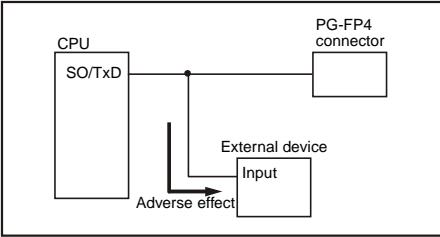
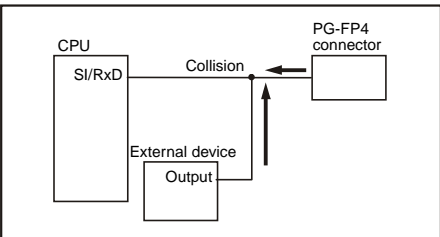
Figure 7-13. USB Port Connector

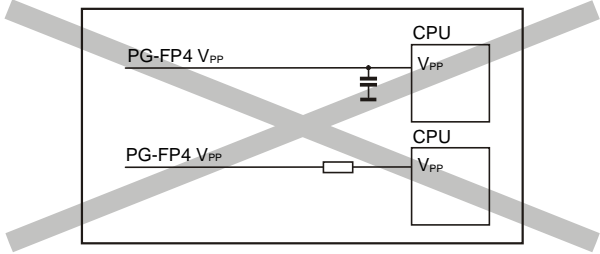


CHAPTER 8 NOTES ON TARGET SYSTEMS

This chapter explains the basic notes on the target system for rewriting the flash memory in the microcontroller using the FP4.

CPU Pin	Design Proposal
$\overline{\text{RESET}}$	<p>Do not connect the $\overline{\text{RESET}}$ signal generator on the target system to the $\overline{\text{RESET}}$ signal of the FP4. Otherwise, a signal conflict will occur. To avoid the conflict, isolate the $\overline{\text{RESET}}$ signal generator from the $\overline{\text{RESET}}$ signal of the FP4.</p> <p>Do not generate $\overline{\text{RESET}}$ while the FP4 is connected. This must be especially noted in a system that uses an external watchdog timer.</p> <p>Connect the $\overline{\text{RESET}}$ signal of the FP4 at a point where the status of the programmer $\overline{\text{RESET}}$ signal and that of the CPU $\overline{\text{RESET}}$ pin are the same.</p> <p>Correct connection:</p>  <p>Avoid the following $\overline{\text{RESET}}$ signal connection.</p> <ul style="list-style-type: none"> • Connection to a point where the target CPU $\overline{\text{RESET}}$ rise time is slower than the FP4 $\overline{\text{RESET}}$ rise time. <p>Incorrect connection:</p>  <p>It takes time for the CPU $\overline{\text{RESET}}$ pin to go high after the FP4 $\overline{\text{RESET}}$ level goes from low to high.</p>

CPU Pin	Design Proposal
<p>RESET</p>	<ul style="list-style-type: none"> Connection to a point where the target CPU RESET pin cannot be driven to low level by the FP4 RESET signal. <p>Incorrect connection:</p>  <p>When the FP4 RESET is driven low, the level of the voltage at point A does not fall.</p>
<p>Serial interface pin</p>	<p>When the CPU port used by the FP4 is also connected to the input of an external device, and if that device malfunctions, disconnect the external device or make it output high impedance.</p> <p>Example:</p>  <p>While the CPU port used by the FP4 is also connected to the output of an external device, and if a signal collision occurs, disconnect the external device.</p> <p>Example:</p> 

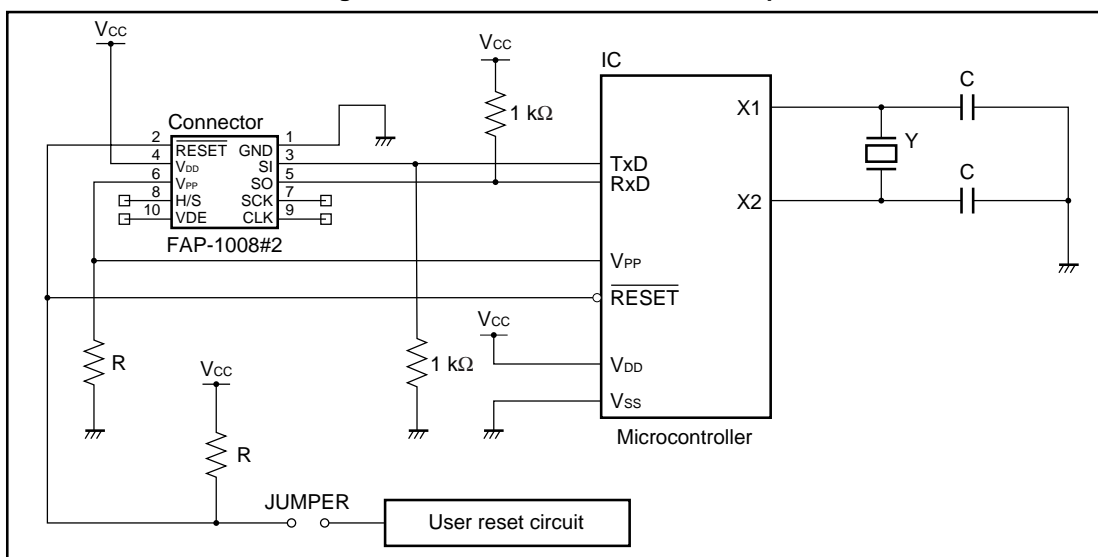
CPU Pin	Design Proposal
<p>V_{PP}</p>	<p>Keep the wiring between the FP4 connector and the CPU V_{PP} pin as thick and as short as possible. Insert neither capacitors nor resistors into the V_{PP} line unless otherwise stated. Note that when pull-down resistors are needed due to the specifications of the target, the <u>resistor value must be 470 Ω or higher</u>.</p> <p>Incorrect circuit:</p> 
<p>Others</p>	<p>For the unused pins, refer to the user's manual of the device. Some devices have pins that must be processed differently. For these pins also, refer to the user's manual of the device.</p> <p>Example of pins processed differently:</p> <ul style="list-style-type: none"> MODE CKSEL REGOUT REGIN, etc.

The following show examples of the interface circuits of UART (asynchronous communication port) and SIO (3-wire clocked communication port).

Refer to the above design proposal for the pin processing of the device to be used.

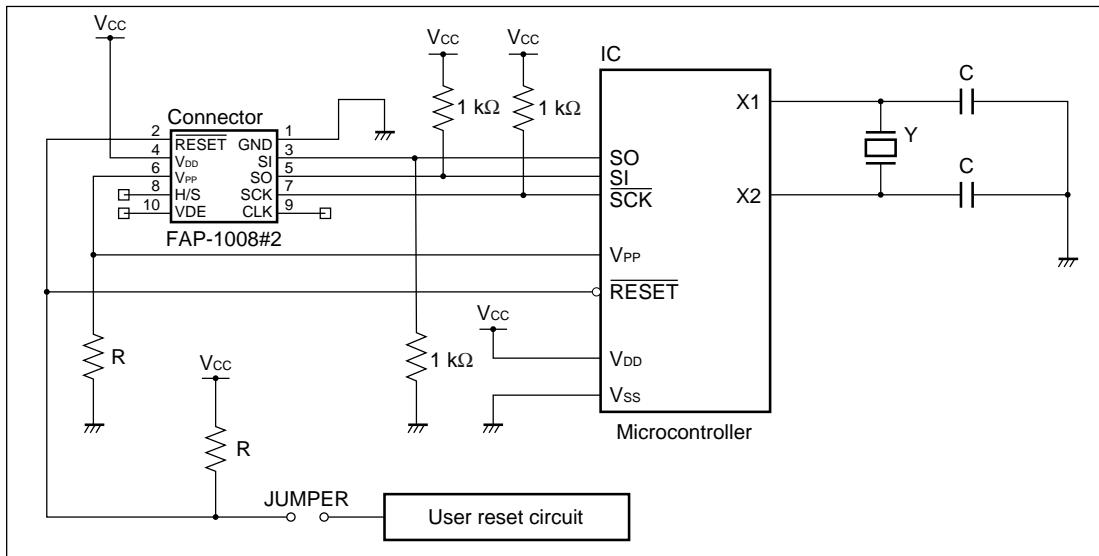
★ • Using two-power-supply flash memory microcontroller

Figure 8-1. UART Interface Circuit Example



- Caution1.** Insert neither capacitors nor resistors into the V_{PP} line unless otherwise stated. When pull-down resistors are inserted into the V_{PP} line, the resistor value must be $470\ \Omega$ or higher.
2. The FP4 generally performs normally without pin processing.
 3. If the pins of the FP4's output signals (SO/TxD) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (V_{IH} , V_{IL}) of the target device, referring to **CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS**.
 4. If the pins of the FP4's input signals (SI/RxD, RESET) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (I_{OH} , I_{OL}) of the target device, referring to **CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS**.

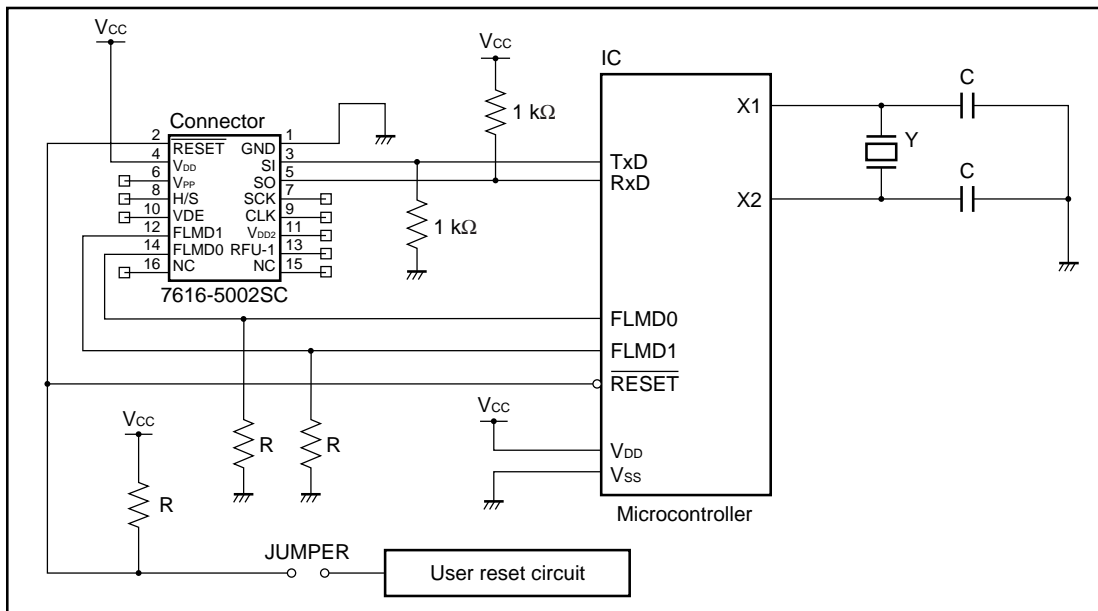
Figure 8-2. SIO Interface Circuit Example



- Caution1.** Insert neither capacitors nor resistors into the V_{PP} line unless otherwise stated. When pull-down resistors are inserted into the V_{PP} line, the resistor value must be $470\ \Omega$ or higher.
2. The FP4 generally performs normally without pin processing.
 3. If the pins of the FP4's output signals (SO/TxD, SCK) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (V_{IH} , V_{IL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.
 4. If the pins of the FP4's input signals (SI/RxD, H/S, RESET) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (I_{OH} , I_{OL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.

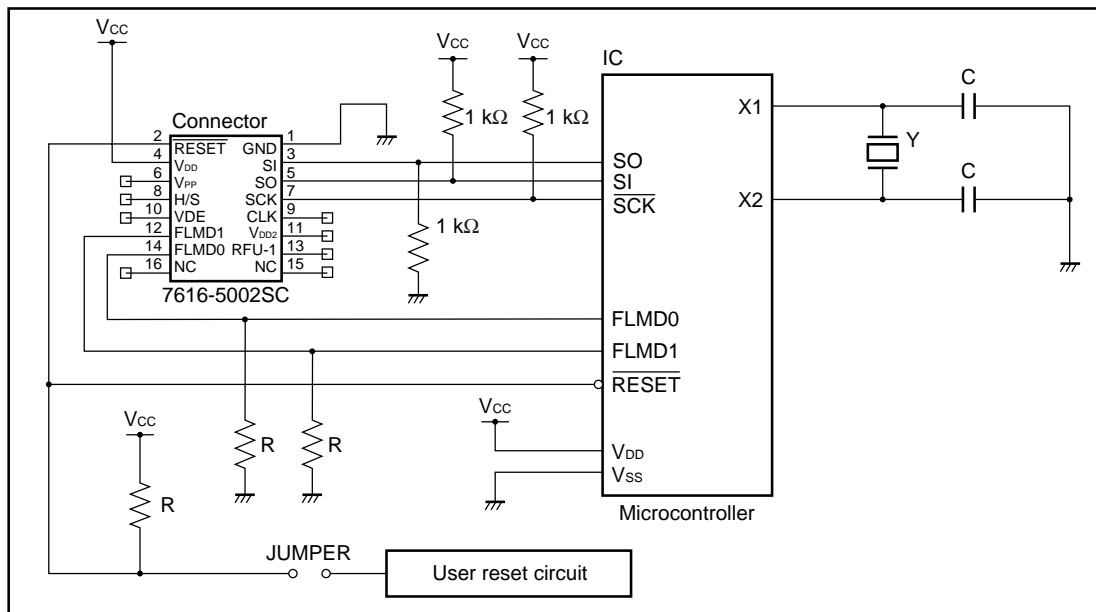
- ★ • Using single-power-supply flash memory microcontroller

Figure 8-3. UART Interface Circuit Example



- Caution1.** Insert neither capacitors nor resistors into the FLMD0, FLMD1 line unless otherwise stated. When pull-down resistors are inserted into the FLMD0, FLMD1 line, the resistor value must be 470 Ω or higher.
2. The FP4 generally performs normally without pin processing.
 3. If the pins of the FP4's output signals (SO/TxD) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (V_{IH} , V_{IL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.
 4. If the pins of the FP4's input signals (SI/RxD, RESET) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (I_{OH} , I_{OL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.

Figure 8-4. SIO Interface Circuit Example



- Caution1.** Insert neither capacitors nor resistors into the FLMD0, FLMD1 line unless otherwise stated. When pull-down resistors are inserted into the FLMD0, FLMD1 line, the resistor value must be 470 Ω or higher.
2. The FP4 generally performs normally without pin processing.
 3. If the pins of the FP4's output signals (SO/TxD, SCK) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (V_{IH} , V_{IL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.
 4. If the pins of the FP4's input signals (SI/RxD, H/S, RESET) are processed, pull up (or pull down) with a resistor value in compliance with the specifications (I_{OH} , I_{OL}) of the target device, referring to CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS.

CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS

This chapter describes the target system interface circuits of the FP4 (TTL level).

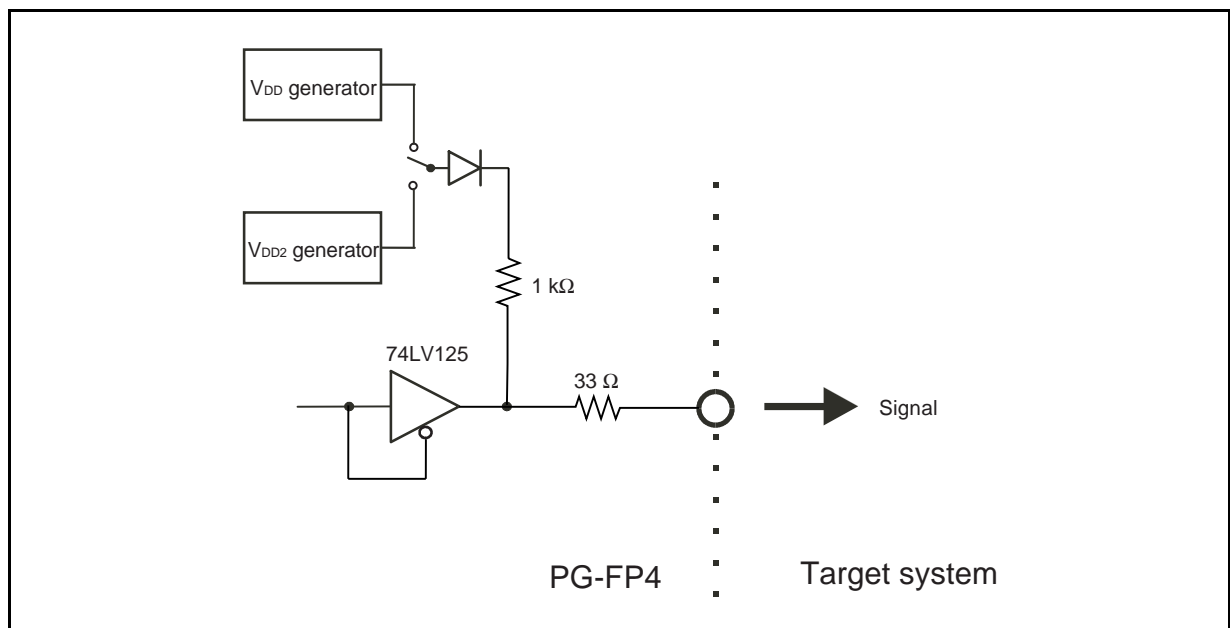
9.1 $\overline{\text{SO/TxD}}$, $\overline{\text{RESET}}$

For programming flash memory devices, V_{DD} and V_{DD2} may be supplied by the FP4.

When V_{DD} and V_{DD2} are supplied by the target system, the FP4 internal voltage regulator is protected so that user V_{DD} and V_{DD2} will not affect the signal lines $\overline{\text{SO/TxD}}$ and $\overline{\text{RESET}}$.

In either case, the signal lines $\overline{\text{SO/TxD}}$ and $\overline{\text{RESET}}$ will have TTL-level voltage.

Figure 9-1. $\overline{\text{SO/TxD}}$ and $\overline{\text{RESET}}$ Pins



9.2 SCK

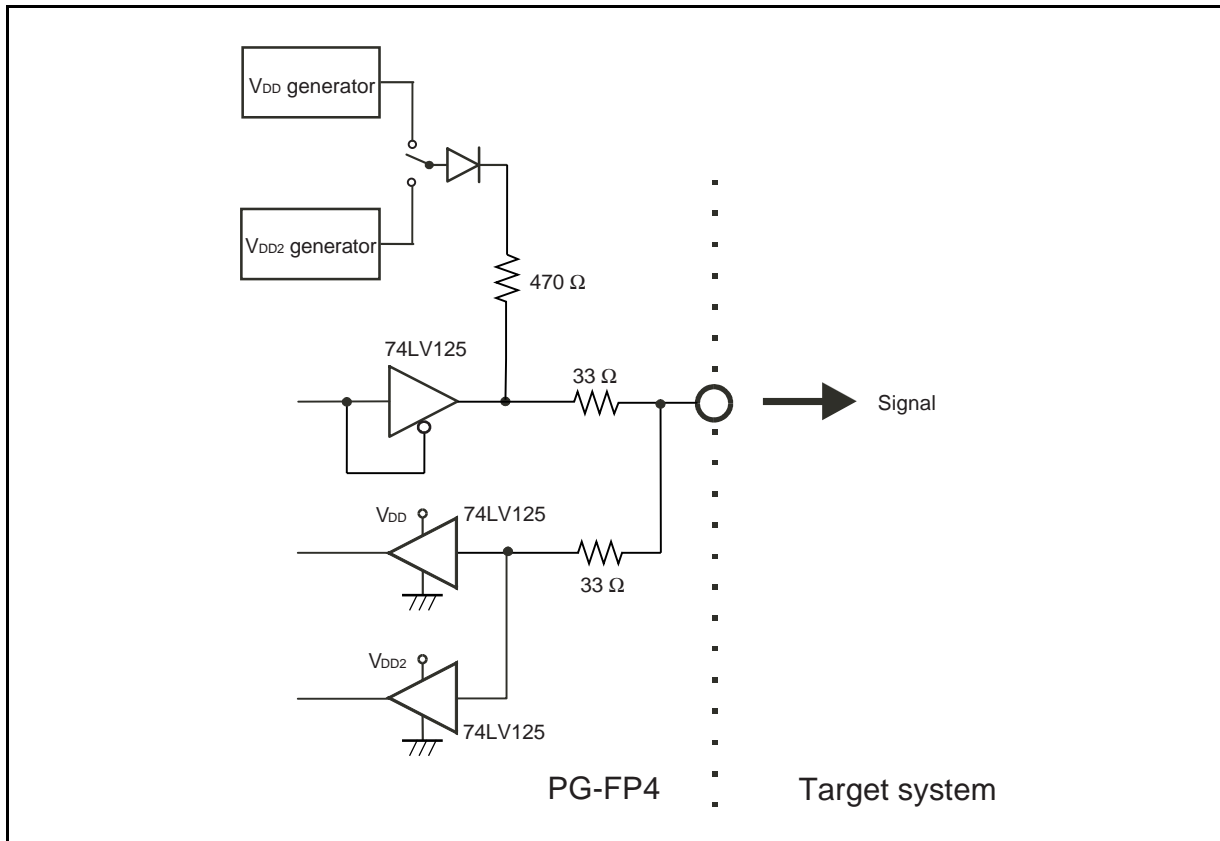
For programming flash memory devices, V_{DD} and V_{DD2} may be supplied by the FP4.

When V_{DD} and V_{DD2} are supplied by the target system, the FP4 internal voltage regulator is protected so that user V_{DD} and V_{DD2} will not affect the signal line SCK.

In either case, the signal line SCK will have TTL-level voltage.

★

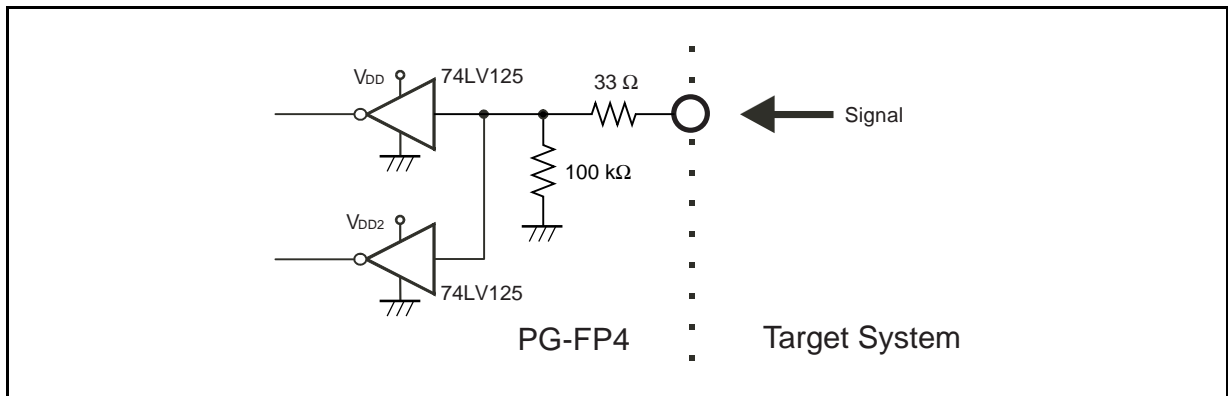
Figure 9-2. SCK Pin



9.3 SI/RxD, H/S

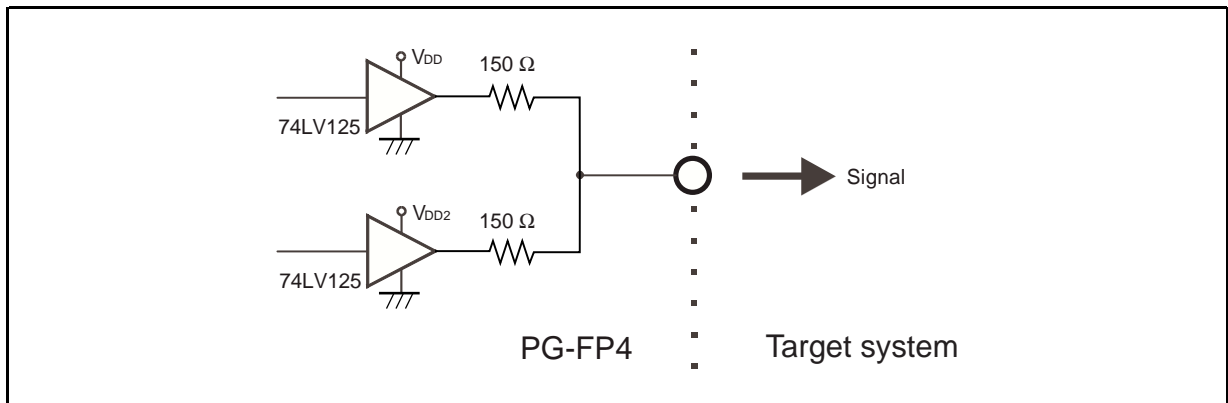
The SI/RxD input signal must not exceed TTL-level voltage.

Figure 9-3. SI/RxD and H/S Pins



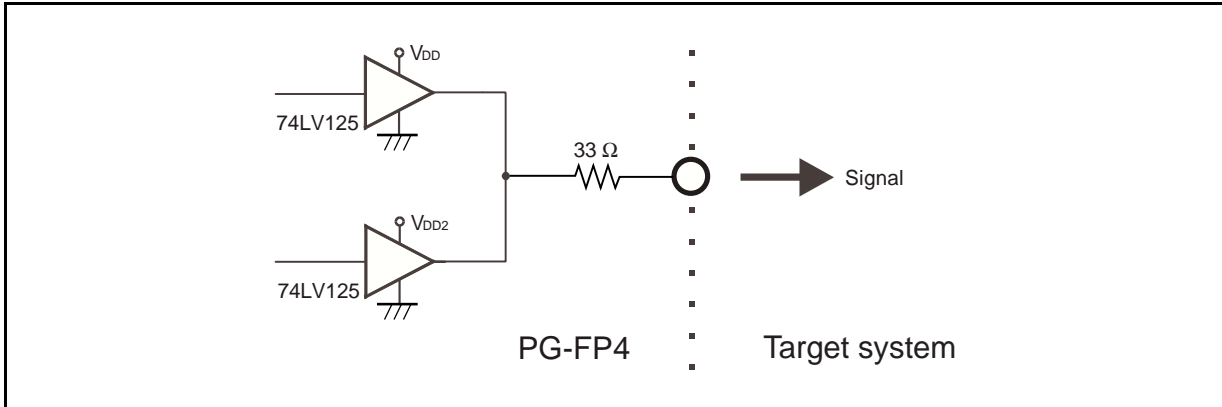
9.4 CLK

Figure 9-4. CLK Pin



9.5 FLMD0, FLMD1

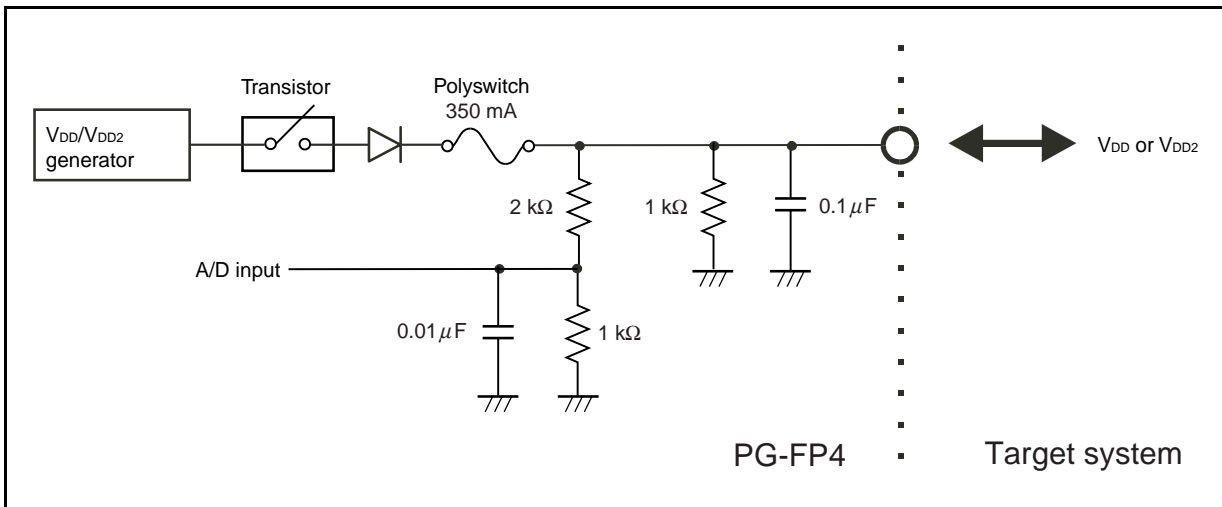
Figure 9-5. FLMD0 and FLMD1 Pins



9.6 V_{DD} , V_{DD2}

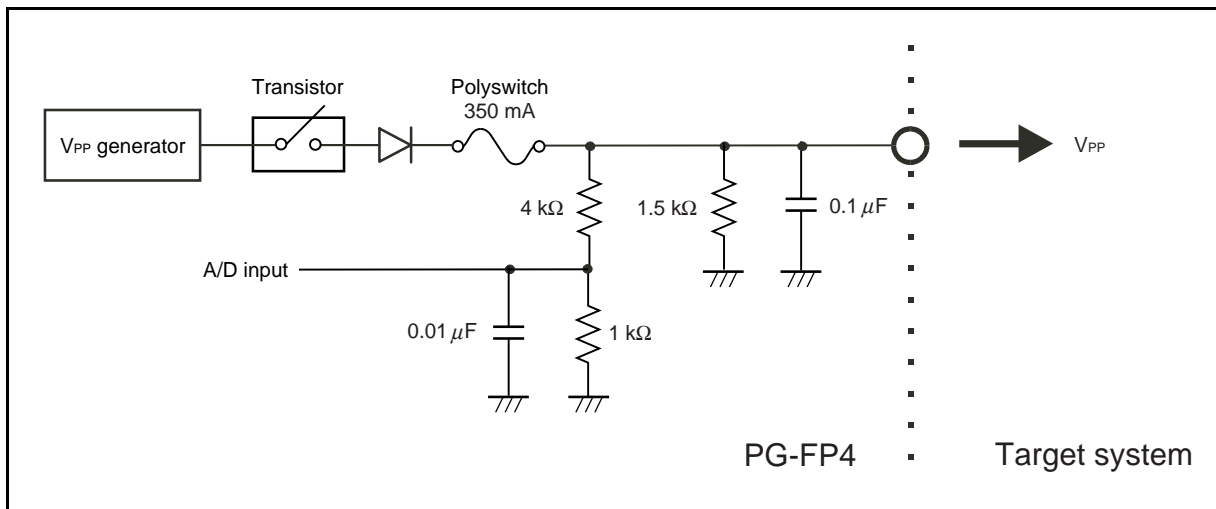
When V_{DD} and V_{DD2} are supplied from the target system, the FP4 internal voltage regulator is protected.

Figure 9-6. V_{DD} and V_{DD2} Pins



9.7 V_{PP}

Figure 9-7. V_{PP} Pin



CHAPTER 10 ERROR MESSAGES

The FP4 error and warning messages are displayed on the message display.

10.1 Error Messages of FP4 in Standalone Mode

No.	Message	Error Condition	Possible Workaround
★ 001	Invalid PRM data	PRM data is invalid	The parameter file includes invalid data, or the file is incomplete. Re-set using the parameter file downloaded from the following URL. http://www.necel.com/micro/ods/eng/index.html
005	Not supported !		The command issued is not supported on the device and thus cannot be used.
006	Command aborted!	Command aborted	-
★ 009	Power failure	Abnormal VDD current	An overcurrent was detected when VDD was output. Check the connection with the device.
011	Read. Sig failed	Reading device signature failed	Check if the correct device is selected.
012	Check connection	Check connection	The FP4 cannot establish connection to the target device. This might be due to wrong connections between device and the FP4, bad socket contacts or non-working oscillator.
013	Addr. Range err	Address range error	The address given in the command exceeds the device's address range.
020	Inv. Sig. ID	Invalid signature ID	Check if the correct device is selected.
021	Inv. Sig. Code	Invalid signature code	Check if the correct device is selected.
022	Inv. Sig. func.	Invalid signature function	Check if the correct device is selected.
023	Inv. Sig. addr.	Invalid signature address	Check if the correct device is selected.
024	Inv. device name	Invalid device name	Check if the correct device is selected.
025	Inv. Signature	Invalid signature	Check if the correct device is selected.
030	Prewrite Timeout	Prewrite timeout	Communication problem between the FP4 and the target device. Try the operation again.
032	Prewr. retry err	Prewrite retry error	-
040	Erase Timeout	Erase timeout	Communication problem between the FP4 and the target device. Try the operation again.
041	Erase failure	Erase failure	A device defect is most probably causing this error.
042	Ers time exceed	Erase time exceeded	A device defect is most probably causing this error.
043	Ers Timeset err	Erase timeset error	The parameter file may contain invalid data. Contact NEC Electronics.
050	Bln Timeout	Blank check timeout	Communication problem between the FP4 and the target device. Try the operation again.
051	Blankchk failed	Blank check failed	The device connected is not empty. Use the 'erase' command before programming.

CHAPTER 10 ERROR MESSAGES

No.	Message	Error Condition	Possible Workaround
060	Wrb Timeout	Writeback timeout	Communication problem between the FP4 and the target device. Try the operation again.
061	Writeback failed	Writeback failed	A device defect is most probably causing this error.
062	Wrb retry exceed	Writeback retries exceed	A device defect is most probably causing this error.
063	Wrb Timeset err	Writeback timeset error	The parameter file may contain invalid data. Contact NEC Electronics.
070	Write timeout	Write timeout	Communication problem between the FP4 and the target device. Try the operation again.
071	Write failed	The write operation failed	Either the device was not blank before writing or a device defect is causing this error.
072	Write retry err	Write retry error	Either the device was not blank before writing or device defect is causing this error.
073	Wrt. Timeset err	Write timeset error	The parameter file may contain invalid data. Contact NEC Electronics.
080	Vrf Timeout	Verify timeout	Communication problem between FP4 and the target device. Try the operation again.
081	Verify failed	Verify failed	The data in the target device's flash memory is not the same as in the FP4.
090	IVrf Timeout	Internal verify timeout	Communication problem between the FP4 and the target device. Try the operation again.
091	IVerify failed	Internal verify error	An error has occurred while the write data level is checked. Erase and write the device again.
092	VGT Comm err	Device communication error	Communication problem between the FP4 and the target device. Try the operation again.
093	SUM Comm err	Device communication error	Communication problem between the FP4 and the target device. Try the operation again.
094	SCF Comm err	Device communication error	Communication problem between the FP4 and the target device. Try the operation again.
095	EXR Comm err	Device communication error	Communication problem between the FP4 and the target device. Try the operation again.
096	EXW Comm err	Device communication error	Communication problem between the FP4 and the target device. Try the operation again.

10.2 GUI Software Fatal Error Messages

GUI software fatal error messages indicate a severe error that destabilizes the GUI software operation. When the problem persists after restarting the GUI software, please contact NEC Electronics.

No.	Message	Description
F100	Could not initialize INI-File.	Errors F 100 to F 409 indicate severe internal error situations.
F101	Registering GUI Windows failed.	
F102	Loading GUI Main Menu failed.	
F103	Creating GUI main window failed.	
F104	Loading keyboard shortcuts failed.	
F105	Painting GUI main window failed.	
F106	Starting debug failed.	
F107	Setting status bar text failed.	
F108	Creating tool bar failed.	
F109	Creating Status Bar failed.	
F110	Creating Client Area failed.	
F111	Creating Information Window failed.	
F112	Initialisation of internal GUI status failed.	
F113	Preparing communication to programmer failed.	
F114	Could not initialize dialog boxes.	
F115	Could not initialize window for monitoring communication to the programmer.	
F116	Determining program path failed.	
F117	Could not initialize device setup dialog.	
F118	Could not initialize debug information.	
F119	Resizing the Status Bar failed.	
F120	Resizing Monitor Area failed.	
F121	Moving Info Area failed.	
F122	Loading tool tip text failed.	
F123	Setting status bar text failed.	
F124	Loading menu info text failed.	
F125	Creating CRC check dialog window failed.	
F126	Creating communication setup dialog window failed.	
F127	Creating program area selection dialog window failed.	
F128	Stopping debug failed.	
F129	Close Upload_file_handle failed.	
F200	Invalid start address.	
F201	Invalid end address.	
F202	Neither Hex nor SREC specified.	

CHAPTER 10 ERROR MESSAGES

No.	Message	Description
F300	Creating splash screen timer failed.	Errors F 100 to F 409 indicate severe internal error situations.
F301	Edit control out of space.	
F302	Determining selected communication port speed failed.	
F303	Determining selected communication port number failed.	
F304	Determining selected download port number failed.	
F400	Creating receive task failed.	
F401	Setting timeouts failed.	
F402	Setting buffer size failed.	
F403	Resetting HS failed.	
F404	Setting receive event failed.	
F405	Invalid port index.	
F406	Terminating receive thread failed.	
F407	Creating transmit task failed.	
F408	Creating status dialog window failed.	
F409	Clearing error in receive task failed.	
F410	Download failed.	This occurs when an illegal HEX file or a HEX file that exceeds the FP4 internal memory (1 MB or 2 MB) is downloaded.
F411	Connection between host and programmer is broken.	Errors F 411 to F 899 indicate severe internal error situations.
F412	Communication error.	
F413	Connection between host and programmer is broken.	
F500	Reading current cursor handle failed.	
F501	Unknown result of operation.	
F502	Placing command execution time information in status bar failed.	
F503	Unknown command (status update).	
F504	Unknown command (transmit ended with OK).	
F505	Unknown command (transmit ended with unknown answer).	
F506	Unknown command (receive timeout).	
F507	Unknown command (receive error).	
F508	Unknown command (transmit aborted).	
F600	Please stop logging communication first.	
F601	Opening log file failed.	
F602	Creating edit control for communication window failed.	
F603	Creating communication window timer failed.	
F604	Killing monitor timer failed.	

★

CHAPTER 10 ERROR MESSAGES

No.	Message	Description
F605	Creating communication window subclassing procedure failed.	Errors F 411 to F 899 indicate severe internal error situations.
F700	USB splash screen timer failed.	
F750	Please stop debugging first.	
F751	Opening debug file failed.	
F752	Debug information overflow. Discharging actual message.	
F753	Setting up message box failed.	
F800	Memory cannot be allocated.	
F801	Shortage of memory.	
F802	Temporary file could not be read. abort Save File	
F803	File save error. abort Save File	
F804	error line : <line number> Data error. abort DATA Check	
F805	error line : <line number> Data Count error. abort "Data Count" Check	
F806	error line : <line number> Check sum error. abort "Check sum" Check	
F807	cannot open Temporary File abort "Save File"	
F808	HEX format error.	
F809	Too large address.	
F810	Parameter of "Start Address" is invalid.	
F811	Parameter of "End Address" is invalid.	
F812	File load error. abort	
F813	Temporary file could not be created. abort	
F902	Unable to find any PRM file. Please install PRM files.	The GUI software could not find any PRM file in sub-directory \PRM. Download the PRM file for the target device to the sub-directory PRM.

10.3 GUI Software Error Messages

In addition to the error messages listed below, error messages can be displayed directly from the FP4.

No.	Message	Description
E200	Opening script file failed.	Opening the specified script file failed. Script file in use?
E201	Updating the firmware will take several minutes. ATTENTION: <ul style="list-style-type: none"> • The process of updating your firmware must NOT be interrupted! • Without firmware this FP4 GUI will NOT run properly. Install new firmware in your programmer?	Check if the [<u>U</u> Update Firmware] menu has been started.
E202	Checking address data failed.	Signature command returned unexpected character.
E203	Evaluating area data failed.	Signature command returned unexpected character.
E204	Unknown Version of your firmware! The FP4 GUI may not work properly!	Refer to 3.2.1 Firmware update installation for a description of these messages.
E205	The firmware you are using requires an update of the GUI! The FP4 GUI may not work properly!	
E206	Your firmware is not up to date! Updating the firmware will take several minutes. ATTENTION: - The process of updating your firmware must NOT be interrupted! - Without new firmware this FP4 GUI will NOT run properly. Install new firmware in your programmer?	
E207	Wrong firmware in programmer! The GUI may not work properly!	
E208	The programmer memory does not contain the most recent downloaded file (different CRC). Please download your user application(s) again.	
E209	Searching for a port communicating with the programmer failed. Please check the connection.	<p>No communication with the programmer could be established at all. Sequence of connecting the FP4 on start up of the GUI software:</p> <ol style="list-style-type: none"> 1. Read most recent INI-file settings. Try opening the most recent PC port and send the <code>ver</code> command to the PG. 2. If 1. fails, try the following twice: <ol style="list-style-type: none"> a) Open the USB port and send the <code>ver</code> command (on Windows 98 and Windows 2000 only). b) Open COM1 ... COM6 with all possible baud rates and send the <code>ver</code> command for each of these combinations. As soon as any of the combinations above succeeds the communication port has been found. 3. When serial communication is established and most recently the parallel download port has been used (<code>DownloadPort</code>-key in INI-file): Try opening the parallel PC port and send the <code>ctr on</code> command to the PG

CHAPTER 10 ERROR MESSAGES

No.	Message	Description
E210	Line too long.	Executing a script file might abort with one of these errors. The contents of the line causing the error are also displayed.
E211	Nested repeat is not supported.	
E212	Loop number invalid.	
E213	File too long.	
E214	Statement 'repeat <num. rep.>' missing.	
E215	Command not found	
E216	Download file name missing.	
E217	Opening download file failed.	
E218	Upload file name missing.	
E219	Opening parameter file for upload failed.	
E220	Opening upload file failed.	
E221	Command not allowed in script file.	
E222	Processing a command failed.	
E223	Command execution failed.	The script syntax was correct and the command has been sent to the FP4, but the command execution itself showed an error (e.g. a verify error on the target device).
E300	Determining download directory failed.	The selected directory name in the file download dialog box is invalid.
E301	Determining upload directory failed.	The selected directory name in the file upload dialog box is invalid.
E302	Trying to open USB port failed.	The processing after setting the Programmer Communication Setup dialog box might fail due to one of these reasons. Please verify proper selection of the port/speed for the programmer.
E303	Trying to connect Programmer failed.	
E304	Trying to open serial port failed.	
E305	Changing the communication speed of the programmer failed.	
E306	Trying to connect Programmer failed.	
E307	Trying to open USB failed.	
E316	Trying to connect Programmer failed.	
E317	ver command failed.	
E400	Port is already open.	Processing after setting the Programmer Communication Setup dialog box failed since the port is already open. Check if programmer ports are set correctly.
E401	The communication port has not been opened so far.	Sending a command to the FP4 is only possible after the communication channel has been opened.
E500	Evaluating CRC answer failed.	The FP4 answered with an unexpected string after sending the Checksum command.
E501	Operation failed.	Executing a command failed (e.g. a verify error occurred for a signal from the target device).
E502	Programmer is not responding.	Communication between the PC and the FP4 timed out.
E503	Receiving failed.	Reading the PC port failed.
E600	Appending information to communication logging file failed.	Writing data to the communication log file failed.

CHAPTER 10 ERROR MESSAGES

No.	Message	Description
E750	Writing to INI-File failed.	Writing to the FP4.INI file failed.
E800	Illegal address	The end address entered in the HEX Editor is lower than the start address.
E801	The file cannot be read.	Processing the selected file in the HEX Editor failed.
E802	No HEX data.	The file format could not be read in the HEX Editor.
E803	The file cannot be written.	The Windows write-file function failed in the HEX Editor.
E804	cannot open <file name> abort	The Windows file-open function failed in the HEX Editor.
E805	cannot open file	A NULL handle was returned when a file was opened in the HEX Editor.
E806	Check sum error. Continue ?	The HEX Editor detected a faulty checksum. The checksum will be corrected if continuing.
E808	Invalid file name.	The specified file could not be found in the HEX Editor.
E809	<file name> could not be opened. abort	The Windows file-open function failed in the HEX Editor.
E900	Unable to open last active PRM/SET file. Using most recent settings.	The FP4.INI file does not exist or contains invalid entries for RecentPrmFile or RecentSet-File. The first PRM file from sub-directory \PRM will be loaded instead.
E901	Searching for fp4com.dll failed.	Cannot find Communication DLL fp4com.dll. Reinstall FP4 software.
E903	Unable to find any PRM file. Please install PRM files.	Sub-directory \PRM does not exist or valid PRM file does not exist in the sub-directory \PRM.
E907	Download of PRM file failed.	An error occurred while attempting to download a PRM file. The PRM file may be invalid.
E908	Download of SET file failed.	An error occurred while attempting to download a SET file. The SET file may be invalid.
E910	Checking device name failed.	The parameter file signature differs from the signature read from the device.
E911	Checking device end address failed.	The parameter file signature differs from the signature read from the device.

10.4 GUI Software Information Messages

Informational messages do not need any workaround because they do not indicate an error condition. The message is sent as information only and does not require any user action in response.

No.	Message	Description
I200	New firmware installed successfully in your programmer!	Firmware upgrade completed with success.
I201	Opening parallel download port failed. File download will be done on the serial port.	The Windows internal function to open the parallel port failed (port occupied by other software?)
I202	Download via parallel port failed.	Communication via the parallel port failed. Re-download or use a serial port.
I300	Value out of range.	The value entered in a dialog box is out of the allowable max/min range. The max/min value or the most recent value will be written into the dialog element.
I301	Multiple Program Areas are disabled. Please enable Program Areas usage in the Device Setup Dialog.	The menu command [Programmer] → [Select Programming area] can only be used when it has been enabled on the Advanced tab of the device Setup dialog box.
I500	Operation completed successfully.	Executing a command succeeded.
I501	This command can only be used for UC2 devices.	The menu entries Device → Write Security and Device Checksum can only be used for UC2 devices.
I502	Note: To abort a write, erase or verify operation it is necessary to reset the programmer manually.	Aborting device-related commands requires an additional Programmer reset.
I801	End record not found, created.	The HEX Editor implicitly created an end record when loading a file.
I800	Buffer is modified. Are you sure to close ?	The HEX Editor indicates that its contents are not yet saved to a disk.
I802	The file is modified. Save ?	
I804	The file is modified. Are you sure to quit?	
I805	This file is not valid.	The HEX Editor is attempting to open an invalid file.
I905	*.set is not valid. Using most recent settings.	The SET file format is old.
I906	*.prm is not valid. Using most recent settings.	The PRM file format is old.
I907	Caution: When 'Chip Erase' is disabled, chip cannot be erased and programmed any more!	This is displayed when [Disable Chip Erase] on Advanced tab of the [Device] → [Setup] menu is checked.
I911	The selection is out of range.	The value of [Speed] on the Standard tab of the [Device] → [Setup] menu exceeds the maximum value.
I912	The selection is out of range.	The value of [Speed] on the Standard tab of the [Device] → [Setup] menu is smaller than the minimum value.
I913	Value is out of range.	The value of [Frequency] on the Standard tab of the [Device] → [Setup] menu exceeds the maximum value.
I914	Value is out of range.	The value of [Frequency] on the Standard tab of the [Device] → [Setup] menu is smaller than the minimum value.

No.	Message	Description
I915	The selection is out of range.	The value of Vdd [V] on the Advanced tab of the [Device] → [Setup] menu is out of range.
I916	The selection is out of range.	The value of Vdd2 [V] on the Advanced tab of the [Device] → [Setup] menu is out of range.
I917	The selection is out of range.	The end address of Range [hex] on the [File] → [Upload] menu is smaller than the start address of that.
I918	Input data is out of range.	The value of [Multiply rate] on the Standard tab of the [Device] → [Setup] menu is out of range.

APPENDIX A REVISION HISTORY

The revision history is shown below. Applicable Chapter refers to the chapter in each version.

(1/2)

Version	Revised Points	Applicable Chapter
Third	CHAPTER 2 HARDWARE INSTALLATION Addition of operating software Windows 2000 and Windows XP	CHAPTER 2 HARDWARE INSTALLATION
	2.1 System Requirements Change from "PC-9821 series" to "PC-9800 series"	
	2.3.2 FP4 control panel and connectors Change of status LED color from yellow to orange	
	Addition of 2.3.9 I²C adapter	
	3.1.1 GUI software installation Change of Figure 3-6 Software License Agreement Window Change of Figure 3-12 Setup Is Complete Window Change of name of file to be installed.	CHAPTER 3 SOFTWARE INSTALLATION
	Addition of 3.1.2 USB driver installation	
	3.1.3 GUI software uninstallation Addition of (2) Uninstallation using "Add/Remove Programs"	
	3.2 Firmware and GUI Software Update Installation Addition of procedures to update firmware	
	Change of Figure 4-3 GUI Software Main Window	CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE
	Addition of [P]rogrammer] – [Select Programming area...] button to Table 4-1 Toolbar Buttons	
	4.4.2 (3) [Select Programming area...] menu Addition of an icon to [Select Programming area...] menu (5) [Update Firmware] menu Addition of [U]pdate Firmware] menu	
	Change of Figure 4-19 [Device] menu	
	4.4.3 (2) to (7) and (9) (b) to (c) Addition and change of description	
	Change of Figure 4-32 About Window	
	CHAPTER 5 (4) to (8) Addition and change of description	CHAPTER 5 SAMPLE PROGRAMMING SESSION USING GUI SOFTWARE
	CHAPTER 6 FP4 OPERATION IN STANDALONE MODE Change of status LED color from yellow to orange	CHAPTER 6 FP4 OPERATION IN STANDALONE MODE
	6.1.1 [Commands] menu Addition to Note and addition of Note 3	
	6.1.5 [Utility/Misc.] menu Addition of [HEX File Name]	
	CHAPTER 7 CONNECTORS AND CABLES Addition of description about power supply connector, HD-Sub 9 serial host connector, HD-Sub 15 target interface connector and HD-Sub 25 parallel host connector.	CHAPTER 7 CONNECTORS AND CABLES
	Change of 7.4 Target Cable Specifications	

APPENDIX A REVISION HISTORY

(2/2)

Version	Revised Points	Applicable Chapter
Third	CHAPTER 8 NOTES ON TARGET SYSTEMS Change of example of correct connection regarding RESET signal Addition of description about V _{PP} Addition of examples of UART and SIO interface circuits	CHAPTER 8 NOTES ON TARGET SYSTEMS
	Change of 9.1 SO/TxD, RESET	CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS
	Addition of 9.2 SCK	
	Change of Figure 9-3 SI/RxD and HS Pins	
	Change of Figure 9-4 CLK Pin	
	Addition of 9.6 V_{DD}, V_{DD2}	
	Addition of 9.7 V_{PP}	
	10.2 GUI Software Fatal Error Messages Addition of F129, F410, F411, F412 and F413	CHAPTER 10 ERROR MESSAGES
	10.3 GUI Software Error Messages Addition of E201, E307, E316, E317, E805, E901, E903, E907 and E908	
	10.4 GUI Software Information Messages Addition of I202, I805, I905, I906, I907, I911, I912, I913, I914, I915, I916, I917 and I918	
Fourth	Change of Figure 2-1 FP4 System Configuration	CHAPTER 2 HARDWARE INSTALLATION
	2.3.8 Target cable Addition of description about the kind of target cable.	
	CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE Addition and change of description	CHAPTER 4 FP4 OPERATION USING GUI SOFTWARE
	Change of Figure 5-4, Figure 5-5, Figure 5-10, Figure 5-11, Figure 5-13, Figure 5-14	CHAPTER 5 SAMPLE PROGRAMMING SESSION USING GUI SOFTWARE
	Change of Figure 7-5 Host Cable Connections	CHAPTER 7 CONNECTORS AND CABLES
	Change of 7.4 Target Cable Specifications	
	Additions and changes to descriptions in UART and SIO interface circuit examples	CHAPTER 8 NOTES ON TARGET SYSTEMS
	Change of Figure 9-2 SCK Pin	CHAPTER 9 TARGET SYSTEM INTERFACE CIRCUITS
	10.1 Error Messages of FP4 in Standalone Mode Change of 001, Addition of 009	CHAPTER 10 ERROR MESSAGES
	10.2 GUI Software Fatal Error Messages Change of F410	