

User's Manual

PG-FPL

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CE

PG-FPL complies with the EMC protection requirements

CAUTION

This equipment should be handled like a CMOS semiconductor device. The user must take all precautions to avoid build-up of static electricity while working with this equipment. All test and measurement tool including the workbench must be grounded. The user/operator must be grounded using the wrist strap. The connectors and/or device pins should not be touched with bare hands.

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NEC Electronics America Inc.

Santa Clara, California Tel: 408-588-6000 800-366-9782 Fax: 408-588-6130 800-729-9288

NEC Electronics (Europe) GmbH

Duesseldorf, Germany Tel: 0211-65 03 1101 Fax: 0211-65 03 1327

Sucursal en España

Madrid, Spain Tel: 091- 504 27 87 Fax: 091- 504 28 60

Succursale Française

Vélizy-Villacoublay, France Tel: 01-30-67 58 00 Fax: 01-30-67 58 99 Filiale Italiana Milano, Italy Tel: 02-66 75 41 Fax: 02-66 75 42 99

Branch The Netherlands

Eindhoven, The Netherlands Tel: 040-244 58 45 Fax: 040-244 45 80

Branch Sweden

Taeby, SwedenTel:08-6380820Fax:08-6380388

United Kingdom Branch

Milton Keynes, UK Tel: 01908-691-133 Fax: 01908-670-290

NEC Electronics Hong Kong Ltd.

Hong Kong Tel: 2886-9318 Fax: 2886-9022/9044

NEC Electronics Hong Kong Ltd. Seoul Branch Seoul, Korea

Tel: 02-528-0303 Fax: 02-528-4411

NEC Electronics Singapore Pte. Ltd. Singapore

Tel: 65-6253-8311 Fax: 65-6250-3583

NEC Electronics Taiwan Ltd.

Taipei, Taiwan Tel: 02-2719-2377 Fax: 02-2719-5951

Preface

Target Reader	This manual is intended for users who use the PG-FPL when designing and developing a system using an NEC Electronics on-chip flash memory micro- controller.
Purpose	This manual is intended to give users an understanding of the basic specifications and correct use of the PG-FPL. By using the PG-FPL, programs can be easily erased from or written to the flash memory of an NEC on-chip flash memory microcontroller, or can be verified on Windows TM screens, while the microcontroller is mounted on the user board.
Organization	This manual includes the following chapters:
	Overview
	Hardware installation
	Software installation
	Using the GUI software
	Example of use
	Connectors and cables
	Notes on target systems
	Circuit diagrams
	Troubleshooting
	• Appendix
Reading this Manual	To understand the overall functions and usage of the PG-FPL, read this manual in the order of CONTENTS. Be sure to read CHAPTER 4 USING THE GUI SOFTWARE because this chapter presents important information for using the PG-FPL. 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 readers have sufficient knowledge of Windows. For the usage and terminology of Windows 98, Windows Me, Windows 2000, or Windows XP, refer to each Windows manual.

Conventions	Symbols and notation ar	e used as follows:
	Weight in data notation :	Left is high-order column, right is low order column
	Active low notation :	xxx (pin or signal name is over-scored) or /xxx (slash before signal name)
	Memory map address: :	High order at high stage and low order at low stage
	Note :	Footnote for an item marked with Note in the text
	Caution :	Information requiring particular attention
	Remark :	Supplementary explanation
	"" OK [] < >	: Any character or item on the screen : Name of button : Menu : Dialog box name
	Numeric notation :	Binary xxxx or xxxB Decimal xxxx Hexadecimal xxxxH or 0x xxxx
	Prefixes representing po	wers of 2 (address space, memory capacity) K (kilo): 2 ¹⁰ = 1024 M (mega): 2 ²⁰ = 1024 ² = 1,048,576 G (giga): 2 ³⁰ = 1024 ³ = 1,073,741,824

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

Term	Meaning
FPL	Abbreviation of the on-chip flash memory microcontroller programmer PG-FPL
GUI software	Windows application used to operate the PG-FPL by using GUI
Target device	NEC Electronics on-chip flash memory microcontroller
Target system	User-designed board on which an NEC Electronics on-chip flash memory microcontroller is installed
FP4 connector	Abbreviation of a PG-FP4 target connector (type A)
FA adapter	Adapter board used to write programs to an NEC Electronics on-chip flash memory microcontroller (FA adapter board) ^{Note}

Note: The FA adapter is a product of Naito Densei Machida Mfg. Co., Ltd. If you have any questions about the FA adapter board, contact your local NEC sales or Distributor.

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Chapter 1 Overview

The FPL is a tool that erases, writes, and verifies programs on an NEC Electronics on-chip flash memory microcontroller on the target board.

1.1 Features

- The FPL is a compact on-chip flash memory microcontroller designed for development.
- The USB interface is available for connection with the host.
- The FPL allows on-board programming without removing the target device from the target system.
- UART only is supported for connection with the target device.
- Device-specific parameters required for writing are read from a parameter file (PRM file).

[MEMO]

Chapter 2 Hardware Installation

2.1 System Requirements

- OS: A PC supporting Windows 98, Windows Me, Windows 2000, or Windows XP is needed.
 A free space of 2 Mbytes is required on the hard disk to install the GUI software.
- Host machine: The following types of personal computers can be used: IBM PC/ATTM or compatible CPU PentiumTM 100 MHz or more RAM 32 Mbytes or more
- Host interface: USB interface that enables communication based on USB (Ver1.1 or later)
- File formats: Program files can be used in Motorola HEX file format or Intel HEX file format.

2.2 System Configuration

The system configuration of the FPL is shown in Figure 2-1.





Notes: 1. se the USB cable (Mini-B type) delivered with IECUBE.

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

The FPL is connected to the host machine via the USB cable (Mini-B type). The FPL is connected to the user system via the target cable. For the detailed specifications of the target cable and connector, refer to **Chapter 6 Connectors and Cables**.

2.2.1 FPL display specifications, and connector and MODE switch settings



Figure 2-2: Connector and LED Configuration

Caution: When the Status LED is blinking, communication with the target device is in progress. Do not disconnect the target cable and USB cable.

MODE switch

: Switches power to be supplied to the target system.

MODE	1	2	3	4
V _{DD}	Target	3.3 V	5 V	5 V
V_{DD2}	Target	N.C.	N.C.	3.3 V

Table 2-1: Settings on the rear of the housing

Setting of the MODE switch

- MODE1: Used when V_{DD}/V_{DD2} is supplied from the target system.
- MODE2: Used when the FPL supplies power to a target system with 3.3 V V_{DD}. (The V_{DD2} pin is placed in the high-impedance state.)
- MODE3: Used when the FPL supplies power to a target system with 5 V V_{DD} . (The V_{DD2} pin is placed in the high-impedance state.)
- MODE4 : Used when the FPL supplies power to a target system with 5 V $\rm V_{DD}$ and 3.3 V $\rm V_{DD2}.$

2.2.2 FPL-FA connectors





- Target connector : Used to connect the tip of the target cable.
- FP4 connector : Used to connect the FA adapter board or target system.

2.2.3 Target system

The target system must be equipped with an interface that complies with the target interface specifications.

For details of the specifications, refer to Chapter 6 Connectors and Cables.

2.2.4 USB connector

The shape of the USB connector is based on the Mini-B type. For details of the specifications, refer to **Chapter 6 Connectors and Cables**.

2.2.5 Target cable

The tip of the target cable can be connected to the header pin of 0.635×0.635 mm. For details of the specifications, refer to **Chapter 6 Connectors and Cables**.

2.2.6 Connection procedure

- 1. Set the MODE switch according to the power supply of the target system.
- Caution: Be sure to set the MODE switch before making connections with the host machine and target system.

If connections are made based on an incorrect setting, this product and target system can be damaged.

Figure 2-4: MODE Switch Setting



- 2. Connect the host machine with the FPL via the USB cable. (Check that the Power LED is turned on in green.)
- Cautions: 1. Be sure to perform this step before making a connection with the target system. If connections are made in an incorrect order, this product and target system can be damaged.
 - 2. If the MODE switch is set to MODE2, MODE3, or MODE4 (power is supplied from the FPL), the voltage set on the VDD/VDD2 pin is output when the FPL is connected with the host machine.
- 3A. (When a connection is made with a target system that has a 16-pin connector usable with the FP4 connector)
 - <1> Connect the tip of the target cable with the target connector of the FPL-FA.
- **Remark:** The FPL-FA is connected with the target cable at the time of shipment.
 - <2> Check that the power to the target system is not turned on.
- Caution: Check that the power to the target system is not turned on before connecting the target cable. If the target cable is connected after the power to the target system is turned on, this product can be damaged.
 - <3> Connect the FP4 connector with the connector installed on the target system.
- Caution: When MODE2, MODE3, or MODE4 is set, VDD/VDD2 is output from the FP4 connector. Before inserting or removing a device on the target system, be sure to detach the FP4 connector.
 - <4> Be sure to turn on the power to the target system. (When MODE2, MODE3, or MODE4 is set, power is supplied from the FPL, so that this step is not required.)

· Method of connecting the tip of the target cable with the FPL-FA

Make a connection so that the stamp mark (number) on the tip of the target cable matches the number on the FPL-FA board.



Figure 2-5: Connecting the Target Cable with the FPL-FA

- 3B. (When the FPL is connected with the target system without using the FPL-FA)
 - <1> Disconnect the FPL-FA from the target cable.
 - <2> Check that the power to the target system is not turned on.
- Caution: Check that the power to the target system is not turned on before connecting the target cable. If the target cable is connected after the power to the target system is turned on, this product can be damaged.
 - <3> Connect the tip of the target cable marked "0.GND" to GND of the target system.
- Caution: Be sure to connect "0.GND" at the beginning. If connections are made in an incorrect order, this product and target system can be damaged.
 - <4> Check that the power to the target system is not turned on.
 - <5> Connect the tip of the target cable marked "1.VDD" to VDD of the target system.
 - <6> Connect the tip of the target cable marked "2.VDD2" to VDD2 of the target system.

Caution: Be sure to make connections in the order from "0.GND" to "1.VDD" to "2.VDD2" to "other signals". If connections are made in an incorrect order, this product and target system can be damaged.

- <7> Connect the tips of other target cables to the target system.
- <8> Turn on the power to the target system. (When MODE2, MODE3, or MODE4 is set, power is supplied from the FPL, so that this step is not required.)

2.2.7 Disconnection procedure

- 1. When communication with the target system ends, terminate the GUI software.
- 2A. (When the FPL is connected with the target system by using the FPL-FA)
 - <1> Turn off the power to the target system. (When MODE2, MODE3, or MODE4 is set, power is supplied from the FPL, so that this step is not required.)
 - <2> Disconnect the FPL-FA from the target system.
- Caution: When MODE2, MODE3, or MODE4 is set, the FPL outputs power at all times. Before disconnecting the target device, be sure to disconnect the FP4 connector from the target system.
- 2B. (When the FPL is connected with the target system without using the FPL-FA)
 - <1> Turned off the power to the target system. (When MODE2, MODE3, or MODE4 is set, power is supplied from the FPL, so that this step is not required.)
 - <2> Disconnect the tips of the target cables marked "3./RESET", "4.TXD", "5.RXD", and "6.FLMD0" from the target system.
- Caution: Be sure to disconnect the target cables in this order. If the target cables are disconnected in an incorrect order, the target system or this product can be damaged.
 - <3> Disconnect the tip of the target cable marked "2.VDD2" from the target system.
 - <4> Disconnect the tip of the target cable marked "1.VDD " from the target system.
 - <5> Disconnect the tip of the target cable marked "0.GND" from the target system.
- 3. Disconnect the USB cable from the host machine. (Check that the Power LED is turned off.)
- 4. Disconnect the USB cable from the FPL.

[MEMO]

Chapter 3 Software Installation

3.1 GUI Software Installation

The GUI software allows easy and comfortable access to all features of the FPL. The installation program is located on the CD-ROM (IECUBE Accessory Disk) delivered with the IECUBE package. To install the GUI software, use the following procedure:

- <1> When using Windows XP, log on as the computer administrator. When using Windows 2000, log on as the Administrator.
- <2> Insert the delivered CD-ROM (IECUBE Accessory Disk) into the CD-ROM drive.
- <3> Double-click in the order from "My Computer" to "CD-ROM" to "PG-FPL" to "setup". "setup.exe" is displayed. Double-click "setup.exe".

🔁 setup					- 🗆 ×
File Edit View Favorites To	ools Help				-
📙 😓 Back 🔹 🔿 👻 🔂 🗐 🧟 Search	n 🔁 Folders 🎯 H	istory 📴	¶ X ∽ III+		
Address D:\PG-FPL\setup				•	€ Go
	Name 🔺	Size	Туре	Modified	
	🐻 0x0409.ini	5 KB	Configuration Settings	2/25/2003 8:04 AM	
Real Provide Line of the line	🐻 0x0411.ini	5 KB	Configuration Settings	4/3/2003 8:22 AM	
setup	🛋 1033.mst	52 KB	MST File	11/21/2003 12:16 AM	
	폐 1041.mst	27 KB	MST File	11/21/2003 12:16 AM	
Select an item to view its	Data1.cab	589 KB	Cabinet File	11/21/2003 12:16 AM	
description.	避 instmsia.exe	1,669 KB	Application	3/11/2002 6:45 AM	
	彈 instmsiw.exe	1,780 KB	Application	3/11/2002 7:06 AM	
	🛃 ISScript8.Msi	697 KB	Windows Installer Package	4/9/2003 11:03 AM	
	🛃 PG-FPL.msi	1,349 KB	Windows Installer Package	11/21/2003 12:16 AM	
	setup.exe	220 KB	Application	11/21/2003 12:16 AM	
	📓 Setup.ini	2 KB	Configuration Settings	11/21/2003 12:16 AM	
		-Double-	click		
11 object(s)			6.24 MB	🖳 My Computer	

Figure 3-1: Setup Folder

Remark: "D:\" on the screen indicates that the CD-ROM drive is set on drive D.

<4> Select a language to be used for installation ("English" in this example), then click <u>OK</u>.

Figure 3-2: Setup Language Selection



<5> Click <u>Next></u>.

Figure 3-3: Welcome Window



<6> Read the displayed license agreement carefully, then click <u>Accepted</u> if you accept the agreement. When using the PG-FPL, you need to accept the agreement. If you do not accept the agreement, click <u>Not accepted</u> to terminate the installation of the software.

	Figure 3-4:	License Agreement
--	-------------	-------------------

tallShield Wizard		
icense Agreement Please read the following license agr	reement carefully.	24
Press the PAGE DOWN key to see t	he rest of the agreement.	
USER LICENSE AGREEMENT		
IMPORTANT-READ CAREFULLY:		
This User License Agreement ("UL (either a natural person or an entity for the SOFTWARE PRODUCT. A means the NEC software product p computer software and may include and "online" files or data. By install	A") is a legal agreement be y) and NEC Electronics Corp \s used herein, "SOFTWAF provided with this ULA, which e associated media, printed ling, copying, or otherwise u	tween you poration ("NEC") 3E PRODUCT'' ch includes materials, µsing
, Do you accept all the terms of the pr setup will close. To install PG-FPL V	eceding License Agreemen '1.00, you must accept this	agreement.
allShield		•

<7> Check that "Typical" is selected, then click <u>Next></u>.

stallShield Wizard	2
Setup Type Choose the setup type that best suits your nee	ed.
Please select a setup type.	
Typical Check that	it "Typical" is selected
Program will be with the most op	ptions. Recommended for most users.
C Custom	
Choose which program features	is you want install. Recommended for
Destination Folder	Click
C:\Program Files\NECTools32\	Browse

< Back

Next >

Cancel

Figure 3-5: Setup Type

Remark: By selecting Custom, the GUI software or document only can be installed. By clicking <u>Browse...</u>, the GUI software installation destination can be changed. This manual assumes the default installation folder.

Choose Folder	
Please choose the installation folder.	Specify an installation destination folder path
C:\Program Files\NECTools32\	_
Directories:	
→ → ×p_E_SP1 (C:) → → Documents and S → → Program Files → → Common Files → → ComPlus Appl → → InstallShield I → → Internet Expl → → Messenger	ettings
<u>ск</u>	

Figure 3-6: Changing the Installation Folder

Figure 3-7: Custom Installation



<8> Click <u>Next></u>.

Select Program Folder Please select a program folder.	
Setup will add program icons to name, or select one from the ex	o the Program Folder listed below. You may type a new folder xisting folders list. Click Next to continue.
Program Folders:	
NEC Tools32	
Evicting Folders:	
Accessories	
Startup	
Startup	
Startup	
Startup	Click
Accessories Startup	Click

Figure 3-8: Program Folder Selection

<9> Check the current setting, then click <u>Next></u>. (Program installation starts.)



stallShield Wizard			
Start Copying Files Review settings before copying files.			22
Setup has enough information to start copy change any settings, click Back. If you an copying files.	ing the program files. If e satisfied with the settin	you want to re igs, click Next	eview or to begin
Current Settings:			
Product to install: PG-FPL V1.00 PG-FPL V1.00 Document Files Target Directory: C:\Program Files\NECTools32\			1
Program Folder NEC Tools32	[Click	T
Ŧ			Þ
tallShield			
	< Back	Next>	Cancel

<10> When the screen shown below appears, the installation of the GUI software is completed. Click *Finish* to end the installer.



Figure 3-10: Completion of Installation

<11> Upon completion of installation, the following folders are created:

Figure 3-11: Folder Configuration after Installation



3.2 Driver Installation

When the FPL is used, the driver needs to be installed on the host machine. Install the driver according to the following procedure:

Installation on Windows 98/Me	page 29
Installation on Windows 2000	page 33
Installation on Windows XP	page 39

3.2.1 Installation on Windows 98/Me

<1> When the FPL is connected with the host machine, the FPL is recognized by Plug and Play, and the wizard for adding new hardware is started. Click <u>Next></u>.

Add New Hardware Wiz	zard
	This wizard searches for new drivers for:
	USB <-> Serial
	A device driver is a software program that makes a hardware device work.
🗞 🍝	
\diamond	Click
	< Back. (Next > Cancel

Figure 3-12: Add New Hardware Wizard (Windows 98)

<2> The window below is displayed. So, check that "Search for a suitable driver..." is selected, then click <u>Next></u>.



Figure 3-13: Search Method (Windows 98)

<3> Check the "Specify a location" check box only and enter "C:\Program Files\NECTools32\BIN\PG-FPL\DRIVER\FTDI" in the address bar, then click <u>Next></u>.

Add New Hardware Wiz	ard
	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search. Eloppy disk drives CD-ROM drive Microsoft Windows Update Specify a Jocation: C:\Program Files\NECTools32\bin\PG-FPL\DRIV Browse
<1> Check "Specify a location" only	< <u>B</u> ack Next> Cancel
<2> Enter "C:\Program Files\NECTool:	s32\BIN\PG-FPL\DRIVER\FTDI" <3> Click

Figure 3-14: Search Location Specification (Windows 98)

Remark: If the installation destination folder is changed at the time of GUI software installation, enter "new-folder/BIN/PG-FPL\DRIVER\FTDI".

<4> The window below is displayed. Click <u>Next></u>.

Add New Hardware Wiz	ard
	Windows driver file search for the device:
	Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue. Location of driver: C:\PROGRA~1\NECTOO~1\BIN\PG-FPL\DF
	Click
	< <u>B</u> ack <u>Next</u> Cancel

Figure 3-15: Checking Driver to Be Installed (Windows 98)

<5> When the window below is displayed, the installation of the USB driver is completed. Click *Finish*. The installation of the USB Serial Port driver is then automatically performed.

Figure 3-16: Installation Completion (Windows 98)

Add New Hardware Wiz	ard
	USB High Speed Serial Converter
	Windows has finished installing the software that your new hardware device requires.
ی ک	
	Click
	< <u>B</u> ack Finish Cancel

3.2.2 Installation on Windows 2000

<1> When the FPL is connected with the host machine, the FPL is recognized by Plug and Play, and the wizard for finding new hardware is started. Click <u>Next></u>.





<2> The window below is displayed. So, check that "Search for a suitable driver..." is selected, then click <u>Next></u>.



Figure 3-18: Search Method 1 (Windows 2000)

<3> Check the "Specify a location" check box only, then click <u>Next></u>.

Figure 3-19: Driver File Location 1 (Windows 2000)

Found Ne	w Hardware Wizard			
Local W	te Driver Files /here do you want Windows to sea	ch for driver files?		(A)
Si	earch for driver files for the following	hardware device:		
4	USB <-> Serial			
TI ar	he wizard searches for suitable drive ny of the following optional search lo	ers in its driver databa locations that you spec	ise on your comput cify.	er and in
To in	o start the search, click Next. If you sert the floppy disk or CD before clir	are searching on a fl sking Next.	oppy disk or CD-R(OM drive,
C	Iptional search locations:			
	Floppy disk drives			
	CD-ROM drives		Click	
	Specify a location			
	Microsoft Windows Update			
t "Specify a	location" only is checked	(Deels	I News	

<4> Enter "C:\Program Files\NECTools32\BIN\PG-FPL\DRIVER\FTDI" in the address bar, then click <u>OK</u>.



Found Net	w Hardware Wizard		×	
	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel		Click
	Copy manufacturer's files from: C:\Program Files\NECTools32\bin\PG-FPL\DRIVE	Browse		
Enter "C:	<pre>\Program Files\NECTools32\BIN\PG-FPL\DRIVER\F^</pre>	TDI"		

Remark: If the installation destination folder is changed at the time of GUI software installation, enter "new-folder\BIN\PG-FPL\DRIVER\FTDI".

<5> Click <u>Next></u>.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
USB <-> Serial
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\program files\nectools32\bin\pg-fpl\driver\ftdi\ftdibus.inf
Click
< Back Next > Cancel

Figure 3-21: Driver File Search 1 (Windows 2000)

<6> Click *Finish* to complete the installation of the USB driver.

Figure 3-22:	USB Driver Installation Completion 1 (Windows 2000)
Found New Har	dware Wizard



<7> Proceed to the installation of the USB Serial Port driver. Click <u>Next></u>.



Figure 3-23: Found New Hardware Wizard 2 (Windows 2000)

<8> The window below is displayed. So, check that "Search for a suitable driver..." is selected, then click <u>Next></u>.

Figure 3-24: Search Method 2 (Windows 2000)

	Found New Hardware Wizard
	Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
	This wizard will complete the installation for this device:
	A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
	What do you want the wizard to do?
	Search for a suitable driver for my device (recommended)
	O Display a list of the known drivers for this device so that Click be a specific driver
Check that '	Search for a suitable driver" is selected
	< Back Next > Cancel
<9> Check the "Specify a location" check box only, then click <u>Next></u>.

Figure 3-25: Driver File Location 2 (Windows 2000)

	Found New Hardware Wizard
	Locate Driver Files Where do you want Windows to search for driver files?
	Search for driver files for the following hardware device:
	USB Serial Port
	The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
	To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
	Optional search locations:
	Floppy disk drives
	CD-ROM drives
	→ ✓ Specify a location
	Microsoft Windows Update
Check that "Spe	ecify a location" only is selected
	<back next=""> Cancel</back>

<10> Enter "C:\Program Files\NECTools32\BIN\PG-FPL\DRIVER\FTDI" in the address bar, then click <u>OK</u>.



Found Net	w Hardware Wizard	×	
	Insert the manufacturer's installation disk into the drive selected, and then click OK.	Cancel	Click
	Copy manufacturer's files from: C:\Program Files\NECTools32\bin\PG-FPL\DRIVE	Browse	
Enter "C:	\Program Files\NECTools32\BIN\PG-FPL\DRIVER\F	TDI"	

Remark: If the installation destination folder is changed at the time of GUI software installation, enter "new-folder/BIN/PG-FPL/DRIVER/FTDI".

<11> Click <u>Next></u>.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
USB Serial Port
Windows found a driver for this device. To install the driver Windows found, click Next.
c:\program files\nectools32\bin\pg-fpl\driver\ftdi\ftdiport.inf
Click
< Back Next > Cancel

Figure 3-27: Driver File Search 2 (Windows 2000)

<12> Click *Finish* to complete the installation of the USB driver.

Found New Hardware Wizard	
	Completing the Found New Hardware Wizard USB Serial Port Windows has finished installing the software for this device.
	Click To close this wizard, click Finish.
	K Back Finish Cancel

Figure 3-28: USB Driver Installation Completion 2 (Windows 2000)

3.2.3 Installation on Windows XP

<1> When the FPL is connected with the host machine, the FPL is recognized by Plug and Play, and the wizard for finding new hardware is started. Check that "Install from a list or specific..." is selected, then click <u>Next></u>.

Found New Hardware Wiz	ard
	Welcome to the Found New Hardware Wizard
	This wizard helps you install software for:
	USB <-> Serial If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or specific location (Advanced) Click Next to continue.
	< Back Next > Cancel
neck that "Install from a list or specific	." is selected

Figure 3-29: Found New Hardware Wizard 1 (Windows XP)

<2> Check that "Search for the best driver in these locations." is selected. Check the "Include this location in the search:" check box and enter "C:\Program Files\NECTools32\bin\PG-FPL\DRIVER\FTDI" in the address bar, then click <u>Next></u>.

<1> Check driver	that "Search for the best in these locations" is selected
	Found New Hardware Wizard
	Please choose your search and installation options.
	 Search for the best driver in these locations.
	Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
	Search removable media (floppy, CD-ROM)
	✓ Include this location in the search:
	C:\Program Files\NECTools32\bin\PG-FPL\DRIVER V Browse
	O Don't search. I will choose the driver to install.
	Chobse this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
<2>	Check "Include this location in the search:" only
	< Back Next > Cancel
Enter "C:\Progra	m Files\NECTools32\bin\PG-FPL\DRIVER\FTDI" <4> Click

Figure 3-30: Search Location Specification 3 (Windows XP)

<3> As shown below, "has not passed Windows Logo testing to verify its compatibility with Windows XP." is displayed. Click <u>Continue Anyway</u>.

Figure 3-31: Windows XP Logo Testing 3 (Windows XP)



<4> When the window below is displayed, the installation of the USB driver is completed. Click *<u>Finish</u>*.



Figure 3-32: USB Driver Installation Completion 1 (Windows XP)

<5> Proceed to the installation of the USB Serial Port driver. Click <u>Next></u>.

Figure 3-33: Found New Hardware Wizard 2 (Windows XP)



<6> Check that "Search for the best driver in these locations." is selected. Check the "Include this location in the search:" check box and enter "C:\Program Files\NECTools32\bin\PG-FPL\DRIVER\FTDI", then click <u>Next></u>.



Figure 3-34: Search Location Specification 2 (Windows XP)

<7> As shown below, "has not passed Windows Logo testing to verify its compatibility with Windows XP." is displayed. Click <u>Continue Anyway</u>.

Figure 3-35: Windows XP Logo Testing 2 (Windows XP)



<8> When the window below is displayed, the installation of the USB driver is completed. Click *<u>Finish</u>*.



Figure 3-36: USB Serial Port2 Driver Installation Completion (Windows XP)

3.3 Confirmation of USB Driver Installation

After installing the two types of drivers, check that the drivers have been installed normally, according to the procedure below. When using the FPL, the information to be checked here is needed.

By clicking the "Device Manager" tab, check that the drivers are installed normally.



Figure 3-37: Device Manager

For Windows 98/Me

Caution: Do not select Update and Erase when communicating with the target device.

For Windows 2000/XP

- Caution: Do not perform "Hardware Modification Scan" when communicating with the target device.
- **Remark:** In the GUI port list box, the same communication port as COM? of USB Serial Port (COM?) needs to be selected.

If the drivers above are not displayed, or the mark " \times " or "!" is prefixed, refer to **Chapter 9** Troubleshooting.

3.4 Uninstallation

3.4.1 Driver uninstallation

The driver uninstallation program is installed on the host machine when the GUI software is installed. Use the procedure below for driver uninstallation.

- <1> When using Windows XP, log on as the computer administrator. When using Windows 2000, log on as the Administrator.
- <2> Double-click in the order from "My Computer" to "(C:)" to "Program Files" to "NECTools32" to "bin" to "PG-FPL" to "DRIVER" to "FTDI". "Ftdiunin.exe" is displayed. Double-click "Ftdiunin.exe".

🗁 FTDI				
File Edit View Favorites Tools	Help			
	earch 10 Folders			
Address 🛅 C:\Program Files\NECTools	32\bin\PG-FPL\DRIVER\FTDI			🔽 🄁 Go
	Name 🔺	Size	Туре	Date Modified
File and Folder Tasks 🔅	🗐 901 Release Info.DOC	6 KB	Wordpad Document	6/12/2003 3:18 PM
C Mala a pau faldar	🗒 2134 Release Info.DOC	8 KB	Wordpad Document	6/16/2003 1:22 PM
	COMPORT.PDF	6 KB	PDF File	4/10/2003 3:00 PM
Publish this folder to the	S FTCOMMS.VXD	24 KB	Virtual device driver	6/10/2003 5:10 PM
Share this folder	FTDIBUS.CAT	9 KB	Security Catalog	4/10/2003 3:00 PM
Share chis rolder	FTDIBUS.INF	4 KB	Setup Information	6/16/2003 1:23 PM
	🖬 ftdibus.sys	19 KB	System file	6/16/2003 1:24 PM
Other Places	FTDIPORT.CAT	8 KB	Security Catalog	4/10/2003 3:00 PM
	FTDIPORT.INF	5 KB	Setup Information	6/16/2003 1:24 PM
DRIVER	FTDIUN2K.INI	1 KB	Configuration Settings	4/10/2003 3:00 PM
📋 My Documents	SFTDIUNIN.EXE	405 KB	Application	4/10/2003 3:00 PM
Shared Documents	FTDIUNIN.INI	1 KB	Configuration Settings	4/10/2003 3:00 PM
My Computer	FTSENUM.SYS	25 KB	System file	6/10/2003 5:10 PM
	Server Server Server Double-c	lick ^{8 KB}	Virtual device driver	6/10/2003 5:10 PM
S My Network Places	🔤 ftser2k.sys	55 KB	System file	6/16/2003 1:24 PM
	FTSERIAL.SYS	69 KB	System file	6/10/2003 5:10 PM
Details	FTSERMOU.INF	2 KB	Setup Information	4/10/2003 3:00 PM
UCCOIIS V	FTSERMOU.VXD	10 KB	Virtual device driver	4/10/2003 3:00 PM
	🔊 ftserui2.dll	48 KB	Application Extension	6/11/2003 12:48 PM
	S FTSERUI.DLL	23 KB	Application Extension	5/20/2003 2:04 PM
	E README.TXT	2 KB	Text Document	6/16/2003 1:22 PM

Figure 3-38: Driver Uninstallation

<3> Click <u>Continue</u>.

Figure 3-39: Driver Uninstaller



<4> Click *Finish* to complete driver uninstallation.



Uninstalling VID_0	403&PID_	6001	
Deleting files	ntries		
Uninstall complete	, press Fir	nish to exit.	
Contin	nue	Finish	

Caution: If the GUI software is uninstalled earlier, "Ftdiunin.exe" is also deleted. At this time, delete "USB Serial Port (COM?)" and "USB High Speed Serial Converter" from Device Manager manually.

3.4.2 GUI software uninstallation

The uninstallation program is placed on the CD-ROM (IECUBE Accessory Disk) delivered with the IECUBE package (the same program as the installer). For GUI software uninstallation, use the procedure below.

- <1> When using Windows XP, log on as the computer administrator. When using Windows 2000, log on as the Administrator.
- <2> Insert the delivered CD-ROM (IECUBE Accessory Disk) into the CD-ROM drive.
- <3> Double-click in the order from "My Computer" to "CD-ROM" to "PG-FPL" to "setup". "setup.exe" is displayed. Double-click "setup.exe".

🔁 setup					
File Edit View Favorites Too	ols Help				-
│ 🗢 Back 🔹 🔿 👻 🔂 🔞 Search	E Folders	istory 📭	¶ × ∽ ⊞•		
Address D:\PG-FPL\setup				•	€ Go
	Name 🛆	Size	Туре	Modified	
	🐻 0x0409.ini	5 KB	Configuration Settings	2/25/2003 8:04 AM	
	🐻 0x0411.ini	5 KB	Configuration Settings	4/3/2003 8:22 AM	
setup	🍺 1033.mst	52 KB	MST File	11/21/2003 12:16 AM	
	🖻 1041.mst	27 KB	MST File	11/21/2003 12:16 AM	
Select an item to view its	🖄 Data1.cab	589 KB	Cabinet File	11/21/2003 12:16 AM	
description.	🚰 instmsia.exe	1,669 KB	Application	3/11/2002 6:45 AM	
	👜 instmsiw.exe	1,780 KB	Application	3/11/2002 7:06 AM	
	🛃 ISScript8.Msi	697 KB	Windows Installer Package	4/9/2003 11:03 AM	
l -	PG-FPL.msi	1,349 KB	Windows Installer Package	11/21/2003 12:16 AM	
	exe setup.exe	220 KB	Application	11/21/2003 12:16 AM	
	Double-clic	2 KB	Configuration Settings	11/21/2003 12:16 AM	
I 11 object(s)			6.24 MB	🖳 My Computer	

Figure 3-41: Setup Folder

Remark: "D:\" on the screen indicates that the CD-ROM drive is set on drive D.

<4> Select a language to be used for installation ("English" in this example), then click <u>OK</u>.

Figure 3-42: Setup Language Selection

Choose S	etup Language 🔰 🔀	<
2	Select the language for this installation from the choices below.	
	English (United States)	
	OK Cancel	
	Click	

<5> Select "Remove" then click <u>Next></u>.

Figure 3-43: Program Modification

InstallShield Wi	izard 🔀
₩elcome Modify, repair	r, or remove the program.
Welcome to	the PG-FPL V1.00 Setup Maintenance program. Click one of the options below.
C Modify	Select new program features to add or select currently installed features to remove.
F	Reinstall all program features installed by the previous setup.
Hemove Bemove	Click Remove all installed features.
InstallShield	
Select "Remove"	< <u>B</u> ack <u>N</u> ext> Cancel

<6> Click <u>OK</u>.

Figure 3-44: Confirmation of File Deletion



<7> Click *Finish* to complete the deletion of the GUI software.



InstallShield Wizard	
	Maintenance Complete InstallShield Wizard has finished performing maintenance operations on PG-FPL V1.00.
	Click
	< Back Finish Cancel

[MEMO]

Chapter 4 Using The GUI Software

4.1 Introduction

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

• <Downloading the parameter file>

The parameter file is not delivered with the FPL software package. Download the parameter file for the PG-FP4 from the following NEC Electronics Web site:

http://www.ee.nec.de/update

Copy the parameter file downloaded from the NEC Electronics Web site into sub-directory <FPL.EXE-install-path>\PRM created during GUI software setup (refer to **Chapter 3** Software Installation).

4.2 Starting up the GUI Software

• GUI software startup

Select FPL.EXE from the start menu to start the FPL GUI software.

When the GUI software is started normally, the following screen appears.



Menu bar			
	File Device View Help		
Toolbar	>> FlashOpenning Flash Open OK >> ParameterFile Reading Success Read ParameterFile.	Name : Firm Version : ExtCode : Vendor :	Programmer parameter
		Parameter file Format : Version : Processor Ver. : Load file	window
	Action log window	Name: Date: Chksum: Area: Connection to device	
Status bar		Port Speed: Vdd: Freq.: Multiply	J
	Ready		

This window consists of the following items:

Name	Display Information
Menu bar (displayed at the top)	Displays menu items executable by the FPL
Toolbar (displayed under the menu bar)	Displays frequently used commands as icons
Action log window (displayed under the toolbar)	Displays an FPL action log
Programmer parameter window (displayed to the right of the action log window)	Displays programming parameter settings
Status bar	Displays status

4.3 Toolbar

The toolbar contains buttons for starting the important procedures of the FPL.

N.	$[\underline{D}evice] \rightarrow [\underline{S}etup]$ button
	[<u>F</u> ile] → [<u>L</u> oad] button
	[Device] \rightarrow [Blank Check] button
Var	[Device] \rightarrow [Erase] button
17	[Device] \rightarrow [Program] button
*	$[\underline{D}evice] \rightarrow [\underline{V}erify]$ button
AND NO	[Device] \rightarrow [Autoprocedure (EPV)] button

Table 4-1: Toolbar Buttons

4.4 Menu Bar

Depending on the actual device status and device type, some menu items may be enabled or disabled.

4.4.1 [File] menu

Clicking the [<u>F</u>ile] menu displays the pull-down menu as shown below. This menu mainly contains commands related to file operation.

🔂 FPL				
File	Device	View		
Lo				
Q	<mark>I</mark> l			
>> Fl Flash >> P Succ	ashOpen 1 Open Ol arameterf cess Rear	ning K File Rea d Param		

Figure 4-2: [File] Menu

(1) [Load] command



The [Load] command allows you to select a program file. The selected program file is programmed into the flash memory of the device by executing the [Program] command or [Autoprocedure (EPV)] command.

Open			? ×
Look in: 🔂	PG-FPL	💽 🗕 🖻 🚽	•
DRIVER PRM			
File name:	*.hex		lpen
Files of type:	HEX Files(*.HEX)	▼ C.	ancel

Figure 4-3: HEX File Selection Window

The file selection window for program loading displays the most recently used directory to which a user program has been loaded. After a user program is loaded, a checksum calculation is made and the result is displayed in the programmer parameter window.

[**Open** button]

Selects a user program as a program to be written to the target device.

[Cancel button]

Closes the window without selecting a program.

(2) [Quit] command

The [Quit] menu is the command for terminating the FPL GUI software. Clicking \times on the right side of the task bar also terminates the FPL GUI software.

User settings are saved in the FPL.INI^{Note} file, so that the GUI software starts up next time with the same settings.

Note: FPL.INI is created in the Windows folder when Windows 98, Windows Me, or Windows XP is used.

When Windows 2000 is used, FPL.INI is created in the Winnt folder.

4.4.2 [Device] menu

Clicking the [Device] menu displays the pull-down menu as shown below.

This menu mainly contains commands for programming operations such as deletion, programming, and verification on the target device.

Help k
k 📝
Jure(EPV) ead

Figure 4-4: [Device] Menu

(1) [Blank Check] command



The [Blank Check] command allows you to make a blank check on the target device connected to the FPL. If the flash memory of the target device is erased, a blank check is terminated normally. If the flash memory is not completely erased, the indication "not blank" is provided. Before starting programming, erase the flash memory of the target device.

(2) [Erase] command



The [<u>E</u>rase] command erases the flash memory of the target device connected to the FPL. While the flash memory is being erased, the progress status is displayed in the action log window to indicate programmer operation.

The execution on the [Blank Check] command before the [Erase] command is executed follows the setting of 'Command options' of the Advance tab displayed by selecting [Device] \rightarrow [Setup].

Upon completion of [Erase] command execution, the GUI software displays the result of executing the command on the target device.

Caution: During erase operation, the Status LED is not turned on. Until the GUI software displays "Erase finished", do not disconnect the target cable and USB cable. Otherwise, the target device can be damaged.

(3) [Program] command



The [Program] command sends a specified user program to the target device and writes the program to the flash memory.

The execution of Verify operation for detecting an error in user program communication from the FPL to the target device after the execution of the [Program] command follows the setting of the 'Command options' on the Advance tab displayed by selecting [Device] \rightarrow [Setup].

During programming, the progress status is displayed in the action log window to indicate programmer operation. This progress status display window displays the progress status on target device programming by percentage.

Upon completion of [Program] command execution, the GUI software displays the result of executing the command on the target device.

(4) [Verify] command



The [\underline{V} erify] command sends a specified user program to the target device connected with the FPL, and performs verification against the data written to the flash memory of the target device.

During verification, the progress status is displayed in the action log window to indicate programmer operation. This progress status display window displays the progress status of target device verification by percentage.

Upon completion of [\underline{V} erify] command execution, the GUI software displays the result of executing the command on the target device.

(5) [Security] command

This command is not supported.

(6) [Checksu<u>m</u>] command

The [Checksum] command reads the checksum value of the target device connected with the FPL.

This value differs from the value displayed in the parameter window of the main window.

(7) [Autoprocedure (EPV)] command



The [<u>A</u>utoprocedure (EPV)] command executes the [<u>E</u>rase] command and [<u>P</u>rogram] command in succession.

When a user program is to be resent to the target device for comparison with the data written to the flash memory of the target device because of a user program communication error, execute the [Program] command by selecting [Device] \rightarrow [Setup] and specifying 'Command options' on the Advance tab, then set the automatic execution of the [Verify] command.

During EPV execution, the progress status is displayed in the action log window to indicate programmer operation. For a selected command, its execution operation, and messages, refer to **Chapter 5 Example of Use**.

Upon completion of [<u>A</u>utoprocedure (EPV)] command execution, the GUI software displays the result of executing the command on the target device.

(8) [Signature read] command

The [Signature read] command reads the signature information (device name, flash memory information, and so forth) of the target.

(9) [Setup] command



The [Setup] menu allows you to make settings related to flash memory rewriting according to the user environment and to set command options. Each time the GUI software is started, the most recently used parameter file (.PRM) is read and the settings are displayed. The [Setup] menu allows you to modify the settings of items other than those items consisting of shadowed characters according to the user environment.

(a) Standard setup

This menu is used to set the environment for rewriting the flash memory of the target device. The mode of communication with the target, the operating clock, and so forth differ depending on the device used. For details, refer to the manual of the device used, when making settings. The window shown below is opened.

Standard Advance					
Parameter file	PRM File Read				
Host connection	Supply oscillator				
Port	Frequency MHz				
Speed	Multiply rate				
Operation Mode					
C Chip Start	•				
C Block End	•				
C Area	Show Addres				
Target Reset Message					
	OK Cancel				

Figure 4-5: Device Setup Window - Standard

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 settings on the Standard and Advance menus and closes the window.

[Cancel button]

Clicking the *Cancel* button closes the window without saving the settings on the Standard and Advance menus.

<1> Parameter file

This file holds parameters and timing data required to rewrite the flash memory of the target device. Do not modify the data in the parameter file because the data is related to the guarantee of rewrite data.

The parameter file is protected by the checksum function. If the checksum result indicates an error, the FPL does not accept the parameter file.



Parameter file	PRM File Read
----------------	---------------

Figure 4-7: Parameter File Selection Window

Open			? ×
Look in: 🔂) PRM 🗾 🗢 🖻	. 💣 🎹 -	
			_
File neme:		0	
File name:		Upen	
Files of type:	PRM Files(*.PRM)	Cance	!
			11.

[PRM File Read button]

A window for specifying a parameter file is displayed. Specify a desired file then click **<u>Open</u>**.

<2> Communication interface to device

"Communication interface to device" is used to select a channel for communication between the FPL and host machine.

Host connec	ction
Port	•
Speed	•

[Port list box]

Select a channel for communication between the FPL and host machine.

• COM1 to COM16

Remark: Selectable ports can be checked using Device Manager. For details, refer to3.3 Confirmation of USB Driver Installation.

[Speed list box]

Select a communication rate for the selected communication channel from the following:

- 9600 bps
- 19200 bps
- 38400 bps

Remark: For selectable communication rates, refer to the user's manual of the device used.

<3> Supply oscillator

"Supply oscillator" is used to select a clock that determines programming, data transfer, and a transfer rate.

Figure 4-9:	Setup	Window -	Supply	Oscillator	Selection
-------------	-------	----------	--------	------------	-----------

Supply oscillator	
Frequency	MHz
Multiply rate	

[Frequency box]

Sets the clock frequency of the target system.

The range of operating frequency varies from one device to another. So, check the specifications of the device used before making a setting.

[Multiply rate]

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

If the target device has an on-chip PLL circuit, enter a division rate or multiplication rate according to the use environment.

The selectable division rate or multiplication rate differs depending on the device. Check the specifications of the device used before making a setting.

If the target device does not have an on-chip PLL circuit, select "1.0".

On the initial screen, the default setting is displayed according to the parameter file.

<4> Operation Mode

The setting of "Operation Mode" may divide the flash memory of some target devices into blocks or areas.

This menu is used to select an operation mode of the flash memory. Some devices do not have the block and area division modes, and some devices have only one of the modes. In these cases, a nonexistent mode is unchoosable.

Figure 4-10: Setup Window - Operation Mode

Coperation Mode	
C Chip	Start 📃
C Block	End
C Area	Show Addres

[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 numbers where the flash memory of the target device is configured.

[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 numbers where the flash memory of the target device is configured.

[Show Address check box]

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

If this check box is checked, addresses are displayed.

If this check box is not checked, numbers are displayed.

(b) Advance setup

The Advance setup menu is used to specify the command options and security flag settings. When "Advance" is clicked, the following window is displayed:

🙀 Device Setu	p	x
Standard Adv	vance	
- Command op	otions Blank check before Erase	
	Read verify after Program	
	Security flag after Program	
	Checksum after Program	
- Security flag	settings	
	🗖 Disable Chip Erase	
	🗖 Disable Block Erase	
	🗖 Disable Program	
Target Res	et Message	
	OK Cancel	

Figure 4-11: Device Setup Window - Advance

<1> Command options

This dialog box is used to specify the FPL flash processing command options.

Figure 4-12: Setup Window - Command options

Command options	
🔲 Blank check before Erase	
Read verify after Program	
🗖 Security flag after Program	
Checksum after Program	

[Blank check before Erase check box]

If this check box is checked, blank check is made before the Erase command or EPV command is executed.

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

[Read verify after Program check box]

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

[Security flag after Program check box]

Not usable

[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 after execution of the Program command and EPV command. This value differs from the value displayed in the parameter window of the main window.

<2> Security flag settings

Not usable

4.4.3 [View] menu

Clicking the [View] menu displays the pull-down menu shown below. This menu contains commands for setting whether to display the toolbar and status bar.

F PL					
File	Device	View	Help		
	<u>م</u> او	✓ Too ✓ State	olbar atus Bar	<i>i</i> //	
>> FlashOpenning Flash Open OK					

Figure 4-13: [View] Menu

(1) [Toolbar] command

Checking the [Toolbar] command displays the toolbar. Unchecking the command hides the toolbar.

(2) [Status Bar] command

Checking the [Status Bar] command displays the status bar. Unchecking the command hides the status bar.

4.4.4 [Help] menu

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

Figure 4-14: [Help] Menu

E.F	PL					
File	Device	View	Help			
	<u>م</u> او	ħ [Ab	out FPL	 V	8
>> F Flast	lashOpen h Open O	ning K				

(1) [About FPL] command

The [About FPL] command opens the program entry window as shown below and indicates the version.

Clicking OK terminates the display.



Figure 4-15: About FPL Window

4.5 Programmer Parameter Window

This window displays the settings of the programming parameters.

Device ¬
Name :
Firm Version :
ExtCode :
Vendor :
Parameter file
Name :
Format :
Version :
Processor Ver. :
Load file
Name:
Name: Date:
Name: Date: Chksum:
Name: Date: Chksum: Area:
Name: Date: Chksum: Area: Connection to device
Name: Date: Chksum: Area: Connection to device Port:
Name: Date: Chksum: Area: Port: Speed:
Name: Date: Chksum: Area: Port: Speed: Vdd:
Name: Date: Chksum: Area: Port: Speed: Vdd: Freq.: Multicle

Figure 4-16: Programmer Parameter Window

[Device]

Updated after communication with the target device to display information about the target device.

[Parameter file]

Updated after [Setup] command execution to display information about a read parameter file.

[Load file]

Updated after [Load] command execution to select information about a selected program file.

[Connection to device]

Updated after [Setup] command execution to display information about the connection with the target device.

Chapter 5 Example of Use

This chapter explains a series of basic operations of the PG-FPL with the GUI software, taking a case where the μ PD70F3266 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 Using The GUI Software.

Series of operations described in this chapter

The conditions of the series of operations described in this chapter are as follows:

Target system Target device Clock Voltage level Communication	:	μPD70F3266 5 MHz 3.3 V UART CH0
FPL		
Parameter file	:	70F3266_CSI0.PRM
Clock setting	:	5 MHz Multiplied by 4
Port	:	COM2 (38400 bps)
MODE switch	:	2 (V _{DD} : 3.3, V _{DD2} : N.C)
Operation mode	:	Chip
Write HEX	:	FPL_TEST.HEX
Option setting	:	Read verify after Program
		Blank check before Erase

(1) Installing the GUI software

Install the FPL GUI software in the host machine you are using, by referring to **Chapter 3** Software Installation (if the software has not been installed yet).

(2) Installing the driver

Install the USB driver in the host machine you are using, by referring to **Chapter 3** Software Installation (if the driver has not been installed yet).

(3) Installing the parameter file

Copy the parameter file for the μ PD70F3266 to the hard disk and install it in <FPL-install-path>\PRM. Download the parameter file from the following:

http://www.ee.nec.de/update

(4) Connecting and starting the system

- <1> Set the MODE switch to "2".
- <2> Connect the FPL with the host machine via the USB cable.
- <3> Check that the Power LED is turned on.
- <4> Check that the power to the target system is not turned on, then connect the FPL with the target system via the target cable.
- <5> Start the GUI software.

Figure 5-1: GUI Software Startup Screen



(5) Setting the programming environment

- <1> Select [Device] \rightarrow [Setup] from the menu bar.
- <2> The Standard dialog box for device setup is activated.

Device Setup		×
Standard Advance		
Parameter file	<u></u>	PRM File Read
Host connection		Supply oscillator
Port	•	Frequency MHz
Speed	•	Multiply rate
Operation Mode		
C Chip	Start	•
C Block	End	•
C Area	🗖 She	ow Addres
Target Reset M	essage	
		OK Cancel

Figure 5-2: <Standard Device Setup> Dialog Box

<3> Click PRM File Read to open the parameter file selection window. In this case, select the parameter file for the µPD70F3266 then click **<u>Open</u>**.

Figure 5-3: Parameter File Selection

Open			<u>? ×</u>
Look in: 🔁	PBM	- 🗢 🔁 (* 🎟 •
70F3266_	CSI0.prm		
File name:	70F3266_CS10.prm		Open
Files of type:	PRM Files(*.PRM)		Cancel

<4> From the Port list box, select the communication port that matches the host machine being used.

Device Setup Standard Advance		<u>×</u>
Parameter file 70	F3266_CS10.prm	PRM File Read
Host connection	Supply oscillate	or
Port	✓ Frequency	5.00 MHz
Speed CON	1 2 Multiply rate	4.00
Operation Mode		
Chip	Start 000 💌	
C Block	End 015 🔽	
C Area	Show Addres	
🔲 Target Reset N	lessage	
)K Cancel

Figure 5-4: Port Selection

Remark: Selectable ports can be checked using Device Manager. For details, refer to3.3 Confirmation of USB Driver Installation.

<5> Set the other displayed setting items to match the programming environment being used. In particular, set "Supply oscillator" according to the specifications of the selected device. In "Operation Mode", specify a flash memory range subject to operation. Here, the following settings are assumed:

R Device Setup	X
Standard Advance	
Parameter file 70F3266_CS10.prm	PRM File Read
Host connection	- Supply oscillator
Port COM1	Frequency 5.00 MHz
Speed 38400 💌	Multiply rate 4.00
Operation Mode	
Chip Start	▼
C Block End 015	7
C Area 🗖 Show	w Addres
🔲 Target Reset Message	
	OK Cancel

Figure 5-5: <Standard Device Setup> Dialog Box after Setting

<6> Switch to the Advance dialog box.

🙀 Device Setup		×
Standard Advance]	
└ Command options 	Blank check before Erase Read verify after Program Security flag after Program	
- Security flag settin	Checksum after Program	
Security hag security	g» 1 Disable Chip Erase	
Г	Disable Block Erase	
Г	Disable Program	
Target Reset Message		

Figure 5-6: <Advance Device Setup> Dialog Box

<Command options> Blank check before Erase : Checked Read verify after Program : Checked Checksum after Program

: Not checked
<7> Click the **OK** button. The GUI software sets the parameters. When the settings have been completed, the following screen is displayed:



Figure 5-7: Completion of Parameter Setting

(6) Selecting an user program

- <1> Select [<u>File</u>] \rightarrow [<u>L</u>oad].
- <2> Select a program file to be written to the target device, then click **Open**.

🛃 FPL File Device View Help 1m 🐉 🐝 O) > FlashOpenning. Device ۰ P> FlashOperning.... Flash Open OK >>COMMAND: Device Setup PRM File Read OK. >>COMMAND: LoadFile Open() Success read HEX file. Name : Firm Version : ExtCode : Vendor Parameter file 70F3266_CSI0 0411 E1.00a Name : Format : "Success read HEX file" is displayed Version : Processor Ver. : 0200 Load file FPL_TEST.HEX 2000/04/20 13:56:36 Name: Date: The display is updated Chksum: D581h 000000h-0106C3h Area: Connection to device COM1 38400 Port: Speed: Vdd: Freq.: 5.00 Multiply 4.00 4 Þ Ready

Figure 5-8: After Downloading

(7) [Autoprocedure (EPV)] command execution

Select [Device] \rightarrow [Autoprocedure (EPV)] from the menu bar.

When the [Autoprocedure (EPV)] command is executed, Blank Check \rightarrow Erase \rightarrow Program \rightarrow Verify are executed sequentially for the µPD70F3266. In this example, Read verify after Program is checked. So, after the execution of the [Autoprocedure (EPV)] command, verification is performed to check if communication between the FPL and the target device has been performed normally.





(8) Terminating the system

- <1> If other devices need not be programmed, select [<u>File</u>] → [<u>Quit</u>] to terminate the GUI software. All settings executed so far are saved in the FPL.INI file, so that those settings can be reused when the GUI software is restarted.
- <2> Disconnect the target cable from the target system.
- <3> Disconnect the USB cable from the FPL.

(9) Restart

When the system is restarted, the same screen as shown in Figure 5-7 appears.

[MEMO]

Chapter 6 Connectors and Cables

6.1 USB Connector (FPL)



Figure 6-1: USB Mini-B Type Host Connector Pin Configuration

Table 6-1: Pin Configuration of USB Connector

USB Connector	FPL Signal Name
1	VCC_USB
2	USBDM
3	USBDP
4	N.C.
5	GND

Connector model: UX60A-MB-5ST (manufactured by Hirose Electric)

For connection with the host machine, use a USB cable (Mini-B type). For confirmation, NEC Electronics used only the USB cable delivered with IECUBE.

6.2 Target Cable Connection Connector (FPL)

Figure 6-2: Target Connector Pin Configuration



 Table 6-2:
 Pin Configuration of Target Cable Connection Connector

Target Connector	FPL Signal Name
1	GND
2	V _{DD}
3	V _{DD2}
4	RESET
5	TXD
6	RXD
7	FLMD0
8	FLMD1

Connector model: DF3A-8P-2DSA (manufactured by Hirose Electric)

6.3 Target Cable Specifications

Figure 6-3: External View of Target Cable



Cable Specification		Display Specification	
No. 1	Black	GND	0. GND
No. 2	Brown	V _{DD}	1. V _{DD}
No. 3	Red	V _{DD2}	2. V _{DD2}
No. 4	Orange	RESET	3. RESET
No. 5	Yellow	TXD	4. TXD
No. 6	Green	RXD	5. RXD
No. 7	Blue	FLMD0	6. FLMD0
No. 8	Purple	FLMD1	7. FLMD1

	Table 6-3:	Pin Configuration	on of Target	Cable
--	------------	-------------------	--------------	-------

Applicable header pin specification: 0.635×0.635 mm (length: 6 mm) NEC Electronics confirmed that the header pin below is usable. Honda Tsushin Kogyo: FFC-7AMEP1

6.4 Target Connector (FPL-FA)

Figure 6-4: External View of Target Connector



Table 6-4: Pin Configuration of Target Connector

Target Connector	FPL-FA Signal Name
0	GND
1	V _{DD}
2	V _{DD2}
3	RESET
4	TXD
5	RXD
6	FLMD0
7	FLMD1

Connector model: FFC-7AMEP1 (manufactured by Honda Tsushin Kogyo)

6.5 FP4 Connector (FPL-FA)

Figure 6-5: External View of FP4 Connector



Table 6-5: Pin Configuration of FP4 Connector

FP4 Connector	FPL-FA Signal Name
1	GND
2	RESET
3	RXD
4	V _{DD}
5	TXD
11	V _{DD2}
12	FLMD1
14	FLMD0
6, 7, 8, 9, 10, 13, 15, 16	N.C.

Connector model: 8516-4500SC (manufactured by Sumitomo 3M)

Note: Receptacle connector which fits FP4 connector is 7616-5002SC (manufactured by Sumitomo 3M).

6.6 List of Interface Connections

Signal Name	Target Cable Connection Connector	Tip of Target Cable	Target Connector CN1	FP4 Connector CN2
GND	1	0. GND	0	1
V _{DD}	2	1. V _{DD}	1	4
V _{DD2}	3	2. V _{DD2}	2	11
RESET	4	3. RESET	3	2
TXD	5	4. TXD	4	5
RXD	6	5. RXD	5	3
FLMD0	7	6. FLMD0	6	14
FLMD1	8	7. FLMD1	7	12

Table 6-6: List of Interface Connections

Figure 6-6: Target Interface



- **Remark:** 1 Target cable connector, pin 8
 - 2 Target cable FLMD1, pin 7 3 Target connector CN1, pin 7

 - 4 FP4 connector CN2, pin 12

Chapter 7 Notes on Target System

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





The following shows an example of the interface circuit of UART (asynchronous communication port). Refer to the above design proposal for the pin processing of the device to be used.



Figure 7-1: Example of UART Interface Circuit

- Cautions: 1. The FPL operates normally if a direct connection between PG-FPL and the device is established. No additional external components like pull up or pull down resistors need to be connected to the signals between PG-FPL and the device.
 - Special care have to be taken if pull up or pull down resistors are attached to any signal between PG-FPL and the device.
 PG-FPL drive some signals by internal pull up or pull down resistors to high or low level. Especially the FLMD0 (4.7 K pull up), FLMD1 (100 pull down), TXD (~5 K pull up), RESET (~5K pull up) signals may be corrupted by an external circuitry.

Please check the compatibility of external components to the internal circuitry shown on page 90 of Chapter 8 Circuit Diagrams.

[MEMO]

Chapter 8 Circuit Diagrams



Figure 8-1: Circuit Diagram of FPL-FA

Figure 8-2: Circuit Diagrams of Main FPL Unit (1/3)



(a) USB Power Generator





(b) Main Unit





(c) Target Interface Section

Chapter 9 Troubleshooting

9.1 Trouble during Setup

(1) In driver installation, recognition based on Plug and Play is disabled.

Cause:

The USB connector may not be inserted normally into the USB port of the personal computer. Action:

Check that the USB connector is inserted fully into the USB port of the personal computer. Alternatively, disconnect the USB connector, then insert the USB connector again after a while.

(2) The driver file cannot be found at a specified location.

Cause:

The GUI software of the FPL may not be installed correctly. Action: Install the GUI software again by referring to **3.1 GUI Software Installation**.

(3) In checking by Device Manager, "USB Serial Port" or "USB High Speed Serial Converter" is not displayed. Alternatively, the "!" or "×" is prefixed.

Cause:

The USB connector may not be inserted normally into the USB port of the personal computer. Action:

Check that the USB connector is inserted fully into the USB port of the personal computer. Alternatively, disconnect the USB connector from the USB port, then insert the USB connector again after a while.

Cause:

The driver may not be installed correctly.

Action:

<1> When this product is connected to the personal computer, right-click the driver marked with "!" or "×".

Click *Erase* when displayed.

- <2> On Device Manager, execute [Hardware Modification Scan].
- <3> Install the driver again with Plug and Play.

Cause:

The device may not be recognized (in the case of connection with the USB hub).

Action:

Try the following:

- Disconnect the USB connector, then insert the USB connector again.
- Connect the USB connector to another port of the USB hub.

If the same symptom occurs, do not use the USB hub, but directly connect the connector to the USB port of the personal computer.

9.2 Trouble during Operation (Main Unit)

(1) When a connection is made to the personal computer, the Power LED is not turned on.

Cause:

This product or the USB port of the personal computer may be destructed. Action: Try a connection to another personal computer.

(2) When communication is not performed with the target device, the Status LED is turned on.

In accordance with the specifications of this product, the Status LED may be turned on even when communication is not performed with the target device. The Status LED blinks when communication is performed with the target device.

(3) When this product is connected with a personal computer, the "Add New Hardware Wizard" screen is displayed.

Cause:

If the USB connector of this product is inserted not into the USB port used at the installation time but into another USB port, this product may be recognized as a new hardware item. Action:

Install the driver by referring to **3.2** Driver Installation.

9.3 Trouble during Operation (Communication)

(1) Communication with the target device is disabled.

Cause:

The driver may not be installed correctly.

Action:

Check if "USB Serial Port" and "USB High Speed Serial Converter" are installed correctly by referring to **3.2** Driver Installation.

Cause: The Port list box may not be set correctly. Action: Set the port checked using Device Manager.

Cause:

An incorrect connection may be made between the target cable and target system. Action:

Check if the connection is correct.

Pay special attention to the following connections because the connections are confusing:

TXD of target cable \rightarrow RXD of target device

RXD of target cable \leftarrow TXD of target device

Cause:

The power or clock may not be supplied to the target device correctly.

Action:

- <1> Check that the clock is supplied on the target system.
- <2> Check that the power is supplied on the target system.

If the power is supplied from the FPL, check if the setting of the MODE switch is correct.

Cause:

The PRM file selected in [Device Setup] may be incorrect. Action: Use a PRM file that matches the target device. For information about PRM files, refer to **Chapter 4** Using The GUI Software.

Remark: A parameter file (.prc) for FlashPro3 is unusable.

Cause:

The setting of "Supply oscillator" in [Device Setup] may be incorrect.

Action:

Make a correct setting according to the specifications of the target device and the use environment.

Cause:

The setting of the Speed list box in [Device Setup] may be incorrect.

Action:

Make a correct setting according to the user's manual of the target device.

Cause:

The power supply capacity of the USB port of the personal computer may be low (when MODE2, MODE3, or MODE4 is selected).

Action:

Try using another personal computer or supply power from the target system by selecting MODE1.

Cause:

Security may be set with another on-chip flash memory microcontroller programmer (such as PG-FP4).

Action:

Check that security is not set.

(2) During erase operation, the Status LED does not blink.

In accordance with the specifications of this product, the Status LED may not blink during erase operation.

To confirm the erasure status, check the following message in the action log window of the GUI software:

Message during erase operation: "Flash Erasing..." Message for completion of erasure: "chip erase finish." or "all block erase finish."

Cause:

The power supply capacity of the USB port of the personal computer may be low (when MODE2, MODE3, or MODE4 is selected).

Action:

Try using another personal computer or supply power from the target system by selecting MODE1.

Chapter 10 Appendix

10.1 Hardware Specifications

	MIN.	TYP.	MAX.
Operating supply voltage (V _{DD} USB)	4.4 V	5.0 V	5.25 V
Supply current (V _{DD} _USB)			500 mA
Current consumption of the main unit		35 mA	
5.0-V output ^{Note}	4.2 V	4.8 V	5.05 V
3.3-V output	3.0 V	3.3 V	3.6 V
Target V _{DD} voltage	2.7 V		5.5 V
V _{DD} output current			200 mA
V _{DD2} output current			200 mA

Table 10-1: Specifications of the Main Unit

Note: The 5-V output of this product depends on the USB port of the host machine. If the supply power of the USB port is unstable or does not satisfy the specifications of the target device, use MODE1 (power supply from the target system).

10.2 Dimensions

External view of the main FPL unit



Figure 10-1: External View of the Main Unit

Unit [mm]

External view of the FPL-FA



Figure 10-2: External View of the FPL-FA

Unit [mm]

Target cable

Figure 10-3: External View of Target Cable



Figure 10-4: External View of Target Cable Tip



Connector model: PS-SF-C2-1 (manufactured by JAE)

Unit [mm]

Warranty and Support

• Warranty

This product (including hardware and software) is replaced free of charge in the case of an initial failure only.

No warranty is provided for failures other than initial failures.

• Support

No support is provided for this product. Visit the following site to obtain the latest information about this product:

Site: http://www.ee.nec.de/update

[MEMO]

NEC

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