

User's Manual

GFP4

**Graphic user interface for multi
FLASH programming using PG-FP4**

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M8E 02.10



This equipment complies with the EMC protection requirements

WARNING

This is a 'Class A' (EN 55022: 1998) equipment. This equipment can cause radio frequency noise when used in the residential area. In such cases, the user/operator of the equipment may be required to take appropriate countermeasures under his responsibility.

EEDT-ST-001-11

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.

EEDT-ST-004-10



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Revision History

Date	Revision	Chapter	Description
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1 Preface

- Target Users** This manual is intended for the users, who use GFP4, for gang programming of NEC microcontrollers with built-in FLASH memory by using the standard FLASH programmer PG-FP4. By using GFP4 up to ten FLASH programmers of type PG-FP4 can be controlled in parallel.
- Purpose** This manual aims at having a clear understanding of the basic specification of GFP4 and the proper way of using it. By using GFP4, automatic program erasing, writing and verifying of NEC microcontrollers with built-in flash memory can be easily controlled.
- Organization** This manual is organized into an Outline and three major modules.
- Installation
 - How to use
 - Example of the use
- Guide to read** If you want to have a comprehensive understanding about the basic specification and the way of using, please read this manual as contents.
- With reference to **Chapter 4 How to use**, please be sure to read all, because important contents are being written when you operate GFP4.
- To read some part of this manual, general knowledge of the microcomputer is required. And about the operation of the application, this manual explains with standing on the precondition that a user understood the adequate knowledge about Windows.
- About the way to use and the unique technical terms of Windows98, Windows Me, Windows 2000 or Windows XP, please see the Window's manuals.
- Notations**
- Note The explanation of the note.
 Caution: Use care in reading.
 Remark: As the supplemental explanation.
 " " It indicates any character or item on the screen.
 It indicates a button name.
 [] It indicates a menu.
 < > It indicates a dialog box.

Terms About terms in this manual, their meanings are shown in the following table.

Terms	Meanings
FP4	An abbreviation of the programmer for the microcomputer with built-in flash memory; PG-FP4 system.
GFP4	An abbreviation of Gang FLASH programming GUI for PG-FP4
Target Device	The microcomputer with built-in flash memory of NEC Electronics.
Target System	A board-product designed by the user, with mounting a microcomputer with built-in flash memory of NEC Electronics.
FP4 connector	An abbreviation of the target connector (Type A) of PG-FP4.
FA Adapter	An adapter board to program a microcomputer with built-in flash memory of NEC Electronics. (FA Adapter Board)

2 Outline

GFP4 is the tool designed to program the microcomputer with the flash memory of NEC Electronics' product. This tool allows executing the automatic operation; for onboard FLASH programming of NEC microcontrollers, such as erasing, writing and verifying operations, by controlling up to ten the FLASH programmers of type PG-FP4 in parallel.

2.1 Feature

- > Designed for mass production and E.P.V automatic operation software.
- > Equipped USB as the Host Interface.
- > Supported OS: Windows98, Windows Me, Windows2000 and Windows XP
- > GFP4 controls up to ten PG-FP4 FLASH programmers in parallel, with one host PC by using a USB hub connecting.

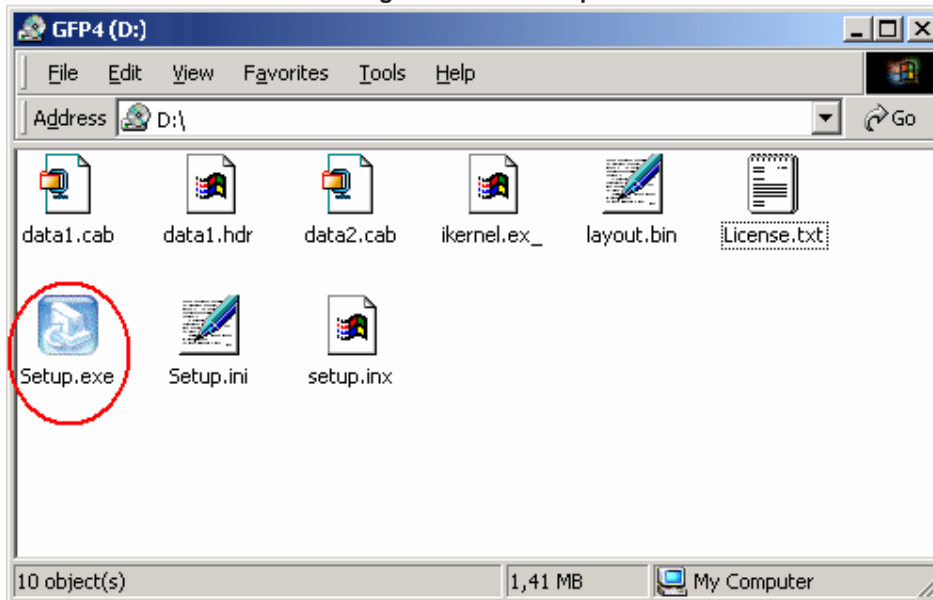
3 Installation

3.1 Install GFP4

GFP4 makes command execution of PG-FP4 ease.
To install GFP4, follow the procedure as below.

1. Insert CD-ROM into CD-ROM drive and execute SETUP.EXE. Then the Installation of GFP4 starts.

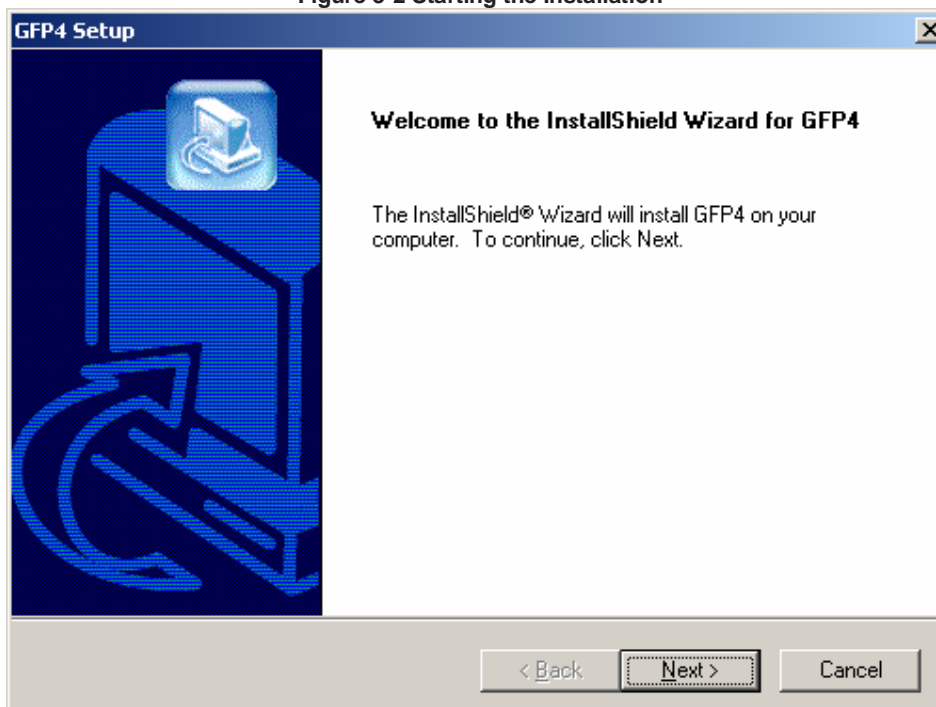
Figure 3-1 Start Setup



Note: "D:\:" on this figure shows CD-ROM drive that is set as D drive in this sample.

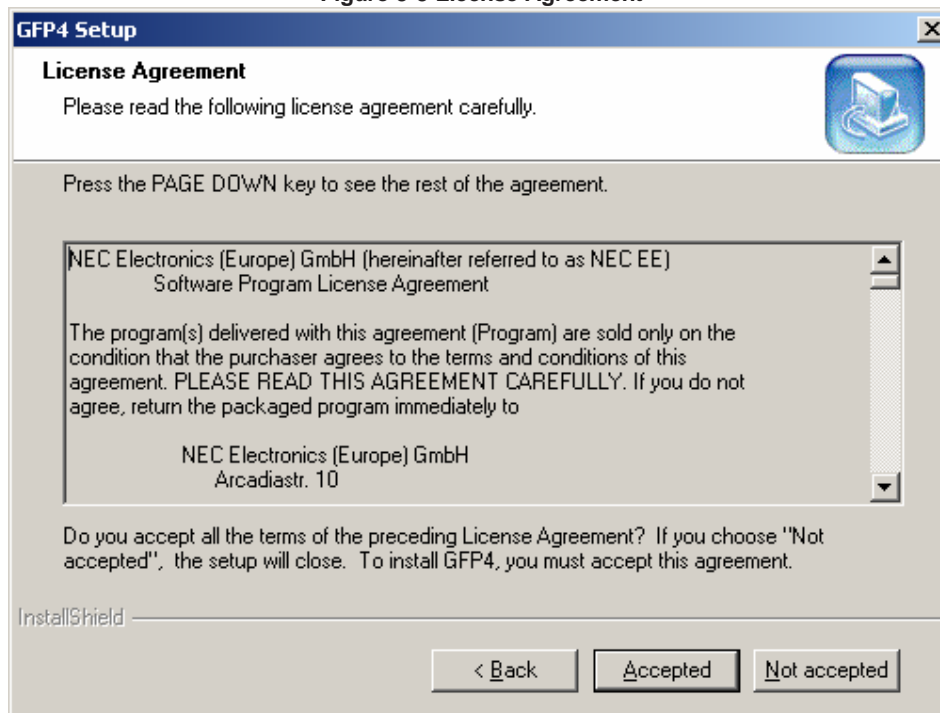
2. Execute .

Figure 3-2 Starting the Installation



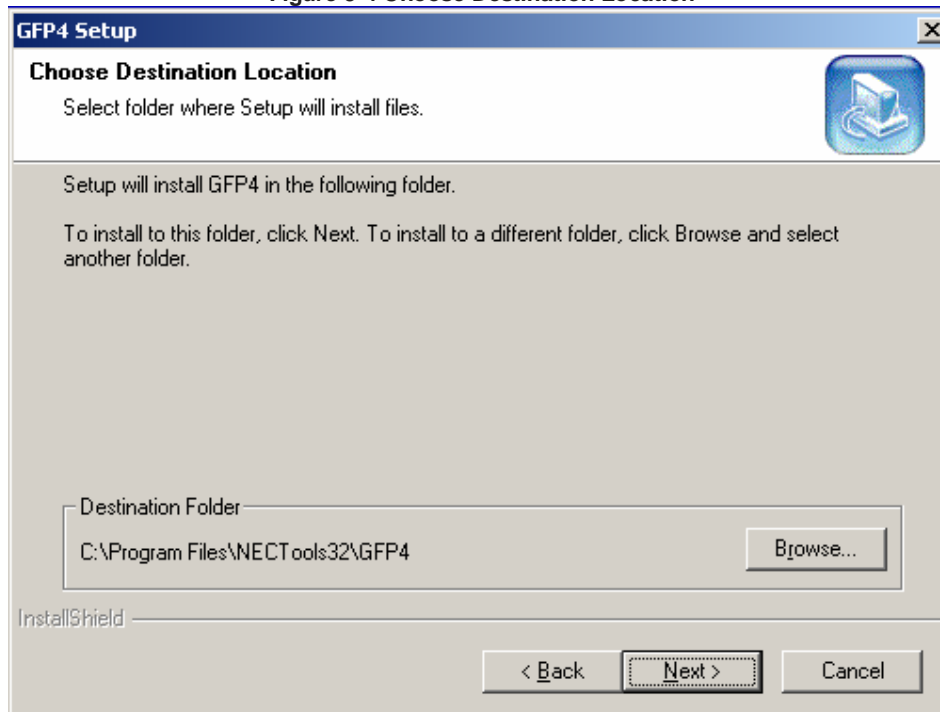
3. Read the license agreement carefully, execute **Accepted >**.

Figure 3-3 License Agreement



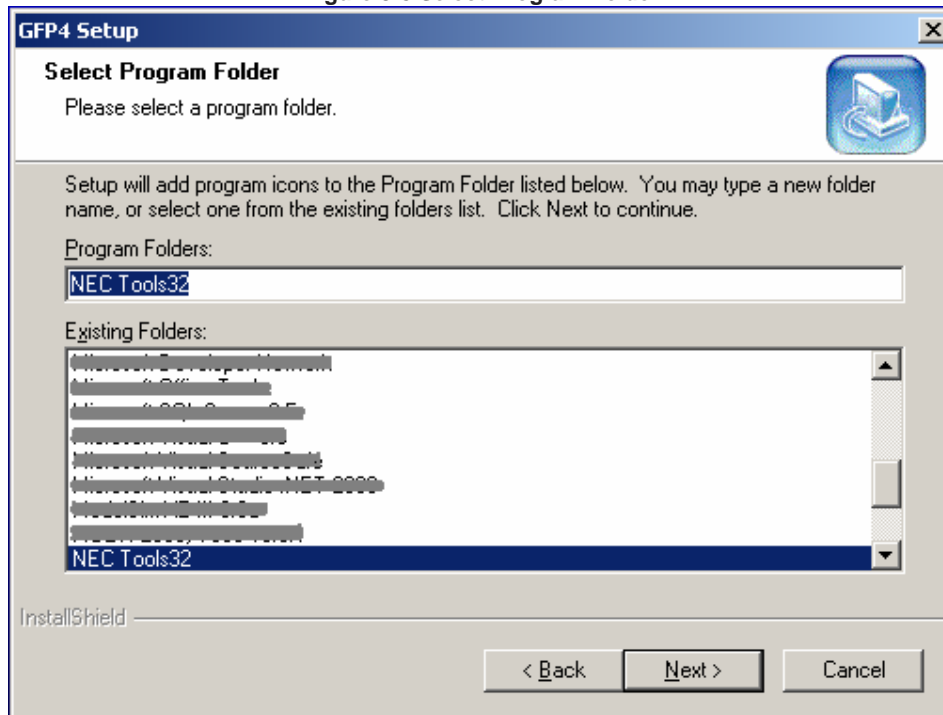
4. Confirm the Destination Location, execute **Next >**.

Figure 3-4 Choose Destination Location



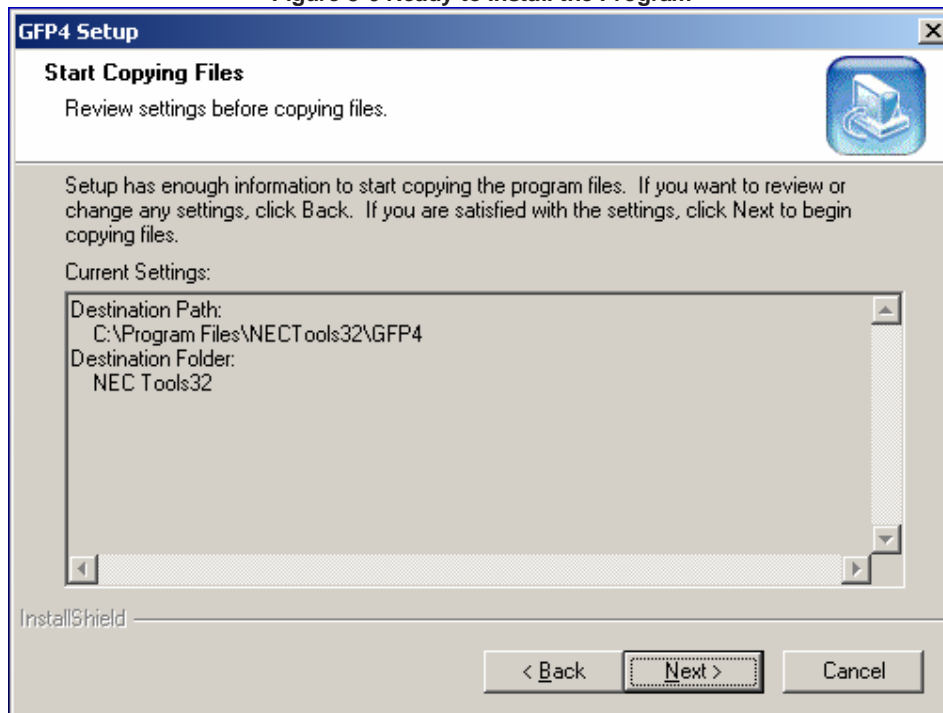
5. Select Program Folder and execute **Next >**.

Figure 3-5 Select Program Folder



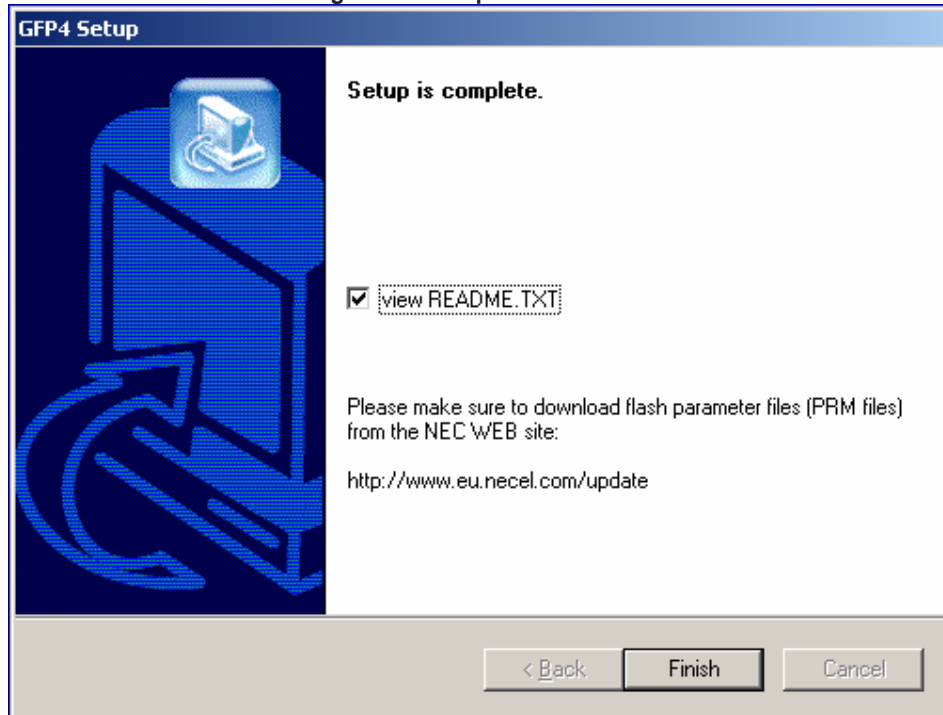
6. Start Installation. Execute **Install**.

Figure 3-6 Ready to Install the Program



7. Installation of GFP4 is completed. Execute **Finish**.

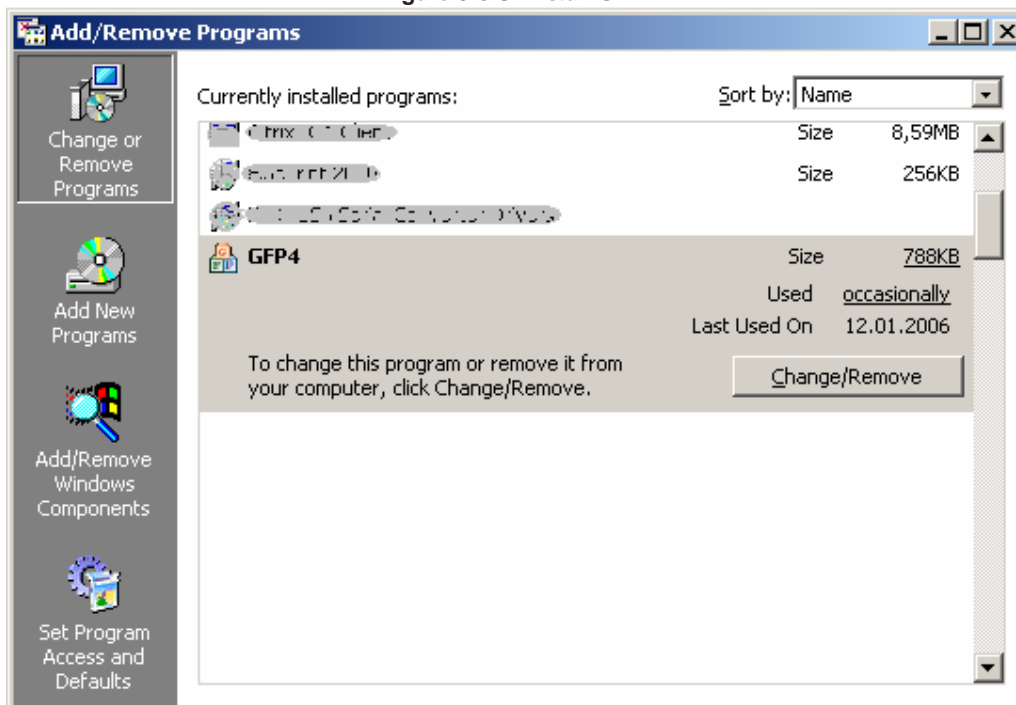
Figure 3-7 Complete Installation



3.2 Uninstall GFP4

To uninstall GFP4, remove GFP4 from “Add/Remove Programs” of the control panel.

Figure 3-8 Uninstall GFP4



4 How to use

4.1 Preface

Before using GFP4 please create a corresponding parameter file (*.prm) and customization setup file (*.set) for the target device - that should be programmed - by using the PG-FP4 GUI. Please store these files in the PRM and SET folder of your GFP4 installation.

<How to create Customization Setup File >

Prior to use GFP4, Customization Setup File should be created with reference to the environment, by using PG-FP4. About how to create this file, please refer to PG-FP4 user's manual.

<How to create PRM Folder and SET Folder>

PRM Folder and SET Folder, where Parameter File and Customization Setup File are stored, should be created on the same level of the hierarchy as PG-FP4.

<Installation of Parameter File>

Install the Parameter File, which you will use, to the PRM Folder. Download the parameter file for the PG-FP4 from the following NEC Electronics Web site:

<http://www.eu.necel.com/updates>

<Connect the Host PC and PG-FP4>

Connect the Host PC and PG-FP4 via USB. If USB ports are not sufficiently equipped with the Host PC, please provide the general-purpose USB hub. GFP4 can control 10 units of PG-FP4 at maximum.

<Installation of USB Driver>

When you connect PG-FP4 to your host computer, the corresponding operating system Windows98, Windows Me, Windows2000 or Windows XP will detect PG-FP4 automatically and start to install USB driver as the detected unit number. About how to install the USB driver, please see the user's manual of PG-FP4.

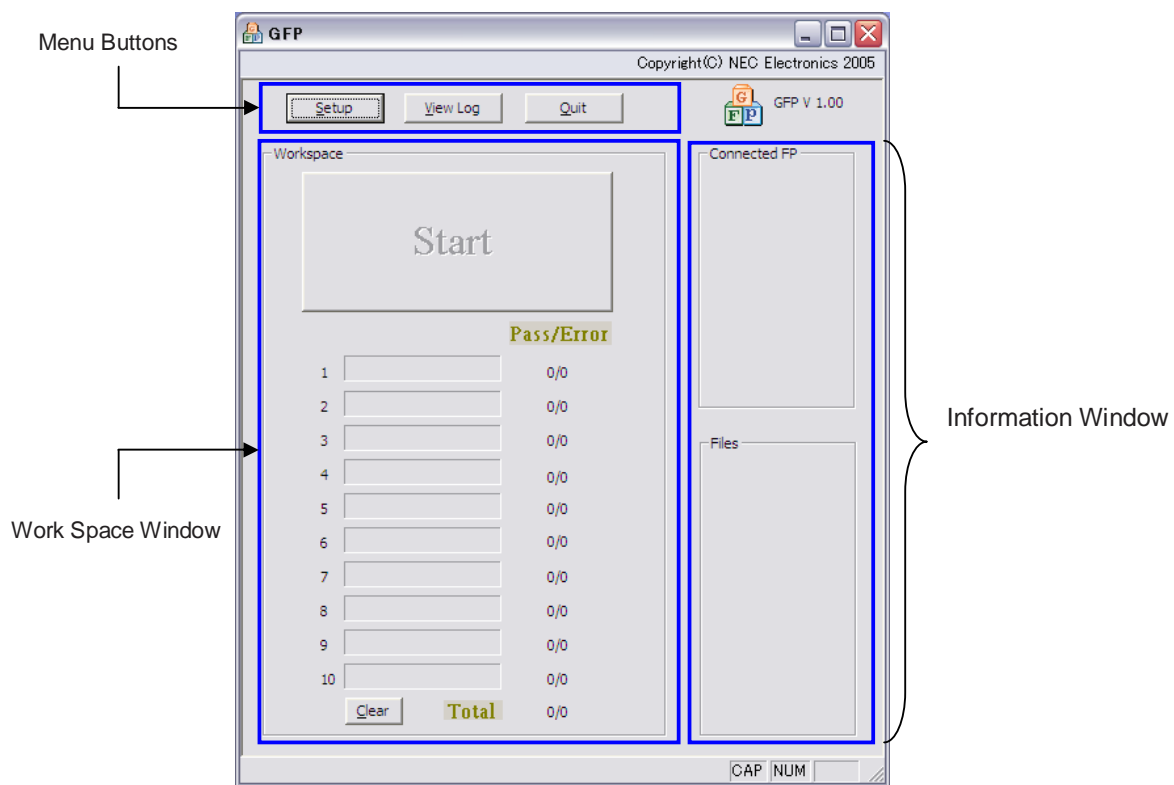
4.2 Start GFP4

Start GFP4

Select GFP4.exe from GFP4 folder to start.

When the GFP4 GUI is started the following screen appears.

Figure 4-1 GUI Software Main Window



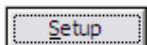
This Window includes the following sections.

Name	Contents to be indicated
Menu button (Indicated on the upper part)	[Set up]button, [View Log]button, [Quit]button
Work Space Window (Indicated under the Menu button)	To indicate action logs of GFP4.
Information Window (Indicated on the right-side of Work Space Window)	To indicate the connectional status with PG-FP4 and the file specified at the Setup Window.

4.3 Menu buttons

The following buttons are prepared; [Setup] button to set the setting for programming, [View] button to see the contents of LOG file, [Quit] button to finish GFP4.

4.3.1 [Setup] button



[Setup] button calls Setup window. Here, you can load the setting of the user environmental setting for programming flash memory, and set the connection setting with PG-FP4.

(a) Setup Window

Through this window, you can set the flash memory programming environment for the target device. By loading the set file, which is set and created on PG-FP4, the communication method with the target, the operation clock on can be set. About how to create SET file, please refer to PG-FP4 user's manual. The following window will open.

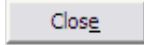
Figure 4-2 Setup Window

The Setup window contains the following elements:

- Connect with PC:**
 - Connected FP: 1 2 3 4 5 6 7 8 9 10 (checkboxes)
 - FP count: [input field]
 - Connect button
- Firmware:**
 - EW Update button
- File setting:**
 - SET File: [checkbox] [input field] [file selection button]
 - PRM File: [checkbox] [input field] [file selection button]
 - HEX File: [checkbox] [input field] [file selection button]
 - LOG File: [checkbox] [input field containing 'trace.txt'] [file selection button]
 - Default button
 - Download button
- Close button** at the bottom center.

This window indicates all essential option for the setting according to the user environment and the target device.

Close button

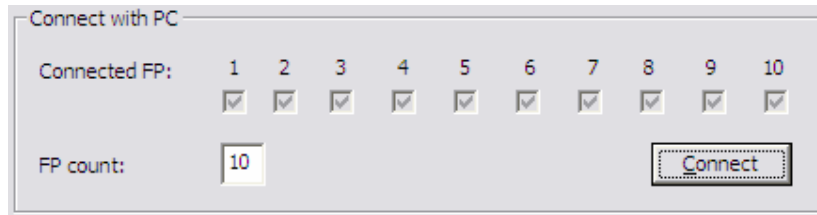


By clicking [Close] button, it closes the window without saving the contents of setting.

1) Connect with PC

Input the number of PG-FP4 connected with the host PC at PC count:, and select [Connect].
At Connected FP:, checkmarks will be placed in the checkboxes of PG-FP4 with regard to the one establishes communication with the host PC.

Figure 4-3 Setup Window-Connect with PC



If the value set at FP count: is different from the unit number of PG-FP4, which established communication with the Host PC, the following Warning message appears. Confirm that the connection between the Host PC and PG-FP4, and the value set at FP count.

Figure 4-4 Connect with PC- Warning



2) Firmware Update

Select this when you update the firmware of PG-FP4 connected with the host PC.

Figure 4-5 Setup Window-Firmware



- (1) After selecting [Connect] at Connect with PC, if the firmware version of PG-FP4 is different, you find the warning message as follows.

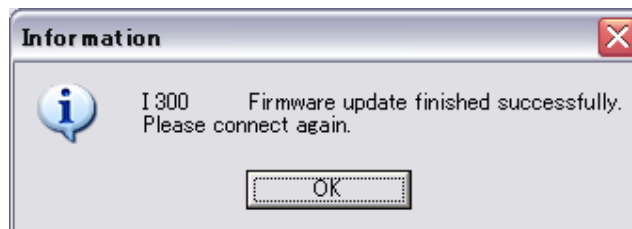
When you face this case, select **FW Update** and update all firmware of the connected FP4.

Figure 4-6 Firmware Update-Warning



- (2) After [FW Update] execution, when the firmware update of the connected PG-FP4 completes normally, the following message appears. Confirm this message, and then select [Connect] again to establish the communication with the Host PC.

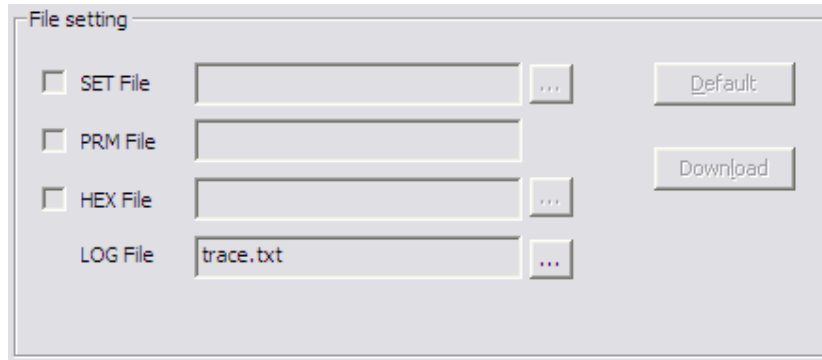
Figure 4-7 Firmware Update-Information



3) File setting

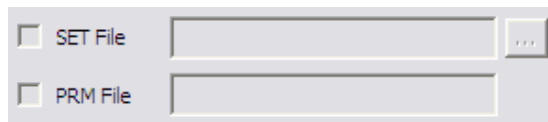
Set the environment setting about the subject target device to program by PG-FP4.

Figure 4-8 Setup Window-File Setting



(a) Selection of Customization setting File (SET File)/Parameter File (PRM File)

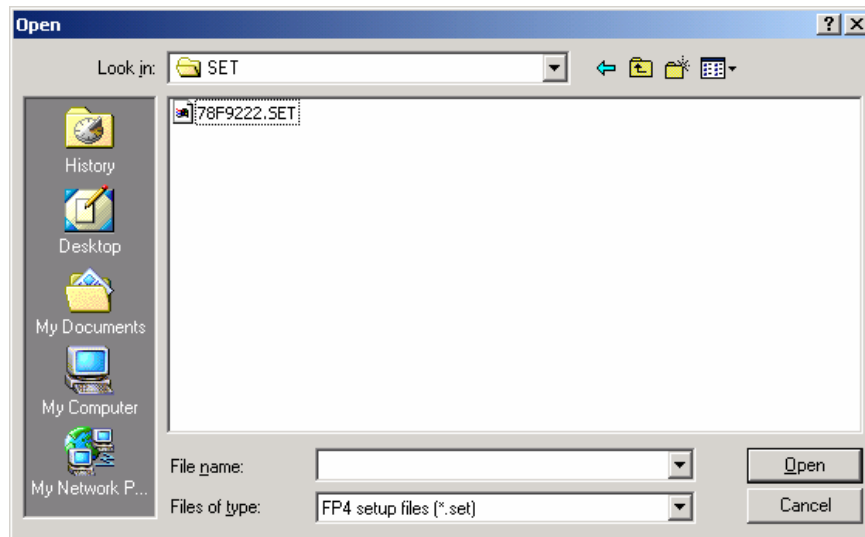
Figure 4-9 Setup Window SET/PRM File Selection



 button

When you execute this, the selection window of Customization Setup File will open.
Select SET File created by GUI of PG-FP4.

Figure 4-10 Set File Select Window (Sample)

**Open (O) button**

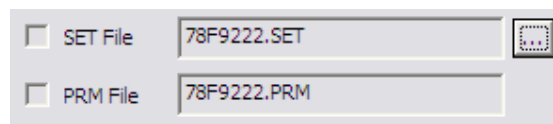
Select a selected SET File as the programming environment for programming the target device.

Cancel button

Close the window without selecting any SET File.

When the Customization Setup File is selected, the SET File column indicates a name of the selected Customization Setup File. And the PRM File column indicates a name of the Customization Setup File, which is specified in the Customization Setup File.

Figure 4-11 SET/PRM File Selection



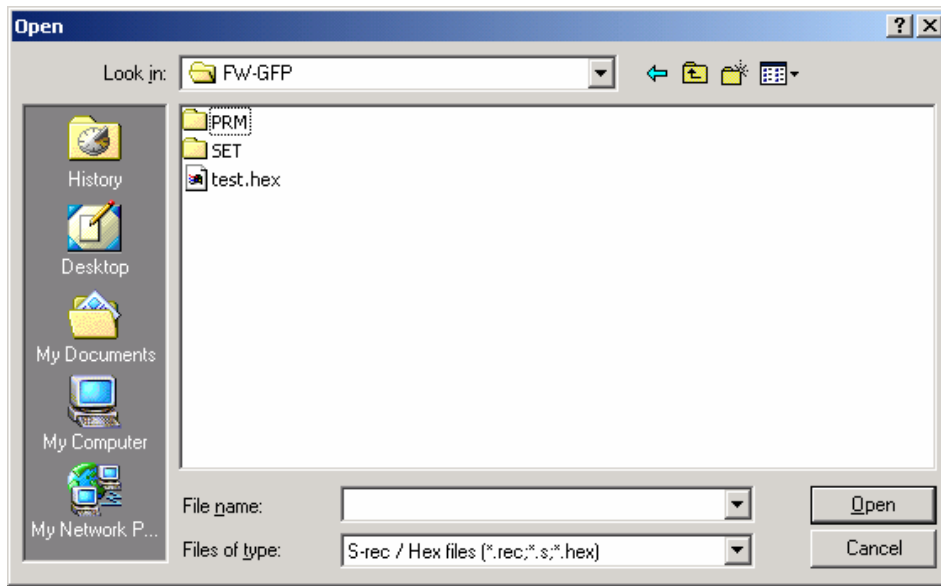
(b) Selection of program files (HEX File)

Figure 4-12 Setup Window-HEX File

**... button**

When this button is executed, program file selection window will open.
Select a program file (HEX file).

Figure 4-13 HEX File Selection Window



After loading the program file (HEX file), it will be indicated on text box.

Open (O) button

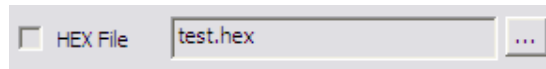
Select a selected code file as the program file for the target device.

Cancel button

Close the window without selecting any code file.

When a program file is selected, the HEX File column indicates a name of the programming file.

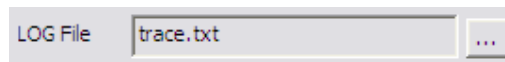
Figure 4-14 HEX File selection (Sample)



(c) Selection of LOG files

* Use this feature when you need to create the programming result log by GFP4.

Figure 4-15 Setup · Window LOG File

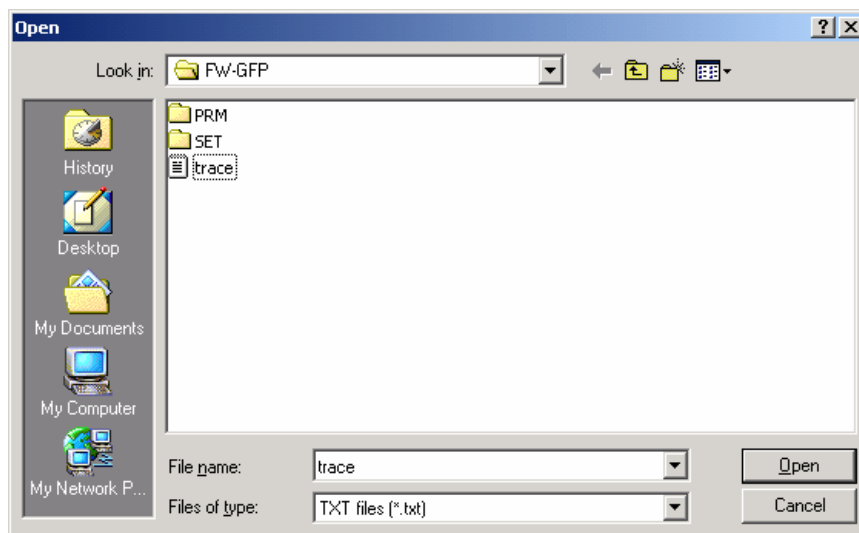


... button

When execute this, Log File Selection Window opens then select a Log File.

*On starting GFP, a LOG file named trace.txt will be generated by default.

Figure 4-16 LOG File Selection Window



After loading the Log File, that is indicated on a Text Box.

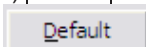
Open (O) button

Select a selected LOG file as the programming result LOG for the target device.

Cancel button

Close the window without selecting any LOG file.

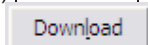
(d) **Default** button



If execute **Default button**, this specifies each SET/PRM/HEX file which is used at the last time.

Default button can not be executed, when start GFP4 at the first time or gfp.ini file doesn't exist.

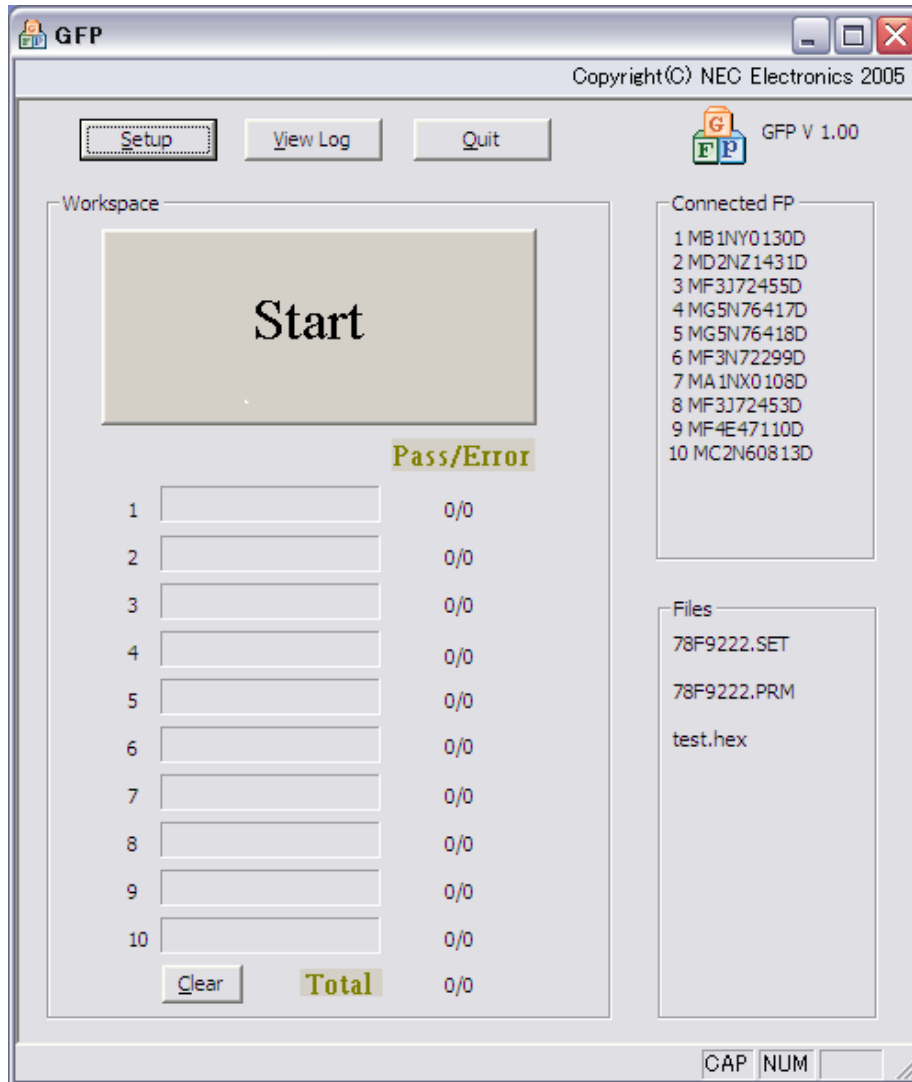
(e) **Download** button



If select the Customization Setup File and the Program File, **Download button** becomes effective.

If execute **Download button**, download the Customization Setup File and the Program File to each PG-FP4. When the download completes normally, the Main Window appears.

Figure 4-17 Main Window



<Caution>

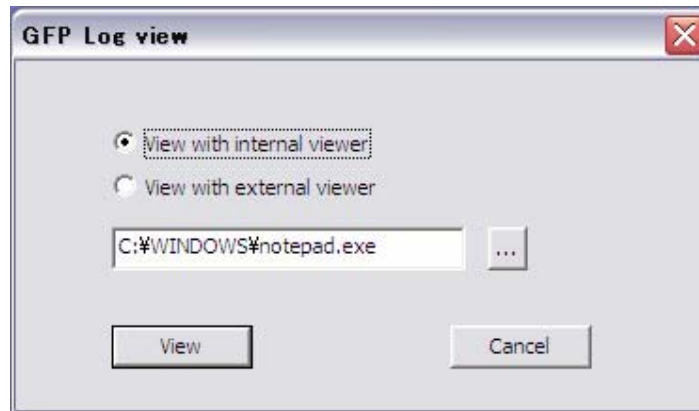
Unless the connection of PG-FP4 and the download of the respective files of SET/PRM/HEX complete at Setup window, [Start] button on the GFP4 Main window does not become effective.

4.3.2 View Log button

View Log

View Log button is prepared to see the LOG file. If select **View Log button**, GFP Log view Window opens, which is to select the way of Log File indication. Select the indication way by the radio button in the GFP Log view Window, and select **View button**.

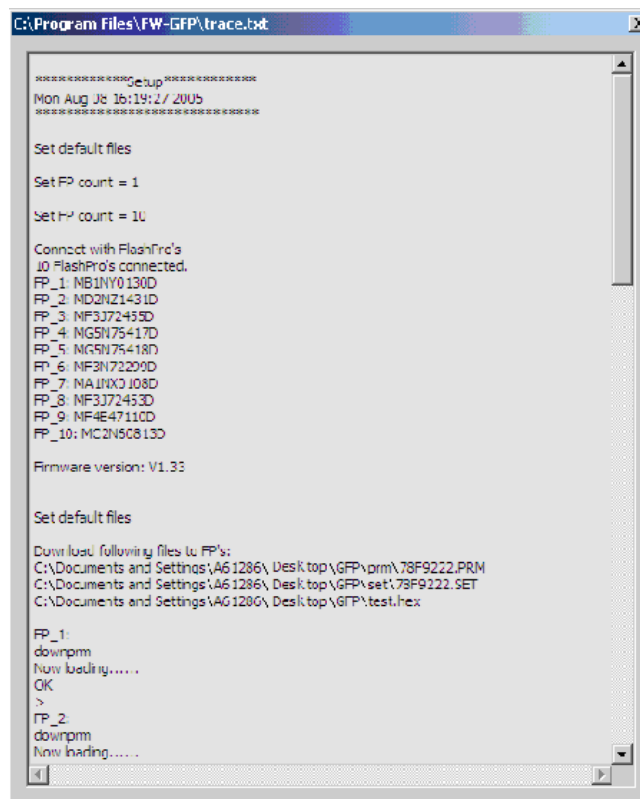
Figure 4-18 GFP Log view Window



(1) If **View with internal viewer** is selected.

If **View with internal viewer** is selected, View is indicated by the Log Viewer of GFP4.

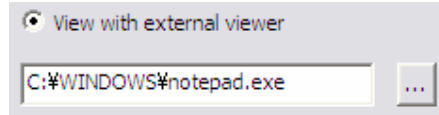
Figure 4-19 View with Internal viewer



(2) If **View with external viewer** is selected.

If **View with external viewer** is selected, use the specified program to indicate.

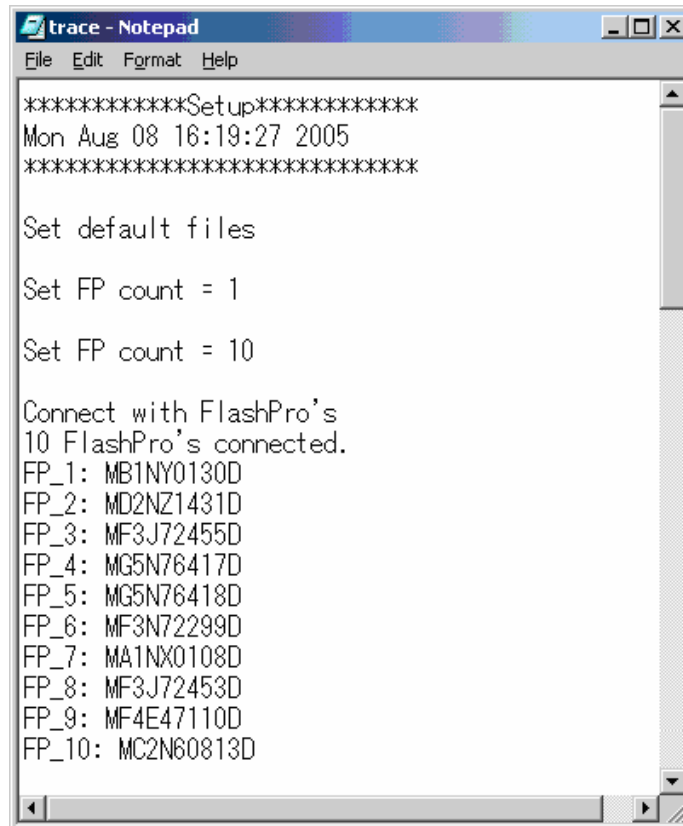
Figure 4-20 Selected View with external viewer (Sample)



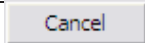
... button

If this button is executed, the Program Selection Window opens. And select a program to indicate the Log File.

Figure 4-21 View with external viewer

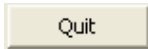



Cancel button



If you select **Cancel button**, close GFP Log view Window with doing nothing.

4.3.3 Quit button



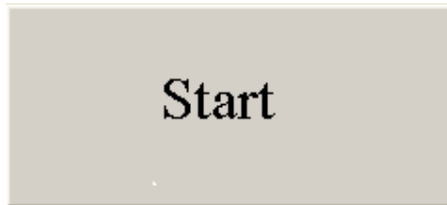
Quit button is prepared to finish GFP4. Also, by clicking  button on the right of the task bar, it allows to finish GFP4.

4.4 Work Space Window

Start button is prepared to execute program. This window indicates the status of PG-FP4 and the programming result, and so on.

Start button


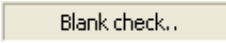
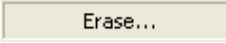
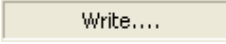
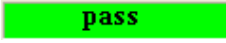

This is EPV start button. Unless set at Set up window, this can't be used on starting of GFP4.



Status

This indicates the status of PG-FP4.

Figure 4-22 Status output display

	: Initial status after set up.
	: During a blank check operation.
	: During an erase operation.
	: During a write operation.
	: When the result is O.K.
	: When the result is N.G.

The number indication of Pass/Error

This indicates the number of the result. Total number of Pass/Error is indicated at the bottom line.

Figure 4-23 command result display

		Pass/Error
1	Pass	6/0
2	Pass	6/0
3	Pass	5/1
4	Pass	6/0
5	Pass	5/1
6	Pass	6/0
7	Pass	5/1
8	Pass	6/0
9	Pass	6/0
10	Pass	6/0
	<input type="button" value="Clear"/>	Total 57/3

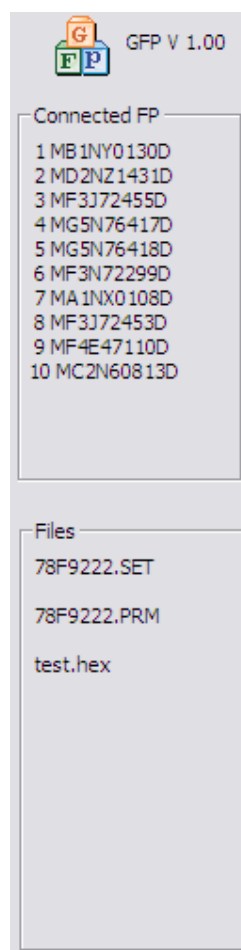
The counted value can be cleared by **Clear button**.

4.5 Information Window

This window indicates the connection and the setting condition of PG-FP4.

- **GFP version**
GFP version is indicated.
- **Connected FP4**
Serial number of the connected PG-FP4 is indicated.
- **Files**
File names of SET/PRM/HEX file, which are set at Set up window, are indicated.

Figure 4-24 Sample screen of the Information Window



5 Example of the use

To have understanding about the basic operational flow of GFP4, this chapter takes μ PD78F9222 as an example. The following operational way provides a case when μ PD78F9222 is taken as a Target device. It explains the way of starting the System and execution of the EPV Command, and completes the program to the Target device.

About this series of operations
In this chapter, the prepared condition for operation is as follows.

Target System

Target device: μ PD78F9222

GFP4

Number of connected units: 10 units
Host Communication: USB
Parameter File: 78F9222.PRM
SET File: 78F9222.SET
HEX File to program: test.hex
Log File: trace.txt

5.1 Installation of the environment of PG-FP4

With referring to the User's Manual of **PG-FP4**, install the environment of PG-FP4 to the Host Machine (If it has not been installed).

5.2 Installation of GFP4

With referring to the **Chapter 2 Installation**, install GFP4 to the Host Machine (If it has not been installed).

5.3 Installation of the Parameter File

Copy the Parameter File for μ PD78F9222 on the Hard disk, install it to <GFP4 install path>\PRM.
Download the parameter file for the PG-FP4 from the following NEC Electronics Web site:

<http://www.eu.necel.com/updates>

5.4 Preparation of the SET File

Create a SET File for μ PD78F9222 by using GUI software of PG-FP4. About the way to create a SET File, please refer to the PG-FP4 user's manual.

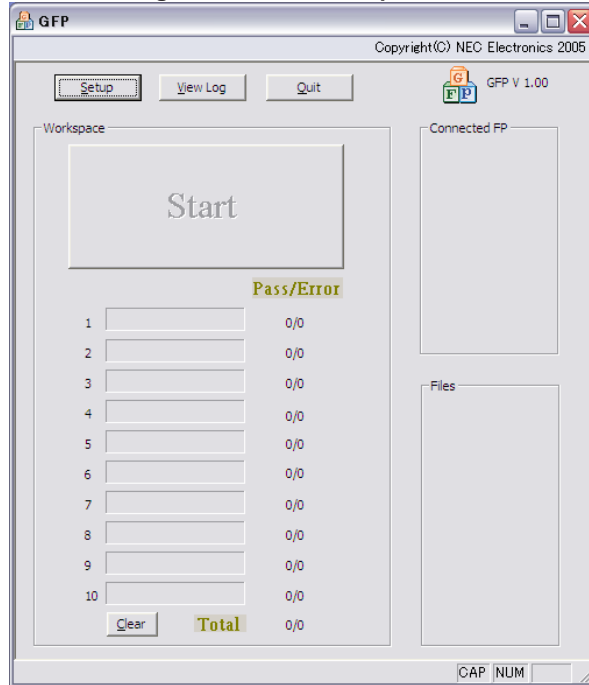
5.5 System Connection and Host Machine Communication Setting

- 1) Connect the Host Machine with PG-FP4 via USB cable.
- 2) Confirm that Power LED of PG-FP4 lights.
- 3) Confirm that the power supply does not provide to the target system and connect PG-FP4 to the target system via target cable.

5.6 Setting of GFP4

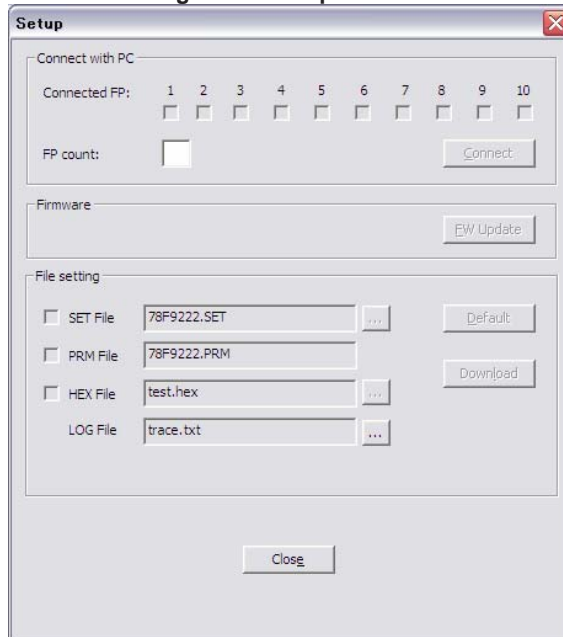
- 1) Complete the GUI software of PG-FP4.
- 2) Start GFP4.

Figure 5-1 GFP4 Startup screen



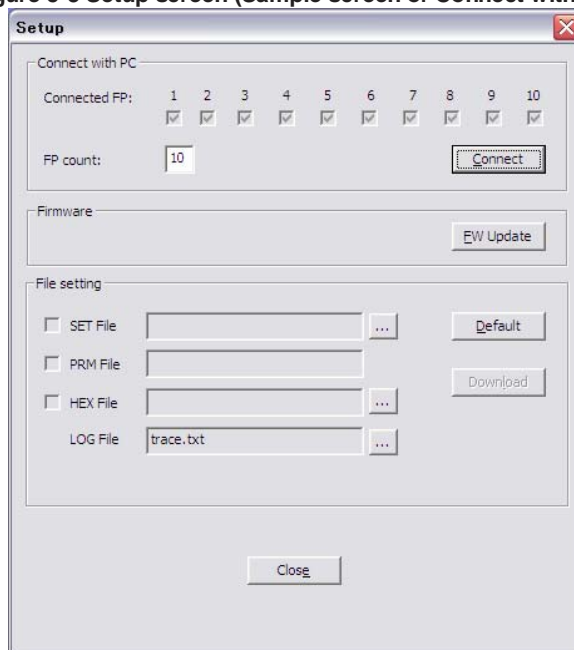
- 3) Select [Setup] button to open the Setup Window.

Figure 5-2 Setup Window



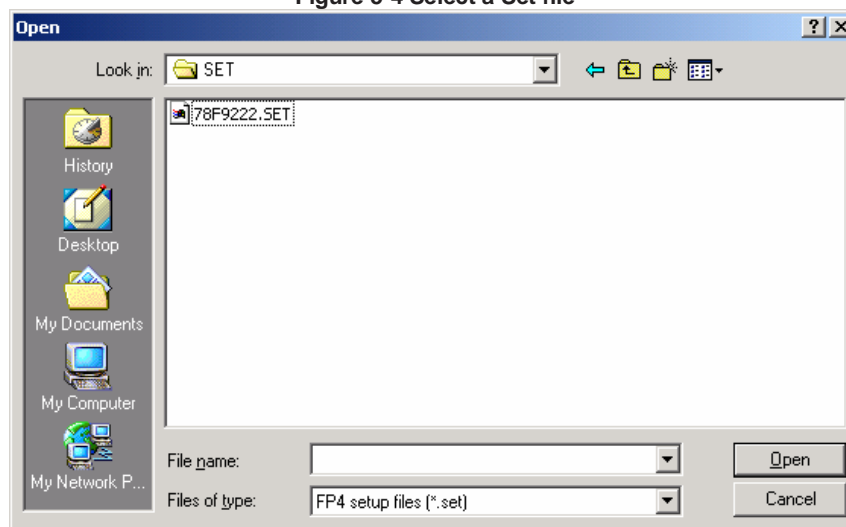
- 4) Input the unit number of PG-FP4, which is to be connected, in FP count: column of Connect with PC:, and select [Connect] button.
- 5) The unit number of PG-FP4, which has the established communication with the Host PC, indicates in the Check Box of Connect with PC.

Figure 5-3 Setup screen (Sample screen of Connect with PC)



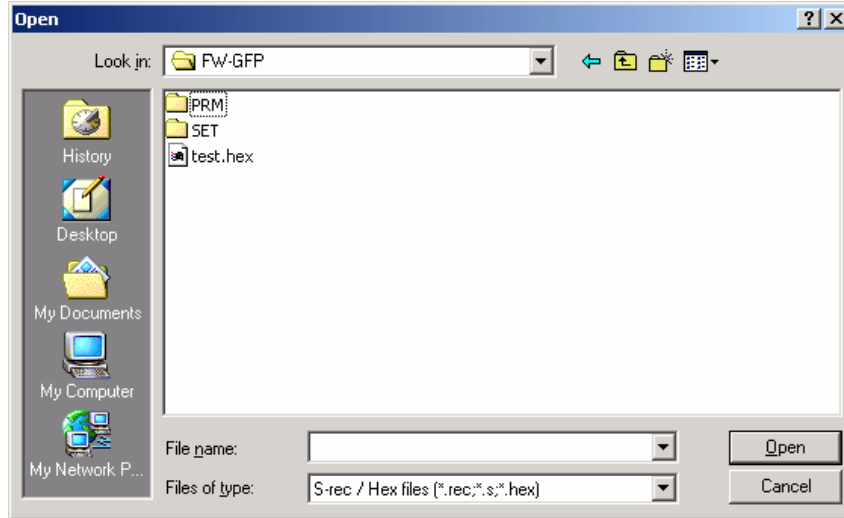
- 6) Click on [...] of SET File of File setting to open the SET File Selection Window. Select the SET File for μ PD78F9222, which is created in the Folder <GFP4 install path>\SET, then click **Open (O)**.

Figure 5-4 Select a Set file



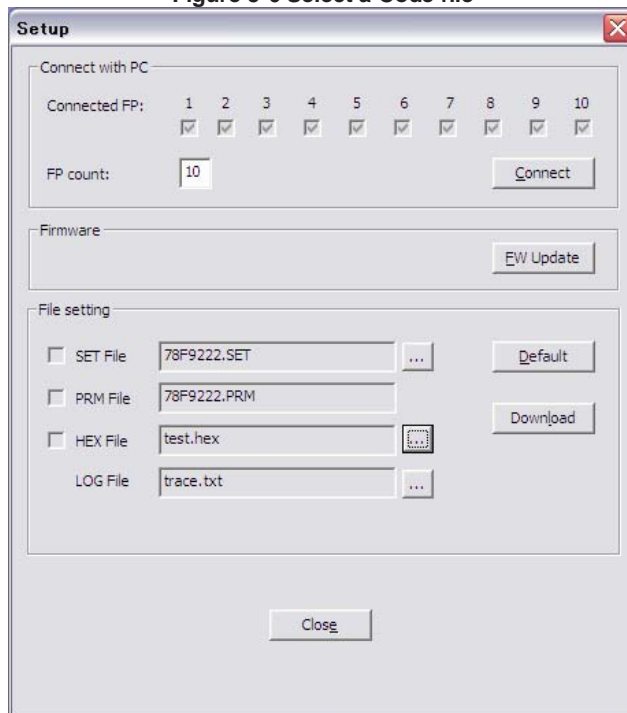
- 7) Click on [...] of HEX file of File Setting to open the Code File Selection Window. Select the file "test.hex", which is created in the Folder <GFP4 install path>, then click **Open (O)**.

Figure 5-5 Select a Code file



- 8) Confirm the settings of the File setting. After this, select [Download] button.
 It causes Files specified at each column of SET file/PRM file/HEX file to be up-loaded to the PG-FP4. And then the Main Window appears.

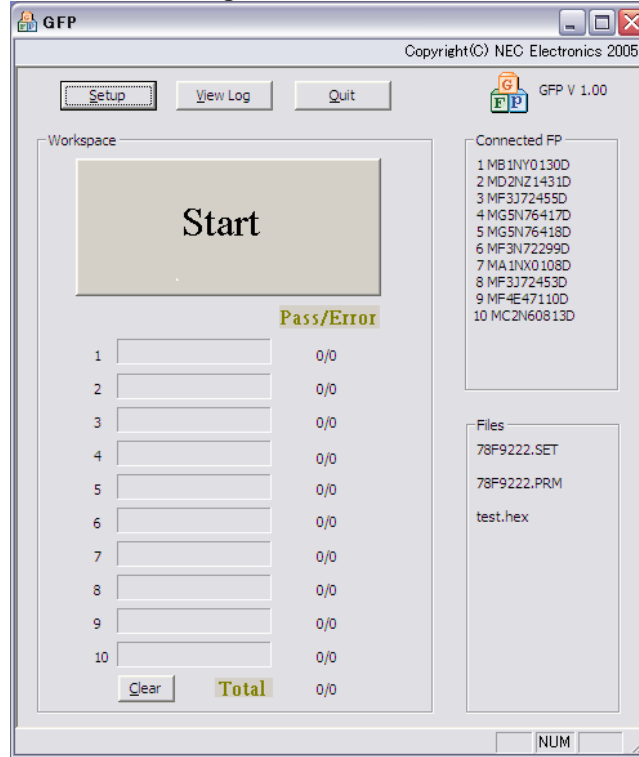
Figure 5-6 Select a Code file



5.7 [E.P.V] Command Execution

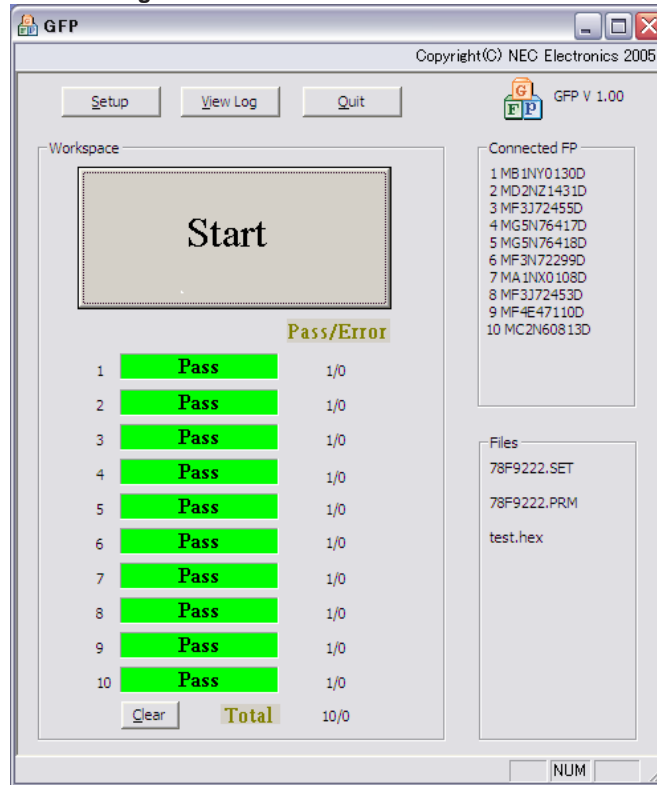
- 1) Select [Start] button.
When select [Start] button, each PG-FP4 program respectively to μ PD789222 in consonance with the condition specified at the SET File preparation.

Figure 5-7 Execute Start



- 2) After program completed, the programming results of each PG-FP4 is indicated on the Work Space Window and [Start] button becomes the waiting status to be selected.

Figure 5-8 Result after the Start execution



5.8 Complete the system

- 1) To complete the system, execute [Quit] button, then GFP4 completes.

6 Cautions

The followings are cautions for this product. Please read cautions on this page in advance.

> Error message E207

If you find this error message, please see the following.



On starting GFP4, if the LOG file is invalid.
(This error is indicated on starting GFP4 and Set up button is ineffective.)

Example:

1. After completed programming and finished GFP4.
2. The trace file is moved to another management folder.
3. When you started GFP4 again, the error indicated.

Workaround: When the error indicates on starting of GFP4, place the LOG file back to the path, where the LOG file existed at the last time execution. Or after delete gfp.ini file, restart GFP4 and set the LOG file again.

> PRM, SET, HEX file (Error indicates when Set up button is pressed.)

Example:

1. Programming completed.
2. Any of PRM, SET, HEX file (or all file) is deleted from the folder.
3. To execute programming again, pressed set up button and the error indicated.

Workaround: Specify each file of PRM, SET, HEX, once again.

> FW Update

On rare occasion, FW Update performance may hang up.

Workaround: If FW Update performance hangs up, once finish GFP4 and PG-FP4. Restart and performance FW Update again.

[MEMO]