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Renesas Flash Programmer V2.05

Flash memory programming software

User's Manual: RL78, 78K, V850

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How to Use This Manual

Target Readers   This manual is intended for users who are using the flash programmer in designing and developing a system that employs a Renesas Electronics microcontroller equipped with on-chip flash memory.

Purpose   This manual is intended to give users an understanding of the basic specifications and correct use of the Renesas flash programmer.

Organization   This manual includes the following sections.

- Basic operation (Basic mode)
- Function details (Basic mode)
- Function details (Full mode)
- Script execution function

How to Read This Manual   It is assumed that the readers of this manual have general knowledge of electricity, logic circuits, and microcontrollers.

Conventions   **Note**:   Footnote for item marked with **Note** in the text.
Caution: Information requiring particular attention
Remark: Supplementary information
Numeral representation: Binary ... xxxx or xxxxB
                               Decimal ... xxxx
                               Hexadecimal ... 0XXXXX or xxxxH
"   ":   Any character or item on the screen that can be selected or input
☐]:   Name of button
[   ]:   Name of commands, dialog boxes, options, or areas on the screen

Related documents   When using this manual, also refer to the following documents.
The related documents indicated in this publication may include preliminary versions.
However, preliminary versions are not marked as such.

Documents related to development tools

Document name	Document number
Renesas Flash Programmer V2.05 Common	R20UT2906E
Renesas Flash Programmer V2.05 RL78, 78K, V850	This manual
Renesas Flash Programmer V2.05 RX100, RX200, RX600 (Except RX64M)	R20UT2908E
Renesas Flash Programmer V2.05 RH850, RX700 (Include RX64M)	R20UT2909E
E1 Emulator R0E000010KCE00 E20 Emulator R0E000200KCT00	R20UT0398E
QB-MINI2 On-Chip Debug Emulator with Programming Function	R20UT0449E
MINICUBE2 Diagnosis Tool	U18588E

Caution   The related documents listed above are subject to change without notice.
Be sure to use the latest version of each document for designing, etc.

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CONTENTS

CHAPTER 1   BASIC OPERATION (BASIC MODE)

This chapter describes the operation method by using the RL78 as the target microcontroller as an example to help you understand a series of basic operations with the basic mode of RFP. This chapter covers how to start the system, execute the [Autoprocedure (E.P)] command, and write the target microcontroller.

• Series of operations described in this chapter:

The operating conditions are as follows:

Target microcontroller:	R5F100LE (RL78/G13)
Target system:	Program adapter
Tool used:	E1
Interface:	UART-ch0 (Single-wire UART)
Interface speed:	1,000,000 bps
Frequency:	None (internal oscillation clock used)
Power supply:	E1 (5.0 V (USB VBUS))
Operating mode:	Chip
Flash option:	Not used
Operation option:	[Blank Check before Erase] enabled

The steps described in this chapter are as follows:
  (1)   Installation
  (2)   System connection
  (3)   Connection of target system
  (4)   Creation of workspace
  (5)   Selection of program file
  (6)   Execution of [Autoprocedure (E.P)] command
  (7)   System shutdown

(1) Installation
   See **Common CHAPTER 2 INSTALLATION** and install in the host PC.

(2) System connection
   Connect the USB connector of RFP to the USB port on the host PC using a USB cable.

**(3) Connection of target system**
   Connect the target cable of the tool used to the target system.

   Remark   Connect the target system before supplying V_{DD} power from the target system.

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(4) Creation of workspace

<1> On the taskbar, click the ⌐Start⌐ button, point to [All Programs], [Renesas Electronics Utilities], [Programming Tools], [Renesas Flash Programmer V*x.xx*], and then click [Renesas Flash Programmer V*x.xx*]. The [Welcome!] dialog box will open. Select [Create new workspace.], select [Basic mode], and then click the ⌐Next⌐ button to open the [Create a new workspace] dialog box.

Figure 1-1. [Welcome!] Dialog Box
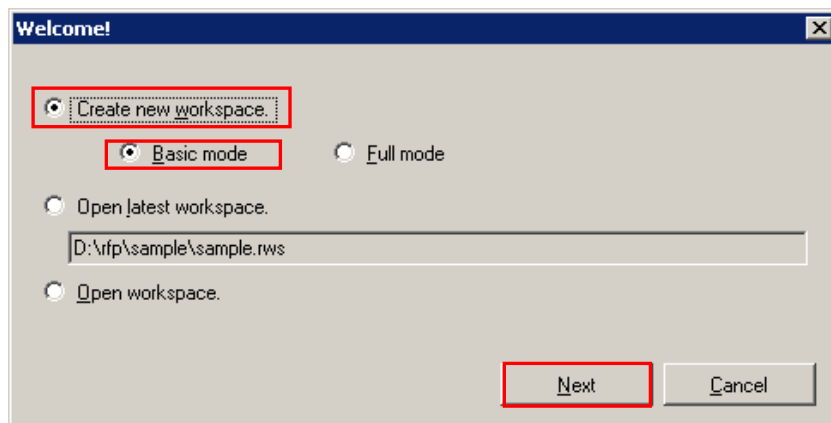
<2> In the [Using Target Microcontroller:] list box, select "R5F100LE". Enter any text string (such as "sample" in this case) in the [Workspace Name:] box, and specify any folder in the [Folder:] box.
Clicking the ⌐Next⌐ button displays the [Communication Interface] dialog box.

Figure 1-2. [Create new workspace] Dialog Box
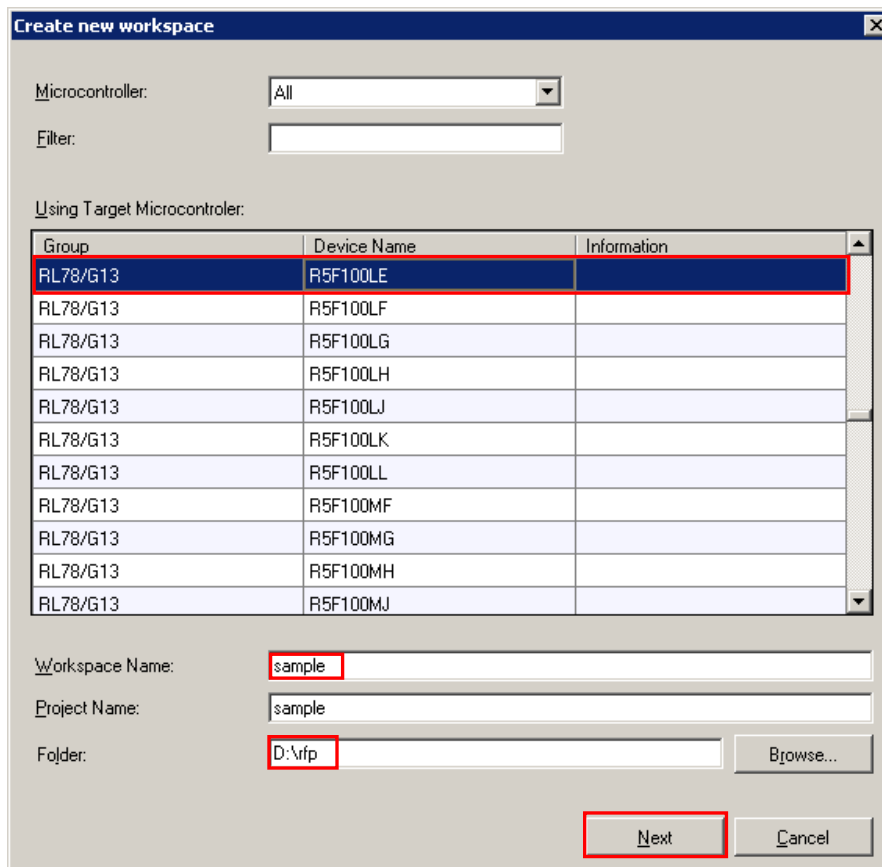
<3> Select "E1" in the [Communication Interface] dialog box. For R5F100LE, the selection in the [Interface] list box is fixed to "UART-ch0" (Single-wire UART).
Clicking the Next button displays the [Frequency] dialog box.

Figure 1-3. [Communication Interface] Dialog Box
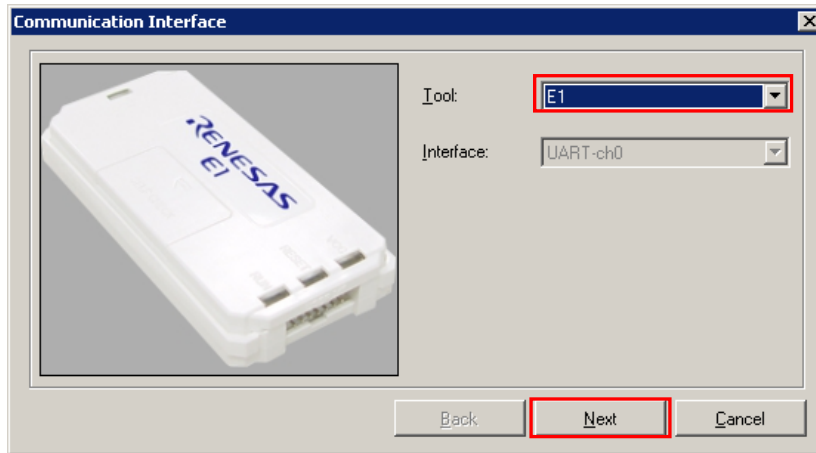
<4> Select "1,000,000bps" from the [Interface Speed:] list box. For R5F100LE, the [Supply Oscillator] area is fixed to "Internal-OSC".
Clicking the Next button displays the [Power Supply] dialog box in the case of E1.

Figure 1-4. [Frequency] Dialog Box
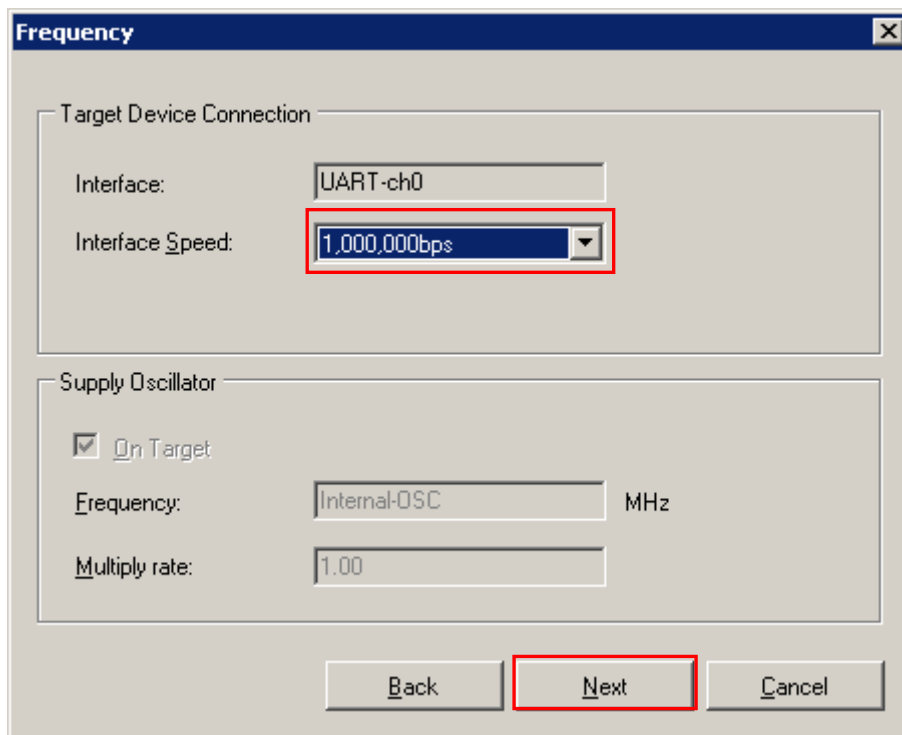
<5> Select the [Power target from the emulator] check box, and then select "5.0V (USB VBUS)" for [Supply voltage].
Clicking the Next button displays the [Project Settings] dialog box.

Figure 1-5. [Power Supply] Dialog Box
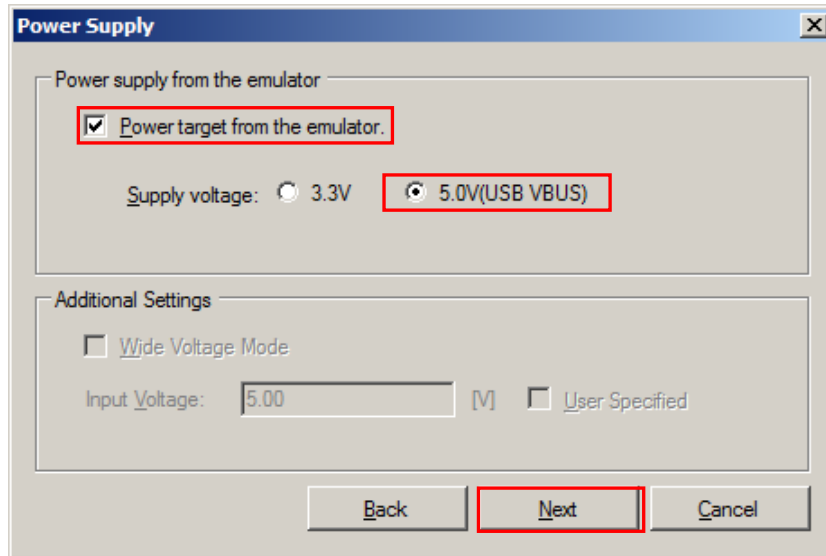
<6> The [Basic Settings] tab of the [Project Settings] dialog box shows the basic information about writing data. Clicking the [Other Settings] tab of the [Project Settings] dialog box displays the [Other Settings] tab screen of the [Project Settings] dialog box.

Figure 1-6. [Basic Settings] Tab of the [Project Settings] Dialog Box
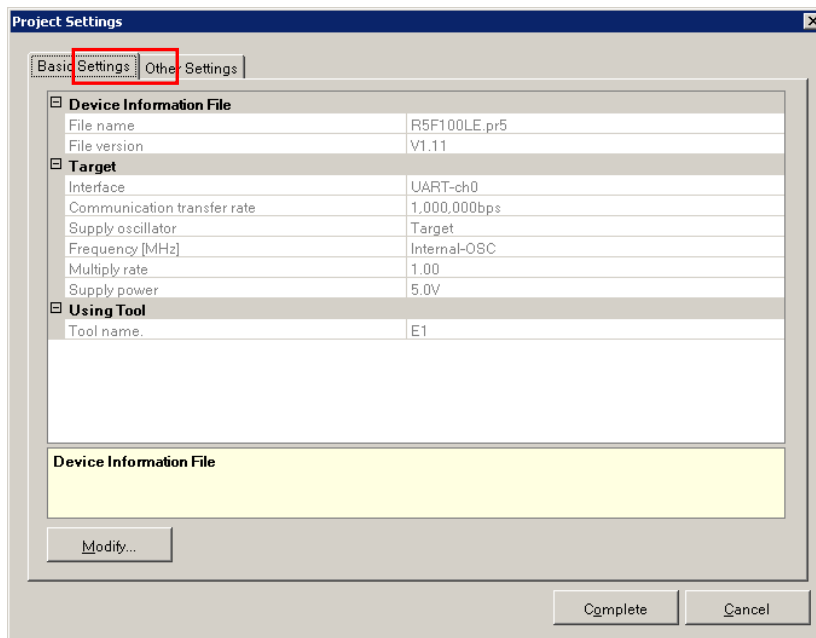
<7> The [Other Settings] tab of the [Project Settings] dialog box allows you to view and set advanced details of writing data. "Chip" is the default value for [Operation mode] under the [Target] category, and the default value for "Blank Check before Erase" in the [Command Options] category is "Valid".
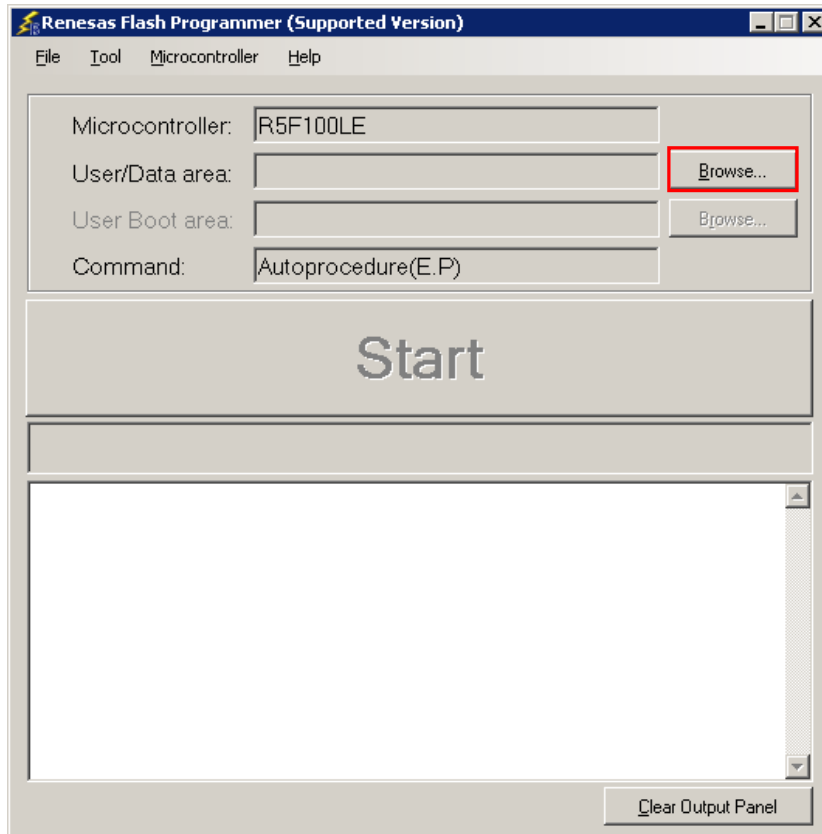Clicking the Complete button saves the project file and displays the main window.

Figure 1-7. [Other Settings] Tab of the [Project Settings] Dialog Box
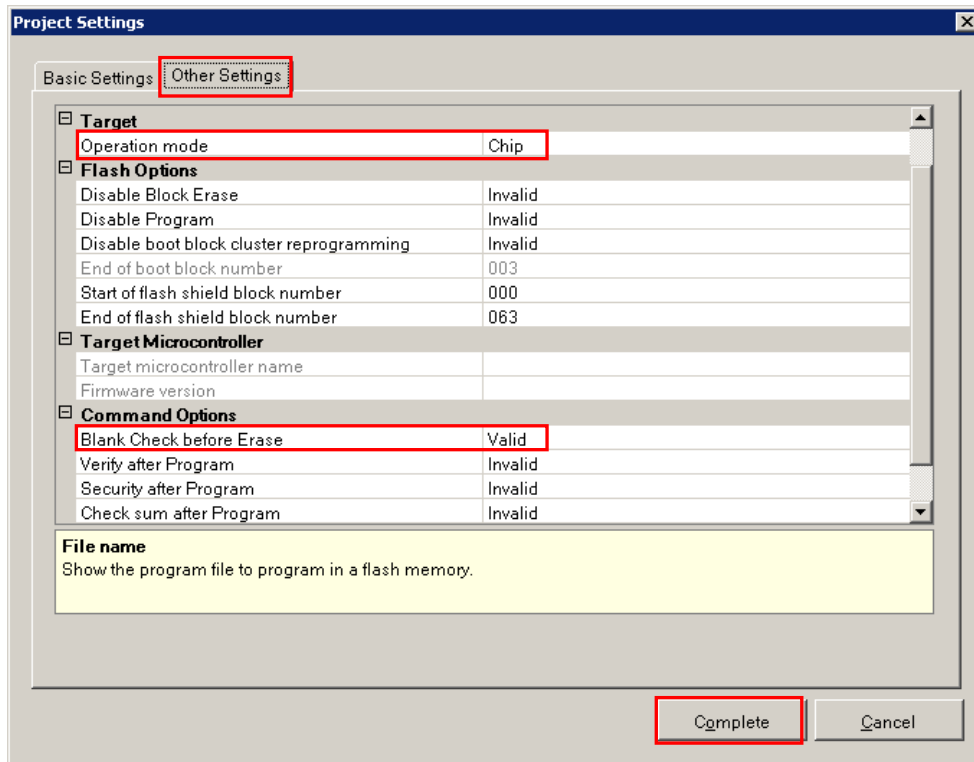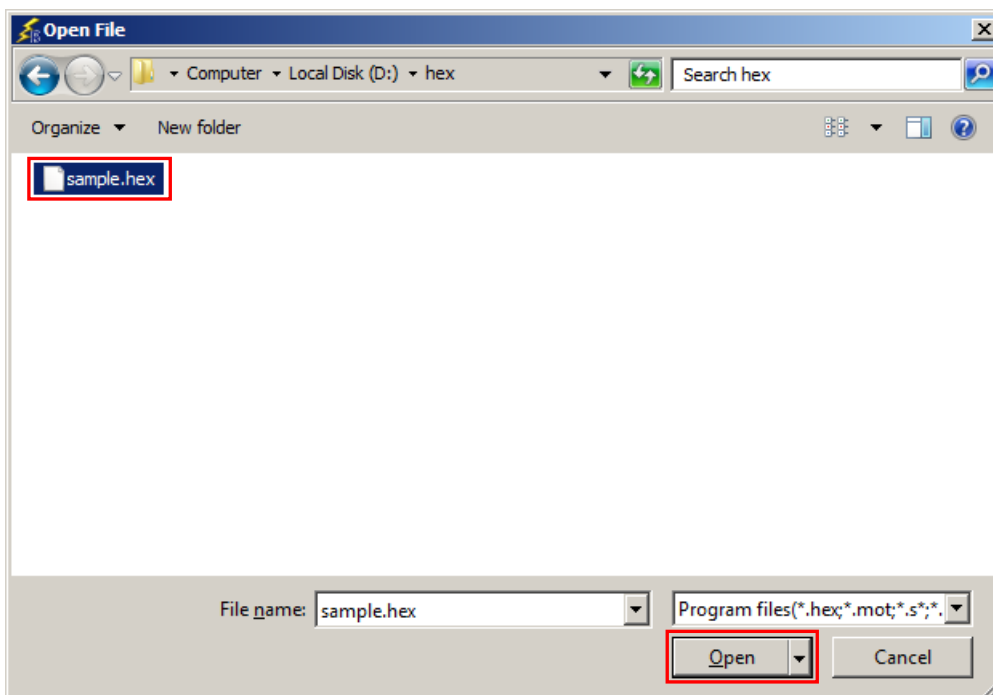
(5) Selection of program file

<1> Click the Browse… button in "User/Data area:" of the program file area to open the [Open File] dialog box.

Figure 1-8. Main Window

<2> Select "sample.hex" in the [Open File] dialog box, and then click the Open button to open the main window.

Figure 1-9. [Open File] Dialog Box

(6) Execute the [Autoprocedure (E.P)] command

<1> Click the [Microcontroller] menu and select the [Autoprocedure (E.P)] command.　A check mark is then placed on the left of the command, and the command is assigned to the Start button.

Figure 1-10.　Main Window
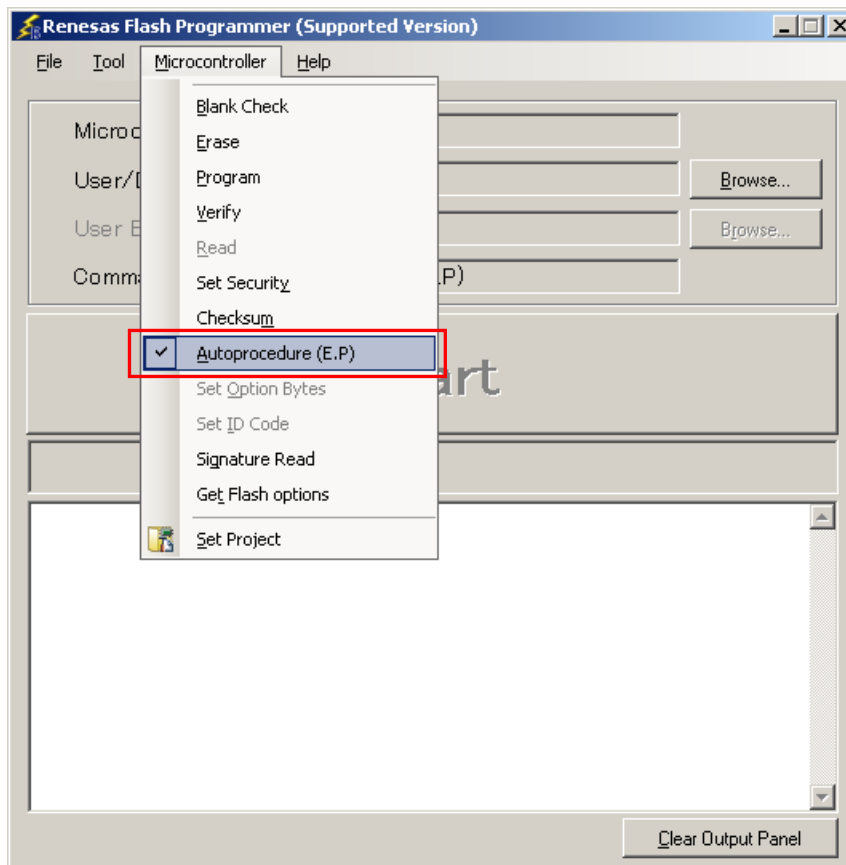
<2> After clicking the Start button, execute the following commands in the following order for R5F100LE: [Blank Check] command, [Erase] command (if there are no blanks), and [Program] command.

<3> When execution of the [Autoprocedure (E.P)] command ends normally, "------ End(Autoprocedure(E.P)) ------" is displayed on the output panel.

Remarks 1. When necessary, insert the target microcontroller (microcontroller to be programmed) into the program adapter, then execute the [Autoprocedure (E.P)] command.
2. When supplying V_{DD} power to the target system, first turn off the power, connect the target system (for programming), and then turn on the power and execute the [Autoprocedure (E.P)] command.

Figure 1-11. [Autoprocedure (E.P)] Command Execution Results
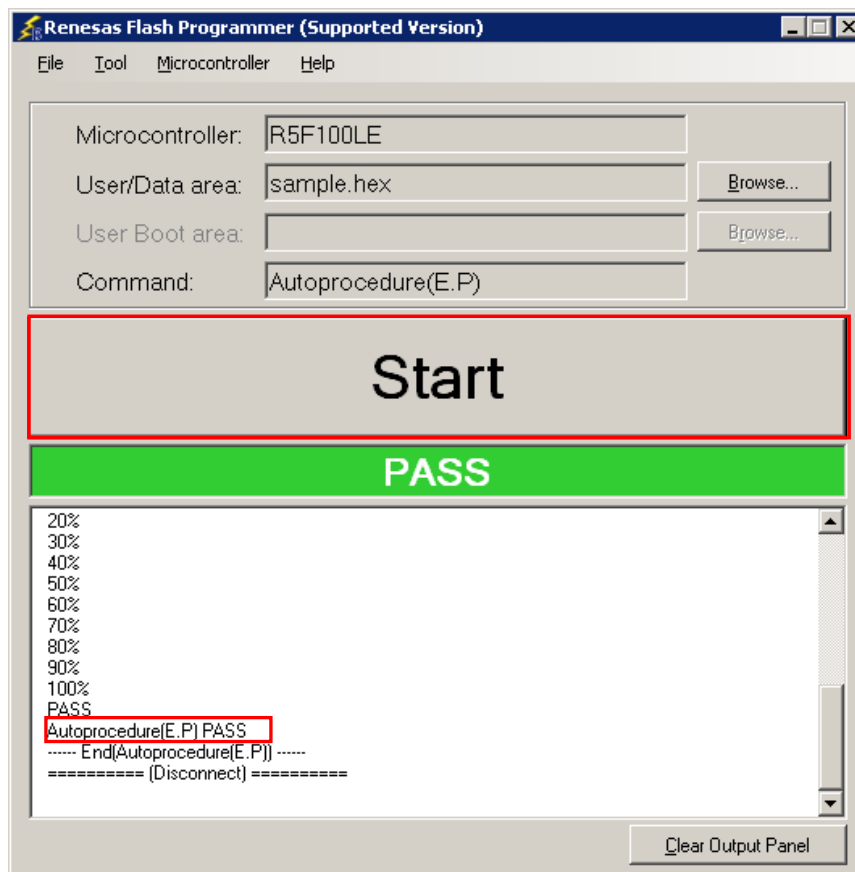
(7) System shutdown

<1> Disconnect the target cable from the target system.

     Remark   When supplying V_{DD} power to the target system, turn off the power before removing the target cable.

<2> Unless there are other target microcontrollers to be programmed, click the [File] menu and select the [Exit] command to close RFP. Because all settings made so far will be saved to a project file, they can be reused after RFP is restarted.

<3> Remove the USB cable from the tool used.

Caution   **If an error occurs during the above procedure, see Common CHAPTER 4 TROUBLESHOOTING and APPENDIX A MESSAGES.**
         Also see the user's manual of the tool used and execute diagnostic tests.
         If the above still does not resolve the problem, see the FAQ (at http://www.renesas.com/support/), or contact Renesas via the Renesas website:
         http://www.renesas.com/contact/.

CHAPTER 2   FUNCTION DETAILS (BASIC MODE)

This chapter describes function details of the commands, windows, and dialog boxes of the basic mode of RFP.

2.1   Introduction

Make sure that the RFP package is installed. For how to install the RFP package, see **Common CHAPTER 2 INSTALLATION**. Before starting RFP, make sure that the debugger and utility are not running.

2.2   Starting up

On the taskbar, click the Start button, point to [All Programs], [Renesas Electronics Utilities], [Programming Tools], [Renesas Flash Programmer V*x.xx*], and then click [Renesas Flash Programmer V*x.xx*]. The [Welcome!] dialog box will open.

Follow the instructions that appear in the wizard. When setup is finished, the main window is displayed. The [Frequency] and the [Power Supply] dialog boxes are skipped if it is not necessary to change the setting.

**Figure 2-1. Dialog Boxes Displayed in the Startup Wizard**
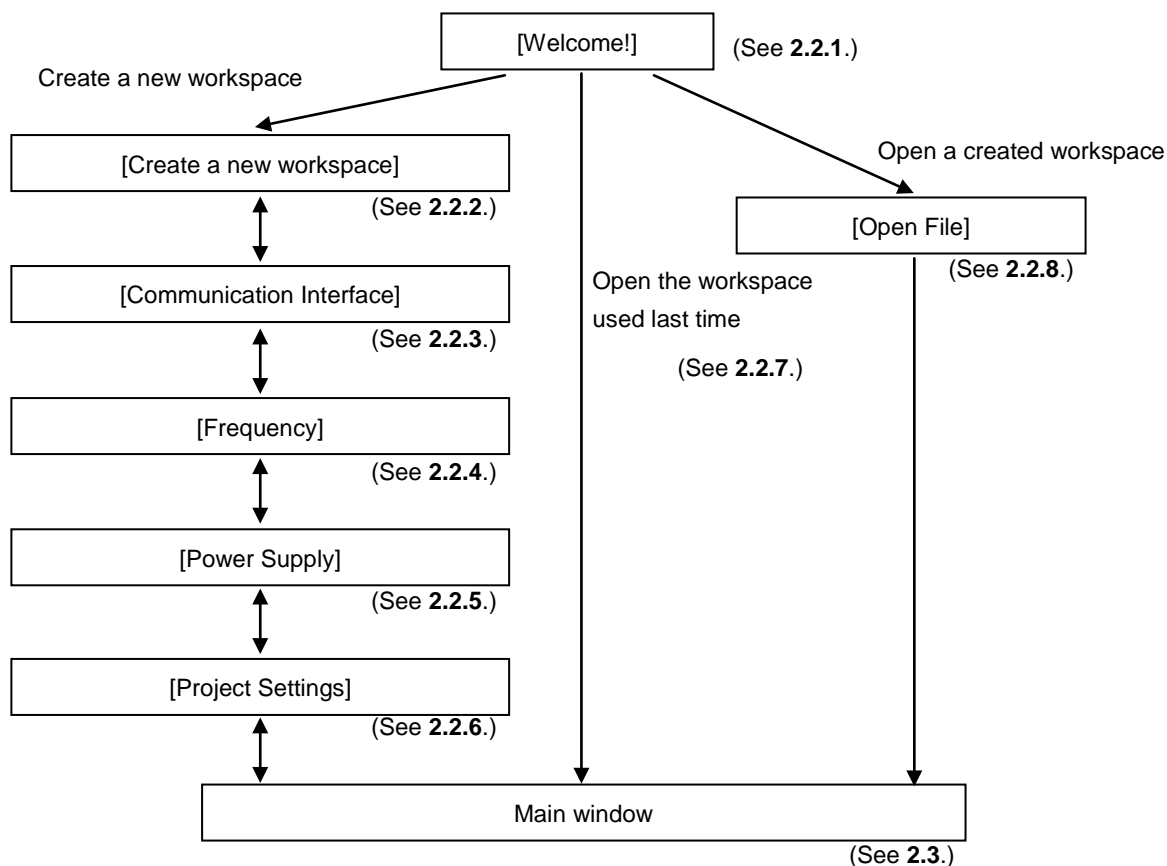
Or a main window is opened by the following method. In the case of (1), the main window of the version installed recently opens.

(1) Double clicking a workspace file.

(2) Dragging and dropping a workspace file onto RFP.exe.

(3) Typing RFP.exe followed by the name of a workspace file at the command prompt and so on; then executing it.

2.2.1   [Welcome!] dialog box

This dialog box is used to make a selection about a workspace.

Figure 2-2. [Welcome!] Dialog Box
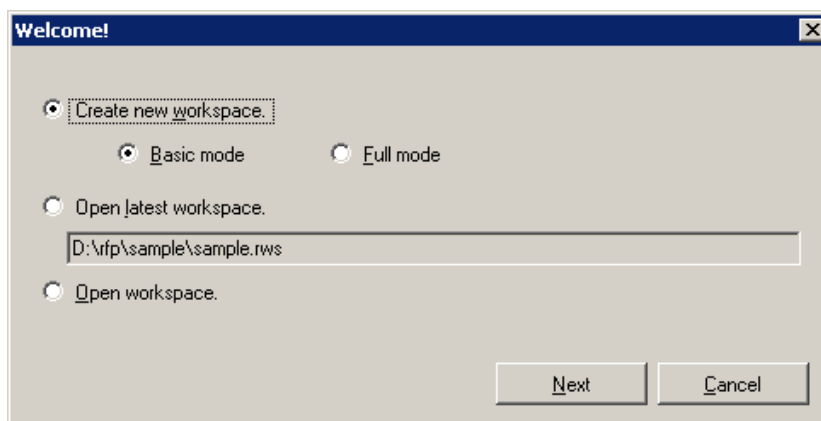
To create a new workspace, select [Create new workspace.], and also select [Basic Mode] or [Full Mode].

To open the workspace used last time, select [Open latest workspace.].

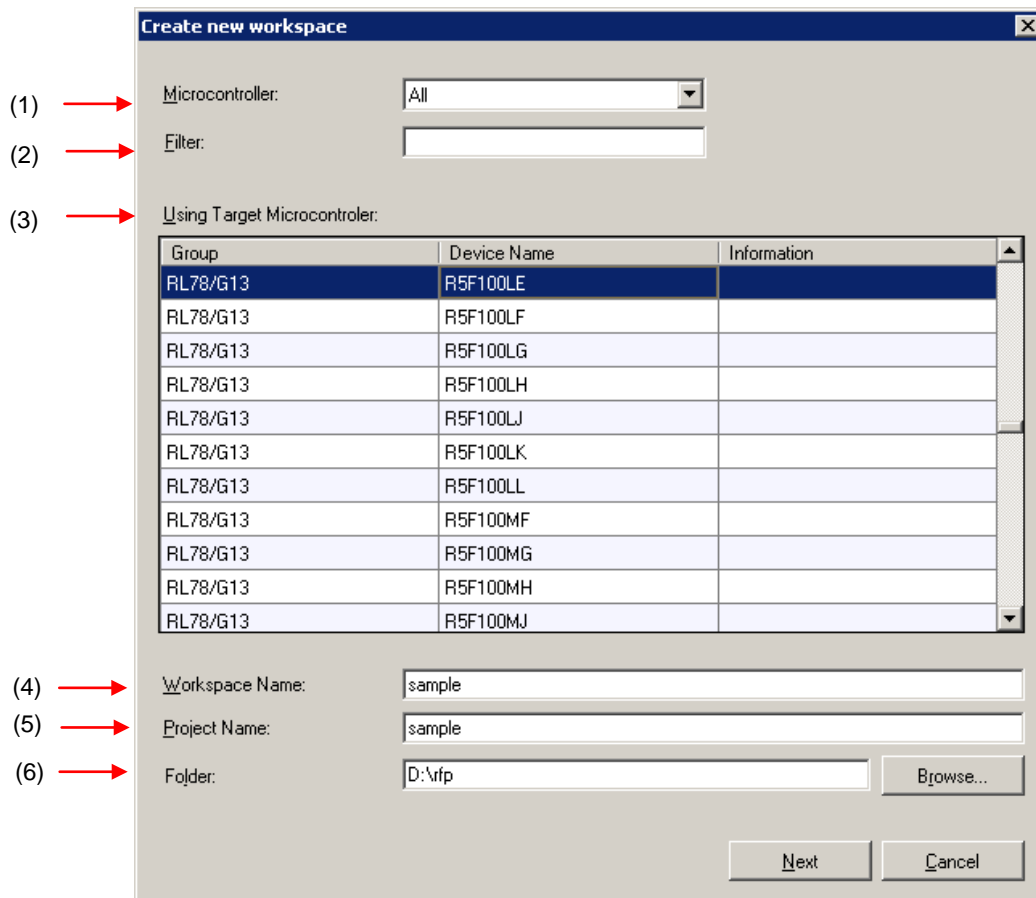To open a created workspace, select [Open workspace.].

Clicking the Next button displays the next dialog box.

Clicking the Cancel or the X button terminates RFP.

2.2.2 [Create new workspace] dialog box

This dialog box is used to create a new workspace.

Figure 2-3. [Create new workspace] Dialog Box

(1) [Microcontroller:] list box

Select "All", "Generic Boot Device", "V850", "RL78", or "78K" to narrow down the microcontrollers that can be selected in the [Using Target Microcontroller:] list box.

(2) [Filter:] box

Enter a character string that matches the character strings displayed in the [Using Target Microcontroller:] list box to narrow down the microcontrollers that can be selected in the [Using Target Microcontroller:] list box.

(3) [Using Target Microcontroller:] list box

Select the target microcontroller to be used.

(4) [Workspace Name:] box

Enter the workspace name in this box.

(5) [Project Name:] box

Enter the project name in this box.

(6) [Folder:] box

Specify a folder in which to create the workspace file. Enter the path in the [Folder:] box, or click the [Browse...] button to display the [Select Folder] dialog box, and then specify the folder.

Clicking the [Next] button displays the next dialog box.
Clicking the [Cancel] or the [X] button terminates RFP.

2.2.3 [Communication Interface] dialog box

This dialog box is used to select the tool used and the connection method used for communication between the selected tool and the target microcontroller.

Figure 2-4. [Communication Interface] Dialog Box
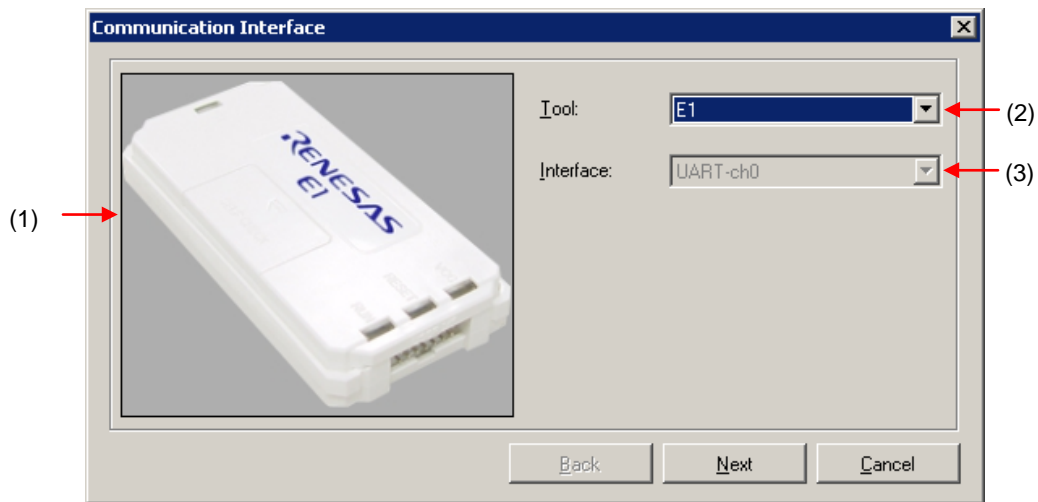
(1) Tool image panel

An image of the tool selected in the [Tool:] list box is displayed.

Figure 2-5. Tool Image Panel

(2) [Tool:] list box

Select the tool to be used.

- E1
- E20
- MINICUBE2
- COMx

(3) [Interface:] list box

Select the method used for communication between the selected tool and the target microcontroller. For the selectable methods, see the user's manual of the target microcontroller.

- UART-ch0 (when using the UART feature of RL78 (Single-wire UART), 78K, or V850)
- SIO-ch0 (when using V850E2)
- SIO-H/S (when using the SIO-H/S feature of V850ES or V850E1)
- UART-X1-OSC (when using the X1 clock of 78K0)
- UART-EXCLK (when using the EXCLK input clock of 78K0)
- UART-Int-OSC (when using the internal oscillation clock of 78K0)

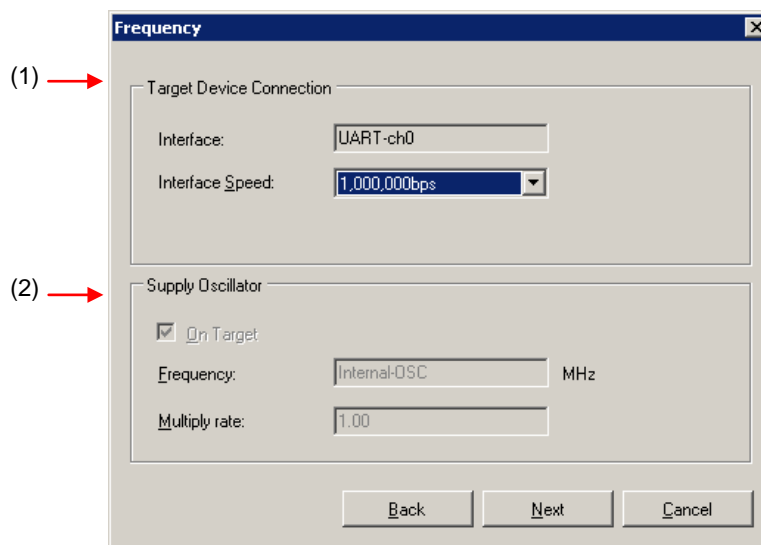Clicking the [Next] button displays the next dialog box.
Clicking the [Cancel] or the [X] button terminates RFP.
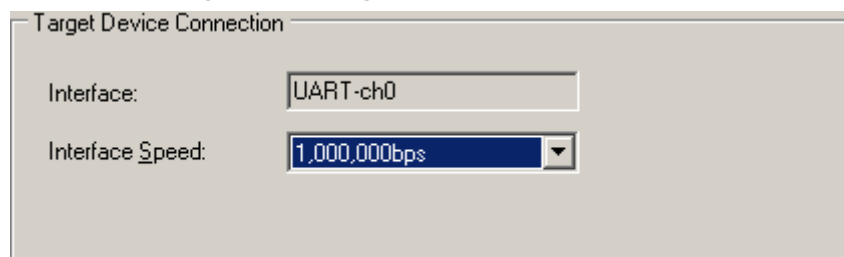
2.2.4 [Frequency] dialog box

This dialog box is used to specify the communication speed and the clock.

Figure 2-6. [Frequency] Dialog Box

(1) [Target Device Connection] area

This area is used to select the communication speed of the connection method.

Figure 2-7. [Target Device Connection] Area

[Interface:] box

The connection method between the tool used and the target microcontroller is displayed.

[Interface Speed:] list box
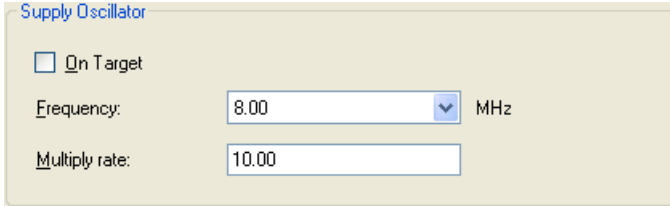
Select the communication speed for the connection method. For the selectable communication speeds, see the user's manual of the target microcontroller.

- When UART-ch0, UART-X1-OSC, UART-EXCLK, or UART-Int-OSC is selected:
  - 9,600 bps
  - 19,200 bps
  - 31,250 bps
  - 38,400 bps
  - 57,600 bps
  - 76,800 bps
  - 115,200 bps
  - 125,000 bps
  - 128,000 bps
  - 153,600 bps
  - 250,000 bps
  - 500,000 bps
  - 1,000,000 bps

- When SIO-ch0 or SIO-H/S is selected:
  - 0.25 MHz
  - 0.5 MHz
  - 1 MHz
  - 2 MHz

(2) [Supply Oscillator] area

This area is used to specify the clock to be supplied to the target device.

Figure 2-8. [Supply Oscillator] Area

[On Target] check box

Specify whether to supply a clock to the target microcontroller by using the clock generated in the target system or the clock generated by the tool used. Select the check box to specify the clock generated in the target system. Clear the check box to specify the clock generated by the tool used.

[Frequency:] text box

Select the oscillation frequency of the clock supplied to the target microcontroller. When using the clock generated in the target system, input its oscillation frequency. When using the clock generated by the tool used, input one of the frequencies below. For the selectable frequency, see the user's manual for the target microcontroller.

- 4.00
- 8.00
- 16.00

[Multiply rate:] text box

Specify the multiplication ratio of the clock supplied to the target microcontroller. If the target microcontroller includes the PLL circuit, input the multiplication ratio in accordance with the environment used. If the target microcontroller does not include the PLL circuit, enter "1.0". For the selectable multiplication ratio, see the user's manual for the target microcontroller.

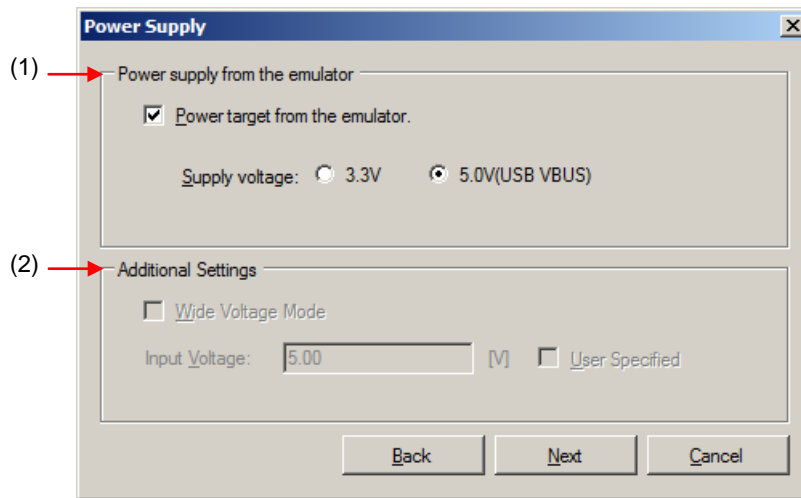Clicking the ⎍Back⎍ button displays the previous dialog box.
Clicking the ⎍Next⎍ button displays the next dialog box.
Clicking the ⎍Cancel⎍ or the ⎍X⎍ button terminates RFP.

4.2.5   [Power Supply] dialog box

This dialog box is used to specify the power supply and other options used for writing to the target microcontroller.

Figure 2-9. [Power Supply] Dialog Box

(1) [Power supply from the emulator] area

This area is used to specify the power supply used for writing to the target microcontroller and the VDD value.

[Power target from the emulator] check box

Select this check box if supplying power from E1. Clear this check box if supplying power from the target system.

[Supply voltage:] option button

When supplying power from the tool used, select a voltage of 3.3 V or 5.0 V (USB VBUS).

Caution   E1 and MINICUBE2 support the power supply function. In the mass-production process, do not use the power supply function of E1 or MINICUBE2. Instead, supply the power suitable for the microcontroller specifications from the target system. The supply voltage from E1 and MINICUBE2 is dependent on the USB power performance of the host PC, so the accuracy cannot be guaranteed.

(2) [Additional Settings] area
This area is used to set power supply options.

[Wide Voltage Mode] check box
Select whether to use wide-voltage mode or full-speed mode. If this check box is selected, commands are executed in wide-voltage mode. If this check box is cleared, commands are executed in full-speed mode. This check box becomes available when a microcontroller that supports this feature is selected. For details about wide-voltage mode and full-speed mode, see the user's manual of the target microcontroller.

Caution   When an HCUHEX file is read, the HCUHEX file is handled as master data. As a result, the settings specified in the HCUHEX file are applied and this check box is unavailable.

[Input Voltage:] box
Input the voltage supplied to the target microcontroller.

 [User Specified] box
   Select the method of input for the value of the voltage to be supplied to the target microcontroller. If this checkbox is selected, the voltage value is input directly in the [Input Voltage] box. If this checkbox is not selected, the voltage value that is detected by using the voltage detection function of the E1/E20 is used.
Normally, do not select this checkbox.
Note that there are cases where an error message (E1002004: "Communication failure or timeout") which indicates an abnormal voltage value for the MCU might occur due to a voltage out of the range of operation being detected due to an error in voltage detection by the E1/E20. In such cases, select the box and enter the actual value for voltage to the target system in the [Input Voltage] box.
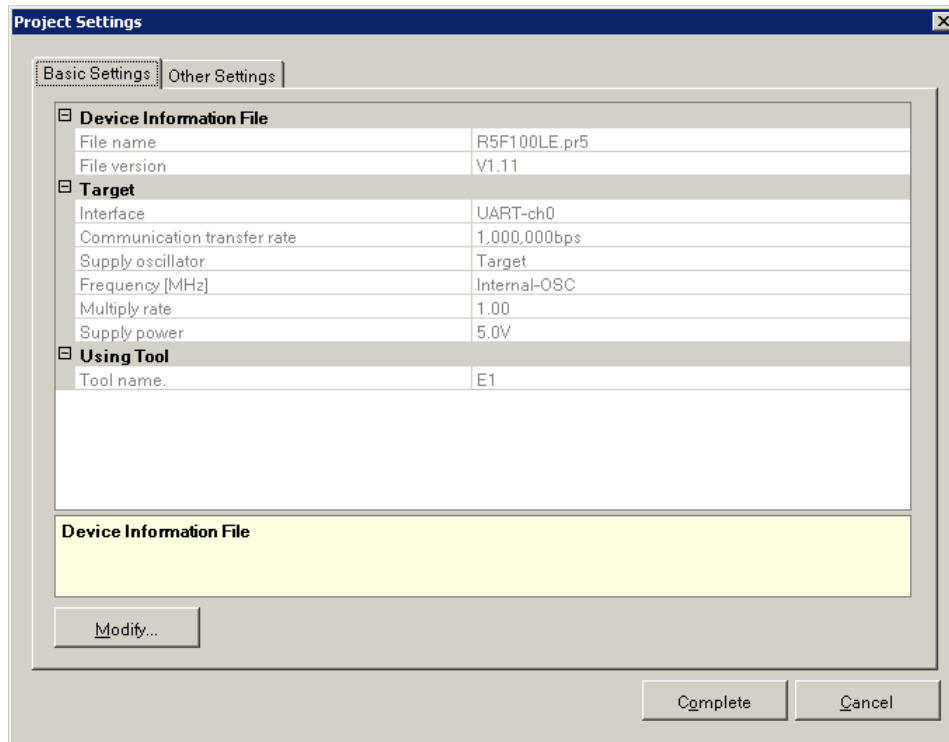
Clicking the Back button displays the previous dialog box.
Clicking the Next button displays the next dialog box.
Clicking the Cancel or the X button terminates RFP

2.2.6 [Project Settings] dialog box

This dialog box is used to check and change the project settings. The [Basic Settings] tab and [Other Settings] tab are provided, each of which allowing you to set a different type of setting categories.

Figure 2-10. [Project Settings] Dialog Box

For details about each item of the dialog box, see **2.4.3 (13) (d), [Project Settings] dialog box**.

Clicking the Modify… button displays the [Communication Interface] dialog box.

Clicking the Complete button saves the project file and displays the main window.

Clicking the Cancel or the X button terminates RFP.

2.2.7 Open latest workspace

If you select [Open latest workspace.] in the [Welcome!] dialog box, the main window is displayed with the settings for the workspace used last time.

Figure 2-11. [Open latest workspace.]
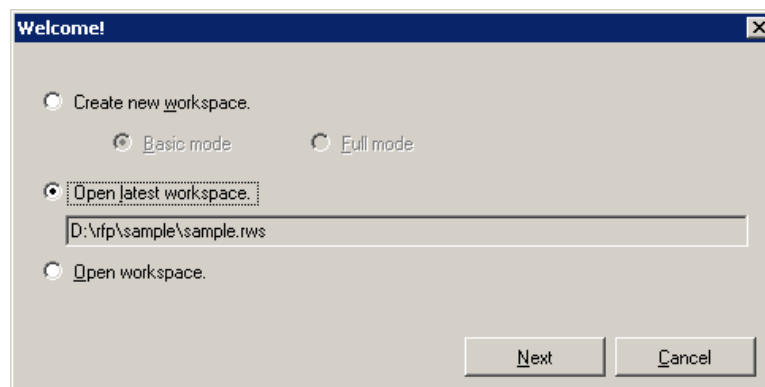
2.2.8   Open workspace

If you select [Open workspace.] in the [Welcome!] dialog box, the [Open File] dialog box is displayed.

Figure 2-12.   [Open workspace.]

Figure 2-13.   [Open File] Dialog Box
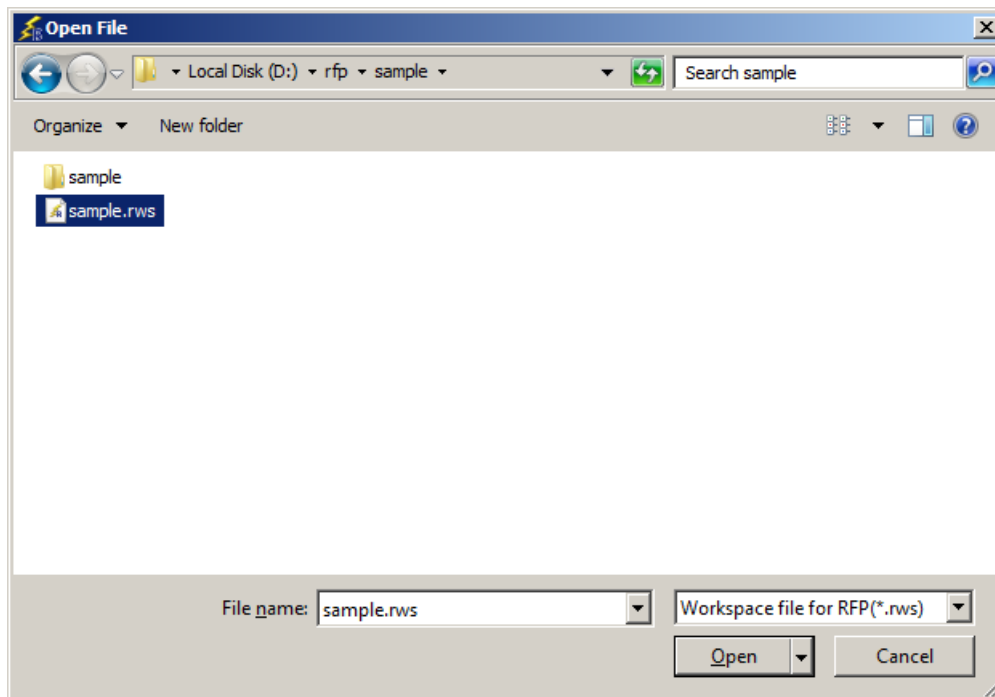
Select a workspace file, and then click the Open button. The main window is displayed with the settings for the specified workspace.

Clicking the Cancel or the X button closes the [Open File] dialog box and opens the [Welcome!] dialog box.

2.3   Main Window
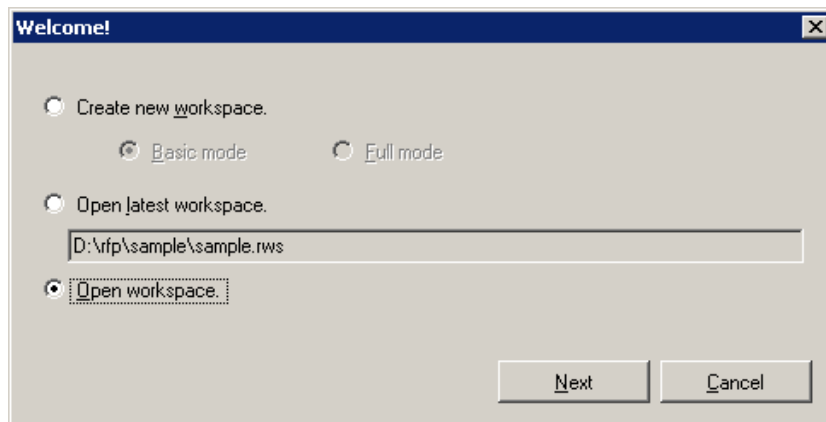
The main window consists of the following items:

Figure 2-14. Main Window
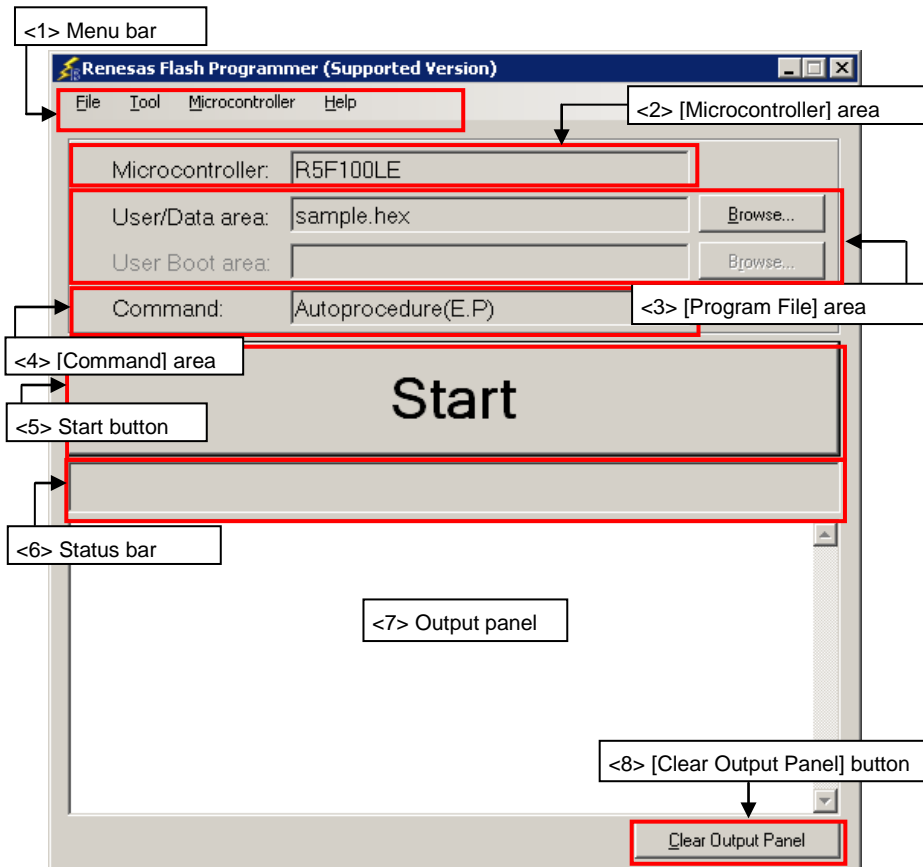
	Name	Description	See
<1>	Menu bar	Displays the selectable menus	2.4
<2>	[Microcontroller] area	Displays the selected target microcontroller	2.5
<3>	[Program File] area	Displays the selected program file	2.6
<4>	[Command] area	Displays the selected command	2.7
<5>	Start button	Executes the selected command	2.8
<6>	Status bar	Displays the command execution status in colors and text	2.9
<7>	Output panel	Displays in detail what is executed by the command	2.10
<8>	[Clear Output Panel] button	Clears the output panel display	2.11

2.4   Menu Bar

The menu bar consists of [File], [Tool], [Microcontroller], and [Help]. When a menu is selected, the pull-down menu is displayed where the items can be selected. Some items may be disabled depending on the settings. When an HCUHEX file has been selected, the HCUHEX file is handled as master data. As a result, the [Program], [Read], [Set Security], [Set Option Bytes], and [Set ID Code] commands become unavailable.

2.4.1   [File] menu

The following pull-down menu appears by selecting the [File] menu.

Figure 2-15.   [File] Menu
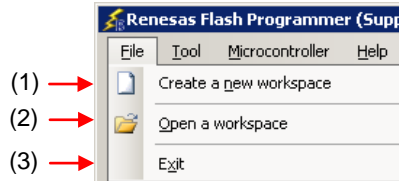
(1)   [Create a new workspace]

The [Create a new workspace] dialog box is displayed. Create a new workspace. Save the project file that has been created. For the items in the dialog box, refer to **2.2.2**.

Figure 2-16.   [Create a new workspace] Dialog Box
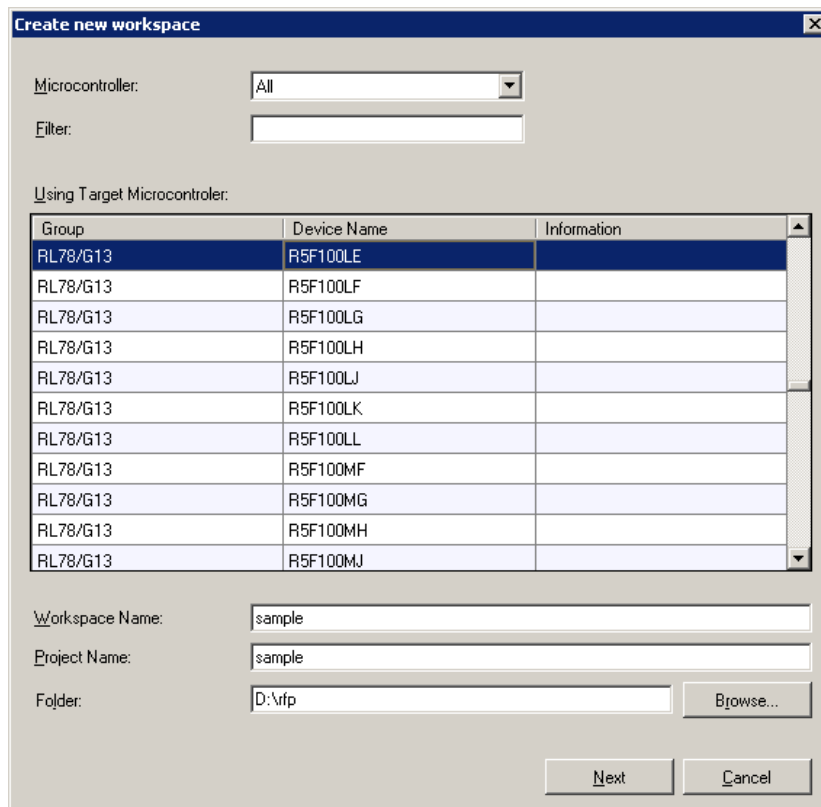
(2) [Open a workspace]

Selecting this option opens the [Open file] dialog box in which you can open a workspace created before. Save the project file that has been created. For the items in the dialog box, refer to 2.2.8.

Figure 2-17. [Open File] Dialog Box
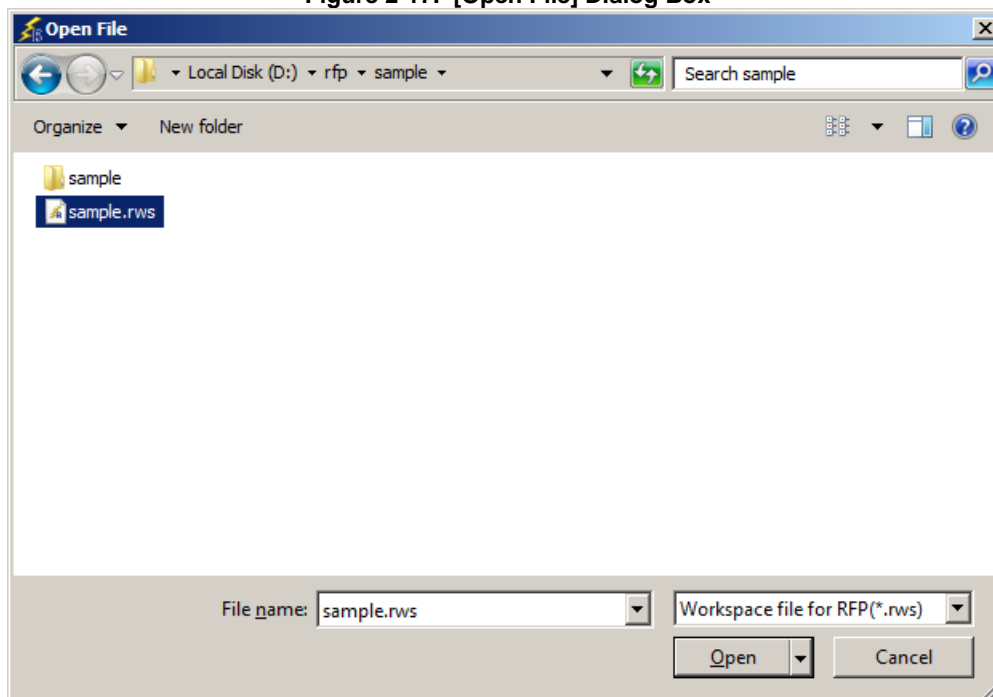
(3) [Exit]

[Exit] terminates RFP. RFP can also be terminated by clicking the ⊠ button on the right end of the title bar in the main window. When RFP is terminated, various settings are saved in the `rfp.ini` file. Save the project file that has been created.

2.4.2   [Tool] menu

Selecting the [Tool] menu displays the pull-down menu as shown in the figure below.

Figure 2-18. [Tool] Menu
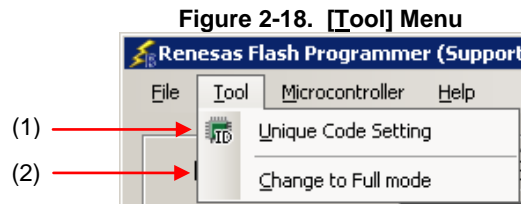
(1) [Unique Code Setting]

Selecting this option displays the [Unique Code Setting] dialog box, in which you make settings for imbedding unique codes. Save the project file that has been created. For the items in the dialog box, refer to **Common Chapter 3**.

Figure 2-19. [Unique Code Setting] Dialog Box
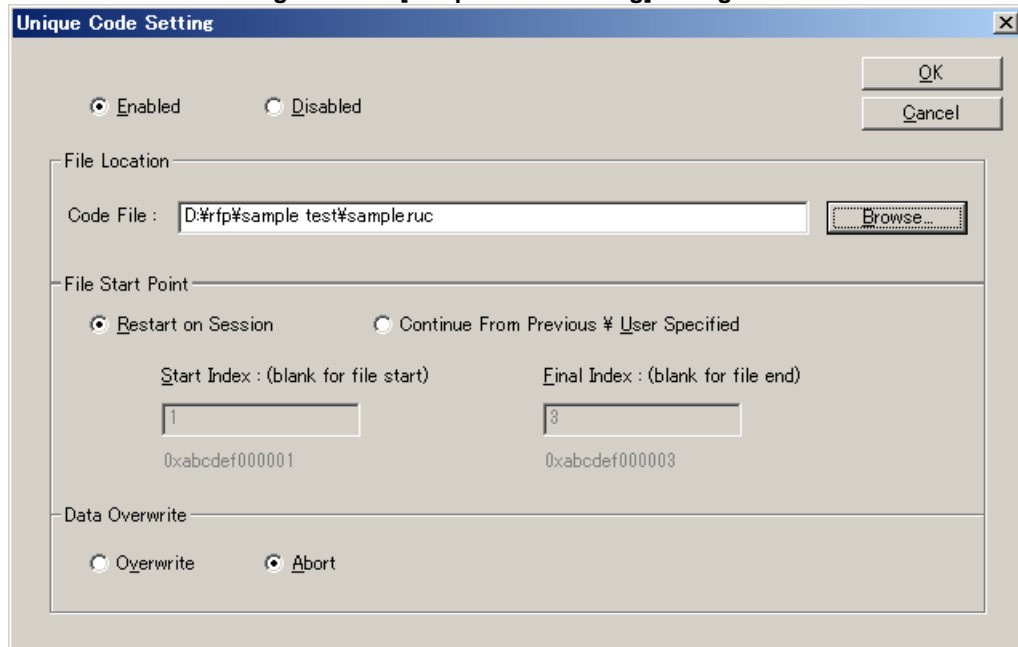
(2) [Change to Full mode]

Selecting this option switches the mode from basic to full in the main window. Save the project file that has been created. For the full mode features, refer to Chapter 5.

2.4.3   [Microcontroller] menu

The following pull-down menu appears by selecting the [Microcontroller] menu.

This menu includes commands mainly related to writing to the flash memory, such as setting up, erasing, and writing to the flash memory, and verifying the written program. If you select a command, the check mark is displayed at the left of the command, and the command is assigned to the Start button. The flash memory area subject to manipulation by each command is specified by using the [Operation mode] parameter under [Target] in the [Other settings] tag of the [Project Settings] dialog box.

Figure 2-20. [Microcontroller] Menu

Caution   When an HCUHEX file has been selected, the HCUHEX file is handled as master data. As a result, the [Program], [Read], [Set Security], [Set Option Bytes], and [Set ID Code] commands become unavailable.

(1) [Blank Check] command

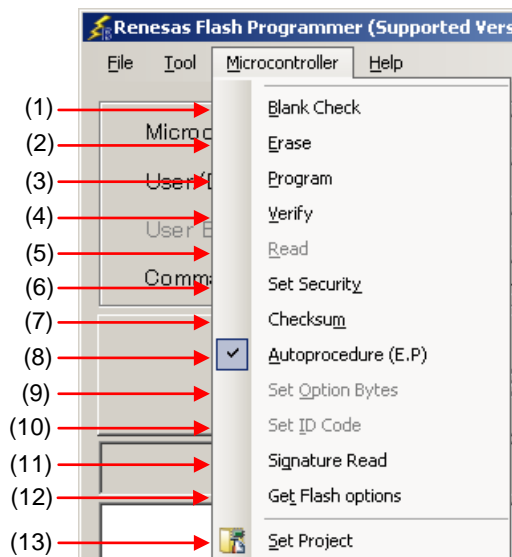This command is used to check whether the flash memory is blank. If the flash memory has already been erased, `PASS` is displayed. If the flash memory has not yet been erased, `Error (E1002008) : Not Blank.` is displayed. If this error is displayed, erase the entire area of the flash memory in the target microcontroller before starting programming.

(2) [Erase] command

This command is used to erase the flash memory. Whether to perform the [Blank Check] command before executing this command depends on the setting of the [Blank Check before Erase] parameter under [Command Options] in the [Other settings] tab of the [Project Settings] dialog box. If this command is executed for the flash memory that has already been erased with [Blank Check before Erase] enabled, `PASS. Erase skipped.` is displayed and erasure is not performed
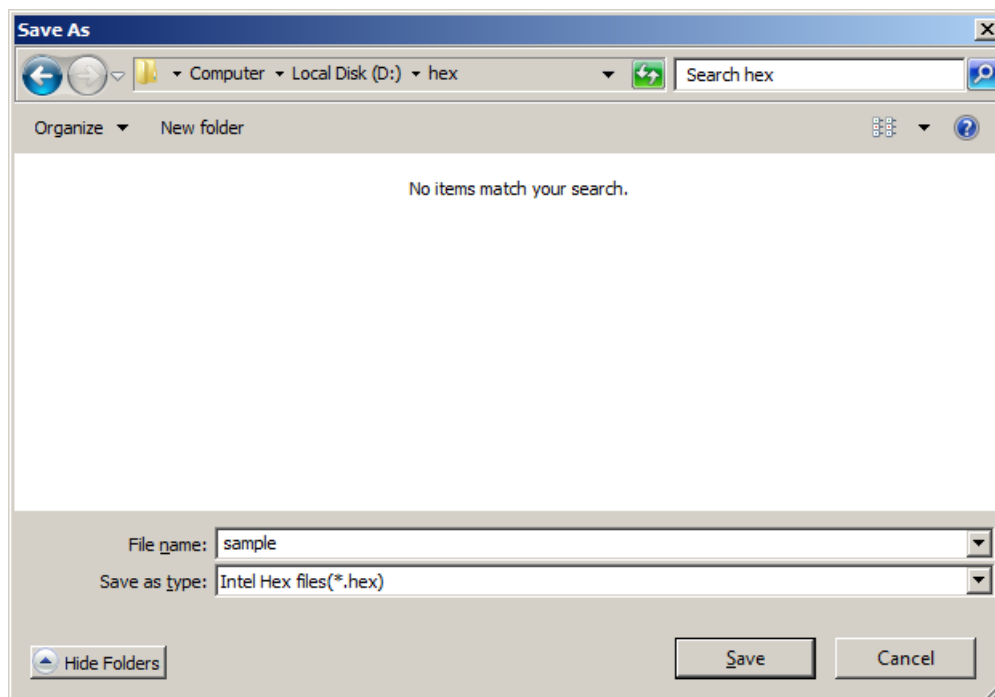
(3) [Program] command

This command is used to write the program file selected in the program file area to the flash memory. The command options after the [Program] command has finished executing depend on the settings of the [Verify after Program], [Security after Program], and [Checksum after Program] parameters under [Command Options] in the [Other Settings] tab of the [Project Settings] dialog box. For details, see **2.4.3 (13) (d) <9> [Command Options] category**.

(4) [Verify] command

This command is used to verify that the data written to the flash memory is the same as the data in the program file selected in the program file area.

(5) [Read] command

This command is used to read data on the flash memory and save it as a file. When this command is executed, the [Save As] dialog box is displayed. Enter any file name in the [File name:] box, select the folder in which to store the file, and then save the program data that has been read. Select the file format from "Intel Hex files(*.hex)" or "Motorola S record files(*.rec;*.s)" in the [Save as type:] list box.

Figure 2-21. [Save As] Dialog Box

Clicking the ⟨Save⟩ button saves the program data as a file and closes the dialog box.
Clicking the ⟨Cancel⟩ or the ⟨X⟩ button closes the dialog box without saving the program data as a file.

(6) [Set Security] command

This command is used to specify the security settings for the target microcontroller. When this command is executed, the settings specified in the [Flash Options] category in the [Other Settings] tab of the [Project Settings] dialog box will be applied to the target microcontroller. For details about the security settings, see **2.4.3 (13) (d) <7> [Flash Options] category**.

(7) [Checksum] command

This command is used to read the checksum calculated in the target microcontroller and displays it in the output panel.

Remark The checksum read by this command differs from the one displayed in the [Program File] category in the [Other Settings] tab of the [Project Settings] dialog box. For details about the [Program File] category, see **2.4.3 (13) (d) <5> [Program File] category**.

The checksum is calculated as follows:
- When using RL78, 78K, V850E1, or V850ES that has a checksum command:
  Method:　Subtraction (16-bit arithmetic)
  Range:　　Area specified in the [Command Options] category in the [Other Settings] tab of the [Project Settings] dialog box

Figure 2-22. Output Panel After [Checksum] Command Execution (When Using RL78, 78K, V850E1, or V850ES)

```
Checksum Code flash: 0x2A8E
Checksum PASS
```

Remark With the 16-bit arithmetic (subtraction) mode, the lower 4 digits of the result from which a value is subtracted from 00h in 1-byte units are displayed.

- When using V850E2 that has a CRC check command:
  Method:　32-bit CRC
  Range:　　Area specified by the [Operation mode] parameter under [Command Options] in the [Other Settings] tab of the [Project Settings] dialog box

Figure 2-23. Output Panel After [Checksum] Command Execution (When Using V850E2)

```
Checksum Code flash: 0xD1CA2956
Checksum PASS
```

Remark With the 32-bit CRC mode, the 8-digit result of CRC32 function calculation is displayed. For details about the arithmetic specifications, see **Common Appendix B Figure B-2. 32-bit CRC Calculation Specifications**.

- When using RL78 that has a CRC check command:
  Method:　16-bit CRC
  Range:　　Area specified by the [Operation mode] parameter under the [Target] category in the [Other Settings] tab of the [Project Settings] dialog box

Figure 2-24. Output Panel After [Checksum] Command Execution (When Using RL78 that has a CRC check command)

```
Chip CRC: 0x242E
Checksum PASS
```

Remark With the 16-bit CRC mode, the 4-digit result of CRC16 function calculation is displayed. For details about the arithmetic specifications, see **Common Appendix B Figure B-3. 16-bit CRC Calculation Specifications**.

(8) [Autoprocedure (E.P)] command

This command is used to erase and write to the flash memory. The command options after the [Autoprocedure (E.P)] command has finished executing depend on the settings of the [Blank Check before Erase], [Verify after Program], [Security after Program], and [Checksum after Program] parameters under [Command Options] in the [Other Settings] tab of the [Project Settings] dialog box. For details about these check boxes, see **2.4.3 (13) (d) <9> [Command Options] category**.

Figure 2-25. Output Panel After [Autoprocedure (E.P)] Command Execution

```
========== (Connect) ==========
------ Start(Autoprocedure(E.P)) ------
Blank check Code flash: Not blank, Erase need.
Erasing...
Erase Chip : PASS
Program Code flash:
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
PASS
Autoprocedure(E.P) PASS
------ End(Autoprocedure(E.P)) ------
========== (Disconnect) ==========
```

(9) [Set Option bytes] command

This command is used to specify the settings for the target microcontroller's option byte. When this command is executed, the settings specified by the [OPBT*n*] parameter in the [Flash Options] category in the [Other Settings] tab of the [Project Settings] dialog box are applied to the target microcontroller. For details about the option byte settings, see **2.4.3 (13) (d) <7> [Flash Options] category**.

(10)　[Set ID Code] command

This command is used to specify the settings for the target microcontroller's on-chip debug security ID. When this command is executed, the settings specified by the [OCD Security ID] parameter in the [Flash Options] category in the [Other Settings] tab of the [Project Settings] dialog box are applied to the target microcontroller. For details about the on-chip debug security ID settings, see **2.4.3 (13) (d) <7> [Flash Options] category**.

(11)　[Signature Read] command

This command is used to read the target microcontroller's product information, such as the microcontroller name and flash memory information. The read result is displayed in the output panel.

(12)   [Get Flash options] command

This command is used to read the settings for the flash options for the target microcontroller and displays the result under the [Flash Options] category in the [Other Settings] tab of the [Project Settings] dialog box.   When this command is enabled, execute this command before the [Set Security] command, [Set Option bytes] command, or [Set ID Code] command; the settings for the flash option settings can thus be checked. For details about the flash option settings, see **2.4.3 (13) (d) <7> [Flash Options] category**.

Caution   When an HCUHEX file is read, the HCUHEX file is handled as master data.   As a result, the flash options specified in the microcontroller can be checked by executing the [Get Flash options] command but the settings cannot be applied.   Click the OK button to close the dialog box.

Figure 2-26. Items Read by the [Get Flash options] Command
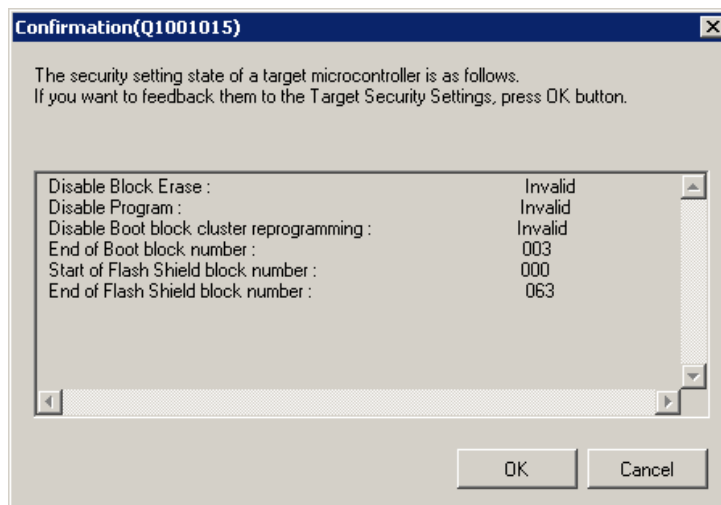
(13)　[Set Project]

Selecting [Set Project] displays the [Project Settings] dialog box, where you can check and change the project settings. The dialog box has two tabs: [Basic Settings] and [Other Settings]. Different categories of settings are displayed depending on the tab you select. Clicking the [Modify…] button of the [Basic Settings] tab opens the wizard-type dialog box [Communication Interface] (see Figure 2-27), which guides you through the process of changing the settings. The [Frequency] and the [Power Supply] dialog boxes are skipped if the settings do not need to be changed.

Figure 2-27. Flow of Setting Modification with the [Modify…] Button
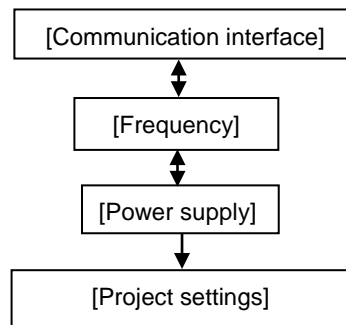
(a)　[Communication Interface] dialog box

This dialog box is used to select the tool used and the interface used for communication between the selected tool and the target microcontroller.

Figure 2-28. [Communication Interface] Dialog Box

For details about each item, see **2.2.3**.

Clicking the ⎡Next⎤ button displays the next dialog box.

Clicking the ⎡Cancel⎤ or the ⎡X⎤ button returns you to the main window.

(b) [Frequency] dialog box

This dialog box is used to specify the communication speed and the clock.

Figure 2-29. [Frequency] Dialog Box

For details about each item, see **2.2.4**.

Clicking the $\boxed{\text{Back}}$ button displays the previous dialog box.

Clicking the $\boxed{\text{Next}}$ button displays the next dialog box.

Clicking the $\boxed{\text{Cancel}}$ or the $\boxed{\text{X}}$ button returns you to the main window.

(c) [Power Supply] dialog box

This dialog box is used to specify the power supply and other options used for writing to the target microcontroller.

Figure 2-30. [Power Supply] Dialog Box

For details about each item, see **2.2.5**.

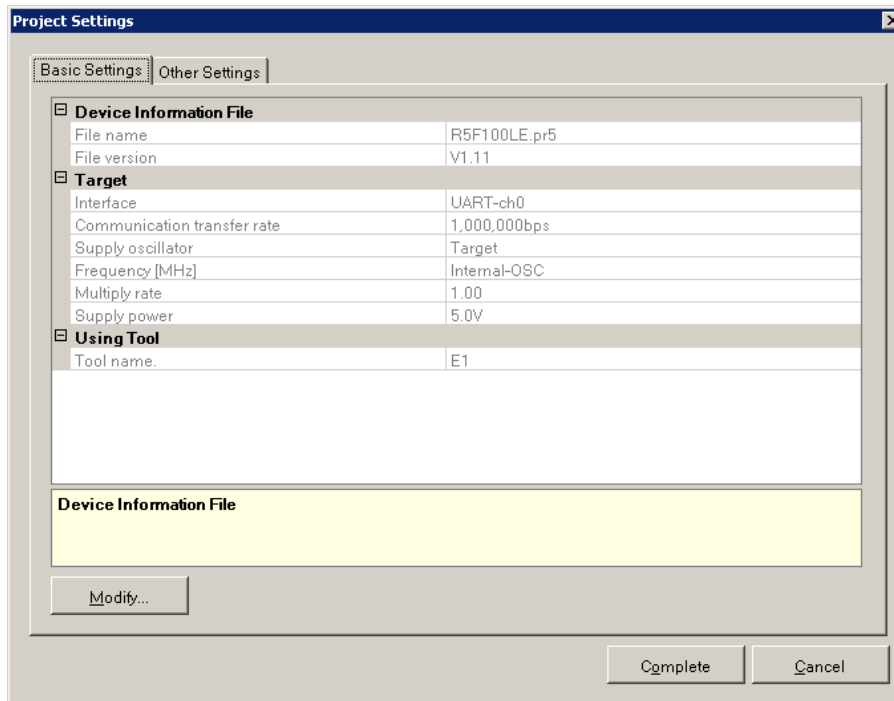Clicking the $\boxed{\text{Back}}$ button displays the previous dialog box.

Clicking the $\boxed{\text{Next}}$ button displays the next dialog box.

Clicking the $\boxed{\text{Cancel}}$ or the $\boxed{\text{X}}$ button returns you to the main window.

(d) [Project Settings] dialog box

This dialog box is used to check and change the project settings. The dialog box has two tabs: [Basic Settings] and [Other Settings]. Different categories of settings are displayed depending on the tab you select.

Figure 2-31. [Project Settings] Dialog Box

[Basic Settings] tab

    <1> [Device Information File] category

    <2> [Target] category

    <3> [Using Tool] category

    <4> [Power Supply Options] category

[Other Settings] tab

    <5> [Program File] category

    <6> [Target] category

    <7> [Flash Options] category

    <8> [Target Microcontroller] category

    <9> [Command Options] category

Clicking the Modify.. button displays the [Communication Interface] dialog box.

Clicking the Complete button saves the project file and returns you to the main window.

Clicking the Cancel or the X button returns you to the main window.

<1> [Device Information File] category

This category displays information about device information files such as the file name and file version.

File name	Displays the device information file name.
File version	Displays the version of the device information file.

<2> [Target] category

This category displays or allows you to select specifics, such as the connection method, communication transfer rate, and supplied clock, about the interface between the tool and the microcontroller.

Interface	Displays the connection method.	
Communication transfer rate	Displays the communication speed.	
Supplied oscillator	Displays the type of clock source supplied to the microcontroller.	
	Target	The clock is supplied from the target system.
	Programmer	The clock is supplied from the tool used.
Frequency [MHz]	Displays the frequency of the clock supplied to the microcontroller.	
Multiply rate	Displays the multiply rate of the clock supplied to the microcontroller.	
Supply power	Displays the voltage supplied to the microcontroller.	
	Target	The voltage is supplied from the target system.
	3.3 V	A voltage of 3.3 V is supplied from the tool used.
	5.0 V	A voltage of 5.0 V is supplied from the tool used.
	x.xx V	The voltage is supplied from the target system.

Remark   [Power Supply] is displayed when a power-related setting is made.

<3> [Using Tool] category

This category displays information about the tool used such as the name and firmware version.

Tool name	Displays the name of the tool used.
Firmware version	Displays the version of the MINICUBE2 firmware.

Remark   The [Firmware version] view is updated whenever a command on the target microcontroller finishes executing.

<4> [Power Supply Options] category

This category displays the power supply options, such as wide voltage mode, of the command executed on the flash memory.

Wide voltage mode	Select whether to write in wide voltage mode.	
	Valid	Data is written in wide voltage mode.
	Invalid	Data is not written in wide voltage mode.

Remark   Some items in this category might not be displayed depending on the type of microcontrollers.

<5> [Program File] category

This category displays or is used to select information about the specified program file such as the file name, date updated, and checksum calculation method.

File name	Displays the selected program file name.	
Updated date	Displays the date that the program file selected by [File name] was last modified.	
Type	Displays the type of the program file selected in [File name]. HCUHEX is displayed when an HCUHEX file is read. HEX is displayed when a HEX file without option data is read.	
Check sum type	Select the checksum calculation method for the program file selected by [File name].	
	Arithmetic check sum (16-bit)	The checksum calculated using 16-bit subtraction.
	CRC sum (32-bit)	Calculated using 32-bit CRC.
	CRC sum (16-bit)	Calculated using 16-bit CRC.
Range	Select the area from which to calculate the checksum. Remark: Use [Operation mode] under the [Target] category to specify the range of memory for the [Checksum] command.	
	Range of the Program file	The area to which the program file selected by [File name] is assigned is subject to checksum calculation.
	Range of target microcontroller	All flash memory area built into the microcontroller specified by the project is subject to checksum calculation.
	User optional range (Code Flash)	An area from [Start address of Code Flash] to [End address of Code Flash] is subject to checksum calculation.
	User optional range (Data Flash)	An area from [Start address of Data Flash] to [End address of Data Flash] is subject to checksum calculation.
	User optional range (Code Flash + Data Flash)	The area specified by [Start address of Code Flash] and [End address of Code Flash], and the area specified by [Start address of Data Flash] and [End address of Data Flash] are subject to checksum calculation.
Start address of Code Flash	Enter the start address of the code flash memory for which to calculate the checksum.	
End address of Code Flash	Enter the end address of the code flash memory for which to calculate the checksum.	
Check sum of Code Flash	Displays the results of checksum calculation using the method selected by [Check sum type].	
Start address of Data Flash	Enter the start address of the data flash memory for which to calculate the checksum.	
End address of Data Flash	Enter the end address of the data flash memory for which to calculate the checksum.	
Check sum of Data Flash	Displays the results of checksum calculation using the method selected by [Check sum type].	

Remarks 1. The [Updated date] view is refreshed whenever a file name is specified for [File name].

2. The [Check sum of Code Flash] and [Check sum of Data Flash] views are refreshed whenever a checksum calculation mode is specified for [Check sum type].

3. If "Range of the Program file" is selected for [Range], the corresponding addresses are specified for [Start address of Code Flash] and [End address of Code Flash], and [Start address of Data Flash] and [End address of Data Flash], and further input is disabled.

4. When the checksum is calculated, areas to which data is not written are filled in with 0xff.

5. Some items in this category might not be displayed for some microcontrollers.

6. With the 16-bit arithmetic (subtraction) mode, the lower 4 digits of the result from which a value is subtracted from 00h in 1-byte units are displayed. With the 32-bit CRC mode, the 8-digit result of CRC32 function calculation is displayed. For details about the arithmetic specifications, see **Common Appendix B Figure B-2. 32-bit CRC Calculation**

Specifications. With the 16-bit CRC mode, the 4-digit result of CRC16 function calculation is displayed. For details about the arithmetic specifications, see **Common Appendix B Figure B-3. 16-bit CRC Calculation Specifications**.

<6> [Target] category

This category is used to select the operation mode and other details about the interface between the tool and the microcontroller.

Operation mode	Select the unit in which the flash memory is accessed.	
	Chip	The flash memory is accessed in chip units.
	Block (Code Flash)	The code flash memory is accessed in block units.
	Block (Data Flash)	The data flash memory is accessed in block units.
	Block (Code Flash + Data Flash)	The flash memory is accessed in block units.
Start block number of Code Flash	Select the starting block when accessing code flash memory in block units.	
End block number of Code Flash	Select the ending block when accessing code flash memory in block units.	
Start block number of Data Flash	Select the starting block when accessing data flash memory in block units.	
End block number of Data Flash	Select the ending block when accessing data flash memory in block units.	
Supplied Power	Displays the voltage supplied to the target microcontroller.	

Note When an HCUHEX file is read, the HCUHEX file is handled as master data. As a result, [Chip] is selected and this setting cannot be changed. When the device is an RL78 that has a CRC check command, [Chip] is selected and this setting cannot be changed.

Remarks 1. [Start block number of Code Flash] and [End block number of Code Flash] are displayed only if "Block (Code Flash)" or "Block (Code Flash + Data Flash)" is selected under [Operation mode].

2. [Start block number of Data Flash] and [End block number of Data Flash] are displayed only if "Block (Data Flash)" or "Block (Code Flash + Data Flash)" is selected under [Operation mode].

<7>   [Flash Options] category

This category is used to disable execution of commands on the flash memory (by selecting settings such as Disable Chip Erase, Disable Block Erase, or Disable Program) and display microcontroller information such as the end of boot block number, reset vector address, and start of flash shield block number.

Disable Chip Erase	Used to disable execution of the chip erase command on the flash memory.	
	Valid	Execution of the chip erase command is disabled.
	Invalid	Execution of the chip erase command is enabled.
Disable Block Erase	Used to disable execution of the block erase command on the flash memory.	
	Valid	Execution of the block erase command is disabled.
	Invalid	Execution of the block erase command is enabled.
Disable Program	Used to disable execution of the write command on the flash memory.	
	Valid	Execution of the write command is disabled.
	Invalid	Execution of the write command is enabled.
Disable Read	Used to disable execution of the read command on the flash memory.	
	Valid	Execution of the read command is disabled.
	Invalid	Execution of the read command is enabled.
Disable boot block cluster reprogramming	Used to disable writing to the boot area.	
	Valid	Writing to the boot area is disabled.
	Invalid	Writing to the boot area is enabled.
End of boot block number	Displays the end of the boot area.	
Reset vector address	Displays the reset vector address of the microcontroller.	
Start of flash shield block number	Select the starting block of the flash shield window.	
End of flash shield block number	Select the ending block of the flash shield window.	
OPBTn	Select the option byte.	
OCD Security ID	Enter the on-chip debug security ID.	

Note   When an HCUHEX file is read, the HCUHEX file is handled as master data. As a result, the settings specified in the HCUHEX file are applied and the settings in this category cannot be changed.

Remark   Some items in this category might not be displayed for some microcontrollers.

<8>   [Target Microcontroller] category

This category displays information about the microcontroller such as the target microcontroller name and firmware version.

Target microcontroller name	Displays the microcontroller name.
Firmware version	Displays the version of the microcontroller firmware.

Remark   The [Target microcontroller name] and [Firmware version] views are refreshed whenever a command finishes executing on the target microcontroller.

<9> [Command Options] category

This category is used to specify options for commands executed on the flash memory such as Blank Check before Erase, Verify after Program, and Security after Program.

Blank Check before Erase**Note**	Select whether or not to check the status of the flash memory (whether or not data has been written) before erasing data written to the flash memory.	
	Valid	Data is erased after checking the status of the flash memory.
	Invalid	Data is erased without checking the status of the flash memory.
Verify after Program	Select whether or not to verify that the data written to the flash memory matches the data in the file specified by the [File name] parameter under [Program File] after writing to the flash memory is complete.	
	Valid	Data match is verified after writing is complete.
	Invalid	Data match is not verified after writing is complete.
Security after Program**Note**	Select whether or not to apply the security settings specified in the [Flash Options] category such as Blank Check before Erase, Verify after Program, and Security after Program, after the writing to the flash memory is complete.	
	Valid	The security settings are applied after writing is complete.
	Invalid	The security settings are not applied after writing is complete.
Check Sum after Program	Select whether or not to read the checksum of the data written to the flash memory after writing is complete.	
	Valid	The checksum is read after writing is complete.
	Invalid	The checksum is not read after writing is complete.
Set Option Bytes after Program**Note**	Select whether or not to apply the option byte settings specified in the [Flash Options] category after writing to the flash memory is complete.	
	Valid	The option byte settings are applied after writing is complete.
	Invalid	The option byte settings are not applied after writing is complete.
Set OCD Security ID after Program**Note**	Select whether or not to apply the on-chip debug security ID specified in the [Flash Options] category after writing to the flash memory is complete.	
	Valid	The on-chip debug security ID is applied after writing is complete.
	Invalid	The on-chip debug security ID is not applied after writing is complete.
Program to the reset mask products	Select the method of controlling a reset. Enable this option to use the COMx connection and the reset pin of the RL 78 for a function other than reset.	
	Valid	Enable this option to use a function other than reset. Executing individual commands displays a confirmation dialog box (Q1001026) for reentering the target power supply.
	Invalid	Disable this option if the reset function is to be used.

Reset Pin as Low	Select whether or not to set the reset pin to the low level when disconnecting the device.	
	Valid	The reset pin is set to low level.
	Invalid	The reset pin is set to high impedance.
Program file size monitor function	Halts execution of programming command if the program file size exceeds the programmable range.	
	Valid	If the address range of the downloaded program file exceeds the range specified for [Operation mode] in the [Target] category and the [Program], [Verify], or [Autoprocedure(E.P)] command is executed, the error message "Error (E1002018): HEX file exceeds target device flash range." is displayed on the output panel and command execution is halted.
	Invalid	The message "Truncate the HEX File." is displayed on the output panel and command execution continues.

Note   When an HCUHEX file is read, the HCUHEX file is handled as master data. As a result, the settings of [Blank Check before Erase], [Security after Program], [Set Option Bytes after Program], and [Set OCD Security ID after Program] cannot be changed.

Remarks 1.   The results of executing the command in accordance with the specified options are shown in the output panel.

       2.   Some items in this category might not be displayed depending on the type of microcontrollers.

2.4.4 [Help] menu

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

Figure 2-32. [Help] Menu
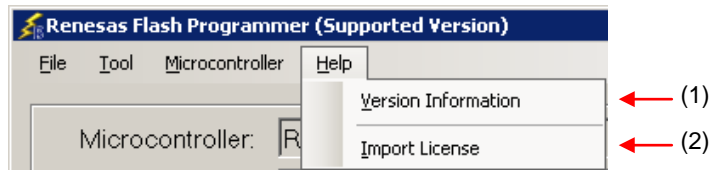
(1) [Version Information]

This is used to open the Version Information dialog box below and display the RFP version.
Clicking the OK button closes this dialog box.

Figure 2-33. Version Information Dialog Box

(2) [Import License]

For details of this menu item, see the manual accompanying this product.

2.5 [Microcontroller] Area

This area displays the selected target microcontroller.

Figure 2-34. [Microcontroller] Area
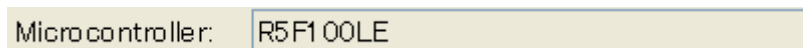
2.6   [Program File] Area

This area displays the selected program file. Clicking the ⌐Browse...⌐ button opens the [Open File] dialog box. Move to a desired folder and select a program file (*.hex;*.mot;*.s*;*.rec).

Figure 2-35. [Program File] Area

Figure 2-36. [Open File] Dialog Box
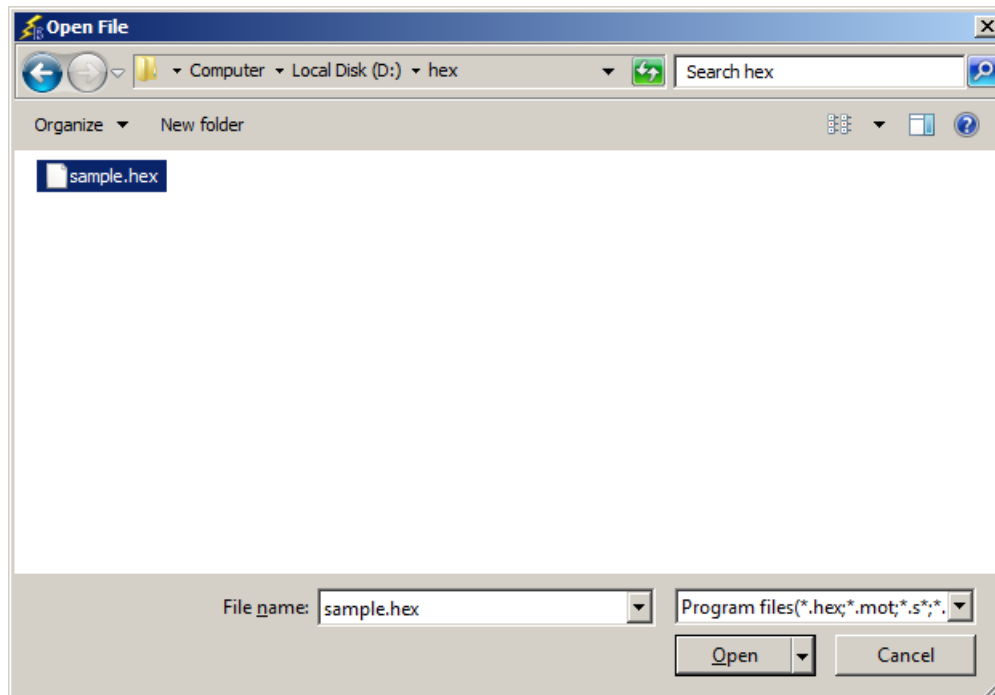
2.7   [Command] Area

The command area displays the command selected on the [Microcontroller] menu.

Figure 2-37. Command Area
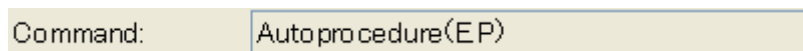
2.8 Start Button

Clicking the Start button executes the command selected on the [Microcontroller] menu. The execution progress is displayed on the output panel or in the [Progress report] dialog box.

Figure 2-38. Start Button

Figure 2-39. [Progress report] Dialog Box
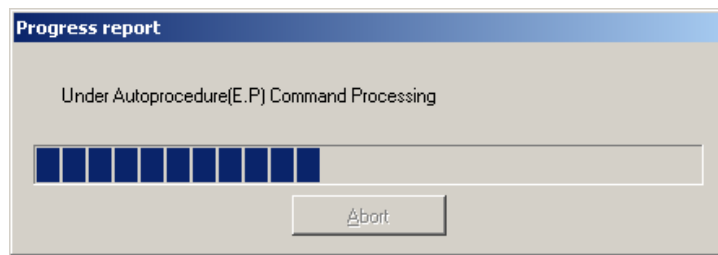
2.9 Status Bar

The status bar shows the progress as a color or with a message when a command selected on the [Microcontroller] menu is executed.

Figure 2-40. Status Bar

Table 2-1. Status Bar Displays

	After startup or when the [Clear Output Panel] button is clicked
BUSY	A command is being executed.
PASS	The command finished executing normally
ERROR	The command terminated abnormally.

2.10 Output Panel

The output panel displays the execution status of the command selected on the [Microcontroller] menu in text. Up to 2000 lines can be displayed. If the text exceeds 2000 lines, lines will be deleted, starting from the first line.

Figure 2-41. Output Panel
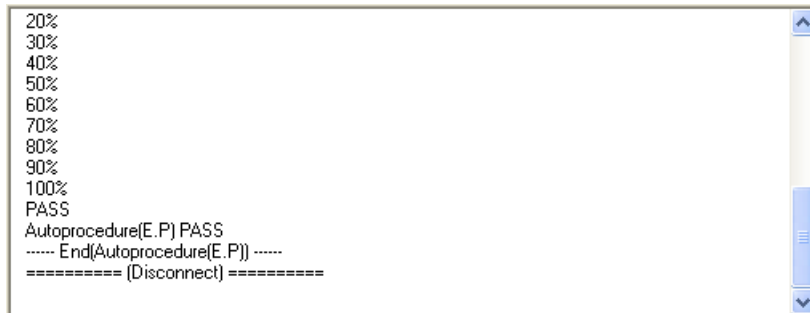
(a) Output Panel Context Menu

Right-clicking the output panel displays a context menu.

Table 2-2 Output Panel Context Menu

Copy	Copies the text selected on the output panel to the clip board.
Select All	Selects the entire text on the output panel.
Clear	Clears the entire text and the status bar display of the output panel.
Save	Saves the entire text on the output panel to a file. The [Open File] dialog box opens, where you can specify any filename for the file saved.

2.11 Clear Output Panel Button

Clicking the Clear Output Panel button will delete all the text displayed on the output panel. The status bar is also cleared.

Figure 2-42. Clear Output Panel Button
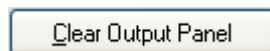
CHAPTER 3   FUNCTION DETAILS (FULL MODE)

This chapter describes function details of the commands, windows, and dialog boxes of the full mode of RFP.

3.1   Introduction

Make sure that the RFP package is installed. For how to install the RFP package, see **Common CHAPTER 2 INSTALLATION**. Before starting RFP, make sure that the debugger and utility are not running.

3.2   Starting up

On the taskbar, click the Start button, point to [All Programs], [Renesas Electronics Utilities], [Programming Tools], [Renesas Flash Programmer V*x.xx*], and then click [Renesas Flash Programmer V*x.xx*]. The [Welcome!] dialog box will open.

Follow the instructions that appear in the wizard. When setup is finished, the main window is displayed. The [Frequency] and the [Power Supply] dialog boxes are skipped if it is not necessary to change the setting.

Figure 3-1.   Dialog Boxes Displayed in the Startup Wizard
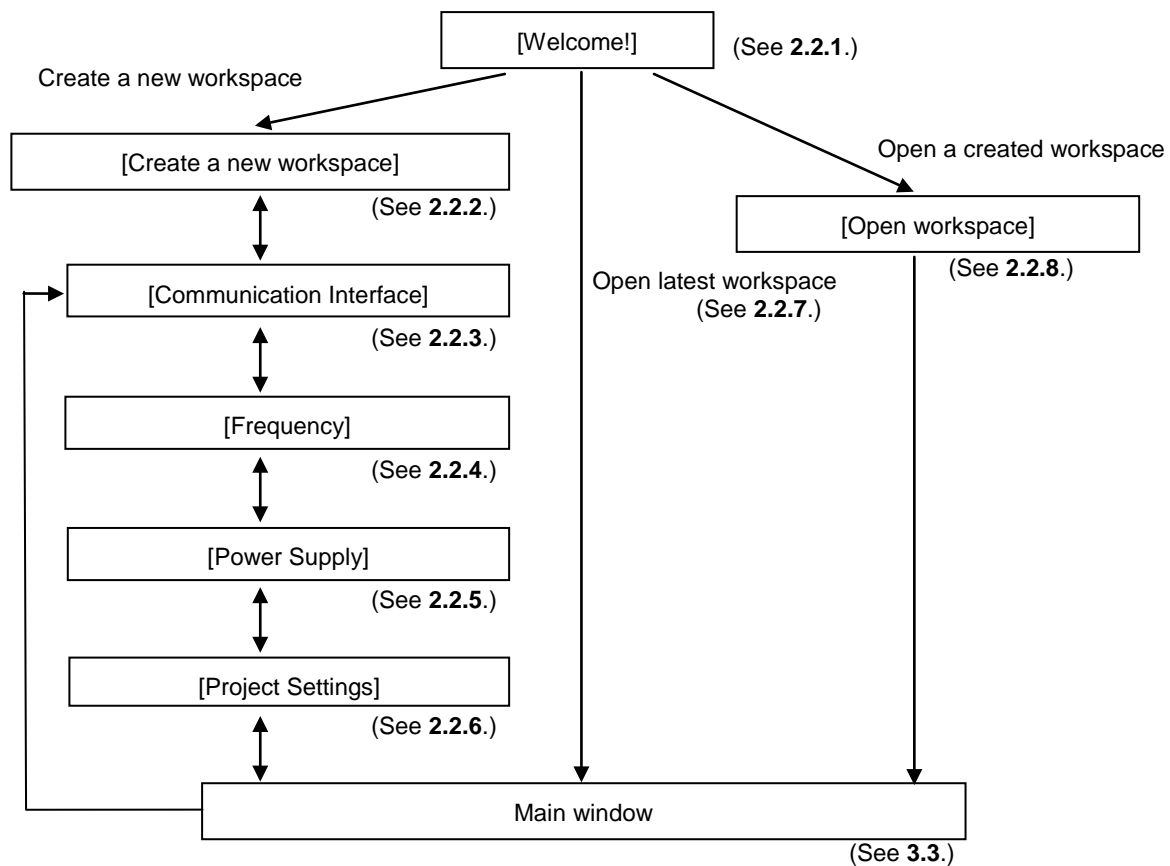
Or a main window is opened by the following method. In the case of (1), the main window of the version installed recently opens.

(1) Double clicking a workspace file.

(2) Dragging and dropping a workspace file onto RFP.exe.

(3) Typing RFP.exe followed by the name of a workspace file at the command prompt and so on; then executing it.

3.3　Main Window

The main window consists of the following items:

Figure 3-2.　Main Window
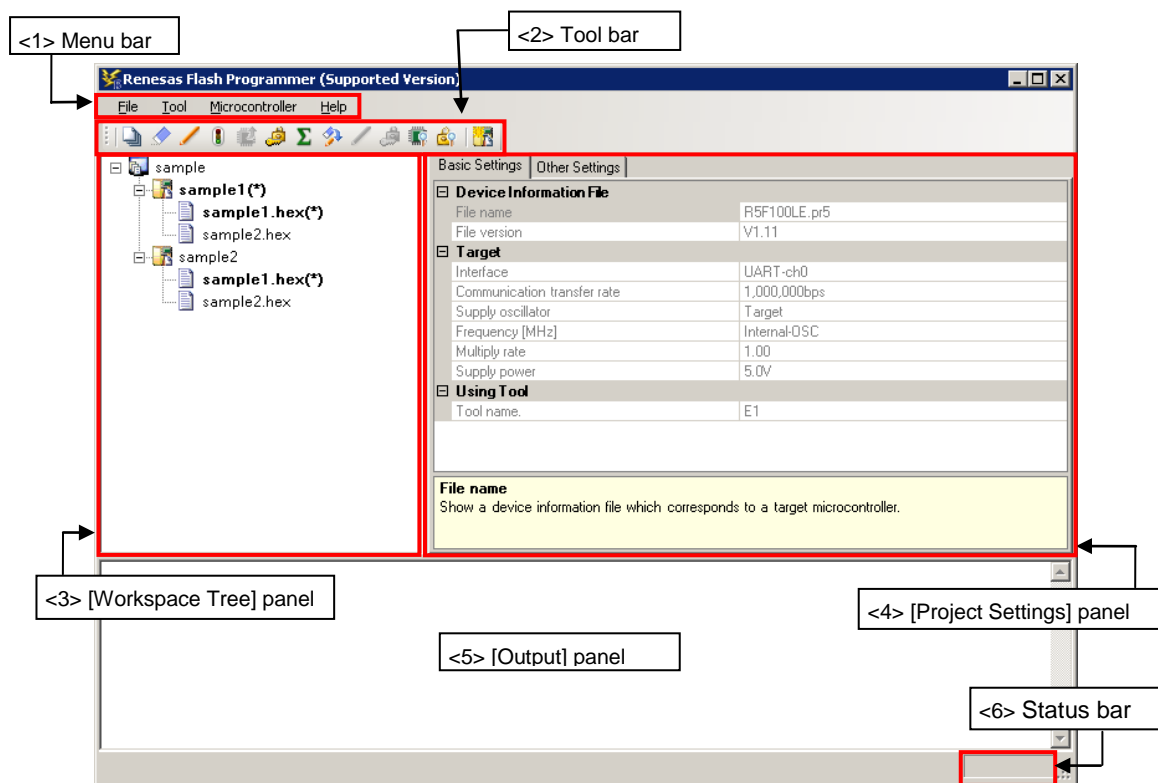
	Name	Description	See
<1>	Menu bar	Displays the selectable menus.	3.4
<2>	Tool bar	Displays buttons for frequently used commands.	3.5
<3>	[Workspace Tree] panel	Displays the workspace in a tree form.	3.6
<4>	[Project Settings] panel	Displays the project settings.	3.7
<5>	[Output] panel	Displays the command execution output.	3.8
<6>	Status bar	Displays the command execution status in colors and text	3.9

3.4   Menu Bar

The menu bar consists of [File], [Tool], [Microcontroller], and [Help]. When a menu is selected, the pull-down menu is displayed where the items can be selected. Some items may be disabled depending on the settings. When an HCUHEX file has been selected, the HCUHEX file is handled as master data. As a result, the [Program], [Read], [Set Security], [Set Option Bytes], and [Set OCD Security ID] commands become unavailable.

3.4.1   [File] menu

The following pull-down menu appears by selecting the [File] menu. Refer to 2.4.1 for details of each menu.

Figure 3-3. [File] Menu

3.4.2   [Tool] menu

Selecting the [**Tool**] menu displays the pull-down menu as shown in the figure below. Refer to 2.4.2 for details of each menu.

Figure 3-4 [Tool] Menu
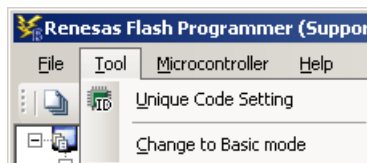
3.4.3   [Microcontroller] menu

The following pull-down menu appears by selecting the [Microcontroller] menu.

This menu includes commands mainly related to writing to the flash memory, such as setting up, erasing, and writing to the flash memory, and verifying the written program. Selecting any command executes that command. The flash memory area subject to manipulation by each command is specified by using the [Operation mode] parameter under [Target] in the [Other Settings] tab of the [Project Settings] dialog box. Selecting [Set Project] opens a wizard-type dialog box for changing the project basic settings. Refer to 2.4.3 for details of each command.

Figure 3-5. [Microcontroller] Menu
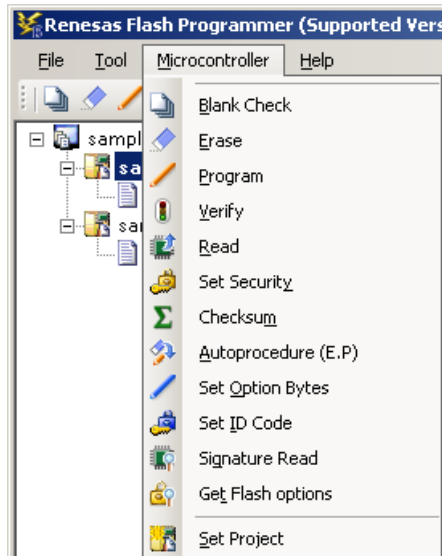
3.4.4 [Help] menu

Clicking the [Help] menu displays the following pull-down menu. Refer to 2.4.4 for details of each menu.

Figure 3-6. [Help] Menu
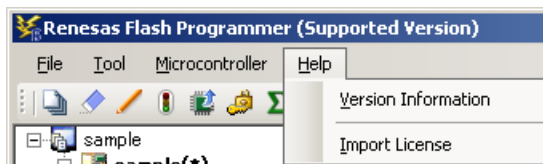
3.5 Tool Bar

The tool bar lists the buttons for the commands of the [Microcontroller] menu. Clicking any of the buttons executes the corresponding command. Some buttons become enabled or disabled depending on the settings. When an HCUHEX file is selected, it is used as the master data, disabling the [Program], [Read], and [Set Security] commands. Placing the mouse cursor over a tool bar button displays a tooltip. Refer to 2.4.3 for details of each command.

Figure 3-7. Tool Bar
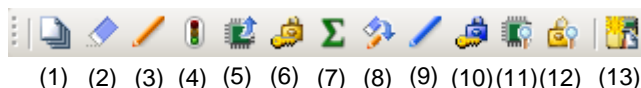
Table 3-1. Tool Bar

(1)	Executes the [Blank Check] command.
(2)	Executes the [Erase] command.
(3)	Executes the [Program] command.
(4)	Executes the [Verify] command.
(5)	Executes the [Read] command.
(6)	Executes the [Set Security] command.
(7)	Executes the [Checksum] command.
(8)	Executes the [Autoprocedure (E.P)] command.
(9)	Executes the [Set Option Bytes] command.
(10)	Executes the [Set ID Code] command.
(11)	Executes the [Signature Read] command.
(12)	Executes the [Get Flash options] command.
(13)	Opens a wizard-type dialog for changing the project basic settings.

3.6 [Workspace Tree] Panel

This panel displays the tree-format representation of the workspace elements (workspace nodes, project nodes, and program file nodes), allowing you to make project operations (such as adding and deleting) and program file operations (such as adding, deleting, and programming).

Figure 3-8. [Workspace Tree] Panel
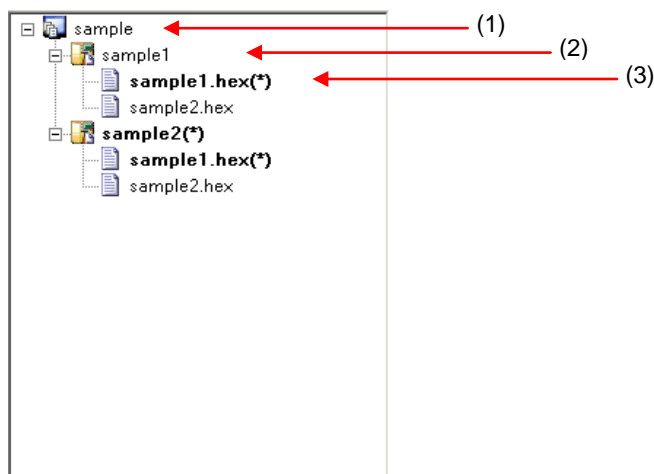
(1) Workspace node

This node represents the workspace currently opened. You cannot open multiple workspaces. The workspace tree has only one workspace node as its root node.

(a) Context menu of the workspace node

Right-clicking the workspace node displays its context menu.

Table 3-2. Context Menu of the Workspace Node

Add Project	This menu item opens the [Create a new workspace] dialog for adding a project in the workspace. The newly added project becomes available for manipulation and edition. The project that has been created is saved.

(2) Project nodes

A project node represents a project within the workspace. You can manipulate and edit one of the multiple projects (maximum of 64) at a time. The project that can be manipulated and edited is displayed bold and marked by "(*)". Double-clicking one of other project nodes makes it available for manipulation and edition.

(a) Context menu of project nodes

Right-clicking a project node displays its context menu.

Table 3-3. Context Menu of Project Nodes

Set Project Active	Makes the selected project available for manipulation and edition. The project that has been manipulated and edited is saved.
Delete Project	Deletes the selected project from the list. The project file itself is not deleted. This menu item is enabled when the project is not being manipulated or edited.
Add Program File	Adds a program file to the selected project. The [Open File] dialog box opens for adding a program file.

(3) Program file nodes

A program file node represents a program file of a project. A project can have multiple program files (maximum of 64), one of which is available for programming and verification. The program file node available for programming and verification is displayed in bold type and marked by "(*)". Double-clicking on one of other nodes makes it available for programming and verification. When the User Boot Area is selected as the area for program file nodes, "B" is displayed in bold type.

(a) Context menu of program file nodes

Right-clicking a program file node displays its context menu.

Table 3-4. Context Menu of Program File Nodes

Set Program File Active	Makes the selected program file available for programming and verification.
Delete Program File	Deletes the selected program file from the list. The program file itself is not deleted. This menu item is enabled when the program file is not selected for programming and verification.
Area	Not used.
Program	Executes the [Program] command with the selected program file. This menu item is enabled when the project is selected for manipulation and edition, and the program file is selected for programming and verification.
Autoprocedure(E.P.)	Executes the [Autoprocedure(E.P.)] command with the selected program file. This menu item is enabled when the project is selected for manipulation and edition, and the program file is selected for programming and verification.

3.7   [Project Settings] Panel

This panel allows you to view and change the project settings. The [Basic Setting] tab and [Other Setting] tab are included in this panel, each of which displays its specific category of settings when selected. Information displayed on this panel is for the project selected for manipulation and edition and the program file selected for programming and verification. Refer to 2.4.3 (13) (d), [Project Settings] dialog for details.

Figure 3-9. [Project Settings] Panel

3.8   Output Panel

The output panel displays the execution status of the command selected on the [Microcontroller] menu or the tool bar in text. Up to 2000 lines can be displayed. If the text exceeds 2000 lines, lines will be deleted, starting from the first line. Refer to 2.10 for details.

Figure 3-10. Output Panel

3.9   Status Bar

The status bar shows the progress as a color and with a message when a command selected on the [Microcontroller] menu or the tool bar is executed.

Figure 3-11. Status Bar

Table 3-5. Status Bar Displays

	Immediately after start of the command, or when [Clear] is selected in the context menu of the output panel
BUSY	During the command execution
PASS	When the command has terminated normally
ERROR	When the command has terminated abnormally

CHAPTER 4　SCRIPT EXECUTION FUNCTION

This chapter explains about the script execution function.

4.1　Overview

The script execution function executes the script commands in a script file sequentially without displaying the main window or dialog boxes[note]. The RFP can be started up and the write command can be executed from the command prompt or user applications.

Note　Processing automatically proceeds in response to clicking on the OK button in the [Confirmation] dialog box. Note, however, that when the firmware of the emulator needs updating, this is indicated in the [Confirmation] dialog box.

4.2　Start and exit

The script execution starts by the following method. In the case of (1), the main window of the version installed recently starts.

(1) Double clicking a script file.

(2) Dragging and dropping a script file onto RFP.exe.

(3) Typing RFP.exe followed by the name of a script file at the command prompt and so on; then executing it.

After the script execution starts, the script commands in the script file are executed from the first line to the last sequentially. When execution of all commands in the script down to the last line is completed, the result code '"0" is returned on exit from the RFP. If there is an error in a command or an error is generated while a command is being executed, the result code "1" is returned immediately and execution of the RFP is terminated. As a note, If there is no script file (*.rsc) or a file that is not a script file (not an *.rsc file) is specified, the script execution function ends and the [Welcome!] dialog box is opened. If an error occurs due to an incorrect command in the script or while a command is being executed, the [Welcome!] dialog box will not open.

RFP.exe xxxx

xxxx: the full path of a script file. If the full path contains spaces, use double quotation marks to enclose the full path (" ").

Example) A batch file (sample.bat) example
:START
RFP.exe "d:\rfp\sample test\sample.rsc"
ECHO OFF
ECHO Rusult Code : %ErrorLevel%
PAUSE

4.3 Script file

This section describes a script file (file extension, file format, format, and example).

(1) File extension

*.rsc

(2) File format

File format: text format

Newline: CR + LF

The only supported character code is ASCII (one byte). Unicode (two bytes) is not supported.

(3) Format

The first line	:log command (optional)
The second line	:workspace command
The third line and after	:arbitrary script command

The lines starting with // are comment lines and will be skipped.

(4) Example

//Sample script file

log "d:\rfp\sample test\sample.log"

workspace "d:\rfp\sample test\sample\sample.rws"

programfile d:\hex\sample.hex

verify

4.4 Script commands

This section describes script commands in a script file. The command interpreter is case-insensitive.

The symbols used to describe the script commands are defined below.

Symbol	Description
Characters within angle brackets < >	Information that must be provided

Table 4-1. Script Commands

Function	Script command
	Description
Specify a log file	log <filename>
	Specifies a log file. For more details, see **4.5**. <filename>: the full path of the log file. If the full path contains spaces, use double quotation marks to enclose the full path (" ").
Specify a workspace	workspace <filename>
	Specifies a workspace file. The script execution function uses an active project and an active program file. <filename>: the full path of the workspace file. If the path contains spaces, use double quotation marks to enclose the path (" ").
Specify a program file	programfile <filename> Specifies a program file. When multiple files are specified, the last file is active. <filename>: the full path of the program file. If the path contains spaces, use double quotation marks to enclose the path (" ").

Wait	wait <time>
	Waits for the specified time.
	<time>: specifies the wait time (unit: msec, range: 1-2147483647)
Blank check	blankcheck
	Executes the blankcheck command.
Erase	erase
	Executes the erase command.
Program	program
	Executes the program command.
Verify	verify
	Executes the verify command.
Security setting	security
	Executes the security setting command.
Checksum	checksum
	Executes the checksum command.
Program after erasure	ep
	Executes the program command after erasure.
Signature read	signature
	Executes the signature read command.

4.5 Log file

Execute the specify a log file script command (log <filename>) by the script commands to create a specified log file and to save the script commands and the characters in the output panel to the log file in the text format. If a log file with the same name already exists when a new log file is tried to be created, the existing log file is opened and new log entries are appended after the last line.

(1) Log file format

```
[DD-Mon-YY HH:MM:SS.mmm] ------ Start Script ------
Version
Script
Workspace
[DD-Mon-YY HH:MM:SS.mmm] <script command>
Characters in the output panel
[DD-Mon-YY HH:MM:SS.mmm] ------ End Script ------
```

```
DD: day (two digits)
Mon: month (three characters)
YY: year (two digits)
HH: hour (two digits)
MM: minute (two digits)
SS: second (two digits)
mmm: millisecond (three digits)
```

RENESAS

Renesas Flash Programmer V.2.05