

Renesas Flash Programmer

R20AN0547EJ0100

Rev.1.00

Dec.19.19

Usage from the Command Line

Introduction

This document introduces running the Renesas Flash Programmer from the command line and using this in batch processing. Batch processing enables automated programming.

Target Devices

RA family

RL78 family

RX family

RH850 family

Renesas Synergy™ microcontrollers

RE family

Power management (power-management IC)

Renesas USB Power Delivery family (C30 group)

ICs for driving motors and actuators (ICs for motor control)

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1. Overview

The Renesas Flash Programmer (RFP) can be run from the command line with options prefixed by '/'. This also enables automated programming by using batch files to operate the RFP. For details on the RFP, refer to the user's manual.

<https://www.renesas.com/rfp>

2. Basic Procedure before Batch Processing

This chapter helps you to understand the sequence of the basic procedures to follow before setting up batch processing that runs the RFP from the command line, taking the RL78/G14 as an example of the target MCU.

- The descriptions in this chapter apply under the following conditions.
Target MCU: R5F104LE (RL78/G14)
Tool: E2 emulator Lite
Connection: 1-wire UART (single-wire UART)
Bit rate: 1,000,000 bps
Clock to be supplied: None (on-chip clock oscillator)
Power supply: E2 emulator Lite (3.3 V)
Operations of flash memory: Erasure, programming, and verification
Options for flash memory: None
- This chapter describes the following procedures.
 1. Connecting a system
 2. Connecting a target system
 3. Creating a project file
 4. Setting a project
 5. Creating a batch file
 6. Executing the batch file

2.1 Connecting a System

Connect the USB port of the host PC to the tool to be used via a USB cable.

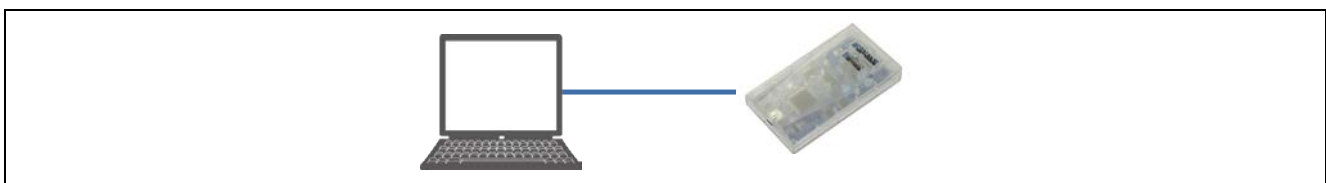


Figure 2.1 Connecting a Tool

2.2 Connecting a Target System

Connect the target cable of the tool to be used to the target system.



Figure 2.2 Connecting a Target System

2.3 Creating a Project File

Start the RFP GUI to open the main window.

Select [New Project] from the [File] menu to open the [Create New Project] dialog box.

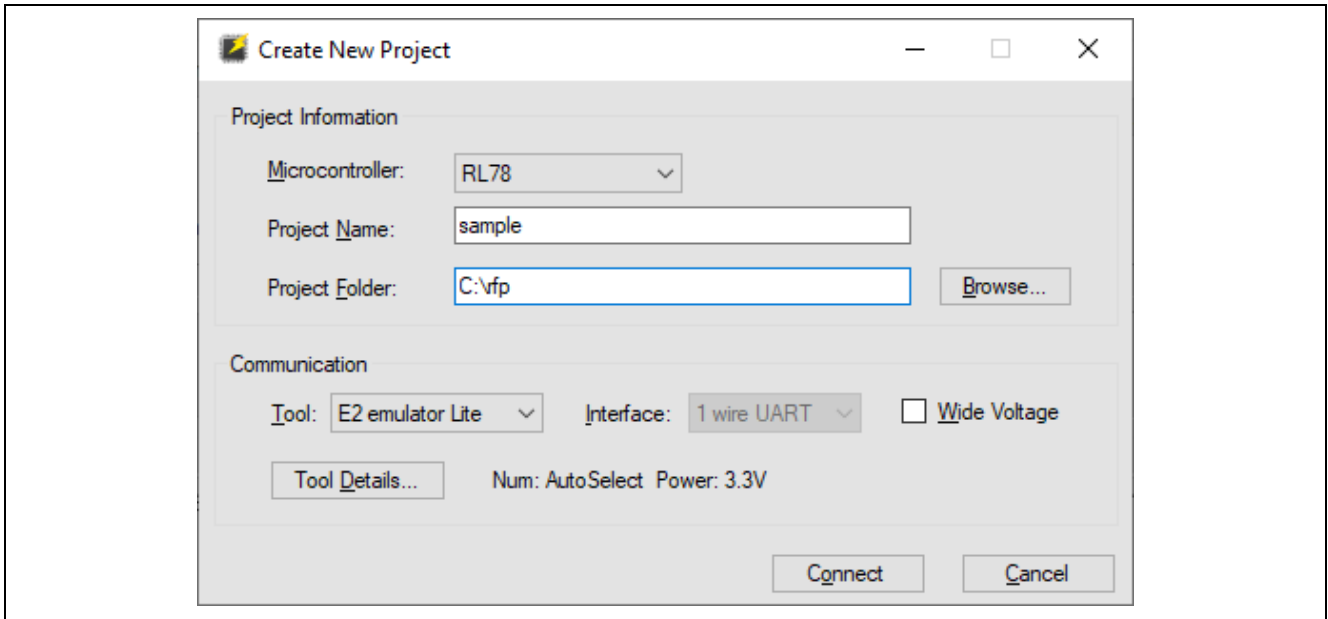


Figure 2.3 [Create New Project] Dialog Box

Select “RL78” for [Microcontroller], enter “sample” for [Project Name], specify “C:\vfp” for [Project Folder], and select “E2 emulator Lite” for [Tool].

Clicking on the [Tool Details] button opens the [Tool Details] dialog box.

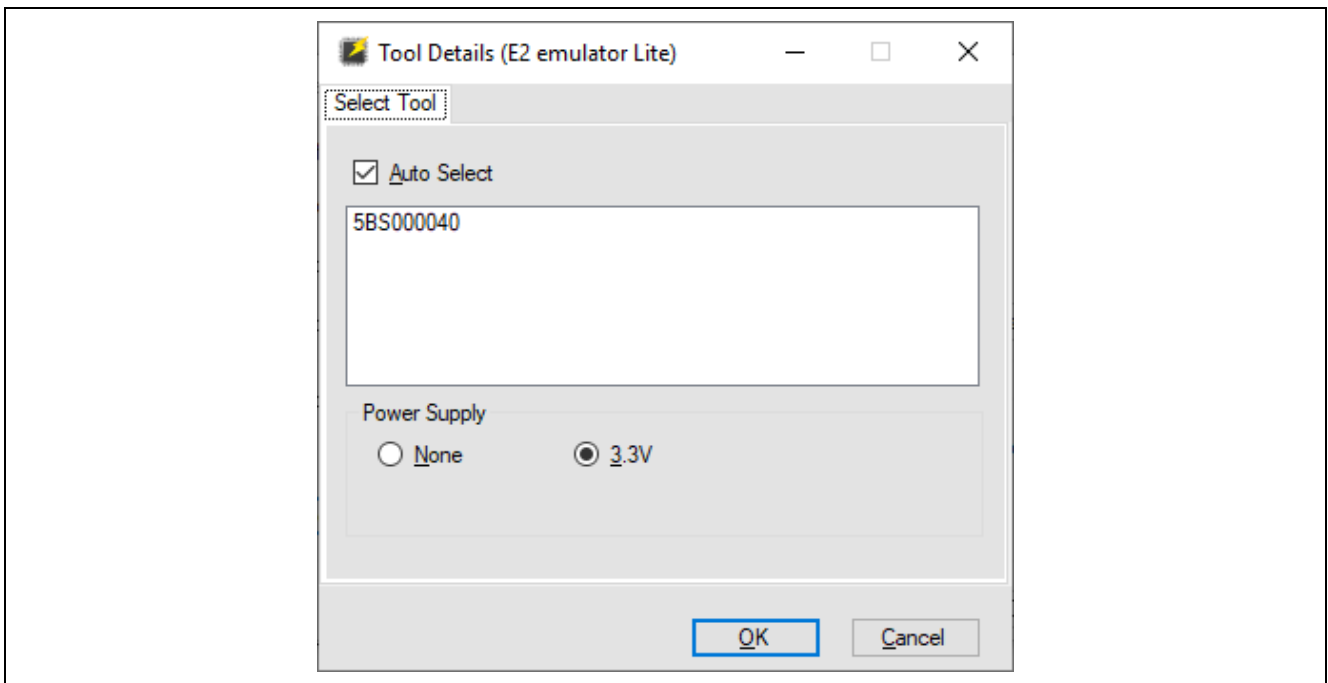


Figure 2.4 [Tool Details] Dialog Box

Select “3.3V” and click on the [OK] button.

After returning to the [Create New Project] dialog box, click on the [Connect] button.

The project file is created and the display returns to the main window.

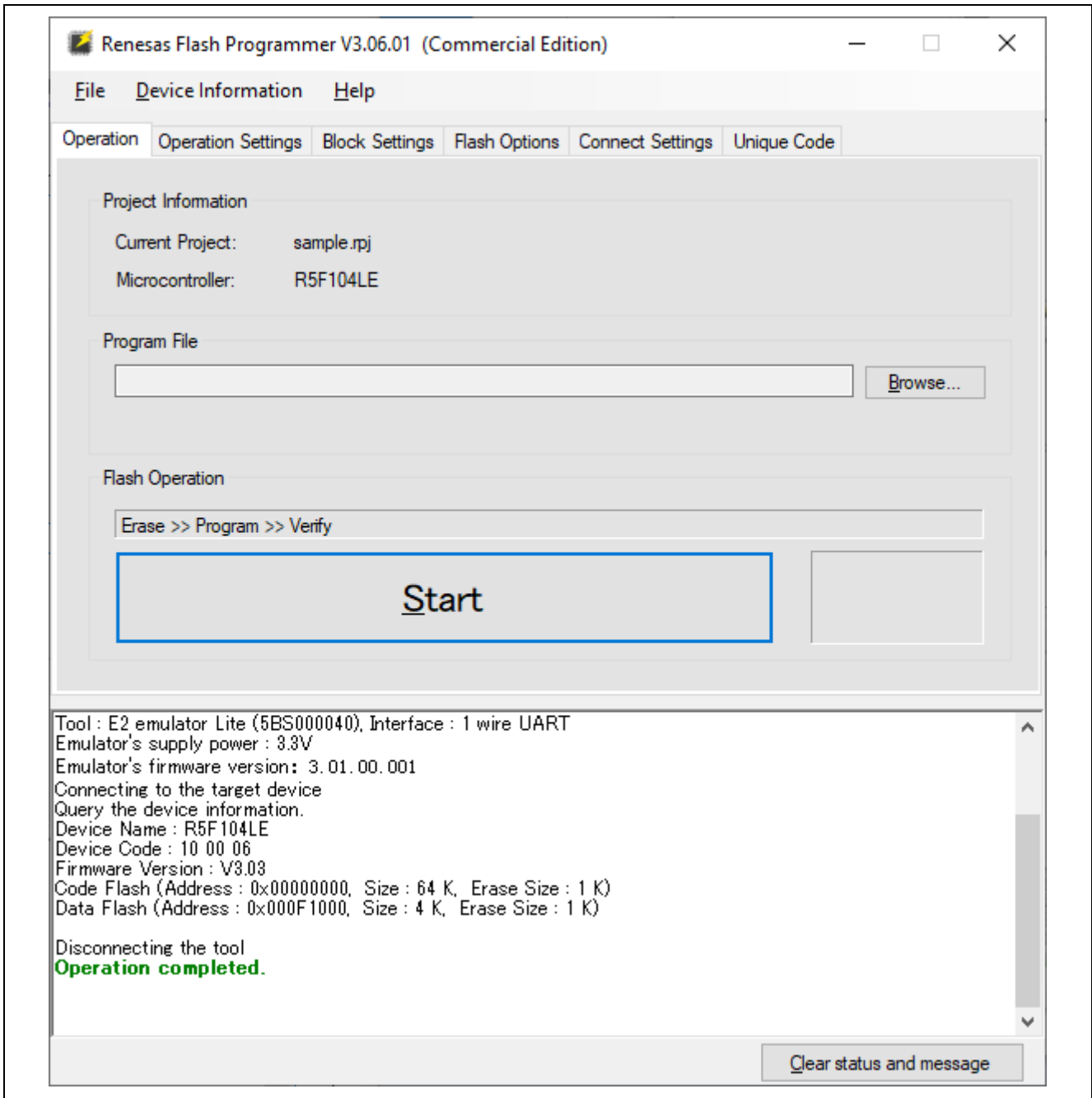


Figure 2.5 Main Window

2.4 Setting a Project

Specify "C:\vfp\sample.mot" for [Program File] on the [Operation] tabbed page.

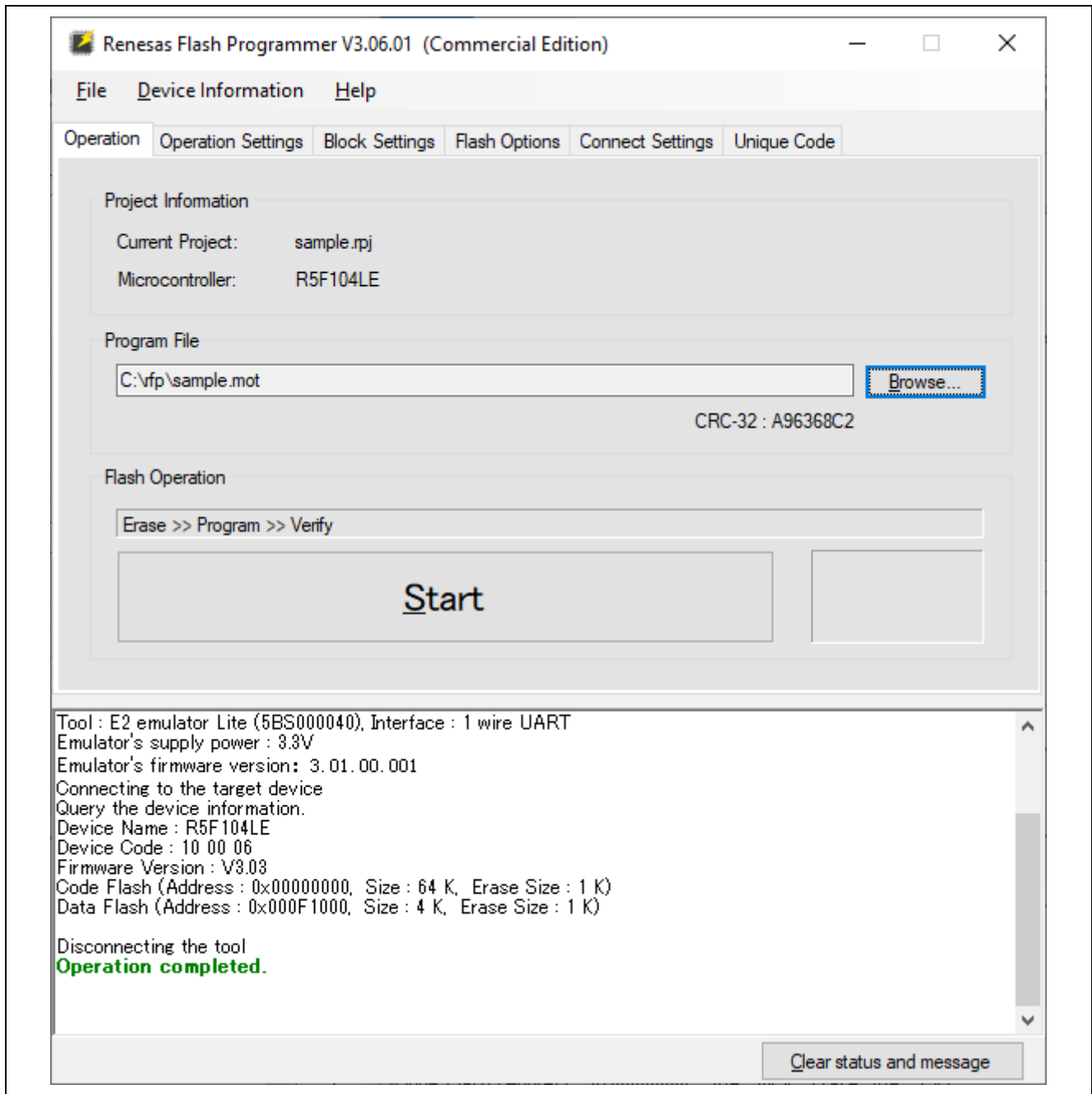


Figure 2.6 [Operation] Tabbed Page

On the [Operation Settings] tabbed page, select the [Erase], [Program], and [Verify] checkboxes in the [Command] category and confirm this.

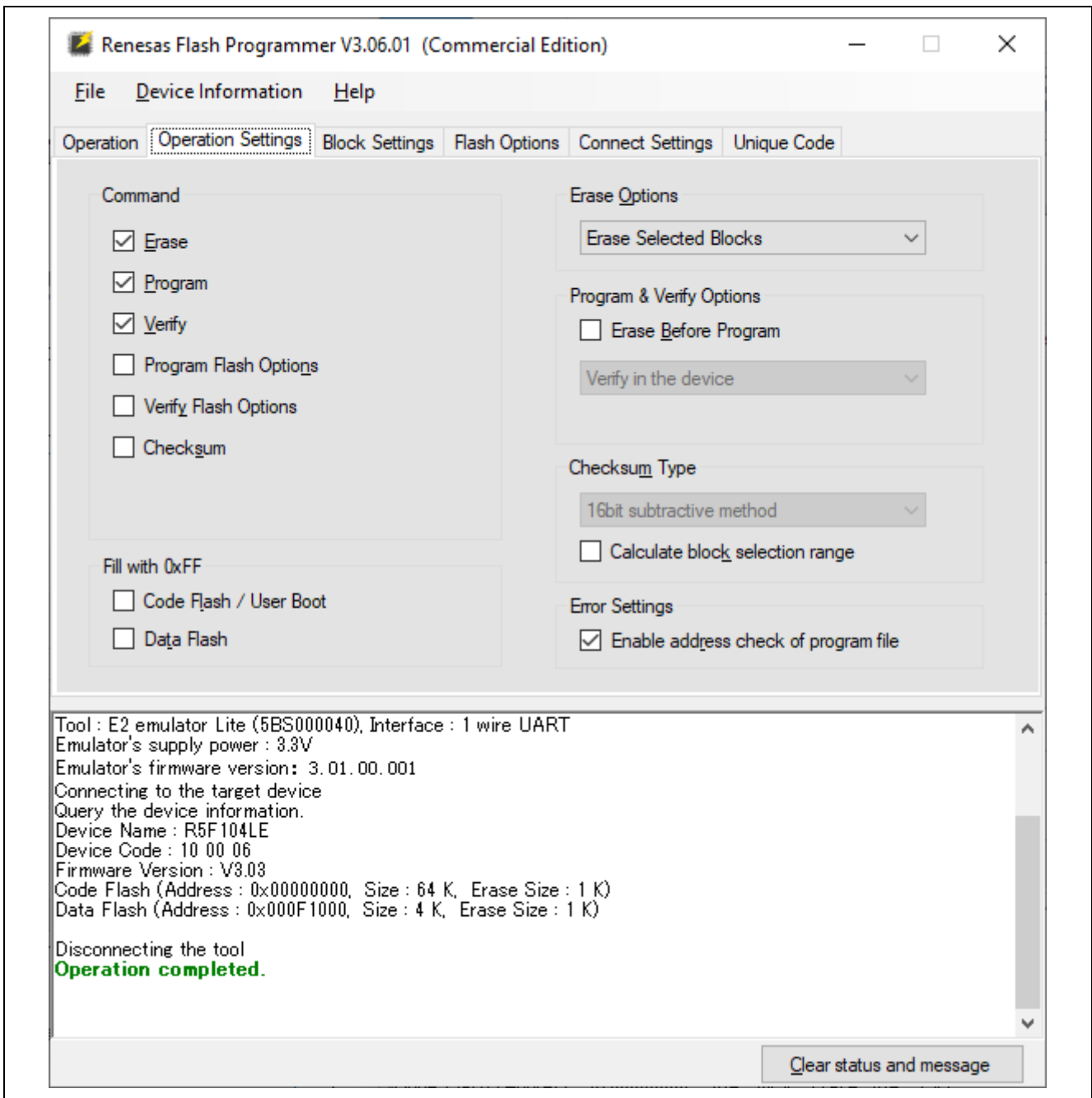


Figure 2.7 [Operation Settings] Tabbed Page

Specify “1,000,000 bps” for [Speed] on the [Connect Settings] tabbed page.

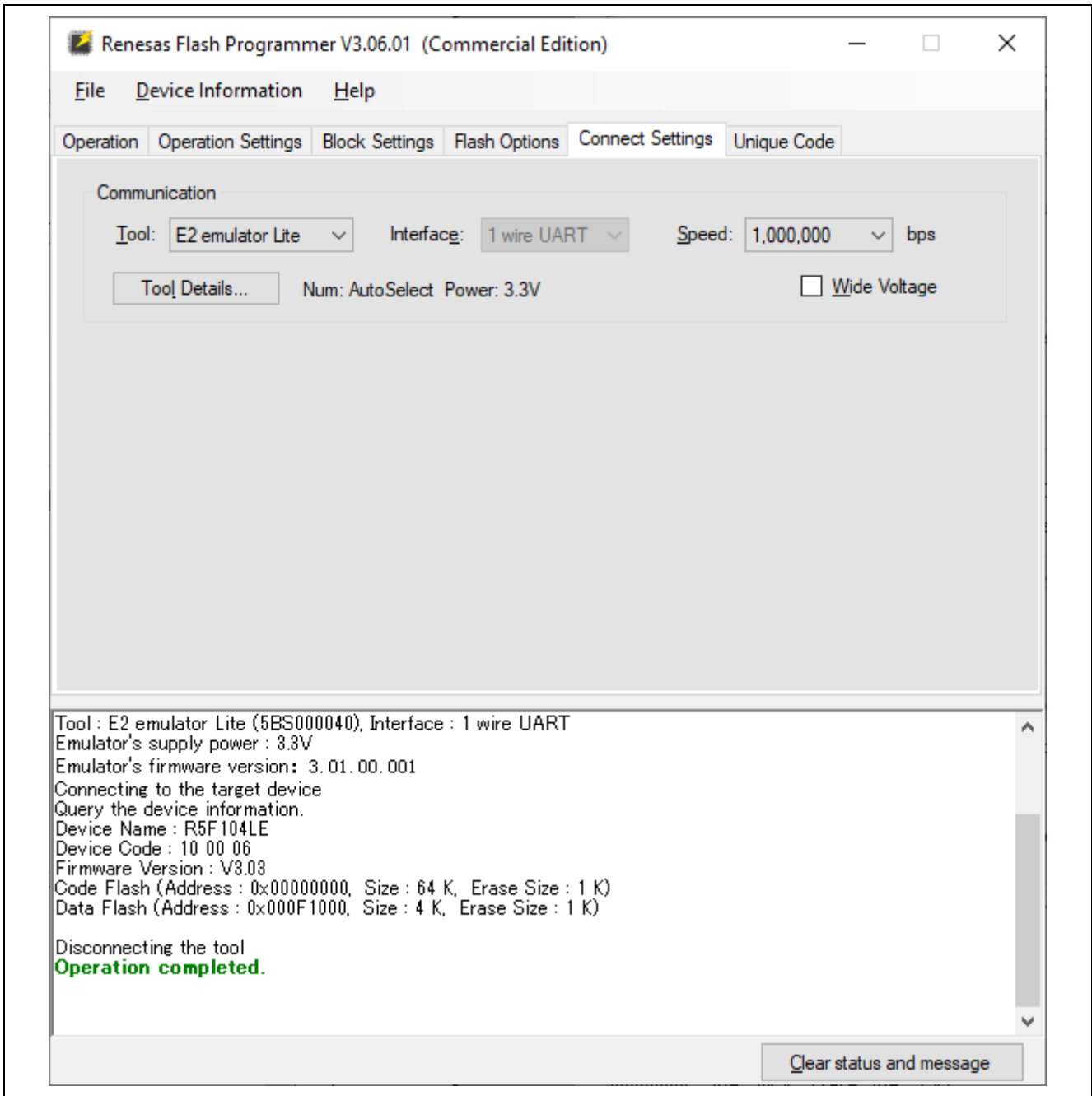


Figure 2.8 [Connect Settings] Tabbed Page

Select [Save Project] from the [File] menu to save the project.

Select [Exit] from the [File] menu to close the RFP window.

2.5 Creating a Batch File

Enter the following in a text editor and save it as "C:\rfp\sample.bat".

```
SET PATH=%PATH%;C:\Program Files (x86)\Renesas Electronics\Programming Tools\Renesas Flash  
Programmer V3.06  
RFPV3.exe /silent "C:\rfp\sample\sample.rpj"  
ECHO Result Code: %ErrorLevel%  
PAUSE
```

Figure 2.9 Creating a Batch File

Using the silent option starts the RFP in a silent mode in which the GUI is not displayed.

After the specified project file (sample.rpj) is opened and processing which is equivalent to execution (in this case, erasure, programming, and verification) in response to pressing the [Start] button once is done, the RFP is closed.

If the processing succeeded, result code 0 is returned. Otherwise, 1 is returned.

Specify the folder in which the RFP has been installed as the folder indicated by "SET PATH".

"PAUSE" is added so that the output against the command prompts can be confirmed after the RFP has been closed.

2.6 Executing the Batch File

Execute the sample.bat batch file.

The following lines are displayed in the command prompt window.

```
C:\rfp>SET PATH=%PATH%;C:\Program Files (x86)\Renesas Electronics\Programming Tools\Renesas  
Flash Programmer V3.06  
  
C:\rfp>RFPV3.exe /silent "C:\rfp\sample\sample.rpj"  
  
C:\rfp>ECHO Result Code: 0  
Result Code: 0  
  
C:\rfp>PAUSE  
Press any key to continue...
```

Figure 2.10 Executing the Batch File

3. Examples of Batch Processing from the Command Line

This chapter describes batch processing from the command line for the purpose of efficient automated programming. For details on the command line, refer to the user's manual.

<https://www.renesas.com/rfp>

3.1 Programming Multiple Program Files

Using the file option allows the specification of a program file without using one specified by a project. Multiple program files are also specifiable.

The command in the following example is for the programming of "sample1.mot" and "sample2.mot".

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /file "C:\rfp\sample1.mot" /file "C:\rfp\sample2.mot"
```

3.2 Consecutive Programming of Different Specified Projects

When programming is executed several times from the command line, different projects can be specified and consecutive programming is possible.

The following shows an example of commands for the consecutive programming of "sample1.rpj" and "sample2.rpj".

```
RFPV3.exe /silent "C:\rfp\sample\sample1.rpj"  
RFPV3.exe /silent "C:\rfp\sample\sample2.rpj"
```

3.3 Executing the Specified Commands (Erasure, Programming, and Verification)

The command option can be used to specify a command without using the specification of a command (erasure, programming, or verification) in a project. Multiple commands are also specifiable.

The following shows an example of the specification of three commands (e: erasure, p: programming, and v: verification).

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /command epv
```

3.4 Programming Sections of the Option Bytes (OPBTs) of MCUs with RH850G4MH Cores

The write32 option can be used to program specified values to specified addresses without using the program file specified in the project.

The following shows an example of programming of the value 0x01020304 to OPBT0 (address 0xFF320080) and the value 0x0A0B0C0D to OPBT1 (address 0xFF320084) of an RH850/E2M.

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /write32 FF320080 01020304 0A0B0C0D
```

Since this option also involves reading, it cannot be used with devices that do not support reading or those from which reading is not possible due to security settings.

3.5 Programming with a Specified Emulator

Using the tool option can specify the serial number of an emulator.

The following shows an example of programming through an emulator with the serial number represented by "xxxxxxxx" of the emulator.

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /tool xxxxxxxx
```

3.6 Simultaneous Programming through Multiple Devices Connected to a PC (Gang Programming)

Multiple RFPs can be started on a PC. It can also be used for programming multiple devices by specifying the serial numbers of different emulators. The start command of the Windows command prompt can also be used to set up a batch file that launches multiple batch files which continue running at the same time.

The following shows an example where two RFPs are started at the same time to program the devices connected to two emulators in the sample.rpj project.

This example is the sample1.bat batch file to handle programming through the first emulator (serial number: xxxxxxxxx).

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /tool xxxxxxxxx
echo off
if errorlevel 1 goto NG
:OK
echo OK Result Code: %ErrorLevel%
goto END
:NG
echo NG Result Code: %ErrorLevel%
:END
PAUSE
exit
```

This example is the sample2.bat batch file to handle programming through the second emulator (serial number: yyyyyyyyy).

```
RFPV3.exe /silent "C:\rfp\sample\sample.rpj" /tool yyyyyyyyy
echo off
if errorlevel 1 goto NG
:OK
echo OK Result Code: %ErrorLevel%
goto END
:NG
echo NG Result Code: %ErrorLevel%
:END
PAUSE
exit
```

This example is the sample.bat batch file, which executes calls of both "sample1.bat" and "sample2.bat".

```
:LOOP
start sample1.bat
start sample2.bat
PAUSE
goto LOOP
```

3.7 Output of Descriptions of the Executed Command Lines to the Windows Command Prompt

The file RFPV3.Console.exe in the folder where the RFP is installed produces descriptions of the executed command lines in the command prompt window.

The following shows an example of the execution of RFPV3.Console.exe for programming from the sample.rpj project.

```
RFPV3.Console.exe "C:\rfp\sample\sample.rpj"
```

The following is output to the command prompt.

```
C:\rfp>RFPV3.Console.exe "C:\rfp\sample\sample.rpj"
Renesas Flash Programmer V3.06.01 [1 Oct 2019] (Commercial Edition)
Load a project (C:\rfp\sample\sample.rpj).
Load a file (C:\rfp\sample.mot). CRC-32 : A96368C2

Connected device: R5F104LE

Connecting the RFP to the tool.
: (Omitted.)
Disconnecting the RFP from the tool.
The operation succeeded.
```

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(Rev.4.0-1 November 2017)

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