

FWuEASE Flash Writer Host Program

User's Manual

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1. Before You Start

The uEASE Flash Writer System is a system for writing programs and data to the flash memory that is on a user target board and of an LAPIS Semiconductor-original low-power microcontroller with a built-in Flash core. This manual describes how to activate the uEASE Flash Writer System, and the operation of the FWuEASE Flash Writer host program.

Chapter 1 describes knowledge that users are presumed to already have in using the uEASE Flash Writer System. Be sure to use this chapter first and then proceed to other chapters.

1.1 Symbols Used in This Manual

The following symbols are used in this manual for convenience in explanation:

[Note]	Indicates cautions required in relation to the item described in this manual.
[Reference]	Indicates a section number as a reference to the item described in this manual.
Note x	A word or phrase marked by this in the main text in this manual is given additional information below the item including that word or phrase, following [Note x] ("x" is a serial number).
[Note x]	Indicates a footnote that adds information to a word or phrase marked by "Note x" in the main text. "[Note x]" as a footnote indicator and "Note x" as a symbol in the main text are associated using the same serial number x.

1.2 Terminology

Table 1-1 lists the terms used in this manual.

Table 1-1 Terms and Their Explanations

Term	Description
uEASE Flash Writer System	Generic term of this Flash Writer System. The uEASE Flash Writer System consists of the following: <ul style="list-style-type: none"> • uEASE/nanoEASE • FWuEASE Flash Writer host program
uEASE	Hardware of the Flash Writer System.
Target microcontroller	The microcontroller incorporates flash memory where data is written and erased by the Flash Writer System.
User target board	Board on which a Flash microcontroller is mounted.
FWuEASE Flash Writer host program	Software that controls the uEASE as a Flash writer. This is a Window application that operates on a PC.
USB driver	PC driver that controls USB communication for uEASE Flash Writer System.
Host PC	PC in which the FWuEASE Flash Writer host program and the USB driver are installed.
USB cable	Cable used to connect the uEASE and a PC on which the FWuEASE Flash Writer host program operates.
uEASE interface cable	Interface cable for connecting the uEASE and a user target board.

2. Overview

This chapter describes an overview and the functions of the uEASE Flash Writer System.

2.1 About the Product

The uEASE Flash Writer System supports programming the Flash ROM of LAPIS Semiconductor-original U8 Flash Microcontroller.

The FWuEASE Flash Writer host program is the software that controls the uEASE as a Flash writer.

2.2 Program Operating Conditions

The FWuEASE Flash Writer host program operates under the following conditions.

Table 2-2 FWuEASE Flash Writer Host Program Operating Conditions

Item	Description
PC	IBM PC/AT compatible machine (requires USB port)
OS	Windows XP, Windows Vista or Windows 7
CPU	Intel Pentium/Celeron family with 300 MHz or higher clock speed is recommended.
Memory	512 MB or more is recommended.
Video card	Video adapter and color display with an SVGA (800×600) or higher resolution is required.
Hard disk	Free disk space of 10 MB or more is required.
Interface	USB 1.1 or 2.0
Others	Pointing device such as mouse

3. Activation and Termination

This chapter describes the procedures for activating and terminating the uEASE Flash Writer System.

3.1 Activation Procedure

3.1.1 Applying Power

Connect the uEASE to the user target board.
Connect the uEASE and your PC with the provided USB cable.

The uEASE operates as a USB bus-powered device. So, connecting the USB cable to the uEASE turns on the uEASE, then the power indicator on the uEASE lights steady green.

3.1.2 Installing the USB Driver

When the uEASE is connected to a PC for the first time, installation of the USB driver for the uEASE starts. If the USB driver for the uEASE is already installed, proceed to Section 3.1.3, "Activating the FWuEASE Flash Writer Host Program."

The following example shows installation under Windows XP.

When the uEASE and a PC are connected with a USB cable, the following dialog box appears. In this window, select [Install from a list or specific location (Advanced)] and click the [Next] button.

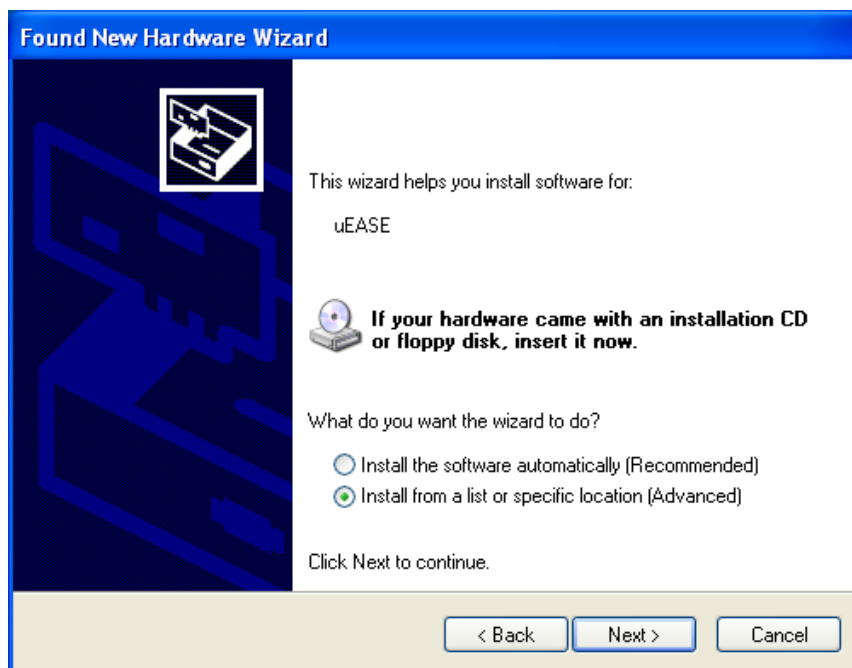


Figure 3-1 Found New Hardware Wizard (1)

A dialog box for installing the USB driver will appear (shown below). Specify the \Setup\Driver\uEASE_inst_pac folder on the setup CD, as shown in the figure below. The same USB driver file is used for both Windows XP and Windows 7. Then click [Next].

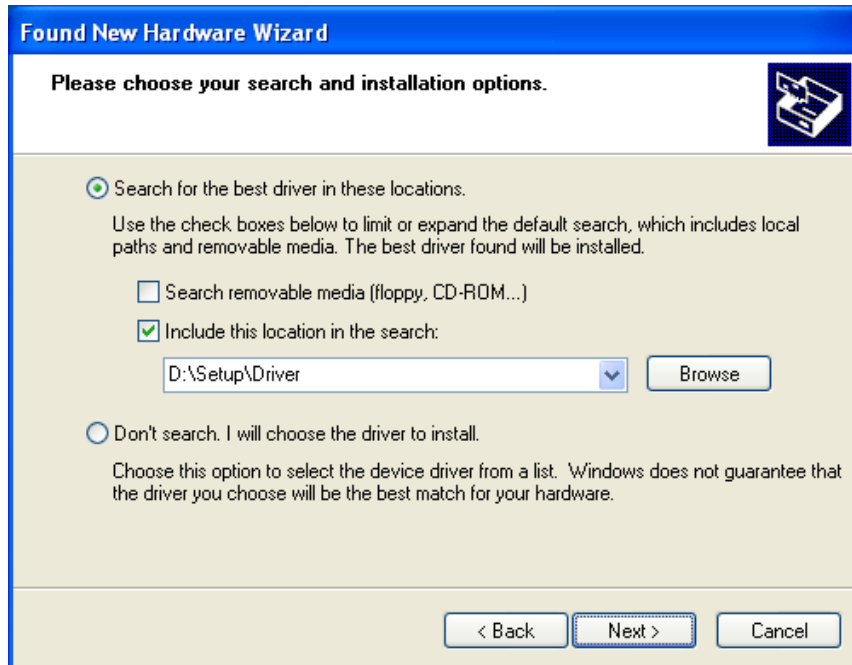


Figure 3-2 Found New Hardware Wizard (2)

Installation of the USB driver now starts. An alert dialog shown below will appear in the middle of installation. Here, click [Continue Anyway].

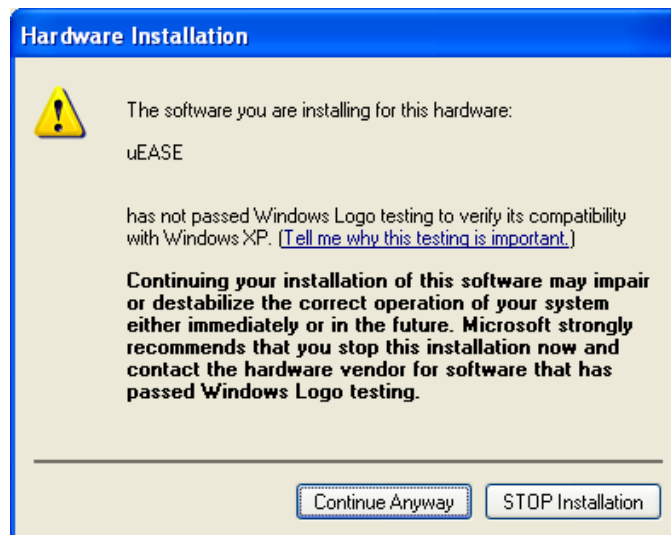


Figure 3-3 Found New Hardware Wizard (3)

When the installation of the USB driver is finished, the dialog box shown below appears. Clicking the [Finish] button completes the installation of the USB driver for the uEASE.



Figure 3-4 Found New Hardware Wizard (4)

3.1.3 Activating the FWuEASE Flash Writer Host Program

To activate the FWuEASE Flash Writer host program, do the following:

- (1) From the Windows [Start] → [All Programs] menu, select [U8 Tools] → [uEASE] → [FWuEASE].
 - (2) Select a target microcontroller. (Only when activate the FWuEASE first or change the target microcontroller.)
- For the details of the subsequent operations, see Chapter 4, "Description of Dialog Boxes."

If the uEASE or USB cable is not connected, the following error message is displayed:

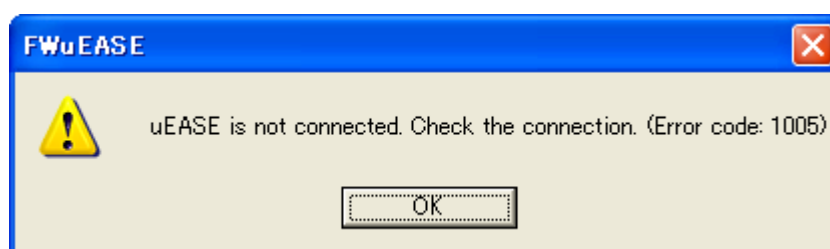


Figure 3-5 Error Message Displayed When USB Is Not Connected

If this message is displayed, click [OK] to close this error message and click the [Exit] button to exit the host program. Then check the connection of the uEASE and USB cable.

[Note]

Simultaneous multiple activations of the FWuEASE Flash Writer host program is not available.

3.2 Termination Procedure

Take the following procedure to terminate the uEASE Flash Writer System.

1. Click the [Exit] button to terminate the FWuEASE Flash Writer host program.
2. Disconnect the USB cable from the uEASE.
3. Disconnect the interface cable connected between the uEASE and the user target system.

4. Description of Dialog Boxes

This chapter describes the dialog boxes displayed by the FWuEASE Flash Writer host program.

4.1 Features of the FWuEASE Flash Writer Host Program

With a lot of the features shown below, the FWuEASE Flash Writer host program provides an easy-to-use user interface.

■ **Flash Memory Write/Verify function**

Since the comparison operation has been included in the write operation in the host program, writing to flash memory and comparison after writing can be executed by only one click.

■ **Flash Memory Erase function**

It is possible to select arbitrary blocks in flash memory and erase those blocks only.

■ **Allows specifying of multiple input files**

Provides an interface through which program files and various data files can be registered collectively and written at one time.

■ **Error messages and automatic focusing on the location where an error occurred**

The FWuEASE Flash Writer host program notifies input errors such as an address input error by message boxes. In addition, a focus automatically moves to the input field where an error occurred.

■ **Records operations**

Each time a write, compare, or erase operation is performed to flash memory, a history of their operation is recorded as a log. A log can be saved as a file in text format.

4.2 Input Files

The FWuEASE Flash Writer host program supports the following file formats:

■ **Intel HEX format**

The file extension of Intel HEX format files is .HEX.

■ **Motorola S record format**

The FWuEASE Flash Writer host program supports an S2 format.

The file extension of Motorola S record format files is .S.

4.3 Details of Dialog Boxes

When the FWuEASE Flash Writer host program is activated, a main dialog box shown in figure 4-1 appears. The main dialog box consists of a “Flash Memory Write/Verify group,” “Flash Memory Erase group,” and other common fields.

FWuEASE

Target: ML610Q431 Unplug About

Flash Memory Write/Verify

File Name: C:\Temp\file_A.hex ...

Start Address on File:

Flash Memory Offset:

End Address on File:

- ☒ End Address on Memory: FDFFH Add to List
- ☐ Depends on File Content
- ☐ Arbitrary Address: Delete from List

File Name	Start Address	End Address	Offset	Flash Start
C:\Temp\file_A.hex	00000H	to end of t...	00000H	00000H

Filling Data

- ☒ Arbitrary Data: FFH
- ☐ Content of Flash Memory

Write Options

- ☒ Erase Flash Memory before Write
- ☐ Not Fill the Area excluding Files
- ☒ Add 2 Word Data after Files

Verify Write & Check Cancel

Flash Memory Erase

Erase	Block #	Start Address	End Address	Status
<input checked="" type="checkbox"/>	1	00000H	03FFFFH	
<input checked="" type="checkbox"/>	2	04000H	07FFFFH	
<input checked="" type="checkbox"/>	3	08000H	0BFFFFH	
<input checked="" type="checkbox"/>	4	0C000H	0FFFFFFH	

Select All Erase Cancel

Save Log Clear Log Exit

Figure 4-1 Main Dialog Box

4.3.1 Common Field

Fields that belong to neither the Flash Memory Write/Verify group nor the Flash Memory Erase group are called common fields. This section describes various controls on the common fields.

■ Target field

The Target specifies the type of microcontroller mounted on the user target board. Select the name of the microcontroller from among the pull-down list at the Target field.

■ [Plug] button

The [Plug] button is used to open the USB port so as to access the flash memory on the target microcontroller. Clicking this button switches the display of the button from [Plug] to [Unplug], enabling various controls.

■ [Unplug] button

The [Unplug] button is used to make a system reset on the target microcontroller and closes the USB port. Clicking this button displays the following confirmation dialog box:

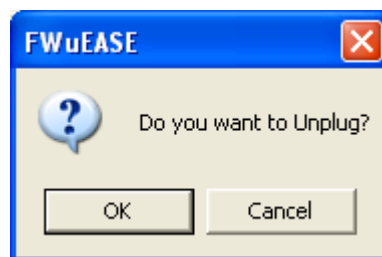


Figure 4-2 Unplug Dialog Box

Clicking [OK] switches the display of the button from [Unplug] to [Plug], disabling any control other than the controls by the [Plug] and [Exit] buttons.

To replace target microcontrollers, click this button.

■ [About] button

The [About] button displays the version of the FWuEASE Flash Writer host program. Clicking this button displays the following dialog box:

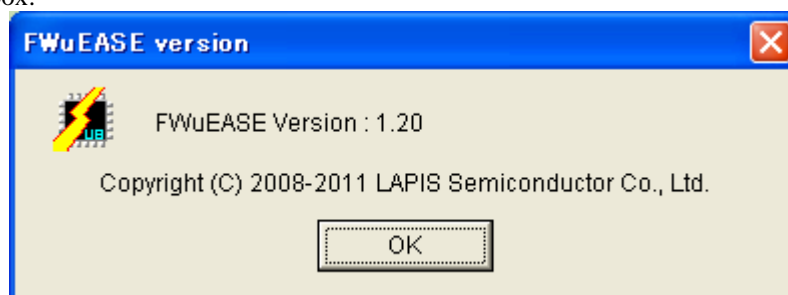


Figure 4-3 Version Information Dialog Box

■ Log Field

The field on the bottom part of the dialog box is an area to which the execution logs of write, compare, and erase operations are output.

A log at write operation displays the following content:

- Written time and date
- Write Options status
- Written files
- Data used to fill an address range at write operation
- Write results

A log at verification displays the following content:

- Verified time and date
- Verified file
- Verified address range
- Verification results

Verification results display the following content:

- Address (Address of the flash memory)
- File (File contents with respect to the Address)
- Flash (Flash memory contents with respect to the Address)

A log at erase operation displays the following content:

- Erased block
- Erased time and date
- Erase results

■ **[Save Log] button**

Content that is being displayed in the log field can be saved in a text-format file.

Click the [Save Log] button, and the following dialog box will appear, where the name of the text file to be saved can be specified.

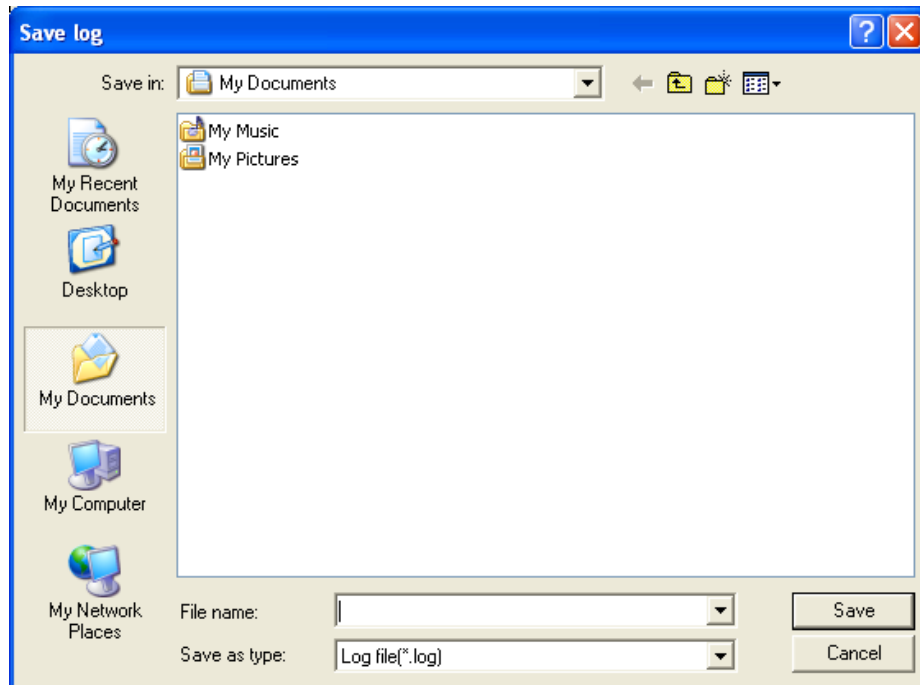


Figure 4-4 Save Log Dialog Box

Type in the name of file you want to save to the [File name] entry field, then click the [Save] button.

■ **[Clear Log] button**

Clicking this button clears the contents of the current log.

■ **[Exit] button**

This button is for terminating the FWuEASE Flash Writer host program.

Clicking this button displays the following confirmation dialog box:

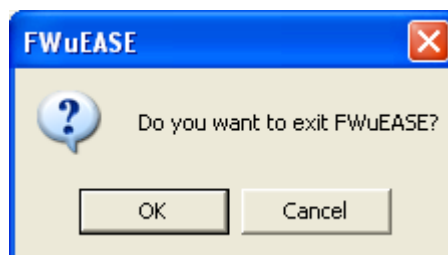


Figure 4-5 FWuEASE Exit Confirmation Dialog Box

Clicking the [OK] button exits the FWuEASE Flash Writer host program.

Clicking the close box on the titlebar of the main dialog box acts as the same operation as clicking the [Exit] button.

4.3.2 Flash Memory Write/Verify group

The Flash Memory Write/Verify group provides the two functions: one to write the contents of the specified file to the flash memory and the other to compare the specified file with the contents of the flash memory.

Figure 4-6 Flash Memory Write/Verify Field

Use a hexadecimal number for any address or value you want to specify in the Flash Memory Write/Verify group. For example, 1234, 1234H, and 0x1234 are all interpreted as a hexadecimal value of 1234H.

Table 4-1 Characters That Can Be Used for Addresses and Values

Base number	Characters that can be used	Base number specifier	Description example
Hexadecimal number	0 to 9, A to F, a to f, – (minus)	H, 0x (H, 0x can be omitted)	1234, –234D 2A3BH, ABCD

■ File Name

Specify the file to be written to the flash memory or the file to be compared with the contents of the flash memory. You have to open at least one input file.

Also, clicking the browse button ([...]) displays a file dialog box, where you can specify the file to be written to the flash memory from any folder.

■ Start Address on File

You can specify the address at which writing or comparison is to be started for the file specified in [File Name].

If the start address of the file is omitted, the smallest address included in the specified file will be the write or verification start address. No negative value can be specified as an address.

■ Flash Memory Offset

Flash Memory Offset is used for adding the offset value to the address of the file specified in [File Name]. A positive or a negative value can be specified for an offset of the flash memory.

For instance, when data is written to the file that contains data in addresses 3000 to 4FFF by specifying 1000 as the offset, that data is actually written to addresses 4000 to 5FFF of the flash memory. That is, data in address 3100 in the file is written to address 4100 of the flash memory.

In addition, when -4000 is specified as the offset for the above file, the data in address 3000 in the file is changed to address -1000; therefore, an input error message appears.

If you intend not to change the offset, you can omit this field. 0 is assumed to be specified.

If the address determined by adding an offset value to the first address and the end address of the file specified in [File Name] is outside the range of the addresses of the flash memory implemented, an input error message appears.

■ End Address on File

You can specify the address at which writing or verification will be finished.

Select one of the following three patterns for the end address on file:

- **End Address on Memory**
When this is selected, addresses up to the last address on the flash memory become the object of writing or verification.
If the specified address exceeds the last address on the file, the area excluding the content of input file will be filled with the value specified in [Filling Data].
- **Depends on File Content**
When this is selected, addresses up to the address determined by adding the value specified in [Flash Memory Offset] to the largest address on the file specified in [File Name] become the object of writing or verification.
- **Arbitrary Address**
When this is selected, addresses up to the address specified in the [Arbitrary Address] entry field become the object of writing or verification. No negative value can be specified as an address.

■ Filling Data

The valid address range excluding the content of input file will be filled with the value specified in [Filling Data].

Select one of the following two patterns for Filling Data:

- **Arbitrary Data**
When this is selected, the value specified in the [Arbitrary Data] entry field is used as the filling data.
The default [Arbitrary Data] value is FF.
- **Content of Flash Memory**
When this is selected, the current contents of the flash memory are used as the filling data.

■ Write Options

The Write Options field has the following three checkboxes:

- **[Erase Flash Memory before Write]**
When this checkbox is checked, the contents of the block that includes the write address are erased before write operation. If they were already erased before write operation, uncheck this checkbox.
If this checkbox is not checked, the area to which data is already written may be overwritten. In this case, the value of the overwritten area is undefined. Therefore, an error message appears at verification after write operation.
- **[Not Fill the Area excluding Files]**
When this checkbox is checked, the Flash Writer will write only the content of the input file.
- **[Add 2 Word Data after Files]**
When this checkbox is checked with the [Not Fill the Area excluding Files] checkbox checked, 2 words of data (FFFFFFFFH) are written to the address next to the largest address of each file if the largest address of each file is not contiguous to the smallest address of another file or a test area. Also, if the [Not Fill the Area excluding Files] checkbox is not checked and a) data is to be written up to the block before the final block and b) the largest address of the data in the file is larger than "the-final-address - 2 words" of the block, then at most 2 words of data (FFFFFFFFH) will be written to the top of the next block.

■ **[Add to List] button**

Clicking this button registers the file specified in [File Name] to the file list.

If that address range for write in the flash memory which is determined by the start address and end address of the file specified in [File Name] and Flash Memory Offset overlaps the address range for write in the flash memory of any file that has already been registered in the file list, FWuEASE displays an error and the file is not added to the file list. If this happens, check the address range of the file, set data so that no addresses are duplicated between the registered file and the registering file, and then add the file to the list again. Also, if addresses are duplicated within the same file, FWuEASE displays an error and makes no addition to the file list.

Further, if the address range for write in the flash memory determined by the start address and end address of the file specified in [File Name] and the Flash Memory Offset contains an unimplemented area of the flash memory, no addition is made to the file list either.

The number of files which can be registered in the file list is 16. FWuEASE might not run correctly when 17 or more files are registered in the file list.

■ **[Delete from List] button**

By selecting a file from the file list and clicking the [Delete from List] button, the selected file can be deleted from the file list.

■ File List

The File List is for registering files that are to be written to the flash memory or to be verified after written in the flash memory.

Each label on the File List menu is described below.

Table 4-2 Display Items in File List

Label	Description
File Name	Path and name of the file specified in [File Name]
Start Address	Start address of the file specified in [Start Address on File]
End Address	End address of the file specified in [End Address on File] If [End Address on Memory] is selected, "to end of memory" is displayed; if [Depends on File Content] is selected, the largest address is displayed; if [Arbitrary Address] is selected, the address specified in the Arbitrary Address entry field is displayed.
Offset	Offset value specified in the [Flash Memory Offset]
Flash Start	Start address to write in the flash memory calculated by the Start Address and the Offset

More than one file can be registered in the file list. In other words, by registering multiple files whose write destination addresses in the flash memory are different with each other into the file list in advance, it is possible to write all the data items in those multiple files to the file list in a batch in one write operation.

To write two or more different areas included in the same file to specific areas in the flash memory separately, register the same file more than once while varying the address range.

■ [Write & Check] button

Clicking this button writes the contents of the files in the file list to the flash memory. Moreover, it is checked that the correct value has been written in by reading the written data.

In this case, the following confirmation dialog box will appear:

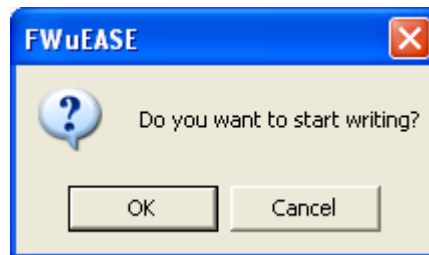


Figure 4-7 Dialog Box That Asks for Confirmation to Start Writing

Click [OK], and writing to the flash memory will start.

When writing is started, various pieces of information about write operation are output as a log.

■ **[Verify] button**

Clicking this button starts verifying (comparing) the data in the writing files with the data in the flash memory. In this case, the following confirmation dialog box will appear:

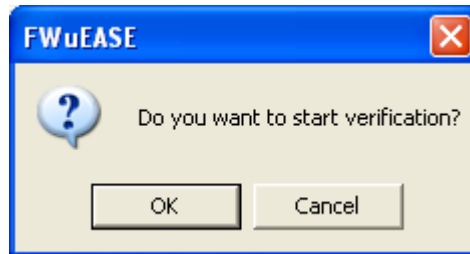


Figure 4-8 Dialog Box That Asks for Confirmation to Start Verification

Click [OK], and verification (comparison) will start.

When verification is started, information about verification and verification results are output as a log.

If the contents of the flash memory and those of the file do not match, the verification results are output in the following format:

The italicized characters shown below indicate that their values vary depending on the verified time and date, verified file, contents of the flash memory, and filling data.

```
Verification XXXX/XX/XX XX:XX:XX
  Filename for verification: XXXXX.hex
  File: [XXXXXXH - XXXXXH ] <--> Flash: [XXXXXXH - XXXXXH ]
  Fill Data: XXH
Address      File      Flash
=====
XXXXXXH     XXH       XXH
YYYYYYH     YYH       YYH
```

■ **[Cancel] button**

Clicking this button cancels writing or verification processing.

In this case, the following confirmation dialog box will appear. (Shown below is an example of canceling verification.)

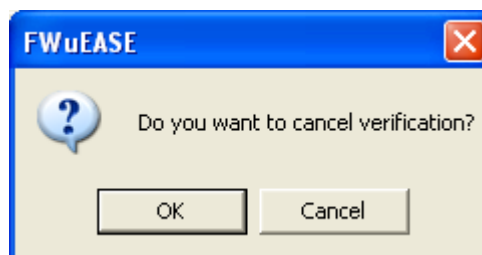


Figure 4-9 Dialog Box That Asks for Confirmation to Cancel Verification

Click [OK], and writing or verification processing will be canceled.

4.3.3 Flash Memory Erase Field

The Flash Memory Erase field provides a function that erases the contents of the flash memory in units of blocks.

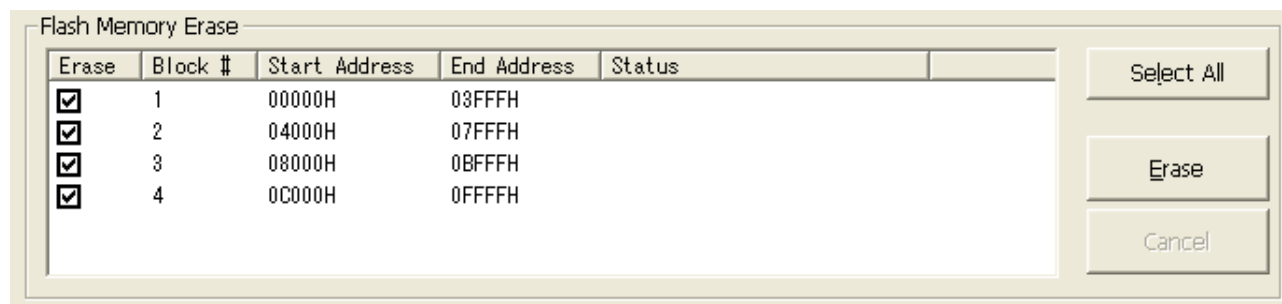


Figure 4-10 Flash Memory Erase Field

■ Block Erase List

This list is for specifying the block to be erased in the flash memory.
Each label provided for the block erase list is described below.

Table 5-3 Display Items in Block Erase List

Label	Description
Erase	Checkboxes used to specify whether to erase the target block. Area indicated as "Not Available" cannot be checked.
Block #	Block No. A block number is added according to the block size defined for each flash memory.
Start Address	Start address of the block
End Address	End address of the block
Status	Whether or not flash memory is allocated to the block is indicated as follows: <ul style="list-style-type: none"> When flash memory is allocated: No display When flash memory is not allocated: "Not Available"

By checking the checkboxes in the block erase list individually, only the desired block(s) can be erased.

■ [Select All] button

Clicking this button makes all the checkboxes in the block erase list checked, thereby making all the blocks the object of erase operation.

■ **[Erase] button**

Clicking this button erases the blocks whose checkbox is checked in the block erase list.
In this case, the following confirmation dialog box will appear:

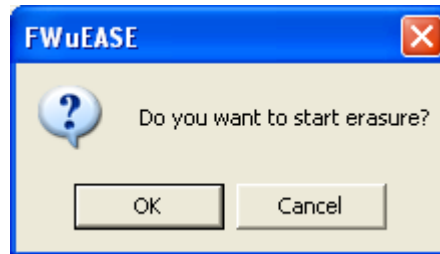


Figure 4-11 Dialog Box That Asks for Confirmation to Start Erasure

Click [OK], and erasing the contents of the flash memory will start.
When erase operation is started, information about erase operation is output as a log.

■ **[Cancel] button**

Clicking this button cancels erase operation.
In this case, the following confirmation dialog box will appear:

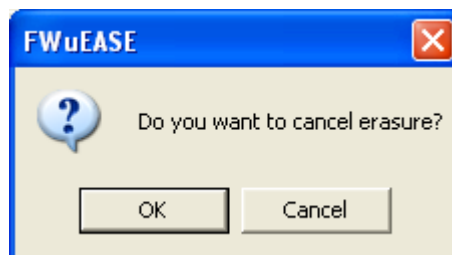


Figure 4-12 Dialog Box That Asks for Confirmation to Cancel Erasure

Click [OK], and erasure processing will be canceled.

■ **Operation example**

The memory space of the flash memory that can be handled by the uEASE Flash Writer System consists of several areas called blocks. Each boundary between the blocks is called a block boundary.
In the flash memory where a block boundary is at 4000H (16K bytes), the relationship is shown in Figure 4-13 between the start address/end address of the file, the offset, and the flash memory writing start address/end address in cases where "4000H" is specified as the offset of the flash, '6000H' as the start address of the file, and an arbitrary value (11FFFH) as the end address of the file.

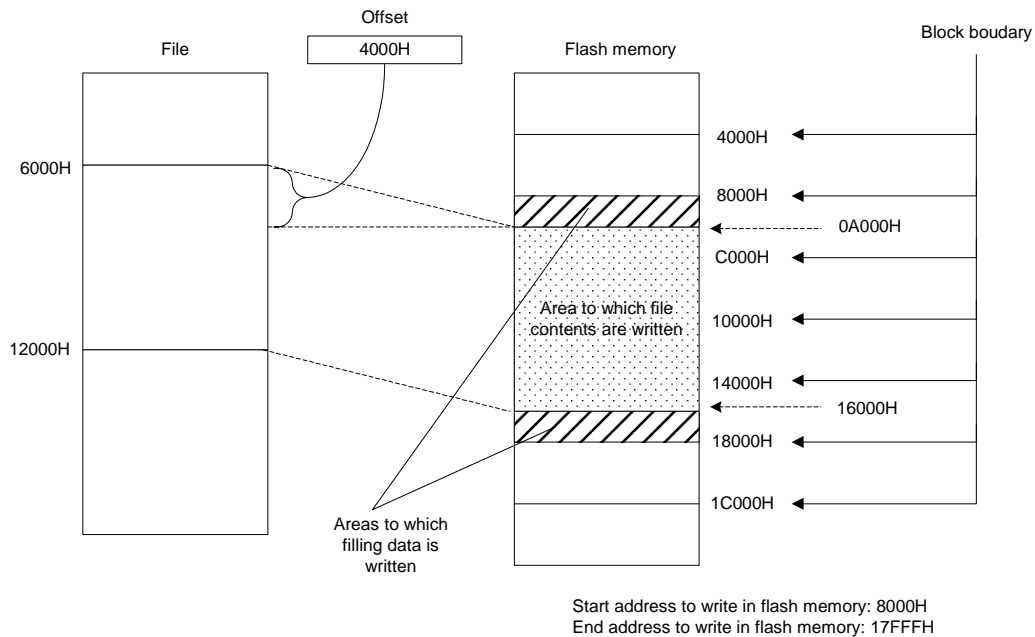


Figure 4-13 Relationship between File Addresses and Addresses Written in Memory

When the [Erase Flash Memory before Write] checkbox is not checked in the Write Options field (that is, when the flash memory is not erased before writing), the address range (0A000H to 15FFFH) determined by adding the offset (4000H) to the address range from the start address (6000H) to the end address (11FFFH) becomes the address range for write in the flash memory.

The flash memory that is supported by the uEASE Flash Writer System is erased in 1-block units, not in 1-address units. Therefore, when [Erase Flash Memory before Write] check box is checked with the [Not Fill the Area excluding Files] checkbox not checked in the Write Options field, the value specified in [Filling Data] is written to the areas (8000H–9FFFH and 16000H–17FFFH) that are indicated by the “Areas to which filling data is written” in the above diagram.

[Note]

Note that if a write operation is performed to a test area, the contents of the block that includes the test area will be erased before the write operation.

For example, if a test area ranges from FC00H to FFFFH, then the area of the block that includes the test area ranges from C000H to FFFFH; therefore, if a write operation is performed to the test area, the data at C000H to FBFFH will be erased before the write operation.

5. Tutorial

This chapter introduces a brief tutorial for using the FWuEASE Flash Writer host program.

5.1 Scenario 1: Writing Only One File to the Flash Memory, then Filling the Free Space with Arbitrary Value

To write only one file to the flash memory, enter data into the entry fields, as shown below. (When there is no data at addresses from 1000 through 10FF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Default (arbitrary data)
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	Default (OFF)
[Add 2 Word Data after Files]	Default (ON)

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The value specified in [Filling Data] is written both to the addresses from 1000 through 10FF in the flash memory and to the free space excluding the contents of the input file.

5.2 Scenario 2: Writing Only One File to the Flash Memory and Writing No Data to the Free Space

To write only one file to the flash memory and writing no data to the free space, enter data into the entry fields, as shown below. (When there is no data at addresses from 1000 through 10FF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Default (arbitrary data)
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	ON
[Add 2 Word Data after Files]	Default (ON)

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The same value as the flash memory contents is written to the addresses from 1000 through 10FF in the flash memory, and 2 words of data (FFFFFFFFH) are written to the address next to the largest address of the file.

5.3 Scenario 3: Writing Two Files to the Flash Memory

To write two files having no duplicate addresses with each other to the flash memory, take the following procedure:
(When there is no data at addresses from 1000 through 10FF in the file indicated in File 1 below and there is no data at addresses from 3000 through 30FF in the file indicated in File 2 below)

File 1

[File Name]	Specify the first file to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Default (arbitrary data)

Click the [Add to List] button to register the file to the file list with the above settings.

File 2

[File Name]	Specify the second file to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Default (arbitrary data)
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	ON
[Add 2 Word Data after Files]	Default (ON)

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The value specified in [Filling Data] is written to the addresses from 1000 through 10FF and from 3000 through 30FF in the flash memory. 2 words of data (FFFFFFFFH) are written to the address next to the largest address of each of the contents of File 1 and the contents of File 2.

5.4 Scenario 4: Writing One File to the Flash Memory by Shifting Addresses by 1000H

Write one file to the flash memory with address offset 1000H, as shown below. (When there is no data at addresses from 1000 through 10FF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	1000
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Default (arbitrary data)
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	ON
[Add 2 Word Data after Files]	Default (ON)

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The value specified in [Filling Data] is written to the addresses from 2000 through 20FF in the flash memory. 2 words of data (FFFFFFFH) are written to the address next to “the-largest-address + 1000” of the file.

5.5 Scenario 5: Writing a Specific Range in a File to the Flash Memory and Leaving Original Data in the Other Area of the Flash Memory

Write a range of 2000H through 3FFFH to the flash memory and leave the original data in the other area (area other than the addresses from 2000H through 3FFFH) of the flash memory, as shown below. (When there is no data at addresses from 3000 through 30FF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	2000
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Arbitrary Address] and specify 3FFF.
[Filling Data]	Default (arbitrary data)
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	ON
[Add 2 Word Data after Files]	OFF

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The value specified in [Filling Data] is written to the addresses from 3000 through 30FF in the flash memory.

5.6 Scenario 6: Writing a File to the Flash Memory, then Filling the Free Space with 5AH

Write a file to the flash memory and then fill the free space in the flash memory with 5AH, as shown below. (When there is no data at addresses from 0 through 0FFF and from 2000 through 2FFF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	0
[Flash Memory Offset]	No entry required
[End Address on File]	Select [End Address on Memory].
[Filling Data]	Select [Arbitrary Data] and specify 5AH.
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	Default (OFF)
[Add 2 Word Data after Files]	OFF

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

5AH, the value specified in [Filling Data], is written to the addresses from 0 through 0FFF, from 2000 through 2FFF, and from the address next to the largest address of the contents of the file through the end address in the flash memory.

5.7 Scenario 7: When Writing One File to the Flash Memory and Leaving Original Data of the Flash Memory in the Free Space

In writing one file to the flash memory, if you want to leave original data in the flash memory in addresses having no data to be written, as shown below. (When there is no data at addresses from 1000 through 10FF in the file)

[File Name]	Specify the file that contains the data to be written to the flash memory.
[Start Address on File]	No entry required
[Flash Memory Offset]	No entry required
[End Address on File]	Select [Depends on File Content].
[Filling Data]	Select [Content of Flash Memory].
[Erase Flash Memory before Write]	Default (ON)
[Not Fill the Area excluding Files]	ON
[Add 2 Word Data after Files]	OFF

Click the [Add to List] button to register the file to the file list with the above settings, then click the [Write & Check] button to start writing to the flash memory.

The same value as the contents of the flash memory is written to the addresses from 1000 through 10FF.

6. Error Messages

This chapter describes the error messages that the FWuEASE Flash Writer host program outputs.

6.1 List of Error Messages

6.1.1 uEASE Related Errors

If an error occurs while the uEASE Flash Writer System is running, the POWER indicator and the RUN indicator at the bottom left of the uEASE body blink concurrently.

In this case, terminate the uEASE Flash Writer System quickly according to the procedure described in Section 3.2. After that, restart the uEASE Flash Writer System according to the procedure described in Section 3.1.

If an error relating to the uEASE occurs, one of the error messages shown below is displayed.

In *number* in the table below, the number corresponding to the error occurrence status is displayed and in *filename*, the file name of the file where the error occurred is displayed.

Table 6-1 uEASE Related Error Messages

Error message	Description and Corrective Action
The FWuEASE Flash Writer may be malfunctioning. Check the connection, and then restart FWuEASE and the uEASE. (Error code: <i>number</i>)	Check the connection of the uEASE, then reactivate it according to the instructions described in Section 3.1, "Activation Procedure." If this error recurs even after reactivation, contact your nearest LAPIS Semiconductor sales office and report how the error occurs and the error code (<i>number</i>).

6.1.2 User Target System Related Errors

If an error relating to a user target board occurs, the error message shown below is displayed.

Table 6-2 User Target Board Related Error Message

Error message	Description and Corrective Action
Failed to access the target LSI. Check the user target system connected to the uEASE. (Error code: <i>number</i>)	An attempt was made to access the flash memory on the target microcontroller, but failed. It is possible that there is a problem in the connection of the uEASE and the user target board, or the flash memory on the target microcontroller may be damaged. For the content of the error code (<i>number</i>), see Table 6-3 below.

Table 6-3 Details of the Errors Concerning the User Target System

Error message	Description and Corrective Action
0x6100	A discrepancy was detected in verification after writing to the flash memory. This error is sometimes detected when flash memory is overwritten. Erase the flash memory contents and write data again, then perform verification again. If this error recurs, the flash memory on the target microcontroller may be damaged. In that case, replace the target microcontroller.
0x6302	An attempt was made to make a reset, but failed. Check the connection between the uEASE and the user target board, then take the procedure described in Section 3.1, "Activation Procedure," to reactivate the system. If an error occurs even after reactivation, replace the target microcontroller.
0x6303	Time-out occurred in flash write, chip erasure, or block erasure processing. Check the connection between the uEASE and the user target board, then take the procedure described in Section 3.1, "Activation Procedure," to reactivate the system. If an error occurs even after reactivation, replace the target microcontroller.
0x6304	The uEASE cannot communicate with a target microcontroller normally owing to a noise etc. Check the connection between the uEASE and the user target board, then take the procedure described in Section 3.1, "Activation Procedure," to reactivate the system.
0x6305	During flash writing, the power supply voltage of the target microcontroller (VTref) falls below the guaranteed range. Check the power supply.
0x6307	An attempt was made to activate the on-chip ICE block, but failed. Check the connection between the uEASE and the user target board, then take the procedure described in Section 3.1, "Activation Procedure," to reactivate the system. If an error occurs even after reactivation, replace the target microcontroller.
0x6308	The Flash ROM operating voltage (VDDL) when the flash memory is controlled is outside the normal range.
0x6309	The power supply voltage of the target microcontroller (VTref) is outside the normal range. Check the power supply.
0x630C	Incorrect data was received from the target microcontroller. Check the connection between the uEASE and the user target board, then take the procedure described in Section 3.1, "Activation Procedure," to reactivate the system.

6.1.3 FWuEASE Flash Writer Host Program Related Errors

If an error occurs during operation of the FWuEASE Flash Writer host program, one of the error messages shown below is displayed.

Table 6-4 FWuEASE Flash Writer Host Program Related Error Messages

Error message	Description and countermeasure
Activation was canceled because the TRG files were not found.	This error occurs if any TRG file is not found in the folder where FWuEASE.EXE is or the relative path "..\trg" from there. Please install a device information file (U8DevInfo) from "U8 Development Tools Setup CD."
An illegal value was input to the "Start Address on File" entry field.	Analysis of [Start Address on File] failed. Check the entered address value.
An illegal value was input to the "Flash Memory Offset" entry field.	Analysis of [Flash Memory Offset] failed. Check the entered offset value.
An illegal value was input to the "Arbitrary Data" entry field.	Analysis of the value specified in [Arbitrary Data] in the [Filling Data] field failed. Check the entered value.
Value has not been input to the "Arbitrary Data" of "Address-Filling Data" entry field.	Although [Arbitrary Data] is being selected in the [Filling Data] field, no filling value has been entered. Enter a filling value.
An illegal value was input to the "Arbitrary Address" entry field.	Analysis of the value specified in [Arbitrary Address] in the [End Address on File] field failed. Check the entered value.
End address on file has not been input to the "Arbitrary Address" entry field.	No address has been specified in [Arbitrary Address] in the [End Address on File] field. Specify an address.
Value in "Start Address on File" is greater than the one in "Arbitrary Address".	The address specified in [Start Address on File] is greater than the value specified in [Arbitrary Address] in the [End Address on File] field. Specify an address so that the [Start Address on File] value is smaller than the [Arbitrary Address] value in the [End Address on File] field.
Flash memory is not implemented at the address specified by "Start Address on File" and "Flash Memory Offset".	The address calculated based on [Start Address on File] and [Flash Memory Offset] is outside the valid range of the flash memory. Check the values that have been set in [Start Address on File] and [Flash Memory Offset].
Flash memory is not implemented at the address specified by "End Address on File" and "Flash Memory Offset".	The address calculated by [End Address on File] and [Flash Memory Offset] is outside the valid range of the flash memory. Check the values set in [End Address on File] and [Flash Memory Offset].
No data is found between "Start Address on File" and "End Address on File".	No effective data record is found in the address range specified by [Start Address on File] and [End Address on File]. Check the file contents and the values set in [Start Address on File] and [End Address on File].

Error message	Description and Corrective Action
An illegal end record was found in <i>filename</i> .	An illegal end record was found in the Intel HEX format file specified in the [File Name] field. The file may be damaged.
A checksum error occurred in a <i>filename</i> .	A checksum error occurred during reading of the HEX file specified in the [File Name] field. The file may be damaged.
An invalid end record was found in <i>filename</i> .	An invalid end record was found in the Motorola S record format file specified in the [File Name] field. The file may be damaged.
No valid end record was found in <i>filename</i> .	No valid end record was found in the Motorola S record format file specified in the [File Name] field. The file may be damaged.
No valid data record was found in <i>filename</i> .	No valid data record was found in the HEX file specified in the [File Name] field. Check the contents of the file.
<i>filename</i> could not be opened.	An attempt was made to open the HEX file specified in the [File Name] field, but failed. It is possible that no HEX file exists or the HEX file is currently opened by another application. Check the file name or check if the file is currently opened by another application.
Data record having duplicate addresses was found included in <i>filename</i> .	There is a data record having duplicate addresses in the HEX file specified in the [File Name] field. The file may be damaged.
The format of <i>filename</i> is illegal.	The format of the HEX file specified in the [File Name] field is illegal. The file may be damaged.
Flash memory write address is a duplication of an address of a registered file.	A duplicate address was found between the HEX file specified in the [File Name] field and the HEX file registered in [File List]. Check the respective address ranges of these files.
An address where Flash memory is not implemented was detected in <i>filename</i> .	The address range determined by adding the offset specified in [Flash Memory Offset] to the address of the HEX file specified in the [File Name] field includes an address to which the flash memory is not allocated. Check the contents of the file and the value of [Flash Memory Offset].
The selected target does not match target LSI.	The target name selected in the [Target] pull-down list and the target microcontroller do not match. Select the target name that matches the target microcontroller.
An illegal value was input to the "Security ID" entry field.	The value entered in the [Security ID] field is invalid. Select [Initialize Flash memory and security setting.] and initialize the target microcontroller.
A wrong value was input to the "Security ID" entry field.	The security ID entered in the [Security ID] field is illegal. Select [Initialize Flash memory and security setting.] and initialize the target microcontroller.

Error message	Description and Corrective Action
An illegal end record was found in <i>filename</i> .	An illegal end record was found in the Intel HEX format file specified in the [File Name] field. The file may be damaged.
Internal FWuEASE error. (Error code: <i>number</i>)	The FWuEASE Flash Writer host program may be malfunctioning. Check the connection with the uEASE, then reactivate the FWuEASE Flash Writer host program. If this error recurs even after reactivation, contact your nearest LAPIS Semiconductor sales office and report how the error occurs and the error code (<i>number</i>).

Table 6-5 FWuEASE Flash Writer Host Program Related Warning Messages

Error message	Description and countermeasure
Several TRG files with the version not supported were skipped.	The TRG file of the old format to which FWuEASE does not correspond was skipped. When a target microcontroller to connect is not displayed on the target dialog at the time of activation, the TRG file for the target microcontroller may be old. Please install a device information file (U8DevInfo) from the latest "U8 Development Tools Setup CD."
Write data include address where Flash memory is not built in.	The writing to the area where the flash memory is not built in was specified. The writing to the area is skipped.

6.1.4 USB Related Errors

If an error relating to USB communication occurs during operation of the FWuEASE Flash Writer host program, the error message shown below is displayed.

Table 6-6 USB Related Error Message

Error message	Description and Corrective Action
Failed to communicate with the uEASE. Check the connection. (Error code: <i>number</i>)	An attempt was made to make USB communication between the uEASE and the FWuEASE Flash Writer host program, but failed. Check the USB cable and check the connection.

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