EFP-I Control Software

WinEFP Instruction Manual

Second edition, May 1999

The contents of the EFP-I instruction manual are subject to change without notification for the purpose of future performance enhancement, etc.

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1. WinEFP Setup

This chapter contains a description of how to install WinEFP and the communication settings when WinEFP is initially started.

1.1 Execution File Copy

Create a folder for WinEFP on the hard disk of your PC and copy the following files:

- WinEFP.EXE (WinEFP execution file)
- EFPMCU.TBL (MCU table file for parallel writing)
- SRPMCU.TBL (MCU table file for serial writing)

* WinEFP requires at least 3 Mbytes of hard disk space and 16 Mbytes of memory.

1.2 WinEFP Start-Up

Before using WinEFP, you must first set the RS-232C communication settings. The procedure is as follows:

(1) Connect the EFP-I and peripheral devices in accordance with "3. Setup" of the EFP-I instruction manual. Also connect the MCU unit to the EFP-I.
(2) Turn on the EFP-I's power.
(3) Execute WInEFP.EXE. When executed, the environment settings dialog appears. Set the communication port and baud rate and click the OK button. If the communication port is set incorrectly, the dialog shown in Fig. 1.1 appears.

Fig. 1.1: Error Dialog at Time of Communication Setting

Click the OK button and the environment settings dialog appears. Set the communication port and baud rate again.

* Once you set the communication port and baud rate correctly, you don't have to make communication settings the next time you start the program.

2. WinEFP Basic Operation

This chapter contains a description of the operation procedure for using WinEFP. The procedures are covered in the order of environment settings, WinEFP window, user program download, dump window, device command execution, and script window.

2.1 Environment Settings Dialog

The environment settings dialog appears when WinEFP is started. Device and RS-232C are set in the environment settings dialog. The configuration of the environment settings dialog is shown in Fig. 2.1.
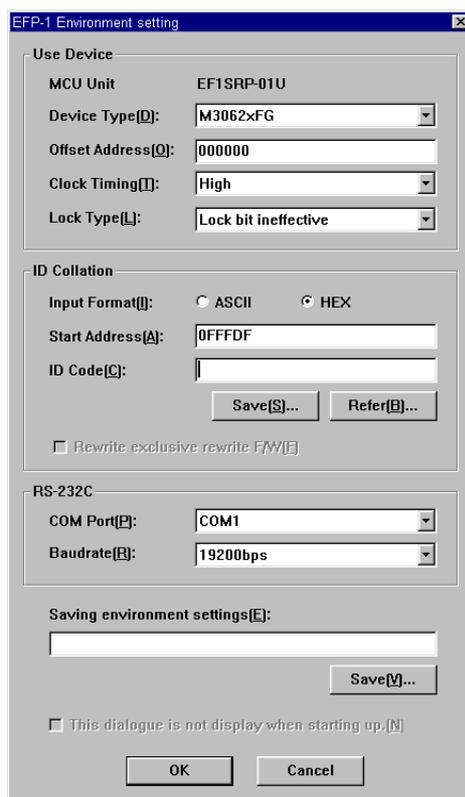
Fig. 2.1: Environment Settings Dialog Configuration

You can set the following operating environment in the environment settings dialog:

1) Use Device
- MCU Unit
  Displays the name of the MCU unit currently connected to the EFP-I.

- Device Type
  Specifies MCU to be used.

- Offset Address (MCU Offset)
  Input the offset address for reading and writing from/to the MCU. For more information on offset address, see "5.1 Offset Address."

• Clock Timing
Specifies HIGH or LOW mode. Clock timing can be set for serial writing MCU unit only.

• Lock Type
Specifies whether lock bit is to be effective or not. Lock type can be set for MCU with lock bit control function only.

* Select device type, clock timing and lock type from the drop-down list to the right of each parameter display field (displayed by clicking the arrow pointing downward with the mouse).

2) ID Collation

ID collation can be input for some MCU's only. For details concerning ID collation, see the user's guide for the MCU unit.

3) RS-232C
• Communication Port
Specifies communication port from COM1 to COM4.

• Communication baud Rate
Specifies communication baud rate from 9,600 bps to 115,200 bps.

*Select communication port and baud rate from the drop down list to the right of each parameter display field (displayed by clicking the arrow pointing downward with the mouse).

4) Saving Environment Settings

Specifies name of file for saving setting contents such as RS-232C and device used in the environment settings dialog. The saved environment settings file is used when carrying out environment settings within script command. When the SAVE button is clicked, the file section dialog appears. Specify the name of the environment settings file to be saved.

5) This dialog is not displayed when starting up.

If you turn the check box ON, you can set so that the environment settings dialog is not displayed the next time you start WinEFP. To turn the check box OFF, select [Other] —> [Environment Settings] from the WinEFP window menu and turn the check box of this parameter OFF. If you change the MCU unit, the environment settings dialog opens regardless of the contents of the check box.

When you're finished setting the parameters, click the OK button and the main window appears. You can also display the environment settings dialog by selecting [Option] —> [Environment Settings] from the WinEFP window menu.

2.2 WinEFP Window

The WinEFP window is the WinEFP main window. You can start the various types of windows and execute the various types of commands from this window. The configuration of the WinEFP window is shown in Fig. 2.2.
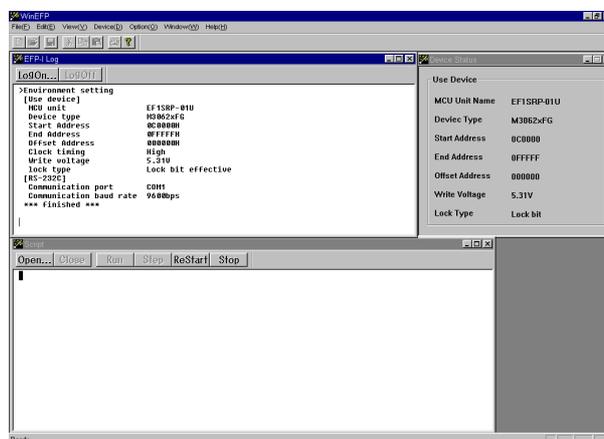
Fig. 2.2: WinEFP Window Configuration

The following windows can be displayed in the WinEFP window:

1) Device Settings Data Window

Window which displays MCU used and name of MCU unit currently connected to the EFP-I. The device settings data window is displayed in the WinEFP main window by selecting [Window] —> [Device Settings Data Window] from the WinEFP window menu.

2) Communications Status Window

Window which displays RS-232C communication settings data. The communications status window is displayed in the WinEFP main window by selecting [Window] —> [Communications Status Window] from the WinEFP window menu.

3) Dump Window

Window for viewing and editing contents of the EFP-I's internal RAM. The dump window is displayed in the WinEFP main window by selecting [Window] —> [Dump Window] from the WinEFP window menu.

4) Script Window

Window for creating and executing script. The script window is displayed in the WinEFP main window by selecting [Window] —> [Script Window] from the WinEFP window menu.

5) Execution Results Window

Window which displays execution results when various types of commands are issued. Also called the "log window." You can also save execution results contents displayed in the execution results display field in a file. To save execution results contents in a file, click the Log On button above the execution results display field. The file section dialog then appears, so specify the file name. To quit saving of execution results contents, click the Log Off button. The log window is displayed in the WinEFP main window by selecting [Window] —> [Log Window] from the WinEFP window menu.

2.3 User Program Download

To download a user program, select [File] —> [Download] from the WinEFP window menu. When download is selected, the download dialog appears so you can specify the download file and input the offset address. When download is executed, user program data is saved in the EFP-I's internal RAM. Configuration of the download dialog is shown in Fig. 2.3.
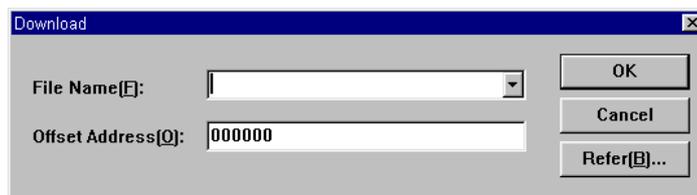
Fig. 2.3: Download Dialog Configuration

Parameters specified in the download dialog are as follows:

1) File Name

Specifies the name of the file to be downloaded. The history of the downloaded file is displayed in the drop-down list to the right of each parameter display field (displayed by clicking the arrow pointing downward with the mouse). You can also specify the file from the list. If you click the view button, the file section dialog appears so you can specify a file in the folder of your choice.

2) Offset Address (HEX Offset)

For inputting the offset address when downloading data of a file in the EFP-I's internal RAM. For more information on offset addresses, see "5.1 Offset Address."

When you have finished setting the parameters, click the OK button and download is executed.

2.4 Dump Window

To view and edit data in the EFP-I's internal RAM, select [Window] —> [Dump Window] from the WinEFP window menu. When dump window is selected, the dump window appears and the RAM data is displayed in dump format. The configuration of the dump window is shown in Fig. 2.4.
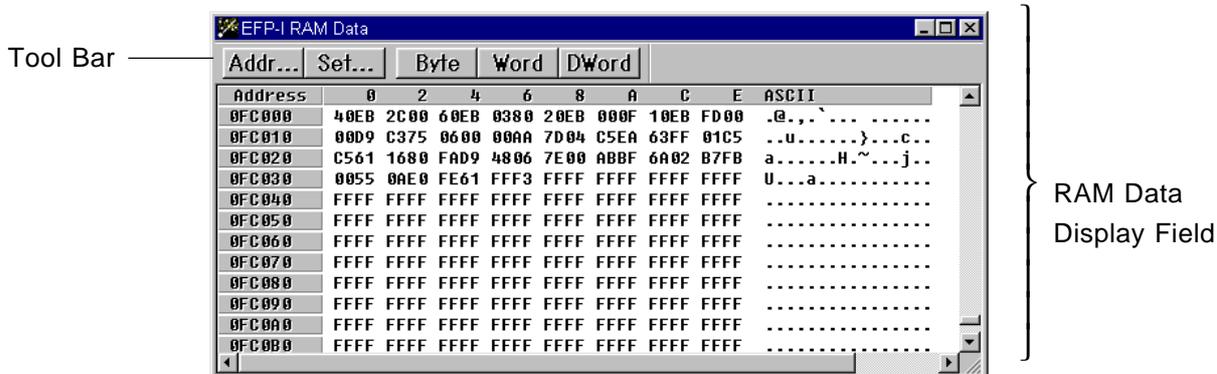
Fig. 2.4: Dump Window Configuration

The dump window contains a tool bar for changing RAM data and display format. The configuration of the tool bar is shown in Fig. 2.5.

Fig. 2.5: Tool Bar Configuration (Dump Window)

1) Addr Button

To change the display address of RAM data, click the Addr button. When the Addr button is clicked, the dump address setting dialog appears, so input the address of your choice and click the OK button. If the dump window is active, press the Ctrl and J key together and the dump address setting dialog appears.

2) Set Button

To change contents of RAM data, click the Set button. When the Set button is clicked, the RAM data setting dialog appears, so input data and address of your choice and click the OK button.

3) Display Format Change Button (Byte, Word, Dword)

To change the RAM data display format, click the Byte, Word or Dword button, and the display format of memory contents changes to 1, 2 or 4-byte length.

Supplementary Explanation 1

You can change RAM data from the RAM data display field. Double-click the data of your choice in the RAM data display field and the RAM data setting dialog appears, so input the data of your choice and click the OK button.

Supplementary Explanation 2

The EFP-I's internal RAM address field is normally set from 0H to 7FFFFH (512 Kbytes). The dump window enables you to view RAM data of up to 512 Kbytes of addresses starting from the offset address. Setting the address of your choice as the offset address of the environment settings dialog sets that address as the top address of the EFP-I's internal RAM. Setting 80000H as the offset address sets 80000H as the RAM's top address, and FFFFFH as the end address.

2.5 Device Command Execution

To read from and write in the MCU, select the command displayed in the [Window] —> [Device] menu from the WinEFP window menu. The procedure for writing in the MCU is explained using the device command.

1) Blank Command Execution

Carries out blank check to prevent follow writing in the MCU. Select [Device] —> [Blank] from the WinEFP window menu. When blank is selected, the parameter input dialog (see Fig. 2.6) appears, so input the top and end addresses and click the OK button.

2) Program Command Execution

Writes data from the EFP-I's internal RAM in the MCU. Select [Device] —> [Program] from the WinEFP window menu. When program is selected, the parameter input dialog (see Fig. 2.6) appears, so input the top and end addresses and click the OK button.

3) Verify Command Execution

Compares MCU internal ROM data and EFP-I internal RAM data.
Select [Device] —> [Verify] from the WinEFP window menu. When verify is selected, the parameter input dialog (see Fig. 2.6) appears, so input the start and quit addresses and click the OK button.
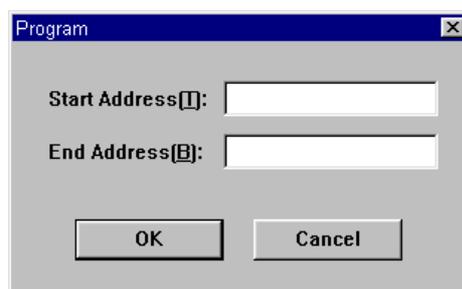
Fig. 2.6: Parameter Input Dialog

* If writing in the MCU, you should execute blank and verify check if possible. You may also use macro commands to execute the commands in a series. The following macro commands are available in the [Device] —> [Device Macro] menu from the WinEFP window menu.

- B.P.V. Macro
    Executes commands in the order of blank —> program —> verify.

- B.P. Macro
    Executes commands in the order of blank —> program.

- P.V. Macro
    Executes commands in the order of program —> verify.

2.6 Script Window

Script is a function that can execute a series of commands by stating the command format for each command. To create and execute script, select [Window] —> [Script Window] from the WinEFP window menu. The configuration of the script window is shown in Fig. 2.7.

Tool Bar 1

Editor Field
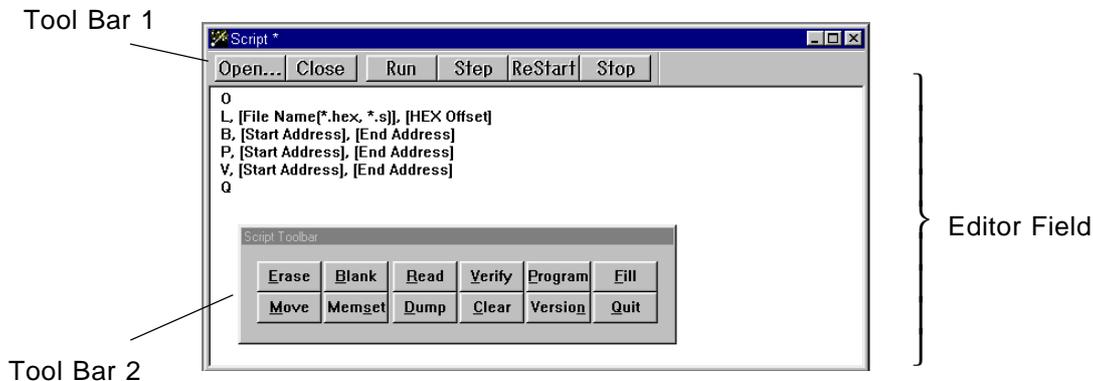
Tool Bar 2

Fig. 2.7: Script Window Configuration

The script window contains tool bar 1 for opening script files and executing script commands, and tool bar 2 for displaying command format of script commands in the editor field.

2.6.1 Tool Bar 1 Configuration

Configuration of tool bar 1 of the script window is shown in Fig. 2.8.

Fig. 2.8: Tool Bar 1 (Script Window)

1) Open Button
The Open button is clicked when you want to open a script file. When the Open button is clicked, the file section dialog appears, so select the script file of your choice. When a script file is opened by the Open button, the contents of the script file are displayed in the editor field.

2) Close Button
The Close button is clicked when you want to close a script file.

3) Run Button
The Run button is clicked when you want to execute a script command. When the Run button is clicked, the script command is executed from the line where the cursor is positioned in the editor field.

4) Step Button
The Step button is clicked when you want to execute a script command in steps. When the Step button is clicked, the command is executed in steps from the line where the cursor is positioned in the editor field.

5) ReStart Button
The ReStart button is clicked when you want to re-execute a script command. When the ReStart button is clicked, the script command is executed from the top line in the editor field.

6) Stop Button
The Stop button is clicked when you want to stop script execution.

2.6.2 Tool Bar 2 Configuration

When the buttons of tool bar 2 are clicked, the command format of the command stated for that button is displayed in the editor field. The method for executing blank command script statement using tool bar 2 is as follows:

1) Command Selection

Click the Blank button in tool bar 2 and the command format of the blank command appears in the editor field. The command format of the blank command is as follows:

B, [Start address], [End address]

2) Parameter Setting

Set parameters in the command format. For blank check of the area from 4000H to FFFFH of MCU internal ROM area, description is as follows:

B, 4000, FFFF

The configuration of tool bar 2 of the script window is shown in Fig. 2.9.

Fig. 2.9: Tool Bar 2 (Script Window)

* Command format of commands not registered on tool bar 2 is displayed by the following procedure:

1) Move the mouse cursor into the editor field and display the shortcut menu by clicking the right button. The shortcut menu is shown in Fig. 2.10.

2) When the mouse cursor is matched with the command format in the shortcut menu, the shortcut menu of the script command list is displayed, so select the command of your choice.

* You can also directly write the command format in the editor field without using tool bar 2. For command format of each command, see Table 3.1: WinEFP Commands.
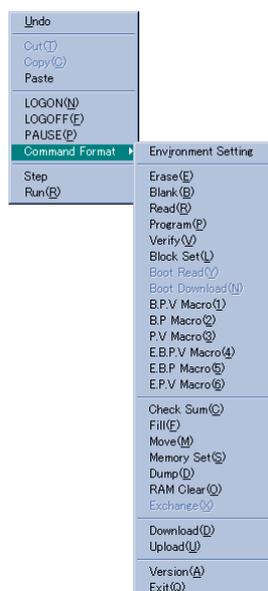
Fig. 2.10: Short-Cut Menu

2.6.3 Notes Concerning Writing Commands

Notes concerning writing commands in the editor field are as follows:
- 128 characters can be used for a single command.
- More than one command cannot be written on the same line. After writing a command, be sure to proceed to the next line.

Incorrect: B, 4000, FFFF   P, 4000, FFFF

Correct: B, 4000, FFFF
               P, 4000, FFFF

2.6.4 Environment Setting by Script Command

An environment settings file is required for carrying out environment settings by script command. For method of creating an environment setting file, see 2.1 Saving Environment Settings of the environment settings dialog. Command format for carrying out environment settings by script command is as follows:

Command format: I, [Environment settings file name]

* The environment settings file contains data such as device used and baud rate. Carrying out environment settings by script command sets device used, etc., in accordance with the contents of the environment setting file.

2.6.5 Execution of Script Command

To execute by script command, click the Run, Step or ReStart button of tool bar 1. Run and Step execute the script command starting from the line in the editor field in which the cursor is located. Clicking the ReStart button executes the script command from the first line in the editor field. You can also arrange for the script command to be executed when WinEFP starts. To have the script command executed when WinEFP starts, write the script file name following WinEFP.EXE on the command line.
To set the command line, create a WinEFP shortcut and write the following for the link destination of the shortcut property. You can also execute a script command by dragging the script file to the WinEFP icon.

Example   WinEFP.EXE [Script file name]

3. Command Outline

3.1 WinEFP Commands

Table 3.1 WinEFP Commands (Part 1)

Menu	Menu Item and Accelerator Key	Command Outline
File (F)	Download (D) Ctrl+D key	Downloads Intellech extension HEX or Motorola S format file data to the EFP-I's internal RAM. Command format: > L, [File name], [Offset address]
	Upload (U) Ctrl+U key	Uploads data from the EFP-I's internal RAM to the Intellech extension HEX or Motorola S format file. Command format: > H, [File name], [HEX type], [Start address], [End address], [Offset address] *Specify 0 or 1 for HEX type in command format. 0: Intellech extension HEX format 1: Motorola S format
	Quit (X)	Quits WinEFP. Command format: > Q
Edit (E)	Check Sum (S) Ctrl+K key	Calculates sum between specified addresses in the EFP-I's internal RAM. Command format: > C, [Start address], [End address]
	Fill (F) Ctrl+L key	Writes designated data by byte units between specified addresses in the EFP-I's internal RAM. Command format: > F, [Start address], [End address], [Write data] *Write byte data for command format data.
	Move (M) Ctrl+M key	Transmits data in blocks between specified addresses in the EFP-I's internal RAM. Command format: > M, [Start address], [End address], [Transmission destination address]
	Buffer RAM Clear (O) Ctrl+O key	Clears all data in the EFP-I's internal RAM. Command format: >O
	Exchange (X) Ctrl+G key	Exchanges upper and lower byte data between specified addresses in the EFP-I's internal RAM. Command format: > X, [Start address], [End address]

*Shortcut key is indicated by letter in parentheses.

Table 3.1 WinEFP Commands (Part 2)

Menu	Menu Item and Accelerator Key	Command Outline
Device (<u>D</u>)	Erase (<u>E</u>) Ctrl+E key	Erases all data or block of data in the MCU internal ROM (flash type). Command format (for all erase): > E Command format (for block erase): > E, [Block top Address]
	Blank (<u>B</u>) Ctrl+B key	Executes blank check of MCU internal ROM data. Command format: > B, [Start address], [End address]
	Read (<u>R</u>) Ctrl+R key	Reads MCU internal ROM data into the EFP-I's internal RAM. Command format: > R, [Start address], [End address]
	Program (<u>P</u>) Ctrl+P key	Writes EFP-I's internal RAM data into the MCU internal ROM. Command format: > P, [Start address], [End address]
	Verify (<u>V</u>) Ctrl+A key	Compares MCU internal ROM data and EFP-I's internal RAM data. Command format: > V, [Start address], [End address]
	Block Set (<u>L</u>) Ctrl+T key	Sets lock bit for specified block of MCU internal ROM data Command format: > K, [Block top address], [Control property R/W]
	Boot Read (<u>Y</u>) Ctrl+Y key	Reads MCU internal ROM (boot area) data into the EFP-I's internal RAM. Command format: > Y, [Start address], [End address]

	Device Macro (<u>D</u>)
	B.P.V. Macro (<u>1</u>)
	Ctrl+1 key
	B.P. Macro (<u>2</u>)
	Ctrl+2 key
	
	P.V. Macro (<u>3</u>)
	Ctrl+3 key
		Executes consecutively in order of blank --> program --> verify.
		Command format:
		  > 1, [Start address], [End address]
		Executes consecutively in order of blank --> program.
		Command format:
		  > 2, [Start address], [End address]
		Executes consecutively in order of program --> verify.
		Command format:
		  > 3, [Start address], [End address]

*Shortcut key is indicated by letter in parentheses.

Table 3.1 WinEFP Commands (Part 3)

Menu	Menu Item and Accelerator Key	Command Outline
Device (D)	E.B.P.V. Macro (4) Ctrl+4 key	Executes consecutively in order of erase --> blank --> program --> verify. Command format: > 4, [Start Address], [End Address]
	E.B.P. Macro (5) Ctrl+5 key	Executes consecutively in order of erase --> blank --> program. Command format: > 5, [Start Address], [End Address]
	E.P.V. Macro (6) Ctrl+6 key	Executes consecutively in order of erase --> program --> verify. Command format: > 6, [Start Address], [End Address]
Option (O)	Environment Settings (I)	Sets device used and baud rate. Command format: > I, [Environment settings file name]
Window (W)	Dump Window (D) Ctrl+W key	Used for displaying and editing EFP-I's internal RAM data. Command format (to view RAM data): > D, [Start address], [End address] Command format (to edit RAM data): > S, [Start address], [End address] *Write byte data for command format data.
Help (H)	Version Data (A)	Displays version data for monitoring program of EFP-I and WinEFP. Command format: > A

Supplementary Explanation
 	
    • The following commands can be used for some MCUs only. For details on each command, see the MCU unit user's guide.
        Exchange command
        Block set command
        Boot read command		

* Shortcut key is indicated by letter in parentheses.

3.2 Script Auxiliary Commands

Table 3.2: Script Auxiliary Commands

Command Format	Command Outline
LOGON, [File name]	Saves execution results of script command in specified file.
LOGOFF	Completes saving of execution results of script command.
PAUSE	Stands by for key input. Script command is executed when the Enter key is pressed.
; (Comment)	A semicolon at the head of a line serves as a comment.

4. Error Messages

4.1 Error Messages

Table 4.1 contains a list of error messages that occur with WinEFP. These errors appear in the error dialog and the execution results window.

Table 4.1: Error Messages

Error Message	Description
Write error (address: xxxxH, write: xxH, read: xxH)	Write error occurred during program command execution.
Collation error (address: xxxxH, ram: xxH, rom: xxH)	Data nonconformity was discovered during verify command execution.
Blank error (address: xxxxH, data: xxH)	Blank error occurred during blank command execution.
Clear error	As a result of executing erase command, data could not be cleared. Make sure device is correctly installed.
Erase error	Erase command was executed when target MCU internal ROM was EPROM type.
Parameter error	Address or data was set outside valid range. Check if setting value is correct.
System error	Fatal error occurred in EFP-I. If error occurs when EFP-I is restarted, contact your dealer or contact us directly.
Serial I/O error	Parity, framing or overrun error occurred. Check if EFP-I and PC are correctly connected.
Character error	Data received by EFP-I contains illegal code. Check if correct data is being sent to EFP-I, and check if EFP-I and PC are correctly connected.
Type error	Data received by EFP-I contains illegal code. Check if correct data is being sent to EFP-I, and check if EFP-I and PC are correctly connected.
Check sum error	Check sum of data received by EFP-I is incorrect. Check if correct data is being sent to EFP-I, and check if EFP-I and PC are correctly connected.
Format error	Format code of data received by EFP-I is incorrect. Check if format of data being sent to EFP-I is correct, and check if EFP-I and PC are correctly connected.
Status error	EFP-I's MCU parameters have been cleared. Connect MCU unit and carry out environment settings.
MCU unit cannot be recognized (Unit No. xx)	Currently connected MCU unit is not recognized in TBL file. If error occurs when EFP-I is restarted, contact your dealer or contact us directly.
Device error	Target device cannot be recognized. Check if target MCU is correctly connected.

Error Message	Description
ID uncollation error	ID code has not been collated. Some sort of data has been written in the ID code area of the target MCU. Execute collation of ID code.
ID collation error	Input ID code does not conform. Input ID code did not agree with data written in ID code area of target MCU. Check ID code.
Forced end	Communication with EFP-I interrupted.
The other error	Some sort of error occurred. If error occurs when EFP-I is restarted, contact your dealer or contact us directly.
The invalid command is appointed.	Invalid command was issued during script command execution. Check the command format.
Command character string is not acquired. The character string that one line can describe is up to 128 characters.	128 or more characters was written on a script command line. Check the command format.
The address appointment is not correct.	Block top address was incorrect when block set command was executed by script command. Check the block top address of block set command.
Opening of a port or setting is failed.	Failed in communication setting on PC side. Communication port setting is improper or is incompatible with the baud rate set for your PC. Reset communication port or baud rate.
Communication did time-out.	No response from EFP-I. Check if EFP-I and PC are correctly connected.
The command code of received data is unjust.	Command sent differs from command returned from EFP-I. Check if EFP-I and PC are correctly connected.
Checksum of received data is unjust.	Check sum of data received from EFP-I is different. Check if EFP-I and PC are correctly connected.
Type of HEX file is not recognized.	File to be downloaded is neither Intellech extension HEX nor Motorola S format file.
Opening of file is failed.	Specified file does not exist or failed to be opened. Check file name.

5. Other

5.1 Offset Address

Using HEX offset and MCU offset enables you to divide HEX files when linking table data of loading data in excess of the internal RAM capacity. Correlation of offset address and internal RAM address is as follows.
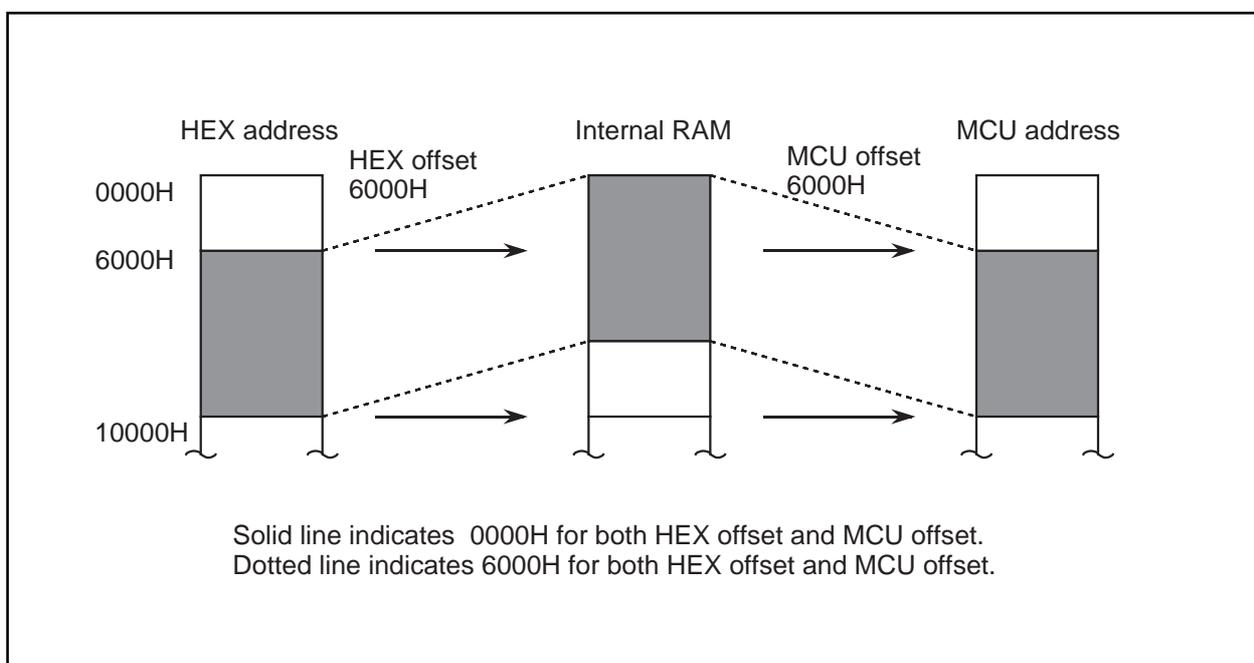
Fig. 5.1: Correlation of Offset Address and Internal RAM Address

Both offsets indicate the difference with the HEX data top address relative to the top address (00000H) of the memory area of the internal RAM, or the difference with the MCU writing actual address.

Thus the following must be true:

      HEX top address $\geq$ internal RAM top address

      MCU top address $\geq$ internal RAM top address

The RAM address must also fit in 0 - 7FFFFH. An error occurs if other than this is set. Upper limit of HEX offset is as follows:

      Intellech extension HEX: 0FFFFF H

      Motorola S Format: 0FFFFFF H

A usage example of HEX offset is shown in Fig. 5.2.

Example 1: Writing HEX data in excess of internal RAM capacity

(1) A.HEX loaded to RAM without offset

(2) RAM contents (A) written in MCU (without offset)

(3) B.HEX loaded to RAM with offset

(4) RAM contents (B) written in MCU (with offset)

Example 2: Linking table data

(1) A.HEX loaded to RAM without offset

(2) B.HEX loaded to RAM with offset

(3) RAM contents (A, B) written in MCU (without offset)
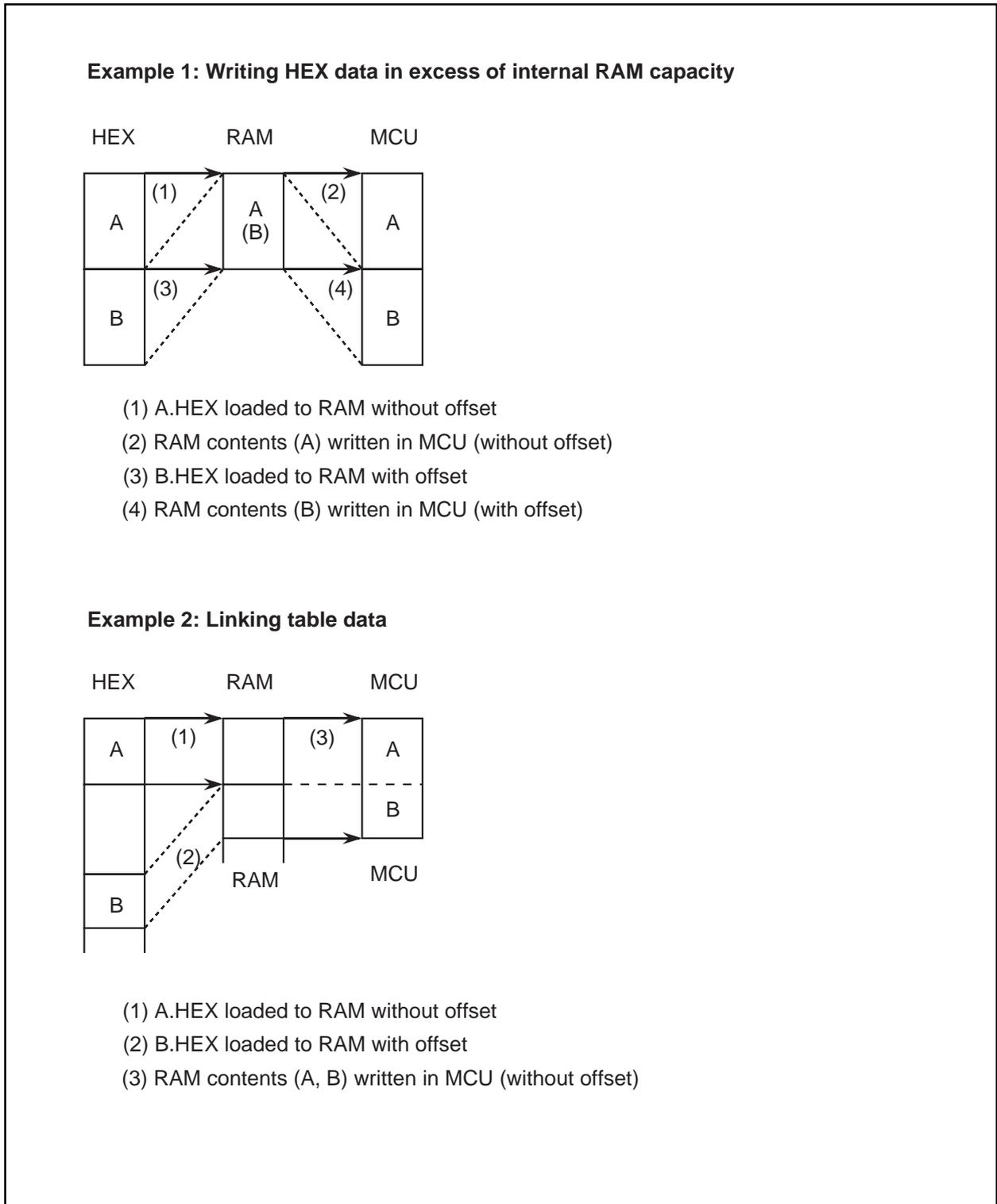
Fig. 5.2: HEX Offset Usage Examples