

EF1SRP-01U Supplement (M16C/6K7 Series Edition)

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1. General Description

This supplement contains information required for reading, writing and clearing data to/from Mitsubishi Electric M16C/6K7 Series MCUs with built-in flash memory. The supplement also contains a description of command operation for the various functions of the M16C/6K7 Series.

2. Operating Environment

Use the MCUs mentioned in this supplement in an environment as follows.

[EFP-I]

Monitor Version: Ver.3.00.43 or later

[Control Software]

WinEFP Version: Ver.1.20.21 or later

SRPMCUI2.TBL Version: Ver.1.02.13 or later

3. Individual Writing Specifications

- 4-wire serial writing
- ID collation function
- Block Erase function
- Boot area output function
- Page program (256 bytes)

4. Pin Connection

Table 4.1 lists the connection of target connection cable pin of the M16C/6K7 Series.

Table 4.1: Connection of the Target Connection Cable Pin

Pin No. (EF1SRP-01U side)	Target End Wire Color	Signal	4-Wire Cable Pin No.	MCU Connection Pin for Serial Writing
1	Orange/red dotted 1	GND	1	Connects to VSS pin *3
2	Orange/black dotted 1	GND	1	Connects to VSS pin *3
3	Gray/red dotted 1	T_VPP	4	Unconnected
4	Gray/black dotted 1	T_VDD	5	Connects to VCC pin (VCC used for user power source) *1
8	White/black dotted 1	T_PGM/OE/MD	8	Unconnected
9	Yellow/red dotted 1	T_SCLK	6	Connects to SCLK pin
10	Yellow/black dotted 1	T_TXD	7	Connects to RXD pin
11	Pink/red dotted 1	T_RXD	2	Connects to TXD pin
12	Pink/black dotted 1	T_BUSY	3	Connects to BUSY pin
14	Orange/black dotted 2	T_RESET	9	Connects to RESET pin *2
15	Gray/red dotted 2	GND	10	Connects to VSS pin *3
16	Gray/black dotted 2	GND	10	Connects to VSS pin *3

*1. Supply VCC from user side to match source voltage of output buffer used on EFP-I side with user side source voltage (VCC).

*2. Reset cancel is not carried out following write verify. To execute MCU, you should therefore unplug the target connection cable.

*3. The signal GND has 4 pins (No. 1, 2, 15 and 16) of EF1SRP-01U side connector. When connecting to the target board, there is no problem for connecting only one pin, but it is recommended to connect more than 2 pins.

*4. When serial writing, connect the M0 pin and the M1 pin of the MCU to the VCC pin and the VSS pin respectively.

*5. Connect the MCU's Xin and Xout terminals to the oscillator circuit.

(1) An example of target MCU peripheral circuit when using the M16C/6K7 Series is shown in Figure 4.1.

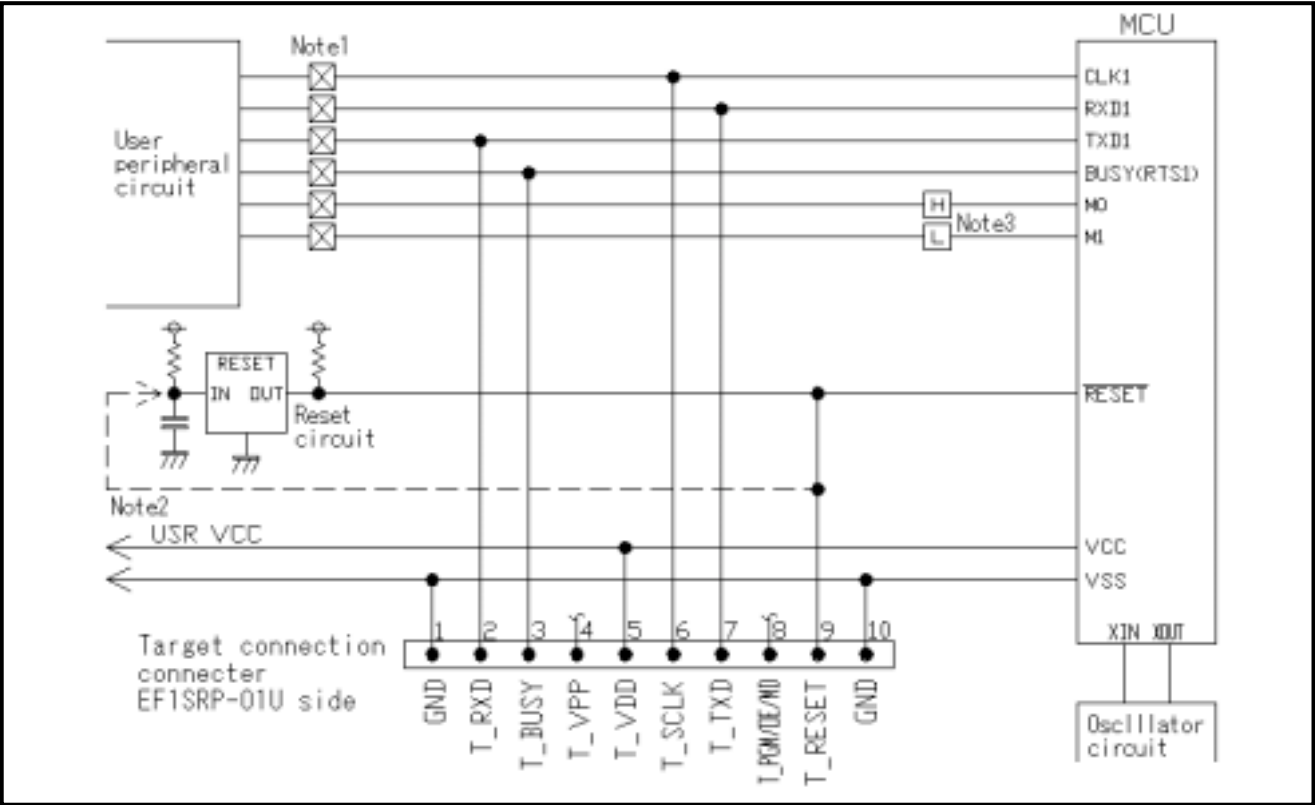


Fig. 4.1: Target MCU Peripheral Circuit Example

Notes

1. If the user peripheral circuit is an output circuit, you should disconnect by jumper to avoid output collision when serial writing.
2. EFP-I side reset output is an open collector, therefore connect directly to the $\overline{\text{RESET}}$ pin for open collector output. A pull-up resistor however must be connected. If the reset circuit is CMOS output, do as described in note 1, or connect the EFP-I side T_RESET signal to reset circuit input. Make reset delay within 30ms.
3. When serial writing, fix the M0 and M1 to “H” and “L” respectively, and in other case, connect to the user peripheral circuit.

(2) An example of a collision prevention circuit when user peripheral circuit outputs is shown in Figure 4.2.

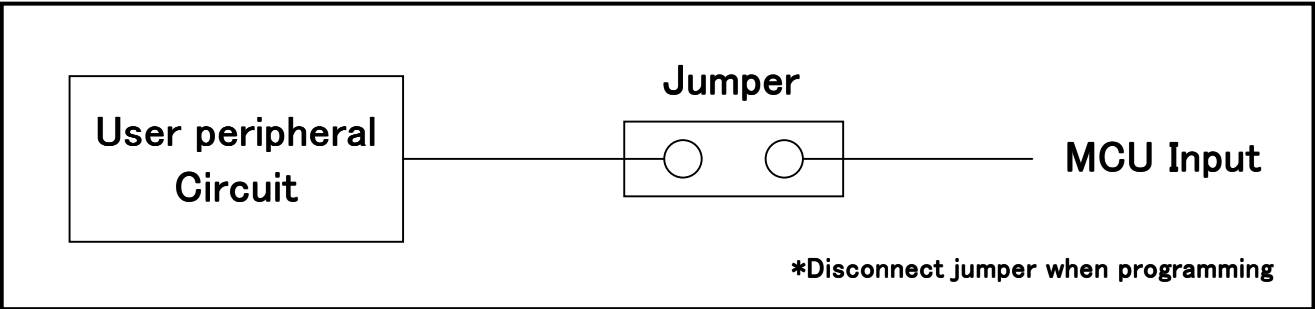


Figure 4.2: Collision Prevention Circuit Using Jumper

5. ID Code Area

ID code area is provided for FFFDFH, FFFE3H, FFFE3BH, FFFE3FH, FFFF3H, FFFF7H, and FFFF3BH of the internal flash memory of M16C/6K7 Series MCUs.

ID data size is fixed at 7 bytes. Set the ID code in each ID area one byte at a time.

MCUs for which an ID code has been written in the ID code area carry out ID code collation and the MCU's internal flash memory cannot be read, written in or cleared unless the ID code matches.

* Does not include when the ID code area is blank..

ID code area configuration is shown in Figure 5.1.

FFFDH	ID code (1st byte)
.	.
FFFE3H	ID code (2nd byte)
.	.
FFFE3BH	ID code (3rd byte)
.	.
FFFE3FH	ID code (4th byte)
.	.
FFFF3H	ID code (5th byte)
.	.
FFFF7H	ID code (6th byte)
.	.
FFFF3BH	ID code (7th byte)

Figure 5.1: ID Code Area Configuration

6. ID Collation Function

The ID code collation is carried out by inputting the ID code etc. for the ID collation parameter of the WinEFP environment setting dialog. Be sure to carry out the ID code collation if an ID has been written in the ID code area of the target MCU.

The commands of [Device] of the WinEFP window menu cannot be used if the ID code does not match.

* If the ID code area is blank, the ID collation is not carried out even if you input the ID code.

The ID collation parameter configuration is shown in Figure 6.1.

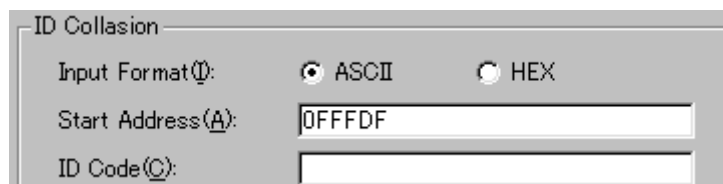


Figure 6.1: ID Collation Parameter Configuration

(1) Input format

The ID code input format is specified as ASCII or HEX.

(2) Top address

Specifies the top address of ID code area. The top address is fixed at FFFDFH for the M16C/6K7 Series.

(3) ID code

Input the ID code. The number of bytes for ID code input is fixed at 7 bytes.

(4) Save button

Saves input ID collation parameters in a file. When the save button is clicked, the file section dialog appears, so input the file name of your choice.

(5) Refer button

Reads the file in which ID collation parameters are saved and sets parameters according to the contents of the file. When the refer button is clicked, the file section dialog appears, so select the file of your choice.

* An example of the operating procedure for ID collation is shown below. The ID code area of the target MCU's internal flash memory is set as follows.

Device type	M16C/6K7 Series.
ID code (FFDFH-FFFBH)	53h, 55h, 49h, 53h, 45h, 49h, 2Eh

(1) Check if FFFDFH is set for the top address parameter. If the device type parameter is set to "M306K7F8L", FFFDFH is automatically set as the top address of the code collation parameter. The ID code will not match if an address other than FFFDFH is set.

(2) Set ASCII or HEX for the input format parameter, and input an ID code for the ID code parameter. An example of ID code parameter setting is given below.

For ASCII:

ID Code: SUISEI.

For HEX:

ID Code: 53 55 49 53 45 49 2E
S U I S E I .

7. Erase Command

The erase type parameter contained in the erase command enables you to erase by block or erase all blocks. The erase command parameter input dialog is shown in Figure 7.1.

*This command has not been described in the WinEFP manual.



Figure 7.1: Erase Command Parameter Input Dialog

(1) Erase type

All Erase and block address area (xxxxxxH – xxxxxxH) are displayed in the drop-down list to the right of the erase type parameter display field (displayed by clicking the arrow pointing downward with the mouse). Select the block erase method.

(2) OK button

Executes the block erase command.

(3) Cancel button

Cancels the command.

8. Boot Read Command

Reads the contents of the boot area, and then writes in the EFP-I's internal RAM. Specify FF000H to FFFFFH for the start and end address parameter.

Unfixed data will be read if address outside the start and end address area is specified.

9. Parameter Input by Device Command

M16C/6K7 Series serial writing MCUs read and write data by the page. Because one page of data is 256 bytes, the input format for the start and end addresses is set as follows.

A parameter error results if addresses outside the page unit are input for the start and end addresses.

Input format:

Start address	xxxx00h
End address	xxxxFFh

10. Automatic offset address for EFP-I'S internal RAM

The capacity of the EFP-I's internal RAM is 512Kbytes, so the area from 0H to 7FFFFh can be used. The address area of the M16C/6K7 series internal flash memory is EF000h to FFFFFh, so the area of the EFP-I's internal RAM is insufficient. WinEFP is therefore designed so that the 80000h HEX offset address is set automatically, 0H of the EFP-I's internal RAM becomes 80000H, and the end address becomes FFFFFH.

*Specify address 80000H to FFFFFH for the command start and stop address parameter in [Edit] of the WinEFP window menu. Because of the automatic offset(80000H), addresses 0H to 7FFFFH cannot be used.

*The automatic offset 80000H is not displayed for HEX offset address, etc. When the address is input for HEX offset , etc., the address input for 80000H is added and the offset is set.