

# EF1SRP-01U Supplement (7900 Series Edition)

Sixth edition issued January, 2001

## 1. General Description

This supplement contains information required for reading, writing and clearing data to/from Mitsubishi Electric 7900 Series MCUs with built-in flash memory. The supplement also contains a description of command operation for the various functions of the 7900 Series.

## 2. Operating Environment

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

[EFP-I]

Monitor Version: Ver.3.00.14 or later

[Control Software]

WinEFP Version: Ver.1.20.10 or later

SRPMCU12.TBL Version: Ver.1.02.03 or later

## 3. Individual Writing Specifications

3-wire serial writing

ID collation function

Data protection function (Block lock, Only 7920,7902 groups.)

Block erase

Page program (256 bytes)

## 4. Pin Connection

Table 4.1 lists the connection of target connection cable pin of the 7900 Series.

**Table 4.1: Connection of the Target Connection Cable Pin**

Pin No. (EF1SRP-01U side)	Target End Wire Color	Signal	3-Wire Cable Pin No.	MCU Connection Pin for Serial Writing
1	Orange/red dotted 1	GND	NC	Connects to VSS pin *4
2	Orange/black dotted 1	GND	NC	Connects to VSS pin *4
3	Gray/red dotted 1	T_VPP	2	Unconnected
4	Gray/black dotted 1	T_VDD	3	Connects to VCC pin (VCC used for user power source) *1
8	White/black dotted 1	T_PGM/OE/MD	6	Connects to MD1 pin
9	Yellow/red dotted 1	T_SCLK	4	Connects to SCLK pin
10	Yellow/black dotted 1	T_TXD	5	Connects to SDA pin *2
11	Pink/red dotted 1	T_RXD	5	Connects to SDA pin *2
12	Pink/black dotted 1	T_BUSY	1	Connects to BUSY pin
14	Orange/black dotted 2	T_RESET	7	Connects to RESET pin *3
15	Gray/red dotted 2	GND	8	Connects to VSS pin *4
16	Gray/black dotted 2	GND	8	Connects to VSS pin *4

\*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. Execute the pull-up process at 1k .

\*3. Reset cancel is not carried out following write verify. To execute MCU, you should therefore unplug the target connection cable.

\*4. 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.

\*5. When serial writing, connect the MD0 pin of the MCU to the VSS pin.

\*6. Connect the MCU's Xin and Xout terminals to the oscillator circuit.

(1) An example of target MCU peripheral circuit when using the 7900 Series is shown in Fig. 4.1.

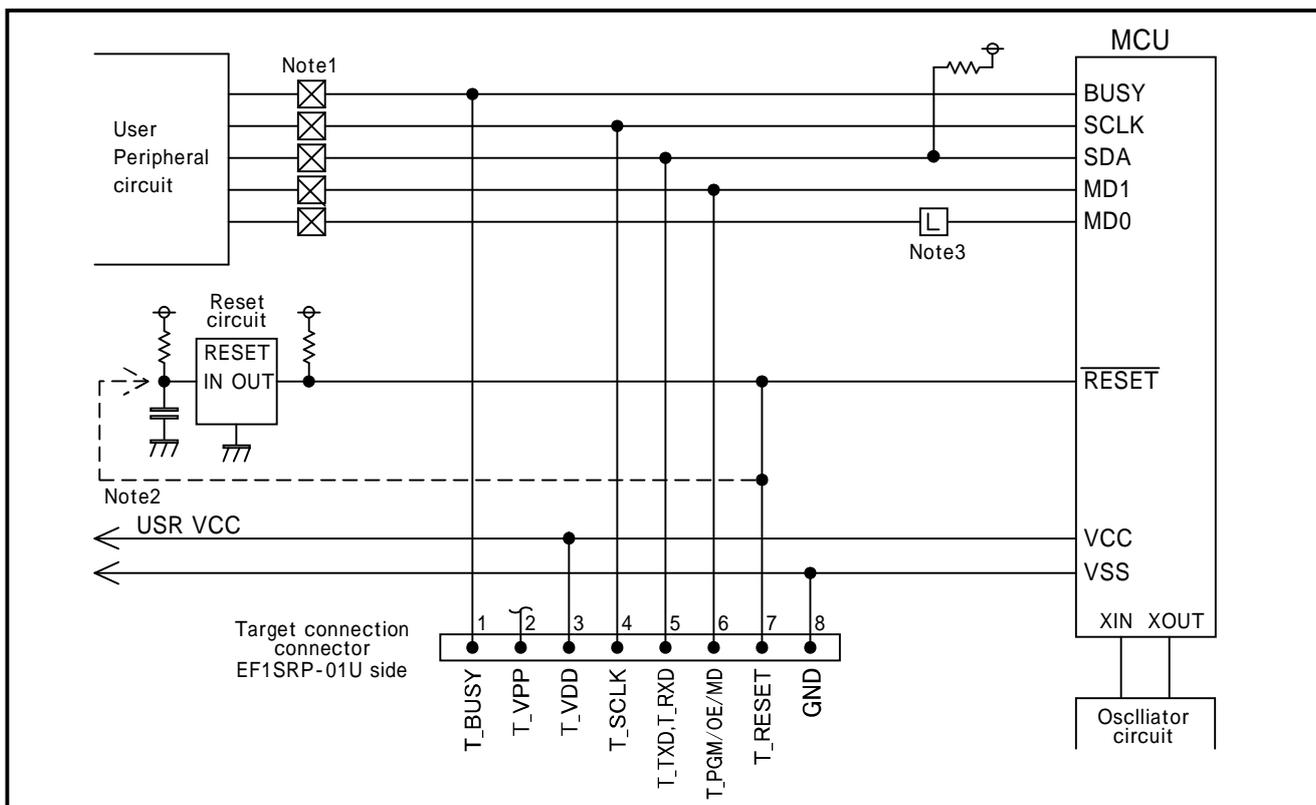


Fig. 4.1: Target MCU Peripheral Circuit Example

**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 MD0 to "L" and in other case, connect to the user peripheral circuit or pull-up.

(2) An example of a collision prevention circuit when user peripheral circuit outputs is shown in Fig. 4.2 and 4.3.

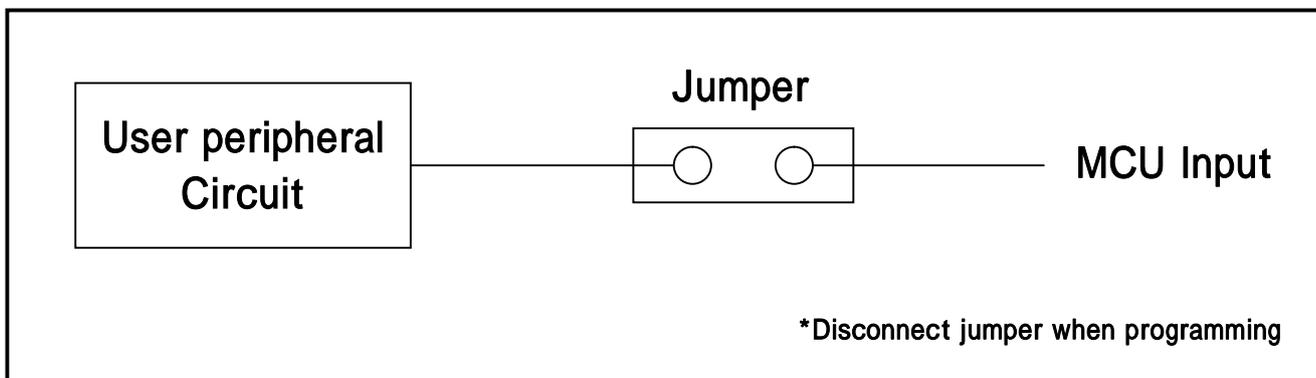


Fig. 4.2: Collision Prevention Circuit Using Jumper

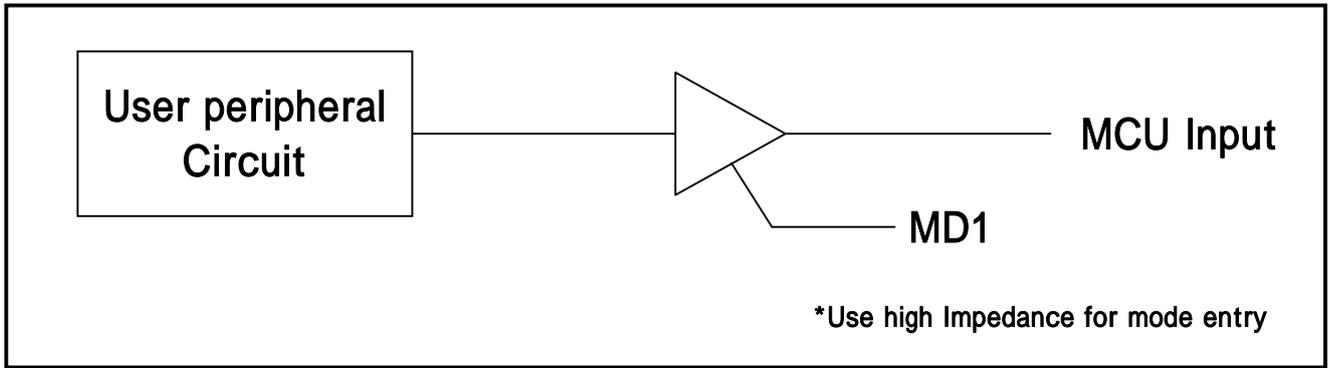


Fig. 4.3: Collision Prevention Circuit Using Three State Buffer

## 5. ID Code Area

ID code area is provided in the internal flash memory of 7900 Series MCUs.

Write an optional ID code and its byte into the ID code area. 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 Fig. 5.1.

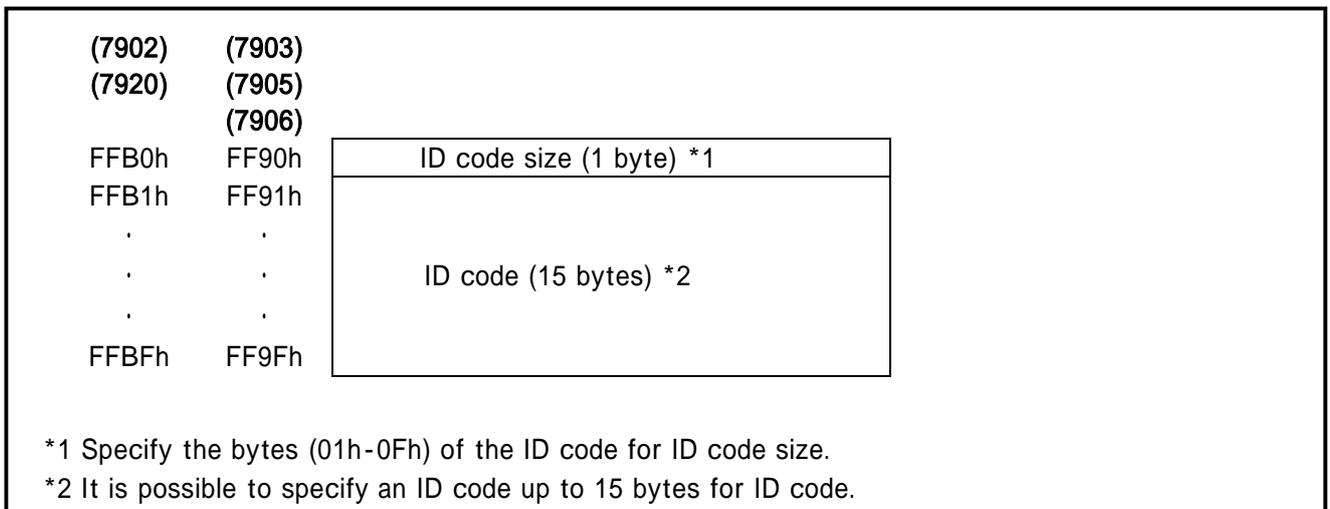


Fig. 5.1: ID Code Area Configuration

## 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 Fig. 6.1.



Fig. 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 FFB0h for the 7920,7902 groups.

The top address is fixed at FF90h for the 7903,7905,7906 groups.

### (3) ID code

Input the ID code.

### (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	7920 groups
ID code (FFB1h-FFB6h)	53h, 55h, 49h, 53h, 45h, 49h
ID code size (FFB0h)	06h

- (1) Check if FFB0h is set for the top address parameter. If the device type parameter is set to "M37920Fx", FFB0h is automatically set as the top address of the code collation parameter. The ID code will not match if an address other than FFB0h 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.
  - \* As the ID code size is calculated automatically, it is not necessary to input into the ID code parameter.

For ASCII:

ID Code: SUISEI

For HEX:

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

## 7. Block Set Command (Only 7920,7902 groups)

The block set command handles the lock bit of each block.

Setting a block's lock bit to "Lock" allows you to protect the block from being written to or erased (i.e. the block is locked).

### 7.1 Screen Layout

Fig. 7.1 shows the screen layout of the block set command.

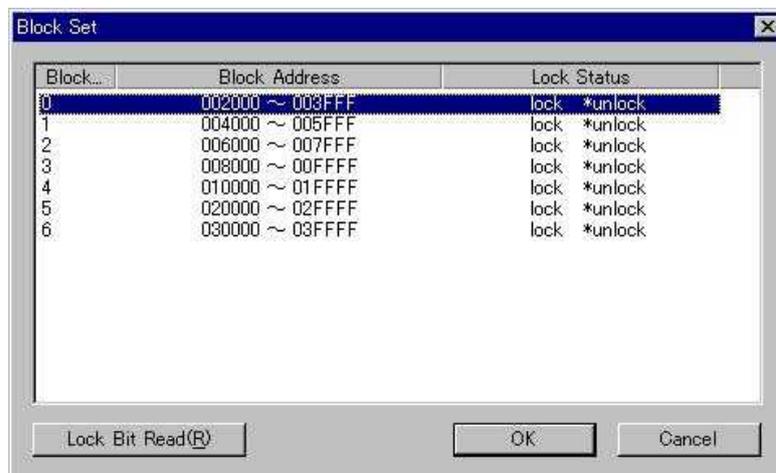


Fig. 7.1: Screen Layout of Block Set Command

- (1) Block number  
Indicates the block number assigned to each block.
- (2) Block address  
Indicates the start address and the end address of each block.
- (3) Lock status  
Indicates the lock bit status of each block.  
\*Lock    Unlock <-- The lock bit is locked.  
  Lock   \*Unlock <-- The lock bit is unlocked.
- (4) Read Lock Bit button  
Reads the content of the lock bit from a target MCU, and indicates the lock bit status according To the content.
- (5) OK button  
Clicking the OK button writes to the target MCU the contents of the lock bits of the blocks set to "Lock".
- (6) Cancel button  
Cancels the command.

## 7.2 Setting the lock bit

Here follow the steps to set a lock bit to "Lock".

- (1) Position the mouse cursor on an arbitrary line and double-click. Then the lock bit status indicated in the lock status switches. Set it to "Lock".
  - (2) Click the OK button. Then the content of the lock bit of the block set to "Lock" will be written to the target MCU.
- \* Once the content of the lock bit is written to the MCU by use of the OK button, the block set command cannot return a locked block back to the unlocked status
  - \* For unlocking a locked block, see 8. Erase Command.

## 8. 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 Fig. 8.1.



Fig. 8.1: 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.

\* To erase a locked block, follow the steps given below. These steps also allow you to unlock a Locked block. (Only 7920,7902groups)

1) Choose [Environment Settings] from the [Option] menu in the WinEFP window to open the environment settings dialog box.

Set the lock type parameter to "Lock bit ineffective", then click the OK button.

2) Choose [Erase] from the [Device] menu in the WinEFP window to open the erase command parameter input dialog box.

Set the erase type parameter to the locked block, then click the OK button.

## 9. Parameter Input by Device Command

7900 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