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Serial EEPROM of HN58X25xxx Series

Control Using Exclusive Clock Synchronous Serial I/O (SI/O) of M16C

Introduction

This document should be used for reference when implementing control of the HN58X25xxx Series serial EEPROM manufactured by Renesas Technology Corp., using the clock synchronous serial communication interface (hereafter referred to as SI/O) of the M16C family manufactured by Renesas Technology Corp.

The some M16C MCU incorporates an exclusive clock synchronous serial I/O. The HN58X25xxx Series serial EEPROM can be controlled through the exclusive clock synchronous serial I/O and software.

This document describes sample programs for controlling the HN58X25xxx Series serial EEPROM by using the exclusive clock synchronous serial I/O.

Target Device

The application examples described in this document are applicable when the following MCU and condition are used.

- MCU : M16C family
- Condition : Exclusive clock synchronous serial I/O is used
- Software Version : Ver.1.01

The programs can be executed by any M16C family MCU with the SI/O. Note however that since some functions may be altered by function addition, etc., the functions should be confirmed against the MCU manual.

Be sure to perform evaluation sufficiently when using this application note.

Contents

1. Control Method for HN58X25xxx Series Serial EEPROM

1.1 Overview of Operation

Control of the HN58X25xxx Series serial EEPROM is implemented by using the exclusive clock synchronous serial I/O in the M16C.

The sample programs execute the following control operations.

- Connects the S# pin of the serial EEPROM to an M16C port and controls it using output of the M16C general port.
- Controls data input/output by the exclusive clock synchronous serial I/O (using the internal clock).

  Assign the exclusive clock synchronous serial I/O pins for which CMOS output is possible and set the CMOS output to them, in order to implement the high-speed operation.

Refer to the data sheets of the MCU and serial EEPROM and specify a usable clock frequency.

The connection method is described below.

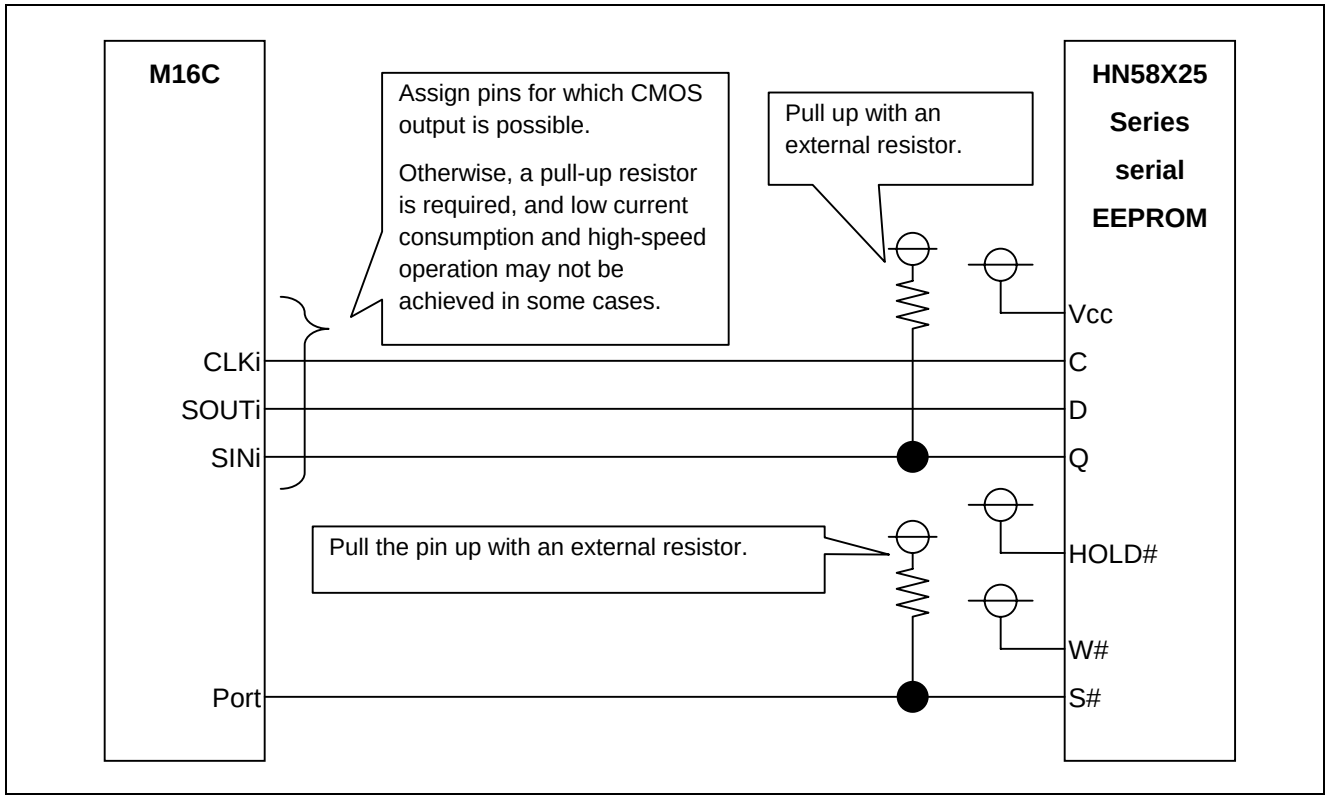
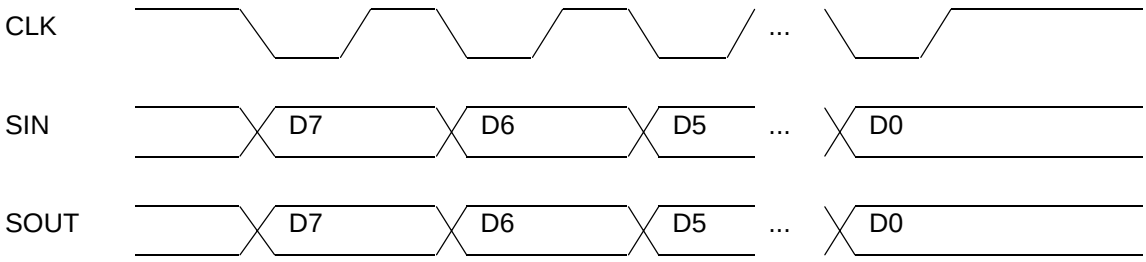


Figure 1.1 Serial EEPROM Connection Example

1.2 Signal Timing Generation of Exclusive clock synchronous serial I/O

Signals are generated at the following timing to satisfy the serial EEPROM timing.



- Transmission from MCU to serial EEPROM: Transmit data output at fall of transfer clock
- Reception from serial EEPROM to MCU: Receive data input at rise of transfer clock
- Transfer in MSB-first

The CLK pin level is high when transfer is not taking place.

Figure 1.2 Timing for Exclusive clock synchronous serial I/O of M16C

Check the data sheets of the MCU and serial EEPROM for the maximum clock frequency that can be used.

1.3 Control of S# Pin of Serial EEPROM

The S# pin of the serial EEPROM is connected to an M16C port and controlled using output of the M16C general port.

The period from the falling edge of the S# pin (port of M16C) of the serial EEPROM to the falling edge of the C pin (CLK of M16C) is controlled by inserting software wait cycles.

The period from the rising edge of the C pin (CLK of M16C) to the rising edge of the S# pin (port of M16C) is controlled by inserting software wait cycles.

Check the data sheet of the serial EEPROM and set the software wait time according to the system.

1.4 Processing after function operating

When function processing is begun, S# pin (Port of M16C) of EEPROM is set to high level first by setting the port function, and, next, C pin (CLK of M16C) of EEPROM is set to high level. Next, SI/O function is enabled and exclusive clock synchronous I/O mode is set. Command codes etc. are output using SI/O function after S# pin (Port of M16C) of EEPROM is set to low level.

After function processing is finished, S# pin (Port of M16C) of EEPROM is set to high level first and, next, SI/O function is disabled. Then the function is changed to general port, and Port/CLK/SOUT pins are set to high level.

1.5 MCU Hardware Resources in Use

The hardware resources to be used are shown below.

Table 1.1 Hardware Resources in Use

Resource in Use	Number of Used Resources
Exclusive clock synchronous serial I/O	One channel (essential)
Port (for control of the S# pin of serial EEPROM)	One port (essential)

1.6 M16C SFR (Peripheral Device Control Register) Setting - Exclusive Clock Synchronous Serial I/O and Interrupt control Register

The way to transmit and receive data of exclusive clock synchronous serial I/O is as follows.

- The data transmission is started by writing transmit data to the Transmit/Receive Register.
- The reception of data is started by writing dummy data to the Transmit/Receive Register.
- In order to control the data transmission/reception, transmit interrupt request bit is used. Transfer completion is detected by a change of interrupt request bit value. The setting is as follows.
  Set the interrupt priority level to 000b (Level 0; Interrupt disable).
  Set the transmit interrupt cause select bit to 0 (No data present in transmit buffer).

Set up the exclusive clock synchronous serial I/O as shown below to satisfy the serial EEPROM specifications/timing.

1.6.1 M16C/62P

An example of setting based on the register descriptions in the M16C/62P Group Hardware Manual Rev. 2.41 is shown in the table below.

S4C register of SI/O4 can be written to by the next instruction after setting the PRC2 bit in the PRCR register to 1.

Also Port control register of SIN4, SOUT4 and CLK4 can be written to by the next instruction after setting the PRC2 bit in the PRCR register to 1.

Don't use SI/O3. (SI/O3 is only for data transmission.)

Table 1.2 Exclusive clock synchronous serial I/O Mode Settings

Register	Bit	Function and Setting
S4TRR	7 to 0	Set the transmit data in these bits. The receive data is read from these bits.
S4BRG	7 to 0	Set the transfer speed in these bits. Clock frequency that can transfer data is different depending on the MCU.
S4C	SM41 to SM40	Select the count source of UiBRG register in these bits.
	SM42	Write 0 to this bit. (SOUT4 output)
	SM43	Write 1 to this bit. (SOUT4 output)
	SM44	Write 0 to this bit. Transmit data is output at falling edge of transfer clock and receive data is input at rising edge.
	SM45	Write 1 to this bit. (MSB first)
	SM46	Write 0 to this bit. (Internal clock)
	SM47	Write 1 to this bit. (High)

The setting example of interrupt control register is shown in the table bellow.

Table 1.3 Interrupt Control Register Settings

Register	Bit	Function and Setting
S4IC	ILVL2 to ILVL0	Write 000b to these bits. (Level 0: Interrupt is disabled.)
	IR	If this bit is 1, Interrupt is requested. Write 0 to this bit according to the needs.

1.6.2 M16C/29

An example of setting based on the register descriptions in the M16C/29 Group Hardware Manual Rev. 1.00 is shown in the table below.

S4C of SI/O4 register can be written to by the next instruction after setting the PRC2 bit in the PRCR register to 1.

Also Port control register of SIN4, SOUT4 and CLK4 can be written to by the next instruction after setting the PRC2 bit in the PRCR register to 1.

Table 1.4 Exclusive clock synchronous serial I/O Mode Settings

Register	Bit	Function and Setting
SiTRR	7 to 0	Set the transmit data in these bits. The receive data is read from these bits.
SiBRG	7 to 0	Set the transfer speed in these bits. Clock frequency that can transfer data is different depending on the MCU.
SiC	SMi1 to SMi0	Select the count source of SiBRG register in these bits.
	SMi2	Write 0 to this bit. (SOUT4 output)
	SMi3	Write 1 to this bit. (SOUT4 output)
	SMi4	Write 0 to this bit. Transmit data is output at falling edge of transfer clock and receive data is input at rising edge.
	SMi5	Write 1 to this bit. (MSB first)
	SMi6	Write 0 to this bit. (Internal clock)
	SMi7	Write 1 to this bit. (High)

The setting example of interrupt control register is shown in the table bellow.

Table 1.5 Interrupt Control Register Settings

Register	Bit	Function and Setting
SiIC	ILVL2 to ILVL0	Write 000b to these bits. (Level 0: Interrupt is disabled.)
	IR	If this bit is 1, Interrupt is requested. Write 0 to this bit according to the needs.

2. Sample Programs

Two or more of the same devices can be connected to the serial bus and controlled.

The sample programs execute the following:

- Data read processing
- Data write processing
- Write-protection processing through software protection
- Status read processing

2.1 Overview of Software Operations

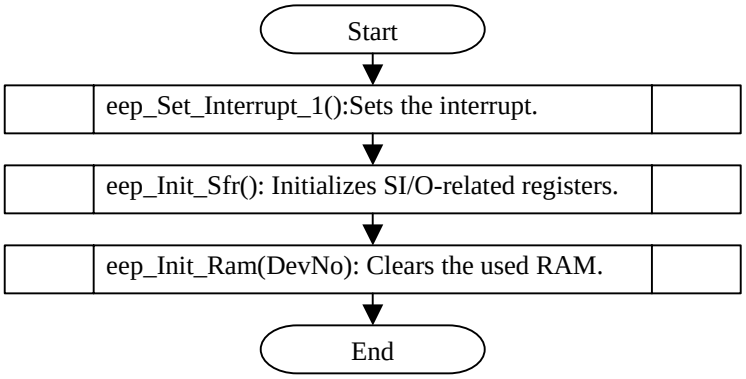
The operations roughly described below are performed.

(1) The driver initialization processing acquires the resources to be used by the driver and initializes them.
At this point, control signals (Port/CLK/SOUT) connected to the serial EEPROM come to high.
(2) Function calls perform the following operations.
(a) The signals of pins connected to the serial EEPROM output to make serial EEPROM inactive state.
(b) Execute the processing of each function.
(c) Control signals (Port/CLK/SOUT) connected to the serial EEPROM come to high.

2.2 Detailed Description of Functions

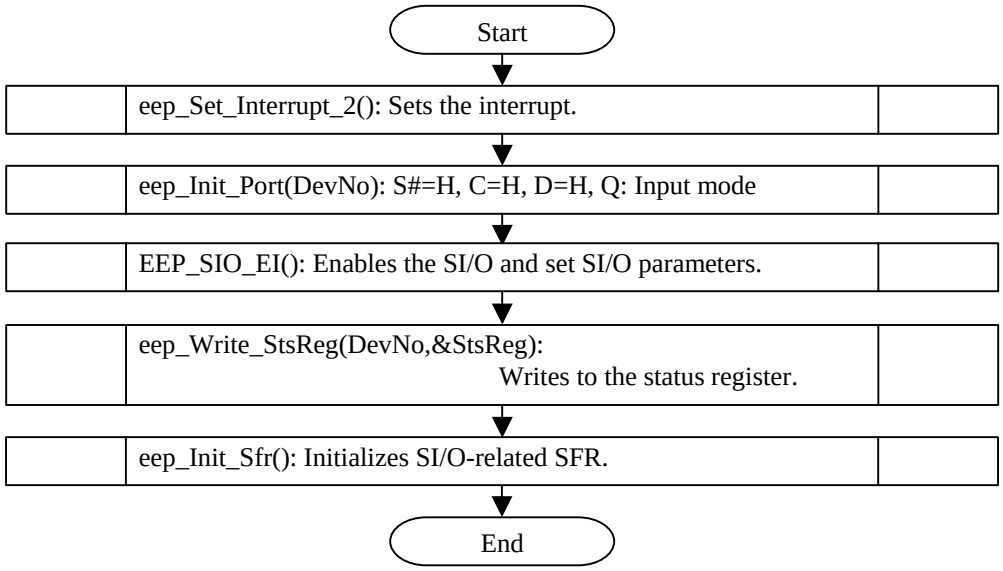
2.2.1 Driver Initialization Processing

Function Name
EEPROM driver initialization processing void eep_Init_Driver(void)
Arguments
None
Return Values
None
Operations
• Initializes the EEPROM driver. • Initializes the SFR for EEPROM control. • Performs the following processing for each device. (a) Initializes the EEPROM control RAM. • Call this function once at system activation.
Notes
None



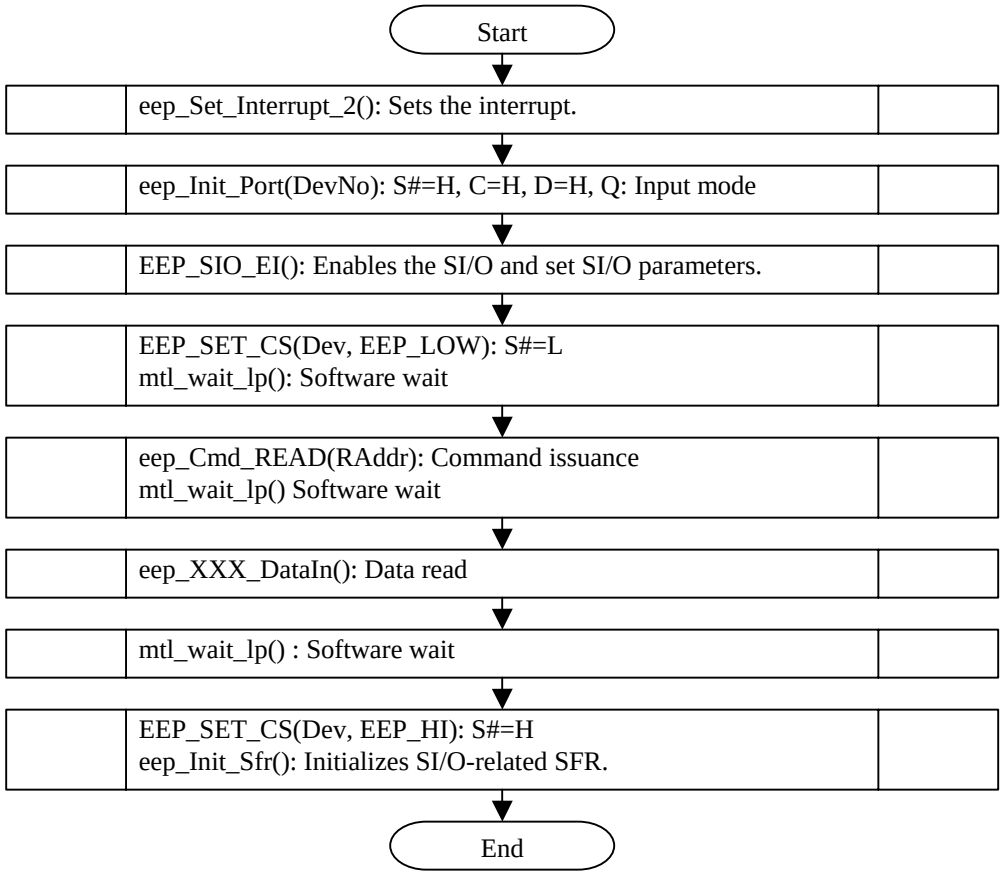
2.2.2 Write-Protection Setting Processing

Function Name			
Write-protection setting processing signed short eep_Write_Protect(unsigned char DevNo, unsigned char WpSts)			
Arguments			
unsigned char	DevNo	;	Device number
unsigned char	WpSts	;	Write-protection setting data
Return Values			
Returns the write-protection setting result.			
EEP_OK		;	Successful operation
EEP_ERR_PARAM		;	Parameter error
EEP_ERR_OTHER		;	Other error
Operations			
• Makes the write-protection setting. • Set the write-protection setting data (WpSts) as follows: EEP_WP_NONE ; No protection EEP_WP_UPPER_QUART ; Upper-quarter protection setting EEP_WP_UPPER_HALF ; Upper-half protection setting EEP_WP_WHOLE_MEM ; Whole memory protection setting			
Notes			
None			



2.2.3 Data Read Processing

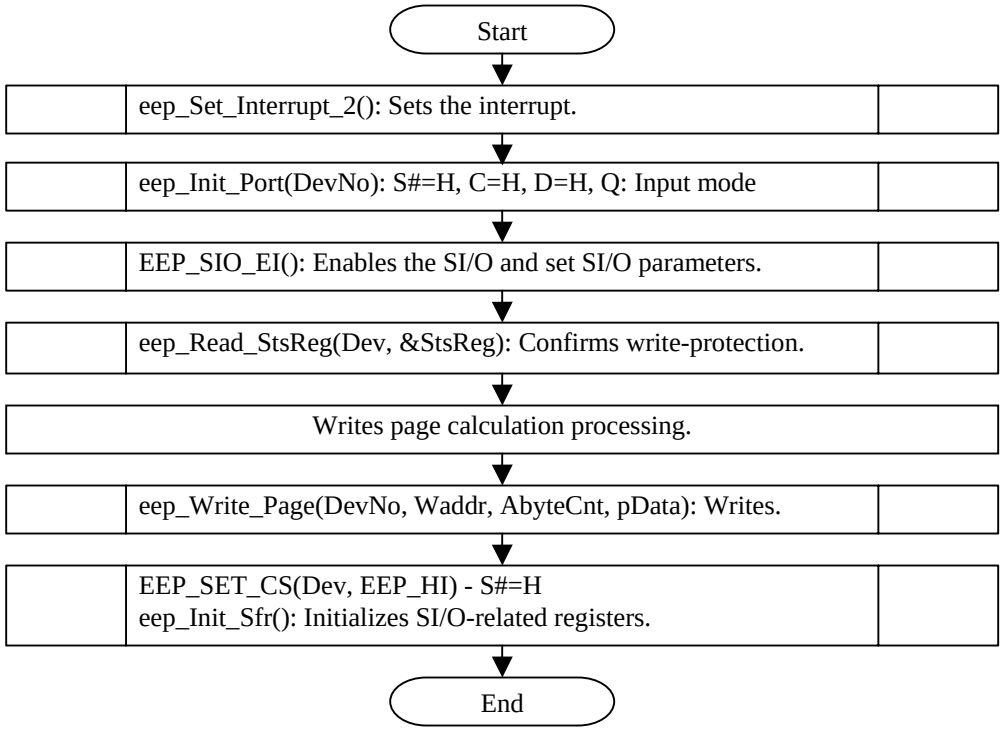
Function Name			
Data read processing signed short eep_Read_Data(unsigned char DevNo, unsigned short RAddr, unsigned short RCnt, unsigned char * pData)			
Arguments			
unsigned char	DevNo	;	Device number
unsigned short	RAddr	;	Read start address
unsigned short	RCnt	;	Number of bytes to be read
unsigned char FAR*	pData	;	Read data storage buffer pointer
Return Values			
Returns the read result.			
EEP_OK		;	Successful operation
EEP_ERR_PARAM		;	Parameter error
EEP_ERR_HARD		;	Hardware error
EEP_ERR_OTHER		;	Other error
Operations			
• Reads data from EEPROM in bytes. • Reads data from the specified address for the specified number of bytes.			
Notes			
• The maximum write address is EEPROM size – 1.			



2.2.4 Data Write Processing

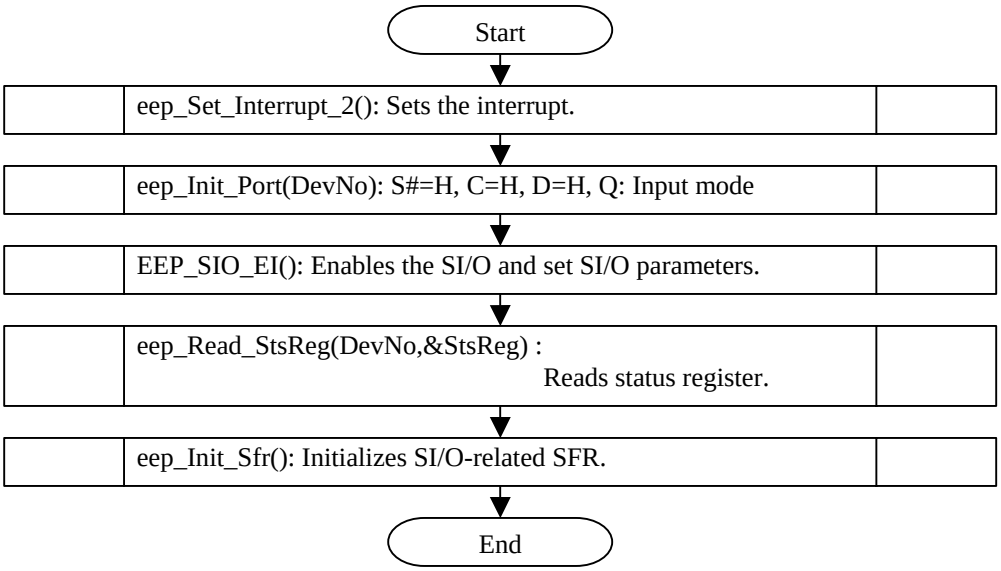
Function Name			
Data write processing signed short eep_Write_Data(unsigned char DevNo, unsigned short WAddr, unsigned short WCnt, unsigned char FAR* pData)			
Arguments			
unsigned char	DevNo	;	Device number
unsigned short	WAddr	;	Write start address
unsigned short	WCnt	;	Number of bytes to be written
unsigned char FAR*	pData	;	Write data storage buffer pointer
Return Values			
Returns the write result.			
EEP_OK		;	Successful operation
EEP_ERR_PARAM		;	Parameter error
EEP_ERR_HARD		;	Hardware error
EEP_ERR_WP		;	Write-protection error
EEP_ERR_OTHER		;	Other error
Operations			
• Writes data to EEPROM in bytes. • Writes data from the specified address for the specified number of bytes.			
Notes			
• EEPROM can be written to only when write-protection has been canceled. • The maximum write address is EEPROM size – 1.			

In a write to the serial EEPROM, address translation is performed and the page rewrite method is used.



2.2.5 Status Read Processing

Function Name			
Status read processing signed short eep_Read_Status(unsigned char DevNo, unsigned char * pStatus)			
Arguments			
unsigned char	DevNo	;	Device number
unsigned char FAR*	pStatus	;	Read status storage buffer
Return Values			
Returns the status register acquisition result.			
EEP_OK		;	Successful operation
EEP_ERR_PARAM		;	Parameter error
EEP_ERR_HARD		;	Hardware error
EEP_ERR_OTHER		;	Other error
Operations			
• Reads the status. Reads from the status register. • The following information is stored in the read status storage buffer (pStatus). Memory size ≤ 512 bytes Bits 7 to 4: Reserved (All 1) Bits 3, 2: BP1, BP0 00: No protection 01: Upper-qSI/Oer protection 10: Upper-half protection 11: Whole memory protection Bit 1: WEL 0: Write disabled 1: Write enabled Bit 0: WIP 1: During write operation Memory size > 512 bytes Bit 7: SRWD 0: Status register can be changed 1: Status register cannot be changed Bits 6 to 4: Reserved (All 0) Bits 3, 2: BP1, BP0 00: No protection 01: Upper-qSI/Oer protection 10: Upper-half protection 11: Whole memory protection Bit 1: WEL 0: Write disabled 1: Write enabled Bit 0: WIP 1: During write operation			
Notes			
None			



2.3 Return Value Definition

```
#define EEP_OK          (short)( 0)    /* Successful operation    */
#define EEP_ERR_PARAM   (short)(-1)    /* Parameter error         */
#define EEP_ERR_HARD    (short)(-2)    /* Hardware error          */
#define EEP_ERR_WP      (short)(-3)    /* Write-protection error  */
#define EEP_ERR_OTHER   (short)(-4)    /* Other error             */
```

2.4 User Setting Examples

Setting examples when using the Renesas Technology MCU M16C29 are shown below.

The location where a setting should be made is indicated by the comment of /** SET **/ in each file.

2.4.1 eep.h

(1) Definition of the number of devices used and device numbers

Specify the number of devices to be used and assign a number for each device.
In the example below, one device is used and 0 is assigned as the device number.
When using three or more, eep_io.h needs to be modified in addition to this file.

```
/*-------------------------------------------------------------------------------*/
/*  Define the number of the required serial EEPROM devices.(1 to N devices)     */
/*  Define the device number in accordance with the number of serial EEPROM devices */
/* to be connected.                                                              */
/*-------------------------------------------------------------------------------*/
/* Define number of devices */
#define EEP_DEV_NUM        1      /* 1 device                                    */

/* Define No. of slots */
#define EEP_DEV0           0      /* Device 0                                    */
#define EEP_DEV1           1      /* Device 1                                    */
```

(2) Definition of device used

Specify the device to be used.
In the example below, 4k bits device is used.

```
/*-------------------------------------------------------------------------- */
/*  Define the serial EEPROM device.                                         */
/*-------------------------------------------------------------------------- */
//#define EEP_SIZE_002K       /*   2kbit  (256 Byte)     */
#define EEP_SIZE_004K         /*   4kbit  (512 Byte)     */
//#define EEP_SIZE_008K       /*   8kbit  (  1kByte)     */
//#define EEP_SIZE_016K       /*  16kbit  (  2kByte)     */
//#define EEP_SIZE_032K       /*  32kbit  (  4kByte)     */
//#define EEP_SIZE_064K       /*  64kbit  (  8kByte)     */
//#define EEP_SIZE_128K       /* 128kbit  ( 16kByte)     */
//#define EEP_SIZE_256K       /* 256kbit  ( 32kByte)     */
```

(3) Definitions the way of interrupt setting of SI/O.

Define the way of transmit interrupt control process.
This software controls the transmission processing by disabling the Interrupt Priority Select Bits and utilizing Interrupt Request Bit (IR) in Interrupt Control Register of SI/O.
The method of the interrupt disabling can be selected by the following three ways.
Select one of them according to the system.

Case 1. Set in the upper system and not setting in the device driver.
#define EEP_IC_SETTING0 should be validated.

Case 2. Set when the device driver is initialized – in executing “eep_Init_Driver()”.
#define EEP_IC _SETTING1 should be validated.

Case 3. Set when SI/O transfer – in executing “eep_Read_Data()”, “eep_Write_Data()”.
#define EEP_IC _SETTING2 should be validated.

Case 2 and 3 can be validated at the same time.

Precaution
The followings are the interrupt setting sequence when the above Case 2 and/or 3 are selected:

1. Disable interrupt (DI)
2. Disable the Interrupt Priority Select Bits and clear the Interrupt Request Bit (IR) of Interrupt Control Register for UART.
3. Enable interrupt (EI)

Be careful when interrupts enable flag (I flag) is managed by a higher system.

```
/*-------------------------------------------------------------------------*/
/* The setting method of the interrupt when "EEP_IC_SETTING1" and
"EEP_IC_SETTING2" are   */
/*  selected is as follows.                                                */
/*  Interrupt disable (DI) -> interrupt setting -> interrupt enable (EI)   */
/*  When manage an interrupt enable flag (I flag) by a higher system, please
be careful.    */
/*  When interrupt it by a higher system and manage it, please choose
"EEP_IC_SETTING0".   */
/*-------------------------------------------------------------------------*/
#define EEP_IC_SETTING0       /* Doesn't set in this driver                */
//#define EEP_IC_SETTING1     /* When the driver is initialized, it sets   */
//#define EEP_IC_SETTING2     /* When the resource is used, it sets        */
```

2.4.2 eep_sfr.h

Rename from eep_sfr.h.xxx (the header corresponding to the MCU) to eep_sfr.h and use it.

In the example below, the M16C/29 is used.

The sample program of M16C/29 shows a description example in which SI/O3 is used as the resource of the clock synchronous serial I/O. No setting needs to be modified when the above resource is used.

(1) SI/O resource

```
/*----------------- SIO definitions -----------------*/
#define EEP_SIO_STIC s3ic     /* SIO interrupt control register         */

#define EEP_SIO_BUF  s3trr    /* SIO transmit/receive buffer register   */
#define EEP_SIO_BRG  s3brg    /* SIO bit rate register                  */
#define EEP_SIO_SIC  s3c      /* SIO transmit/receive control register 0*/

#define EEP_SIO_NEXT ir_s3ic  /* SIO complete flag                      */
```

If another resource is used, make additions or modify the above program. Accordingly, also make additions or modify the /* SI/O setting */ definition with reference to section 1.6, M16C SFR (Peripheral Device Control Register) Setting - Exclusive Clock Synchronous serial I/O.

2.4.3 eep_io.h

Rename from eep_io.h.xxx (the header corresponding to the MCU) to eep_io.h and use it.
In the example below, the M16C/29 is used.

(1) Definition of control ports of MCU used

Specify the control ports of the MCU to be used.
In the example below, SIN, SOUT, CLK, and S# of the clock synchronous serial I/O are assigned.
When two devices are connected, make a definition regarding CS1.
When using three or more, eep.h needs to be modified in addition to this file.

```
/*-----------------------------------------------------------------------------*/
/*  Define the control port.                                                   */
/*-----------------------------------------------------------------------------*/
//#define EEP_PRC2      prc2        /* Port9 write-protection register  */

#define EEP_P_DATAO        p3_1     /* EEP DataOut    */
#define EEP_P_DATAI        p3_2     /* EEP DataIn     */
#define EEP_P_CLK          p3_0     /* EEP CLK        */
#define EEP_D_DATAO        pd3_1    /* EEP DataOut    */
#define EEP_D_DATAI        pd3_2    /* EEP DataIn     */
#define EEP_D_CLK          pd3_0    /* EEP CLK        */

#define EEP_P_CS0          p3_3     /* EEP CS0  (Negative-true logic)*/
#define EEP_D_CS0          pd3_3    /* EEP CS0  (Negative-true logic)*/
#if (EEP_DEV_NUM > 1)
#define EEP_P_CS1                   /* EEP CS1  (Negative-true logic)*/
#define EEP_D_CS1                   /* EEP CS1  (Negative-true logic)*/
#endif   /* #if (EEP_DEV_NUM > 1) */
```

2.4.4 mtl_com.h (Common Header File)

Rename from mtl_com.h.xxx (the header corresponding to the MCU) to mtl_com.h and use it.

In the example below, the M16C/29 is used.

(1) Definition of OS header file

This software is an OS-independent program.
In the example below, the OS is not used. (The system call of MR30 is not used.)

```
/* In order to use wai_sem/sig_sem/dly_tsk for microITRON (Real-Time OS)-
compatible, */
/* include the OS header file that contains the prototype declaration.
/* When not using the OS, put the following 'define' and 'include' as comments.
  */
//#define MTL_OS_USE                              /* Use OS            */
//#include <RTOS.h>                               /* OS header file    */
//#include "mtl_os.h"
```

(2) Definition of header file specifying common access area

Include the header file in which the MCU registers are defined.
This file needs to be included because it is mainly used by the device driver for controlling the ports.
In the example below, the M16C/29 header file is included. Include the header file in accordance with the MCU.

```
/* In order to use definitions of MCU SFR area,                    */
/* include the header file of MCU SFR definition.                  */
#include "sfr29.h"                          /* definition of MCU SFR   */
```

(3) Definition of loop timer

Include the header file below if software timer is used.
It is mainly used as wait time of device driver.
When software timer is not used, the define statement below should be a comment.
In the example below, software timer is used.

```
/* When not using the loop timer, put the following 'include' as comments.  */
#include "mtl_tim.h"
```

(4) Definition of endian type

This is the setting of FAT file system library for M16C family.
Specify the little endian if M16C family is used.

```
/* When using M16C or SuperH for Little Endian setting, define it. */
/* When using other MCUs, put 'define' as a comment.              */
#define MTL_MCU_LITTLE                 /* Little endian           */
```

(5) The fast processes of mtl_endi.c

When Little Endian is specified and it is defined, it performs the fast processes of 'mtl_endi.c' .

```
/* When using M16C, define it.                                    */
/* It performs the fast processes of 'mtl_endi.c'.                */
#define MTL_ENDI_HISPEED         /* Uses the high-speed function. */
```

(6) Specification of standard library type used

Specify the standard library type used. When the processing below is used in the library provided with the compiler, the define statement below should be a comment.
The optimized library enabling high-speed processing is prepared.
The following example shows the standard library set with the compiler.

```
/* Specify the standard library type used.                                  */
/* When the processing below is used in the library provided with the       */
/* compiler, the define statement below should be a comment.                */
/* memcmp() / memcpy() / memset() / strcat() / strcmp() / strcpy() / strlen()*/
//#define MTL_USER_LIB                    /* Optimized library usage              */
```

(7) Definition of RAM area accessed by processing group used

Define the RAM area to be accessed by the user process group.
Standard functions and efficient operations for processes are applied.
If neither of them is defined, error is output when software is compiled
M16C/62P and M16C/29 is possible to define either MTL_MEM_FAR or MTL_MEM_NEAR.
The following is a definition example of MTL_MEM_NEAR when M16C/60, M16C/30, M16C/20 or R8C is used.

```
/* Define the RAM area to be accessed by the user process.                */
/* Efficient operations for standard functions and processes are applied. */
//#define MTL_MEM_FAR         /* Supports Far RAM area of M16C/60
#define MTL_MEM_NEAR       /* Supports Near RAM area.       (Others)      */
```

Set only the above define statement and do not make any other modifications.

2.4.5 mtl_tim.h

(1) Definition of software timer

Set the internal software timer used.
The following reference values are obtained at 20-MHz operation without wait.
The setting should be made in accordance with the system.

```
/* Define the counter value for the timer.                              */
/* Specify according to the user MCU, clock and wait requirements.      */
/* Setting for 20MHz no wait                                            */
#define MTL_T_1US          1                /* loop Number of   1us */
#define MTL_T_2US          2                /* loop Number of   2us */
#define MTL_T_4US          5                /* loop Number of   4us */
#define MTL_T_5US          6                /* loop Number of   5us */
#define MTL_T_10US         13               /* loop Number of  10us */
#define MTL_T_20US         27               /* loop Number of  20us */
#define MTL_T_30US         40               /* loop Number of  30us */
#define MTL_T_50US         68               /* loop Number of  50us */
#define MTL_T_100US        137              /* loop Number of 200us */
#define MTL_T_300US        413              /* loop Number of 300us */
#define MTL_T_400US  ( MTL_T_200US  *  2 )  /* loop Number of 400us */
#define MTL_T_1MS          1381             /* loop Number of   1ms */
```

2.5 Usage Notes

The sample programs show the following description example as the resource of the exclusive clock synchronous serial I/O.

(1) Description example of SI/O3 sample program is shown in M16C/29.

(2) Description example of SI/O4 sample program is shown in M16C/62P.

When using another resource, set the software in accordance with the hardware.

2.6 Notes at Embedment

To embed the sample programs, include eep.h.

2.7 Usage of Another M16C Family MCU

Usage of another M16C family MCU is supported easily.

The following files must be prepared.

(1) I/O module common definition equivalent of eep_io.h.xxx
Define the I/O pins to be used with reference to the SFR header of the MCU used.
(2) SFR common definition equivalent of eep_sfr.h.xxx
Define the SI/O to be used with reference to the SFR header of the MCU used.
(3) Header definition equivalent of mtl_com.h.xxx
Create and define a header for the MCU used.

Create the above files with reference to the provided programs.

In addition, specify the created header in eep_io.h, eep_sfr.h, and mtl_com.h.

2.8 File Configuration

\com	<DIR>		Directory for common functions
	mtl_com.c	mtl_com.h.common	Various definitions for common functions
	mtl_os.c	mtl_os.h	Common file
	mtl_tim.c	mtl_tim.h	Common file
	mtl_tim.h.sample		Common file
	mtl_str.c		Common file
	mtl_mem.c		Common file
	mtl_com.h.m16c29		M16C/29 Common header file
	mtl_com.h.m16c62p		M16C62P Common header file
\seep_spi	<DIR>		Serial EEPROM directory
	eep.h		Driver common definition
	eep_usr.c		Driver user I/F module
	eep_io.c		I/O module
	eep_io.h.m16c29		M16C/29 I/O module common definition
	eep_io.h.m16c62p		M16C/62P I/O module common definition
	eep_sfr.h.m16c29		M16C/29 SFR common definition
	eep_sfr.h.m16c62p		M16C/62P SFR common definition
\sample	<DIR>		Sample program directory
	testmain.c		Sample program for operation verification Use this for operation verification.
	common.c	common.h	Various definitions for common functions

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Revision Record

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Feb.27.07	—	First edition issued
1.01	Nov.09.07	P3	Section1.4 "High-z processing after function operating" is changed to "Processing after function operating" Contents of Section 1.4 was modified.
		P6	Changed three places in the next sentence. "Control signals (Port/CLK/SOUT) connected to the serial EEPROM come to High."
		P7-P12	The content "eep_Open_Port(DevNo): Make the ports Hi-z" was deleted from flow chart.
1.02	Feb.17.08	P1	Target Device Software Version was added.

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