

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

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# MESOC TECHNICAL NEWS No. M16C-36-9909

## M16C/62, M16C/6N Flash Memory Version

### Precautions for Flash Memory Power Supply-OFF Bit

#### 1. Related devices

Flash Memory 5V Version : M30624FGFP, M30624FGGP, M30625FGGP  
M306N0FGTFP

#### 2. Precaution

With the above MCUs, bit 2 (b2) at address 03B616 was initially used as a way of reducing the power consumption. Also, the same function was assigned to a reserved bit. Now, bit 3 (b3) will be used instead, and bit 2 will be reserved. This will allow an easy way to expand our MCUs.

Therefore, please program bit 3 instead of bit 2 when using M16C/62, M16C/6N group flash memory or later versions. However, it is not a problem if the MCU is programmed already.

Before

Flash memory control register 2

b7	b6	b5	b4	b3	b2	b1	b0	Symbol FMC2	Address 03B616	When reset XXXX0XXX2
0	0	0	0	0	0	0	0			

Bit symbol	Bit name	Function	R	W
	Reserved bit	Must always be set to "0"	-	0
FMC2	Flash memory power supply-OFF bit (Note)	0: Flash memory power supply is connected 1: Flash memory power supply-off	0	0
	Reserved bit	Must always be set to "0"	-	0

Note : For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession. When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval. Use the control program except in the internal flash memory for write to this bit. During parallel I/O mode, programming, erase or read of flash memory is not controlled by this bit, only by external pins.

Flash memory control register

b7	b6	b5	b4	b3	b2	b1	b0	Symbol FMCR	Address 03B716	When reset XX000012
X	X	0	0	0	0	0	0			

Bit symbol	Bit name	Function	R	W
FMC0	RY/BY status flag	0: Busy (being written or erased) 1: Ready	0	X
FMC1	CPU rewrite mode select bit (Note 1)	0: Normal mode (Software commands invalid) 1: CPU rewrite mode (Software commands acceptable)	0	0
FMC2	Lock bit disable bit (Note 2)	0: Block lock by lock bit data is enabled 1: Block lock by lock bit data is disabled	0	0
FMC3	Flash memory reset bit (Note 3)	0: Normal operation 1: Reset	0	0
	Reserved bit	Must always be set to "0"	0	0
FMC5	User ROM area select bit (Note 4) (Effective in only boot mode)	0: Boot ROM area is accessed 1: User ROM area is accessed	0	0
	Nothing is assigned. When write, set "0". When read, values are indeterminate.		-	-

Note 1: For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession. When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval. Use the control program except in the internal flash memory for write to this bit.

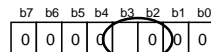
Note 2: For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession when the CPU rewrite mode select bit = "1". When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval.

Note 3: Effective only when the CPU rewrite mode select bit = 1. Set this bit to 0 subsequently after setting it to 1 (reset).

Note 4: Use the control program except in the internal flash memory for write to this bit.

New

Flash memory control register 1



Symbol  
FMR1

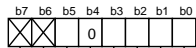
Address  
03B6<sub>16</sub>

When reset  
XXX0XXX<sub>2</sub>

Bit symbol	Bit name	Function	R	W
	Reserved bit	Must always be set to "0"	—	○
FMR13	Flash memory power supply-OFF bit (Note)	0: Flash memory power supply is connected 1: Flash memory power supply-off	○	○
	Reserved bit	Must always be set to "0"	—	○

Note : For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession. When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval. Use the control program except in the internal flash memory for write to this bit.  
During parallel I/O mode, programming, erase or read of flash memory is not controlled by this bit, only by external pins.

Flash memory control register 0



Symbol  
FMR0

Address  
03B7<sub>16</sub>

When reset  
XX00001<sub>2</sub>

Bit symbol	Bit name	Function	R	W
FMR00	RY/ $\overline{\text{BY}}$ status flag	0: Busy (being written or erased) 1: Ready	○	×
FMR01	CPU rewrite mode select bit (Note 1)	0: Normal mode (Software commands invalid) 1: CPU rewrite mode (Software commands acceptable)	○	○
FMR02	Lock bit disable bit (Note 2)	0: Block lock by lock bit data is enabled 1: Block lock by lock bit data is disabled	○	○
FMR03	Flash memory reset bit (Note 3)	0: Normal operation 1: Reset	○	○
	Reserved bit	Must always be set to "0"	○	○
FMR05	User ROM area select bit (Note 4) (Effective in only boot mode)	0: Boot ROM area is accessed 1: User ROM area is accessed	○	○
	Nothing is assigned.	When write, set "0". When read, values are indeterminate.	—	—

Note 1: For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession. When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval. Use the control program except in the internal flash memory for write to this bit.

Note 2: For this bit to be set to "1", the user needs to write a "0" and then a "1" to it in succession when the CPU rewrite mode select bit = "1". When it is not this procedure, it is not enacted in "1". This is necessary to ensure that no interrupt or DMA transfer will be executed during the interval.

Note 3: Effective only when the CPU rewrite mode select bit = 1. Set this bit to 0 subsequently after setting it to 1 (reset).

Note 4: Use the control program except in the internal flash memory for write to this bit.