To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 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

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

Send any inquiries to http://www.renesas.com/inquiry.

Date: Dec. 08, 2009

RENESAS TECHNICAL UPDATE

Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Renesas Technology Corp.

Product Category	MPU/MCU		Document No.	TN-R8C-A004B/E	Rev.	2.00
Title	Notes on Low-Consumption-Current Read Mode		Information Category	Technical Notification		
Applicable Products	R8C/3x Series R8C/Lx Series	Lot No. __	Reference Document			

This document is revision 2.00 for the TN-R8C-A004A/E technical update issued on July 28, 2009.

Please note that the contents in number 1 have been partially revised, a third bullet has been added to number 2, and number 3 in revision 1.00 has been deleted in this revision.

1. Usage conditions on low-consumption-current read mode

   Low-consumption-current read mode can be used when the following conditions are met in standard operating mode:

   - The CPU clock is divide-by-4, 8, or 16 of the low-speed on-chip oscillator clock.
   - The CPU clock is divide-by-1 (no division), 2, 4, or 8 of the XCIN clock.

   Note:

   Even if the above conditions are met, do not use low-consumption-current read mode when the CPU clock is 3 kHz or below.

2. Note when manipulating the FMR27 bit

   - After setting the CPU clock to the conditions described in number 1, set the FMR27 bit to 1 (low-consumption-current read mode enabled).
   - Set the CPU clock to conditions other than those described in number 1 when the FMR27 bit is 0 (low-consumption-current read mode disabled).
   - Enter wait mode or stop mode after setting the FMR27 bit to 0 (low-consumption-current read mode disabled). Do not enter wait mode or stop mode while the FMR27 bit is 1 (low-consumption-current read mode enabled).

   Program example to enter stop mode

```
        BCLR    1,FMR0          ; CPU rewrite mode disabled
        BCLR    7,FMR2          ; Low-consumption-current read mode disabled
        BSET    0,PRCR          ; Writing to the CM1 register enabled
        FSET    I               ; Enable interrupt
        BSET    0,CM1           ; Stop mode
        JMP.B   LABEL_001
LABEL_001:
        NOP
        NOP
        NOP
        NOP
```

Program example to enter wait mode

<When executing the WAIT instruction>

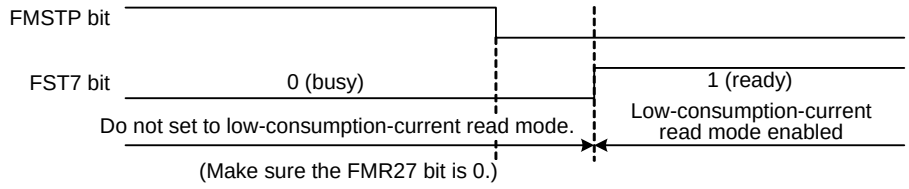
```
BCLR    1,FMR0      ; CPU rewrite mode disabled
BCLR    7,FMR2      ; Low-consumption-current read mode disabled
FSET    I           ; Enable interrupt
WAIT                ; Wait mode
NOP
NOP
NOP
NOP
```

<When setting the CM30 bit to 1>

```
BCLR    1,FMR0      ; CPU rewrite mode disabled
BCLR    7,FMR2      ; Low-consumption-current read mode disabled
BSET    0,PRCR      ; Writing to the CM3 register enabled
FCLR    I           ; Disable interrupt
BSET    0,CM3       ; Wait mode
NOP
NOP
NOP
NOP
BCLR    0,PRCR      ; Writing to the CM3 register disabled
FSET    I           ; Enable interrupt
```

3. Note on the FMSTP bit

Do not set the FMR27 bit to 1 while the FMSTP bit is 1 (flash memory stops). Also, do not set the FMR27 bit to 1 when the flash memory status is busy (the FST7 bit is 0) immediately after changing the FMSTP bit from 1 to 0 (flash memory operates).



4. Note on CPU rewrite mode

Do not execute the program command, block erase command, or lock bit program command while the FMR27 bit is 1.

5. Note on the A/D converter

Do not perform A/D conversion while the FMR27 bit is 1. Also, do not set the FMR27 bit to 1 while the ADST bit is 1 (during A/D conversion).