

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>

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RENESAS TECHNICAL UPDATE

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Product Category	MPU&MCU	Document No.	TN-16C-A155A/E	Rev.	1.00
Title	M32C/81, M32C/82, and M32C/83 Groups: Usage Precaution for fC32	Information Category	Technical Notification		
Applicable Product	M32C/81 Group, M32C/82 Group, M32C/83 Group	Lot No.	Reference Document		

1. Precautionary Note

When the main clock is used as a CPU clock source and fC32 as a count source for timers A and B, fC32 clock cycles may become shorter because of the indeterminate supply voltage and noise. As a consequence, timers A and B whose count source is fC32 may increase counting speed.

2. Countermeasures

If the above becomes a problem, follow one of the countermeasures listed below.

1) Software countermeasure

To select the main clock as a CPU clock source, use f1, f8, or f2n as a count source for timers A and B.

To use subclock or on-chip oscillator as a CPU clock source, fC32 can be used as a count source for timers A and B.

To change the CPU clock source from the main clock to sub clock and vice versa, see the 3. Software Countermeasure Example. If the software countermeasure is used, several sub clock cycle errors may occur when changing the clock source.

2) Hardware countermeasure

Apply an external square-wave clock to the XCIN pin.

3. Software Countermeasure Example

To select the main clock as a CPU clock source, use timer B1 whose count source is f1, f8, or f2n. To select sub clock as a CPU clock source, use timer B2 whose count source is fC32.

In this example, set XIN at 32 MHz and XCIN at 32.768 kHz to operate timers with the settings listed in Table 1. In this case, one timer B2 interrupt is equal to ten timer B1 interrupts.

Table 1. Timer Setting

	Timer B1	Timer B2
Count source	f8	fC32
Timer value	24999 (10d)	63 (10d)
Interrupt request generation frequency	1/160 sec.	1/16 sec.

To change the CPU clock source from main clock to sub clock

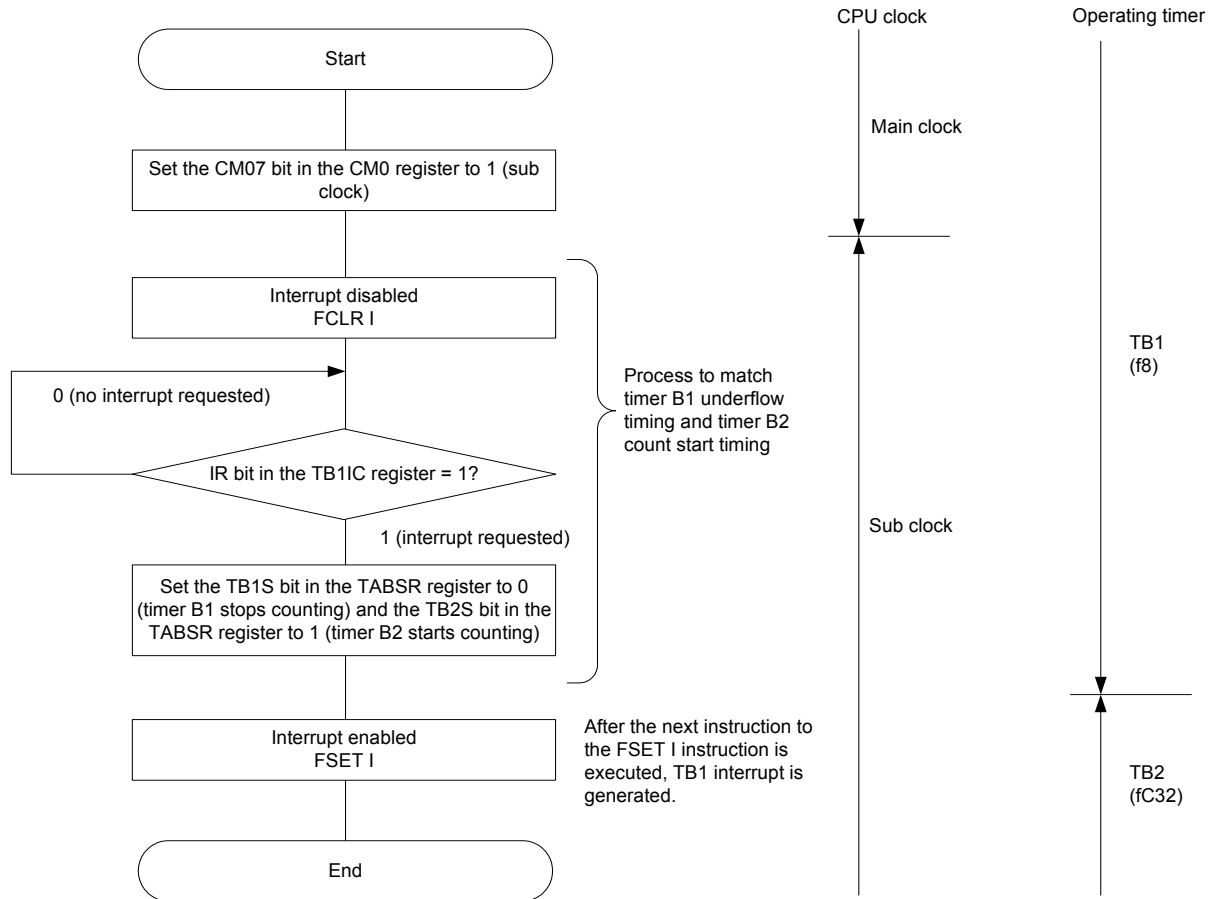


Figure 1. Procedure to Change the CPU Clock Source from Main Clock to Sub Clock

To change the CPU clock source from sub clock to main clock

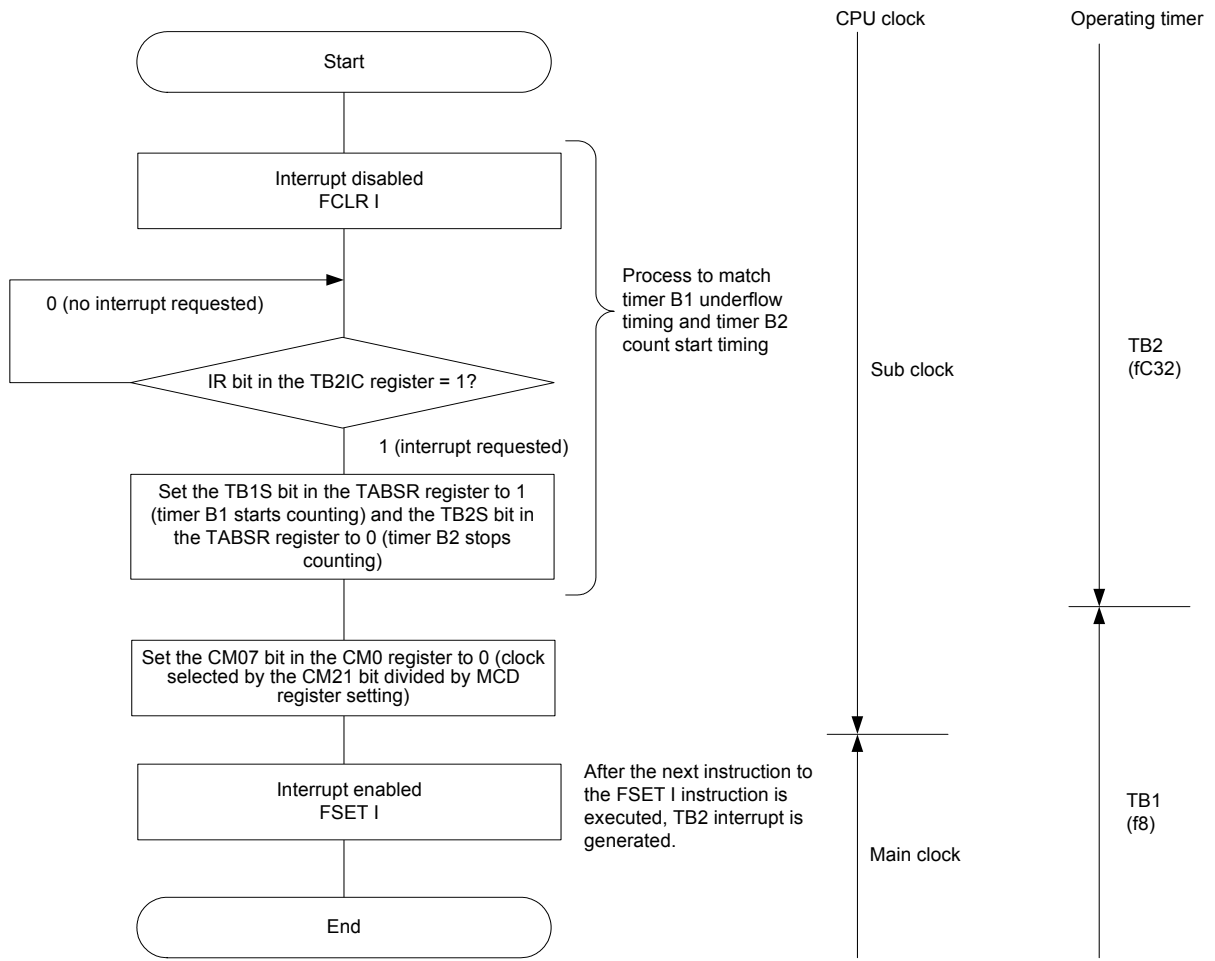


Figure 2. Procedure to Change the CPU Clock Source from Sub Clock to Main Clock