

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## 3823 Group

### Timer X Operation (Pulse Width Measurement Mode)

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#### 1. Abstract

The following article introduces and shows an example of Timer X Operation (Pulse Width Measurement Mode) on the 3823 group device.

#### 2. Introduction

The explanation of this issue is applied to the following conditions:

Applicable MCU: 3823 Group

Oscillation frequency: 8 MHz

This sample program may include operations of unused bit functions for the convenience of the SFR bit layout. Set the values according to the operational conditions of the user system.

### 3. Contents

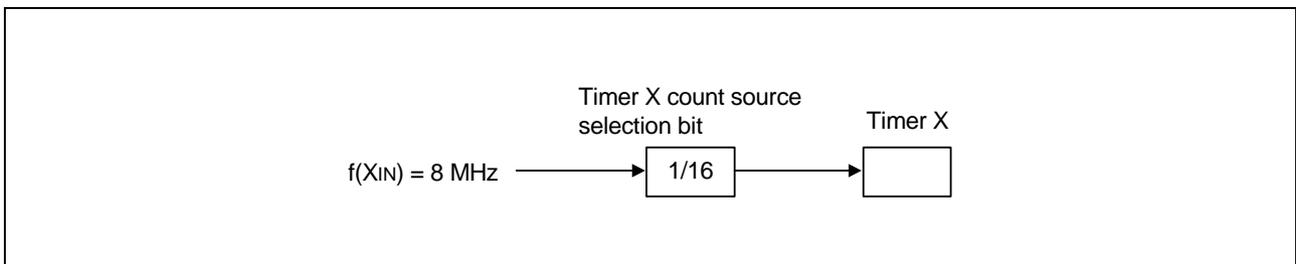
#### 3.1 Pulse Width Measurement

Outline: Timer X counts the “H” width of the pulses input to the P54/CNTR0 pin in the pulse width measurement mode.

Specifications:

- Timer X counts the “H” width of the pulses input to the P54/CNTR0 pin. The initial value of timer X is 65535.
- Measurable values of timer X range from 65535 to 0.
- Error processing is executed when timer X is in underflow status and “H” width cannot be measured.
- The end of the input pulse “H” is detected by the CNTR0 interrupt.

Figure 3.1 shows the Timer Connection and Division Ratio, Figure 3.2 shows the Relevant Register Settings, and Figure 3.3 shows the Control Procedure.



**Figure 3.1 Timer Connection and Division Ratio**

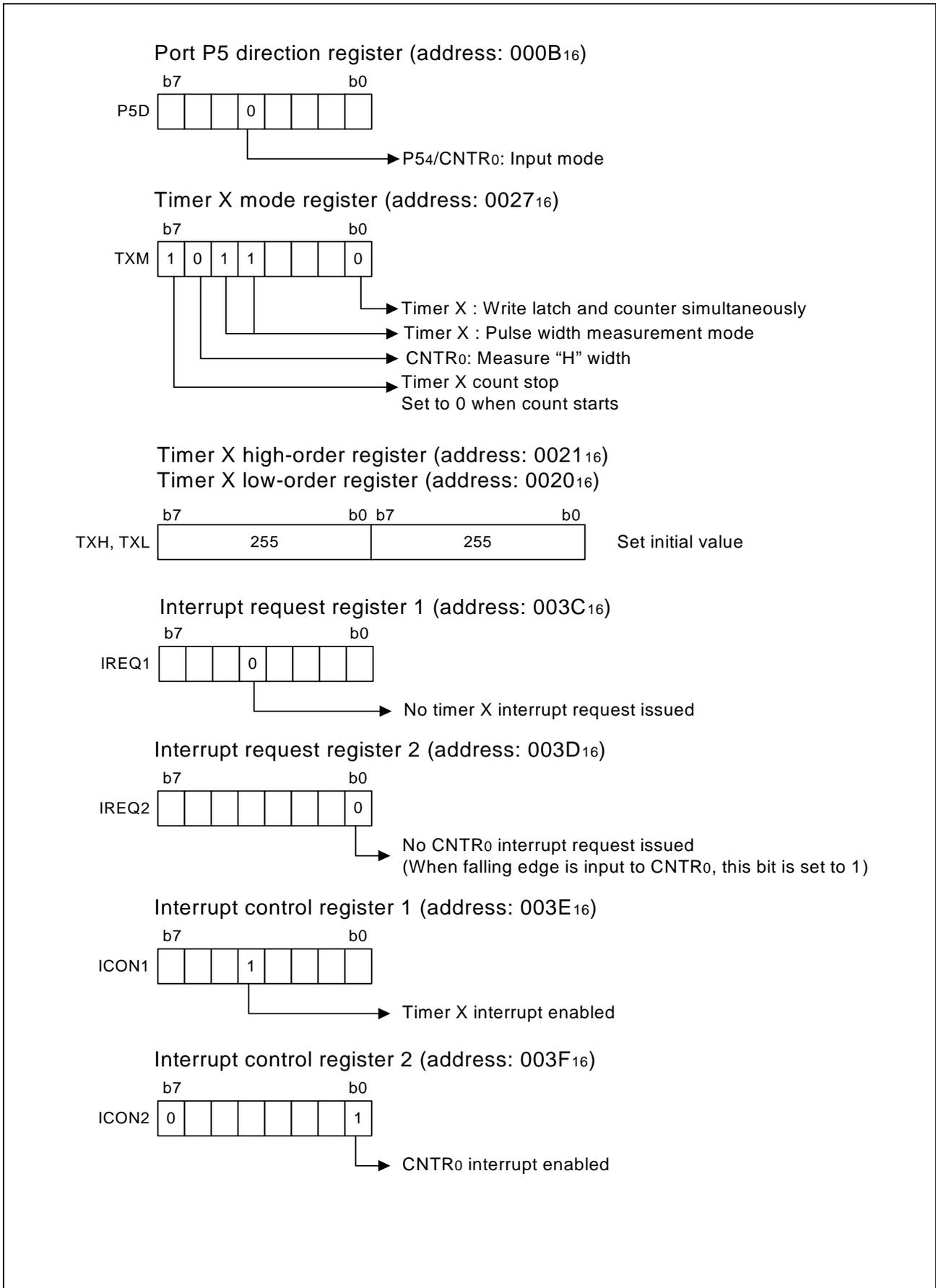


Figure 3.2 Relevant Register Settings

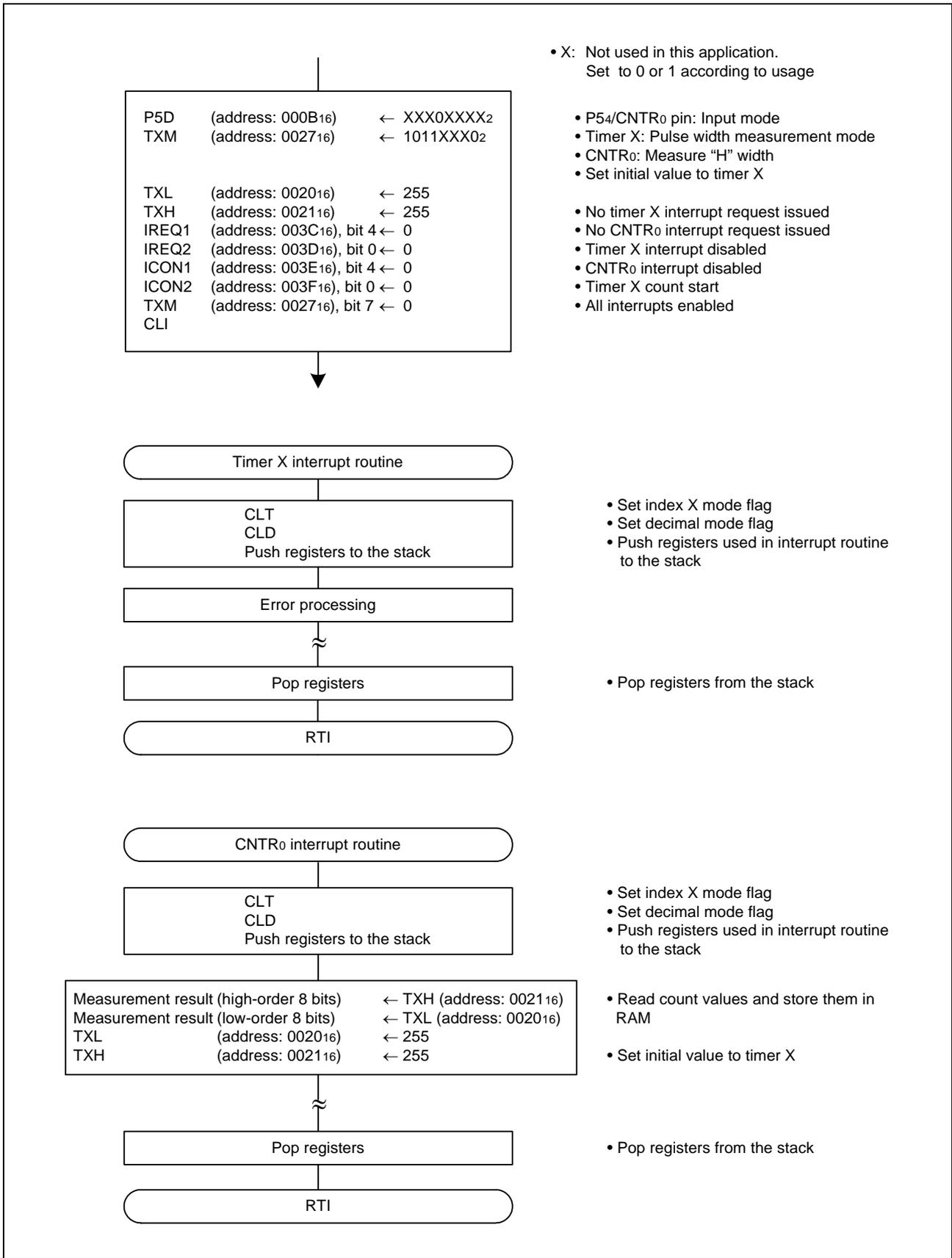


Figure 3.3 Control Procedure

#### 4. Sample Programming Code

Download a sample program from the Renesas Technology website.  
To download, click “Application Notes” in the left side menu on the page of the 3823 Group.

#### 5. Reference Document

Datasheet  
3823 Group Data sheet  
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Technical News/Technical Update  
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REVISION HISTORY	3823 Group Timer X Operation (Pulse Width Measurement Mode)
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Rev.	Date	Description	
		Page	Summary
1.00	Aug 10, 2006	-	First Edition issued

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