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April 1st, 2010
Renesas Electronics Corporation

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3858 Group

Timer Y Operation (Event Counter Mode: Frequency Measuremet)

1. Abstract

This document describes how to set up and use timer Y (event counter mode: frequency measurement) on the 3858 Group device.

2. Introduction

The application example described in this document is applied to the following:

MCU: 3858 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 operating conditions of the user system.

3. Contents

3.1 Frequency Measurement

Outline:

- In event counter mode, the falling edges of pulses input to the P40/CNTR1 pin are counted using timer Y.
- Frequencies are determined from the number of pulses during 2 ms.
- Input pulses (20 to 40 pulses) are judged valid for the range of 10 kHz to 20 kHz.

Specifications:

- Clock $f(XIN) = 8\text{ MHz}$ is divided by timer 12 count source selection, prescaler 12, and timer 1 to generate 2 ms. The timer Y count value is read by timer 1 interrupt generated at every 2 ms.
- Timer Y is counted down from the initial value of 255 and initialized by every timer 1 interrupt.
- Timer Y count values for valid frequency must be in the range of 235 to 215.

Figure 3.1 shows Determining Valid/Invalid Input Pulses, Figures 3.2 and 3.3 show the Relevant Register Settings (1) and (2), respectively, and Figure 3.4 shows the Control Procedure.

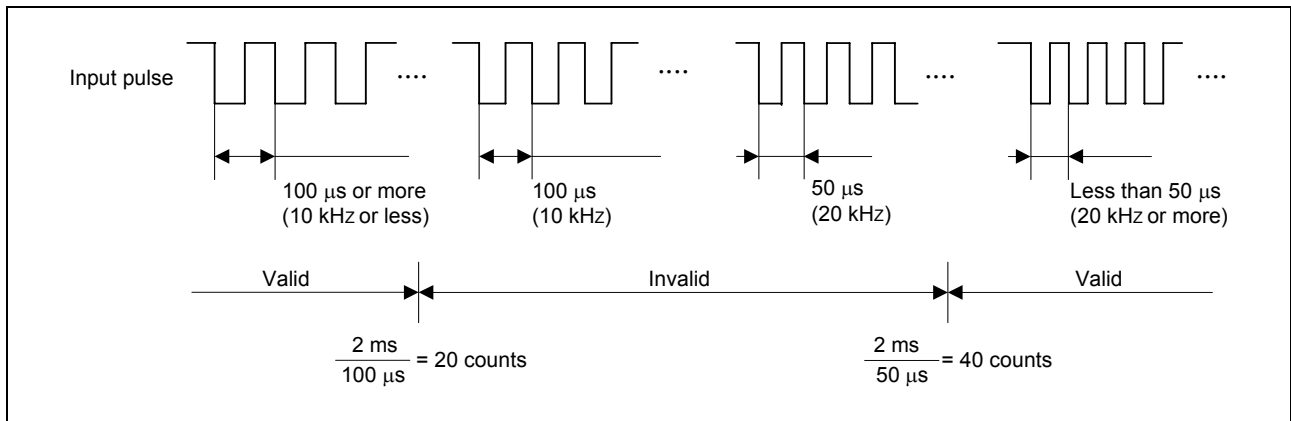


Figure 3.1 Determining Valid/Invalid Input Pulses

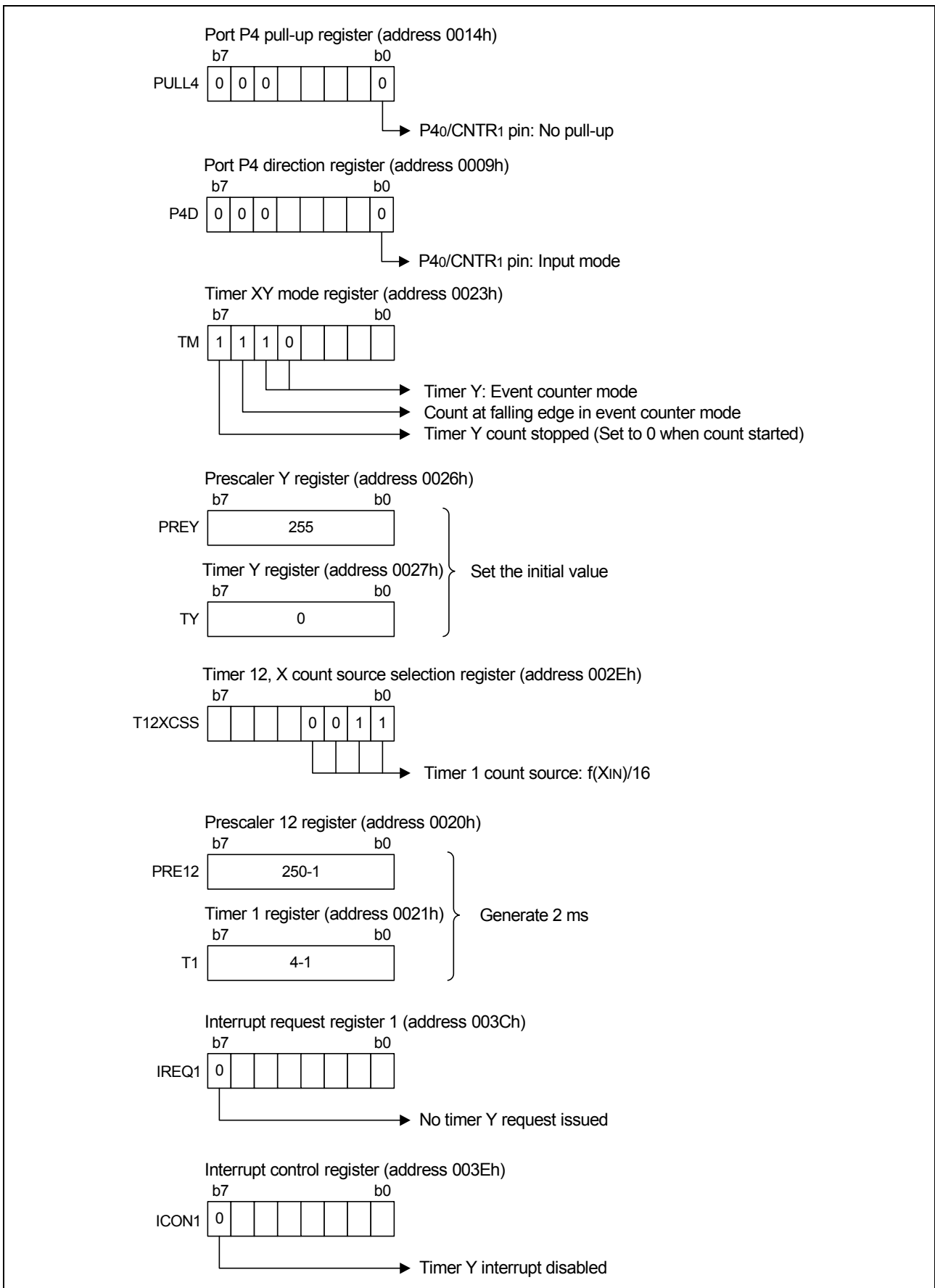


Figure 3.2 Relevant Register Settings (1)

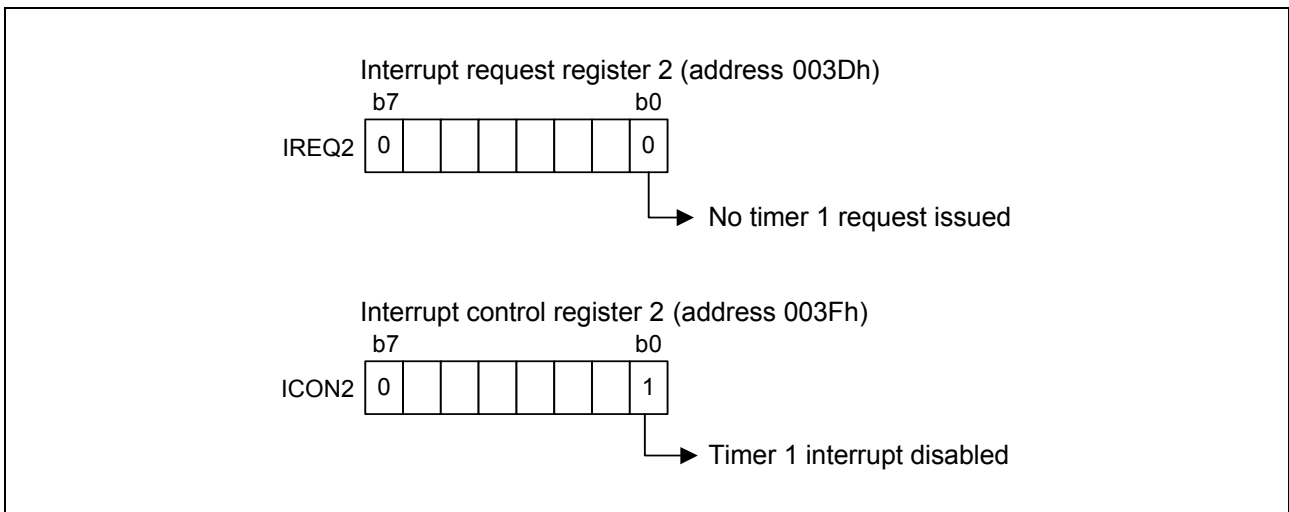


Figure 3.3 Relevant Register Settings (2)

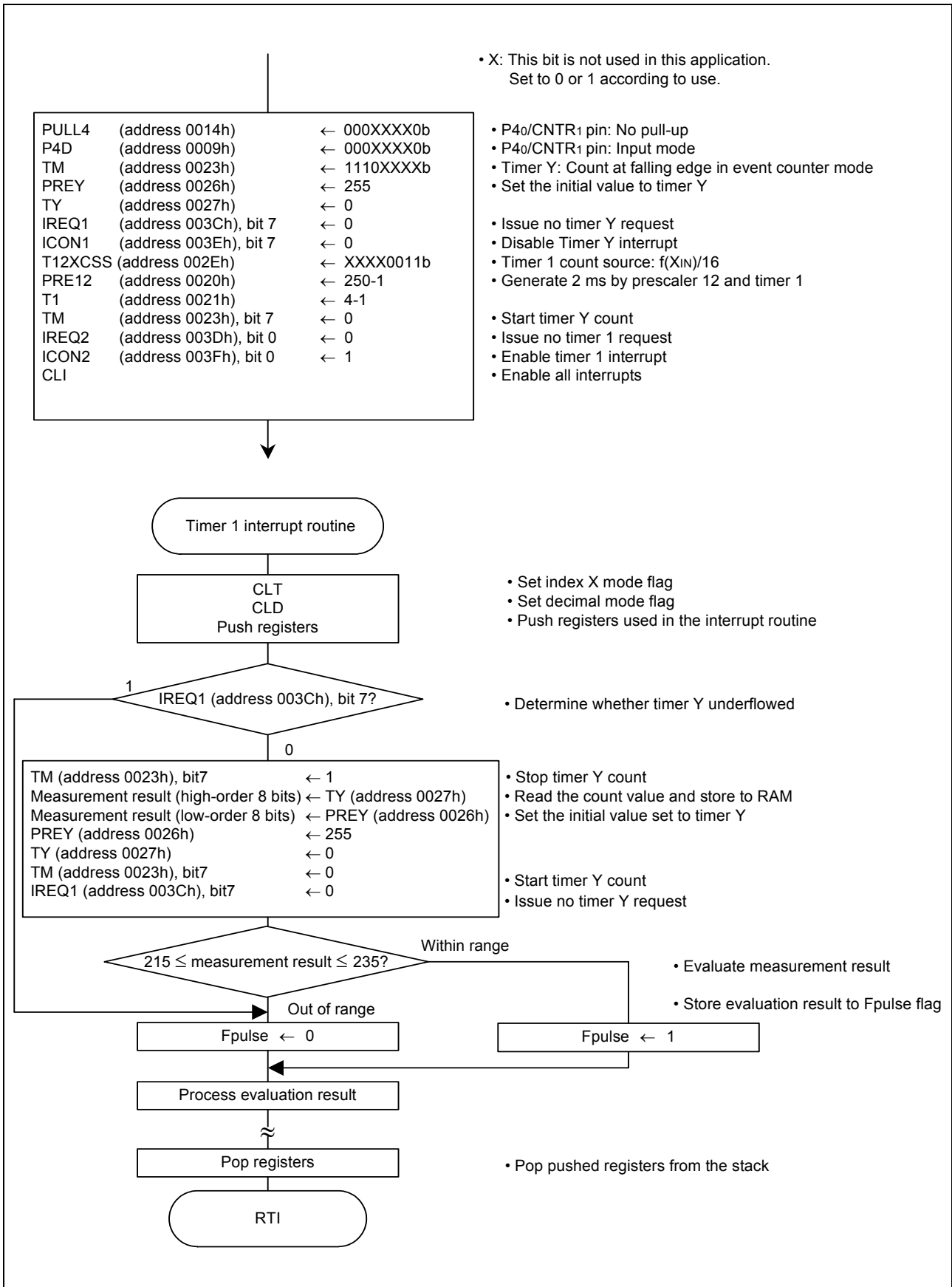


Figure 3.4 Control Procedure

4. Sample Programming Code

Download a sample program from the Renesas Technology website.

To download, click “Application Notes” in the left-hand side menu on the page of the 3858 Group.

5. Reference Document

Datasheet

3858 Group Datasheet

Download the latest version from the Renesas Technology website.

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REVISION HISTORY	3858 Group Timer Y Operation (Event Counter Mode: Frequency Measuremet) Application Note
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Rev.	Date	Description	
		Page	Summary
1.00	Aug 10, 2006	-	First Edition issued

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