

To our customers,

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

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## **7542Group**

### **Output Compare**

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#### **1. Abstract**

The following article introduces and shows an application example of output compare.

#### **2. Introduction**

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

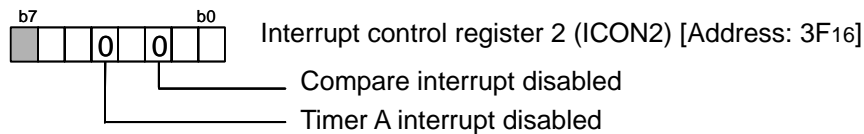
Applicable MCU: 7542 Group

## 3. Output Compare Setting Method

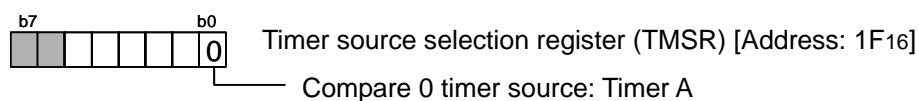
Figure 1, Figure 2, Figure 3 and Figure 4 shows the setting method for output compare.

Also, when output compare 1, 2 or 3 is used, the procedure is the same.

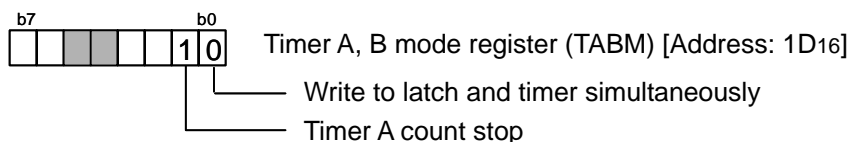
Process 1: Disable timer A interrupt and compare interrupt.



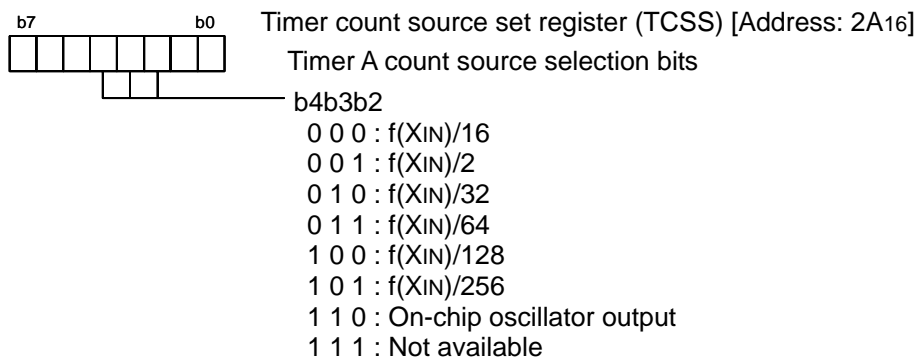
Process 2: Select timer source for compare output.



Process 3: Stop timer A counting and set "0" (Write to latch and timer simultaneously) to the timer A write control bit.



Process 4: Set timer count source set register.



Note: Be sure to select  $f(X_{IN})/16$  or  $f(X_{IN})/2$ . When using other count sources, set this register again after process 9.

Process 5: Set "000" (compare latch 00 selected) to compare register R/W pointer.

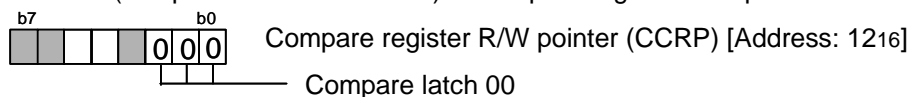
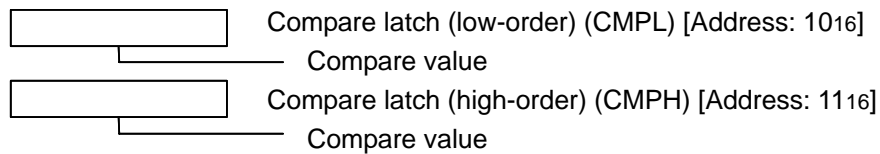
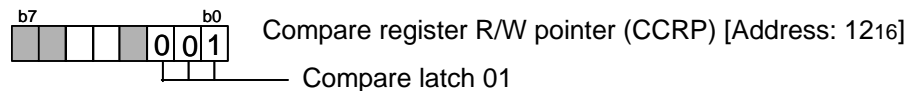


Figure 1 Setting method for output compare (1)

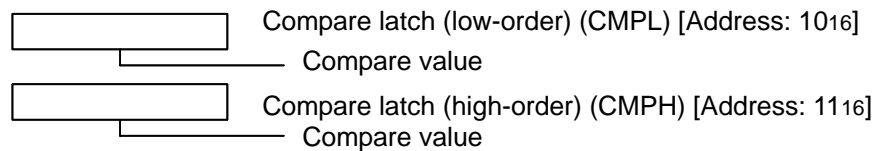
Process 6: Set compare value to compare latch 00.



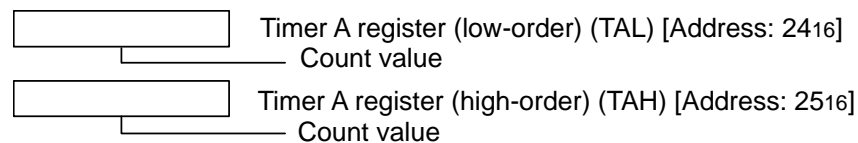
Process 7: Set "001" (compare latch 01) to compare register R/W pointer.



Process 8: Set compare value to compare latch 01.



Process 9: Set the count value to timer A.



Note: Write both registers in order of timer A (low-order) and timer A (high-order) following, certainly.

Process 10: When using a timer A count source except  $f(X_{IN})/16$  or  $f(X_{IN})/2$ , set timer A count source again.

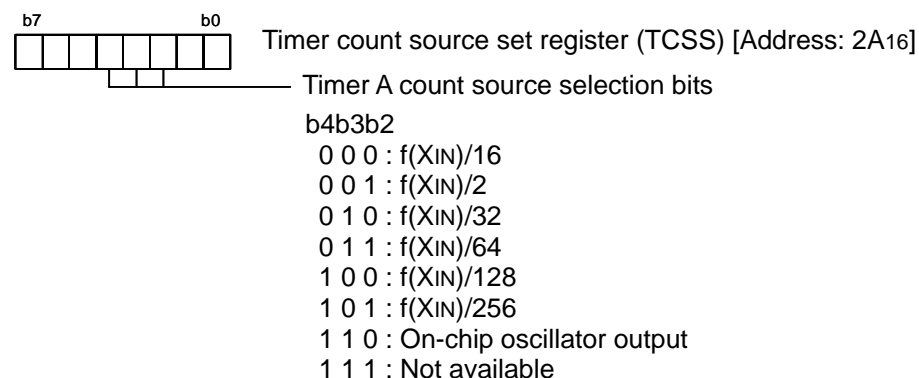
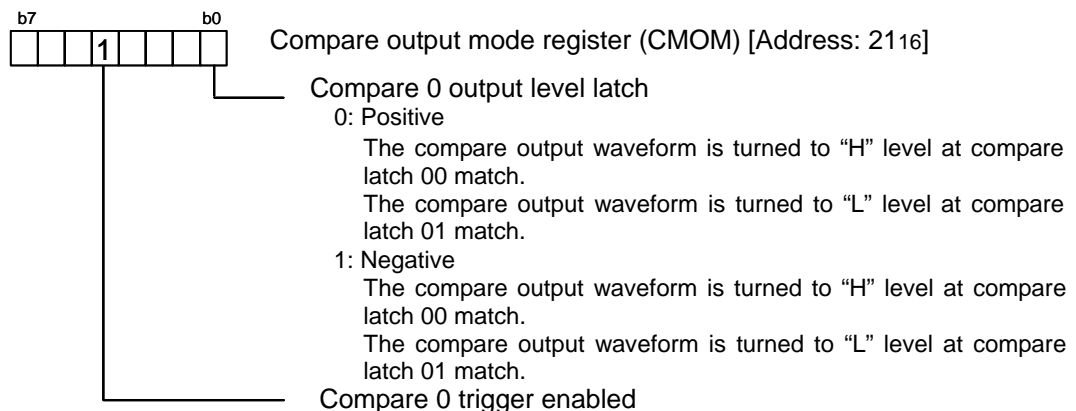
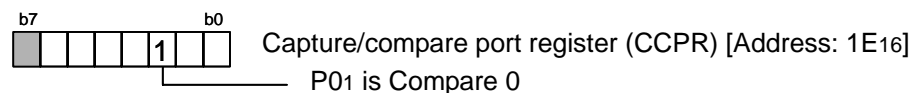


Figure 2 Setting method for output compare (2)

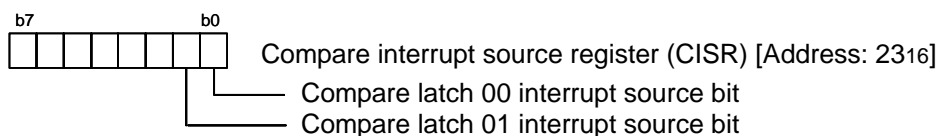
Process 11: Set compare output mode register.



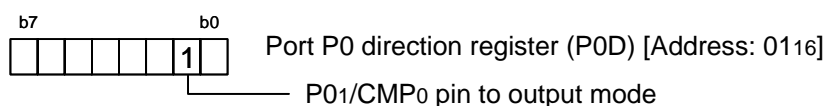
Process 12: Set "1" (compare 0 output port) to compare 0 output port selection bit.



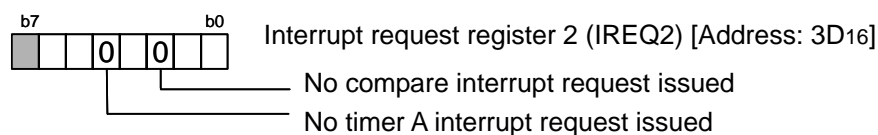
Process 13: When using compare interrupt, set "1"(interrupt enabled) to compare latch 00 interrupt source bit and compare latch 01 interrupt source bit.



Process 14: Set compare 0 output port to output mode.



Process 15: In order not to execute the no requested interrupt processing, set "0" (no requested) to the compare interrupt request bit and timer A interrupt request bit.



Process 16: When the compare interrupt and timer A interrupt are used, set "1" (interrupt enabled) to the corresponding interrupt enable bits.

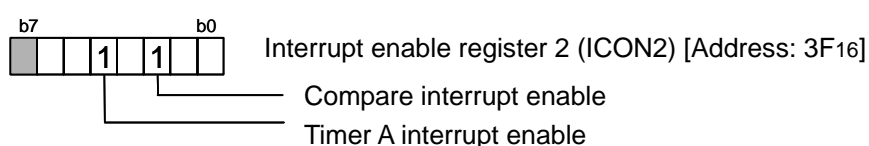
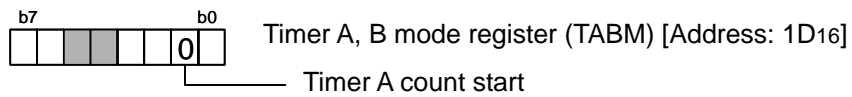


Figure 3 Setting method for output compare (3)

Process 17: Start counting timer A.



Compare output level of each channel can be confirmed by reading the compare output status bit of the capture/compare status register.

In order to change the value of waveform output without stopping output, execute the process 7 to process 10 and set "1" (Re-load at next underflow) to compare latch 00, 01 re-load bit of the compare register re-load register (CMPR).

In this time, the value written to the compare register is transferred to compare latch 00, 01 at the next timer A underflow and the output waveform is changed.

Figure 4 Setting method for output compare (4)

#### 4. Reference

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Data Sheet  
7542 Group Data sheet

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Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Jun.18.03	—	First edition issued
2.00	Jul.01.04	All pages	Words standardized

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