

RENESAS TECHNICAL UPDATE

TOYOSU FORESIA, 3-2-24, Toyosu, Koto-ku, Tokyo 135-0061, Japan
Renesas Electronics Corporation

Product Category	MPU/MCU		Document No.	TN-H8*-A442A/E	Rev.	1.00
Title	Restriction of input capture function at TPU cascaded operation		Information Category	Technical Notification		
Applicable Product	H8SX family (Please refer to the following table)	Lot No.	Reference Document	Please refer to the following table		
		ALL				

Regarding 16-bit timer pulse unit (TPU) implemented in the product shown above, it is found that there is a restriction of input capture function at cascaded operation. Please take the restriction into account at the time of use.

1. Restriction

When 16-bit timer counter 1 and 2 (TPU1.TCNT and TPU2.TCNT) are connected in cascade and operate as 32-bit counter, the value of 32-bit counter can be captured by input capture signal of timer counter 1 and 2 (TIOCA1 and TIOCA2 or TIOCB1 and TIOCB2) simultaneously.

However, even 2 input capture signals are input simultaneously, there is a possibility that the capture timing of the upper counter and the lower counter can be deviated 1 clock due to the delay time difference into LSI.

When capturing overflow timing of the lower counter, like from 0000_FFFF to 0001_0000, the captured value should be either 0000_FFFF or 0001_0000, but due to the 1 clock deviation of the capture timing, 0000_0000 or 0001_FFFF can be captured.

2. Example of workaround

When these timers are operated as 32-bit input capture counter, the deviation of the captured value can be occurred when the captured values of the lower counter are 0000 or FFFF. In this case, please disable the values, discard the captured value etc.

3. Related document of applicable product

Applicable products are shown in the next page.

	Group	Reference Document	Rev.	Number
H8SX	H8SX/1520 Group	H8SX/1520 Group Hardware Manual	3.00	REJ09B0104-300
	H8SX/1520R Group	H8SX/1520R Group Hardware Manual	1.00	REJ09B0282-0100
	H8SX/1544 Group	H8SX/1544 Group Hardware Manual	3.00	REJ09B0381-0300
	H8SX/1582 Group	H8SX/1582 Group Hardware Manual	2.00	REJ09B0199-0200
	H8SX/1720 Group	H8SX/1720 Group User' s Manual: Hardware	3.00	R01UH0369EJ0300
	H8SX/1720S Group	H8SX/1720S Group User' s Manual: Hardware	2.00	R01UH0370EJ0200