RENESAS Tool News

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A Note on Using the Real-Time OS HI1000/4, Which Is Used for the H8SX and H8S MCU Families

Please take note of the following problems in using the real-time OS HI1000/4, which is used for the H8SX and H8S MCU families:

- With clearing an event flag waited for by two or more tasks

1. Product and Versions Concerned

HI1000/4 V.1.05 Release 00 and earlier versions

2. Description

Any of the two or more tasks that are waiting for an event flag (consisting of 16 bits) to be set may not be released from their WAITING states even if the conditions for canceling these WAITING states are satisfied.
However, the unreleased tasks will exit from their WAITING states if other conditions for canceling them that are independent of the conditions described in Section 3 below are fulfilled.

3. Conditions

If the following conditions are all satisfied, the tasks that would be released from the WAITING states by the issuance of the set_flg or iset_flg service call in (3) below will not be done so in some cases:

(1) In the program exists an event flag having the TA_WMUL attribute (allows two or more tasks to enter the WAITING states) and TA_CLR attribute (clears all the F's bits to 0s if the WAITING states are canceled). This flag is hereafter called F.

(2) Two or more tasks are waiting for F to be set to the value represented by the bit pattern that satisfies the conditions for canceling their WAITING states.

(3) The set_flg or iset_flg service call is issued to set F to the value represented by the bit pattern that satisfy the conditions for canceling the WAITING states of any of tasks in (2).

(4) While the kernel is handling set_flg or iset_flg in (3), an interrupt is requested.

(5) The interrupt in (4) invokes the interrupt handler or time-event handler, which issues the iclr_flg service call to clear the bits in F that are included in those set in (3) and satisfy the conditions for canceling the WAITING states of the tasks in (2).

4. Workaround

Before and after issuing set_flg or iset_flg in Condition (3), change the level of the interrupt mask to that of the kernel interrupt mask as follows:

(1) If set_flg issued

```
IMASK old_imask;
get_ims(&old_imask);
chg_ims(1);  /* Interrupt mask level changed to kernel interrupt
              mask level (1 in this example) */
iset_flg(...);   /* As context is interpreted as non-task one while
                    interrupt is masked in product specifications,
                    set_flg is changed to iset_flg */
ichg_ims(old_imask);  /* Interrupt mask level resumed */
```

(2) If iset_flg issued

```
IMASK old_imask;
iget_ims(&old_imask);
ichg_ims(1);  /* Interrupt mask level changed to kernel interrupt
               mask level (1 in this example) */
iset_flg(...);
ichg_ims(old_imask);  /* Interrupt mask level resumed */
```

5. Schedule of Fixing the Problems

The problem has been resolved in HI1000/4 V.1.05 Release 01, which will be opened on the download site at

http://www.renesas.com/itron_download

from June 5 on. So update yours to it.

Free-of-charge online update is available. For details see RENESAS TOOL NEWS Document No. 080601/tn8, "The Real-Time OS HI1000/4, Which Is Used for the H8SX and H8S MCU Families, Revised to V.1.05 Release 01," on the Web page at

http://tool-support.renesas.com/eng/toolnews/080601/tn8.htm

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