

[Notes]

R20TS0666EJ0100

Rev.1.00

Feb. 16, 2021

RX Driver Package,

RX Family RTC Module Using Firmware Integration Technology

Overview

When using the RX Driver Package and RX Family RTC Module Using Firmware Integration Technology (referred to as RTC FIT module hereafter), note the following point.

1. Notes on output of RTCOUT pin when the R\_RTC\_Open function is called

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1.1 Applicable Products

- (1) RX Family RTC Module Using Firmware Integration Technology

The relevant revisions and documents are as shown in "Table 1.1, RTC FIT Module Applicable Products".

Table 1.1 RTC FIT Module Applicable Products

Revision of the RTC FIT module	Document number
Rev.2.71	R01AN1817EJ0271
Rev.2.72	R01AN1817EJ0272
Rev.2.73	R01AN1817EJ0273
Rev.2.74	R01AN1817EJ0274
Rev.2.75	R01AN1817EJ0275
Rev.2.76	R01AN1817EJ0276
Rev.2.77	R01AN1817EJ0277
Rev.2.78	R01AN1817EJ0278
Rev.2.79	R01AN1817EJ0279
Rev.2.80	R01AN1817EJ0280

These notes also apply to the following RX Driver Package products which include the above RTC FIT module\*1.

\*1: The RTC FIT module is included as r\_rtc\_rx\_v\*.\*\*.zip (\*.\*\* is the revision number).

(2) RX Driver Package

The product name and revision of the relevant RX Driver Package products and the revision of the included RTC FIT module are as shown in "Table 1.2, Products Which Include the RTC FIT Module".

Table 1.2 Products Which Include the RTC FIT Module

Product name of the RX Driver Package	Revision of the RX Driver Package	Document number	Revision of the included RTC FIT module
RX family RX Driver Package Ver.1.13	Rev.1.13	R01AN3859EJ0113	Rev.2.71
RX family RX Driver Package Ver.1.14	Rev.1.14	R01AN4191EJ0114	Rev.2.72
RX family RX Driver Package Ver.1.15	Rev.1.15	R01AN4372EJ0115	Rev.2.72
RX family RX Driver Package Ver.1.16	Rev.1.16	R01AN4471EJ0116	Rev.2.72
RX family RX Driver Package Ver.1.17	Rev.1.17	R01AN4572EJ0117	Rev.2.73
RX family RX Driver Package Ver.1.18	Rev.1.18	R01AN4659EJ0118	Rev.2.73
RX family RX Driver Package Ver.1.19	Rev.1.19	R01AN4677EJ0119	Rev.2.74
RX family RX Driver Package Ver.1.20	Rev.1.20	R01AN4794EJ0120	Rev.2.75
RX family RX Driver Package Ver.1.21	Rev.1.21	R01AN4843EJ0121	Rev.2.76
RX family RX Driver Package Ver.1.22	Rev.1.22	R01AN4873EJ0122	Rev.2.77
RX family RX Driver Package Ver.1.23	Rev.1.23	R01AN4976EJ0123	Rev.2.77
RX family RX Driver Package Ver.1.24	Rev.1.24	R01AN5267EJ0124	Rev.2.77
RX family RX Driver Package Ver.1.25	Rev.1.25	R01AN5371EJ0125	Rev.2.78
RX family RX Driver Package Ver.1.26	Rev.1.26	R01AN5401EJ0126	Rev.2.78
RX family RX Driver Package Ver.1.27	Rev.1.27	R01AN5600EJ0127	Rev.2.79
RX family RX Driver Package Ver.1.28	Rev.1.28	—*1	Rev.2.80

\*1: RX family RX Driver Package Ver.1.28 has not yet been released as of February 16, 2021.

## 1.2 Applicable MCUs

RX110, RX111, RX113, RX130, RX230, RX231, RX23W, RX64M, RX651, RX65N, RX71M, RX72M and RX72N groups

## 1.3 Description

When an R\_RTC\_Open function is called, the RTCOUT pin might output 1 Hz even when the RTCOUT pin is set to output 64 Hz.

## 1.4 Conditions

The output of RTCOUT pin becomes 1 Hz when an R\_RTC\_Open function is called while output\_freq stores RTC\_OUTPUT\_64\_HZ and set\_time stores true, where output\_freq and set\_time are members of a structure variable rtc\_init\_t.

```

rtc_err_t ret;
rtc_init_t rtc_init;
tm_t rtc_curr_time =
{
    20,
    59,
    23,
    31,
    7,
    115,
    1,
    0,
    0,
};

/* Initialize rtc_init */
rtc_init.output_freq = RTC_OUTPUT_64_HZ;
rtc_init.periodic_freq = RTC_PERIODIC_2_SEC;
rtc_init.periodic_priority = 8;
rtc_init.set_time = true;
rtc_init.p_callback = rtc_callback;

ret = R_RTC_Open(&rtc_init, &rtc_curr_time);

```

## 1.5 Workaround

In the RTC FIT module source code `r_rtc_rx_hw.c`, modify the processing of the `rtc_enable_ints` function. The details of the modification are as follows. Modify the blue part to the red part.

Before modification:

```
void rtc_enable_ints (void)
{

    /* Enable RTC interrupts (PIE, CIE and AIE), not ICU yet */
    RTC.RCR1.BYTE = RTC_INT_ENABLE;
    /* WAIT_LOOP */
    while (RTC_INT_ENABLE != RTC.RCR1.BYTE)
    {
        /* Confirm that it has changed */
        R_BSP_NOP();
    }

    return;
}
```

After modification:

```
void rtc_enable_ints (void)
{

    /* Enable RTC interrupts (PIE, CIE and AIE), not ICU yet */
    RTC.RCR1.BYTE |= RTC_INT_ENABLE;
    /* WAIT_LOOP */
    while (RTC_INT_ENABLE != (RTC.RCR1.BYTE & RTC_INT_ENABLE))
    {
        /* Confirm that it has changed */
        R_BSP_NOP();
    }

    return;
}
```

### 1.6 Permanent Measure

#### (1) RTC FIT module

This problem will be fixed in Rev.2.81, which will be the next release.

#### (2) RX Driver Package

The RTC FIT module Rev.2.81 modified in accord with this note will be included in Ver.1.29 of the RX Family RX Driver Package, which will be the hereafter release.

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Feb.16.21	-	First edition issued

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**Corporate Headquarters**

TOYOSU FORESIA, 3- 2- 24 Toyosu,  
Koto-ku, Tokyo 135- 0061, Japan  
[www.renesas.com](http://www.renesas.com)

**Contact information**

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