

[Notes]

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Rev.1.00
Sep. 16, 2019

e² studio Smart Configurator Plug-in,
Smart Configurator for RX

Outline

When using the e² studio Smart Configurator Plug-in and Smart Configurator for RX, note the following point.

1. When using the automatic adjustment function for time error adjustment on the Realtime Clock

1. When Using the Automatic Adjustment Function for Time Error Adjustment on the Realtime Clock

1.1 Applicable Products

- e² studio V7.0.0 (Smart Configurator Plug-in V1.4.0) or later
- Smart Configurator for RX V1.4.0 or later

1.2 Applicable Devices

- RX family:
RX110, RX111, RX113, RX130, RX230, RX231, RX23W,
RX64M, RX651, and RX65N groups

1.3 Details

When the automatic adjustment function for timer error adjustment is used on the Realtime Clock, the order of code initialization for the PMADJ register and AADJE/AADJP bits in RCR2 register is inverted, which may affect the automatic adjustment accuracy.

Error location

```

*****/
/* Start user code for global. Do not edit comment generated here */
/* End user code. Do not edit comment generated here */

/*****
* Function Name: R_Config_RTC_Create
* Description   : This function initializes the RTC module
* Arguments    : None
* Return Value  : None
*****/

void R_Config_RTC_Create(void)
{
    uint16_t w_count;
    uint32_t rw_count;
    volatile uint32_t dummy;
    ...

    /* Set clock error adjustment values */
    RTC.RADJ.BYTE = _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE;
    while (( _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE ) != RTC.RADJ.BYTE)
    {
        /* Wait for this write to complete. */
    }

    RTC.RCR2.BYTE |= ( _10_RTC_AUTO_ADJUSTMENT_ENABLE | _20_RTC_AUTO_ADJUSTMENT_PERIOD_8SEC );
    ...
}

```

The diagram highlights two code blocks with red boxes. The first block contains the initialization of RTC.RADJ.BYTE and a while loop that waits for the write to complete. The second block contains the initialization of RTC.RCR2.BYTE. A blue arrow points from the first block to the second, and a red arrow points from the second block back to the first, indicating that the initialization sequence for these two sets of codes is inverted.

1.4 Conditions

The error occurs when Realtime clock component is added in Smart Configurator and the automatic adjustment function for timer error adjustment is used ('Enable automatic adjustment' check box is checked).



1.5 Workaround

Change the order of code initialization for setting the PMADJ register and AADJE/AADJP bits in RCR2 register in the source file below.

Note: When code is generated again, generated code returns to the state before correction. Therefore, correct the source file each time you generate code.

- Source file: "<RTC-configuration-name>.c"
- Function: "void r_<RTC- configuration-name>_Create (void)"

The <RTC- configuration-name> varies depending on the selected component of RTC.

Below is an example of modification when the <RTC-configuration-name> is Config_RTC (initial value) for RX64M.

Before correction

```

*****/
/* Start user code for global. Do not edit comment generated here */
/* End user code. Do not edit comment generated here */

/*****
* Function Name: R_Config_RTC_Create
* Description  : This function initializes the RTC module
* Arguments   : None
* Return Value: None
*****/

void R_Config_RTC_Create(void)
{
    uint16_t w_count;
    uint32_t rw_count;
    volatile uint32_t dummy;
    ...

    /* Set clock error adjustment values */
    RTC.RADJ.BYTE = _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE;
    while (( _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE) != RTC.RADJ.BYTE)
    {
        /* Wait for this write to complete. */
    }

    RTC.RCR2.BYTE |= ( _10_RTC_AUTO_ADJUSTMENT_ENABLE | _20_RTC_AUTO_ADJUSTMENT_PERIOD_8SEC );
    ...
}

```

Change the order of these 2 set of codes

After correction

```

*****
/* Start user code for global. Do not edit comment generated here */
/* End user code. Do not edit comment generated here */

/*****
* Function Name: R_Config_RTC_Create
* Description  : This function initializes the RTC module
* Arguments   : None
* Return Value : None
*****/

void R_Config_RTC_Create(void)
{
    uint16_t w_count;
    uint32_t rw_count;
    volatile uint32_t dummy;
    ...

    RTC.RCR2.BYTE |= ( _10_RTC_AUTO_ADJUSTMENT_ENABLE | _20_RTC_AUTO_ADJUSTMENT_PERIOD_8SEC);

    /* Set clock error adjustment values */
    RTC.RADJ.BYTE = _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE;
    while (( _40_RTC_TIMER_ERROR_ADJUST_PLUS | _03_RTC_AUTO_ADJUSTMENT_VALUE) != RTC.RADJ.BYTE)
    {
        /* Wait for this write to complete. */
    }
    ...
}

```

1.6 Schedule for Fixing the Problem

This problem will be fixed in the following product versions. (Scheduled to be released in January 2020.)

- e² studio V7.7.0
- Smart Configurator for RX V2.4.0

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Sep.16.19	-	First edition issued

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061 Japan
www.renesas.com

Contact information

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