

Note on Using Renesas Peripheral Driver Libraries and Peripheral Driver Generator --Problem with Setting the Real-Time Clock (RTC)--

When using Renesas Peripheral Driver Libraries and Peripheral Driver Generator, take note of the following problem:

- With setting the real-time clock (RTC)

1. Products and Versions Concerned

- RX63N Group Renesas Peripheral Driver Library V.1.01
- RX630 Group Renesas Peripheral Driver Library V.1.00
- Peripheral Driver Generator V.2.04 and later

2. Description

If the main clock oscillator stop bit (the MOSCCR.MOSTP bit) is set to 1 (the oscillator stops), the count clock source of the real-time clock (RTC) may not be switched to the main clock.

3. Conditions

(1) In Renesas Peripheral Driver Libraries

This problem arises if the following condition is satisfied:

While the MOSCCR.MOSPTP bit is set to 1, the count clock source of the RTC is switched to the main clock by using the R_RTC_Create or R_RTC_Control function.

Example:

```
-----  
/* To oscillate the main clock forcibly, the MOFCR.MOFXIN bit is set  
to 1. So, the main clock oscillates independent of the value of  
the MOSCCR.MOSTP bit */  
R_CGC_Control(PDL_NO_DATA, PDL_CGC_MAIN_FORCED_ENABLE,  
PDL_NO_DATA);
```

```
/* The MOSCCR.MOSTP bit is set to 1 */  
R_CGC_Control(PDL_NO_DATA, PDL_CGC_MAIN_DISABLE, PDL_NO_DATA);
```

```
/* The count clock source of the RTC is switched to the main clock */  
R_RTC_Create(  
    PDL_RTC_24_HOUR_MODE | PDL_RTC_OUTPUT_DISABLE |  
PDL_RTC_COUNT_SOURCE_MAINCLK,  
    PDL_NO_DATA, 0xFF000000, 0x00000101,  
    PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,  
    PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,  
    PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,  
PDL_RTC_PERIODIC_DISABLE,  
    0xFF000000, 0x00000101, PDL_NO_FUNC, 0, PDL_NO_FUNC, 0);  
-----
```

(2) In Peripheral Driver Generator

This problem arises if the following conditions are all satisfied:

- In any MCU of the RX630, RX63N, or RX631 group, the count clock source of the RTC is switched to the main clock.
- After the main clock has been stopped by R_PG_Clock_Stop_MAIN, a call is made to the R_PG_RTC_Start() function, which has been generated for the RTC by the peripheral driver generator.

Example:

```
-----  
/* To oscillate the main clock forcibly, the MOFCR.MOFXIN bit is set  
to 1. So, the main clock oscillates independent of the value of  
the MOSCCR.MOSTP bit */  
R_PG_Clock_Enable_MAIN_ForcedOscillation();  
  
/* The MOSCCR.MOSTP bit is set to 1 */  
R_PG_Clock_Stop_MAIN();  
  
/* The count clock source of the RTC is switched to the main clock */  
R_PG_RTC_Start();  
-----
```

4. Workarounds

If you switch the count clock source of the RTC to the main clock, make sure that the MOSCCR.MOSTP bit is cleared to 0 (the oscillator oscillates). That is, before switching the count clock source of the RTC, clear the MOSCCR.MOSTP bit to 0.

(1) Example in Renesas Peripheral Driver Libraries

```

/* To oscillate the main clock forcibly, the MOFCR.MOFXIN bit is set
to 1. So, the main clock oscillates independent of the value of
the MOSCCR.MOSTP bit */
R_CGC_Control(PDL_NO_DATA, PDL_CGC_MAIN_FORCED_ENABLE,
PDL_NO_DATA);

/* Workaround */
flg = OFF;
if(SYSTEM.MOSCCR.BIT.MOSTP == 1){
    /* The MOSCCR.MOSTP bit cleared to 0 */
    R_CGC_Control(PDL_NO_DATA, PDL_CGC_MAIN_ENABLE, PDL_NO_DATA);
    flg = ON; /* Make variable "flg" remember that the MOSCCR.MOSTP
                bit has temporarily been set to 1 */
}

/* Wait for the stabilization of oscillation of the main clock */
wait_clk(1000);

R_RTC_Create(PDL_RTC_24_HOUR_MODE | PDL_RTC_OUTPUT_DISABLE |
PDL_RTC_COUNT_SOURCE_MAINCLK,
PDL_NO_DATA, 0xFF000000, 0x00000101,
PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,
PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,
PDL_RTC_CAPTURE_EDGE_NONE | PDL_RTC_CAPTURE_FILTER_OFF,
PDL_RTC_PERIODIC_DISABLE,
0xFF000000, 0x00000101, PDL_NO_FUNC, 0, PDL_NO_FUNC, 0);

/* The MOSCCR.MOSTP bit, which has temporarily been cleared, is set
to 1 */
if(flg == ON){
    /* The MOSCCR.MOSTP bit is again set to 1 */
    R_CGC_Control(PDL_NO_DATA, PDL_CGC_MAIN_DISABLE,
PDL_NO_DATA);
}

```

(2) Example in Peripheral Driver Generator

```

/* To oscillate the main clock forcibly, the MOFCR.MOFXIN bit is set
to 1. So, the main clock oscillates independent of the value of
the MOSCCR.MOSTP bit */
R_PG_Clock_Enable_MAIN_ForcedOscillation();

flg = OFF;
if(SYSTEM.MOSCCR.BIT.MOSTP == 1){

```

```
/* The MOSCCR.MOSTP bit cleared to 0 */
R_PG_Clock_Start_MAIN();
flg = ON; /* Make variable "flg" remember that the MOSCCR.MOSTP
          bit has temporarily been set to 1 */
}

/* Wait for the stabilization of oscillation of the main clock */
wait_clk(1000);

R_PG_RTC_Start();

/* The MOSCCR.MOSTP bit, which has temporarily been cleared, is set
to 1 */
if(flg == ON){
/* The MOSCCR.MOSTP bit is again set to 1 */
R_PG_Clock_Stop_MAIN();
}
-----
```

5. Schedule of Fixing Problem

We plan to fix this problem in the near future.

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