

Smart Configurator for RH850 Plug-in in e² studio 2024-01

Smart Configurator for RH850 V1.10.0

Release Note

Introduction

Thank you for using the Smart Configurator for RH850.

This document describes the restrictions and points for caution. Read this document before using the product.

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1. Introduction

Smart Configurator is a utility for combining software to meet your needs. It supports the following three functions related to the embedding of Renesas drivers in your systems: importing middleware, generating driver code, and setting pins.

1.1 System Requirements

The operating environment is as follows.

1.1.1 Windows PC

- System: x64/x86 based processor
 - Windows® 11
 - Windows® 10 (64-bit version)
 - Windows® 8.1 (64-bit version)
- Memory capacity: We recommend 4 GB or more.
- Capacity of hard disk: At least 500 MB of free space.
- Display: Graphics resolution should be at least 1024 x 768, and the mode should display at least 65,536 colors.
- Processor: 1 GHz or higher (must support hyper-threading, multi-core CPUs)

1.1.2 Linux PC

Smart Configurator for RH850 plug-in in e² studio 2024-01 or later is supported on Linux OS.

- System: x64 based processor, 2 GHz or faster (with multicore CPUs)
 - Ubuntu 22.04 LTS Desktop (64-bit version)
 - Ubuntu 20.04 LTS Desktop (64-bit version)
- Memory capacity: We recommend 2 GB or more.
- Capacity of hard disk: At least 2 GB of free space.

1.1.3 Development Environments

- Renesas electronics Compiler for RH850 [CC-RH] V2.06.00 or later
- GHS Multi V8.1.4 or later
- IAR Embedded Workbench for RH850 V3.10.1 ^{Note} or later
- Note:
 - IAR Embedded Workbench for RH850 V3.10.1 doesn't support RH850/U2B yet, so Smart Configurator doesn't support creating RH850/U2B IAR project and generate code.

2. Support List

2.1 Support Devices List

Below is a list of devices supported by the Smart Configurator for RH850 V1.10.0,.

Table 2-1 Support Devices

Group (HW Manual number)	PIN	Device name (Device file version)
RH850/F1KM-S1 Group (R01UH0684EJ0130)	48pin	R7F701693, R7F701694, R7F701695 (V1.40)
	64pin	R7F701690, R7F701691, R7F701692 (V1.40)
	80pin	R7F701687, R7F701688, R7F701689 (V1.40)
	100pin	R7F701684, R7F701685, R7F701686 (V1.40)
RH850/F1KM-S2 Group (R01UH0684EJ0130)	100pin	R7F701760 (V1.40)
	144pin	R7F701762 (V1.40)
	176pin	R7F701764 (V1.40)
RH850/F1KM-S4 Group (R01UH0684EJ0130)	100pin	R7F701760, R7F701644, R7F701645 (V1.40)
	144pin	R7F701762, R7F701646, R7F701647 (V1.40)
	176pin	R7F701764, R7F701648, R7F701649 (V1.40)
	232pin	R7F701650, R7F701651 (V1.40)
	272pin	R7F701652, R7F701653 (V1.40)
RH850/U2A16 Group (R01UH0864EJ0130)	292pin	R7F702300 ^{*1} , R7F702300A (V1.20), R7F702300B (V1.10)
	373pin	R7F702300 ^{*1} , R7F702300A (V1.20), R7F702300B (V1.10)
	516pin	R7F702300 ^{*1} , R7F702300A (V1.20), R7F702300B (V1.10)
RH850/U2A8 Group (R01UH0864EJ0130)	292pin	R7F702301 ^{*1} , R7F702301A (V1.20), R7F702301B (V1.00)
	373pin	R7F702301 ^{*1} , R7F702301A (V1.20), R7F702301B (V1.00)
RH850/U2A6 Group (R01UH0864EJ0130)	144pin	R7F702302 (V1.10)
	156pin	R7F702302 (V1.10)
	176pin	R7F702302 (V1.10)
	292pin	R7F702302 (V1.10)
RH850/F1KH-D8 Group (R01UH0684EJ0111)	176pin	R7F701708, R7F701709 (V1.20)
	233pin	R7F701710, R7F701711 (V1.20)
	324pin	R7F701714, R7F701715 (V1.20)
RH850/C1M-A2 Group (R01UH0607EJ0120)	252pin	R7F701275 (V1.10)
RH850/U2B6 Group (R01UH0923EJ0050)	292pin	R7F70255x (V1.10)
RH850/U2B10 Group (R01UH0923EJ0050)	292pin	R7F70254x (V1.00)
	373pin	R7F70254x (V1.00)
	468pin	R7F70254x (V1.00)

Note 1. The devices are not supported in CS+V8.08 or later.

If you want to use these devices, you can use CS+V8.07 or earlier or obtain the device files via Renesas distributor.

2.2 Support Components List

Below is a list of Components supported by the Smart Configurator for RH850 V1.10.0.

Table 2-2 Support Components

✓: Support, -: Non-support

No	Components	Mode	RH850 F1KM	RH850 U2A	RH850 F1KH	RH850 C1M	RH850 U2B	Remarks
1	A/D Converter	-	✓	✓	✓	✓	✓	
2	CSI Master	Master Transmit	✓	-	✓	✓	-	
		Master Receive	✓	-	✓	✓	-	
		Master Transmit/Receive	✓	-	✓	✓	-	
3	CSI Slave	Slave Transmit	✓	-	✓	✓	-	
		Slave Receive	✓	-	✓	✓	-	
		Slave Transmit/Receive	✓	-	✓	✓	-	
4	Data CRC	-	✓	✓	✓	✓	-	
5	DMA Controller	-	✓	✓	✓	✓	✓	
6	DTS Controller	-	-	✓	-	✓	-	
7	Error Control Module	-	-	✓	-	✓	-	
8	ATOM Signal Output Mode Compare	-	-	✓	-	-	-	
9	ATOM Signal Output Mode Immediate	-	-	✓	-	-	-	
10	ATOM Signal Output Mode PWM	-	-	✓	-	-	-	
11	ATOM Signal Output Mode Serial	-	-	✓	-	-	-	
12	Dead Time Module	-	-	✓	-	-	-	
13	GTM Clock	-	-	✓	-	-	-	
14	TIM Bit Compression Mode	-	-	✓	-	-	-	

Table 2-3 Support Components

✓: Support, -: Non-support

No	Components	Mode	RH850 F1KM	RH850 U2A	RH850 F1KH	RH850 C1M	RH850 U2B	Remarks
15	TIM Gated Periodic Sampling Mode	-	-	✓	-	-	-	
16	TIM Input Event Mode	-	-	✓	-	-	-	
17	TIM Input Prescaler Mode	-	-	✓	-	-	-	
18	TIM Pulse Integration Mode	-	-	✓	-	-	-	
19	TIM PWM Measurement Mode	-	-	✓	-	-	-	
20	TIM Serial Shift Mode	-	-	✓	-	-	-	
21	Time Base Unit	-	-	✓	-	-	-	
22	Interrupt Controller	-	✓	✓	✓	✓	✓	Only table reference method
23	Key Return	-	✓	-	✓	-	-	
24	MSPI Master	Transmit	-	✓	-	-	✓	No support LVDS mode
		Receive	-	✓	-	-	✓	
		Transmit/Receive	-	✓	-	-	✓	
25	MSPI Slave	Transmit	-	✓	-	-	✓	
		Receive	-	✓	-	-	✓	
		Transmit/Receive	-	✓	-	-	✓	
26	OS Timer	-	✓	✓	✓	✓	-	
27	Ports	-	✓	✓	✓	✓	✓	
28	Real-Time Clock	-	✓	✓	✓	-	-	
29	RIIC Master	-	✓	✓	✓	✓	✓	
30	RIIC Slave	-	✓	✓	✓	✓	✓	

Table 2-4 Support Component

✓ : Support, - : Non-support

No	Components	Mode	RH850F1KM	RH850U2A	RH850F1KH	RH850C1M	RH850U2B	Remarks
31	SCI3 Asynchronous Mode	Transmission	-	✓	-	✓	-	
		Reception	-	✓	-	✓	-	
		Transmission / Reception	-	✓	-	✓	-	
		Multi-processor Transmission	-	✓	-	✓	-	
		Multi-processor Reception	-	✓	-	✓	-	
		Multi-processor Transmission / Reception	-	✓	-	✓	-	
32	SCI3 Clock Synchronous Mode	Transmission	-	✓	-	✓	-	
		Reception	-	✓	-	✓	-	
		Transmission / Reception	-	✓	-	✓	-	
33	Stand-by Controller	-	✓	✓	✓	-	-	Only Stop and DeepStop mode
34	Clock Divider	-	✓	✓	✓	✓	✓	
35	Delay Count	-	✓	✓	✓	✓	✓	
36	External Event Count	-	✓	✓	✓	✓	✓	
37	Input Interval Timer	-	✓	✓	✓	✓	✓	
38	Input Period Count Detection	-	✓	✓	✓	✓	✓	
39	Input Position Detection	-	✓	✓	✓	✓	✓	
40	Input Pulse Interval Judgment	-	✓	✓	✓	✓	✓	
41	Input Pulse Interval Measurement	-	✓	✓	✓	✓	✓	
42	Input Signal Width Judgement	-	✓	✓	✓	✓	-	
43	Input Signal Width Measurement	-	✓	✓	✓	✓	-	
44	Interval Timer	-	✓	✓	✓	✓	✓	
45	One-Pulse Output	-	✓	✓	✓	✓	✓	

Table 2-5 Support Components

✓: Support, -: Non-support

No	Components	Mode	RH850 F1KM	RH850 U2A	RH850 F1KH	RH850 C1M	RH850 U2B	Remarks
46	One-Shot Pulse output	-	✓	✓	✓	✓	✓	
47	Overflow Interrupt Output (Input Period Count Detection)	-	✓	✓	✓	-	-	
48	Overflow Interrupt Output (Width Measurement)	-	✓	✓	✓	-	✓	
49	PWM Output	-	✓	✓	✓	✓	✓	
50	Triangle PWM Output	-	✓	✓	✓	✓	-	
51	Triangle PWM Output with Dead Time	-	-	✓	✓	✓	✓	
52	UART Interface	Transmission	✓	✓	✓	✓	✓	
		Reception	✓	✓	✓	✓	✓	
		Transmission / Reception	✓	✓	✓	✓	✓	
53	Window Watchdog Timer	-	✓	✓	✓	✓	-	
54	ADC Boundary Flag Generator	-	-	-	-	-	✓	

2.3 New Support

2.3.1 Support Smart Configurator for RH850 plug-in in e² studio

From Smart Configurator for RH850 V1.10.0, Smart Configurator for RH850 plug-in is integrated into e² studio and will be released in e² studio 2024-1.

When creating Renesas CC-RH executable project in e² studio for RH850 devices supported by Smart Configurator, the UI below will appear, and user should checking [Use Smart Configurator] when using Smart Configurator.

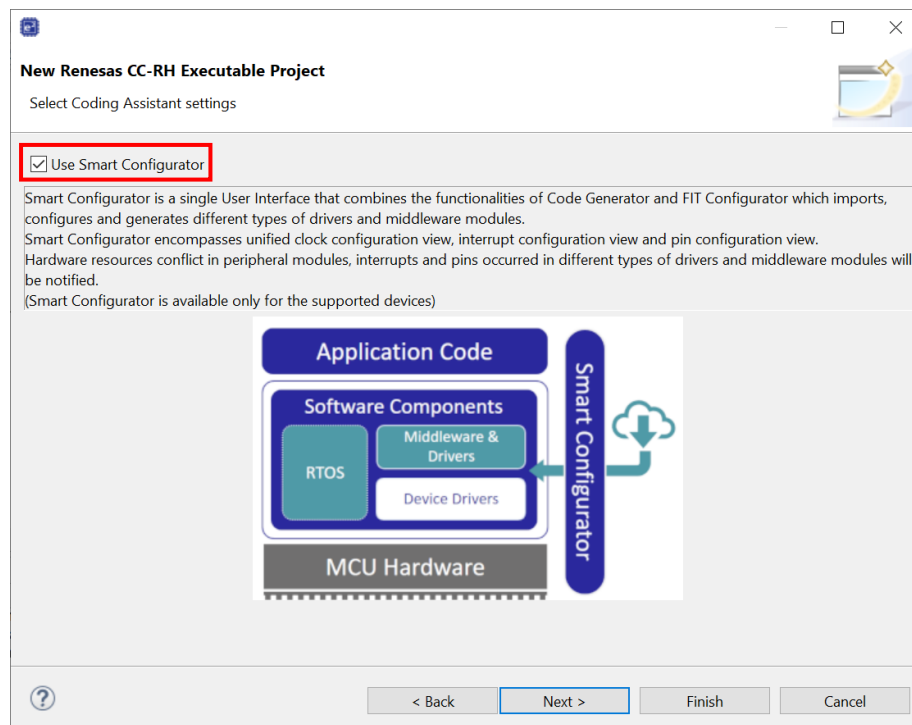


Figure 2-1 Support Smart Configurator for RH850 plug-in in e² studio

Note:

Below Smart Configurator's features haven't been supported yet:

- 1) Blinky project creation.
- 2) Developer assistance.
- 3) Download boards function

2.3.2 Support user code protection features for Smart Configurator Clock and Interrupt

From Smart Configurator for RH850V1.10.0, the enhanced user code protection feature is extended to the generated files of Clock and Interrupt. This feature empowers users to insert codes to any location by utilizing the specific tags “Start user code” and “End user code”.

```
/* Start user code */  
User code can be added between the specific tags  
/* End user code */
```

Figure 2-2 Specific tags for user code protection feature

2.3.3 Support User-defined interrupt handler in [Interrupt] page for all RH850 devices.

From Smart Configurator for RH850 V1.10.0, User-defined interrupt handler is supported for all RH850 devices supported by Smart Configurator. User can define the interrupt handler for each interrupt in [Interrupt] page and decide if to generate the interrupt handler entity and interrupt enable/disable function.

- 1) User can input his own interrupt handler name by editing column [interrupt Handler] manually. “eiintn” is displayed on column [Interrupt Handler] as default interrupt handler. User can edit this column and enter a user-defined name (except the default name “eiintn”) here.

Note: interrupt handler which is used by components is non-editable.

- 2) User can specify whether user-defined interrupt handler entity is generated by checking/unchecking [Generated Entity].
The default setting is always checked. When you change the setting to unchecked, the interrupt handler code won't be generated by Smart Configurator, then user can use his own handler code.
- 3) Users can specify whether the interrupt enable/disable function is generated by checking/unchecking [Generate Enable/Disable Function].
The default setting is unchecked. When user changes the setting to checked, a pair of interrupt enable/disable functions will be provided in “*r_smc_interrupt.c*” file. User can easily use interrupt by calling these APIs directly.
For code samples of the interrupt enable/disable functions, see **Figure 2-4 Interrupt Enable/Disable Functions Code Example**.

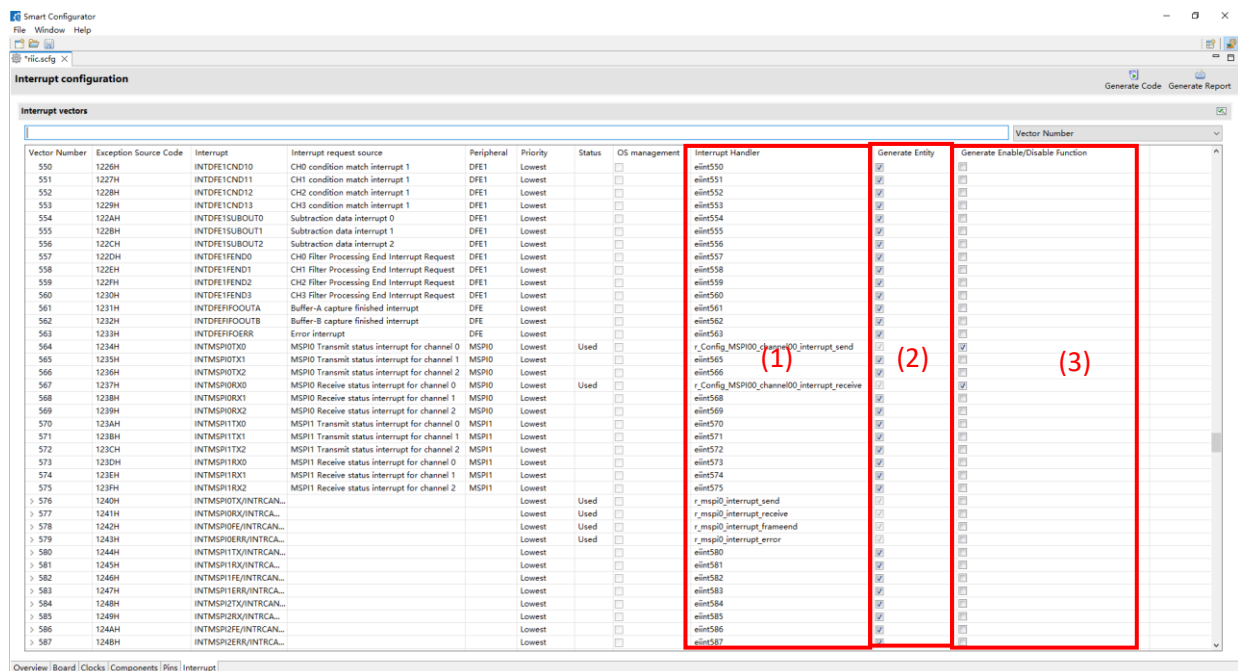


Figure 2-3 Interrupt Handler and Generate Entity settings

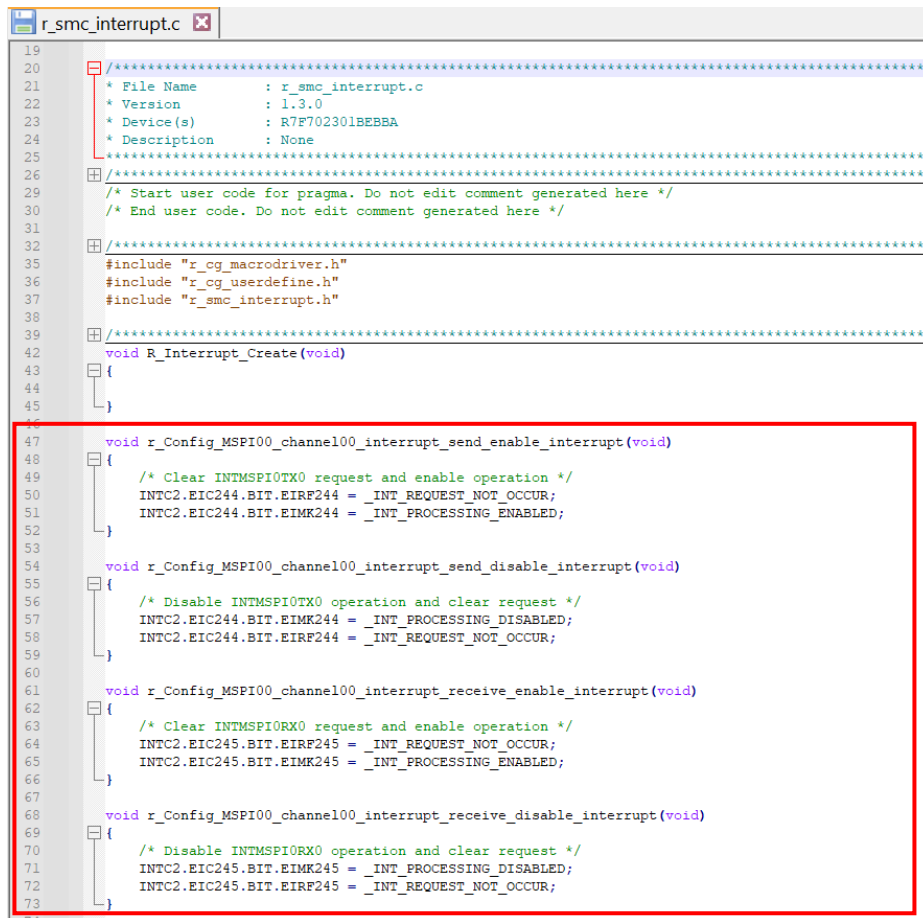


Figure 2-4 Interrupt Enable/Disable Functions Code Example

3. Changes

This chapter describes changes to the Smart Configurator for RH850 V1.10.0.

3.1 Correction of Issues/Limitations

Table 3-1 List of Correction of Issues/Limitations

✓: Applicable, -: Not Applicable

No	Description	RH850 F1KM	RH850 U2A	RH850 F1KH	RH850 C1M	RH850 U2B	Remarks
1	Fixed the issue that the extra “Run” menu appears on toolbar	✓	✓	✓	✓	✓	
2	Fixed the issue about the insufficient waiting time when changing the clock source	-	✓	-	-	-	
3	Fixed the issue about T&H setting when using A/D Converter	✓	-	-	-	-	
4	Fixed the issue about the wrong reset path of "Smart Configurator for RH850 executable file path"	✓	✓	✓	✓	✓	
5	Fixed the issue about the wrong macro value when using DMA Controller	-	✓	✓	-	-	
6	Fixed the issue about the wrong macro value when using Stand-by Controller	✓	✓	✓	-	-	

3.1.1 Fixed the issue that the extra “Run” menu appears on toolbar

After launching Smart Configurator, an extra menu “Run” will appear on the toolbar if user has launched the Smart Configurator for RH850 V1.9.0 or earlier version.

This issue has been fixed from Smart Configurator for RH850 V1.10.0.

3.1.2 Fixed the issue about the insufficient waiting time when changing the clock source

When using PLL clock, the waiting time after verifying is not sufficient when changing the clock source.

This issue is fixed from Smart Configurator for RH850 V1.10.0.

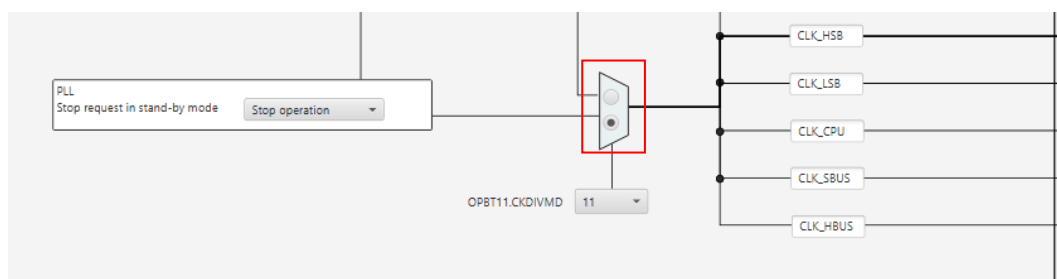


Figure 3-1 Clock setting

3.1.3 Fixed the issue about T&H setting when using A/D Converter

When Virtual channel0x selects ANI00x, and T&H setting is disabled, T&H3 is enabled in the generated code for T&H which is not correct. And the wrong code will make the converter value from ANI003 is not correct. This issue is fixed from Smart Configurator for RH850 V1.10.0.

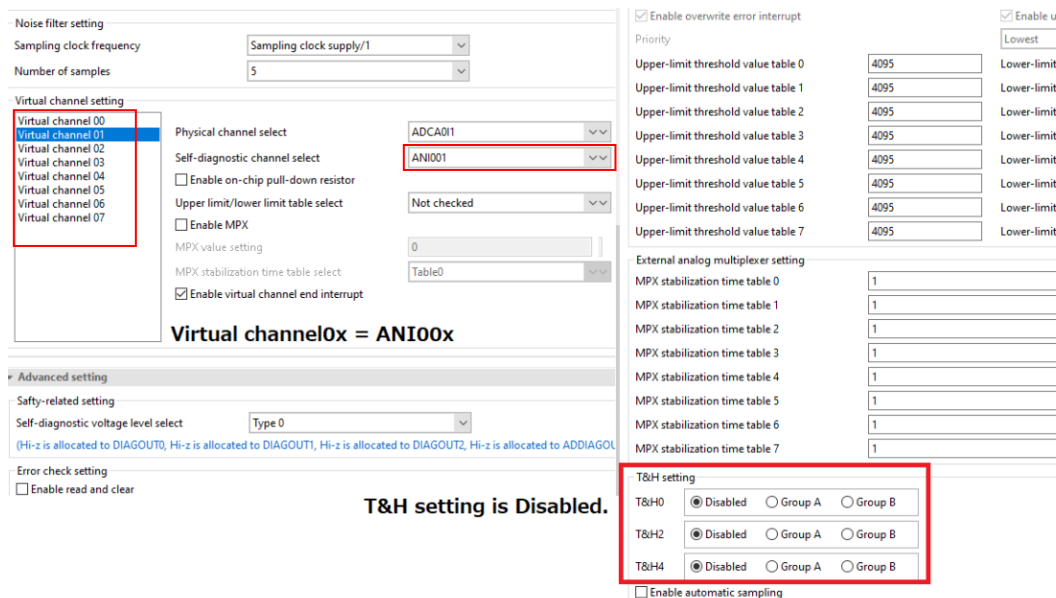


Figure 3-2. Virtual channel setting and T&H setting

3.1.4 Fixed the issue about the wrong reset path of "Smart Configurator for RH850 executable file path"

In CS+, when user resets the "Smart Configurator for RH850 executable file path" by clicking "Reset to Default" or "Reset All to Default", the path is not back to the default smart configurator installer path. This issue is fixed from Smart Configurator for RH850 V1.10.0.

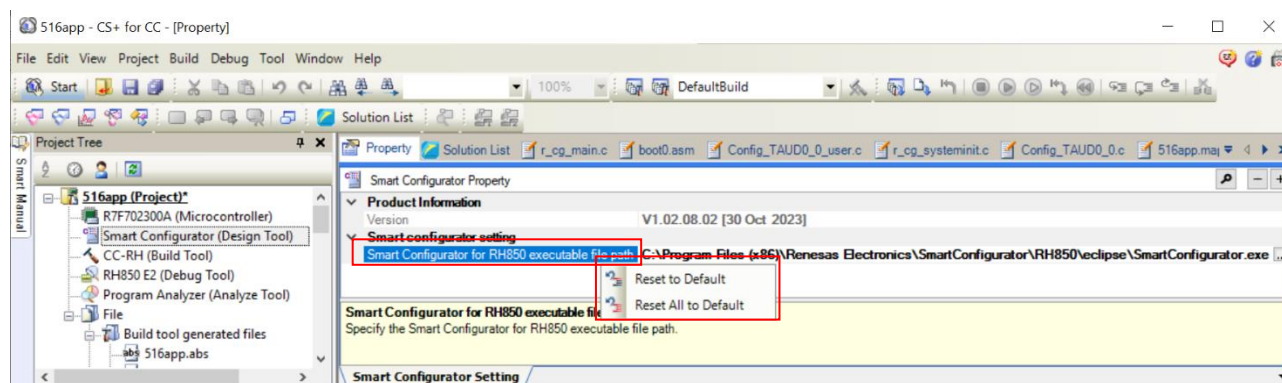


Figure 3-3 Change back to default installer path after clicking "Reset to Default" or "Reset All to Default"

3.1.5 Fixed the issue about the wrong macro value when using DMA Controller

The macro value(0x00010000UL) for the bit TRS of the register DMAjTMR_n is wrong in generated file “r_cg_dma.h” which will cause the hardware request is not enabled and to not work. The correct value should be “0x00001000UL”. This issue occurred only in RH850/U2A.

When Hardware DMA transfer source selection for DMA Controller is enabled and user uses RSCANFDRF8 ~RSCANFDRF11 as the trigger source, the macro value generated in file “r_cg_dam.h” for these trigger sources is not correct. This issue occurred only in RH850/F1KH.

This issue is fixed from Smart Configurator for RH850 V1.10.0.

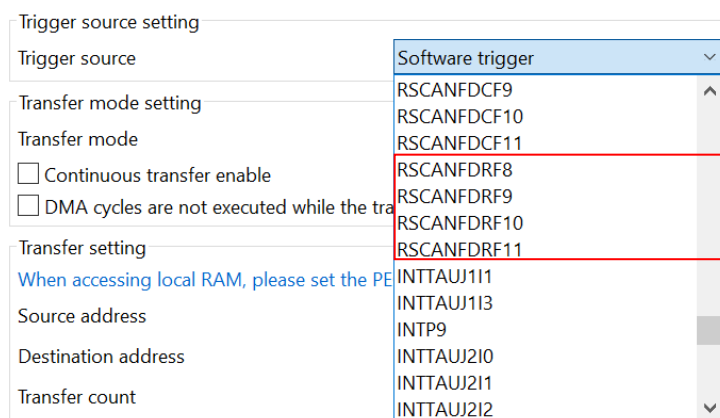


Figure 3-4 DMA Controller Trigger source setting

3.1.6 Fixed the issue about the wrong macro value when using Stand-by Controller

When user selects DeepSTOP mode and INTTAUJ210 and INTTAUJ211 as wake-up factor 2 for RH850/F1KM and RH850/F1KH devices, the value of relative macro generated in r_cg_stbc.h is not correct. When user selects Stop mode and INTRLIN3n(n=0~23) as wake-up factor 0 for RH850/U2A devices, the value of relative macro generated in r_cg_stbc.h is not correct.

This issue is fixed from Smart Configurator for RH850 V1.10.0.



Figure 3-5 Wake-up factor 2 setting in DeepSTOP mode

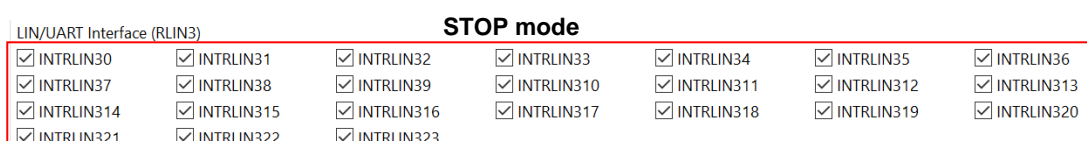


Figure 3-6 Wake-up factor 0 setting in STOP mode

3.2 Specification Changes

Table 3-2 List of Specification Changes

✓ : Applicable, - : Not Applicable

No	Description	RH850 F1KM	RH850 U2A	RH850 F1KH	RH850 C1M	RH850 U2B	Remarks
1	Improved [Overview] page	✓	✓	✓	✓	✓	
2	Improved CPU core information in default.gpj file for GHS RH850 toolchain project	✓	✓	✓	✓	✓	
3	Improved changing device function for Symbolic Name	-	✓	-	✓	✓	
4	Improved the device selection when creating Smart Configurator project	-	✓	-	-	-	

3.2.1 Improved [Overview] page

From Smart Configurator for RH850 V1.10.0, [Overview] page is updated to provide more information and easier access to Renesas website:

- (1) Overview:
 - The "[overview](#)" link is updated to open Smart Configurator for RH850 page on Renesas website.
- (2) What's new:
 - New link "See all [Release Notes](#)" is added to open a page for all release note versions.
- (3) Product Documentation: this part is new added for standalone Smart Configurator for RH850.
 - Add "[API manual](#)" link.
 - Change the "[User manual and release notes](#)" link to "[User guide](#)" link which will show the latest user guide according to the way of opening the project and the project type which the user chooses.
 - Under e² studio, two more links "[Application Notes](#)" and "[Tool news](#)" display.

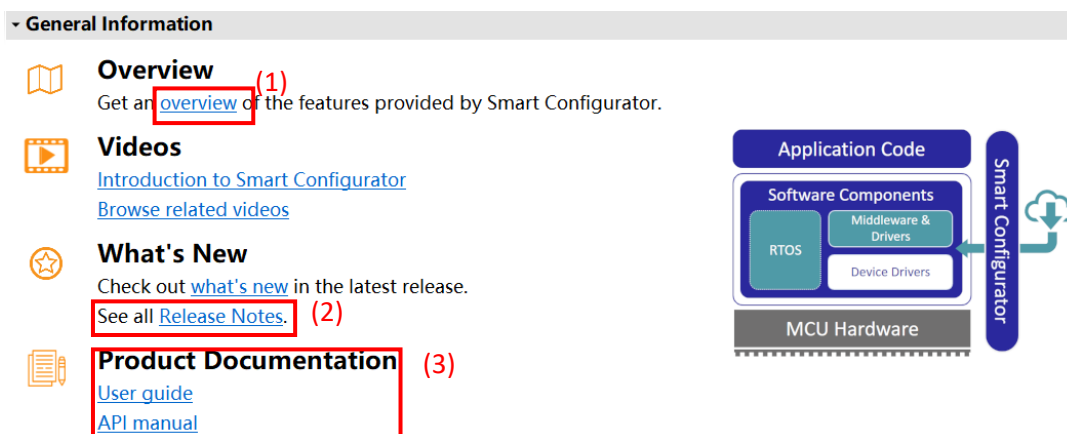


Figure 3-7 [Overview] page in standalone Smart Configurator

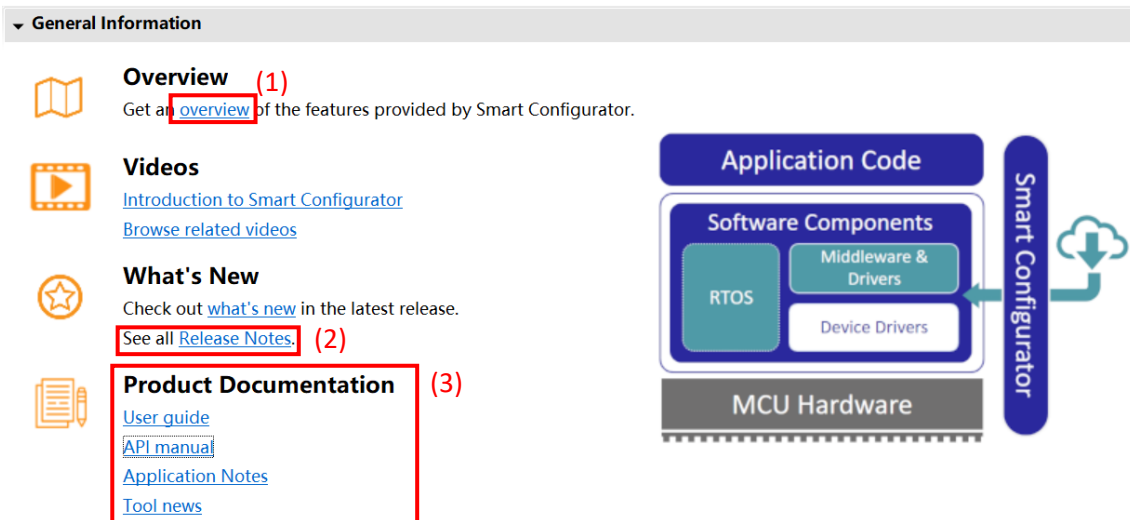


Figure 3-8 [Overview] page in e² studio

3.2.2 Improved CPU core information in default.gpj file for GHS RH850 toolchain project

From Smart Configurator for RH850 V1.10.0, when creating Smart Configurator project with GHS RH850 toolchain, "-cpu" setting in the default.gpj file can be set according to selected device's CPU type, instead of generating "-cpu=rh850g3kh" by default.

3.2.3 Improved changing device function for Symbolic Name

From Smart Configurator for RH850 V1.10.0, the symbolic name for the assigned active low pin with prefix "_" such as _MSPInSSI, _ERROROUT_C can be migrated when changing device.

3.2.4 Improved the device selection when creating Smart Configurator project

From Smart Configurator for RH850 V1.10.0, when creating project for RH850/U2A device, below new devices are added:

- RH850/U2A16: R7F72300A and R7F72300B;
- RH850/U2A8: R7F72301A and R7F72301B.

The new added devices support totally same Smart Configurator function as R7F72300/R7F72301 devices.

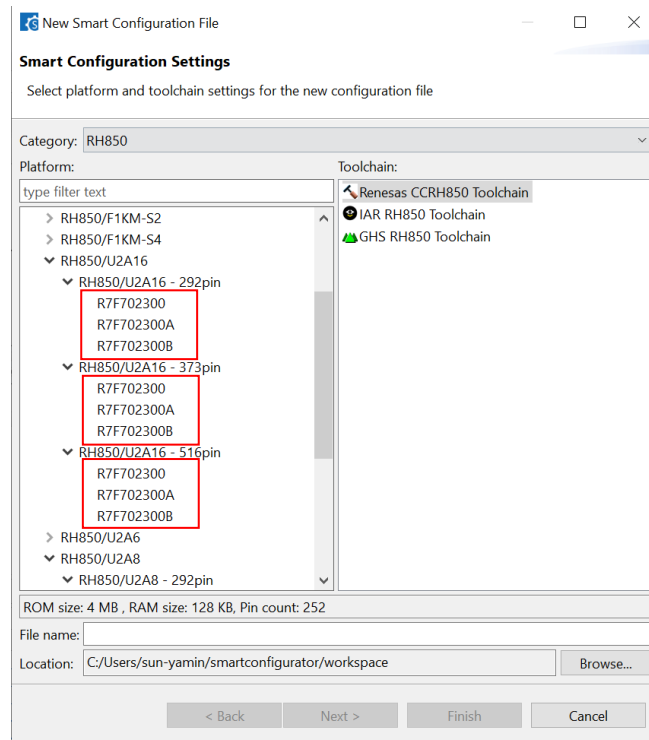


Figure 3-9 Device selection for RH850/U2A16

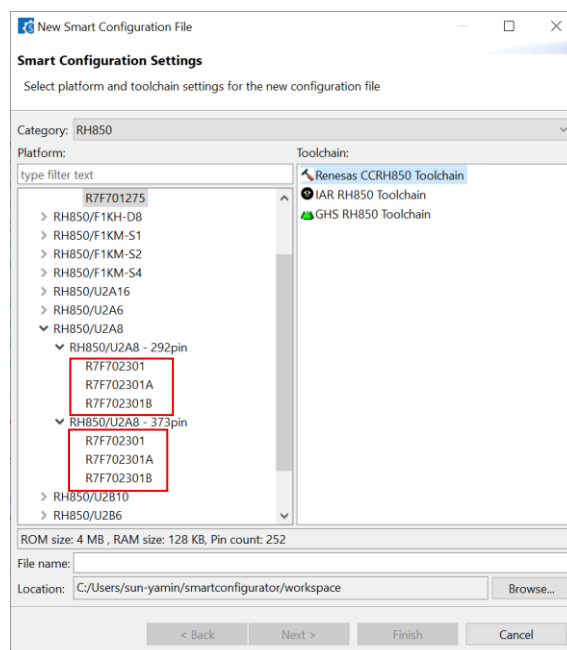


Figure 3-10 Device selection for RH850/U2A8

4. List of RENESAS TOOL NEWS AND TECHNICAL UPDATE

Below is a list of notifications delivered by RENESAS TOOL NEWS and TECHNICAL UPDATE.

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Mar.16, 2019	R20TS0407	1. Build error occurs when setting not to generate clocks 2. RAM size display error https://www.renesas.com/document/tnn/notes-rh850-smart-configurator	RH850F1KM	V1.2.0
Jun. 01, 2016	R20TS0431	When using PLL0 Clock https://www.renesas.com/document/tnn/notes-rh850-smart-configurator-0	RH850F1KM	V1.2.0
Jul.01, 2019	R20TS0441	1. When using PWM output and triangle PWM output slave setting 2. Port input buffer setting error 3. Port drive strength control setting error 4. Port register setting error https://www.renesas.com/document/tnn/notes-smart-configurator-rh850	RH850F1KM	V1.2.0
Aug.01, 2019	R20TS0463	1. When using the input pulse interval measurement function 2. When using the Clocked Serial Interface in Master mode https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-0	RH850F1KM	V1.2.0
Oct.16, 2019	R20TS0500	1. When using data CRC 2. When using one-pulse outputs https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-1	RH850F1KM	V1.2.0
Apr.16, 2020	R20TS0569	When using CSI master and CSI slave https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-2	RH850F1KM	V1.3.0
May.16, 2020	R20TS0576	When using CSI master and CSI slave https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-3	RH850F1KM	V1.3.0
Feb. 16, 2021	R20TS0668	When using CSI master https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-4	RH850F1KM	V1.4.0

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Apr. 05, 2021	R20TS0679	1. When using CSI Master and CSI Slave with CSIG 2. When using CSI Master with CSIH 3. When using Data CRC 4. When using One-Pulse Output and One-Shot Pulse Output 5. When using PWM Output and Triangle PWM Output https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-5	RH850F1KM RH850U2A	V1.4.0
Jun.16, 2021	R20TS0717	1. When using A/D converter with ADCJ2 https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-6	RH850U2A	V1.5.0
Jul. 01, 2021	R20TS0723	1. Notes on using One-Shot Pulse Output, PWM Output, Triangle PWM Output, Triangle PWM Output with Dead Time functions with TAUD1, TAUD2 https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-7	RH850U2A	V1.5.0
Sep. 16, 2021	R20TS0744	1. Notes on selecting PLL0 clock CPLL0OUT as source of CPU Subsystem clock 2. Notes on using CSIH Master receive and Master transmit/receive operation mode https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-8	RH850F1KM RH850F1KH	V1.5.0
Feb. 01, 2022	R20TS0806	1. Notes on using T&H path self-diagnosis function of A/D Converter 2. Notes on redundant macros and wrong comments in A/D Converter header file https://www.renesas.com/document/tnn/notes-smart-configurator-rh850-9	RH850U2A	V1.6.0

5. Points for Limitation

This section describes points for limitation regarding the Smart Configurator for RH850 V1.10.0

5.1 List of Limitation

Table 5-1 List of Limitation

✓ : Applicable, -: Not Applicable

No	Description	RH850F 1KM	RH850U2 A	RH850F 1KH	RH850C 1M	RH850U 2B	Remarks
1	Note on using RIIC	✓	-	✓	-	-	
2	Note on using OS Timer	✓	-	✓	-	-	
3	Note on using Interval Timer	-	-	-	-	✓	

5.2 Details of Limitation

5.2.1 Note on using RIIC

When using RIIC master or RIIC Slave to send or receive data, error interrupt priority must be higher than any other interrupt priority.

Interrupt setting

Transmit data empty interrupt (TI)	Lowest
Transmit end interrupt (TEI)	Lowest
Receive data full interrupt (RI)	Lowest
<input type="checkbox"/> Enable timeout interrupt (TMOI) <input type="checkbox"/> Enable arbitration-lost interrupt (ALI) <input checked="" type="checkbox"/> Enable NACK reception interrupt (NAKI)	
Priority	Level 8

Figure 5-1. RIIC interrupt priority setting

5.2.2 Note on using OS Timer

Smart Configurator only supports OSTM0, OSTM1~OSTM4 are not supported.

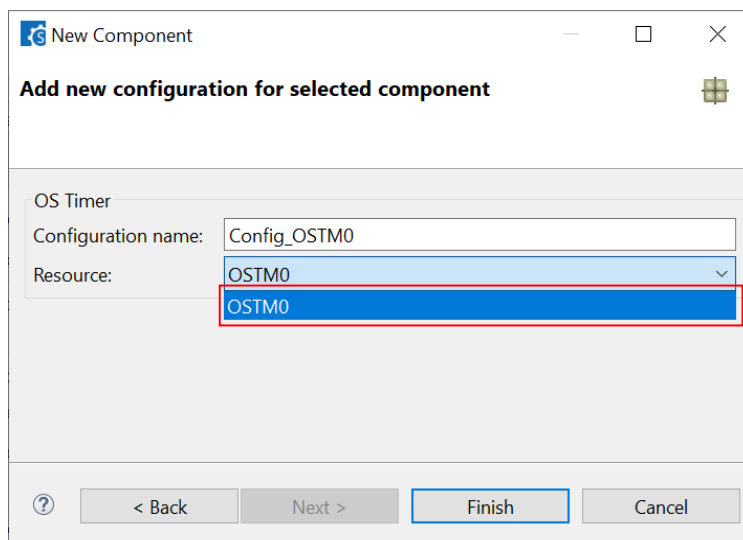


Figure 5-2 OS Timer Resource selection

5.2.3 Note on using Interval Timer

When using TAUD3 Interval Timer function, the interrupt signal INTTAUD3I m ($m=0\sim15$) does not generated because of register TAUD3INTNOSEL0 / TAUD3INTNOSEL1 setting is missing in generated code.

[Workaround]

Please add the following code in the function "void R_<Config_TAUD3_m>_Create_UserInit(void)" in the file "<Config_TAUD3_m>_user.c"

- $m=0\sim9$:
INTSEL_INTSTT.TAUD3INTNOSEL0.UINT32 |= _TAUD3_CH m _INTERRUPT_NUMBER_xxx;
- $m=10\sim15$:
INTSEL_INTSTT.TAUD3INTNOSEL1.UINT32 |= _TAUD3_CH m _INTERRUPT_NUMBER_xxx;

Note: 1. "xxx" indicates the interrupt number selected on UI.

2. The macro "_TAUD3_CH m _INTERRUPT_NUMBER_xxx" can be found in the file "r_cg_taud.h".

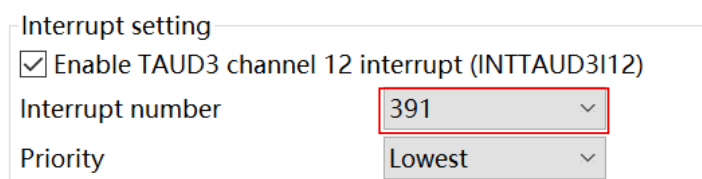


Figure 5-3 Interval Timer Interrupt number selection

```
void R_Config_TAUD3_12_Create_UserInit(void)
{
    /* Start user code for user init. Do not edit comment generated here */
    /* Set INTTAUD3I12 interrupt number */
    INTSEL_INTSTT.TAUD3INTNOSEL1.UINT32 |= TAUD3_CH12_INTERRUPT_NUMBER_391;
    /* End user code. Do not edit comment generated here */
}
```

Figure 5-4 Workaround code

6. Points for Caution

This section describes points for caution regarding the Smart Configurator for RH850 V1.10.0

6.1 List of Caution

Table 6-1 List of Caution

✓ : Applicable, -: Not Applicable

No	Description	RH850F1KM	RH850U2A	RH850F1K	RH850C1M	RH850U2B	Remarks
1	About the I/O define header file	✓	✓	✓	✓	✓	
2	About loading the project on CS+	✓	✓	✓	✓	✓	
3	About the sample projects	✓	✓	✓	✓	-	
4	About the decimal point	✓	✓	✓	✓	✓	
5	Note on pins sharing functions.	✓	✓	✓	✓	✓	
6	Note on Interrupt Controller resource name	✓	-	-	-	-	
7	Note on DMA/DTS trigger generator setting of MSPI Master	-	✓	-	-	✓	
8	Note on CPU Operating mode of DTS Controller	-	✓	-	-	-	
9	Note on using Smart Configurator when the OS language is Japanese	-	✓	-	-	✓	
10	Note on changing device when using Error Control Module	-	✓	-	✓	-	
11	Note on reloading project for Error Control Module	-	✓	-	-	-	
12	Note on the “Release Notes” or “Tool News” display issue in Renesas Website	✓	✓	✓	✓	✓	
13	Note on using Smart Configurator for RH850 project in CS+	✓	✓	✓	✓	✓	

6.2 Details of Caution

6.2.1 About the I/O define header file

Please use Renesas iodef.h for the header file that defines the register. Because RH850 Smart Configurator outputs code conforming to the definition in Renesas iodef.h, a build error occurs when using the register definition file provided by other environments.

6.2.2 About loading the project on CS+

When launching RH850 Smart Configurator from CS+, please set 'RH850 Build tool CC-RH plugin' and 'RH850 Build tool GHS CCRH850 plugin' to enable. If these plugins are disable, the error occurs when CS+ project that includes the setting of RH850 Smart Configurator is loaded.

6.2.3 About the sample project

The RH850 Smart Configurator does not output the processing after resetting the microcontroller (including the startup routine).

Therefore, we provide sample projects that include sample startup routines and other necessary processing so that user applications can be built immediately after peripheral modules are set up using the RH850 Smart Configurator.

Please refer to the user guide for sample projects under installation path.

Default installation path:

C:\Program Files (x86)\Renesas Electronics\SmartConfigurator\RH850\

6.2.4 About the decimal point

For error-free operation of the RH850 Smart Configurator, use a period (".") as the decimal point and a comma (",") as the digit grouping separator. Which of "." (period), "," (comma) or " " (space) is used as the decimal point or digit grouping separator differs depending on the language setting of the Windows OS that is used. For example, if you use a comma (",") as the decimal point, the RH850 Smart Configurator may not work correctly. This will occur when you are using Windows OS with language set to other than Japanese or English. If you are using the RH850 Smart Configurator on Windows OS with language set to other than Japanese or English, change the language setting to Japanese or English.

6.2.5 Note on pins sharing functions

When function shared pin selects a shared pin, shared pin displays an error.

But the shared pin can be selected correctly and work correctly.

Example) For RH850/U2A RSENT0

Assign RSENT0RX and RSENT0SPCO to the T24 pin

When assigned: T24 pin displays an error

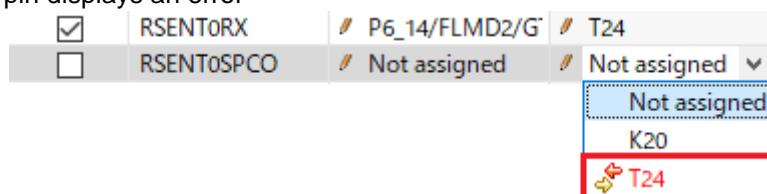


Figure 6-1. pins sharing function sample when assigned

After assignment

<input checked="" type="checkbox"/>	RSENT0RX	P6_14/FLMD2/G	T24
<input checked="" type="checkbox"/>	RSENT0SPCO	P6_14/FLMD2/G	T24

Figure 6-2. pins sharing function sample after assigned

6.2.6 Note on Interrupt Controller resource name

In RH850 Smart Configurator V1.2.0, the resource name of the interrupt controller has been changed to "INTC". The resource name of the interrupt controller of the previous version is automatically changed from "ICU" to "INTC".

Therefore, the following file name and macro name are changed.

Table 6-2 File name change

Before change	After change
r_cg_icu.h	r_cg_intc.h

Table 6-3 Macro name change

File name	Before change	After change
r_smc_interrupt.h	ICU_xxx_PRIORITY	INTC_xxx_PRIORITY

6.2.7 Note on DMA/DTS trigger generator setting of MSPI Master

If alternative trigger is selected in Smart Configurator for RH850 V1.5.0, when reloading the project file (.scfg file) into Smart Configurator for RH850 V1.6.0, the alternative trigger signal "Use alternative trigger" can't be reloaded and the default trigger signal "Trigger1(DTSMSPi12)/Trigger2(DTSMSPi13)" will be used.

There isn't this cautions when reloading project between Smart Configurator for RH850 V1.5.0 and before, or between Smart Configurator for RH850 V1.6.0 and later.

DMA/DTS trigger generator setting

☐ DMA ☒ DTS

Trigger1 Transmit status interrupt (INTMSPI0TX0) ▾

Trigger2 Receive status interrupt (INTMSPI0RX0) ▾

☒ Use alternative trigger

Trigger1 (Alternative) (DTSMSPi8)

Trigger2 (Alternative) (DTSMSPi9)

Figure 6-3. "Use alternative trigger" checked in Smart Configurator for RH850 V1.5.0

DMA/DTS trigger generator setting

☐ DMA trigger signal ☒ DTS trigger signal

Trigger1 Trigger1(DMAMSPi4)/Trigger2(DMAMSPi5)

Trigger2 Trigger1(DTSMSPi12)/Trigger2(DTSMSPi13)

Trigger1 Transmit status interrupt (INTMSPI0TX6)

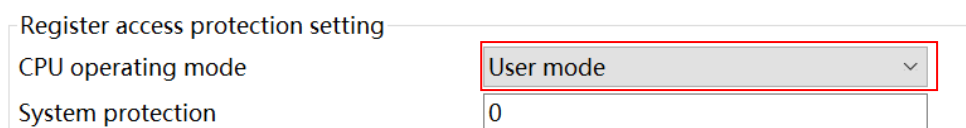
Trigger2 Receive status interrupt (INTMSPI0RX6)

Figure 6-4. "Trigger1(DTSMSPi12)/Trigger2(DTSMSPi13)" selected after reloading in Smart Configurator for RH850 V1.6.0

6.2.8 Note on CPU Operating mode of DTS Controller

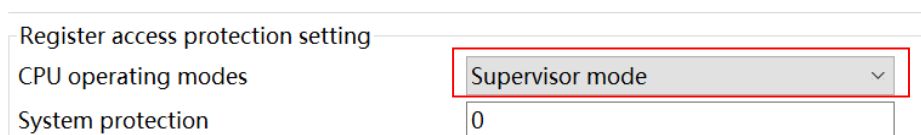
If CPU operating mode selects “User mode” in Smart Configurator for RH850 V1.5.0, after reloading the project in Smart Configurator for RH850 V1.6.0, CPU operating mode will be changed to “Supervisor mode” which is default setting.

There isn't this cautions when reloading project between Smart Configurator for RH850 V1.5.0 and before, or between Smart Configurator for RH850 V1.6.0 and later.



The screenshot shows the 'Register access protection setting' dialog box. It contains three fields: 'CPU operating mode' with a dropdown menu showing 'User mode', 'System protection' with a text box containing '0', and a 'Register access protection setting' label at the top.

Figure 6-5. CPU operating mode in Smart Configurator for RH850 V1.5.0



The screenshot shows the 'Register access protection setting' dialog box. It contains three fields: 'CPU operating modes' with a dropdown menu showing 'Supervisor mode', 'System protection' with a text box containing '0', and a 'Register access protection setting' label at the top.

Figure 6-6. CPU operating mode after reloading in Smart Configurator for RH850 V1.6.0

6.2.9 Note on using Smart Configurator when the OS language is Japanese

For RH850/U2x users, we recommend using Smart Configurator on English OS. If your OS is Japanese, you also can add “-Duser.language=en” to “<install directory>\SmartConfigurator\RH850\eclipse\SmartConfigurator.ini” file, then you can see English GUI in Smart Configurator. For RH850/U2x, Smart Configurator Japanese UI is just for your reference, and we do not recommend that you use it.

6.2.10 Note on changing device when using Error Control Module

When using Error Control Module, we don't recommend changing device between RH850/U2A and RH850/C1M. Because most of the error sources of these two devices are different, the error sources can't migrate.

6.2.11 Note on reloading project for Error Control Module

If user used some error sources of Error Control Module in the project created using Smart Configurator for RH850 V1.7.0 or earlier, when reloading the project using Smart Configurator for RH850 V1.8.0 or later, the error source will be different between the two versions.
Figure 6-7 and Figure 6-8 show the difference.
Figure 6-9 shows the error sources that have such issue.

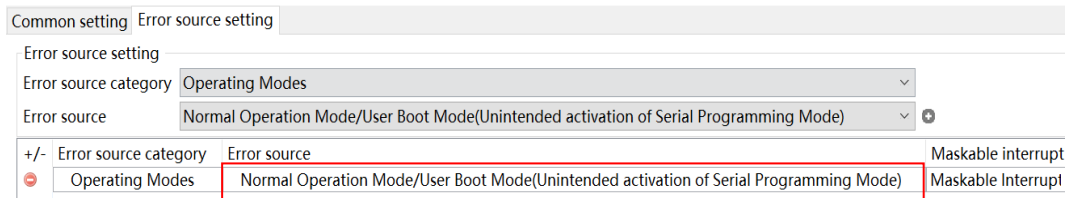


Figure 6-7. Error source added in Smart Configurator for RH850 V1.7.0 or earlier

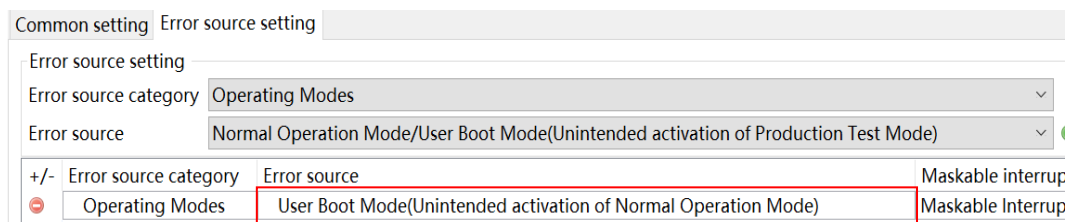


Figure 6-8. Error source reloaded in Smart Configurator for RH850 V1.8.0 or later

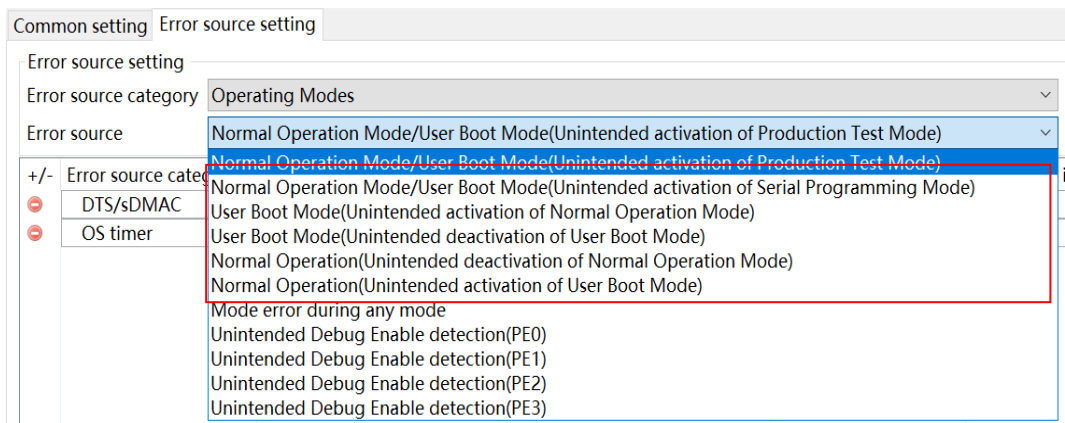


Figure 6-9. Error sources that have such issue

6.2.12 Note on the “Release Notes”, “Tool News” display issue in Renesas Website

For Smart Configurator for RH850 V1.7 or before version, release note or tools news might not be displayed correctly on Renesas Website after clicking the “Renesas Notes” or “Tool News” under the help menu of Smart Configurator. This issue has been fixed from this version.

As a workaround, please use the URL directly:

- Release Notes: <https://www.renesas.com/rh850-smart-configurator-release-note>
- Tool News: <https://www.renesas.com/rh850-smart-configurator-tn-notes>

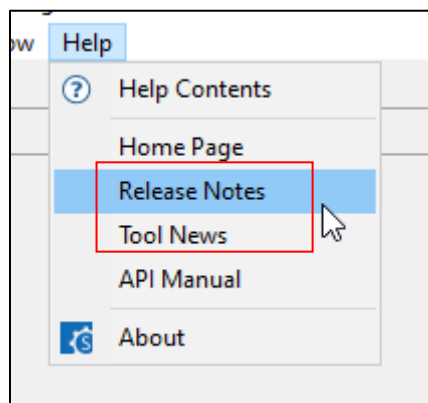


Figure 6-10 Help menu of Smart Configurator

6.2.13 Note on using Smart Configurator for RH850 in CS+

When you want to use Smart Configurator for RH850 in CS+, Please take note to select below six kinds of projects in “Create project” dialog of CS+:

- Application(CC-RH) (for single-core devices, such as RH850/F1KM)
- Application for Multi-core(CC-RH) (for multi-core devices, such as RH850/C1M-A2, RH850/F1KH, RH850/U2A, RH850/U2B)
- Empty Application(CC-RH)
- Library(CC-RH)
- Empty Application(GHS CCRH850)
- Application(RI850V4,CC-RH)
-

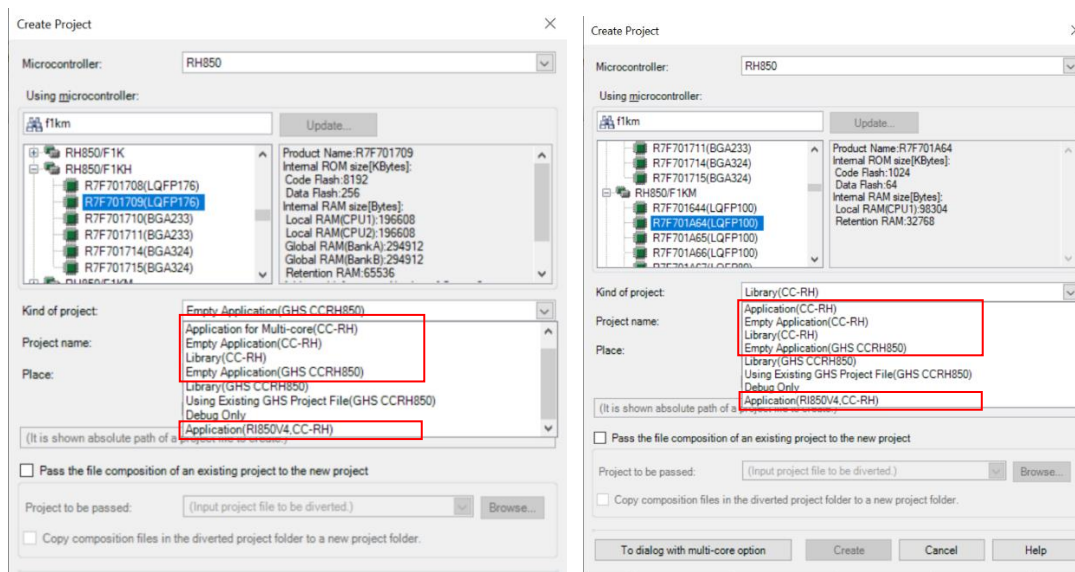


Figure 6-11 Kinds of project for multi-core devices and single-core devices

Revision History

Rev.	Section	Description
1.00	-	First edition issued

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity.

Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.

6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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(Rev.5.0-1 October 2020)

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