

Smart Configurator for RX Plug-in in e2 studio 2023-07

Smart Configurator for RX V2.18.0

Release Note

Introduction

Thank you for using the Smart Configurator for RX.

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

Contents

1. Introduction.....	3
1.1 System requirements.....	3
1.1.1 Windows PC.....	3
1.1.2 Linux PC.....	3
1.1.3 Development Environments.....	3
2. Support List.....	4
2.1 Support Devices List.....	4
2.2 Support Components List.....	10
2.3 New support.....	16
2.3.1 BSP (Board Support Package) revision update.....	16
2.3.2 New device support for RX26T group.....	16
2.3.3 New resource support for Motor Code Generation component.....	16
2.3.4 Symbolic name function support.....	17
2.3.5 Support compare view for user to resolve code merge conflicts.....	19
3. Changes.....	21
3.1 Correction of issues/limitations.....	21
3.1.1 Fixed the GUI issue when using Port component.....	23
3.1.2 Fixed the A/D channel and MTU6_MTU7 resource issues when using Motor component.....	23
3.1.3 Fixed the wrong generated value when using SCI/SCIF Clock Synchronous Mode component.....	23
3.1.4 Fixed the GUI display issue when using the Port Output Enable (POE) component.....	23
3.1.5 Fixed the section error when generating code in CS+.....	23
3.1.6 Fixed the auto pin assignment in the “Pin” tab.....	24
3.2 Specification changes.....	25
3.2.1 Improve the display of warning message after renaming the configuration name.....	26
3.2.2 Improve the configuration of “Backup settings”.....	26
3.2.3 Improve BCDF feature to update the feature configuration setting for components that were already added.....	26
3.2.4 Improve the generated code in the alarm function of the RTC component.....	27
3.2.5 Improve the GUI in SCI Asynchronous Mode component.....	28
3.2.6 Improve the include path of generation location path.....	29

4.	List of RENESAS TOOL NEWS AND TECHNICAL UPDATE	30
5.	Points for Limitation	35
5.1	List of Limitation.....	35
5.2	Details of Limitation	36
5.2.1	Note on the general I/O port direction issue on MCU package view when using Port Component....	36
5.2.2	Note on the resource tree in the FIT component GUI configuration	36
5.2.3	Note on address bus when using external bus	37
5.2.4	Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain	37
5.2.5	Note on the redundant “Run” menu in the toolbar of Standalone Smart Configurator.....	39
6.	Points for Caution	41
6.1	List of Caution.....	41
6.2	Details of Caution	43
6.2.1	Note on configuring GPT interrupts.....	43
6.2.2	Note on using only reception in SCI Clock Synchronous Mode.....	44
6.2.3	Note on using high transfer speed in SCIF Synchronous Mode	44
6.2.4	Note on device change functionality	45
6.2.5	Note on using Smart Configurator for GCC project in e2 studio 7.4.0	45
6.2.6	Note on using Data Transfer Controller	45
6.2.7	Note on Ports setting when using S12AD components	45
6.2.8	Note on section build warning when using FIT components.....	45
6.2.9	Note on C++ project support in CS+	46
6.2.10	Note on Installation directory.....	47
6.2.11	Note on the build error of existing RTOS C++ project.....	47
6.2.12	Note on the output of high impedance issue for TXDn pin	47
6.2.13	Note on the include path update issue when renaming the component’s configuration name.....	48
6.2.14	Note on accessing “Release Notes” and “Tool News” URL from the help menu.....	50
6.2.15	Note on the IPCF file naming change for IAR project	50
6.2.16	Note on using user code protection feature	50
	Revision History.....	51

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.

Smart Configurator for RX V2.18.0 is equivalent to Smart Configurator for RX plug-in in e² studio 2023-07.

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 300 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

From Smart Configurator for RX plug-in in e² studio 2023-01 onwards will be 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 RX [CC-RX] V3.01.00 or later
- GCC for Renesas 4.8.4.201902 or later
- IAR Embedded Workbench 4.12.1 or later

2. Support List

2.1 Support Devices List

Below is a list of devices supported by the Smart Configurator for RX V2.18.0.

Table 2-1 Support Devices

Group (HW Manual number)	PIN	Device name
RX110 Group (R01UH0421EJ0120)	36pin	R5F5110HAxLM, R5F5110JAxLM, R5F51101AxLM, R5F51103AxLM
	40pin	R5F51101AxNF, R5F51103AxNF, R5F5110HAxNF, R5F5110JAxNF
	48pin	R5F51101AxNE, R5F51103AxNE, R5F51104AxNE, R5F51105AxNE, R5F5110JAxNE, R5F51101AxFL, R5F51103AxFL, R5F51104AxFL, R5F51105AxFL, R5F5110JAxFL
	64pin	R5F51101AxLF, R5F51103AxLF, R5F51104AxLF, R5F51105AxLF, R5F5110JAxLF, R5F51101AxFK, R5F51103AxFK, R5F51104AxFK, R5F51105AxFK, R5F5110JAxFK, R5F51101AxFM, R5F51103AxFM, R5F51104AxFM, R5F51105AxFM, R5F5110JAxFM
RX111 Group (R01UH0365EJ0130)	36pin	R5F51111AxLM, R5F51113AxLM, R5F5111JAxLM
	40pin	R5F51111AxNF, R5F51113AxNF, R5F5111JAxNF
	48pin	R5F51111AxFL, R5F51113AxFL, R5F51114AxFL, R5F51115AxFL, R5F51116AxFL, R5F51117AxFL, R5F51118AxFL, R5F5111JAxFL, R5F51111AxNE, R5F51113AxNE, R5F51114AxNE, R5F51115AxNE, R5F51116AxNE, R5F51117AxNE, R5F51118AxNE, R5F5111JAxNE
	64pin	R5F51111AxFM, R5F51113AxFM, R5F51114AxFM, R5F51115AxFM, R5F51116AxFM, R5F51117AxFM, R5F51118AxFM, R5F5111JAxFM, R5F51111AxFK, R5F51113AxFK, R5F51114AxFK, R5F51115AxFK, R5F51116AxFK, R5F51117AxFK, R5F51118AxFK, R5F5111JAxFK, R5F51111AxLF, R5F51113AxLF, R5F51114AxLF, R5F51115AxLF, R5F51116AxLF, R5F51117AxLF, R5F51118AxLF, R5F5111JAxLF
RX113 Group (R01UH0448EJ0110)	64pin	R5F51135AxFM, R5F51136AxFM, R5F51137AxFM, R5F51138AxFM
	100pin	R5F51135AxLJ, R5F51136AxLJ, R5F51137AxLJ, R5F51138AxLJ, R5F51135AxFP, R5F51136AxFP, R5F51137AxFP, R5F51138AxFP
RX130 Group (R01UH0560EJ0200)	48pin	R5F51303AxFL, R5F51305AxFL, R5F51303AxNE, R5F51305AxNE, R5F51306AxNE, R5F51306AxFL, R5F51307AxNE, R5F51307AxFL, R5F51308AxNE, R5F51308AxFL, R5F51306BxFL
	64pin	R5F51303AxFM, R5F51305AxFM, R5F51303AxFK, R5F51305AxFK, R5F51306AxFK, R5F51306AxFM, R5F51307AxFK, R5F51307AxFM, R5F51308AxFK, R5F51308AxFM R5F51308AxFK, R5F51308AxFM, R5F51306BxFK, R5F51306BxFM
	80pin	R5F51303AxFN, R5F51305AxFN, R5F51306AxFN, R5F51306BxFN
	100pin	R5F51305AxFP, R5F51306AxFP, R5F51307AxFP, R5F51308AxFP, R5F51305BxFP, R5F51306BxFP
RX13T Group (R01UH0822EJ0100)	32pin	R5F513T3AxFJ, R5F513T5AxFJ, R5F513T3AxNH, R5F513T5AxNH
	48pin	R5F513T5AxFL, R5F513T3AxFL, R5F513T5AxNE, R5F513T3AxNE
RX230 Group (R01UH0496EJ0110)	48pin	R5F52305AxNE, R5F52306AxNE, R5F52305AxFL, R5F52306AxFL
	64pin	R5F52305AxND, R5F52306AxND, R5F52305AxFM, R5F52306AxFM, R5F52305AxLF, R5F52306AxLF
	100pin	R5F52305AxLA, R5F52306AxLA, R5F52305AxFP, R5F52306AxFP

Table 2-2 Support Devices

Group (HW Manual number)	PIN	Device name
RX231 Group (R01UH0496EJ0110)	48pin	R5F52315AxNE, R5F52316AxNE, R5F52317AxNE, R5F52318AxNE, R5F52315CxNE, R5F52316CxNE, R5F52317BxNE, R5F52318BxNE, R5F52315AxFL, R5F52316AxFL, R5F52317AxFL, R5F52318AxFL, R5F52315CxFL, R5F52316CxFL, R5F52317BxFL, R5F52318BxFL
	64pin	R5F52315AxND, R5F52316AxND, R5F52317AxND, R5F52318AxND, R5F52315CxND, R5F52316CxND, R5F52317BxND, R5F52318BxND, R5F52315AxFM, R5F52316AxFM, R5F52317AxFM, R5F52318AxFM, R5F52315CxFM, R5F52316CxFM, R5F52317BxFM, R5F52318BxFM, R5F52315CxLF, R5F52316CxLF
	100pin	R5F52315AxLA, R5F52316AxLA, R5F52317AxLA, R5F52318AxLA, R5F52315CxLA, R5F52316CxLA, R5F52317BxLA, R5F52318BxLA, R5F52315AxFP, R5F52316AxFP, R5F52317AxFP, R5F52318AxFP, R5F52315CxFP, R5F52316CxFP, R5F52317BxFP, R5F52318BxFP
RX23E-A Group (R01UH0801EJ0100)	40pin	R5F523E5AxNF, R5F523E6AxNF, R5F523E5SxNF, R5F523E6SxNF
	48pin	R5F523E5AxFL, R5F523E6AxFL, R5F523E5SxFL, R5F523E6SxFL
RX23T Group (R01UH0520EJ0110)	48pin	R5F523T3AxFL, R5F523T5AxFL
	52pin	R5F523T5AxFD, R5F523T3AxFD
	64pin	R5F523T5AxFM, R5F523T3AxFM
RX23W Group (R01UH0823EJ0100)	56pin	R5F523W8BxNG, R5F523W8AxNG, R5F523W7BxNG, R5F523W7AxNG
	83pin	R5F523W8CxLN, R5F523W8DxLN
	85pin	R5F523W7AxBL, R5F523W8AxBL, R5F523W8BxBL, R5F523W7BxBL
RX24T Group (R01UH0576EJ0200)	64pin	R5F524TAxFM, R5F524T8AxFM, R5F524TAxFK, R5F524T8AxFK
	80pin	R5F524TAxFF, R5F524T8AxFF, R5F524TAxFN, R5F524T8AxFN
	100pin	R5F524TCxFP, R5F524T8AxFP, R5F524TBxFP, R5F524TEAxFP, R5F524TAxFP
RX24U Group (R01UH0658EJ0100)	100pin	R5F524UEAxFP, R5F524UCxFP, R5F524UBxFP
	144pin	R5F524UEAxFB, R5F524UBxFB, R5F524UCxFB
RX64M Group (R01UH0377EJ0110)	100pin	R5F564MFCxFP, R5F564MFCxLJ, R5F564MFDxFP, R5F564MFDxLJ, R5F564MGCxFP, R5F564MGCxLJ, R5F564MGDxFP, R5F564MGDxLJ, R5F564MJCxFP, R5F564MJCxLJ, R5F564MJDxFP, R5F564MJDxLJ, R5F564MLCxFP, R5F564MLCxLJ, R5F564MLDxFP, R5F564MLDxLJ
	144/145pin	R5F564MFCxFB, R5F564MFCxLK, R5F564MFDxFB, R5F564MFDxLK, R5F564MGCxFB, R5F564MGCxLK, R5F564MGDxFB, R5F564MGDxLK, R5F564MJCxFB, R5F564MJCxLK, R5F564MJDxFB, R5F564MJDxLK, R5F564MLCxFB, R5F564MLCxLK, R5F564MLDxFB, R5F564MLDxLK
	176/177pin	R5F564MFDxFC, R5F564MFDxBG, R5F564MFDxLC, R5F564MFCxFC, R5F564MFCxBG, R5F564MFCxLC, R5F564MGDxFC, R5F564MGDxBG, R5F564MGDxLC, R5F564MGCxFC, R5F564MGCxBG, R5F564MGCxLC, R5F564MJDxFC, R5F564MJDxBG, R5F564MJDxLC, R5F564MJCxFC, R5F564MJCxBG, R5F564MJCxLC, R5F564MLDxFC, R5F564MLDxBG, R5F564MLDxLC, R5F564MLCxFC, R5F564MLCxBG, R5F564MLCxLC

Table 2-3 Support Devices

Group (HW Manual number)	PIN	Device name
RX65N Group (R01UH0590EJ0210)	100pin	R5F565N9AxLJ, R5F565N9BxLJ, R5F565N9ExLJ, R5F565N9FxLJ, R5F565N7AxLJ, R5F565N7BxLJ, R5F565N7ExLJ, R5F565N7FxLJ, R5F565N4AxLJ, R5F565N4BxLJ, R5F565N4ExLJ, R5F565N4FxLJ, R5F565N9AxFP, R5F565N9BxFP, R5F565N9ExFP, R5F565N9FxFP, R5F565N7AxFP, R5F565N7BxFP, R5F565N7ExFP, R5F565N7FxFP, R5F565N4AxFP, R5F565N4BxFP, R5F565N4ExFP, R5F565N4FxFP, R5F565NCHxLJ, R5F565NCDxLJ, R5F565NEHxLJ, R5F565NEDxLJ, R5F565NCHxFP, R5F565NCDxFP, R5F565NEHxFP, R5F565NEDxFP
	144/145 pin	R5F565N9AxFB, R5F565N9BxFB, R5F565N9ExFB, R5F565N9FxFB, R5F565N7AxFB, R5F565N7BxFB, R5F565N7ExFB, R5F565N7FxFB, R5F565N4AxFB, R5F565N4BxFB, R5F565N4ExFB, R5F565N4FxFB, R5F565NCHxFB, R5F565NCDxFB, R5F565NEHxFB, R5F565NEDxFB, R5F565N9AxLK, R5F565N9BxLK, R5F565N9ExLK, R5F565N9FxLK, R5F565N7AxLK, R5F565N7BxLK, R5F565N7ExLK, R5F565N7FxLK, R5F565N4AxLK, R5F565N4BxLK, R5F565N4ExLK, R5F565N4FxLK, R5F565NCHxLK, R5F565NCDxLK, R5F565NEHxLK, R5F565NEDxLK
	176/177 pin	R5F565NCHxBG, R5F565NCDxBG, R5F565NEHxBG, R5F565NEDxBG, R5F565NCHxFC, R5F565NCDxFC, R5F565NEHxFC, R5F565NEDxFC, R5F565NCHxLC, R5F565NCDxLC, R5F565NEHxLC, R5F565NEDxLC
RX651 Group (R01UH0590EJ0210)	64pin	R5F5651CHxFM, R5F56514FxFM, R5F5651EHxFM, R5F5651CDxFM, R5F56514FxBP, R5F56514BxFM, R5F56519FxBP, R5F5651CDxBP, R5F5651EDxBP, R5F5651EDxFM, R5F56517BxBP, R5F5651EHxBP, R5F56519BxBP, R5F56517FxBP, R5F5651CHxBP, R5F56519FxFM, R5F56517BxFM, R5F56514BxBP, R5F56519BxFM, R5F56517FxFM
	100pin	R5F56519AxLJ, R5F56519BxLJ, R5F56519ExLJ, R5F56519FxLJ, R5F56517AxLJ, R5F56517BxLJ, R5F56517ExLJ, R5F56517FxLJ, R5F56514AxLJ, R5F56514BxLJ, R5F56514ExLJ, R5F56514FxLJ, R5F56519AxFP, R5F56519BxFP, R5F56519ExFP, R5F56519FxFP, R5F56517AxFP, R5F56517BxFP, R5F56517ExFP, R5F56517FxFP, R5F56514AxFP, R5F56514BxFP, R5F56514ExFP, R5F56514FxFP
	144/145 pin	R5F56519AxFB, R5F56519BxFB, R5F56519ExFB, R5F56519FxFB, R5F56517AxFB, R5F56517BxFB, R5F56517ExFB, R5F56517FxFB, R5F56514AxFB, R5F56514BxFB, R5F56514ExFB, R5F56514FxFB, R5F5651CDxFB, R5F5651CHxFB, R5F5651EDxFB, R5F5651EHxFB, R5F56519AxLK, R5F56519BxLK, R5F56519ExLK, R5F56519FxLK, R5F56517AxLK, R5F56517BxLK, R5F56517ExLK, R5F56517FxLK, R5F56514AxLK, R5F56514BxLK, R5F56514ExLK, R5F56514FxLK, R5F5651CDxLK, R5F5651CHxLK, R5F5651EDxLK, R5F5651EHxLK
	176/177 pin	R5F5651CDxBG, R5F5651CDxFC, R5F5651CHxBG, R5F5651CHxFC, R5F5651EDxBG, R5F5651EDxFC, R5F5651EHxBG, R5F5651EHxFC, R5F5651CDxLC, R5F5651CHxLC, R5F5651EDxLC, R5F5651EHxLC
RX66N Group (R01UH0825EJ0100)	100pin	R5F566NNDxFP, R5F566NNHxFP, R5F566NDDxFP, R5F566NDHxFP
	144pin	R5F566NNDxFB, R5F566NNHxFB, R5F566NDDxFB, R5F566NDHxFB
	145pin	R5F566NNDxLK, R5F566NNHxLK, R5F566NDDxLK, R5F566NDHxLK
	176pin	R5F566NNDxFC, R5F566NNHxFC, R5F566NDDxFC, R5F566NDHxFC, R5F566NNDxBG, R5F566NNHxBG, R5F566NDDxBG, R5F566NDHxBG
	244pin	R5F566NNDxBD, R5F566NNHxBD, R5F566NDDxBD, R5F566NDHxBD

Table 2-4 Support Devices

Group (HW Manual number)	PIN	Device name
RX66T Group (R01UH0749EJ0120)	48pin	R5F566TABxFL, R5F566TAFxFL, R5F566TEBxFL, R5F566TEFxFL
	64pin	R5F566TAAxFM, R5F566TAEExFM, R5F566TEAxFM, R5F566TEExFM
	80pin	R5F566TAAxFF, R5F566TAEExFF, R5F566TEAxFF, R5F566TEExFF, R5F566TAAxFN, R5F566TAEExFN, R5F566TEAxFN, R5F566TEExFN
	100pin	R5F566TKCxFP, R5F566TAEExFP, R5F566TFFxFP, R5F566TFCxFP, R5F566TFExFP, R5F566TFBxFP, R5F566TFAxFP, R5F566TABxFP, R5F566TAFxFP, R5F566TEFxFP, R5F566TKFxFP, R5F566TKGxFP, R5F566TKAxFP, R5F566TKEExFP, R5F566TKBxFP, R5F566TEBxFP, R5F566TEExFP, R5F566TEAxFP, R5F566TAAxFP, R5F566TFGxFP
	112pin	R5F566TAAxFH, R5F566TAEExFH, R5F566TEExFH, R5F566TEAxFH
	144pin	R5F566TKCxFB, R5F566TFGxFB, R5F566TFCxFB, R5F566TKGxFB
RX71M Group (R01UH0493EJ0110)	100pin	R5F571MLCxFP, R5F571MLDxFP, R5F571MLGxFP, R5F571MLHxFP, R5F571MJCxFP, R5F571MJDxFP, R5F571MJGxFP, R5F571MJHxFP, R5F571MGCxFP, R5F571MGDxFP, R5F571MFGxFP, R5F571MGHxFP, R5F571MFCxFP, R5F571MFDxFP, R5F571MFGxFP, R5F571MFHxFP, R5F571MLCxLJ, R5F571MLDxLJ, R5F571MLGxLJ, R5F571MLHxLJ, R5F571MJCxLJ, R5F571MJDxLJ, R5F571MJGxLJ, R5F571MJHxLJ, R5F571MGCxLJ, R5F571MGDxLJ, R5F571MGGxLJ, R5F571MGHxLJ, R5F571MFCxLJ, R5F571MFDxLJ, R5F571MFGxLJ, R5F571MFHxLJ
	144/145pin	R5F571MLCxLK, R5F571MLDxLK, R5F571MLGxLK, R5F571MLHxLK, R5F571MJCxLK, R5F571MJDxLK, R5F571MJGxLK, R5F571MJHxLK, R5F571MGCxLK, R5F571MGDxLK, R5F571MGGxLK, R5F571MGHxLK, R5F571MFCxLK, R5F571MFDxLK, R5F571MFGxLK, R5F571MFHxLK, R5F571MLCxLB, R5F571MLDxLB, R5F571MLGxLB, R5F571MLHxLB, R5F571MJCxLB, R5F571MJDxLB, R5F571MJGxLB, R5F571MJHxLB, R5F571MGCxLB, R5F571MGDxLB, R5F571MGGxLB, R5F571MGHxLB, R5F571MFCxLB, R5F571MFDxLB, R5F571MFGxLB, R5F571MFHxLB
	176/177pin	R5F571MLCxFC, R5F571MLDxFC, R5F571MLGxFC, R5F571MLHxFC, R5F571MJCxFC, R5F571MJDxFC, R5F571MJGxFC, R5F571MJHxFC, R5F571MGCxFC, R5F571MGDxFC, R5F571MGGxFC, R5F571MGHxFC, R5F571MFCxFC, R5F571MFDxFC, R5F571MFGxFC, R5F571MFHxFC, R5F571MLCxLC, R5F571MLDxLC, R5F571MLGxLC, R5F571MLHxLC, R5F571MJCxLC, R5F571MJDxLC, R5F571MJGxLC, R5F571MJHxLC, R5F571MGCxLC, R5F571MGDxLC, R5F571MGGxLC, R5F571MGHxLC, R5F571MFCxLC, R5F571MFDxLC, R5F571MFGxLC, R5F571MFHxLC, R5F571MLCxBG, R5F571MLDxBG, R5F571MLGxBG, R5F571MLHxBG, R5F571MJCxBG, R5F571MJDxBG, R5F571MJGxBG, R5F571MJHxBG, R5F571MGCxBG, R5F571MGDxBG, R5F571MGGxBG, R5F571MGHxBG, R5F571MFCxBG, R5F571MFDxBG, R5F571MFGxBG, R5F571MFHxBG
RX72M Group (R01UH0804EJ0110)	100pin	R5F572MDDxFP, R5F572MDHxFP, R5F572MNDxFP, R5F572MNHxFP
	144pin	R5F572MDDxFB, R5F572MDHxFB, R5F572MNDxFB, R5F572MNHxFB
	176pin	R5F572MNHxFC, R5F572MDDxBG, R5F572MNDxFC, R5F572MDHxBG, R5F572MDDxFC, R5F572MNHxBG, R5F572MNDxBG, R5F572MDHxFC
	224pin	R5F572MDDxBD, R5F572MDHxBD, R5F572MNHxBD, R5F572MNDxBD

Table 2-5 Support Devices

Group (HW Manual number)	PIN	Device name
RX72N Group (R01UH0824EJ0100)	100pin	R5F572NNDxFP, R5F572NNHxFP, R5F572NDDxFP, R5F572NDHxFP
	144pin	R5F572NNDxFB, R5F572NNHxFB, R5F572NDDxFB, R5F572NDHxFB
	145pin	R5F572NNDxLK, R5F572NNHxLK, R5F572NDDxLK, R5F572NDHxLK
	176pin	R5F572NNDxFC, R5F572NNHxFC, R5F572NDDxFC, R5F572NDHxFC, R5F572NNDxBG, R5F572NNHxBG, R5F572NDDxBG, R5F572NDHxBG
	224pin	R5F572NNDxBD, R5F572NNHxBD, R5F572NDDxBD, R5F572NDHxBD
RX72T Group (R01UH0803EJ0100)	100pin	R5F572TKExFP, R5F572TFFxFP, R5F572TKFxFP, R5F572TFGxFP, R5F572TKCxFP, R5F572TFBxFP, R5F572TFExFP, R5F572TFCxFP, R5F572TFAxFP, R5F572TKAxFP, R5F572TKBxFP, R5F572TKGxFP
	144pin	R5F572TKGxFB, R5F572TKCxFB, R5F572TFGxFB, R5F572TFCxFB
RX671 Group (R01UH0899EJ0100)	48pin	R5F5671EHxNE, R5F5671EDxNE, R5F5671CHxNE, R5F5671CDxNE, R5F56719HxNE, R5F56719DxNE
	64pin	R5F5671EHxFM, R5F5671EDxFM, R5F5671CHxFM, R5F5671CDxFM, R5F56719HxFM, R5F56719DxFM, R5F5671EHxBP, R5F5671EDxBP, R5F5671CHxBP, R5F5671CDxBP, R5F56719HxBP, R5F56719DxBP
	100pin	R5F5671EHxFP, R5F5671EDxFP, R5F5671CHxFP, R5F5671CDxFP, R5F56719HxFP, R5F56719DxFP, R5F5671EHxLJ, R5F5671EDxLJ, R5F5671CHxLJ, R5F5671CDxLJ, R5F56719HxLJ, R5F56719DxLJ
	144pin	R5F5671EHxFB, R5F5671EDxFB, R5F5671CHxFB, R5F5671CDxFB, R5F56719HxFB, R5F56719DxFB
	145pin	R5F5671EHxLE, R5F5671EDxLE, R5F5671CHxLE, R5F5671CDxLE, R5F56719HxLE, R5F56719DxLE, R5F5671EHxLK, R5F5671EDxLK, R5F5671CHxLK, R5F5671CDxLK, R5F56719HxLK, R5F56719DxLK
RX140 Group (R01UH0905EJ0110)	32pin	R5F51403AxFJ, R5F51403AxNH
	48pin	R5F51403AxFL, R5F51403AxNE, R5F51405AxFL, R5F51405AxNE, R5F51405BxFL, R5F51405BxNE, R5F51406AxFL, R5F51406AxNE, R5F51406BxFL, R5F51406BxNE
	64pin	R5F51403AxFK, R5F51403AxFM, R5F51405AxFK, R5F51405AxFM, R5F51405BxFK, R5F51405BxFM, R5F51406AxFK, R5F51406AxFM, R5F51406BxFK, R5F51406BxFM
	80pin	R5F51405AxFN, R5F51405BxFN, R5F51406AxFN, R5F51406BxFN
RX660 Group (R01UH0937EJ0100)	48pin	R5F56609AxFL, R5F56609BxFL, R5F56604AxFL, R5F56604BxFL
	64pin	R5F56609AxFM, R5F56609BxFM, R5F56609CxFM, R5F56609DxFM R5F56604AxFM, R5F56604BxFM, R5F56604CxFM, R5F56604DxFM
	80pin	R5F56609AxFN, R5F56609BxFN, R5F56609CxFN, R5F56609DxFN R5F56604AxFN, R5F56604BxFN, R5F56604CxFN, R5F56604DxFN
	100pin	R5F56609AxFP, R5F56609BxFP, R5F56609CxFP, R5F56609DxFP R5F56609ExFP, R5F56609FxFP, R5F56609GxFP, R5F56609HxFP R5F56604AxFP, R5F56604BxFP, R5F56604CxFP, R5F56604DxFP R5F56604ExFP, R5F56604FxFP, R5F56604GxFP, R5F56604HxFP
	144pin	R5F56609AxFB, R5F56609BxFB, R5F56609CxFB, R5F56609DxFB R5F56609ExFB, R5F56609FxFB, R5F56609GxFB, R5F56609HxFB R5F56604AxFB, R5F56604BxFB, R5F56604CxFB, R5F56604DxFB R5F56604ExFB, R5F56604FxFB, R5F56604GxFB, R5F56604HxFB

Table 2-6 Support Devices

Group (HW Manual number)	PIN	Device name
RX23E-B Group (R01UH0972EJ0080)	40pin	R5F523E5BxNF, R5F523E5KxNF, R5F523E5MxNF, R5F523E6BxNF R5F523E6KxNF, R5F523E6MxNF
	48pin	R5F523E5BxFL, R5F523E5MxFL, R5F523E6BxFL, R5F523E6MxFL
	64pin	R5F523E5BxFM, R5F523E5KxFM, R5F523E5MxFM, R5F523E6BxFM, R5F523E6KxFM, R5F523E6MxFM
	80pin	R5F523E5JxFN, R5F523E5NxFN, R5F523E6JxFN, R5F523E6NxFN
	100pin	R5F523E5LxBS, R5F523E5LxFP, R5F523E5NxBS, R5F523E5NxFP, R5F523E6LxBS, R5F523E6LxFP, R5F523E6NxBS, R5F523E6NxFP
RX26T Group (R01UH0979EJ0101)	48pin	R5F526T9AxFL, R5F526T9AxNE, R5F526T9BxFL, R5F526T9BxNE, R5F526TBxFL, R5F526TBxNE, R5F526TBBxFL, R5F526TBBxNE, R5F526TBCxFL, R5F526TBCxNE, R5F526TBDxFL, R5F526TBDxNE, R5F526TFxFL, R5F526TFxNE, R5F526TFBxFL, R5F526TFBxNE, R5F526TFCxFL, R5F526TFCxNE, R5F526TFDxFL, R5F526TFDxNE, R5F526T8AxFL, R5F526TAAxFL, R5F526TACxFL
	64pin	R5F526T9AxFM, R5F526T9AxND, R5F526T9BxFM, R5F526T9BxND, R5F526TBxFM, R5F526TBxND, R5F526TBBxFM, R5F526TBBxND, R5F526TBCxFM, R5F526TBCxND, R5F526TBDxFM, R5F526TBDxND, R5F526TFxFM, R5F526TFxND, R5F526TFBxFM, R5F526TFBxND, R5F526TFCxFM, R5F526TFCxND, R5F526TFDxFM, R5F526TFDxND, R5F526T8AxFM, R5F526TAAxFM, R5F526TACxFM
	80pin	R5F526T9AxFN, R5F526T9BxFN, R5F526TBxFN, R5F526TBBxFN, R5F526TBCxFN, R5F526TBDxFN, R5F526TFxFN, R5F526TFBxFN, R5F526TFCxFN, R5F526TFDxFN
	100pin	R5F526T9AxFP, R5F526T9BxFP, R5F526TBxFP, R5F526TBBxFP, R5F526TBCxFP, R5F526TBDxFP, R5F526TFxFP, R5F526TFBxFP, R5F526TFCxFP, R5F526TFDxFP

2.2 Support Components List

Below is a list of Components supported by the Smart Configurator for RX V2.18.0.

Table 2-7 Support Components (RX100, RX200 family)

✓: Support, -: Non-support

No	Components	Mode	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
1	8-Bit Timer	-	-	-	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
2	CRC Calculator	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	D/A Converter	-	-	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	
4	DMA Controller	-	-	-	-	-	-	✓	✓	✓	-	✓	-	✓		
5	I2C Slave Mode	I2C mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		SMBus mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
6	I2C Master Mode	I2C mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		SMBus mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
7	LCD Controller	-	-	✓	-	-	-	-	-	✓	-	-	-	-		
8	PWM Mode Timer	PWM mode 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		PWM mode 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
9	SCI/SCIF Clock Synchronous Mode	Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
		Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
		Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
10	SCI/SCIF Asynchronous Mode	Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
11	SPI Clock Synchronous Mode	Slave transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Slave transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
12	SPI Operation Mode	Slave transmit/receive	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
		Slave transmit only	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit/receive	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit only	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
		Multi-master transmit/receive	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
		Multi-master transmit only	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	
13	Event Link Controller	-	✓	✓	✓	-	✓	✓	✓	✓	-	✓	-	✓		
14	Watchdog Timer	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓		
15	Clock Frequency Accuracy Measurement Circuit	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Note 1. Refer to No 2 in Table 6-2

Note 2. Refer to No 3 in Table 6-2

Table 2-8 Support Components (RX100, RX200 family)

√: Support, -: Non-support

No	Components	Mode	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks	
16	Group Scan Mode S12AD	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
17	Comparator	-	-	-	√	√	√	√	√	-	-	-	√	-	√		
18	Compare Match Timer	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
19	Single Scan Mode S12AD	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
20	Smart Card Interface Mode	Transmission	√	√	√	√	√	√	√	√	√	√	√	√	√		
		Reception	√	√	√	√	√	√	√	√	√	√	√	√	√		
		Transmission/Reception	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
21	Dead-time Compensation Counter	-	√	√	√	√	√	√	√	√	√	√	-	√	√		
22	Data Transfer Controller	-	√	√	√	√	√	√	√	√	√	√	√	√	√	Note 3	
23	Data Operation Circuit	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
24	Normal Mode Timer	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
25	Buses	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
26	Programmable Pulse Generator	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
27	Ports	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
28	Port Output Enable	-	-	√	√	√	√	√	√	√	√	√	√	√	√		
29	Real Time Clock	Binary	√	√	√	√	-	√	√	-	√	-	√	-	-		
		Calendar	√	√	√	√	-	√	√	-	√	-	√	-	-		
30	Remote Control Signal Receiver	-	-	-	√	-	-	-	-	-	-	-	-	-	-		
31	Low-Power Timer	-	-	-	√	√	-	√	√	√	√	-	√	-	-		
32	Phase Counting Mode Timer	16-Bit Phase Counting Mode	√	√	√	√	√	√	√	√	√	√	√	√	√		
		Cascade Connection 32-Bit Phase Counting Mode	-	-	-	-	√	-	-	-	-	√	-	√	√		
33	Interrupt Controller	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
34	General PWM Timer	Saw-wave PWM mode	-	-	-	-	-	-	-	-	-	-	-	-	√	Note 4, Note 5	
		Saw-wave one-shot pulse mode	-	-	-	-	-	-	-	-	-	-	-	-	√	Note 4	
		Triangle-wave PWM mode 1	-	-	-	-	-	-	-	-	-	-	-	-	√	√	
		Triangle-wave PWM mode 2	-	-	-	-	-	-	-	-	-	-	-	-	√	√	
		Triangle-wave PWM mode 3	-	-	-	-	-	-	-	-	-	-	-	-	√	√	
		Saw-wave PWM mode 2	-	-	-	-	-	-	-	-	-	-	-	-	-	√	
		Complementary PWM Mode 1	-	-	-	-	-	-	-	-	-	-	-	-	-	√	
		Complementary PWM Mode 2	-	-	-	-	-	-	-	-	-	-	-	-	-	√	
Complementary PWM Mode 3	-	-	-	-	-	-	-	-	-	-	-	-	-	√			
Complementary PWM Mode 4	-	-	-	-	-	-	-	-	-	-	-	-	-	√			
35	Low Power Consumption	-	√	√	√	√	√	√	√	√	√	√	√	√	√		
36	Complementary PWM Mode Timer	Complementary PWM mode 1	-	√	√	√	√	√	√	√	√	√	√	√	√		
		Complementary PWM mode 2	-	√	√	√	√	√	√	√	√	√	√	√	√		
		Complementary PWM mode 3	-	√	√	√	√	√	√	√	√	√	√	√	√		

Note 3. Refer to No 6 in Table 6-1

Note 4. Refer to No 1 in Table 6-1

Note 5. In RX26T, this mode is called as "Saw-wave PWM Mode 1"

Table 2-9 Support Components (RX100, RX200 family)

✓: Support, -: Non-support

No	Components	Mode	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
37	Continuous Scan Mode S12AD	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
38	Voltage Detection Circuit	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
39	Delta-Sigma Modulator Interface	Master	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Slave	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	Single Scan Mode DSAD	-	-	-	-	-	✓	-	✓	✓	-	-	-	-	-	
41	Continuous Scan Mode DSAD	-	-	-	-	-	✓	-	✓	✓	-	-	-	-	-	
42	Analog Front End	-	-	-	-	-	✓	-	✓	✓	-	-	-	-	-	
43	Motor	3-Phase Brushless DC Motor	-	-	-	-	✓	-	-	-	-	✓	-	✓	✓	
		2-Phase Stepping Motor (Fast Decay)	-	-	-	-	✓	-	-	-	-	✓	-	✓	✓	
		2-Phase Stepping Motor (Slow Decay)	-	-	-	-	✓	-	-	-	-	✓	-	✓	✓	

Table 2-10 Support Components (RX600, RX700 family)

✓: Support, -: Non-support

No	Components	Mode	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
1	8-Bit Timer	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	CRC Calculator	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	D/A Converter	-	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	
4	DMA Controller	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
5	I2C Slave Mode	I2C mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		SMBus mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
6	I2C Master Mode	I2C mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		SMBus mode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
7	LCD Controller	-	-	-	-	-	-	-	-	-	-	-	
8	PWM Mode Timer	PWM mode 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		PWM mode 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
9	SCI/SCIF Clock Synchronous Mode	Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
		Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
		Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1, 2
10	SCI/SCIF Asynchronous Mode	Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Transmission	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
		Multi-processor Transmission/Reception	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Note 1
11	SPI Clock Synchronous Mode	Slave transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Slave transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
12	SPI Operation Mode	Slave transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Slave transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Slave receive only	-	-	-	-	✓	✓	-	-	-	-	
		Master transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Master transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Multi-master transmit/receive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Multi-master transmit only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
13	Event Link Controller	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
14	Watchdog Timer	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
15	Clock Frequency Accuracy Measurement Circuit	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Note 1. Refer to No 2 in Table 6-2

Note 2. Refer to No 3 in Table 6-2

Table 2-11 Support Components (RX600, RX700 family)

√: Support, -: Non-support

No	Components	Mode	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
16	Group Scan Mode S12AD	-	√	√	√	√	√	√	√	√	√	√	
17	Comparator	-	-	-	√	√	-	-	√	-	√		
18	Compare Match Timer	-	√	√	√	√	√	√	√	√	√	√	
19	Single Scan Mode S12AD	-	√	√	√	√	√	√	√	√	√	√	
20	Smart Card Interface Mode	Transmission	√	√	√	√	√	√	√	√	√	√	
		Reception	√	√	√	√	√	√	√	√	√	√	
		Transmission/Reception	√	√	√	√	√	√	√	√	√	√	
21	Dead-time Compensation Counter	-	√	√	√	√	√	√	√	√	√		
22	Data Transfer Controller	-	√	√	√	√	√	√	√	√	√	Note 3	
23	Data Operation Circuit	-	√	√	√	√	√	√	√	√	√		
24	Normal Mode Timer	-	√	√	√	√	√	√	√	√	√		
25	Buses	-	√	√	√	√	√	√	√	√	√		
26	Programmable Pulse Generator	-	√	√	√	-	-	√	√	-	√	-	
27	Ports	-	√	√	√	√	√	√	√	√	√	√	
28	Port Output Enable	-	√	√	√	√	√	√	√	√	√	√	
29	Real Time Clock	Binary	√	√	√	-	√	√	√	-	√	-	
		Calendar	√	√	√	-	√	√	√	-	√	-	
30	Remote Control Signal Receiver	-	-	-	-	√	√	-	-	-	-		
31	Low-Power Timer	-	-	-	-	-	-	-	-	-	-	-	
32	Phase Counting Mode Timer	16-Bit Phase Counting Mode	√	√	√	√	√	√	√	√	√	√	
		Cascade Connection 32-Bit Phase Counting Mode	√	√	√	√	√	√	√	√	√	√	
33	Interrupt Controller	-	√	√	√	√	√	√	√	√	√		
34	General PWM Timer	Saw-wave PWM mode	√	-	√	√	-	-	√	√	√	√	Note 4
		Saw-wave one-shot pulse mode	√	-	√	√	-	-	√	√	√	√	Note 4
		Triangle-wave PWM mode 1	√	-	√	√	-	-	√	√	√	√	Note 4
		Triangle-wave PWM mode 2	√	-	√	√	-	-	√	√	√	√	Note 4
		Triangle-wave PWM mode 3	√	-	√	√	-	-	√	√	√	√	Note 4
35	Low Power Consumption	-	√	√	√	√	√	√	√	√	√		
36	Complementary PWM Mode Timer	Complementary PWM mode 1	√	√	√	√	√	√	√	√	√	√	
		Complementary PWM mode 2	√	√	√	√	√	√	√	√	√	√	
		Complementary PWM mode 3	√	√	√	√	√	√	√	√	√	√	
37	Continuous Scan Mode S12AD	-	√	√	√	√	√	√	√	√	√		

Note 3. Refer to No 6 in Table 6-1

Note 4. Refer to No 1 in Table 6-1

Table 2-12 Support Components (RX600, RX700 family)

✓: Support, -: Non-support

No	Components	Mode	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
38	Voltage Detection Circuit	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
39	Delta-Sigma Modulator Interface	Master	-	-	-	-	-	-	-	✓	-	-	
		Slave	-	-	-	-	-	-	-	✓	-	-	
40	Single Scan Mode DSAD	-	-	-	-	-	-	-	-	-	-	-	
41	Continuous Scan Mode DSAD	-	-	-	-	-	-	-	-	-	-	-	
42	Analog Front End	-	-	-	-	-	-	-	-	-	-	-	
43	Motor	3-Phase Brushless DC Motor	-	-	-	✓	-	-	-	✓	-	✓	
		2-Phase Stepping Motor (Fast Decay)	-	-	-	✓	-	-	-	✓	-	✓	
		2-Phase Stepping Motor (Slow Decay)	-	-	-	✓	-	-	-	✓	-	✓	

2.3 New support

2.3.1 BSP (Board Support Package) revision update

From Smart Configurator for RX V2.18.0, BSP rev7.41 is supported and will be added as default BSP when creating Smart Configurator project.

2.3.2 New device support for RX26T group

From Smart Configurator for RX V2.18.0, 48K RAM size devices for RX26T have been supported. Regarding to the supported device list, please refer to **Table 2-6** (last three package numbers with 48 pin and 64 pin group of RX26T).

2.3.3 New resource support for Motor Code Generation component

From Smart Configurator for RX V2.18.0, GPT triangle mode 1 is supported in Motor Code Generation component for RX66T and RX26T device groups, and it can be selectable from the resource list as below.

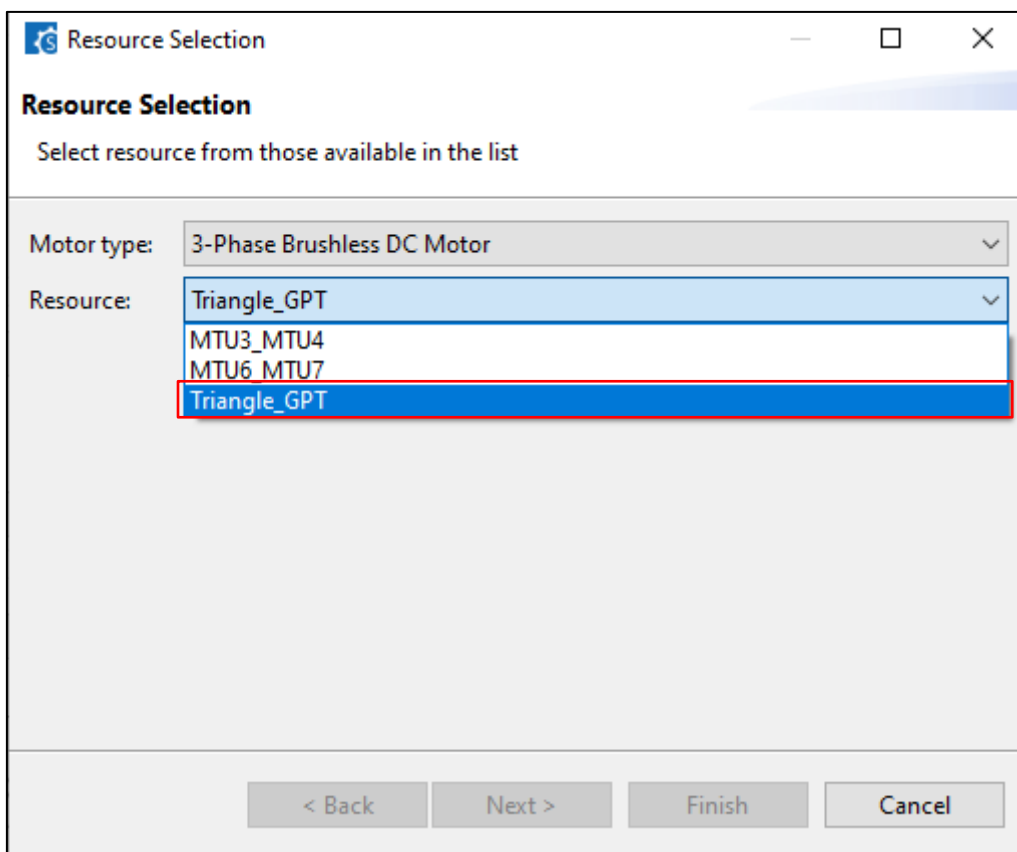


Figure 2-1 GPT resource is selectable from the Resource list for Motor component

2.3.4 Symbolic name function support

From Smart Configurator for RX V2.18.0, a new “Symbolic Name” column has been added on the “Pin” page, as shown in **Figure 2-2**. By defining the symbolic name for the multiplex pin, user can maintain same software even if the MCU is changed. The symbolic name can be migrated when changing device only on condition that the pin with symbolic name is assigned. The symbolic name macro is generated in “\src\smc_gen\r_pincfg\pin.h” after generating code.

Pin configuration							
Pin Number							
type filter text (* = any string, ? = any character)							
Pin Number	Pin Name	Board Functions	Function	Direction	Remarks	Symbolic Name	Comments
19	P31/MTIOC4D/TMC12/CTS1#/RTS1#/SS1#/IRQ1		Not assigned	None			
20	P30/MTIOC4B/TMRI3/POE8#/RXD1/SMISO1/SSCL1/IR...		Not assigned	None			
21	P27/CS3#/MTIOC2B/TMC13/SCK1/IRQ7/CVREFC3		Not assigned	None			
22	P26/CS2#/MTIOC2A/TMO1/TXD1/SMOS1/SSDA1/CT...		Not assigned	None			
23	P25/CS1#/MTIOC4C/MTCLKB/RXD3/SMISO3/SSCL3/L...		Not assigned	None			
24	P24/CS0#/MTIOC4A/MTCLKA/TMRI1/SCK3/IRQ12		Not assigned	None			
25	P23/MTIOC3D/MTCLKD/TXD3/SMOS3/SSDA3/CTS0#...		Not assigned	None			
26	P22/MTIOC3B/MTCLKC/TMO0/SCK0/IRQ15		Not assigned	None		LED1	
27	P21/MTIOC1B/TMC10/MTIOC4A/RXD0/SMISO0/SSCL...		Not assigned	None			
28	P20/MTIOC1A/TMRI0/TXD0/SMOS0/SSDA0/IRQ8		Not assigned	None			
29	P17/MTIOC3A/MTIOC3B/TMO1/POE8#/MTIOC4B/SC...		Not assigned	None			
30	P16/MTIOC3C/MTIOC3D/TMO2/TXD1/SMOS1/SSDA...		Not assigned	None			
31	P15/MTIOC0B/MTCLKB/TMC12/RXD1/SMISO1/SSCL1/...		Not assigned	None			
32	P14/MTIOC3A/MTCLKA/TMRI2/CTS1#/RTS1#/SS1#/C...		Not assigned	None			
33	P13/MTIOC0B/TMO3/TXD2/SMOS2/SSDA2/SDA0/IRQ3		Not assigned	None			
34	P12/MTIC5U/TMC11/RXD2/SMISO2/SSCL2/SCL0/IRQ2		Not assigned	None			
35	PH3/MTIOC4D/TMC10		Not assigned	None			
36	PH2/MTIOC4C/TMRI0/TOC1/IRQ1		Not assigned	None			
37	PH1/MTIOC3D/TMO0/TIC1/IRQ0/ADST0		Not assigned	None			
38	PH0/MTIOC3B/CACREF/ADTRG0#		Not assigned	None			
39	P55/D0/WAIT#/MTIOC4D/MTIOC4A/TMO3/CRX0-D/L...		Not assigned	None			

Figure 2-2 New “Symbolic Name” column on the Pin page

```

Pin.h ×
(Unknown Scope)

/* User's guide for symbolic name.
 * The generated symbolic names can be used in the user application as follows:
 *
 * Example: Toggle LED1 at Pin P54.
 * There are 2 ways to toggle LED1
 * 1) Using symbolic name macro
 *   Assuming the symbolic name for P54 is "LED1", the generated macro definition will be:
 *   #define LED1 5,4
 *
 * To use this macro definition to toggle the LED1, call the symbolic name APIs:
 *   PIN_WRITE(LED1) = ~PIN_READ(LED1)
 *
 * 2) Not using symbolic name macro
 *   Call the symbolic name APIs directly
 *   PIN_WRITE(5,4) = ~PIN_READ(5,4)
 */

/* Symbolic name */
#define LED1 2,2

/* Pin write helper */
#define PIN_WRITE_HELPER(x,y) ((PORT##x.PODR.BIT.B##y))
/* Pin read helper */
#define PIN_READ_HELPER(x,y) ((PORT##x.PIDR.BIT.B##y))

#if !(defined(__CCRX__) && defined(__cplusplus))
/* Pin write API */
#define PIN_WRITE(...) (PIN_WRITE_HELPER(__VA_ARGS__))
/* Pin read API */
#define PIN_READ(...) (PIN_READ_HELPER(__VA_ARGS__))
#else
/* CC-RX' C++ mode does not support variadic macros */
/* Pin write API */
#define PIN_WRITE(args) (PIN_WRITE_HELPER(args))
/* Pin read API */
#define PIN_READ(args) (PIN_READ_HELPER(args))
#endif

```

Figure 2-3 Symbolic name macro generated in the Pin.h file

2.3.5 Support compare view for user to resolve code merge conflicts

When the code merge conflict occurs, a red conflict message will be displayed in the Smart Configurator console. The user can resolve the conflict by clicking the conflicted file in the console message and opening the "File Compare view".

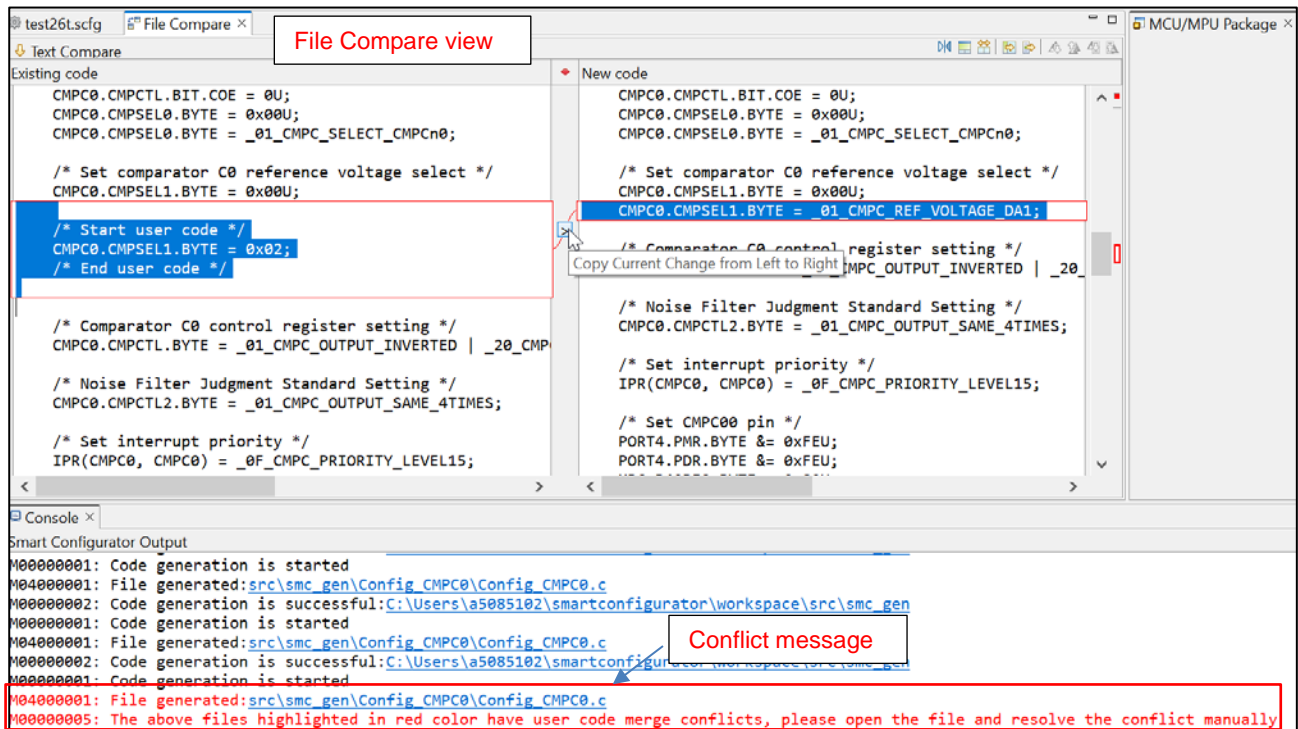


Figure 2-4 Compare view for generated files with user codes merge conflicts.

There are two methods to resolve the conflict:

- 1) Click "Copy Current Change from Left to Right" button and remove the unused code to resolve conflict.
- 2) Resolve the conflict manually by copying the code in the left panel to the right panel or editing the code in the right panel directly.

Note: Even after the conflict has been resolved, clicking the conflict message will still open the compare view.

Regarding to the Smart Configurator for RX Plug-in in e2 studio, the compare view feature has 2 minor differences as below:

- (1) The text in the compare view panels is highlighted as C style code.
- (2) An additional C compare panel for C code structure is displayed on the top.

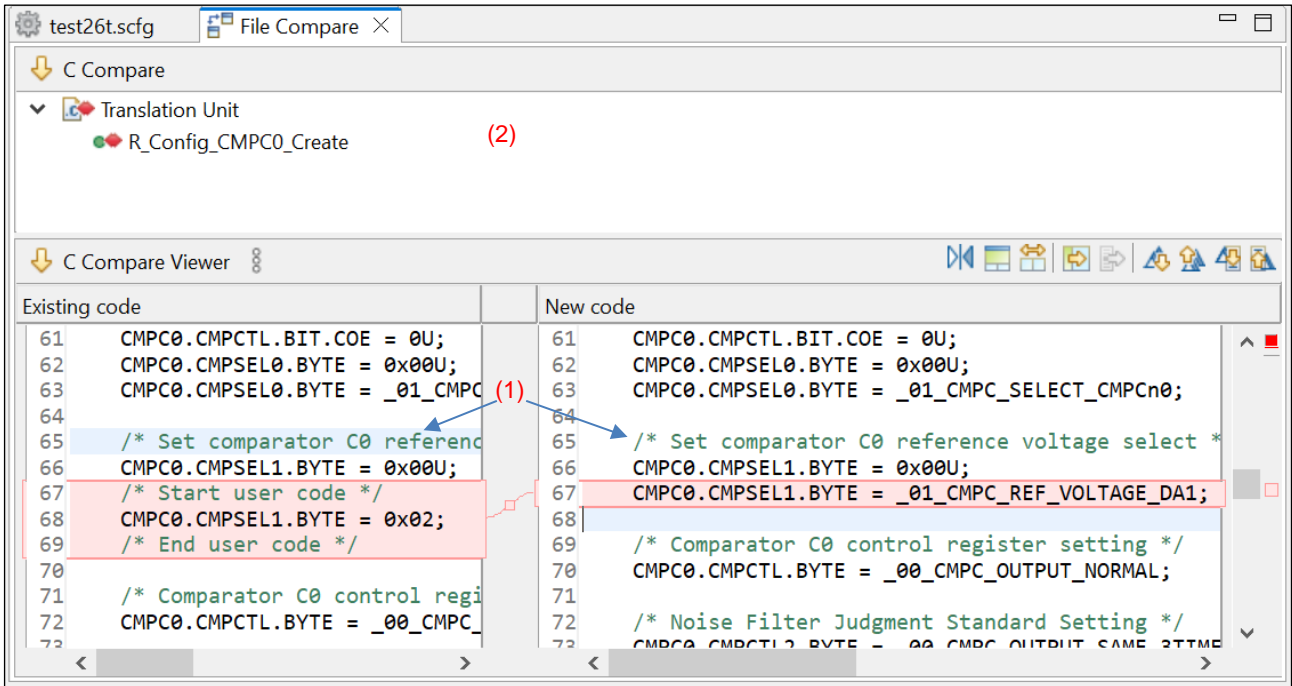


Figure 2-5 Compare view for generated files with user codes merge conflicts in e2 studio.

3. Changes

This chapter describes changes to the Smart Configurator for RX V2.18.0.

3.1 Correction of issues/limitations

Table 3-1 List of Correction of issues/limitations (RX100, RX200 Family) ✓: Applicable, -: Not Applicable

No	Description	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
1	Fixed the GUI issue when using Port component	-	-	-	✓	-	-	-	-	-	-	-	-	-	
2	Fixed the A/D channel and MTU6_MTU7 resource issues when using Motor component	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	Fixed the wrong generated value when using SCI/SCIF Clock Synchronous Mode component	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4	Fixed the GUI display issue when using the Port Output Enable (POE) component	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
5	Fixed the section error when generating code in CS+	-	-	-	-	-	-	-	-	-	-	-	-	✓	
6	Fixed the auto pin assignment in the "Pin" tab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Table 3-2 List of Correction of issues/limitations (RX600, RX700 Family) ✓: Applicable, -: Not Applicable

No	Description	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
1	Fixed the GUI issue when using Port component	-	-	-	-	-	-	-	-	-	-	
2	Fixed the A/D channel and MTU6_MTU7 resource issues when using Motor component	-	-	-	✓	-	-	-	-	-	-	
3	Fixed the wrong generated value when using SCI/SCIF Clock Synchronous Mode component	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	
4	Fixed the GUI display issue when using the Port Output Enable (POE) component	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
5	Fixed the section error when generating code in CS+	-	✓	-	✓	-	-	-	-	-	-	
6	Fixed the auto pin assignment in the "Pin" tab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

3.1.1 Fixed the GUI issue when using Port component

When using the PORT component in the following pin packages of RX130 device, "High-drive output" checkbox will be displayed on the GUI of PJ6 and PJ7. The "Drive Capacity Switching" of PJ6 and PJ7 should be fixed to normal output, and the "High-drive output" checkbox should be removed from the GUI. This issue has been fixed from SC for RX V2.18.0.

Table 3-3 Pin package in RX130 device that display the "High-drive output" checkbox

Device name	Pin package
RX130	R5F51303AxFL
	R5F51303AxNE
	R5F51303AxFK
	R5F51303AxFM
	R5F51303AxFN
	R5F51305BxFP

3.1.2 Fixed the A/D channel and MTU6_MTU7 resource issues when using Motor component

When using the Motor component in the RX66T 48-pin package device, all A/D channels are currently being supported on the Analog input channel, regardless of the available pins in the 48-pin package.

Additionally, the MTU6_MTU7 resource can be selected within the Motor component. However, when using the Motor component in the RX66T 48-pin package device, the MTU6_MTU7 resource should be hidden because of insufficient pins.

These issues have been fixed from SC for RX V2.18.0.

3.1.3 Fixed the wrong generated value when using SCI/SCIF Clock Synchronous Mode component

When using SCI/SCIF Clock Synchronous Mode component, SCMR.CHR1 bit is being configured as 1 instead of 0 after code generation. This issue has been fixed by SC from RX V2.18.0

3.1.4 Fixed the GUI display issue when using the Port Output Enable (POE) component

After adding the Port Output Enable (POE) component from the "Component" page, its GUI configuration may not be displayed in the Smart Configurator. This issue has been fixed by SC from RX V2.18.0.

3.1.5 Fixed the section error when generating code in CS+

After changing the SU section to 0x00000000 in the CS+ project and generating code in the Standalone Smart Configurator, the following section error will be displayed. This issue has been fixed by SC from RX V2.18.0.

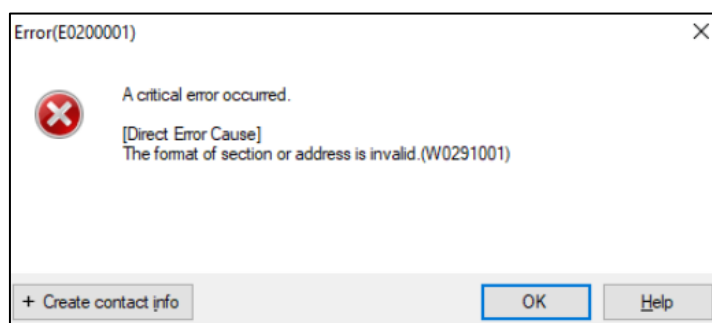


Figure 3-1 Section error when generating code in CS+

3.1.6 Fixed the auto pin assignment in the “Pin” tab

When using pin functions that do not have a default pin stated by board information, a warning may be issued if the pin assigned conflicts with a default pin stated in board information. Starting from this version, the best available pin (without warning/error) will be automatically assigned to the pin function unless such pins are no longer available.

3.2 Specification changes

Table 3-4 List of Specification changes (RX100, RX200 family)

○: Applicable, /: Not Applicable

No	Description	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
1	Improve the display of warning message after renaming the configuration name	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	Improve the configuration of "Backup settings"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	Improve BCDF feature to update the feature configuration setting for components that were already added	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	
4	Improve the generated code in the alarm function of the RTC component	✓	✓	✓	✓	-	✓	✓	-	✓	-	✓	-	-	
5	Improve the GUI in SCI Asynchronous Mode component	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	Improve the include path of generation location path	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Table 3-5 List of Specification changes (RX600, RX700 family)

○: Applicable, /: Not Applicable

No	Description	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
1	Improve the display of warning message after renaming the configuration name	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2	Improve the configuration of "Backup settings"	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3	Improve BCDF feature to update the feature configuration setting for components that were already added	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4	Improve the generated code in the alarm function of the RTC component	✓	✓	✓	-	✓	✓	✓	✓	✓	-	
5	Improve the GUI in SCI Asynchronous Mode component	-	-	-	-	✓	-	-	-	-	-	
6	Improve the include path of generation location path	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

3.2.1 Improve the display of warning message after renaming the configuration name

After renaming the configuration name of Code Generator component and regenerating the codes by clicking the "Generate Code" button, the user codes that were added in the previously generated files will not be kept in the newly generated files. There will be no warning message to alert the user that the user code is missing.

From Smart Configurator for RX V2.18.0, the warning message as shown in Figure 3-2 will be displayed to alert the user that the user codes will not be merged into the new generated files after clicking on the "Rename" button.

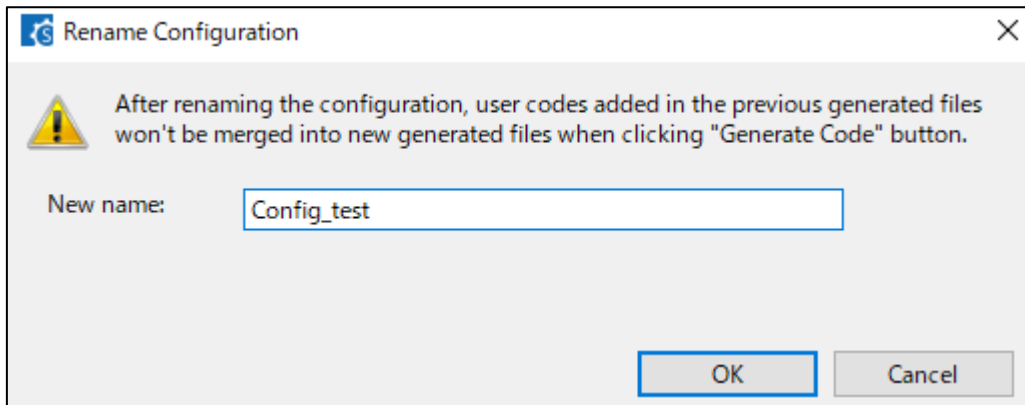


Figure 3-2 Warning message after renaming the configuration name

3.2.2 Improve the configuration of "Backup settings"

From Smart Configurator for RX V2.18.0, "Enable Backup settings" checkbox has been added to the GUI. Instead of manually setting the number of trash items to 0, you can now turn off the preferences for the number of trash items by using this checkbox.

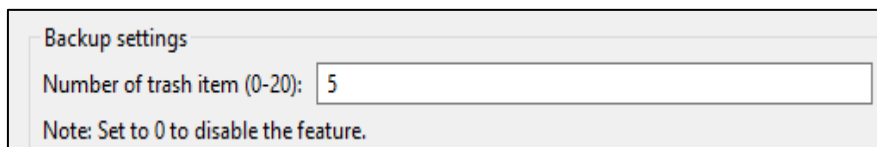


Figure 3-3 Configuration of "Backup settings" before update

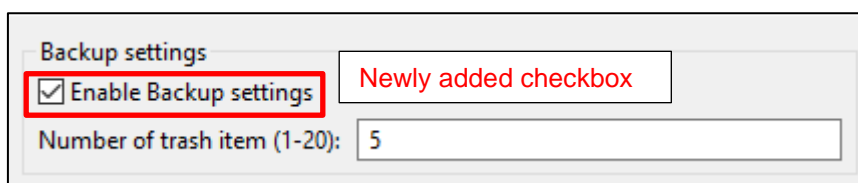


Figure 3-4 Configuration of "Backup settings" after update"

3.2.3 Improve BCDF feature to update the feature configuration setting for components that were already added

In previous versions, feature configuration setting cannot be updated from the Board page if the component is already added by another feature or added from the Component page.

From Smart Configurator for RX V2.18.0, Board page supports a new "Apply" action for users to update the feature configuration setting for components that were already added.

3.2.4 Improve the generated code in the alarm function of the RTC component

Starting from Smart Configurator for RX V2.18.0, the generated code of the RTC component has been updated to follow the flowchart in the hardware user manual.

- The following code for waiting AIE bit to become 1 has been added after enabling the RTC alarm interrupt.

```
while (RTC.RCR1.BIT1.AIE != 1U) {  
    /* Wait for the register modification to complete */  
}
```

- The following code for clearing the IR flag of ICU alarm interrupt has been added after disabling the alarm interrupt request.

```
/* Disable RTC ALARM interrupt */  
RTC.RCR1.BIT.AIE = 0U;  
while (RTC.RCR1.BIT.AIE != 0U){  
    /* Wait for the register modification to complete */  
}  
/* Clear IR flag of ICU ALARM interrupt */  
IR (RTC, ALM) = 0U;
```

3.2.5 Improve the GUI in SCI Asynchronous Mode component

Starting from Smart Configurator for RX V2.18.0, when using the RSCI resource in SCI Asynchronous Mode component in RX660 devices of 100, 80, 64, or 48 pin package, “Use CTS and RTS functions at the same time” checkbox has been added inside the GUI to allow RTS and CTS functions to be used at the same time.

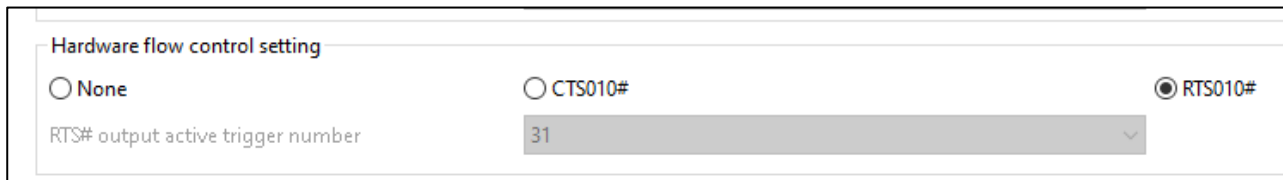


Figure 3-5 GUI of Hardware flow control setting before update

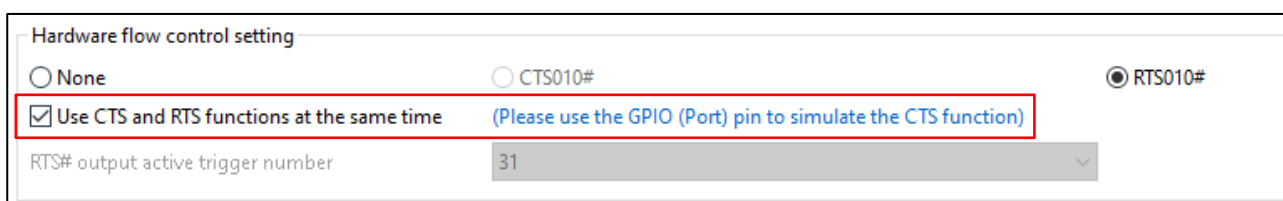


Figure 3-6 GUI of Hardware flow control setting after update

3.2.6 Improve the include path of generation location path

From Smart Configurator for RX Plug-in in e² studio 2023-07, user's self-defined "generated location" path (example: "\${workspace_loc}/\${ProjName}/src/smc_gen/test") on the "Overview" page will be added to the include path list of the toolchain after code generation.

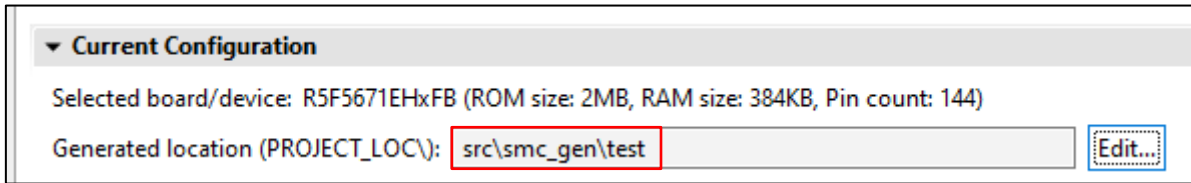


Figure 3-7 User's self-defined "generated location" path on Overview page

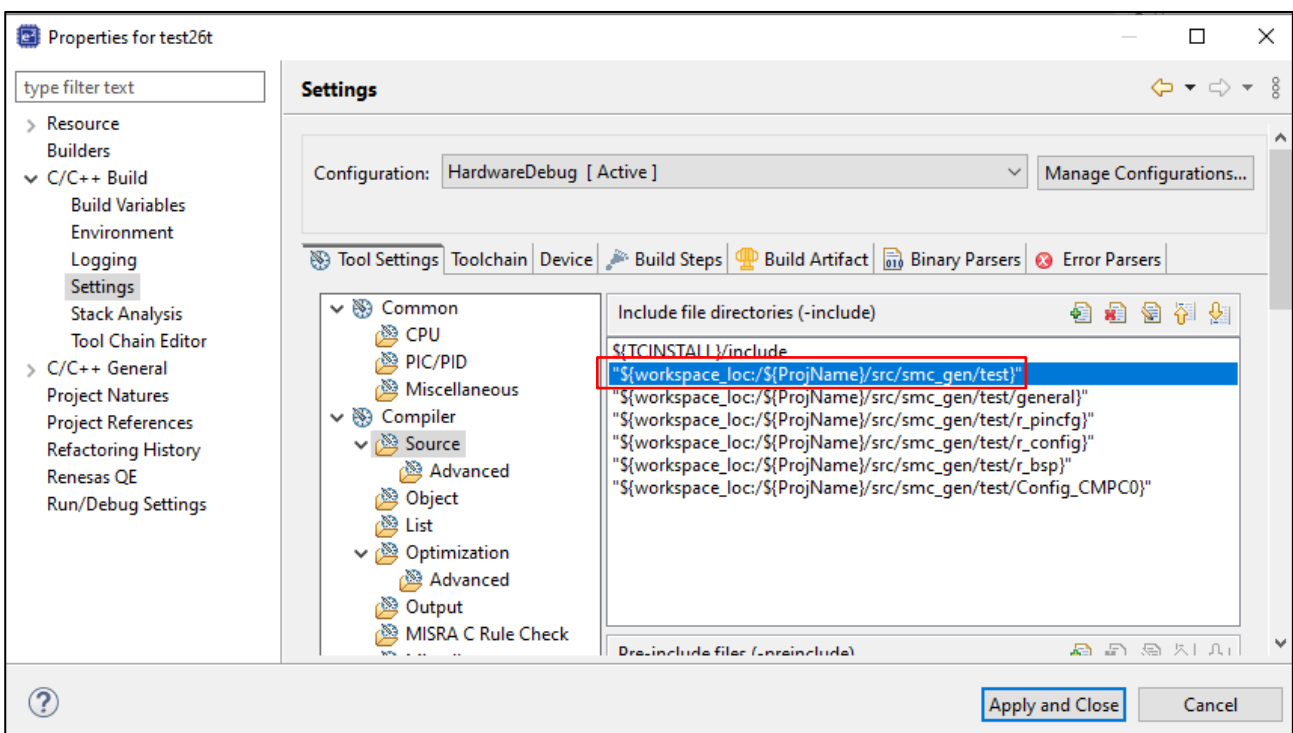


Figure 3-8 Include path list inside the toolchain

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
Sep. 1, 2017	R20TS0198	1. When using the I2C bus interface in slave mode https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx	RX130, RX64M, RX651, RX65N	V1.3.0
Apr. 1, 2018	R20TS0294	1. When using the bus for peripheral functions https://www.renesas.com/document/tnn/notes-cs-smart-configurator-rx-e-studio-smart-configurator-plug	RX230, RX231	V1.4.0
Oct. 01, 2018	R20TS0351	1. Setting TPU0 channel of PWM Mode Timer https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-0	RX65N, RX651, RX64M	V1.5.0
Feb.01, 2019	R20TS0401	1. Point for caution when using the GTIOcnm pin (n = 0 to 9, m = A, B) of the general PWM timer (GPTW) as a hardware source https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-1	RX66T	V2.1.0
Apr.16, 2019	R20TS0425	1. When using the I2C bus interface in master mode https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-2	RX110, RX111, RX113, RX130, RX230, RX231, RX23T, RX24T, RX24U, RX64M, RX651, RX65N, RX71M	V2.2.0
Jun.01, 2019	R20TS0434	1. When using self-diagnosis function of 12-bit A/D converter in Single Scan Mode 2. When using Serial Peripheral Interface clock synchronous mode in slave transmit 3. When using I2C Bus Interface with Fast-mode Plus enabled https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-3	RX230, RX231, RX66T, RX72T, RX64M, RX651, RX65N, RX71M	V2.2.0

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Jun.16, 2019	R20TS0436	1. When using general PWM timer https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-4	RX66T, RX72T	V2.2.0
Aug.01, 2019	R20TS0466	1. When using the NACK reception transfer suspension function on the I ² C bus interface https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-5	RX110, RX111, RX113, RX130, RX230, RX231, RX23T, RX24T, RX24U, RX64M, RX651, RX65N, RX66T, RX71M, RX72M, RX72T	V2.3.0
Sep.16, 2019	R20TS0477	1. When Using the Automatic Adjustment Function for Time Error Adjustment on the Realtime Clock https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-6	RX110, RX111, RX113, RX130, RX230, RX231, RX64M, RX651, RX65N	V2.4.0
Dec.16, 2019	R20TS0522	1. When using temperature sensor output or internal reference voltage for comparison function on S12AD components (Single Scan Mode, Group Scan Mode and Continuous Scan Mode) 2. When using calendar mode API to set counter value on RTC component 3. When using window B for comparison function on S12AD Continuous Scan Mode component 4. When using double trigger mode on S12AD Single Scan Mode component https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-7	RX64M, RX651, RX65N, RX66T, RX71M, RX72M, RX72T	V2.4.0
Feb. 01, 2020	R20TS0546	1. When using the PLL frequency synthesizer of the clock https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-8	RX64M, RX651, RX65N, RX66T, RX71M, RX72T	V2.5.0

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Mar. 16, 2020	R20TS0555	<ol style="list-style-type: none"> When using the TGIC7 and TGID7 interrupts in Normal Mode Timer or PWM Mode Timer When creating a project with RX24T 64-pin FK packages When using compare level of AN109 in Single Scan Mode S12AD https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-9	RX24T, RX24U, RX71M	V2.5.0
Apr.03, 2020	TN-RX*-A0222	Errata to RX72N Group User's Manual: Hardware Rev.1.00 https://www.renesas.com/document/tcu/errata-rx72n-group-users-manual-hardware-rev100	RX72N	V2.5.0
May.16, 2020	R20TS0579	<ol style="list-style-type: none"> When using Stop API in Continuous Scan Mode DSAD and Single Scan Mode DSAD components https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-10	RX23E-A	V2.6.0
Jun.16, 2020	R20TS0591	<ol style="list-style-type: none"> When using Data Transfer Controller (DTC) component and making configuration for its vector base address When using SCI/SCIF Asynchronous Mode component and making configuration for its bit-rate When using AN007 or AN107 as analog input pins in S12AD components https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-11	RX230, RX231, RX651, RX65N, RX66T, RX72T	V2.6.0
Aug. 21, 2020	TN-RX*-A0234A/E	Errata to the RX113 Group User's Manual: Hardware Rev.1.10 https://www.renesas.com/document/tcu/errata-rx113-group-users-manual-hardware	RX113	V2.8.0
Sep. 01, 2020	R20TS0611	When using PWM Mode component and making configuration with MTU channel 1 and 2 https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-13	RX13T, RX23T, RX24T, RX24U	V2.7.0

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Sep. 24, 2020	TN-RX*-A0235B/E	Notes on the Transmit Data Empty Interrupt When the FIFO is in Use with the Serial Communications Interface (SCI) https://www.renesas.com/document/tcu/notes-transmit-data-empty-interrupt-when-fifo-use-serial-communications-interface-sci	RX651, RX65N, RX66N, RX66T, RX72M, RX72N, RX72T	V2.7.0
Oct. 01, 2020	R20TS0623	1. When using “r_sci_rx” component and making pin configurations for RXD and TXD 2. When using “r_sci_rx” component, duplicate SCI11 channels are displayed in the Components configuration panel https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-12	RX651, RX65N, RX66N, RX72M, RX72N	V2.7.0
Dec. 01, 2020	R20TS0638	1. Note on setting timer operation period in Motor component. 2. When loading project with port configuration created in V2.5.0 or version before into V2.6.0 version onwards https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-14	RX13T, RX23T, RX24T, RX24U, RX651, RX65N, RX66T, RX72T, RX72M	V2.8.0
Aug. 29, 2017	TN-RX*-A180A/E	Restriction for the PH7/XCIN Pin https://www.renesas.com/document/tcu/restriction-ph7xcin-pin	RX110, RX111, RX113	V2.9.1
May. 16, 2021	R20TS0696	When using PORT component and configuring PORTC multiplexed pins as input https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-15	RX130, RX230, RX231	V2.10.0
Aug. 01, 2021	R20TS0735	When using Port Output Enable (POE) component and configuring MTU pins as high impedance https://www.renesas.com/sg/zh/document/tnn/notes-e2-studio-smart-configurator-plug-smart-configurator-rx	RX23W, RX24T, RX64M, RX651, RX71M, RX72M	V2.11.0

Issue date	Document No.	Description	Applicable MCUs	Fixed version
Nov. 16, 2021	R20TS0770	When using Port component and configuring port pins' driving ability as high drive output https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-16	RX651, RX65N	V2.12.0
Mar. 01, 2022	R20TS0820	1. When importing existing C++ project and updating BSP component version to 7.00 onwards 2. When build or clean e ² studio Smart Configurator project 3. When using AN107 in S12AD Continuous Scan Mode component https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-17	RX110, RX111, RX113, RX130, RX13T, RX140, RX230, RX231, RX23E-A, RX23T, RX23W, RX24T, RX24U, RX651, RX65N, RX66N, RX66T, RX671, RX72M, RX72N, RX72T, RX64M, RX71M	V2.13.0
Feb. 01, 2023	R20TS0920	When using DA component to provide reference input voltage for Comparator component https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-18	RX13T, RX23T, RX24T, RX24U, RX66T, RX72T	V2.17.0
Mar. 16, 2023	R20TS0931	When using S12AD Continuous Scan Mode component and making configuration for channel AN117 to AN119 https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-19	RX651/N	V2.17.0

5. Points for Limitation

This section describes points for limitation regarding the Smart Configurator for RX V2.18.0. Regarding to FIT component driver limitation, please refer to its document generated out after code generation.

5.1 List of Limitation

Table 5-1 List of limitations (RX100, RX200 Family)

√: Applicable, -: Not Applicable

No	Description	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
1	Note on general I/O port direction issue on MCU package view when using Port Component	√	√	√	√	√	√	√	√	√	√	√	√	√	
2	Note on the resource tree in the FIT component GUI configuration	√	√	√	√	√	√	√	√	√	√	√	√	√	
3	Note on address pin when using external bus	-	-	-	-	-	√	-	-	-	√	-	-	-	
4	Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain	√	√	√	-	√	√	√	√	-	√	√	√	√	
5	Note on the redundant “Run” menu in the toolbar of Standalone Smart Configurator	√	√	√	√	√	√	√	√	√	√	√	√	√	

Table 5-2 List of Limitation (RX600, RX700 family)

√: Applicable, -: Not Applicable

No	Description	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
1	Note on the general I/O port direction issue on MCU package view when using Port Component	√	√	√	√	√	√	√	√	√	√	
2	Note on the resource tree in the FIT component GUI configuration	√	√	√	√	√	√	√	√	√	√	
3	Note on address pin when using external bus	√	√	√	√	√	√	√	√	√	√	
4	Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain	√	√	-	√	-	√	√	-	-	√	
5	Note on the redundant “Run” menu in the toolbar of Standalone Smart Configurator	√	√	√	√	√	√	√	√	√	√	

5.2 Details of Limitation

5.2.1 Note on the general I/O port direction issue on MCU package view when using Port Component

When adding two configurations for Port component and set different direction for the same port pin in these two configurations, e.g., set P14 as output in 1st configuration while P14 as input in the 2nd configuration, after that remove the 2nd configuration, but now the P14 direction is marked as 'I' on the MCU package view for 1st configuration.

5.2.2 Note on the resource tree in the FIT component GUI configuration

When configuring the FIT component, the resource tree is still visible even there is no pins under it, for such case it will be hidden from next release.

Property	Value
# RX FIFO threshold for channel 9	8
# RX FIFO threshold for channel 10	8
# RX FIFO threshold for channel 11	8
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
# Received data match function for chann	Not
Resources	
SCI	

Figure 5-1 Resource tree without any pin in FIT component GUI

5.2.3 Note on address bus when using external bus

When using Address/Data multiplexed bus in external bus, disable all unnecessary address output pin settings.

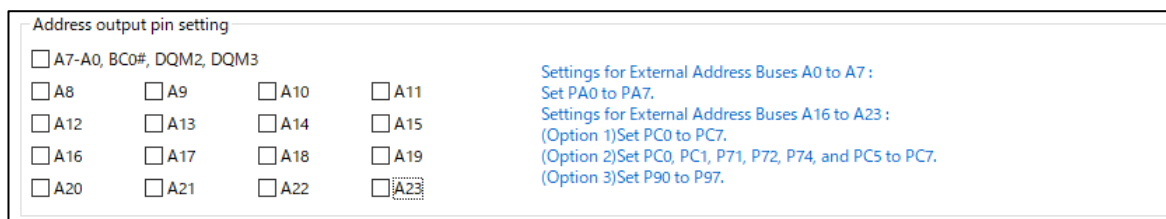


Figure 5-2 “Address output pin setting” value should be disabled

5.2.4 Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain

When using Data Transfer Controller component in Smart Configurator project that is using EWRX IAR tool chain, the following Overlaps build error might occur.

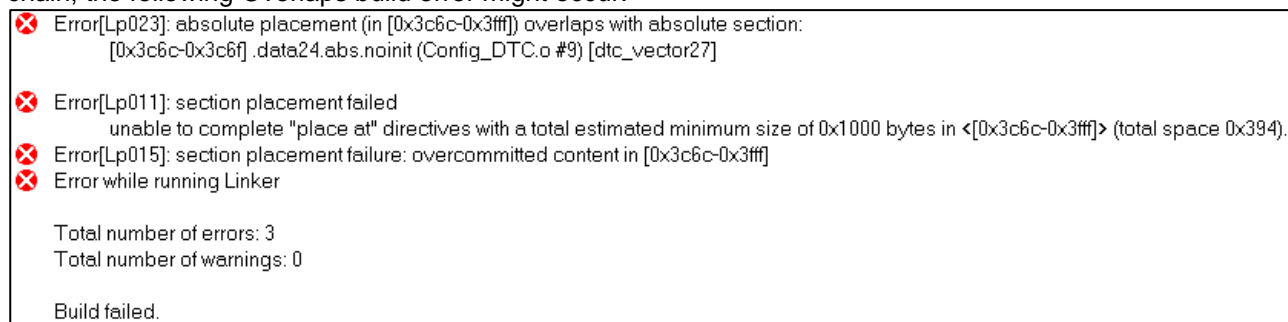
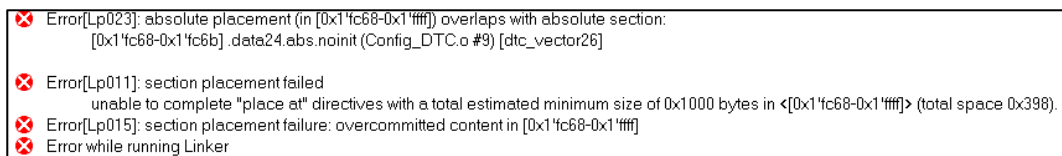


Figure 5-3 Build error when using Data Transfer Controller component

To solve the build error, please reconfigure the value of DTC vector base address in Smart Configurator GUI into the value that is out of the range value mentioned inside the build error message and smaller than the default value of DTC vector base address in 1-Kbyte units.

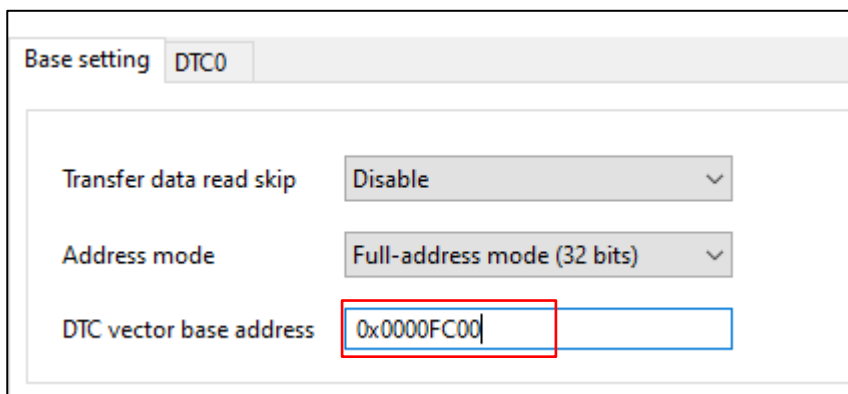
The following is an example on how to reconfigure the value of DTC vector base address of Data Transfer Controller component in RX671 device

- 1) Add Data Transfer Controller in Smart Configurator and generate code with default settings.
- 2) Import the project to IAR Workbench and build.
- 3) The following error is generated out when build the project in IAR Workbench.

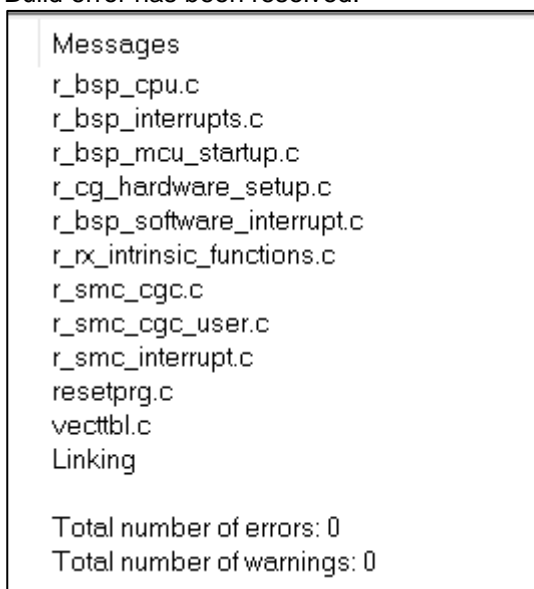


- 4) From the error message, the invalid range [0x1'fc68-0x1'ffff] will be shown at the console. Moreover, the valid input value of DTC vector base address must also be smaller than the default value.

- 5) Configure the value of DTC vector base address into "0x0000FC00"



- 6) Generate code and rebuild the project in IAR Workbench.
- 7) Build error has been resolved.



5.2.5 Note on the redundant “Run” menu in the toolbar of Standalone Smart Configurator

When using Standalone Smart Configurator, you may notice a redundant “Run” menu displayed in the toolbar if you have launched the Smart Configurator for RX V2.17.0 or an earlier version. Please ignore and do not use this “Run” menu.

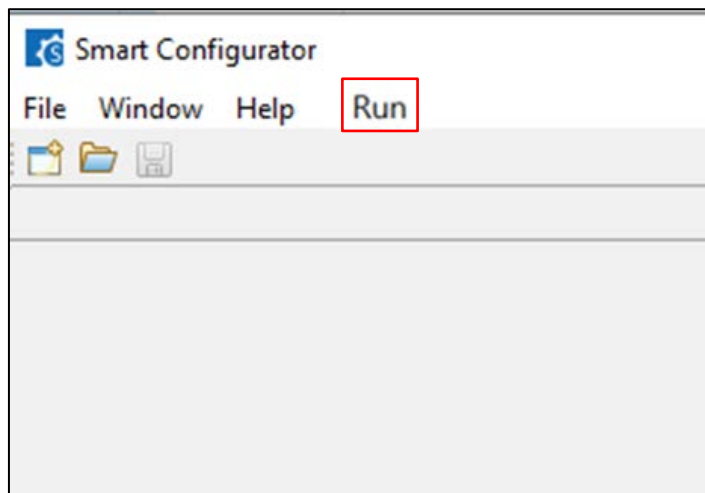


Figure 5-4 Redundant "Run" menu displayed in the toolbar

To remove the “Run” menu, please follow the steps below to reset the perspective.

- 1) Right click the icon  and click “Reset”.

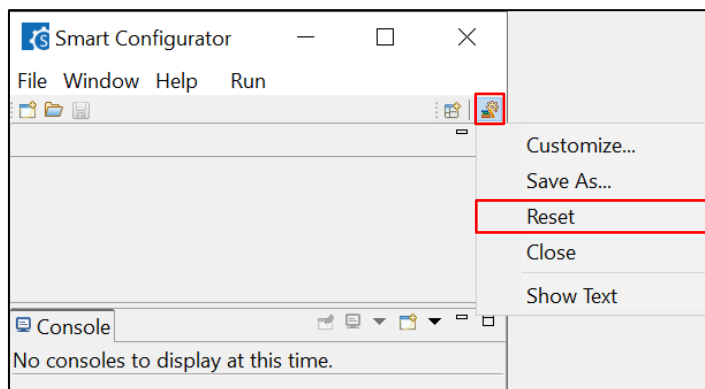


Figure 5-5 "Reset" menu

- 2) Click "Reset Perspective"

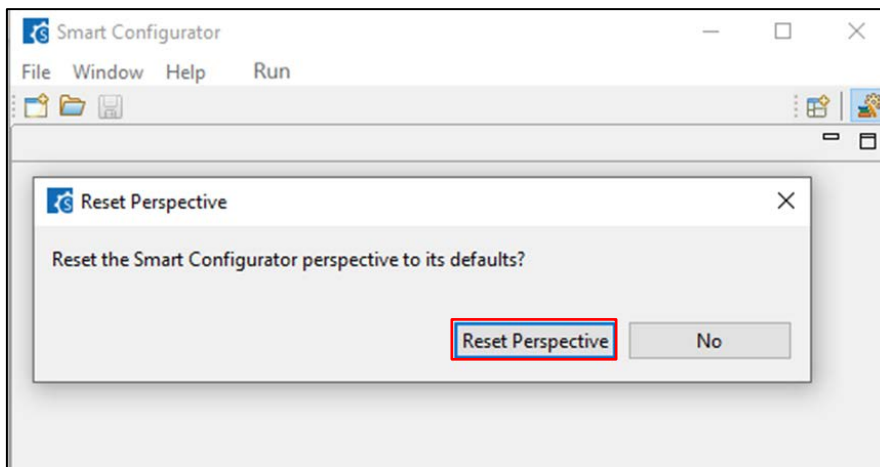


Figure 5-6 "Reset perspective" dialog

"Run" menu will be removed from the toolbar.



Figure 5-7 GUI of Smart Configurator after resetting the perspective

6. Points for Caution

This section describes points for caution regarding the Smart Configurator for RX V2.18.0. Regarding to FIT component driver caution, please refer to its document generated out after code generation.

6.1 List of Caution

Table 6-1 List of Caution (RX100, RX200 Family)

√: Applicable, -: Not Applicable

No	Description	RX110	RX111	RX113	RX130	RX13T	RX140	RX230, RX231	RX23E-A	RX23E-B	RX23T	RX23W	RX24T, RX24U	RX26T	Remarks
1	Note on configuring GPT interrupt	-	-	-	-	-	-	-	-	-	-	-	√	√	
2	Note on using only reception in SCI Clock Synchronous Mode	√	√	√	√	√	√	√	√	√	√	√	√	√	
3	Notes on using high transfer speed in SCIF Synchronous Mode	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	Note on device change functionality	√	√	√	√	√	√	√	√	√	√	√	√	√	
5	Note on using Smart Configurator for GCC project in e ² studio 7.4.0	√	√	√	√	√	-	√	√	√	√	-	√	√	
6	Note on using Data Transfer Controller	-	-	-	-	√	√	-	√	√	-	-	-	√	
7	Note on Ports setting when using S12AD components	√	-	√	√	-	√	-	-	-	-	√	-	-	
8	Note on section build warning when using FIT components	√	√	√	√	√	√	√	√	√	√	√	√	√	
9	Note on C++ project support in CS+	√	√	√	√	√	√	√	√	√	√	√	√	√	
10	Note on Installation directory	√	√	√	√	√	√	√	√	√	√	√	√	√	
11	Note on the build error of RTOS C++ project	√	√	√	√	√	√	√	√	√	√	√	√	√	
12	Note on the output of high impedance issue for TXDn pin	√	√	√	√	√	√	√	√	√	√	√	√	√	
13	Note on the include path update issue when renaming the component's configuration name	√	√	√	√	√	√	√	√	√	√	√	√	√	
14	Note on accessing "Release Notes" and "Tool News" URL from the help menu	√	√	√	√	√	√	√	√	√	√	√	√	√	
15	Note on the IPCF file naming change for IAR project	√	√	√	√	√	√	√	√	√	√	√	√	√	
16	Note on using user code protection feature	√	√	√	√	√	√	√	√	√	√	√	√	√	

Table 6-2 List of Caution (RX600, RX700 Family)

√: Applicable, -: Not Applicable

No	Description	RX64M	RX65N, RX651	RX66N	RX66T	RX660	RX671	RX71M	RX72M	RX72N	RX72T	Remarks
1	Note on configuring GPT interrupt	√	-	√	√	-	-	√	√	√	√	
2	Note on using only reception in SCI Clock Synchronous Mode	√	√	√	√	√	√	√	√	√	√	
3	Notes on using high transfer speed in SCIF Synchronous Mode	√	-	-	-	-	-	√	-	-	-	
4	Note on device change functionality	√	√	√	√	√	√	√	√	√	√	
5	Note on using Smart Configurator for GCC project in e ² studio 7.4.0	√	√	√	√	-	-	√	-	√	√	
6	Note on using Data Transfer Controller	-	√	√	-	√	√	-	√	√	-	
7	Note on Ports setting when using S12AD components	√	√	√	-	-	√	√	√	√	-	
8	Note on section build warning when using FIT components	√	√	√	√	√	√	√	√	√	√	
9	Note on C++ project support in CS+	√	√	√	√	√	√	√	√	√	√	
10	Note on Installation directory	√	√	√	√	√	√	√	√	√	√	
11	Note on the build error of existing RTOS C++ project	√	√	√	√	-	√	√	√	√	√	
12	Note on the output of high impedance issue for TXDn pin	√	√	√	√	√	√	√	√	√	√	
13	Note on the include path update issue when renaming the component's configuration name	√	√	√	√	√	√	√	√	√	√	
14	Note on accessing "Release Notes" and "Tool News" URL from the help menu	√	√	√	√	√	√	√	√	√	√	
15	Note on the IPCF file naming change for IAR project	√	√	√	√	√	√	√	√	√	√	
16	Note on using user code protection feature	√	√	√	√	√	√	√	√	√	√	

6.2 Details of Caution

6.2.1 Note on configuring GPT interrupts

The GPT interrupts are not specified as the Software Configurable Interrupt in the initial state even after the GPT interrupts are configured by GPT component. To specify GPT interrupts as Software Configurable Interrupt source, release unused Software Configurable interrupt source on the Interrupt sheet and allocate GPT interrupts instead.

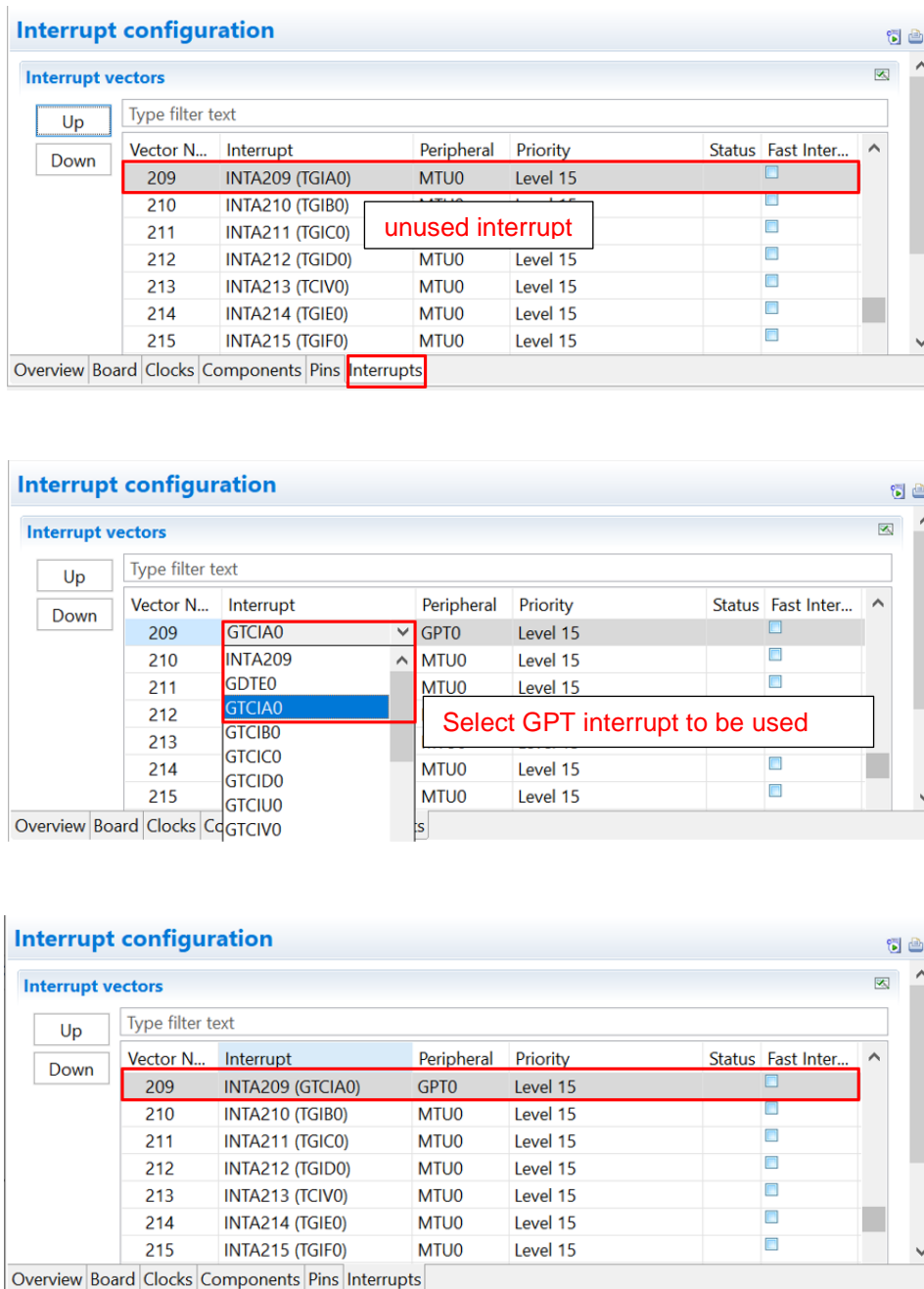


Figure 6-1 GPT interrupt vector number assignment

6.2.2 Note on using only reception in SCI Clock Synchronous Mode

In SCI Clock Synchronous Mode using internal clock, if only reception is enabled in high communication speed, extra clocks are generated even though reception has been completed.

This is due to the delay in disabling RE to stop the clock after the desired number of data is received.

To prevent this issue, select Transmission/Reception work mode when using Smart Configurator. Use “R_<Configuration Name>_Serial_Send_Receive” function instead of “R_<Configuration Name>_Serial_Receive”. The same number of data for tx_num and rx_num should be specified.

Disable TXDn pin in Smart Configurator Pins page and send dummy data if transmission is not required.

There will be warnings when TXDn pin is disabled. These warnings can be ignored as TXDn pin is not intended to be used originally.

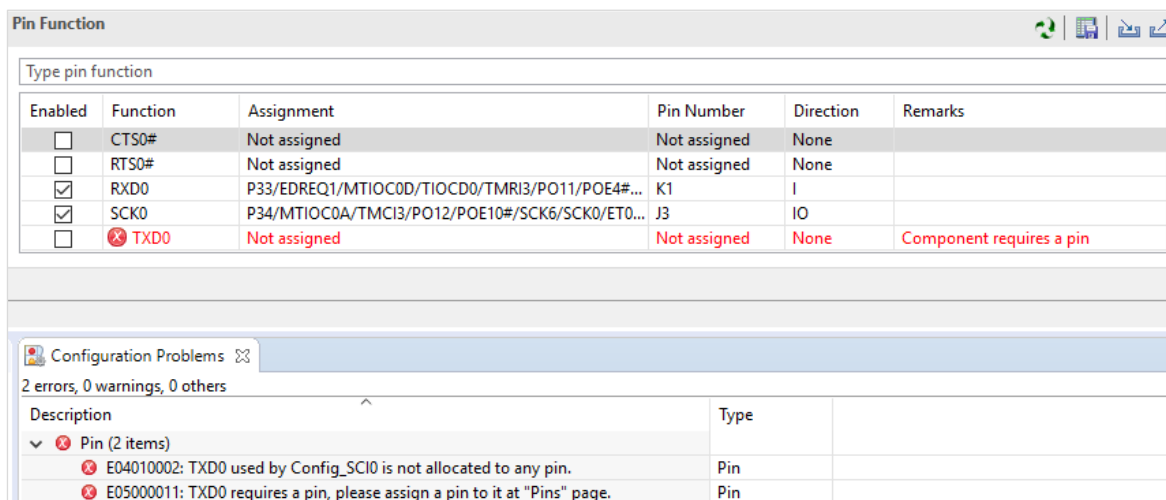


Figure 6-2 Ignore warnings when TXDn pin is disabled (Example with TXD0)

6.2.3 Note on using high transfer speed in SCIF Synchronous Mode

If the number of reception data specified for the API (R_<Configuration Name>_Serial_Receive or R_<Configuration Name>_Serial_Send_Receive) and reception FIFO threshold specified on GUI do not satisfy the formula below:

$$(\text{Reception Data Size}) = n * (\text{Reception FIFO threshold}) \quad (n=1,2,3,\dots)$$

extra clock generation may occur after the desired number of data is received in high communication speed when using internal clock.

To prevent this issue, specify the reception data size and reception FIFO threshold that satisfy the formula.

6.2.4 Note on device change functionality

Save project settings before performing change device operation. After change device, perform these operations:

1. Visual check on Components window and Configuration Problems window. Resolve errors and conflicts if there is any.
2. Check each component and convert settings.
3. Re-generate codes.

6.2.5 Note on using Smart Configurator for GCC project in e2 studio 7.4.0

When using default options to create new "GCC for Renesas RX Executable Project" with Smart Configurator in e2 studio 7.4.0, build error occurs.

```
C:\example\src\smc_gen\r_bsp\mcu/all\r_bsp_common.h:55:24:
fatal error: stdbool.h: No such file or directory
```

As workaround, use e2 studio 7.5.0 to create new "GCC for Renesas RX Executable Project" with Smart Configurator.

6.2.6 Note on using Data Transfer Controller

Smart Configurator does not support sequence transfer, write-back skip, write-skip disable and displacement addition features.

6.2.7 Note on Ports setting when using S12AD components

Some pins cannot be configured as output pins when S12AD components (Single Scan Mode, Continuous Scan Mode and Group Scan Mode) are used. For more information, refer to User's Manual: Hardware of the affected groups, "12-Bit A/D Converter" chapter, "Pin Setting When Using the 12-bit A/D Converter" usage note. From SC for RX 2.4.0, this note has been highlighted on the top GUI of S12AD components.

Device groups	Port pins
RX110, RX113	P40 to P44, P46
RX113	P40 to P44, P46 P90 to P92
RX130, RX140, RX23W	P40 to P47
RX64M, RX651, RX65N, RX66N, RX71M, RX72M, RX72N	P00 to P02, P03, P05, P07 P40 to P47 P90 to P93 PD0 to PD7 PE0 to PE7
RX671	P00 to P02, P03, P05, P07 P40 to P47 P90 PD0 to PD7 PE0, PE1

6.2.8 Note on section build warning when using FIT components

When using FIT components (e.g. r_ether_rx) with section settings, these section settings will be added automatically into IDE C/C++ builder setting, but these section settings will not automatically removed from the C/C++ builder setting when these FIT components are deleted from SC, thus there are build warnings for not finding section declaration when execute build operation after these FIT components are removed, please ignore these build warnings.

6.2.9 Note on C++ project support in CS+

When using Smart Configurator for C++ project application in CS+, please be noted to manually prepare the following content in the main.cpp generated out by these IDEs to make it work properly with Smart Configurator source codes.

- CS+: please manually add the following highlighted one line of code into main.cpp

```
#ifdef __cplusplus
// #include <ios> // Remove the comment when you use ios
// _SINT ios_base::init::init_cnt; // Remove the comment when you use ios
#endif

void main(void);
#ifdef __cplusplus
extern "C" {
#include "r_smc_entry.h"
void abort(void);
}
#endif

void main(void)
{
}

#ifdef __cplusplus
void abort(void)
{
}
#endif
```

6.2.10 Note on Installation directory

When installing Smart Configurator, you may get an error message "The specified path is too long" if the installation file path is longer than the maximum length permitted by Windows. The suggested way is to re-install the CS+ into its default path (C:\Program Files (x86)\Renesas Electronics\ or a folder whose paths' length is less than 65 characters, then install Smart Configurator again.

6.2.11 Note on the build error of existing RTOS C++ project

When building existing RTOS C++ CCRX project (FreeRTOS & Azure RTOS) in e² studio, there will be a build error saying "E0562310: Undefined external symbol "_abort" referenced in "error"" in the output console, these existing projects were created by Smart Configurator for RX V2.12.0 and before version while BSP version was updated to V7.00. To resolve this build error, please add the "abort" function manually into main program file.

e.g. Add the "abort" function for FreeRTOS C++ CCRX project

```
#include "FreeRTOS.h"
#include "task.h"

void main_task(void *pvParameters)
{
    /* Create all other application tasks here */

    while(1);

    vTaskDelete(NULL);
}

void abort (void)
{
}
```

6.2.12 Note on the output of high impedance issue for TXDn pin

When using the serial components, the SCR.TE bit is set to 1 after changing the pin function to TXDn which will cause the output of TXDn pin becomes high impedance. To fix this issue, SCI/SCIF Asynchronous Mode component has followed the UM suggestion (set the TE bit to 1 before changing the pin function to "TXDn". Change the pin function to "general-purpose I/O port, output" before setting the TE bit to 0) and updated the generated codes from Smart Configurator for RX V2.14.0. For the other serial components as below, the generated codes are not updated to follow the UM suggestion because the high impedance time is quite short, there is no impact to these modes' communications.

- SCI/SCIF Clock Synchronous Mode
- Smart Card Interface Mode
- SPI Clock Synchronous Mode (SCI channels)

6.2.13 Note on the include path update issue when renaming the component's configuration name

When renaming the added component's configuration in e² studio Smart Configurator project that has self-defined include path setting for any folder or file, include path setting for that folder or file will keep the old name setting after code generation. This will cause build error when compiling the newly generated codes so please manually update the include path.

The folder or file which has self-defined include path setting can be recognized by checking the overlay icon (📁) on that folder or file. Below is an example on how to handle the include path update after renaming Compare Match Timer component configuration.

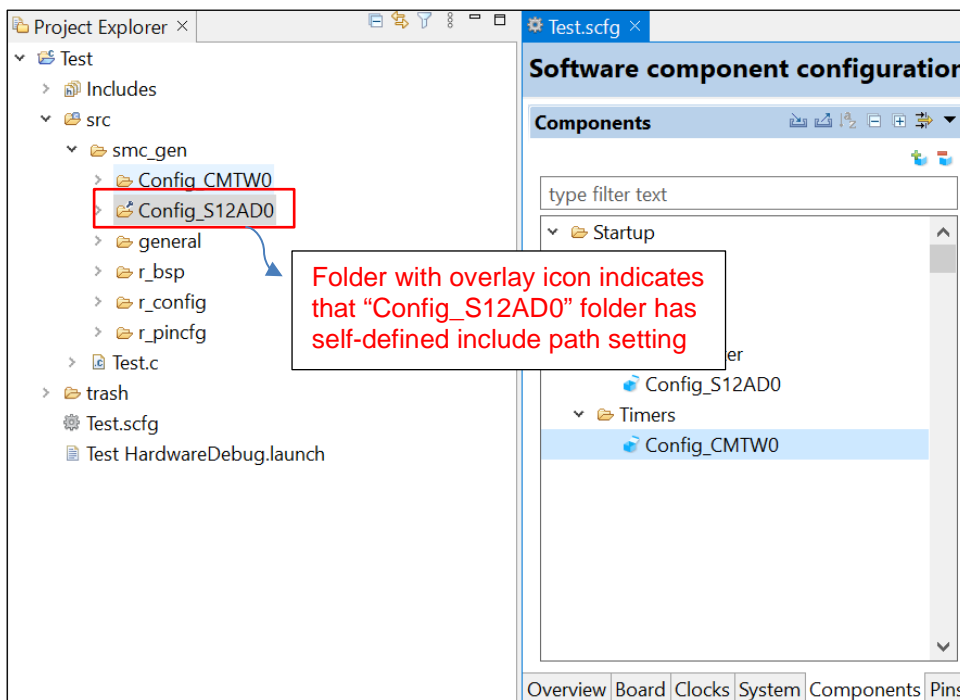


Figure 6-3 Compare Match Timer component configuration before renaming

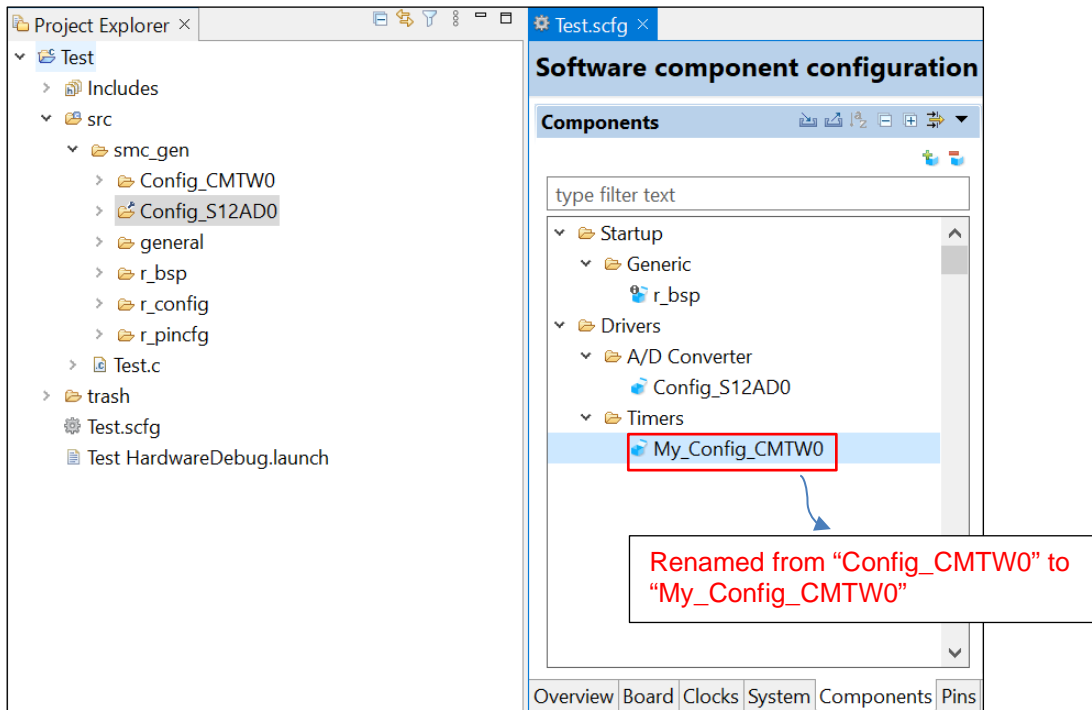


Figure 6-4 The Compare Match Timer component configuration after renaming

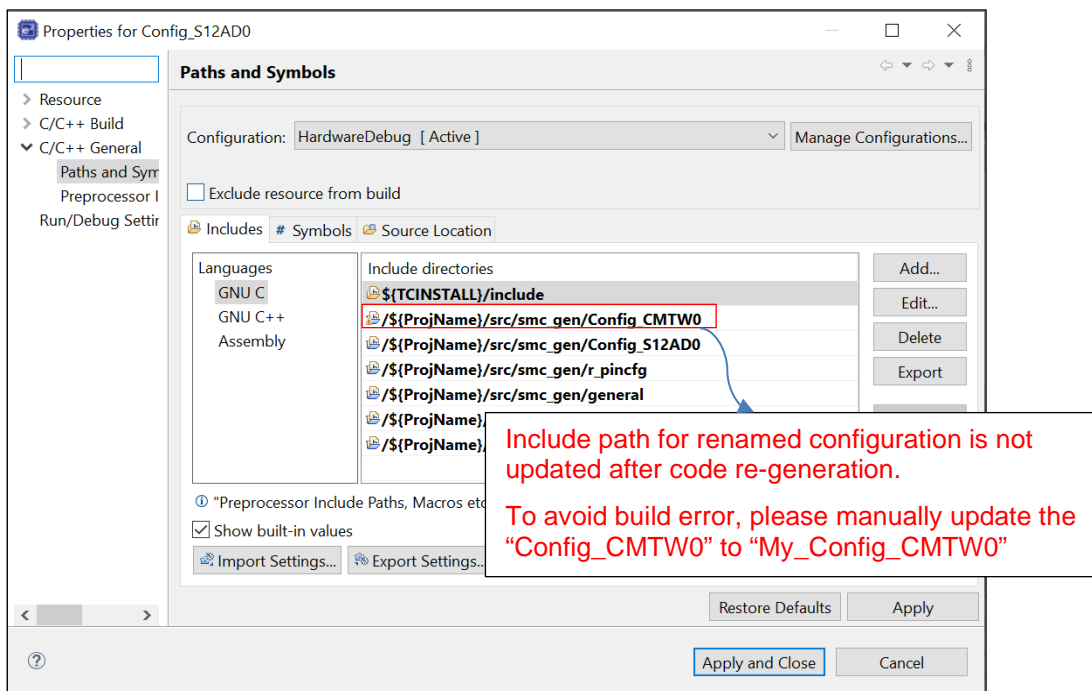


Figure 6-5 Include path setting for the “Config_S12AD0” configuration

6.2.14 Note on accessing “Release Notes” and “Tool News” URL from the help menu

For Smart Configurator for RX V2.15.0 or before version, “Release Notes” and “Tools News” in the help menu cannot access the correct URL. This issue has been fixed from this version.

Please access the URL below directly for Smart Configurator for RX V2.15.0 or before version.

Release Notes: <https://www.renesas.com/rx-smart-configurator-release-note>

Tool News: <https://www.renesas.com/rx-smart-configurator-tn-notes>

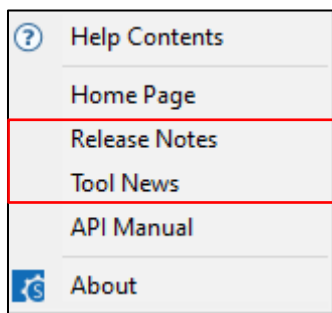


Figure 6-6 "Release Notes" and "Tool News" in help menu

6.2.15 Note on the IPCF file naming change for IAR project

From Smart Configurator for RX V2.15.0 onwards, IPCF file name has been updated from “projectname.ipcf” to “buildinfo.ipcf”, thus for existing IAR project which is using “projectname.ipcf”, please register the new IPCF file “buildinfo.ipcf” file into IAR EWRX workbench via the “Add project connection” menu to restore the connection between Smart Configurator and IAR EWRX workbench, otherwise there is no update for the generated files in the IAR EWRX workbench when changing GUI setting in Smart Configurator and then generating codes.

6.2.16 Note on using user code protection feature

From Smart Configurator for RX V2.16.0 onwards, user code protection feature will be supported for all Code Generation components. Please use the following specific tags to add user code when using the user code protection feature. If the specific tags do not match exactly, inserted user code will not be protected after the code generation.

```
/* Start user code */
```

User code can be added between the specific tags

```
/* End user code */
```

The user code protection feature will only be supported on the files that are generated by the Code Generation component. Hence, the user code protection feature is not available for non-Code Generation components.

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.

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
6. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The intended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.
 - "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
 - "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user's manual or other Renesas Electronics document.
7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION ("Vulnerability Issues"). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
8. When using Renesas Electronics products, refer to the latest product information (data sheets, user's manuals, application notes, "General Notes for Handling and Using Semiconductor Devices" in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.

(Note2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

Corporate Headquarters

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

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
www.renesas.com/contact/.