

# Smart Configurator for RX Plug-in in e<sup>2</sup> studio 2024-01

## Smart Configurator for RX V2.20.0

### 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.

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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.

Smart Configurator for RX V2.20.0 is equivalent to Smart Configurator for RX plug-in in e<sup>2</sup> studio 2024-01.

### 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 e<sup>2</sup> 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 V2.20.0.

**Table 2-1 Support Devices**

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

Table 2-2 Support Devices

| Group<br>(HW Manual number)        | PIN        | Device name   |
|------------------------------------|------------|---|
| RX231 Group<br>(R01UH0496EJ0110)   | 48pin      | R5F52315AxNE, R5F52316AxNE, R5F52317AxNE, R5F52318AxNE,<br>R5F52315CxNE, R5F52316CxNE, R5F52317BxNE, R5F52318BxNE,<br>R5F52315AxFL, R5F52316AxFL, R5F52317AxFL, R5F52318AxFL,<br>R5F52315CxFL, R5F52316CxFL, R5F52317BxFL, R5F52318BxFL   |
|                                    | 64pin      | R5F52315AxND, R5F52316AxND, R5F52317AxND, R5F52318AxND,<br>R5F52315CxND, R5F52316CxND, R5F52317BxND, R5F52318BxND,<br>R5F52315AxFM, R5F52316AxFM, R5F52317AxFM, R5F52318AxFM,<br>R5F52315CxFM, R5F52316CxFM, R5F52317BxFM, R5F52318BxFM,<br>R5F52315CxLF, R5F52316CxLF  |
|                                    | 100pin     | R5F52315AxLA, R5F52316AxLA, R5F52317AxLA, R5F52318AxLA,<br>R5F52315CxLA, R5F52316CxLA, R5F52317BxLA, R5F52318BxLA,<br>R5F52315AxFP, R5F52316AxFP, R5F52317AxFP, R5F52318AxFP,<br>R5F52315CxFP, R5F52316CxFP, R5F52317BxFP, R5F52318BxFP   |
| RX23E-A Group<br>(R01UH0801EJ0100) | 40pin      | R5F523E5AxNF, R5F523E6AxNF, R5F523E5SxNF, R5F523E6SxNF  |
|                                    | 48pin      | R5F523E5AxFL, R5F523E6AxFL, R5F523E5SxFL, R5F523E6SxFL  |
| RX23T Group<br>(R01UH0520EJ0110)   | 48pin      | R5F523T3AxFL, R5F523T5AxFL  |
|                                    | 52pin      | R5F523T5AxFD, R5F523T3AxFD  |
|                                    | 64pin      | R5F523T5AxFM, R5F523T3AxFM  |
| RX23W Group<br>(R01UH0823EJ0100)   | 56pin      | R5F523W8BxNG, R5F523W8AxNG, R5F523W7BxNG, R5F523W7AxNG  |
|                                    | 83pin      | R5F523W8CxLN, R5F523W8DxLN  |
|                                    | 85pin      | R5F523W7AxBL, R5F523W8AxBL, R5F523W8BxBL, R5F523W7BxBL  |
| RX24T Group<br>(R01UH0576EJ0200)   | 64pin      | R5F524TAAxFM, R5F524T8AxFM, R5F524TAAxFK, R5F524T8AxFK  |
|                                    | 80pin      | R5F524TAAxFF, R5F524T8AxFF, R5F524TAAxFN, R5F524T8AxFN  |
|                                    | 100pin     | R5F524TCxAFP, R5F524T8AxFP, R5F524TBxAFP, R5F524TEAxFP,<br>R5F524TAAxFP   |
| RX24U Group<br>(R01UH0658EJ0100)   | 100pin     | R5F524UEAxFP, R5F524UCAxFP, R5F524UBAxFP  |
|                                    | 144pin     | R5F524UEAxFB, R5F524UBAxFB, R5F524UCAxFB  |
| RX64M Group<br>(R01UH0377EJ0110)   | 100pin     | R5F564MFCxFP, R5F564MFCxLJ, R5F564MFDxFP, R5F564MFDxLJ,<br>R5F564MGCxFP, R5F564MGCxLJ, R5F564MGDxFP, R5F564MGDxLJ,<br>R5F564MJCxFP, R5F564MJCxLJ, R5F564MJDxFP, R5F564MJDxLJ,<br>R5F564MLCxFP, R5F564MLCxLJ, R5F564MLDxFP, R5F564MLDxLJ   |
|                                    | 144/145pin | R5F564MFCxFB, R5F564MFCxLK, R5F564MFDxFB, R5F564MFDxLK,<br>R5F564MGCxFB, R5F564MGCxLK, R5F564MGDxFB, R5F564MGDxLK,<br>R5F564MJCxFB, R5F564MJCxLK, R5F564MJDxFB, R5F564MJDxLK,<br>R5F564MLCxFB, R5F564MLCxLK, R5F564MLDxFB, R5F564MLDxLK   |
|                                    | 176/177pin | R5F564MFDxFC, R5F564MFDxBG, R5F564MFDxLC, R5F564MFCxFC,<br>R5F564MFCxBG, R5F564MFCxLC, R5F564MGDxFC, R5F564MGDxBG,<br>R5F564MGDxLC, R5F564MGCxFC, R5F564MGCxBG, R5F564MGCxLC,<br>R5F564MJDxFC, R5F564MJDxBG, R5F564MJDxLC, R5F564MJCxFC,<br>R5F564MJCxBG, R5F564MJCxLC, R5F564MLDxFC, R5F564MLDxBG,<br>R5F564MLDxLC, R5F564MLCxFC, R5F564MLCxBG, R5F564MLCxLC |

Table 2-3 Support Devices

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

Table 2-4 Support Devices

| Group<br>(HW Manual number)      | PIN        | Device name   |
|----------------------------------|------------|---|
| RX66T Group<br>(R01UH0749EJ0120) | 48pin      | R5F566TABxFL, R5F566TAFxFL, R5F566TEBxFL, R5F566TEFxFL  |
|                                  | 64pin      | R5F566TAAxFM, R5F566TAExFM, R5F566TEAxFM, R5F566TEExFM  |
|                                  | 80pin      | R5F566TAAxFF, R5F566TAExFF, R5F566TEAxFF, R5F566TEExFF,<br>R5F566TAAxFN, R5F566TAExFN, R5F566TEAxFN, R5F566TEExFN   |
|                                  | 100pin     | R5F566TKCxFP, R5F566TAExFP, R5F566TFFxFP, R5F566TFCxFP,<br>R5F566TFExFP, R5F566TFBxFP, R5F566TFAxFP, R5F566TABxFP,<br>R5F566TAFxFP, R5F566TEFxFP, R5F566TKFxFP, R5F566TKGxFP,<br>R5F566TKAxFP, R5F566TKExFP, R5F566TKBxFP, R5F566TEBxFP,<br>R5F566TEExFP, R5F566TEAxFP, R5F566TAAxFP, R5F566TFGxFP  |
|                                  | 112pin     | R5F566TAAxFH, R5F566TAExFH, R5F566TEExFH, R5F566TEAxFH  |
|                                  | 144pin     | R5F566TKCxFB, R5F566TFGxFB, R5F566TFCxFB, R5F566TKGxFB  |
| RX71M Group<br>(R01UH0493EJ0110) | 100pin     | R5F571MLCxFP, R5F571MLDxFP, R5F571MLGxFP, R5F571MLHxFP,<br>R5F571MJCxFP, R5F571MJDxFP, R5F571MJGxFP, R5F571MJHxFP,<br>R5F571MGCxFP, R5F571MGDxFP, R5F571MGGxFP, R5F571MGHxFP,<br>R5F571MFCxFP, R5F571MFDxFP, R5F571MFGxFP, R5F571MFHxFP,<br>R5F571MLCxLJ, R5F571MLDxLJ, R5F571MLGxLJ, R5F571MLHxLJ,<br>R5F571MJCxLJ, R5F571MJDxLJ, R5F571MJGxLJ, R5F571MJHxLJ,<br>R5F571MGCxLJ, R5F571MGDxLJ, R5F571MGGxLJ, R5F571MGHxLJ,<br>R5F571MFCxLJ, R5F571MFDxLJ, R5F571MFGxLJ, R5F571MFHxLJ   |
|                                  | 144/145pin | R5F571MLCxLK, R5F571MLDxLK, R5F571MLGxLK, R5F571MLHxLK,<br>R5F571MJCxLK, R5F571MJDxLK, R5F571MJGxLK, R5F571MJHxLK,<br>R5F571MGCxLK, R5F571MGDxLK, R5F571MGGxLK, R5F571MGHxLK,<br>R5F571MFCxLK, R5F571MFDxLK, R5F571MFGxLK, R5F571MFHxLK,<br>R5F571MLCxFB, R5F571MLDxFB, R5F571MLGxFB, R5F571MLHxFB,<br>R5F571MJCxFB, R5F571MJDxFB, R5F571MJGxFB, R5F571MJHxFB,<br>R5F571MGCxFB, R5F571MGDxFB, R5F571MGGxFB, R5F571MGHxFB,<br>R5F571MFCxFB, R5F571MFDxFB, R5F571MFGxFB, R5F571MFHxFB   |
|                                  | 176/177pin | R5F571MLCxFC, R5F571MLDxFC, R5F571MLGxFC, R5F571MLHxFC,<br>R5F571MJCxFC, R5F571MJDxFC, R5F571MJGxFC, R5F571MJHxFC,<br>R5F571MGCxFC, R5F571MGDxFC, R5F571MGGxFC, R5F571MGHxFC,<br>R5F571MFCxFC, R5F571MFDxFC, R5F571MFGxFC, R5F571MFHxFC,<br>R5F571MLCxFC, R5F571MLDxFC, R5F571MLGxFC, R5F571MLHxFC,<br>R5F571MJCxFC, R5F571MJDxFC, R5F571MJGxFC, R5F571MJHxFC,<br>R5F571MGCxFC, R5F571MGDxFC, R5F571MGGxFC, R5F571MGHxFC,<br>R5F571MFCxFC, R5F571MFDxFC, R5F571MFGxFC, R5F571MFHxFC,<br>R5F571MLCxBG, R5F571MLDxBG, R5F571MLGxBG, R5F571MLHxBG,<br>R5F571MJCxBG, R5F571MJDxBG, R5F571MJGxBG, R5F571MJHxBG,<br>R5F571MGCxBG, R5F571MGDxBG, R5F571MGGxBG, R5F571MGHxBG,<br>R5F571MFCxBG, R5F571MFDxBG, R5F571MFGxBG, R5F571MFHxBG |
| RX72M Group<br>(R01UH0804EJ0110) | 100pin     | R5F572MDDxFP, R5F572MDHxFP, R5F572MNDxFP, R5F572MNHxFP  |
|                                  | 144pin     | R5F572MDDxFB, R5F572MDHxFB, R5F572MNDxFB, R5F572MNHxFB  |
|                                  | 176pin     | R5F572MNHxFC, R5F572MDDxBG, R5F572MNDxFC, R5F572MDHxBG,<br>R5F572MDDxFC, R5F572MNHxBG, R5F572MNDxBG, R5F572MDHxFC   |
|                                  | 224pin     | R5F572MDDxBD, R5F572MDHxBD, R5F572MNHxBD, R5F572MNDxBD  |

Table 2-5 Support Devices

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



Table 2-6 Support Devices

| Group<br>(HW Manual number)        | PIN    | Device name   |
|------------------------------------|--------|---|
| RX23E-B Group<br>(R01UH0972EJ0080) | 40pin  | R5F523E5BxNF, R5F523E5KxNF, R5F523E5MxNF, R5F523E6BxNF<br>R5F523E6KxNF, R5F523E6MxNF  |
|                                    | 48pin  | R5F523E5BxFL, R5F523E5MxFL, R5F523E6BxFL, R5F523E6MxFL  |
|                                    | 64pin  | R5F523E5BxFM, R5F523E5KxFM, R5F523E5MxFM, R5F523E6BxFM,<br>R5F523E6KxFM, R5F523E6MxFM   |
|                                    | 80pin  | R5F523E5JxFN, R5F523E5NxFN, R5F523E6JxFN, R5F523E6NxFN  |
|                                    | 100pin | R5F523E5LxBS, R5F523E5LxFP, R5F523E5NxBS, R5F523E5NxFP,<br>R5F523E6LxBS, R5F523E6LxFP, R5F523E6NxBS, R5F523E6NxFP   |
| RX26T Group<br>(R01UH0979EJ0101)   | 48pin  | R5F526T9AxFL, R5F526T9AxNE, R5F526T9BxFL, R5F526T9BxNE,<br>R5F526TBxFL, R5F526TBxNE, R5F526TBBxFL, R5F526TBBxNE,<br>R5F526TBCxFL, R5F526TBCxNE, R5F526TBDxFL, R5F526TBDxNE,<br>R5F526TFAxFL, R5F526TFAxNE, R5F526TFBxFL, R5F526TFBxNE,<br>R5F526TFCxFL, R5F526TFCxNE, R5F526TFDxFL, R5F526TFDxNE,<br>R5F526T8AxFL, R5F526TAAxFL, R5F526TACxFL |
|                                    | 64pin  | R5F526T9AxFM, R5F526T9AxND, R5F526T9BxFM, R5F526T9BxND,<br>R5F526TBxFM, R5F526TBxND, R5F526TBBxFM, R5F526TBBxND,<br>R5F526TBCxFM, R5F526TBCxND, R5F526TBDxFM, R5F526TBDxND,<br>R5F526TFAxFM, R5F526TFAxND, R5F526TFBxFM, R5F526TFBxND,<br>R5F526TFCxFM, R5F526TFCxND, R5F526TFDxFM, R5F526TFDxND,<br>R5F526T8AxFM, R5F526TAAxFM, R5F526TACxFM |
|                                    | 80pin  | R5F526T9AxFN, R5F526T9BxFN, R5F526TBxFN, R5F526TBBxFN,<br>R5F526TBCxFN, R5F526TBDxFN, R5F526TFAxFN, R5F526TFBxFN,<br>R5F526TFCxFN, R5F526TFDxFN   |
|                                    | 100pin | R5F526T9AxFP, R5F526T9BxFP, R5F526TBxFP, R5F526TBBxFP,<br>R5F526TBCxFP, R5F526TBDxFP, R5F526TFAxFP, R5F526TFBxFP,<br>R5F526TFCxFP, R5F526TFDxFP   |

## 2.2 Support Components List

Below is a list of Components supported by the Smart Configurator for RX V2.20.0.

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

✓: Support, -: Non-support

| No | Components                                   | Mode                                   | RX100 | 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 Multiple interrupts support

From Smart Configurator for RX V2.20.0, we extend multiple interrupts support for the following software components:

- Normal Mode Timer
- Phase Counting Mode Timer
- Dead-time Compensation Counter
- PWM Mode Timer
- Complementary PWM Mode Timer
- I2C Master Mode
- I2C Slave Mode

Interrupt setting

|   |          |                      |
|---|----------|----------------------|
| <input checked="" type="checkbox"/> Enable TGRA compare match interrupt (TGIA0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable TGRB compare match interrupt (TGIB0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable TGRC compare match interrupt (TGIC0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable TGRD compare match interrupt (TGID0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable TGRE compare match interrupt (TGIE0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable TGRF compare match interrupt (TGIF0) | Priority | Level 15 (highest) ▾ |
| <input checked="" type="checkbox"/> Enable overflow interrupt (TCIV0)           | Priority | Level 15 (highest) ▾ |

Multiple interrupts setting

- ☐ Enable multiple interrupts for TGRA compare match interrupt (TGIA0)
- ☐ Enable multiple interrupts for TGRB compare match interrupt (TGIB0)
- ☐ Enable multiple interrupts for TGRC compare match interrupt (TGIC0)
- ☐ Enable multiple interrupts for TGRD compare match interrupt (TGID0)
- ☐ Enable multiple interrupts for TGRE compare match interrupt (TGIE0)
- ☐ Enable multiple interrupts for TGRF compare match interrupt (TGIF0)
- ☐ Enable multiple interrupts for overflow interrupt (TCIV0)

Figure 2-1 A sample of multiple interrupts configuration for PWM Mode Timer component



### 2.3.2 Instant transmission support for SCI Asynchronous Mode

From Smart Configurator for RX V2.20.0, SCI Asynchronous Mode has been updated to support instant transmission for devices and resources which do not have SEMR.ITE bit.

The screenshot displays the configuration interface for the Smart Configurator for RX V2.20.0. The 'Instant transmission setting' section is highlighted with a red rectangular box. This section contains a checkbox labeled 'Enable instant transmission (start data transmission without internal wait time)'. Below this, the 'Transfer rate setting' section is visible, featuring dropdown menus for 'Transfer clock' (set to 'Internal clock'), 'Base clock' (set to '16 cycles for 1-bit period'), and 'Bit rate' (set to '9600'). A text label '(bps) (Actual value: 9600.614, Error: 0.006%)' is shown next to the bit rate. Other settings include 'Transfer direction setting' (LSB-first selected), 'Hardware flow control setting' (None selected), and 'SCK1 pin function' (SCK1 is not used).

Figure 2-2 The new setting of instant transmission in SCI Asynchronous Mode

### 2.3.3 BSP (Board Support Package) revision update

From Smart Configurator for RX V2.20.0, BSP rev7.42 is supported and added as default BSP when creating new Smart Configurator project.

### 2.3.4 New support for bootloader project

From Smart Configurator for RX V2.20.0, the generated code in `r_cg_hardware_setup.c` is updated to support the initialization control with `BSP_CFG_BOOTLOADER_PROJECT` macro. This new macro is defined in `r_bsp_config.h` file of BSP rev7.42, and it can be configured on UI setting of `r_bsp` configuration.

```
#if BSP_CFG_BOOTLOADER_PROJECT == 0
/* Disable the following function in the bootloader project. */
void r_undefined_exception(void)
{
    /* Start user code for r_undefined_exception. Do not edit comment generated here. */
    /* End user code. Do not edit comment generated here. */
}
#endif /* BSP_CFG_BOOTLOADER_PROJECT == 0 */

/*****
 * Function Name: R_Systeminit
 * Description: This function initializes every configuration
 * Arguments: None
 * Return Value: None
 *****/

void R_Systeminit(void)
{
    /* Enable writing to registers related to operating modes, LPC, CGC and software reset. */
    SYSTEM.PRCR.WORD = 0xA50BU;

    /* Enable writing to MPC pin function control registers. */
    MPC.PWPR.BIT.BOWI = 0U;
    MPC.PWPR.BIT.PFSWE = 1U;

    #if BSP_CFG_BOOTLOADER_PROJECT == 0
    /* Disable the following codes in the bootloader project. */
    /* Write 0 to the target bits in the POECR2 registers. */
    POE3.POECR2.WORD = 0x0000U;
    #endif /* BSP_CFG_BOOTLOADER_PROJECT == 0 */

    /* Initialize clocks settings. */
    R_CGC_Create();

    #if BSP_CFG_BOOTLOADER_PROJECT == 0
    /* Disable the following codes in the bootloader project. */
    /* Register undefined interrupt. */
    R_BSP_InterruptWrite(BSP_INT_SRC_UNDEFINED_INTERRUPT, (bsp_int_cb_t)r_undefined_exception);
    #endif /* BSP_CFG_BOOTLOADER_PROJECT == 0 */

    /* Disable writing to MPC pin function control registers. */
    MPC.PWPR.BIT.PFSWE = 0U;
    MPC.PWPR.BIT.BOWI = 1U;

    /* Enable protection. */
    SYSTEM.PRCR.WORD = 0xA500U;
}
```

Figure 3-3 Updates of code generation for bootloader project support

| Property   | Value                  |
|--|------------------------|
| # Select the priority order for internal peripheral bus 6. | Fixed                  |
| # Select the priority order for the external bus.          | Fixed                  |
| # Select whether it is bootloader project.                 | Not bootloader project |

**Macro definition: BSP\_CFG\_BOOTLOADER\_PROJECT**  
0 = This project isn't a bootloader project.  
1 = This project is a bootloader project.  
NOTE: Not normally used. Set it only in the bootloader project.

Not bootloader project  
bootloader project

Figure 4-4 The bootloader project setting in r\_bsp configuration

**2.3.5 New voltage pattern change API for Motor Code Generator component**

From Smart Configurator for RX V2.20.0, the Voltage Pattern Change API for 120-degree Conducting Control of BLDC Motor can be configured using the Motor Component for RX13T, RX23T, RX24T, and RX24U on the MTU resources.

Timer Pulse Output Pin Selection

U phase

MTU3 B-D

Up pin : Not Used

Un pin : Not Used

V phase

MTU4 A-C

Vp pin : Not Used

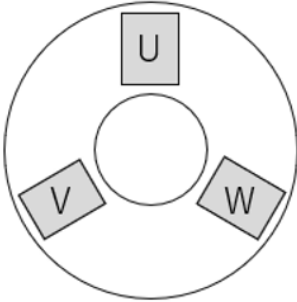
Vn pin : Not Used

W phase

MTU4 B-D

Wp pin : Not Used

Wn pin : Not Used



☐ Enable voltage pattern change API for 120-degree conduction control

**Figure 5-5 Support the voltage pattern change API for 120-degree conduction control**

### 3. Changes

This chapter describes changes to the Smart Configurator for RX V2.20.0.

#### 3.1 Correction of issues/limitations

##### 3.1.1 Fixed ADRLE bit setting when using RX71M Buses component

When using RX71M Buses component, the ADRLE bit is only set when A0-A7 pins are fully assigned.

From Smart Configurator for RX V2.20.0, the ADRLE bit is set for both cases where A0-A7 pins are fully assigned and partially assigned.

##### 3.1.2 Fixed unused pins setting code when using Port component

When using the Port component with the option to handle all unused pins, it still generates setting code for unused pins in Port, even if they are assigned by the system, clocks, and peripheral functions.

This issue has been fixed from SC for RX V2.20.0.

```
void R_Config_PORT_Create(void)
{
    ... /*Set PORT1 registers*/
    PORT1.PODR.BYTE = _00_Pm4_OUTPUT_0 | _00_Pm5_OUTPUT_0 | _00_Pm6_OUTPUT_0 | _00_Pm7_OUTPUT_0;
    PORT1.ODR1.BYTE = _00_Pm4_CMOS_OUTPUT | _00_Pm5_CMOS_OUTPUT | _00_Pm6_CMOS_OUTPUT | _00_Pm7_CMOS_OUTPUT;
    PORT1.PMR.BYTE = _00_Pm4_PIN_GPIO | _00_Pm5_PIN_GPIO | _00_Pm6_PIN_GPIO | _00_Pm7_PIN_GPIO;
    PORT1.PDR.BYTE = _10_Pm4_MODE_OUTPUT | _20_Pm5_MODE_OUTPUT | _40_Pm6_MODE_OUTPUT | _80_Pm7_MODE_OUTPUT;

    ... /*Set all unused pins to output 0*/
    PORT2.PDR.BYTE |= _80_Pm7_MODE_OUTPUT;
    PORT4.PDR.BYTE |= _02_Pm1_MODE_OUTPUT | _04_Pm2_MODE_OUTPUT;
    PORTA.PDR.BYTE |= _08_Pm3_MODE_OUTPUT | _10_Pm4_MODE_OUTPUT | _40_Pm6_MODE_OUTPUT;
    PORTB.PDR.BYTE |= _01_Pm0_MODE_OUTPUT | _08_Pm3_MODE_OUTPUT;
    PORTC.PDR.BYTE |= _10_Pm4_MODE_OUTPUT;
    PORTE.PDR.BYTE |= _01_Pm0_MODE_OUTPUT | _02_Pm1_MODE_OUTPUT | _04_Pm2_MODE_OUTPUT | _08_Pm3_MODE_OUTPUT |
    _10_Pm4_MODE_OUTPUT;
    PORTH.PDR.BYTE |= _01_Pm0_MODE_OUTPUT | _02_Pm1_MODE_OUTPUT | _04_Pm2_MODE_OUTPUT | _08_Pm3_MODE_OUTPUT;
    PORTJ.PDR.BYTE |= _40_Pm6_MODE_OUTPUT | _80_Pm7_MODE_OUTPUT;

    ... R_Config_PORT_Create_UserInit();
}
```

Figure 3- 1 Generated code for used pins (blue box) and unused pins (red box)

### 3.1.3 Fixed wait time code of Stop function when using RX23E-B Continuous Scan Mode DSAD

When using RX23E-B Continuous Scan Mode DSAD component, the wait time for auto scan is only available in one-shot operation.

From Smart Configurator for RX V2.20.0, the wait time is available in all operations.

```
void R_Config_DSAD0_Stop(void)
{
    uint16_t w_count;

    DSAD0.ADSTP.BIT.STOP = 1UL;

    /* Wait for auto scan to stop */
    for (w_count = 0U; w_count <= _0081_DSAD0_STOP_WAIT_COUNT; w_count++)
    {
        nop();
    }
}
```

Figure 3-2 The wait time for auto scan mode in the Stop function

### 3.1.4 Fixed time error adjustment code when using RTC component

When using RTC component, the value of RADJ register is not re-initialized after the software reset occurs.

From Smart Configurator for RX V2.20.0, the following functions are updated to re-initialize for RADJ register:

- RTC\_Restart()
- Restart\_BinaryCounter()
- Set\_CalendarCounterValue()
- RTC\_Set\_BinaryCounterValue()

```

...../*Set the counters*/
.....RTC.BCNT0.BYTE = (uint8_t) (counter_write_val & 0x00000FFUL);
.....RTC.BCNT1.BYTE = (uint8_t) ((counter_write_val & 0x0000FF00UL) >> 8U);
.....RTC.BCNT2.BYTE = (uint8_t) ((counter_write_val & 0x00FF0000UL) >> 16U);
.....RTC.BCNT3.BYTE = (uint8_t) ((counter_write_val & 0xFF000000UL) >> 24U);

...../*Clear PMADJ and wait for update before writing to AADJP and AADJE*/
.....RTC.RADJ.BIT.PMADJ = 0U;
.....while (0U != RTC.RADJ.BIT.PMADJ)
.....{
.....    ...../*Wait for this write to complete*/
.....}

...../*Set control registers*/
.....RTC.RCR2.BYTE |= (_08_RTC_RTCOUT_OUTPUT_ENABLE | _10_RTC_AUTO_ADJUSTMENT_ENABLE |
.....    ....._20_RTC_AUTO_ADJUSTMENT_PERIOD_8SEC);

...../*Perform 4 read operations after writing*/
.....for (rw_count = 0U; rw_count < _04_FOUR_READ_COUNT; rw_count++)
.....{
.....    .....dummy = RTC.RCR2.BYTE;
.....}

...../*Set clock error adjustment values*/
.....RTC.RADJ.BYTE = _40_RTC_TIMER_ERROR_ADJUST_PLUS | _01_RTC_AUTO_ADJUSTMENT_VALUE;
.....while ((_40_RTC_TIMER_ERROR_ADJUST_PLUS | _01_RTC_AUTO_ADJUSTMENT_VALUE) != RTC.RADJ.BYTE)
.....{
.....    ...../*Wait for this write to complete*/
.....}

```

**Figure 3-3 Updates of code generation for the RADJ register**

This issue has been fixed from SC for RX V2.20.0.

### 3.1.5 Fixed GUI issue of 2-Phase Stepping Motor (Slow Decay)

When using RX26T, RX667 and RX72T Motor configuration with 2-Phase Stepping Motor (Slow Decay) and Triangle\_GPT resource, the value of Slave Channel 3 is changed, and redundant items are added to output pin combo boxes after switching to a different configuration and then switching back to the Motor configuration.

These issues have been fixed from SC for RX V2.20.0

## 3.2 Specification changes

### 3.2.1 Improve the Overview tab

From Smart Configurator for RX V2.20.0, the Overview tab is updated to provide more information and easier access to Renesas website:

- Overview:
  - The overview link is updated to open Smart Configurator page on Renesas website.
- What's New:
  - New link is added to open a page for all release note versions.
- Product Documentation:
  - User guide and API manual link are updated to open the related page on Renesas website.

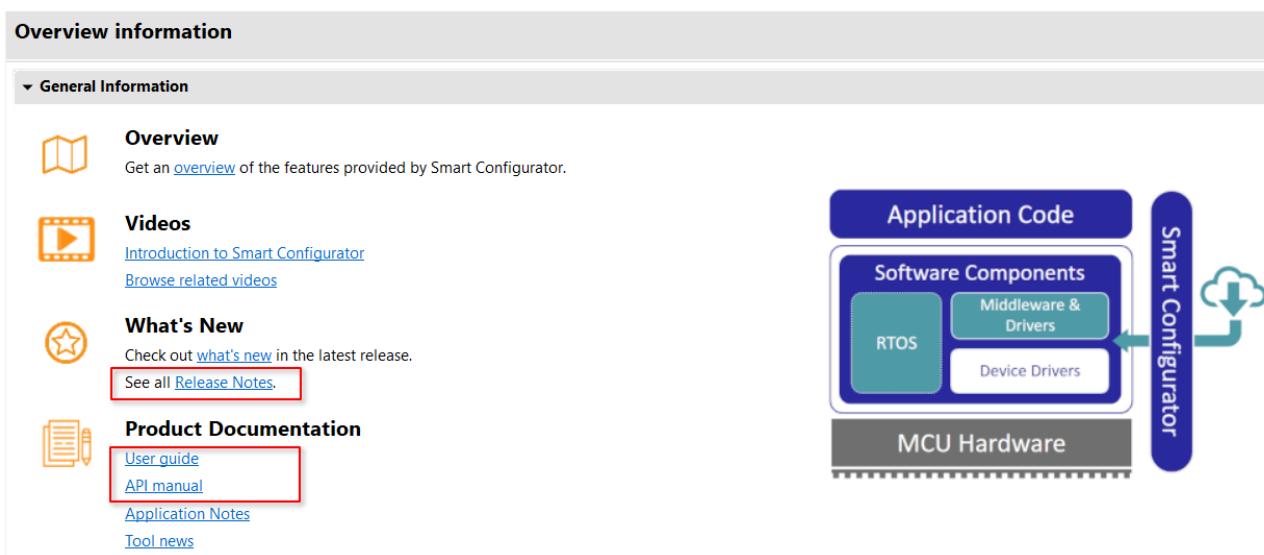


Figure 3-4 Updates of the Overview page

### 3.2.2 Improve the warning display when setting up Buses component

From Smart Configurator for RX V2.20.0, when using Buses component, the warning labels for address output pin setting is added to Buses GUI to assist users in assigning pins.

This improvement is updated for RX660, RX66T and RX72T.

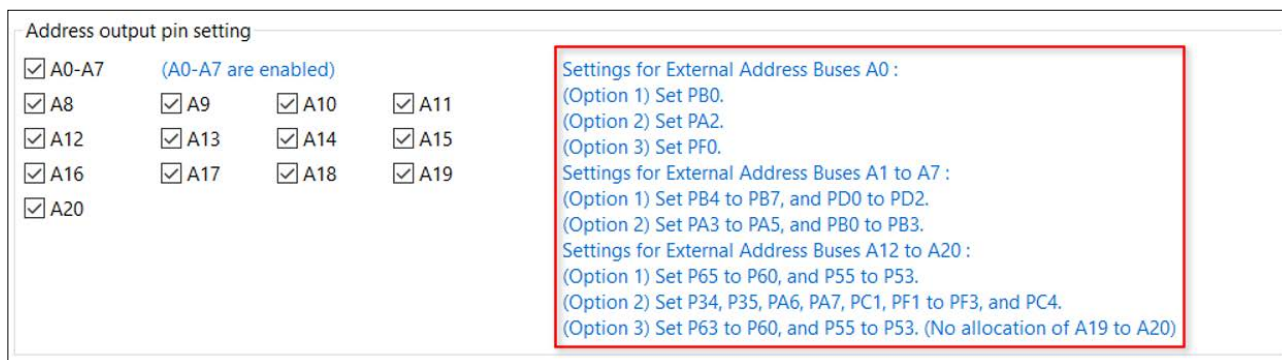


Figure 3-5 The warning labels for address output pin

### 3.2.3 Improve the code generation of DSCR register for Port component

From Smart Configurator for RX V2.20.0, when using Port component without High-drive output, the code generation of DSCR register is generated for “Unused GPIO” and “Out” settings.

This improvement is updated for RX130, RX230, RX231, RX64M, and RX71M.

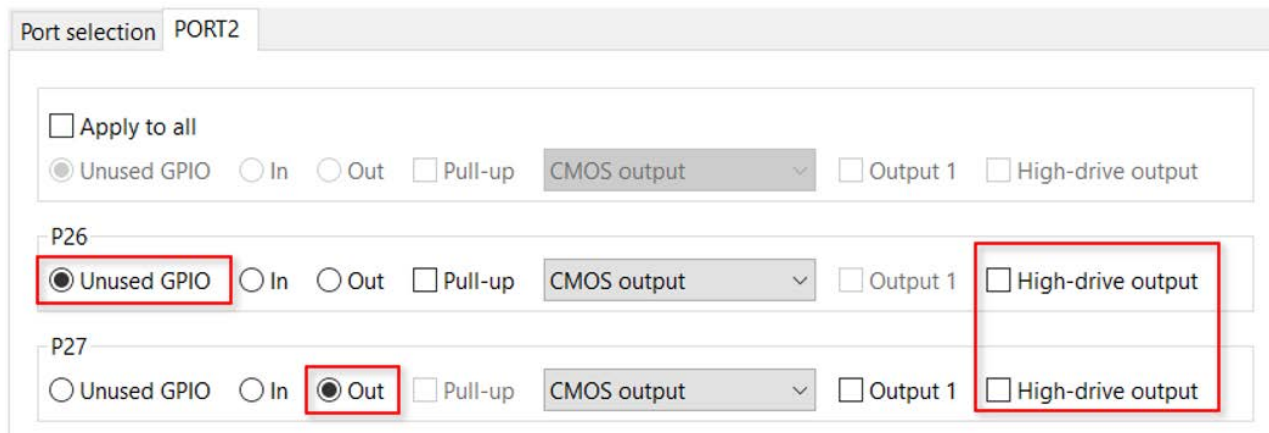


Figure 3-6 The setting of Port component

### 3.2.4 Improve the agreement link of Azure RTOS download dialogue

From Smart Configurator for RX V2.20.0, the End User License Agreement (EULA) link of Azure RTOS dialogue is updated.

- Old URL for EULA link: [https://github.com/azure-rtos/threadx/blob/v6.1.3\\_rel/LICENSE.txt](https://github.com/azure-rtos/threadx/blob/v6.1.3_rel/LICENSE.txt)
- New URL for EULA link: <https://github.com/renesas/azure-rtos/blob/master/LICENSE.md>



#### 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<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx</a>  | RX130,<br>RX64M,<br>RX651,<br>RX65N   | V1.3.0        |
| Apr. 1, 2018  | R20TS0294    | 1. When using the bus for peripheral functions<br><a href="https://www.renesas.com/document/tnn/notes-cs-smart-configurator-rx-e-studio-smart-configurator-plug">https://www.renesas.com/document/tnn/notes-cs-smart-configurator-rx-e-studio-smart-configurator-plug</a>   | RX230,<br>RX231   | V1.4.0        |
| Oct. 01, 2018 | R20TS0351    | 1. Setting TPU0 channel of PWM Mode Timer<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-0">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-0</a>  | RX65N,<br>RX651,<br>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<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-1">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-1</a>  | RX66T   | V2.1.0        |
| Apr.16, 2019  | R20TS0425    | 1. When using the I2C bus interface in master mode<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-2">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-2</a>   | RX110,<br>RX111,<br>RX113,<br>RX130,<br>RX230,<br>RX231,<br>RX23T,<br>RX24T,<br>RX24U,<br>RX64M,<br>RX651,<br>RX65N,<br>RX71M | V2.2.0        |
| Jun.01, 2019  | R20TS0434    | 1. When using self-diagnosis function of 12-bit A/D converter in Single Scan Mode<br>2. When using Serial Peripheral Interface clock synchronous mode in slave transmit<br>3. When using I2C Bus Interface with Fast-mode Plus enabled<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-3">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-3</a> | RX230,<br>RX231,<br>RX66T,<br>RX72T,<br>RX64M,<br>RX651,<br>RX65N,<br>RX71M   | V2.2.0        |

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

| Issue date    | Document No.    | Description   | Applicable MCUs                          | Fixed version |
|---------------|-----------------|---|--|---------------|
| Mar. 16, 2020 | R20TS0555       | 1. When using the TGIC7 and TGID7 interrupts in Normal Mode Timer or PWM Mode Timer<br>2. When creating a project with RX24T 64-pin FK packages<br>3. When using compare level of AN109 in Single Scan Mode S12AD<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-9">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-9</a>  | RX24T, RX24U, RX71M                      | V2.5.0        |
| Apr.03, 2020  | TN-RX*-A0222    | Errata to RX72N Group User's Manual: Hardware Rev.1.00<br><a href="https://www.renesas.com/document/tcu/errata-rx72n-group-users-manual-hardware-rev100">https://www.renesas.com/document/tcu/errata-rx72n-group-users-manual-hardware-rev100</a>   | RX72N                                    | V2.5.0        |
| May.16, 2020  | R20TS0579       | 1. When using Stop API in Continuous Scan Mode DSAD and Single Scan Mode DSAD components<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-10">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-10</a>   | RX23E-A                                  | V2.6.0        |
| Jun.16, 2020  | R20TS0591       | 1. When using Data Transfer Controller (DTC) component and making configuration for its vector base address<br>2. When using SCI/SCIF Asynchronous Mode component and making configuration for its bit-rate<br>3. When using AN007 or AN107 as analog input pins in S12AD components<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-11">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-11</a> | 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<br><a href="https://www.renesas.com/document/tcu/errata-rx113-group-users-manual-hardware">https://www.renesas.com/document/tcu/errata-rx113-group-users-manual-hardware</a>   | RX113                                    | V2.8.0        |
| Sep. 01, 2020 | R20TS0611       | When using PWM Mode component and making configuration with MTU channel 1 and 2<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-13">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-13</a>  | 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)<br><a href="https://www.renesas.com/document/tcu/notes-transmit-data-empty-interrupt-when-fifo-use-serial-communications-interface-sci">https://www.renesas.com/document/tcu/notes-transmit-data-empty-interrupt-when-fifo-use-serial-communications-interface-sci</a>  | RX651,<br>RX65N,<br>RX66N,<br>RX66T,<br>RX72M,<br>RX72N,<br>RX72T                     | V2.7.0        |
| Oct. 01, 2020 | R20TS0623       | 1. When using “r_sci_rx” component and making pin configurations for RXD and TXD<br>2. When using “r_sci_rx” component, duplicate SCI11 channels are displayed in the Components configuration panel<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-12">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-12</a> | RX651,<br>RX65N,<br>RX66N,<br>RX72M,<br>RX72N   | V2.7.0        |
| Dec. 01, 2020 | R20TS0638       | 1. Note on setting timer operation period in Motor component.<br>2. When loading project with port configuration created in V2.5.0 or version before into V2.6.0 version onwards<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-14">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-14</a>                     | RX13T,<br>RX23T,<br>RX24T,<br>RX24U,<br>RX651,<br>RX65N,<br>RX66T,<br>RX72T,<br>RX72M | V2.8.0        |
| Aug. 29, 2017 | TN-RX*-A180A/E  | Restriction for the PH7/XCIN Pin<br><a href="https://www.renesas.com/document/tcu/restriction-ph7xcin-pin">https://www.renesas.com/document/tcu/restriction-ph7xcin-pin</a>   | RX110,<br>RX111,<br>RX113   | V2.9.1        |
| May. 16, 2021 | R20TS0696       | When using PORT component and configuring PORTC multiplexed pins as input<br><a href="https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-15">https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-15</a>  | RX130,<br>RX230,<br>RX231   | V2.10.0       |
| Aug. 01, 2021 | R20TS0735       | When using Port Output Enable (POE) component and configuring MTU pins as high impedance<br><a href="https://www.renesas.com/sg/zh/document/tnn/notes-e2-studio-smart-configurator-plug-smart-configurator-rx">https://www.renesas.com/sg/zh/document/tnn/notes-e2-studio-smart-configurator-plug-smart-configurator-rx</a>   | RX23W,<br>RX24T,<br>RX64M,<br>RX651,<br>RX71M,<br>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<br><a href="https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-16">https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-16</a>   | RX651,<br>RX65N   | V2.12.0       |
| Mar. 01, 2022 | R20TS0820    | 1. When importing existing C++ project and updating BSP component version to 7.00 onwards<br><br>2. When build or clean e <sup>2</sup> studio Smart Configurator project<br><br>3. When using AN107 in S12AD Continuous Scan Mode component<br><a href="https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-17">https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-17</a> | RX110,<br>RX111,<br>RX113,<br>RX130,<br>RX13T,<br>RX140,<br>RX230,<br>RX231,<br>RX23E-A,<br>RX23T,<br>RX23W,<br>RX24T,<br>RX24U,<br>RX651,<br>RX65N,<br>RX66N,<br>RX66T,<br>RX671,<br>RX72M,<br>RX72N,<br>RX72T,<br>RX64M,<br>RX71M | V2.13.0       |
| Feb. 01, 2023 | R20TS0920    | When using DA component to provide reference input voltage for Comparator component<br><a href="https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-18">https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-18</a>   | RX13T,<br>RX23T,<br>RX24T,<br>RX24U,<br>RX66T,<br>RX72T   | V2.17.0       |
| Mar. 16, 2023 | R20TS0931    | When using S12AD Continuous Scan Mode component and making configuration for channel AN117 to AN119<br><a href="https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-19">https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plugin-smart-configurator-rx-19</a>   | RX651/N   | V2.17.0       |

## 5. Points for Limitation

This section describes points for limitation regarding the Smart Configurator for RX V2.20.0. Regarding 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 Port module combo box in ELC component when using Port component               | -     | -     | -     | -     | -     | √     | -            | √       | √       | -     | √     | -            | √     |         |

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 Port module combo box in ELC component when using Port component                   | -     | -            | √     | -     | √     | √     | -     | √     | √     | -     |         |

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.

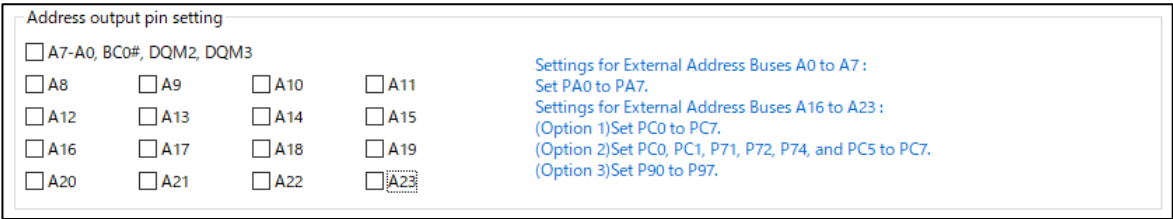


Figure 5-2 “Address output pin setting” value should be disabled

5.2.4 Note on Port module combo box in ELC component when using Port component

When using ELC component, the status of items in the Port module combo box is not updated correctly when changing the status (e.g., check > uncheck > check) of ports in Port selection tab of Port component.

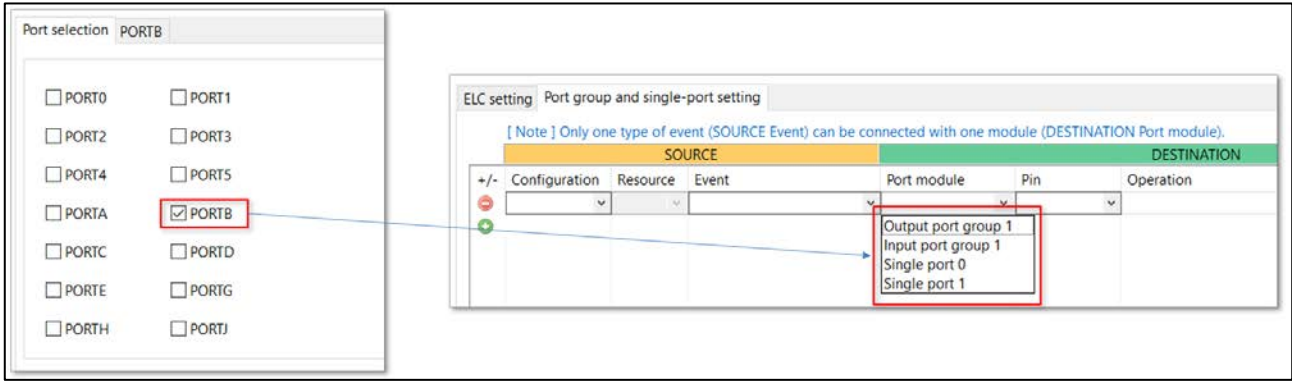


Figure 5-3 The relationship between the Port component and the ELC component



To solve this issue, after you have changed the status (e.g., check > uncheck > check) of ports in Port selection tab, please re-configure the settings of ports that you want to link with ELC components.

Port selection PORTB

☐ Apply to all

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1

PB0

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

PB1

☐ Unused GPIO ☒ In ☐ Out ☐ Pull-up CMOS output ☐ Output 1

PB2

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1

PB3

☐ Unused GPIO ☒ In ☐ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

PB4

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

PB5

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

PB6

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

PB7

☐ Unused GPIO ☐ In ☒ Out ☐ Pull-up CMOS output ☐ Output 1 Normal drive output

Figure 5-4 The settings the port needs to be re-configured

## 6. Points for Caution

This section describes points for caution regarding the Smart Configurator for RX V2.20.0. Regarding 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 <sup>2</sup> 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   | √     | √     | √     | √     | √     | √     | √            | √       | √       | √     | √     | √            | √     |         |
| 17 | Note on code generation difference at Component tab and not at Component tab           | √     | √     | √     | √     | -     | √     | √            | -       | √       | -     | -     | -            | -     |         |

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 <sup>2</sup> 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   | ✓     | ✓            | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     |         |
| 17 | Note on code generation difference at Component tab and not at Component tab           | ✓     | ✓            | -     | -     | -     | -     | ✓     | -     | -     | -     |         |

## 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.

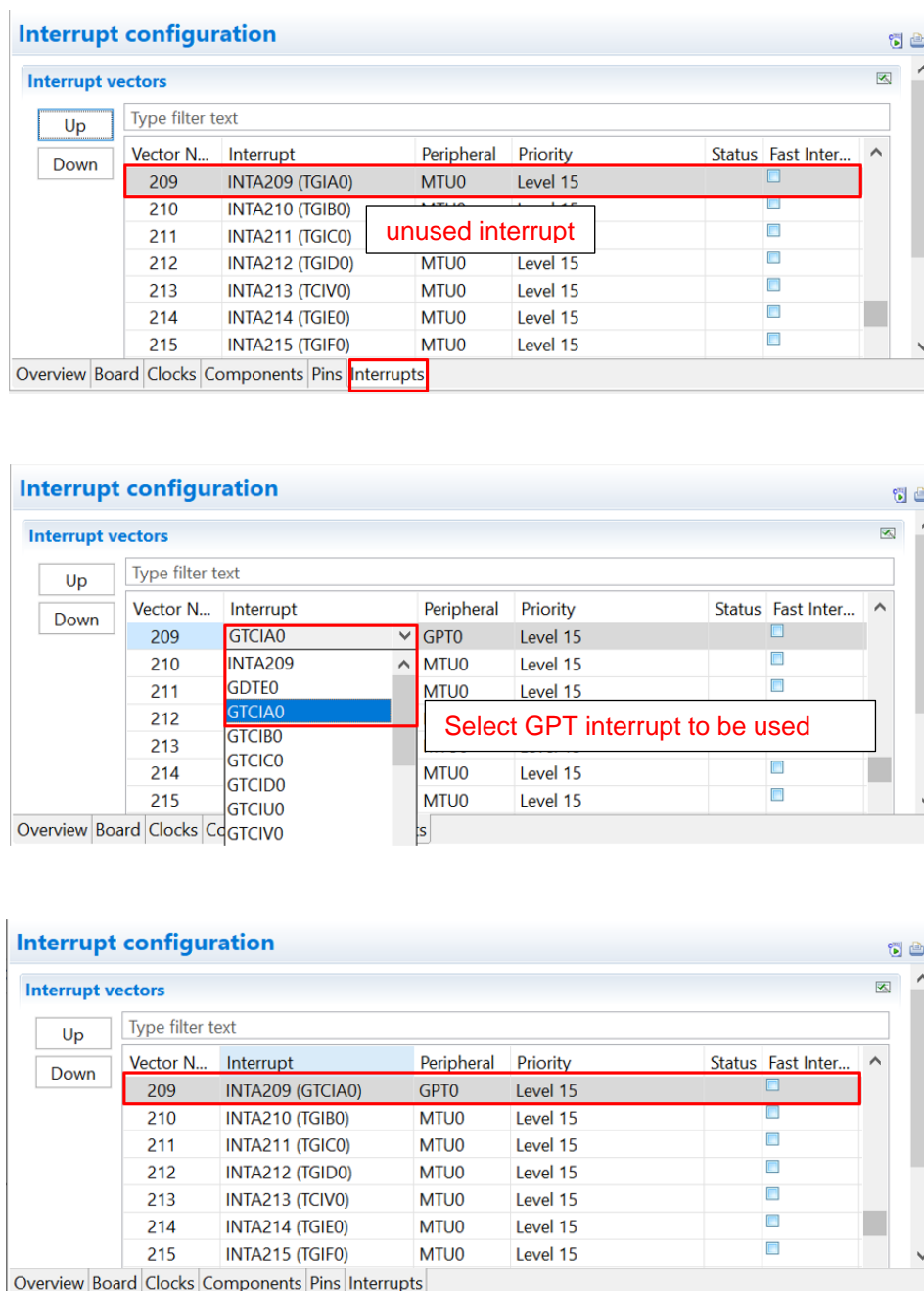


Figure 6-1 GPT interrupt vector number assignment

### 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.

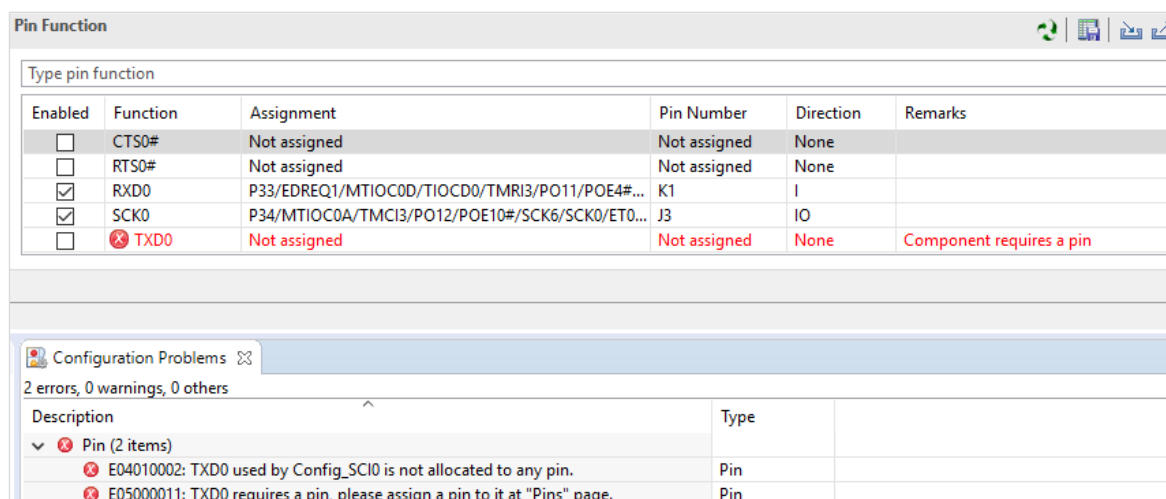


Figure 6-2 Ignore warnings when TXDn pin is disabled (Example with TXD0)

### 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:

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

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<br>P90 to P92   |
| RX130, RX140, RX23W                                | P40 to P47  |
| RX64M, RX651, RX65N, RX66N,<br>RX71M, RX72M, RX72N | P00 to P02, P03, P05, P07<br>P40 to P47<br>P90 to P93<br>PD0 to PD7<br>PE0 to PE7 |
| RX671  | P00 to P02, P03, P05, P07<br>P40 to P47<br>P90<br>PD0 to PD7<br>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 e<sup>2</sup> 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 e<sup>2</sup> 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.

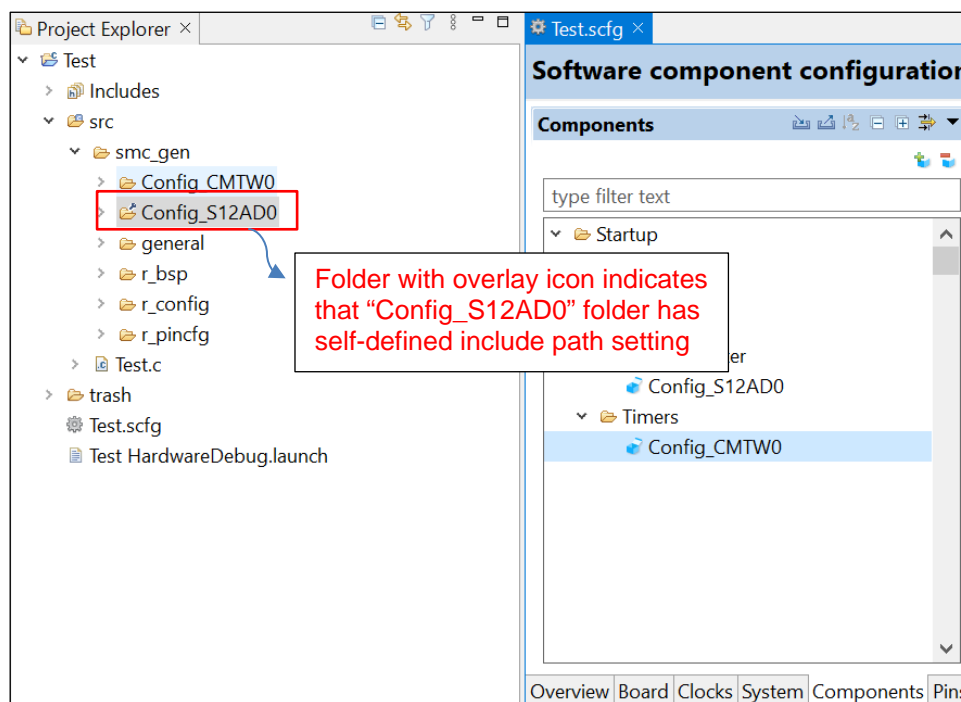


Figure 6-3 Compare Match Timer component configuration before renaming

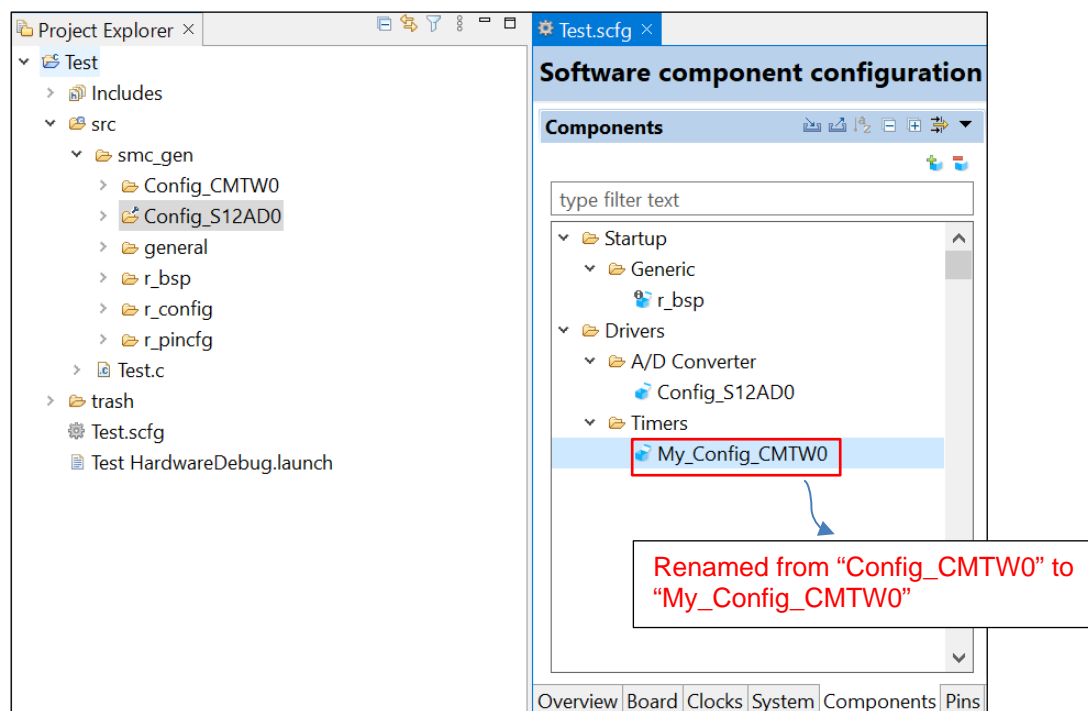


Figure 6-4 The Compare Match Timer component configuration after renaming

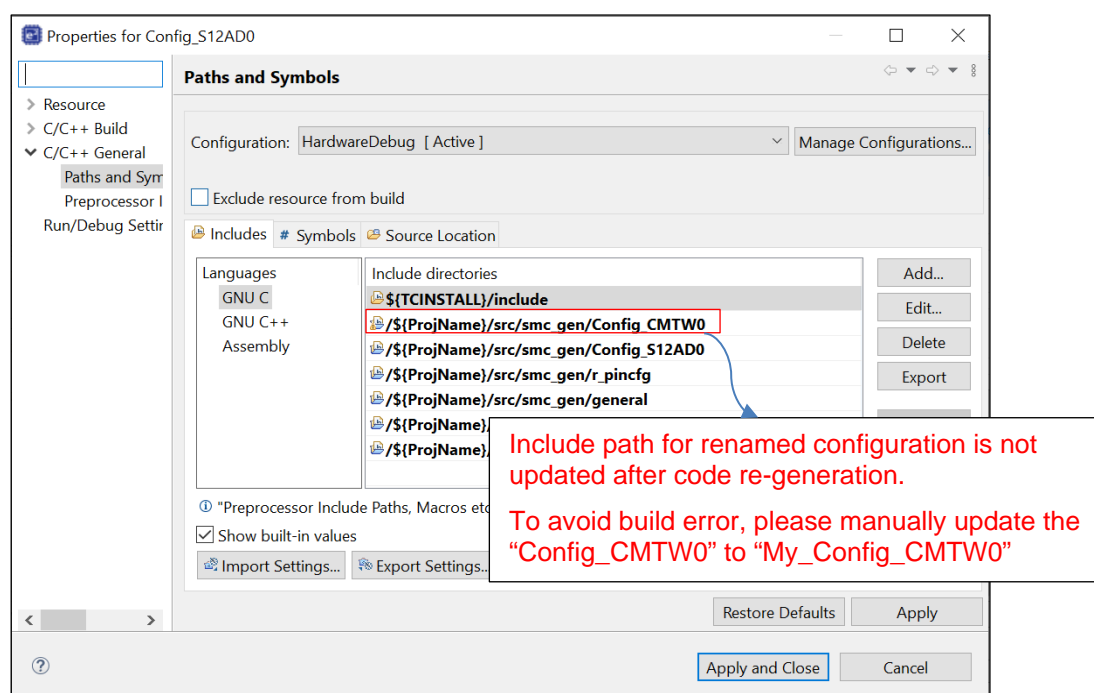


Figure 6-5 Include path setting for the "Config\_S12AD0" configuration

### 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>

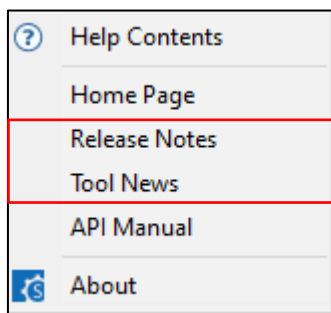


Figure 6-6 “Release Notes” and “Tool News” in help menu

### 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.

**6.2.17 Note on code generation difference at Components tab and not at Components tab**

When using the components on the devices mentioned in following table, code generation might be different at Components tab and not at Components tab after reloading Smart Configurator project.

| Affected components                          | Affected devices   |
|--|--|
| Clock Frequency Accuracy Measurement Circuit | RX64M, RX130, RX140, RX231, RX23EB, RX651, RX71M   |
| Complementary PWM Mode                       | RX64M, RX130, RX231, RX113, RX111, RX651, RX71M  |
| Continuous Scan Mode DSAD                    | RX23E-B  |
| Normal Mode Timer                            | MTU: RX64M, RX130, RX113, RX111, RX110, RX231, RX651, RX71M<br>TPU: RX64M, RX231, RX651, RX71M |
| PWM Mode Timer                               | MTU: RX64M, RX130, RX651<br>TPU: RX64M, RX651  |
| SPI Clock Synchronous Mode (3-wire method)   | SCI: RX651, RX64M, RX130<br>RSPI: RX651, RX64M, RX130  |
| SPI Operation Mode (4-wire method)           | RX651, RX64M, RX130  |
| Single Scan Mode DSAD                        | RX23E-B  |

|                                |                                |
|--------------------------------|--------------------------------|
| MTU0.TGRA = _04E1_TGRA0_VALUE; | MTU0.TGRA = _09C3_TGRA0_VALUE; |
| MTU0.TGRB = _007C_TGRB0_VALUE; | MTU0.TGRB = _00F9_TGRB0_VALUE; |
| MTU0.TGRC = _007C_TGRC0_VALUE; | MTU0.TGRC = _00F9_TGRC0_VALUE; |
| MTU0.TGRD = _007C_TGRD0_VALUE; | MTU0.TGRD = _00F9_TGRD0_VALUE; |
| MTU0.TGRE = _007C_TGRE0_VALUE; | MTU0.TGRE = _00F9_TGRE0_VALUE; |
| MTU0.TGRF = _007C_TGRF0_VALUE; | MTU0.TGRF = _00F9_TGRF0_VALUE; |

**Figure 6-7 Code generation is different at Component tab and not at Component tab**

To solve this code difference issue, please go to Components tab and open all the existing GUI of affected components and click Generate Code button.

**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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