# Smart Configurator for RX Plug-in in e2 studio 2023-01 Smart Configurator for RX V2.16.0

Release Note

## Introduction

Thank you for using the Smart Configurator for RX.
This document describes the restrictions and points for caution. Read this document before using the product.

## Contents

# 1. Introduction

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 V2.16.0 is equivalent to Smart Configurator for RX plug-in in e2 studio 2023-01.

## 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

Only Smart Configurator for RX plug-in in e2 studio 2023-01 is supported on Linux OS.

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

### 1.1.3 Development Environments

- Renesas electronics Compiler for 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 V2.16.0.

**Table 2-1 Support Devices**

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

**Table 2-2 Support Devices**

| Group (HW Manual number) | PIN | Device name |
|---|---|---|
| RX231 Group (R01UH0496EJ0110) | 48pin | R5F52315AxNE, R5F52316AxNE, R5F52317AxNE, R5F52318AxNE, R5F52315CxNE, R5F52316CxNE, R5F52317BxNE, R5F52318BxNE, R5F52315AxFL, R5F52316AxFL, R5F52317AxFL, R5F52318AxFL, R5F52315CxFL, R5F52316CxFL, R5F52317BxFL, R5F52318BxFL |
| | 64pin | R5F52315AxND, R5F52316AxND, R5F52317AxND, R5F52318AxND, R5F52315CxND, R5F52316CxND, R5F52317BxND, R5F52318BxND, R5F52315AxFM, R5F52316AxFM, R5F52317AxFM, R5F52318AxFM, R5F52315CxFM, R5F52316CxFM, R5F52317BxFM, R5F52318BxFM, R5F52315CxLF, R5F52316CxLF |
| | 100pin | R5F52315AxLA, R5F52316AxLA, R5F52317AxLA, R5F52318AxLA, R5F52315CxLA, R5F52316CxLA, R5F52317BxLA, R5F52318BxLA, R5F52315AxFP, R5F52316AxFP, R5F52317AxFP, R5F52318AxFP, R5F52315CxFP, R5F52316CxFP, R5F52317BxFP, R5F52318BxFP |
| RX23E-A Group (R01UH0801EJ0100) | 40pin | R5F523E5AxNF, R5F523E6AxNF, R5F523E5SxNF, R5F523E6SxNF |
| | 48pin | R5F523E5AxFL, R5F523E6AxFL, R5F523E5SxFL, R5F523E6SxFL |
| RX23T Group (R01UH0520EJ0110) | 48pin | R5F523T3AxFL, R5F523T5AxFL |
| | 52pin | R5F523T5AxFD, R5F523T3AxFD |
| | 64pin | R5F523T5AxFM, R5F523T3AxFM |
| RX23W Group (R01UH0823EJ0100) | 56pin | R5F523W8BxNG, R5F523W8AxNG, R5F523W7BxNG, R5F523W7AxNG |
| | 83pin | R5F523W8CxLN, R5F523W8DxLN |
| | 85pin | R5F523W7AxBL, R5F523W8AxBL, R5F523W8BxBL, R5F523W7BxBL |
| RX24T Group (R01UH0576EJ0200) | 64pin | R5F524TAAxFM, R5F524T8AxFM, R5F524TAAxFK, R5F524T8AxFK |
| | 80pin | R5F524TAAxFF, R5F524T8AxFF, R5F524TAAxFN, R5F524T8AxFN |
| | 100pin | R5F524TCAxFP, R5F524T8AxFP, R5F524TBAxFP, R5F524TEAxFP, R5F524TAAxFP |
| RX24U Group (R01UH0658EJ0100) | 100pin | R5F524UEAxFP, R5F524UCAxFP, R5F524UBAxFP |
| | 144pin | R5F524UEAxFB, R5F524UBAxFB, R5F524UCAxFB |
| RX64M Group (R01UH0377EJ0110) | 100pin | R5F564MFCxFP, R5F564MFCxLJ, R5F564MFDxFP, R5F564MFDxLJ, R5F564MGCxFP, R5F564MGCxLJ, R5F564MGDxFP, R5F564MGDxLJ, R5F564MJCxFP, R5F564MJCxLJ, R5F564MJDxFP, R5F564MJDxLJ, R5F564MLCxFP, R5F564MLCxLJ, R5F564MLDxFP, R5F564MLDxLJ |
| | 144/145pin | R5F564MFCxFB, R5F564MFCxLK, R5F564MFDxFB, R5F564MFDxLK, R5F564MGCxFB, R5F564MGCxLK, R5F564MGDxFB, R5F564MGDxLK, R5F564MJCxFB, R5F564MJCxLK, R5F564MJDxFB, R5F564MJDxLK, R5F564MLCxFB, R5F564MLCxLK, R5F564MLDxFB, R5F564MLDxLK |
| | 176/177pin | R5F564MFDxFC, R5F564MFDxBG, R5F564MFDxLC, R5F564MFCxFC, R5F564MFCxBG, R5F564MFCxLC, R5F564MGDxFC, R5F564MGDxBG, R5F564MGDxLC, R5F564MGCxFC, R5F564MGCxBG, R5F564MGCxLC, R5F564MJDxFC, R5F564MJDxBG, R5F564MJDxLC, R5F564MJCxFC, R5F564MJCxBG, R5F564MJCxLC, R5F564MLDxFC, R5F564MLDxBG, R5F564MLDxLC, R5F564MLCxFC, R5F564MLCxBG, R5F564MLCxLC |

**Table 2-3 Support Devices**

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

**Table 2-4 Support Devices**

| Group (HW Manual number) | PIN | Device name |
|---|---|---|
| RX66T Group (R01UH0749EJ0120) | 48pin | R5F566TABxFL, R5F566TAFxFL, R5F566TEBxFL, R5F566TEFxFL |
| | 64pin | R5F566TAAxFM, R5F566TAExFM, R5F566TEAxFM, R5F566TEExFM |
| | 80pin | R5F566TAAxFF, R5F566TAExFF, R5F566TEAxFF, R5F566TEExFF, R5F566TAAxFN, R5F566TAExFN, R5F566TEAxFN, R5F566TEExFN |
| | 100pin | R5F566TKCxFP, R5F566TAExFP, R5F566TFFxFP, R5F566TFCxFP, R5F566TFExFP, R5F566TFBxFP, R5F566TFAxFP, R5F566TABxFP, R5F566TAFxFP, R5F566TEFxFP, R5F566TKFxFP, R5F566TKGxFP, R5F566TKAxFP, R5F566TKExFP, R5F566TKBxFP, R5F566TEBxFP, R5F566TEExFP, R5F566TEAxFP, R5F566TAAxFP, R5F566TFGxFP |
| | 112pin | R5F566TAAxFH, R5F566TAExFH, R5F566TEExFH, R5F566TEAxFH |
| | 144pin | R5F566TKCxFB, R5F566TFGxFB, R5F566TFCxFB, R5F566TKGxFB |
| RX71M Group (R01UH0493EJ0110) | 100pin | R5F571MLCxFP, R5F571MLDxFP, R5F571MLGxFP, R5F571MLHxFP, R5F571MJCxFP, R5F571MJDxFP, R5F571MJGxFP, R5F571MJHxFP, R5F571MGCxFP, R5F571MGDxFP, R5F571MGGxFP, R5F571MGHxFP, R5F571MFCxFP, R5F571MFDxFP, R5F571MFGxFP, R5F571MFHxFP, R5F571MLCxLJ, R5F571MLDxLJ, R5F571MLGxLJ, R5F571MLHxLJ, R5F571MJCxLJ, R5F571MJDxLJ, R5F571MJGxLJ, R5F571MJHxLJ, R5F571MGCxLJ, R5F571MGDxLJ, R5F571MGGxLJ, R5F571MGHxLJ, R5F571MFCxLJ, R5F571MFDxLJ, R5F571MFGxLJ, R5F571MFHxLJ |
| | 144/145pin | R5F571MLCxLK, R5F571MLDxLK, R5F571MLGxLK, R5F571MLHxLK, R5F571MJCxLK, R5F571MJDxLK, R5F571MJGxLK, R5F571MJHxLK, R5F571MGCxLK, R5F571MGDxLK, R5F571MGGxLK, R5F571MGHxLK, R5F571MFCxLK, R5F571MFDxLK, R5F571MFGxLK, R5F571MFHxLK, R5F571MLCxFB, R5F571MLDxFB, R5F571MLGxFB, R5F571MLHxFB, R5F571MJCxFB, R5F571MJDxFB, R5F571MJGxFB, R5F571MJHxFB, R5F571MGCxFB, R5F571MGDxFB, R5F571MGGxFB, R5F571MGHxFB, R5F571MFCxFB, R5F571MFDxFB, R5F571MFGxFB, R5F571MFHxFB |
| | 176/177pin | R5F571MLCxFC, R5F571MLDxFC, R5F571MLGxFC, R5F571MLHxFC, R5F571MJCxFC, R5F571MJDxFC, R5F571MJGxFC, R5F571MJHxFC, R5F571MGCxFC, R5F571MGDxFC, R5F571MGGxFC, R5F571MGHxFC, R5F571MFCxFC, R5F571MFDxFC, R5F571MFGxFC, R5F571MFHxFC, R5F571MLCxLC, R5F571MLDxLC, R5F571MLGxLC, R5F571MLHxLC, R5F571MJCxLC, R5F571MJDxLC, R5F571MJGxLC, R5F571MJHxLC, R5F571MGCxLC, R5F571MGDxLC, R5F571MGGxLC, R5F571MGHxLC, R5F571MFCxLC, R5F571MFDxLC, R5F571MFGxLC, R5F571MFHxLC, R5F571MLCxBG, R5F571MLDxBG, R5F571MLGxBG, R5F571MLHxBG, R5F571MJCxBG, R5F571MJDxBG, R5F571MJGxBG, R5F571MJHxBG, R5F571MGCxBG, R5F571MGDxBG, R5F571MGGxBG, R5F571MGHxBG, R5F571MFCxBG, R5F571MFDxBG, R5F571MFGxBG, R5F571MFHxBG |
| RX72M Group (R01UH0804EJ0110) | 100pin | R5F572MDDxFP, R5F572MDHxFP, R5F572MNDxFP, R5F572MNHxFP |
| | 144pin | R5F572MDDxFB, R5F572MDHxFB, R5F572MNDxFB, R5F572MNHxFB |
| | 176pin | R5F572MNHxFC, R5F572MDDxBG, R5F572MNDxFC, R5F572MDHxBG, R5F572MDDxFC, R5F572MNHxBG, R5F572MNDxBG, R5F572MDHxFC |
| | 224pin | R5F572MDDxBD, R5F572MDHxBD, R5F572MNHxBD, R5F572MNDxBD |

**Table 2-5 Support Devices**

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

## 2.2 Support Components List

Below is a list of Components supported by the Smart Configurator for RX V2.16.0.

**Table 2-6 Support Components (RX100, RX200 family)** **✓: Support, -: Non-support**

| No | Components | Mode | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | 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 2-7 Support Components (RX100, RX200 family)** **✓: Support, -: Non-support**

| No | Components | Mode | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | 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 2-8 Support Components (RX100, RX200 family)** **✓: Support, -: Non-support**

| No | Components | Mode | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | 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) | - | - | - | - | ✓ | - | - | - | ✓ | - | ✓ | |

**Table 2-9 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 2-10 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 2-11 Support Components (RX600, RX700 family)** **✓: Support, -: Non-support**

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

## 2.3 New support

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

From Smart Configurator for RX V2.16.0, BSP rev7.21 is supported and will be added as default BSP when creating Smart Configurator project.

### 2.3.2 RX board feature update

From Smart Configurator for RX V2.16.0, 27 boards' info have been updated.

**Table 2-12 List of board feature update**

| Index | Board name | Remark |
|---|---|---|
| 1 | RSKRX111_V1.02 | Version update |
| 2 | RSKRX113_V1.02 | Version update |
| 3 | RSKRX130_V1.02 | Version update |
| 4 | RSKRX130-512KB_V1.03 | Version update |
| 5 | RSKRX140_V1.01 | Version update |
| 6 | RSKRX231_V1.02 | Version update |
| 7 | RSKRX231B_V1.01 | Version update |
| 8 | RSKRX23T_V1.02 | Version update |
| 9 | RSKRX24T_V1.03 | Version update |
| 10 | RSKRX24U_V1.03 | Version update |
| 11 | RSK+RX64M_V1.02 | Version update |
| 12 | RSK+RX65N_V1.02 | Version update |
| 13 | RSK+RX65N-2MB_V1.05 | Version update |
| 14 | RSK+RX65N-2MB(TSIP)_V1.02 | Version update |
| 15 | RSKRX660_V1.01 | Version update |
| 16 | RSKRX66T_V1.04 | Version update |
| 17 | RSKRX66T(TSIP)_V1.01 | Version update |
| 18 | RSK+RX671_V1.02 | Version update |
| 19 | RSK+RX71M_V1.02 | Version update |
| 20 | RSKRX72T_V1.02 | Version update |
| 21 | RSKRX72T(TSIP)_V1.01 | Version update |
| 22 | RSK+RX72M_V1.02 | Version update |
| 23 | RSK+RX72M(TSIP)_V1.01 | Version update |
| 24 | RSK+RX72N_V1.03 | Version update |
| 25 | RSK+RX72N(TSIP)_V1.01 | Version update |
| 26 | RSSKRX23W_V1.02 | Version update |

| | | |
|---|---|---|
| 27 | RSSKRX23W(TSIP)_V1.01 | Version update |

### 2.3.3 More boards are supported with software component (driver and middleware) recommend feature

From Smart Configurator for RX V2.16.0, the following 10 more boards are supported with software component (driver and middleware) recommended feature. When the user selects those boards, recommended software component can be seen from “Board” page.

- RSKRX111
- RSKRX113
- RSKRX130
- RSKRX130-512KB
- RSKRX23T
- RSKRX24T
- RSKRX24U
- CPUCardRX13T
- CPUCardRX24T
- RX66T CPU Card for CPU Evaluation

### 2.3.4 New support on the easy configuration of all unused pins in Port Component

From Smart Configurator RX V2.16.0, all unused pins in PORT component can be configured to output 0 / output 1 easily.

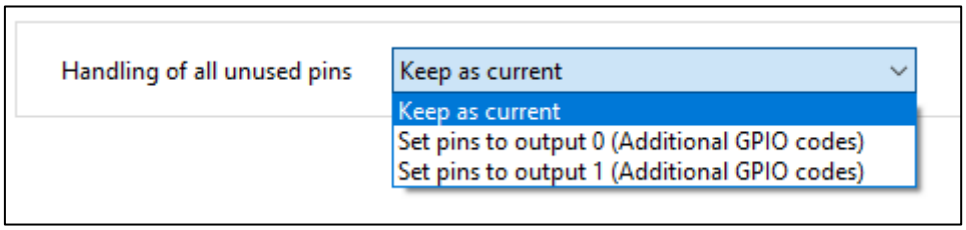



**Figure 2-1 Easy configuration on the unused pins in Port Component**

To decrease the current drawn, all unused pins are suggested to be configured into "input and add pull-up resistor" or "set to output" as mentioned in the Hardware User Manual. However, the previous version of Smart Configurator does not support the easy configuration for all unused pins in Port component.

With this new feature support, all unused pins can be configured effortlessly in Port component.

### 2.3.5 New support of Linux OS

From Smart Configurator for RX V2.16.0, Smart Configurator will be supported on Linux OS

Please refer to 1.1.2 Linux PC for the information of supported Linux.

### 2.3.6 New support of compare match output feature in Phase Counting Mode Timer component

From Smart Configurator for RX V2.16.0, compare match output feature has been supported in "Cascade Connection 32-Bit Phase Counting Mode" of Phase Counting Mode Timer Component.

With this new feature, "Output compare register" will be configured as default setting for TGRALW/TGRBLW register, and signals from MTIOC1A/MTIOC1B pin are able to output at the timing of compare match.

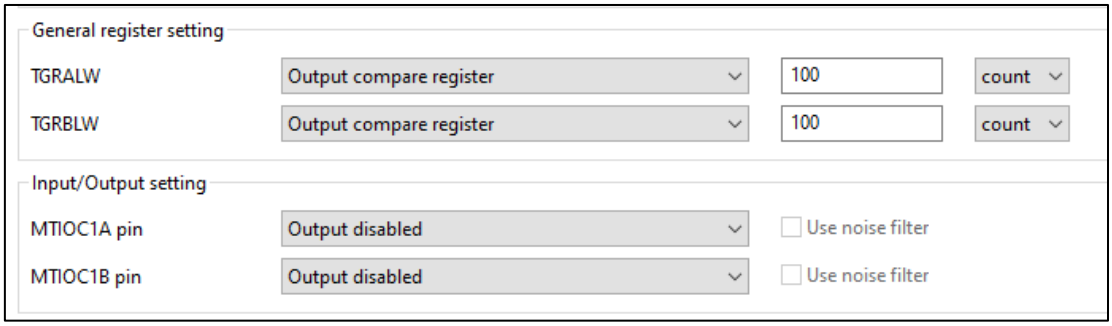



**Figure 2-2 New support of compare match output feature in Phase Counting Mode Timer component**

### 2.3.7 New support for BSP Rev7.21 expansion RAM settings

From Smart Configurator RXV2.16.0, by using the BSP Rev7.21 on e2 studio Smart Configurator project, “BSP_CFG_EXPANSION_RAM_ENABLE” macro will be set to 1 for RX devices that support expansion RAM (e.g., RX66N, RX72N, RX72M) At the same time, sections will be added to the linker settings to allow expansion RAM to be used.

Do take note that “BSP_CFG_EXPANSION_RAM_ENABLE” will be set to 0 in CS+ Smart Configurator project due to tool's limitation. Please configure expansion RAM settings manually when enabling this macro in CS+.

### 2.3.8 Bank mode selection support for IAR project creation with Standalone Smart Configurator

From Smart Configurator for RX V2.16.0, user can configure the bank mode through the wizard page while creating IAR EWRX project with Standalone Smart Configurator, and corresponding Linear/Dual mode device will be automatically configured when loading the IAR project file generated by Smart Configurator into IAR EW for RX.

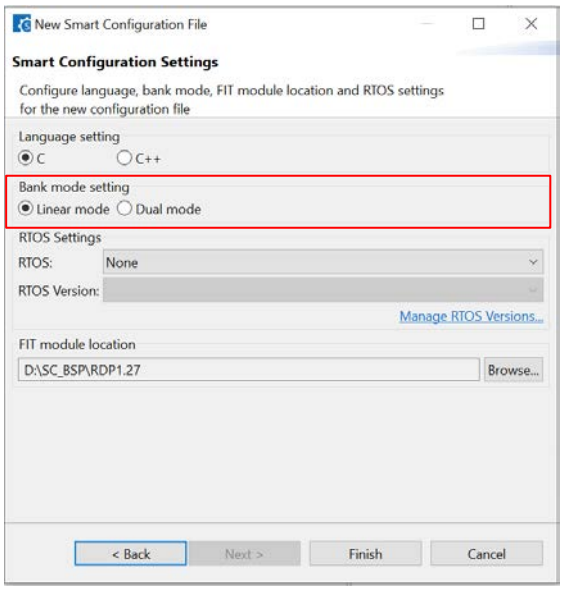



**Figure 2-3 Bank mode selection on wizard page of IAR project creation**

### 2.3.9 Language selection (C or C++) support for IAR project creation with Standalone Smart Configurator

From Smart Configurator for RX V2.16.0, user can configure the language setting (C or C++) through wizard page while creating IAR EWRX project with Standalone Smart Configurator, and when C++ language is selected, main.cpp file will also be generated together with the IAR project files.

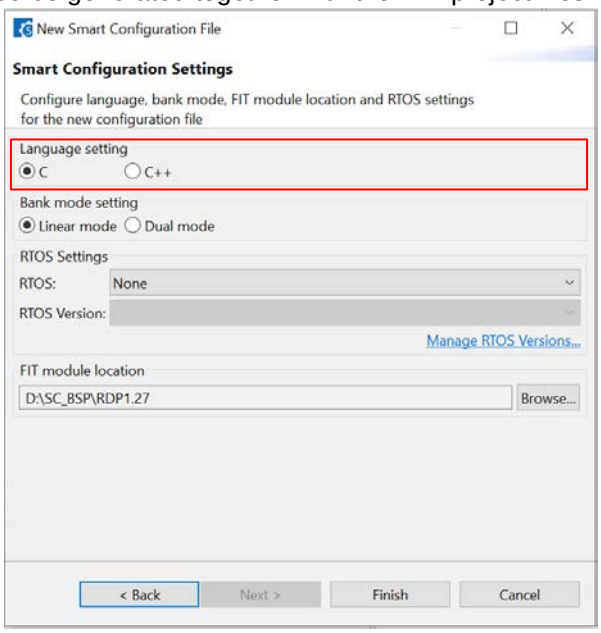



**Figure 2-4 Language selection on the wizard page of IAR project creation**

### 2.3.10 User code protection feature for Smart Configurator Code Generation component

For Smart Configurator for RX V2.15.0 or previous version, user code can be protected when user insert the user code into the fixed location defined inside the generated files of Code Generation component.

From Smart Configurator for RX V2.16.0, an enhanced user code protection feature has been implemented which allows user codes to be added to any locations with the specific tags (/* Start user code */ … /* End user code */) as shown in **Figure 2-5.** Inserted user codes will be protected and automatically merged into generated files in the next code generation.

This feature will be available from Smart Configurator for RX Plug-in in e2 studio 2023-01.

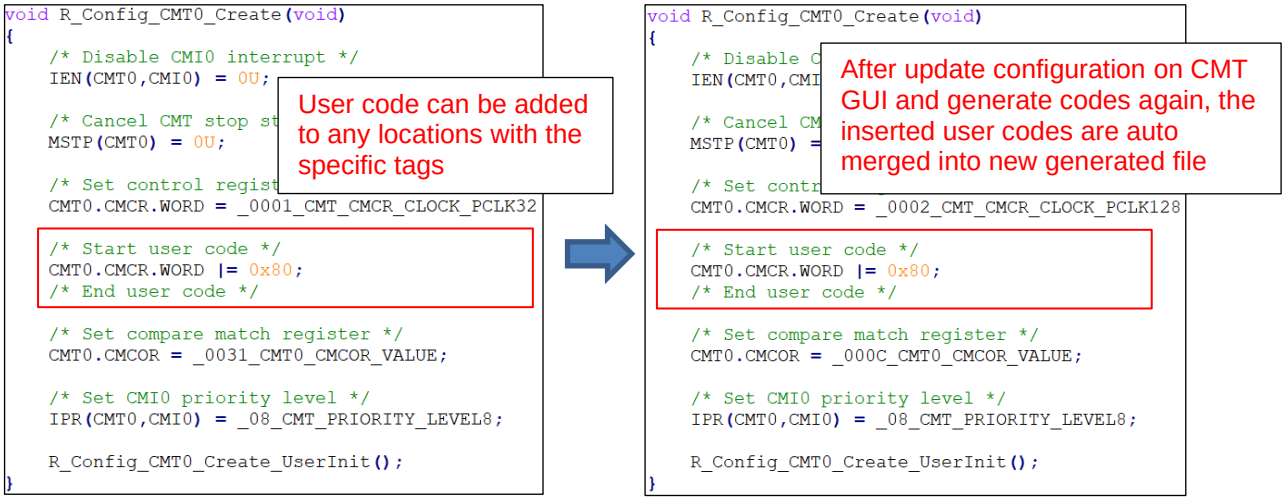



**Figure 2-5 User code protection with auto merge**

However, if the lines of generated codes before and after the inserted user codes are updated due to the new GUI configuration, merge conflict code will be generated out as shown in **Figure 2-6**.

(By upgrading the version of Smart Configurator, merge conflicts will be generated if the GUI configuration in new environment updated the lines of generated codes before and after the inserted user code.)

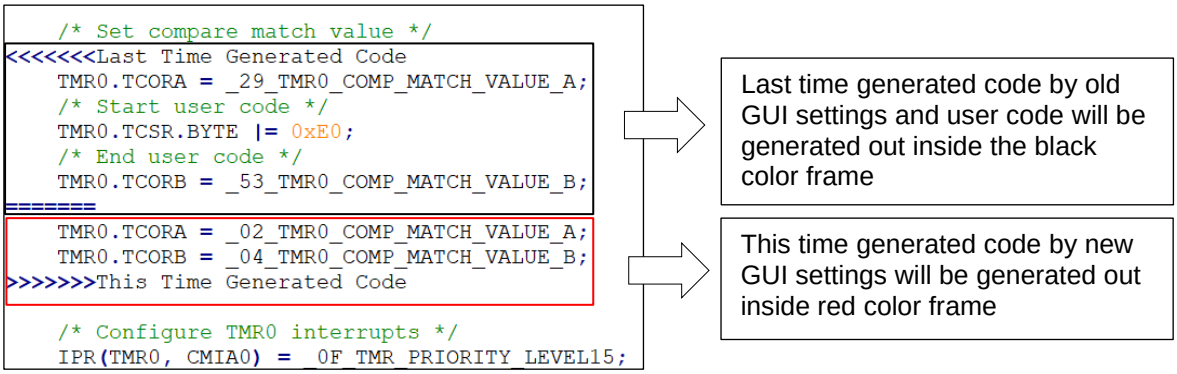



**Figure 2-6 User code protection with merge conflict**

As shown in **Figure 2-7,** conflict message will be generated out to the Smart Configurator console when the merge conflict occurs.


**Figure 2-7 The merge conflict message outputted in the Smart Configurator console**

To resolve this merge conflict, open the highlighted conflict files and follow the steps below to solve the merge conflicts manually.

1) Copy the user code that was generated in **Figure 2-8**.

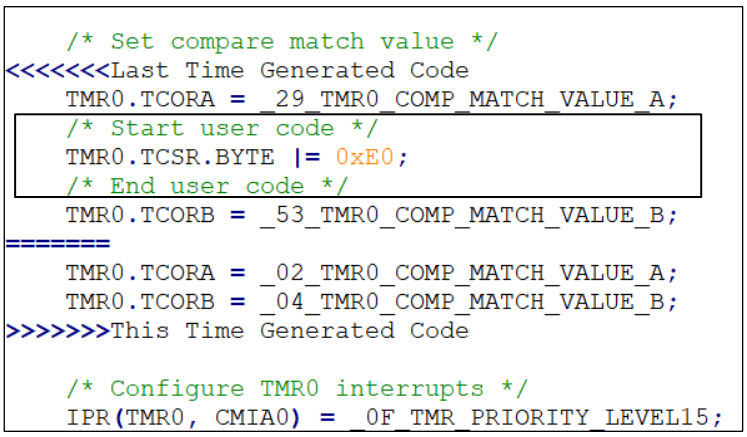



**Figure 2-8 Generated conflict code**

2) Paste the user code into the new position (inside the code that was generated by new GUI settings) as shown in **Figure 2-9**.

```
    /* Set compare match value */
<<<<<<<Last Time Generated Code
    TMR0.TCORA = _29_TMR0_COMP_MATCH_VALUE_A;
    /* Start user code */
    TMR0.TCSR.BYTE |= 0xE0;
    /* End user code */
    TMR0.TCORB = _53_TMR0_COMP_MATCH_VALUE_B;
=======
    TMR0.TCORA = _02_TMR0_COMP_MATCH_VALUE_A;
    /* Start user code */
    TMR0.TCSR.BYTE |= 0xE0;
    /* End user code */
    TMR0.TCORB = _04_TMR0_COMP_MATCH_VALUE_B;
>>>>>>>This Time Generated Code
```

**Figure 2-9 Generated conflict code**

3) Remove last time generated code and the conflicts commend (<<<<<<<Last Time Generated Code, ======= and >>>>>>>This Time Generated Code) as shown in **Figure 2-10**.

```
/* Set compare match value */
TMR0.TCORA = _02_TMR0_COMP_MATCH_VALUE_A;
/* Start user code */
TMR0.TCSR.BYTE |= 0xE0;
/* End user code */
TMR0.TCORB = _04_TMR0_COMP_MATCH_VALUE_B;
```

**Figure 2-10 The codes after resolving the merge conflict**

# 3. Changes

This chapter describes changes to the Smart Configurator for RX V2.16.0.

## 3.1 Correction of issues/limitations

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

| No | Description | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fixed the input range of deadtime in Motor component | – | – | – | – | ✓ | – | – | – | ✓ | – | ✓ | |
| 2 | Fixed the displayed value inside the generated report when using Motor component | – | – | – | – | ✓ | – | – | – | ✓ | – | ✓ | |

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

| No | Description | RX64M | RX65N, RX651 | RX66N | RX66T | RX660 | RX671 | RX71M | RX72M | RX72N | RX72T | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fixed the input range of deadtime in Motor component | – | – | – | ✓ | – | – | – | ✓ | – | ✓ | |
| 2 | Fixed the displayed value inside the generated report when using Motor component | – | – | – | ✓ | – | – | – | ✓ | – | ✓ | |

### 3.1.1 Fixed the input range of deadtime in Motor component

When configuring the maximum input value for "Timer Operation Period" in Motor component, the input value range for dead time is wrong when "count" is being selected. This issue has been fixed from SC for RX V2.16.0

### 3.1.2 Fixed the displayed value inside the generated report when using Motor component

When generating report in Motor component, the value inside the generated report will remain as default value and not updating according to the GUI value. This issue has been fixed from SC for RX V2.16.0

## 3.2 Specification changes

**Table 3-3 List of Specification changes (RX100, RX200 family)** ○: Applicable, /: Not Applicable

| No | Description | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | P, P* and PResetPRG sections have been improved to be updated once by code generation in Smart Configurator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | Layout of Smart Configurator Component Preference page has been improved for better user experience | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

**Table 3-4 List of Specification changes (RX600, RX700 family)** ○: Applicable, /: Not Applicable

| No | Description | RX64M | RX65N, RX651 | RX66N | RX66T | RX660 | RX671 | RX71M | RX72M | RX72N | RX72T | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | P, P* and PResetPRG sections have been improved to be updated once by code generation in Smart Configurator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 2 | Layout of Smart Configurator Component Preference page has been improved for better user experience | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

### 3.2.1 P, P* and PResetPRG sections have been improved to be updated once by code generation in Smart Configurator

From Smart Configurator for RX V2.16.0, P, P* and PResetPRG sections will only update once by code generation in Smart Configurator.

Previous versions of Smart Configurator will always update the section setting if the code generation is being triggered. Section settings are not able to configure freely as it will be updated every time generating code. With this new feature, users can configure and keep the section setting.

Do take note that if BSP is updated into another newer version and generates code, section setting will be updated.

### 3.2.2 Layout of Smart Configurator Component Preference page has been improved for better user experience

From Smart Configurator RX V2.16.0, the layout for Smart Configurator Component Preferences page has been improved for better user experience of the "code generation behavior" feature. "Update configuration files" will be selected by default.

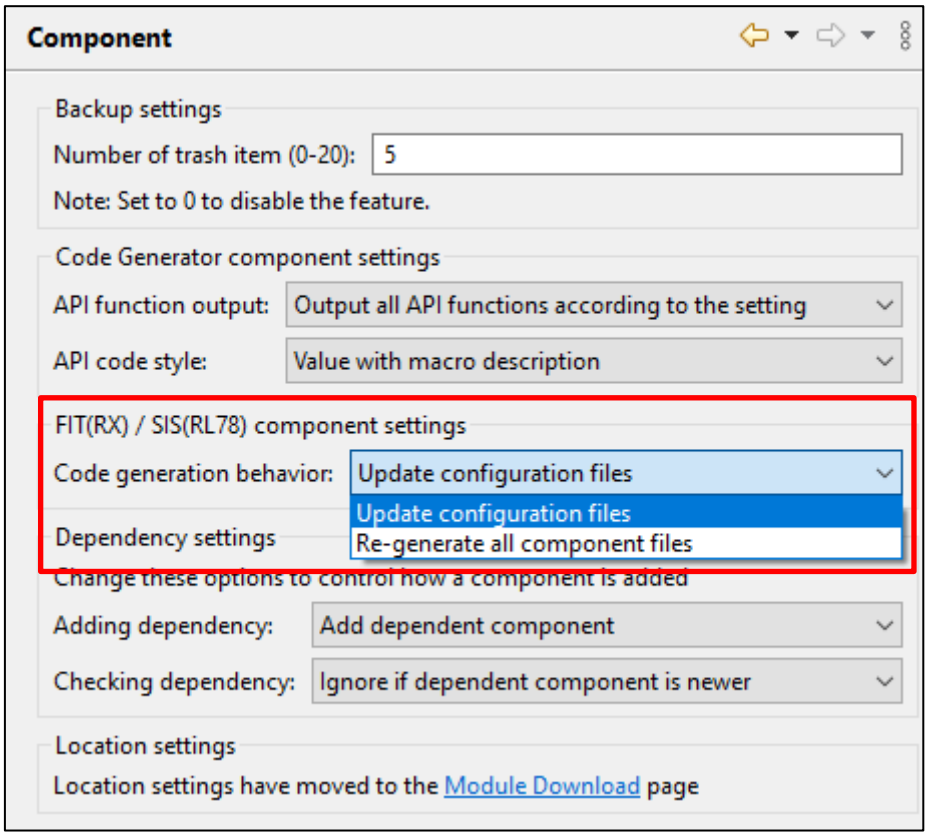



**Figure 3-1 New layout for Smart Configurator Component Preference page**

If "Update configuration files" is being selected and generate code, Smart Configurator will check whether the files are existing inside the user project. If the file exists, the file will not be overwritten. However, configuration files (e.g., xxx_config.h) will still be refreshed when code is generated.

If "Re-generate all component files" being selected and generate code, Smart Configurator does not check the existence of the file and the file will always be overwritten.

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

| Issue date | Document No. | Description | Applicable MCUs | Fixed version |
|---|---|---|---|---|
| Jun.16, 2019 | R20TS0436 | 1. When using general PWM timer<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-4 | RX66T, RX72T | V2.2.0 |
| Aug.01, 2019 | R20TS0466 | 1. When using the NACK reception transfer suspension function on the I²C bus interface<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-5 | RX110, RX111, RX113, RX130, RX230, RX231, RX23T, RX24T, RX24U, RX64M, RX651, RX65N, RX66T, RX71M, RX72M, RX72T | V2.3.0 |
| Sep.16, 2019 | R20TS0477 | 1. When Using the Automatic Adjustment Function for Time Error Adjustment on the Realtime Clock<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-6 | RX110, RX111, RX113, RX130, RX230, RX231, RX64M, RX651, RX65N | V2.4.0 |
| Dec.16, 2019 | R20TS0522 | 1. When using temperature sensor output or internal reference voltage for comparison function on S12AD components (Single Scan Mode, Group Scan Mode and Continuous Scan Mode)<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>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-7 | RX64M, RX651, RX65N, RX66T, RX71M, RX72M, RX72T | V2.4.0 |
| Feb. 01, 2020 | R20TS0546 | 1. When using the PLL frequency synthesizer of the clock<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-8 | RX64M, RX651, RX65N, RX66T, RX71M, RX72T | V2.5.0 |

| Issue date | Document No. | Description | Applicable MCUs | Fixed version |
|---|---|---|---|---|
| Mar. 16, 2020 | R20TS0555 | 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>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-9 | RX24T, RX24U, RX71M | V2.5.0 |
| Apr.03, 2020 | TN−RX*-A0222 | Errata to RX72N Group User's Manual: Hardware Rev.1.00<br>https://www.renesas.com/document/tcu/errata-rx72n-group-users-manual-hardware-rev100 | 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>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-10 | RX23E-A | V2.6.0 |
| Jun.16, 2020 | R20TS0591 | 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>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-11 | RX230, RX231, RX651, RX65N, RX66T, RX72T | V2.6.0 |
| Aug. 21, 2020 | TN-RX*-A0234A/E | Errata to the RX113 Group User's Manual: Hardware Rev.1.10<br>https://www.renesas.com/document/tcu/errata-rx113-group-users-manual-hardware | RX113 | V2.8.0 |
| Sep. 01, 2020 | R20TS0611 | When using PWM Mode component and making configuration with MTU channel 1 and 2<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-13 | RX13T, RX23T, RX24T, RX24U | V2.7.0 |

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

| Issue date | Document No. | Description | Applicable MCUs | Fixed version |
|---|---|---|---|---|
| Nov. 16, 2021 | R20TS0770 | When using Port component and configuring port pins' driving ability as high drive output<br>https://www.renesas.com/us/en/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-16 | RX651, RX65N | V2.12.0 |
| Mar. 01, 2022 | R20TS0820 | 1. When importing existing C++ project and updating BSP component version to 7.00 onwards<br><br>2. When build or clean e2 studio Smart Configurator project<br><br>3. When using AN107 in S12AD Continuous Scan Mode component<br>https://www.renesas.com/document/tnn/notes-e-studio-smart-configurator-plug-smart-configurator-rx-17 | RX110, RX111, RX113, RX130, RX13T, RX140, RX230, RX231, RX23E-A, RX23T, RX23W, RX24T, RX24U, RX651, RX65N, RX66N, RX66T, RX671, RX72M, RX72N, RX72T, RX64M, RX71M | V2.13.0 |

# 5. Points for Limitation

This section describes points for limitation regarding the Smart Configurator for RX V2.16.0. Regarding to FIT component driver limitation, please refer to its document generated out after code generation.

## 5.1 List of Limitation

**Table 5-1 List of limitations (RX100, RX200 Family)** **✓: Applicable, -: Not Applicable**

| No | Description | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | 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 “Out of range for memory type” build error when using Data Transfer Controller component on EWRX IAR tool chain | - | - | - | - | - | - | - | - | - | - | - | |
| 5 | Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain | ✓ | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ | - | ✓ | ✓ | |
| 6 | Note on generated code 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 “Out of range for memory type” build error when using Data Transfer Controller component on EWRX IAR tool chain | - | - | ✓ | - | - | - | - | ✓ | ✓ | - | |
| 5 | Note on Overlaps build error when using Data Transfer Controller component on EWRX IAR tool chain | ✓ | ✓ | - | ✓ | - | ✓ | ✓ | - | - | ✓ | |
| 6 | Note on generated code 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.

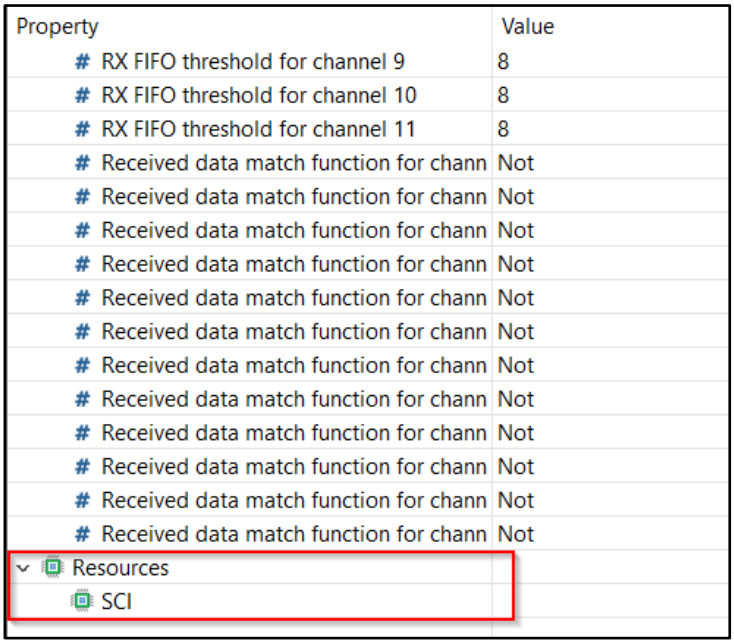



**Figure 5-1 Resource tree without any pin in FIT component GUI**

### 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.

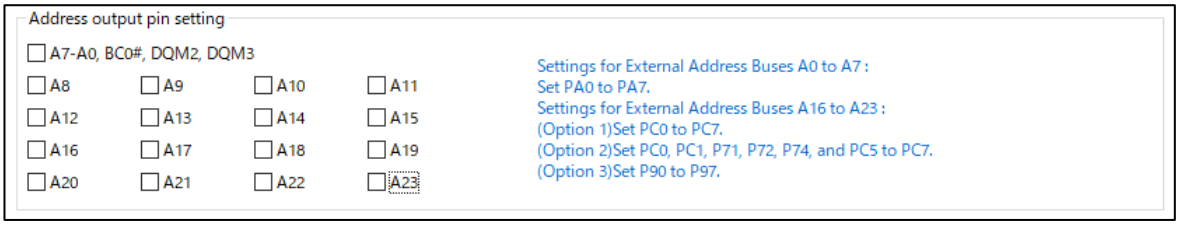



**Figure 5-2 “Address output pin setting” value should be disabled**

### 5.2.4 Note on “Out of range for memory type” build error when using Data Transfer Controller component on EWRX IAR tool chain

When using Data Transfer Controller component in Smart Configurator project that is using EWRX IAR tool chain, the following “Out of range for memory type” build error might occur.

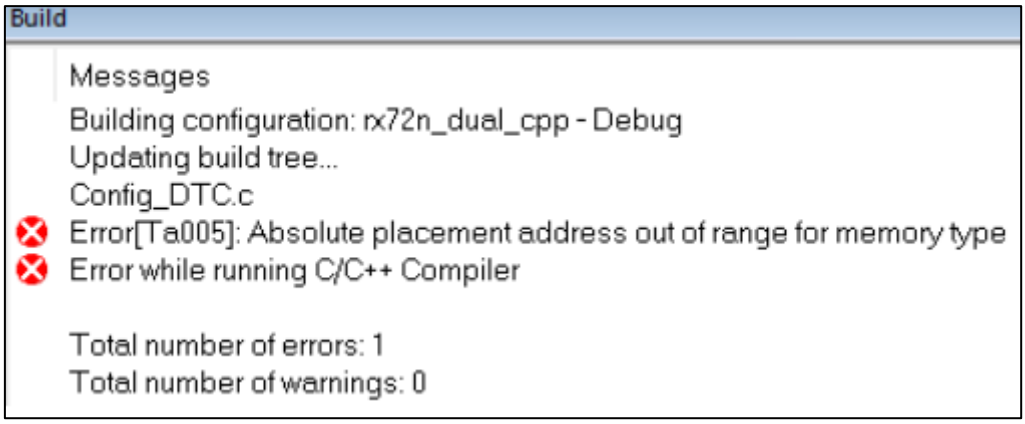



**Figure 5-1 Build error when using Data Transfer Controller component**

To resolve this build error, modify the variable type of dtc_vector26” in “Config_DTC.c” as below.

- Variable type of “dtc_vector26” in “Config_DTC.c” before modifying

```
/***********************************************************************
Global variables and functions
***********************************************************************/
#pragma location = 0x0087FC68UL
__no_init volatile uint32_t dtc_vector26;
__no_init volatile st_dtc_data_t dtc_transferdata_vector26;
/* Start user code for global. Do not edit comment generated here */
/* End user code. Do not edit comment generated here */
```

- Manually update the variable type of “dtc_vector26” as below

```
/***********************************************************************
Global variables and functions
***********************************************************************/
#pragma location = 0x0087FC68UL
__no_init __data32 volatile uint32_t dtc_vector26;
__no_init volatile st_dtc_data_t dtc_transferdata_vector26;
/* Start user code for global. Do not edit comment generated here */
/* End user code. Do not edit comment generated here */
```

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

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

```
Error[Lp023]: absolute placement (in [0x3c6c-0x3fff]) overlaps with absolute section:
      [0x3c6c-0x3c6f] .data24.abs.noinit (Config_DTC.o #9) [dtc_vector27]

Error[Lp011]: section placement failed
      unable to complete "place at" directives with a total estimated minimum size of 0x1000 bytes in <[0x3c6c-0x3fff]> (total space 0x394).
Error[Lp015]: section placement failure: overcommitted content in [0x3c6c-0x3fff]
Error while running Linker

Total number of errors: 3
Total number of warnings: 0

Build failed.
```

**Figure 5-2 Build error when using Data Transfer Controller component**

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

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

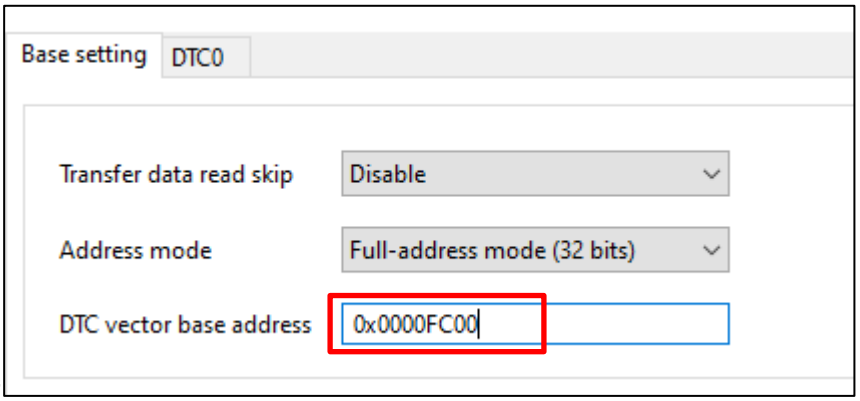
1) Add Data Transfer Controller in Smart Configurator and generate code with default settings.
2) Import the project to IAR Workbench and build.
3) The following error is generated out when build the project in IAR Workbench.

```
Error[Lp023]: absolute placement (in [0x1'fc68-0x1'ffff]) overlaps with absolute section:
      [0x1'fc68-0x1'fc6b] .data24.abs.noinit (Config_DTC.o #9) [dtc_vector26]

Error[Lp011]: section placement failed
      unable to complete "place at" directives with a total estimated minimum size of 0x1000 bytes in <[0x1'fc68-0x1'ffff]> (total space 0x398).
Error[Lp015]: section placement failure: overcommitted content in [0x1'fc68-0x1'ffff]
Error while running Linker
```

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

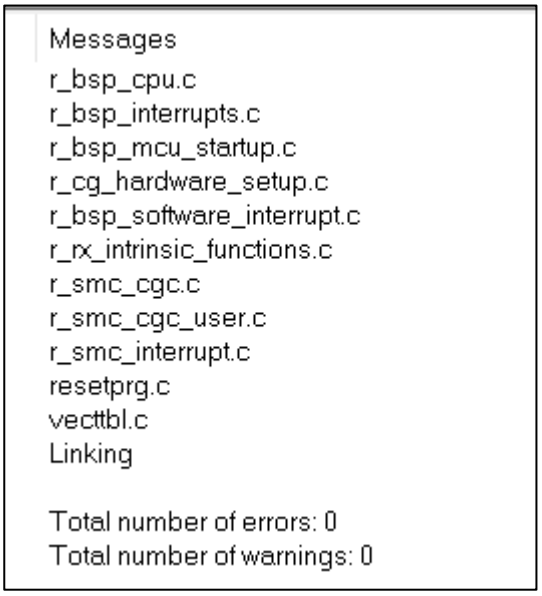
5) Configure the value of DTC vector base address into “0x0000FC00”




“

6) Generate code and rebuild the project in IAR Workbench.

7) Build error has been resolved.



### 5.2.6 Note on generated code when using Port component

When using PORT component in the following device and pin packages, the default value of the PDR register that mentioned in the table below are not generated as expected. This issue will be fixed from the next release.

**Table 5-3 List of the generated PDR default value in PORT component**

| Device | Pin package | Port number | Current PDR default value | Expected PDR default value |
|---|---|---|---|---|
| RX140 | 80 pin | PORTJ | 0x3E or _3E_PORTJ_DEFAULT | 0x3D or _3D_PORTJ_DEFAULT |
| | 48 pin | PORTE | 0xF0 or _F0_PORTE_DEFAULT | 0xE1 or _E1_PORTE_DEFAULT |
| | 32 pin | PORTE | 0xF0 or _F0_PORTE_DEFAULT | 0xE1 or _E1_PORTE_DEFAULT |
| RX660 | 80 pin | PORT3 | 0x04 or _04_PORT3_DEFAULT | 0x08 or _08_PORT3_DEFAULT |
| | | PORT5 | 0xC0 or _C0_PORT5_DEFAULT | 0xCF or _CF_PORT5_DEFAULT |

As a temporary workaround, please follow the below steps to resolve this issue

Here using PORTJ in RX140_80 pin device as example.

- After making PORTJ GUI setting and generate codes, please open the “R_Config_Port.c” file and find the PORTJ PDR initialization line of code in “R_Config_Port_Create(void)” API.

```
void R_Config_PORT_Create(void)
{
    /* Set PORTJ registers */
    PORTJ.PCR.BYTE = _00_Pm1_PULLUP_OFF | _00_Pm6_PULLUP_OFF |
_00_Pm7_PULLUP_OFF;
    PORTJ.PMR.BYTE = _00_Pm1_PIN_GPIO | _00_Pm6_PIN_GPIO | _00_Pm7_PIN_GPIO;
    PORTJ.PDR.BYTE = _00_Pm1_MODE_INPUT | _00_Pm6_MODE_INPUT |
_00_Pm7_MODE_INPUT | _3E_PDRJ_DEFAULT;

    R_Config_PORT_Create_UserInit();
}
```

- Copy the above line of code and paste into the “R_Config_PORT_Create_UserInit(void)” API inside the “R_Config_PORT_user.c” file.

```
void R_Config_PORT_Create_UserInit(void)
{
    /* Start user code for user init. Do not edit comment generated here */
    PORTJ.PDR.BYTE = _00_Pm1_MODE_INPUT | _00_Pm6_MODE_INPUT |
_00_Pm7_MODE_INPUT | _3E_PDRJ_DEFAULT;
    /* End user code. Do not edit comment generated here */
}
```

- Replace the wrong default value for PORTJ PDR register with the expected value "_3D_PDRJ_DEFAULT" described in above Table 5-3 and save.

```
void R_Config_PORT_Create_UserInit(void)
{
    /* Start user code for user init. Do not edit comment generated here */
    PORTJ.PDR.BYTE = _00_Pm1_MODE_INPUT | _00_Pm6_MODE_INPUT |
_00_Pm7_MODE_INPUT | _3D_PDRJ_DEFAULT;
    /* End user code. Do not edit comment generated here */
}
```

# 6. Points for Caution

This section describes points for caution regarding the Smart Configurator for RX V2.16.0. Regarding to FIT component driver caution, please refer to its document generated out after code generation.

## 6.1 List of Caution

**Table 6-1 List of Caution (RX100, RX200 Family)** **✓: Applicable, -: Not Applicable**

| No | Description | RX110 | RX111 | RX113 | RX130 | RX13T | RX140 | RX230, RX231 | RX23E-A | RX23T | RX23W | RX24T, RX24U | 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 e2 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 the “Show view” dialog in Standalone Smart Configurator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 15 | Note on accessing “Release Notes” and “Tool News” URL from the help menu | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 16 | Note on the IPCF file naming change for IAR project | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 17 | Note on using user code protection feature | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

**Table 6-2 List of Caution (RX600, RX700 Family)** **✓: Applicable, -: Not Applicable**

| No | Description | RX64M | RX65N, RX651 | RX66N | RX66T | RX660 | RX671 | RX71M | RX72M | RX72N | RX72T | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Note on configuring GPT interrupt | ✓ | - | ✓ | ✓ | – | – | ✓ | ✓ | ✓ | ✓ | |
| 2 | Note on using only reception in SCI Clock Synchronous Mode | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 3 | Notes on using high transfer speed in SCIF Synchronous Mode | ✓ | - | - | - | - | - | ✓ | - | - | - | |
| 4 | Note on device change functionality | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 5 | Note on using Smart Configurator for GCC project in e2 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 the “Show view” dialog in Standalone Smart Configurator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 15 | Note on accessing “Release Notes” and “Tool News” URL from the help menu | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 16 | Note on the IPCF file naming change for IAR project | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 17 | Note on using user code protection feature | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |

## 6.2 Details of Caution

### 6.2.1 Note on configuring GPT interrupts

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

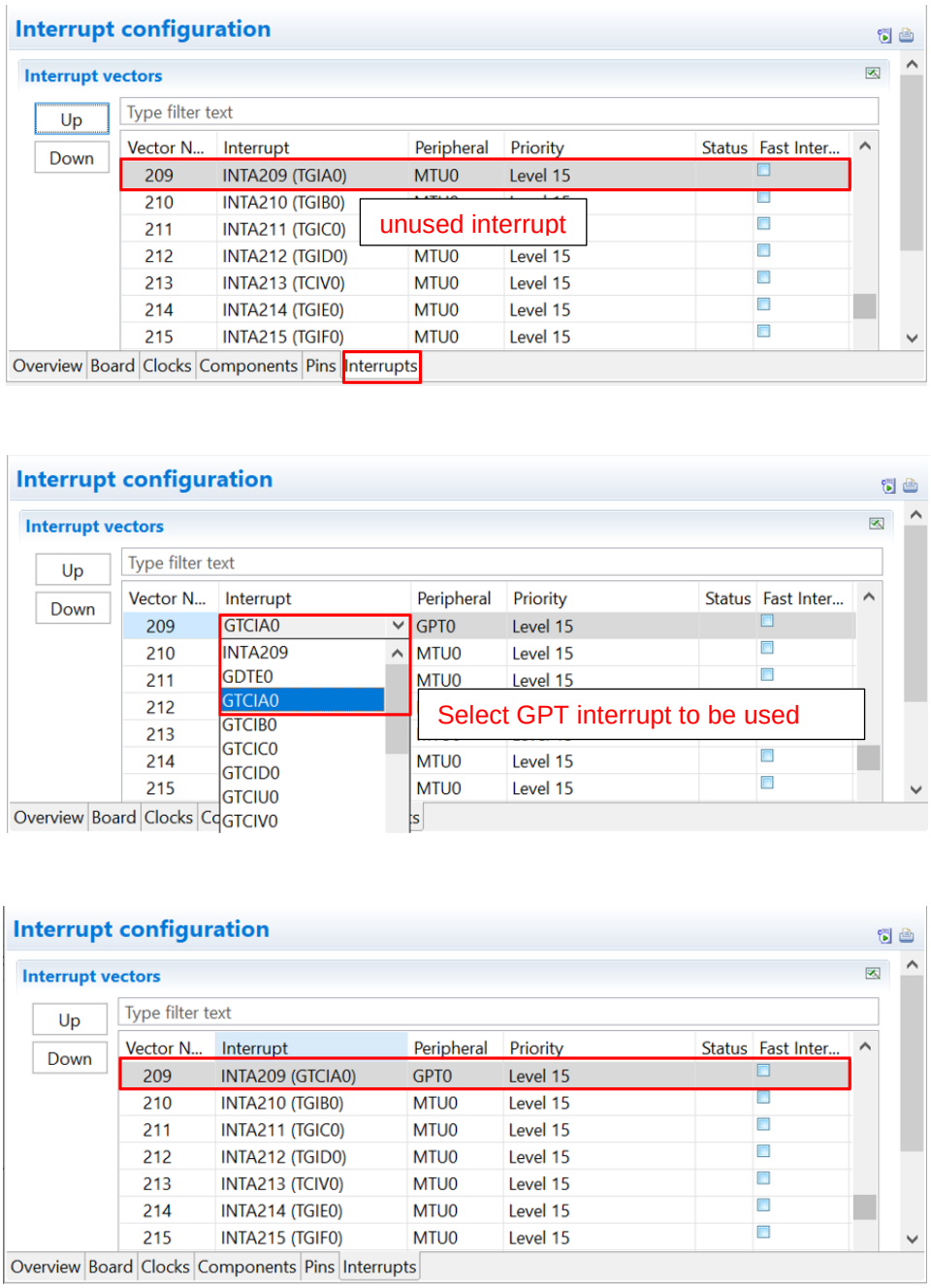



**Figure 6-1 GPT interrupt vector number assignment**

### 6.2.2 Note on using only reception in SCI Clock Synchronous Mode

In SCI Clock Synchronous Mode using internal clock, if only reception is enabled in high communication speed, extra clocks are generated even though reception has been completed.
This is due to the delay in disabling RE to stop the clock after the desired number of data is received.
To prevent this issue, select Transmission/Reception work mode when using Smart Configurator. Use “R_<Configuration Name>_Serial_Send_Receive” function instead of “R_<Configuration Name>_Serial_Receive”. The same number of data for tx_num and rx_num should be specified.
Disable TXDn pin in Smart Configurator Pins page and send dummy data if transmission is not required.
There will be warnings when TXDn pin is disabled. These warnings can be ignored as TXDn pin is not intended to be used originally.

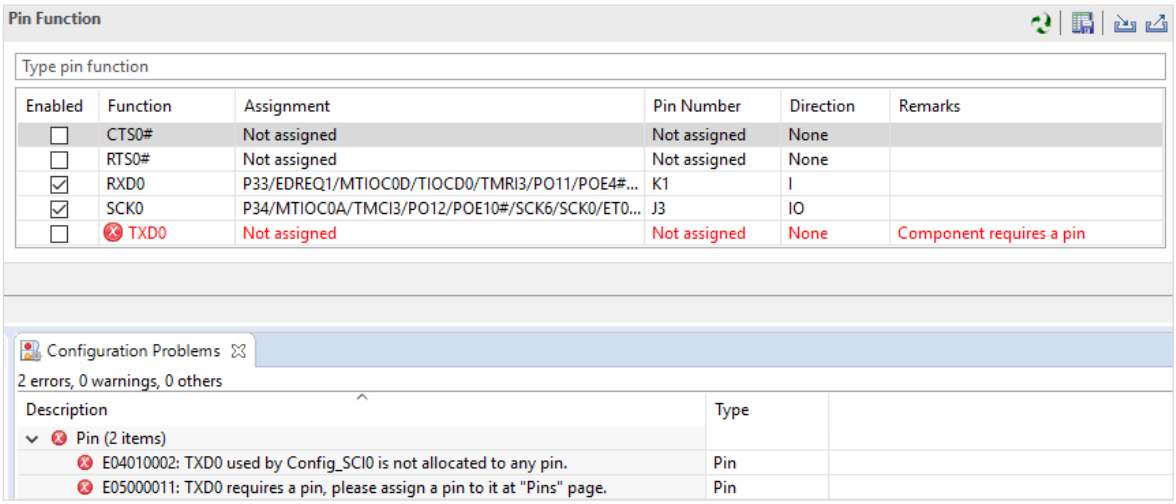



**Figure 6-1-2 Ignore warnings when TXDn pin is disabled (Example with TXD0)**

### 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:

(Reception Data Size) = n * (Reception FIFO threshold) (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, 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 e2 studio, there will be a build error saying "E0562310: Undefined external symbol "_abort" referenced in "error"" in the output console, these existing projects were created by Smart Configurator for RX V2.12.0 and before version while BSP version was updated to V7.00. To resolve this build error, please add the "abort" function manually into main program file.

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

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

void main_task(void *pvParameters)
{

	/* Create all other application tasks here */

	while(1);

	vTaskDelete(NULL);

}

void abort (void)
{

}
```

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

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

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

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

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

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

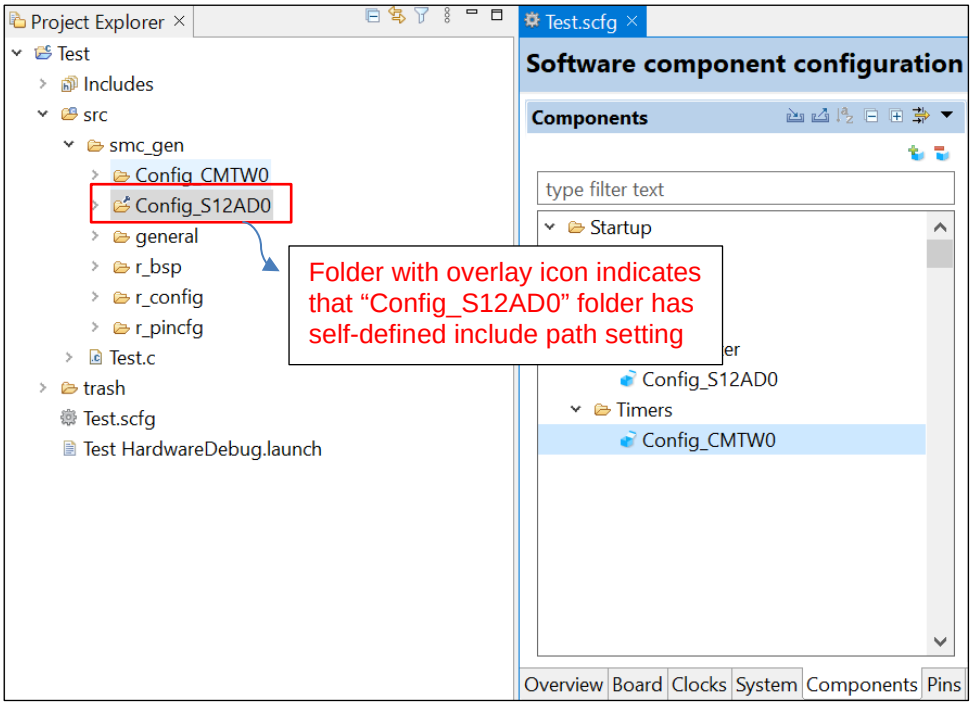



**Figure 6-3 Compare Match Timer component configuration before renaming**

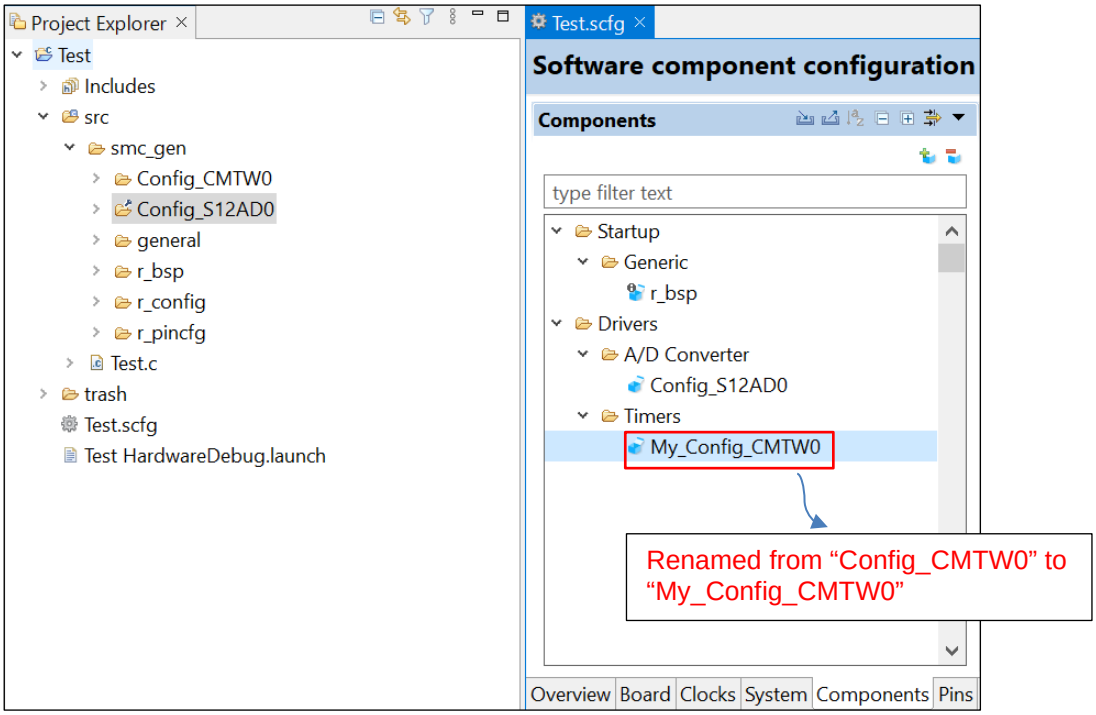



**Figure 6-4 The Compare Match Timer component configuration after renaming**

.

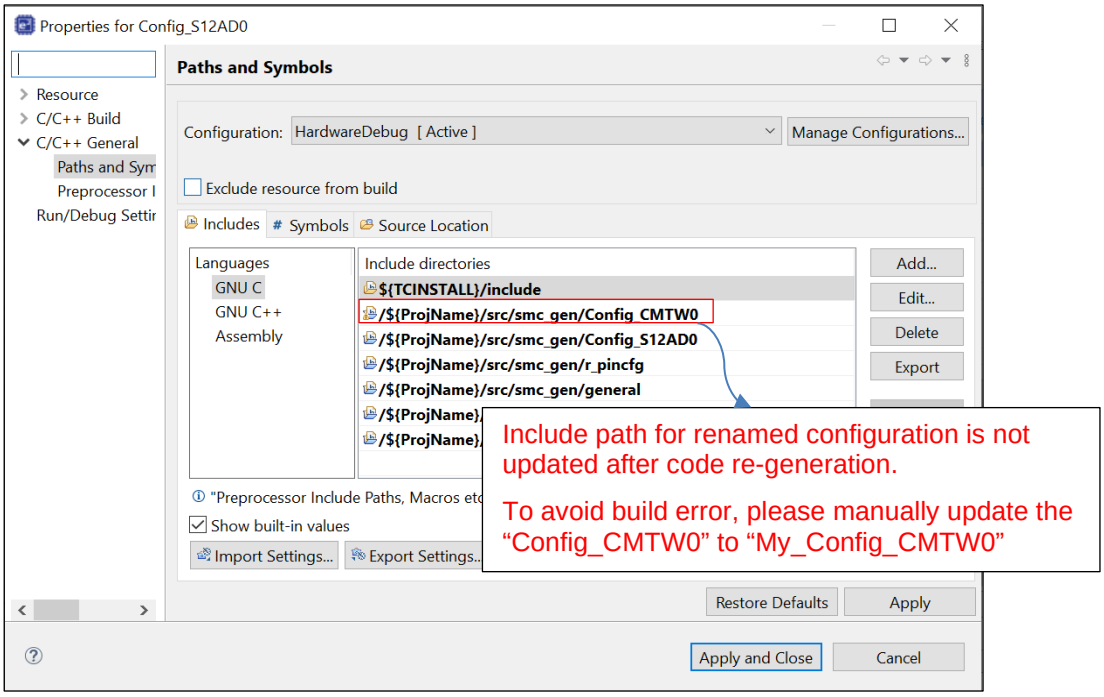



**Figure 6-5 Inclue path setting for the “Config_S12AD0” configuration**

### 6.2.14 Note on the “Show view” dialog in Standalone Smart Configurator

When configuring the "Show View" dialog in Standalone Smart Configurator, although the following items will be shown inside the menu, but do not configure or use it. This issue will be fixed from the next release.

- Bookmarks
- Markers
- Navigator (Deprecated)
- Problems
- Progress
- Tasks
- Welcome
- Cheat Sheets

### 6.2.15 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

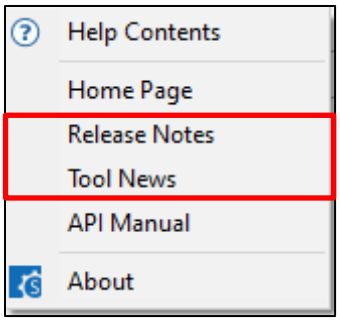



**Figure 6-2 "Release Notes" and "Tool News" in help menu**

### 6.2.16 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.

### 6.2.17 Note on using user code protection feature

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

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

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

## Revision History

| Rev. | Section | Description |
|---|---|---|
| 1.00 | - | First edition issued |

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

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

1. Precaution against Electrostatic Discharge (ESD)

   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.
2. Processing at power-on

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

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

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

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

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

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

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

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