Smart Configurator for RL78 V1.0.1

Release Note

R20UT4874EC0101
Rev.1.01
Apr.13.21

Introduction

Thank you for using the Smart Configurator for RL78.

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.

1.1 System requirements

Smart Configurator for RL78 V1.0.1 operating environment is as follows.

1.1.1 PC

- IBM PC/AT compatibles (Windows® 10, Windows® 8.1)
- Processor: 1 GHz or higher (must support hyper-threading, multi-core CPUs)
- Memory capacity: 4 GB or more recommended. Minimum requirement is 2 GB or more (64-bit Windows requires 4 GB or more)
- Hard disk capacity: 200 MB or more spare capacity
- Display: 1024 x 768 or higher resolution, 65,536 or more colors
- All other necessary software environments in addition to Windows OS: Java Runtime Environment

1.1.2 Development Environments

- Renesas electronics Compiler for RL78 [CC-RL] V1.09 or later
- LLVM for Renesas RL78 10.0.0.202012 or later
- IAR Embedded Workbench for Renesas RL78 V4.20.1 or later
- SMS Assembler V1.00.00 or later

2. Support List

2.1 Support Devices List

Below is a list of devices supported by the Smart Configurator for RL78 V1.0.1.

Table 2-1 Support Devices

Group (HW Manual number)	PIN	Device name
RL78/G23 Group (R01UH0896EJ0090)	30pin	R7F100GAFxSP, R7F100GAGxSP, R7F100GAHxSP, R7F100GAJxSP
	32pin	R7F100GBFxNP, R7F100GBGxNP, R7F100GBHxNP, R7F100GBJxNP, R7F100GBFxFP, R7F100GBGxFP, R7F100GBHxFP, R7F100GBJxFP
	36pin	R7F100GCFxLA, R7F100GCGxLA, R7F100GCHxLA, R7F100GCJxLA
	40pin	R7F100GEFxNP, R7F100GEGxNP, R7F100GEHxNP, R7F100GEJxNP
	44pin	R7F100GFFxFP, R7F100GFGxFP, R7F100GFHxFP, R7F100GFJxFP, R7F100GFKxFP, R7F100GFLxFP, R7F100GFNxFP
	48pin	R7F100GGFxFB, R7F100GGGxFB, R7F100GGHxFB, R7F100GGJxFB, R7F100GGKxFB, R7F100GGLxFB, R7F100GGNxFB, R7F100GGFxNP, R7F100GGGxNP, R7F100GGHxNP, R7F100GGJxNP, R7F100GGKxNP, R7F100GGLxNP, R7F100GGNxNP
	52pin	R7F100GJFxFA, R7F100GJGxFA, R7F100GJHxFA, R7F100GJJxFA, R7F100GJKxFA, R7F100GJLxFA, R7F100GJNxFA
	64pin	R7F100GLFxFA, R7F100GLGxFA, R7F100GLHxFA, R7F100GLJxFA, R7F100GLKxFA, R7F100GLLxFA, R7F100GLNxFA, R7F100GLFxFB, R7F100GLGxFB, R7F100GLHxFB, R7F100GLJxFB, R7F100GLKxFB, R7F100GLLxFB, R7F100GLNxFB, R7F100GLFxLA, R7F100GLGxLA, R7F100GLHxLA, R7F100GLJxLA, R7F100GLKxLA, R7F100GLLxLA, R7F100GLNxLA
	80pin	R7F100GMGxFA, R7F100GMHxFA, R7F100GMJxFA, R7F100GMKxFA, R7F100GMLxFA, R7F100GMNxFA, R7F100GMGxFB, R7F100GMHxFB, R7F100GMJxFB, R7F100GMKxFB, R7F100GMLxFB, R7F100GMNxFB
	100pin	R7F100GPGxFB, R7F100GPHxFB, R7F100GPJxFB, R7F100GPKxFB, R7F100GPLxFB, R7F100GPNxFB, R7F100GPGxFA, R7F100GPHxFA, R7F100GPJxFA, R7F100GPKxFA, R7F100GPLxFA, R7F100GPNxFA
	128pin	R7F100GSJxFB, R7F100GSKxFB, R7F100GSLxFB, R7F100GSNxFB

2.2 Support Components List

Below is a list of Components supported by the Smart Configurator for RL78 V1.0.1.

Table 2-2 Support Components (1/2) ✓: Support, -: Non-support

No	Components	Mode	RL78/G23	Remarks
1	A/D Converter	-	✓	
2	Clock Output/Buzzer Output Controller	-	✓	
3	Comparator	-	✓	
4	CSI Communication	Transmission	✓	
		Reception	✓	
		Transmission/reception	✓	
5	D/A Converter	-	✓	
6	Data Transfer Controller	-	✓	
7	Delay Counter	-	✓	
8	Divider Function	-	✓	
9	External Event Counter	-	✓	
10	IIC Communication (Master mode)	-	✓	
11	IIC Communication (Slave mode)	-	✓	
12	Input Pulse Interval Measurement	-	✓	
13	Input Signal High-/Low-Level Width Measurement	-	✓	
14	Interrupt Controller	-	✓	
15	Interval Timer	8 bit count mode	✓	
		16 bit count mode	✓	
		16 bit capture mode	✓	
		32 bit count mode	✓	
16	Key Interrupt	-	✓	
17	One-Shot Pulse Output	-	✓	
18	Ports	-	✓	
19	PWM Output	-	✓	
20	Real-Time Clock	-	✓	
21	Remote Control Signal Receiver	-	✓	
22	SNOOZE Mode Sequencer	-	✓	
23	Square Wave Output	-	✓	

Table 2-3 Support Components (2/2) ✓: Support, -: Non-support

No	Components	Mode	RL78/G23	Remarks
24	UART Communication	Transmission	✓	
		Reception	✓	
		Transmission/reception	✓	
25	Voltage Detector	-	✓	
26	Watchdog Timer	-	✓	
27	Logic & Event Link Controller	-	✓	Need download in Smart Configurator RL78

2.3 New Support

2.3.1 LLVM project support

From Smart Configurator for RL78 V1.0.1, user can create RL78 LLVM project with Smart Configurator in both e² studio and standalone version.

1) e² studio Smart Configurator for RL78 plug-in

When creating LLVM project in e² studio, the following screen will be displayed, so please check [Use Smart Configurator].

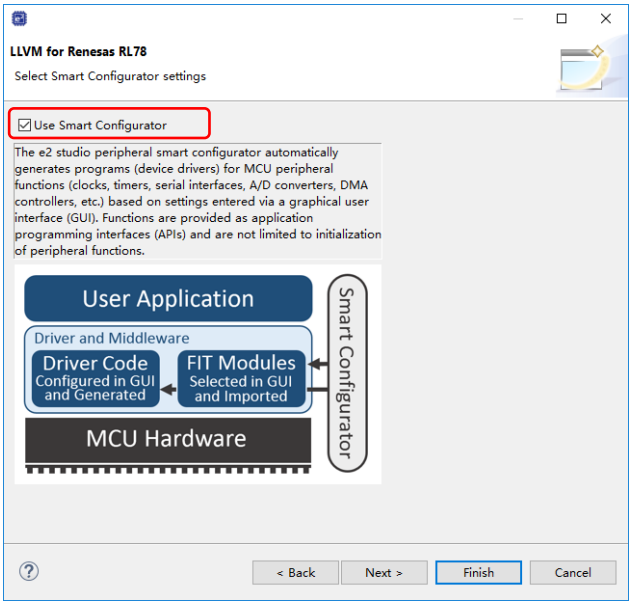

Figure 2-1 Adding to the LLVM project

2) RL78 Smart Configurator

Select [LLVM for Renesas RL78] when creating a new file.

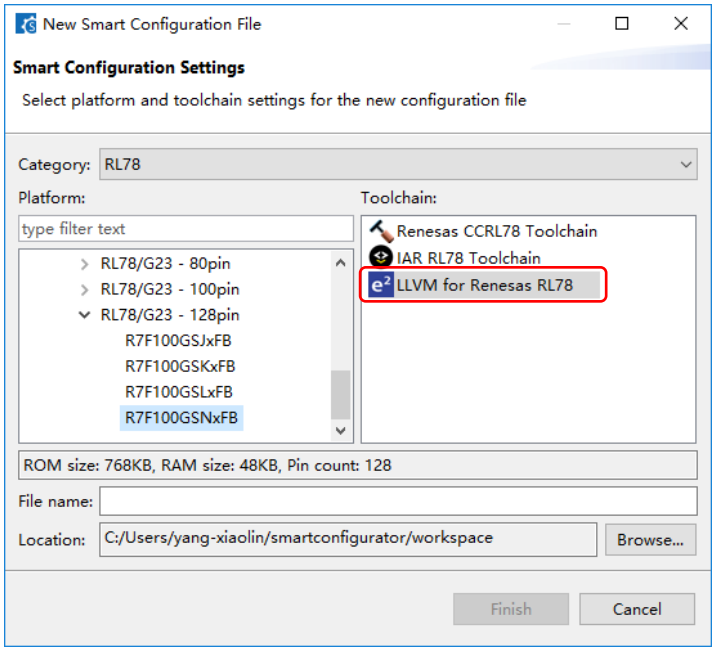

Figure 2-2 Create LLVM project

2.3.2 Graphical Configurator drivers (SMS, ELCL) support

Smart Configurator RL78 can support a new component type called “Graphical Configurator”. SNOOZE Mode Sequencer (SMS) and Logic Event Link Controller (ELCL) are this kind of component. Please refer to User Guide document for the details.

2.3.3 RL78 Software Integration System module support

RL78 Software Integration System module is another software component type which can provide simple view for you to make driver/middle/application SW configuration and generate the code. The available RL78 Software Integration System modules can be downloaded from Renesas web. Please refer to User Guide document for the download operation.

3. Points for Limitation

This section describes points for limitation regarding the Smart Configurator for RL78 V1.0.1.

3.1 List of Limitation

Table 3-1 List of Limitation ✓: Applicable, -: Not Applicable

No	Description	RL78/G23	Remarks
1	Note on extra help document issue	✓	
2	Note on security ID code issue when using IAREW	✓	
3	Note on the option byte C1H value of LVD0 issue	✓	

3.2 Details of Limitation

3.2.1 Note on extra help document issue

For standalone version, there is an extra help "Smart Browser" under "[Help] > [Help Contents]".

Please ignore it.

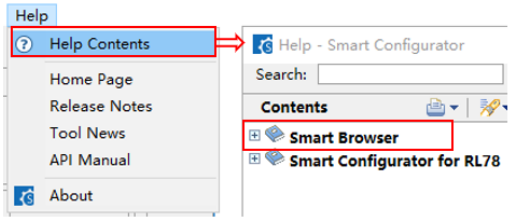

Figure 3-1 Extra help issue

3.2.2 Note on security ID code issue when using IAREW

For standalone version, when you create an IAR RL78 Toolchain project, if you want to change the security ID value, you could copy following code to the top of main.c file as workaround.

```
#include "r_smc_entry.h"


  /* Set security ID */
#pragma location = "SECUID"
__root const uint8_t secuid[10] =
    {0x00U, 0x00U, 0x00U, 0x00U, 0x00U, 0x00U, 0x00U, 0x00U, 0x00U, 0x00U};


int main( void )
{
  return 0;
}
```

Note: You can change the security ID value manually.

3.2.3 Note on the option byte C1H value of LVD0 issue

When you use LVD0, the option byte C1H value is not expected value. As a workaround please refer to Table 3-2 to change [Current] value to [Expectation] after “Generate Code”.

Table 3-2 Option Byte C1H Value of LVD0

Voltage detection setting	Detection Voltage	Option Byte C1H Value	
		Current	Expectation
Reset generation level (VLVD0)	1.650 V	0xFD	0xFF
	1.860 V	0xFC	0xFE
	2.330 V	0xFB	0xFD
	2.620 V	0xFA	0xFC
	2.910 V	0xFF	0xFB
	3.880 V	0xFF	0xFA
Interrupt generation level (VLVD0)	1.650 V	0xBD	0xBF
	1.860 V	0xBC	0xBE
	2.330 V	0xBB	0xBD
	2.620 V	0xBA	0xBC
	2.910 V	0xFF	0xBB
	3.880 V	0xFF	0xBA

1) For CS+, please change the value in Build Tool property as below figure.

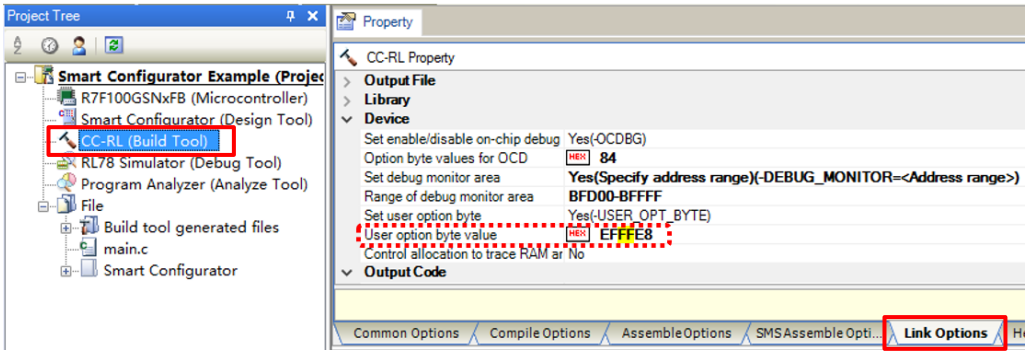

Figure 3-2. Option Byte C1H Value in CS+

2) For IAREW, please change the value in \<ProjectDir>\src\smc_gen\r_bsp\r_config\ r_bsp_config.h file.

```
84  #if defined(__ICCRL78__)
85   /* Option byte setting(When using IAR) */
86   #define OPTBYTE0_VALUE (0xEFU) /* Generated value. Do not edit this manually */
87   #define OPTBYTE1_VALUE (0xFDU) /* Generated value. Do not edit this manually */
88   #define OPTBYTE2_VALUE (0xE8U) /* Generated value. Do not edit this manually */
89   #define OPTBYTE3_VALUE (0x04U) /* Generated value. Do not edit this manually */
90  #endif
```

Figure 3-3. Option Byte C1H Value in IAREW

3) For e2 studio, please change the value in [Properties] window as below figure.

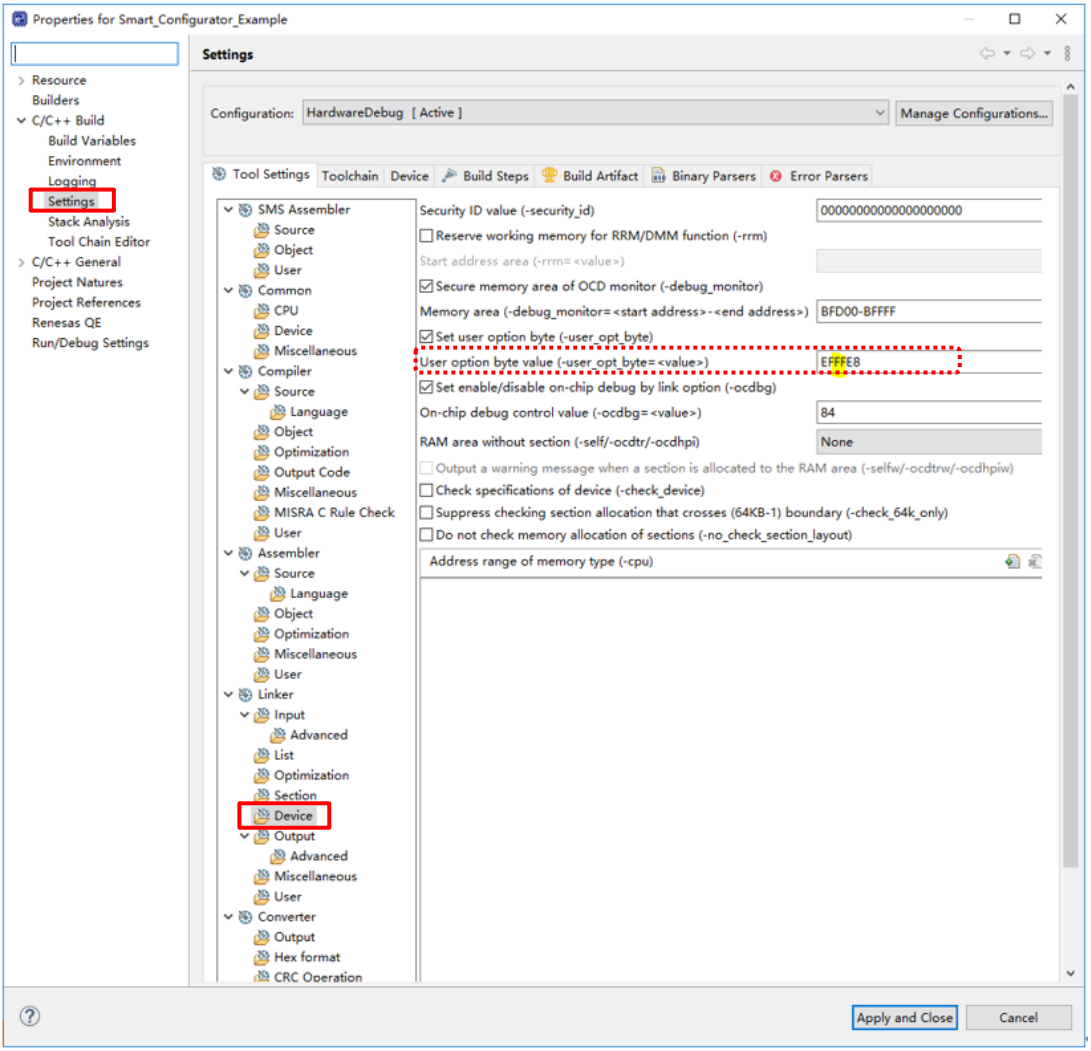

Figure 3-4. Option Byte C1H Value in e2 studio

Revision History

Rev.	Date	Description	
		Page	Summary
1.01	Apr 13, 2021	-	First edition issued

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

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

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

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

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

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

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

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

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

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

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(Rev.5.0-1 October 2020)

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