RENESAS

CS+ Code Generator for RL78
(CS+ for CC) (CS+ for CA, CX) V2.18.00

Release Note

Introduction

Thank you for using the CS+ integrated development environment. This document describes the restrictions and points for caution. Read this document before using the product.

Contents

1. Introduction

The CS+ Code Generator for RL78 (CS+ for CC) (CS+ for CA, CX) is a software tool to generate control programs (device driver programs) for peripheral modules (timers, UART, A/D, etc.). It generates device driver codes using user settings through GUI. Initialize code and API (Application Programming Interface) functions are provided.

1.1 PC

- · IBM PC/AT compatible (with Windows® 7, Windows® 8.1, or Windows® 10)
- · Processor: At least 1 GHz (the product supports hyper-threading and multi-core CPUs)
- · Memory capacity: 2 GB or more is recommended. At least 1 GB (or 2 GB for 64-bit versions of Windows®) is required.
- · Hard disk capacity: At least 200 MB available
- · Display resolution: 1024x768 or higher; at least 65536 colors
- · Required elements of the software environment other than the Windows OS: .NET Framework 4.5 plus a language pack

1.2 Development tools

- · Integrated development environment CS+ from Renesas, V8.02.00 or later
- · Renesas electronics Compiler for RL78 [CC-RL] V1.07 or later
- · Renesas electronics Compiler for 78K0R [CA78K0R] V1.30 or later

1.3 Code Generator Plug-in

Please check a checkbox of Code Generator plug-in at additional tab of Plug-in management dialog to use Code Generator for target device.

How to open of Plug-in management dialog: [Tool(T)] - [Plug-in Management(P)…] menu of CS+

Plug-in name	Supported device
Code Generator Plug-in	78K0, 78K0R, V850, a part of RL78 * * RL78/I1A, RL78/G12, RL78/G13, RL78/G14, RL78/G1A, RL78/F12, RL78/L12, RL78/F13, RL78/F14, RL78/F15
Code Generator/PinView Plug-in	RL78 except the above, RX

2. Supported Devices

2.1 Target Devices

The devices supported by the CS+ Code Generator for RL78 (CS+ for CC) (CS+ for CA, CX) V2.18.00 are listed below.

Table 2-1 Supported devices

Group (HW Manual number)	PIN	Device name
RL78/F12 Group (R01UH0231EJ0111)	20pin	R5F1096E, R5F1096D, R5F1096C, R5F1096B, R5F1096A, R5F10968
	30pin	R5F109AE, R5F109AD, R5F109AC, R5F109AB, R5F109AA
	32pin	R5F109BE, R5F109BD, R5F109BC, R5F109BB, R5F109BA
	48pin	R5F109GE, R5F109GD, R5F109GC, R5F109GB, R5F109GA
	64pin	R5F109LE, R5F109LD, R5F109LC, R5F109LB, R5F109LA
RL78/F13 Group (R01UH0368EJ0210)	20pin	R5F10A6A, R5F10A6C, R5F10A6D, R5F10A6E
	30pin	R5F10AAA, R5F10AAC, R5F10AAD, R5F10AAE, R5F10BAC, R5F10BAD, R5F10BAE, R5F10BAF, R5F10BAG
	32pin	R5F10ABA, R5F10ABC, R5F10ABD, R5F10ABE, R5F10BBC, R5F10BBD, R5F10BBE, R5F10BBF, R5F10BBG
	48pin	R5F10AGA, R5F10AGC, R5F10AGD, R5F10AGE, R5F10AGF, R5F10AGG, R5F10BGC, R5F10BGD, R5F10BGE, R5F10BGF, R5F10BGG
	64pin	R5F10BLC, R5F10ALD, R5F10ALE, R5F10ALF, R5F10ALG, R5F10BLC, R5F10BLD, R5F10BLE, R5F10BLF, R5F10BLG
	80pin	R5F10AME, R5F10AMF, R5F10AMG, R5F10BME, R5F10BMF, R5F10BMG
RL78/F14 Group (R01UH0368EJ0210)	30pin	R5F10PAD, R5F10PAE
	32pin	R5F10PBD, R5F10PBE
	48pin	R5F10PGD, R5F10PGE, R5F10PGF, R5F10PGG, R5F10PGH, R5F10PGJ
	64pin	R5F10PLE, R5F10PLF, R5F10PLG, R5F10PLH, R5F10PLJ
	80pin	R5F10PME, R5F10PMF, R5F10PMG, R5F10PMH, R5F10PMJ
	100pin	R5F10PPE, R5F10PPF, R5F10PPG, R5F10PPH, R5F10PPJ
RL78/F15 Group (R01UH0559EJ0100)	48pin	R5F113GL, R5F113GK
	64pin	R5F113LL, R5F113LK
	80pin	R5F113ML, R5F113MK
	100pin	R5F113PL, R5F113PK, R5F113PJ, R5F113PH, R5F113PG
	144pin	R5F113TL, R5F113TK, R5F113TJ, R5F113TH, R5F113TG
RL78/F1E Group (R01UH0611EJ0050)	64pin	R5F11KLE, R5F11LLG
RL78/G10 Group (R01UH0384EJ0311)	10pin	R5F10Y14, R5F10Y16, R5F10Y17
	16pin	R5F10Y44, R5F10Y46, R5F10Y47

Table 2-2 Support Devices

Group (HW Manual number)	PIN	Device name
RL78/G11 Group (R01UH0637EJ0110)	10pin	R5F1051A
	16pin	R5F1054A
	20pin	R5F1056A
	24pin	R5F1057A
	25pin	R5F1058A
RL78/G12 Group (R01UH0200EJ0210)	20pin	R5F10266, R5F10267, R5F10268, R5F10269, R5F1026A, R5F10366, R5F10367, R5F10368, R5F10369, R5F1036A
	24pin	R5F10277, R5F10278, R5F10279, R5F1027A, R5F10377, R5F10378, R5F10379, R5F1037A
	30pin	R5F102A7, R5F102A8, R5F102A9, R5F102AA, R5F103A7, R5F103A8, R5F103A9, R5F103AA
RL78/G13 Group (R01UH0146EJ0330)	20pin	R5F1006A, R5F1006C, R5F1006D, R5F1006E, R5F1016A, R5F1016C, R5F1016D, R5F1016E
	24pin	R5F1007A, R5F1007C, R5F1007D, R5F1007E, R5F1017A, R5F1017C, R5F1017D, R5F1017E
	25pin	R5F1008A, R5F1008C, R5F1008D, R5F1008E, R5F1018A, R5F1018C, R5F1018D, R5F1018E
	30pin	R5F100AA, R5F100AC, R5F100AD, R5F100AE, R5F100AF, R5F100AG, R5F101AA, R5F101AC, R5F101AD, R5F101AE, R5F101AF, R5F101AG
	32pin	R5F100BA, R5F100BC, R5F100BD, R5F100BE, R5F100BF, R5F100BG, R5F101BA, R5F101BC, R5F101BD, R5F101BE, R5F101BF, R5F101BG
	36pin	R5F100CA, R5F100CC, R5F100CD, R5F100CE, R5F100CF, R5F100CG, R5F101CA, R5F101CC, R5F101CD, R5F101CE, R5F101CF, R5F101CG
RL78/G13 Group (R01UH0146EJ0330)	40pin	R5F100EA, R5F100EC, R5F100ED, R5F100EE, R5F100EF, R5F100EG, R5F100EH, R5F101EA, R5F101EC, R5F101ED, R5F101EE, R5F101EF, R5F101EG, R5F101EH
	44pin	R5F100FA, R5F100FC, R5F100FD, R5F100FE, R5F100FF, R5F100FG, R5F100FH, R5F100FJ, R5F100FK, R5F100FL, R5F101FA, R5F101FC, R5F101FD, R5F101FE, R5F101FF, R5F101FG, R5F101FH, R5F101FJ, R5F101FK, R5F101FL
	48pin	R5F100GA, R5F100GC, R5F100GD, R5F100GE, R5F100GF, R5F100GG, R5F100GH, R5F100GJ, R5F100GK, R5F100GL, R5F101GA, R5F101GC, R5F101GD, R5F101GE, R5F101GF, R5F101GG, R5F101GH, R5F101GJ, R5F101GK, R5F101GL
	52pin	R5F100JC, R5F100JD, R5F100JE, R5F100JF, R5F100JG, R5F100JH, R5F100JJ, R5F100JK, R5F100JL, R5F101JC, R5F101JD, R5F101JE, R5F101JF, R5F101JG, R5F101JH, R5F101JJ, R5F101JK, R5F101JL
	64pin	R5F100LC, R5F100LD, R5F100LE, R5F100LF, R5F100LG, R5F100LH, R5F100LJ, R5F100LK, R5F100LL, R5F101LC, R5F101LD, R5F101LE, R5F101LF, R5F101LG, R5F101LH, R5F101LJ, R5F101LK, R5F101LL
	80pin	R5F100MF, R5F100MG, R5F100MH, R5F100MJ, R5F100MK, R5F100ML, R5F101MF, R5F101MG, R5F101MH, R5F101MJ, R5F101MK, R5F101ML
	100pin	R5F100PF, R5F100PG, R5F100PH, R5F100PJ, R5F100PK, R5F100PL, R5F101PF, R5F101PG, R5F101PH, R5F101PJ, R5F101PK, R5F101PL
	128pin	R5F100SH, R5F100SJ, R5F100SK, R5F100SL, R5F101SH, R5F101SJ, R5F101SK, R5F101SL

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Table 2-3 Support Devices

Group (HW Manual number)	PIN	Device name
RL78/G14 Group (R01UH0186EJ0330)	30pin	R5F104AA, R5F104AC, R5F104AD, R5F104AE, R5F104AF, R5F104AG
	32pin	R5F104BA, R5F104BC, R5F104BD, R5F104BE, R5F104BF, R5F104BG
	36pin	R5F104CA, R5F104CC, R5F104CD, R5F104CE, R5F104CF, R5F104CG
	40pin	R5F104EA, R5F104EC, R5F104ED, R5F104EE, R5F104EF, R5F104EG, R5F104EH
	44pin	R5F104FA, R5F104FC, R5F104FD, R5F104FE, R5F104FF, R5F104FG, R5F104FH, R5F104FJ
	48pin	R5F104GA, R5F104GC, R5F104GD, R5F104GE, R5F104GF, R5F104GG, R5F104GH, R5F104GJ, R5F104GK, R5F104GL
	52pin	R5F104JC, R5F104JD, R5F104JE, R5F104JF, R5F104JG, R5F104JH, R5F104JJ
	64pin	R5F104LC, R5F104LD, R5F104LE, R5F104LF, R5F104LG, R5F104LH, R5F104LJ, R5F104LK, R5F104LL
	80pin	R5F104MF, R5F104MG, R5F104MH, R5F104MJ, R5F104MK, R5F104ML
	100pin	R5F104PF, R5F104PG, R5F104PH, R5F104PJ, R5F104PK, R5F104PL
RL78/G1A Group (R01UH0305EJ0200)	20pin	R5F10E8A, R5F10E8C, R5F10E8D, R5F10E8E
	24pin	R5F10EBA, R5F10EBC, R5F10EBD, R5F10EBE
	30pin	R5F10EGA, R5F10EGC, R5F10EGD, R5F10EGE
	64pin	R5F10ELC, R5F10ELD, R5F10ELE
RL78/G1C Group (R01UH0348EJ0100)	32pin	R5F10JBC, R5F10KBC
	48pin	R5F10JGC, R5F10KGC
RL78/G1D Group (R01UH0515EJ0100)	48pin	R5F11AGG, R5F11AGH, R5F11AGJ
RL78/G1E Group (R01UH0353EJ0101)	64pin	R5F10FLC, R5F10FLD, R5F10FLE
	80pin	R5F10FMC, R5F10FMD, R5F10FME
RL78/G1F Group (R01UH0516EJ0100)	24pin	R5F11B7C, R5F11B7E
	32pin	R5F11BBC, R5F11BBE
	36pin	R5F11BCC, R5F11BCE
	48pin	R5F11BGC, R5F11BGE
	64pin	R5F11BLC, R5F11BLE
RL78/G1G Group (R01UH0499EJ0100)	30pin	R5F11EA8, R5F11EAA
	32pin	R5F11EB8, R5F11EBA
	44pin	R5F11EF8, R5F11EFA
RL78/G1H Group (R01UH0575EJ0100)	64pin	R5F11FLJ, R5F11FLK, R5F11FLL

Table 2-4 Support Devices

Group (HW Manual number)	PIN	Device name
RL78/H1D グループ (R01UH0756JJ0080)	48pin	R5F11NGG, R5F11NGF
	64pin	R5F11NLG, R5F11PLG, R5F11NLF, R5F11PLF
	80pin	R5F11RMG, R5F11NMG, R5F11NMF, R5F11NME
RL78/I1A Group (R01UH0169EJ0210)	20pin	R5F1076C
	30pin	R5F107AC, R5F107AE
	38pin	R5F107DE
RL78/I1B Group (R01UH0407EJ0100)	80pin	R5F10MME, R5F10MMG
	100pin	R5F10MPE, R5F10MPG
RL78/I1C Group (R01UH0587JJ0051)	64pin	R5F11NLE, R5F11NLG
	80pin	R5F11NME, R5F11NMG, R5F11NMJ
	100pin	R5F11NPJ
RL78/I1D Group (R01UH0474JJ0100)	20pin	R5F11768, R5F1176A
	24pin	R5F11778, R5F1177A
	30pin	R5F117A8, R5F117AA, R5F117AC
	32pin	R5F117BA, R5F117BC
	48pin	R5F117GA, R5F117GC
RL78/I1E Group (R01UH0524JJ0100)	32pin	R5F11CBC
	36pin	R5F11CCC
RL78/L12 Group (R01UH0330EJ0200)	32pin	R5F10RBC, R5F10RBA, R5F10RB8
	44pin	R5F10RFC, R5F10RFA, R5F10RF8
	48pin	R5F10RGC, R5F10RGA, R5F10RG8
	52pin	R5F10RJC, R5F10RJA, R5F10RJ8
	64pin	R5F10RLC, R5F10RLA
RL78/L13 Group (R01UH0382EJ0100)	64pin	R5F10WLA, R5F10WLC, R5F10WLD, R5F10WLE, R5F10WLF, R5F10WLG
	80pin	R5F10WMA, R5F10WMC, R5F10WMD, R5F10WME, R5F10WMF, R5F10WMG
RL78/L1A Group (R01UH0636EJ0100)	80pin	R5F11MMD, R5F11MME, R5F11MMF
	100pin	R5F11MPE, R5F11MPF, R5F11MPG
RL78/L1C Group (R01UH0409EJ0100)	80pin	R5F110MJ, R5F110MH, R5F110MG, R5F110MF, R5F110ME, R5F111MJ, R5F111MH, R5F111MG, R5F111MF, R5F111ME
	100pin	R5F110PJ, R5F110PH, R5F110PG, R5F110PF, R5F110PE, R5F111PJ, R5F111PH, R5F111PG, R5F111PF, R5F111PE

3.   User's Manuals

Please read the following user's manuals together with this document.

Manual Name	Document Number
CS+ Code Generator Peripheral Function Operation	R20UT3104
CS+ Code Generator Pin View	R20UT3105
CS+ RL78 Pin Configurator	R20UT3106
Code Generator RL78 API Reference	R20UT4323

4.   Uninstallation

There are two ways to uninstall this product.

- Use the integrated uninstaller from Renesas (uninstalls all CS+ components)
- Use the Windows uninstaller (only uninstalls this product only)

To use the Windows uninstaller, select "CS+ for CC Code Generator for RL78" or "CS+ for CA,CX Code Generator for RL78" from "Programs and Features" of the control panel.

5.   Changes

This chapter describes changes to the CS+ Code Generator for RL78 (CS+ for CC) (CS+ for CA, CX) V2.18.00.

5.1   List of Changes

Table 3-1 List of Changes

No	Description	Version *1					
		RL78/F15 V1.01.04.01	RL78/F14 V2.03.04.01	RL78/F13 V2.03.04.01	RL78/D1A V2.04.02.01	RL78/IL1A V1.01.03.01	RL78/F1E V1.01.03.01
1	PLL clock setting of clock generator	○	○	○	/	/	○
2	RTC operation clock setting of clock generator	○	○	○	/	/	/
3	1/2 AVDD voltage output operation setting of voltage reference	/	/	/	/	○	/

○: Applicable, /: Not applicable

*1: These version numbers are stated in the file headers of the source code which is generated by the code generator.

5.2   Details of the Changes

5.2.1   PLL clock setting of clock generator

When you perform the following settings in the [Clock generator] of the applicable products, the code generated for setting the division of the PLL output is incorrect. This issue was corrected.
Please refer to the document number R20TS0432EJ0100 of RENESAS TOOL NEWS.

5.2.2   RTC operation clock setting of clock generator

When you select fMX or fIH divided clock in the [RTC operation clock setting] of the [Clock Generator] of the applicable products, incorrect code is generated. This issue was corrected.
Please refer to the document number R20TS0432EJ0100 of RENESAS TOOL NEWS.

5.2.3   1/2AVDD voltage output operation setting of voltage reference

When you select Enable in the [1/2 AVDD voltage output operation setting] of the [Voltage Reference] of the applicable products, incorrect code is generated. This issue was corrected.

Example:

Before modification:

```
void R_VR_Create(void)

{

   ADCEN = 1U; /* enables input clock supply */

   VREFCR = _04_VR_OUTPUT_18;

}
```

After modification:

```
void R_VR_Create(void)

{

   ADCEN = 1U; /* enables input clock supply */

   VREFCR = _80_VR_AVDD_ENABLE | _04_VR_OUTPUT_18;

}
```

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6. History of Corrections Announced in Renesas Tool New

This section is a summary of corrections announced in Renesas Tool News.

Issue Date	Document No.	Description	Device Concerned	Fixed version
May 21, 2012	120521/tn2	With generating codes for the R5F1007x and R5F1017x MCUs, RL78/G13 group	RL78/G13	V1.00.06
Aug. 01, 2012	120801/tn8	Problems arising in Applilet3 for RL78/G13 and Applilet3 for RL78/G14	RL78/G13, RL78/G14	V1.00.06
Sep. 01, 2012	120901/tn1	With using the code generator for the RL78/G12 group	RL78/G12	V1.00.06
Feb. 01, 2013	130201/tn1	With using the code generator for the RL78/G14 group of MCUs	RL78/G14	V2.00.00
Jul. 01, 2013	130701/tn1	When edited source codes disappear	RL78/F12, RL78/F13, RL78/F14, RL78/F15, RL78/G10, RL78/G12, RL78/G13, RL78/G14, RL78/G1A, RL78/G1C, RL78/G1D, RL78/G1E, RL78/G1F, RL78/G1G, RL78/G1H, RL78/I1A, RL78/I1D, RL78/I1E, RL78/L12, RL78/L13, RL78/L1C	V2.11.00
		When the port cannot be set properly	RL78/G1A	V2.00.01
Aug. 01, 2013	130801/tn1	With using the code generator for the RL78/G12 group of MCUs	RL78/G12	V2.00.01
Oct. 16, 2013	131016/tn1	2. When a RL78/G13 product in a 100-pin package is selected	RL78/G13	V2.03.00
		3. With the key input interrupt setting	RL78/L12	V2.03.00
		4. With A/D converter operation setting	RL78/G1A	V2.03.00
		5. When the timer KB20 is in use	RL78/L13	V2.03.00
Apr. 16, 2014	140416/tn5	With selecting the 20-pin, 30-pin, or 32-pin package for the RL78/F13 or RL78/F14 group	RL78/F13, RL78/F14	V2.04.00
		With using the remote control carrier wave mask signal in the RL78/L12 or RL78/L13 group	RL78/L12, RL78/L13	V2.04.00
		With processing to reflect the pin configurator when the A/D converter is set in the RL78/G12 group	RL78/G12	V2.04.00
		With the case when ports that are not available in the MCU are displayed in the RL78/G14 group	RL78/G14	V2.04.00

Issue Date	Document No.	Description	Device Concerned	Fixed version
Jul. 01, 2014	140701/tn1	With setting port 2	RL78/L13	V2.07.00
		With setting an interval timer	RL78/G10, RL78/G12, RL78/G13, RL78/G14, RL78/G1A, RL78/G1C, RL78/L12, RL78/L13, RL78/L1C, RL78/I1A	V2.07.00
Aug. 16, 2014	140816/tn1	With setting of P20 and P21 of port2	RL78/L1C	V2.05.00
		With setting of port1	RL78/G14	V2.05.00
Dec. 16, 2014	141216/tn3	1. Code Generated for Comparator Settings	RL78/I1A	V2.07.00
		2. DTC Settings	RL78/F13, RL78/F14	V2.07.00
		3. Setting the Voltage Detection Circuit to "Interrupt Mode"	RL78/L12, RL78/I1A, RL78/G1A, RL78/F13, RL78/F14	V2.07.00
		4. Saving Projects with Settings for the A/D Convertor	RL78/L1C	V2.07.00
		5. Reflection of Pin Configurations in Generated Code	RL78/G12, RL78/ G13, RL78/G14	V2.07.00
Jul. 16, 2015	150716/tn2	1. Clock Generation Circuit (PLL Circuit Operation)	RL78/F13, RL78/F14, RL78/G1C, RL78/L1C	V2.11.00
		2. Setting P40 of Port 4	RL78/F12, RL78/F13, RL78/F14, RL78/G10, RL78/G12, RL78/G13, RL78/G14, RL78/G1A, RL78/G1C, RL78/G1E, RL78/G1F, RL78/G1G, RL78/I1A, RL78/I1D, RL78/L1C, RL78/L12, RL78/L13	V2.11.00
		3. Code Generated for UART0 and UARTF	RL78/F12	V2.11.00
Nov. 16, 2015	151116/tn2	1. Indication of Channels of Serial Interface IICA	RL78/G14	V2.11.00
		2. Procedure for Setting the PLL Clock	RL78/F13, RL78/F14, RL78/F15	V2.11.00
Jan. 16, 2016	160116/tn5	Transfer of data with a length of 10 or more bits through an element of a serial array unit configured as a CSI or data with a length of 16 bits through an element configured as a UART	RL78/F12, RL78/F13, RL78/F14, RL78/F15, RL78/D1A	V2.11.00
Feb. 16, 2016	160216/tn5	1. Using the error interrupt of serial array unit 4 as UART4 or DALI4	RL78/I1A	V2.11.00
		2. Using serial array unit 4 as DALI4	RL78/I1A	V2.11.00

Issue Date	Document No.	Description	Device Concerned	Fixed version
Mar. 16, 2016	160316/tn1	Pin settings for the IICA serial interface when setting the PIOR to change the assignment of pin functions	RL78/G12	V2.11.00
Jun. 16, 2016	R20TS0038EJ 0100	Scan Mode of A/D Converter	RL78/F12, RL78/F13, RL78/F14, RL78/F15, RL78/G1A	V2.12.00
Aug. 01, 2016	R20TS0045EJ 0100	Peripheral I/O redirection register 0 (PIOR0)	RL78/G1F	V2.12.00
Mar. 1, 2017	R20TS0139EJ 0100	1. Input of Ports P10 and P11	RL78/G13 (20/24/25pin product)	V2.14.00
		2. Port Settings Related to Reset Processing	RL78/F12 (20pin product)	V2.14.00
Dec. 16, 2017	R20TS0244EJ 0100	When Continuous Transfer Mode is Selected in the CSI Configuration	RL78/D1A, RL78/F12, RL78/F13, RL78/F14, RL78/F15, RL78/L12	V2.16.00
Mar. 16, 2018	R20TS0290EJ 0100	When Opening a Project for RL78/G11 Created by a Previous Version of Code Generator	RL78/G11 (20-pin R5F1056A)	V2.16.00
May. 16, 2018	R20TS0313EJ 0100	Writing to Port-Related Registers for Unused Pins	RL78/I1D	V2.16.00
Nov. 16, 2018	R20TS0370EJ 0100	When setting the Serial UART4	RL78/I1A	V2.17.00
Jun. 1, 2019	R20TS0432EJ 0100	1. PLL clock setting of clock generator	RL78/F13, RL78/F14, RL78/F15	V2.18.00
		2. RTC operation clock setting of clock generator	RL78/F13, RL78/F14, RL78/F15, RL78/D1A	V2.18.00

7. Points of Restriction

This section describes the restriction regarding the CS+ Code Generator for RL78 (CS+ for CC) (CS+ for CA, CX) V2.18.00

7.1   Lists of Points for Restriction

Table 5-1 List of Points Restriction

No	Description	RL78/G10 V1.05.02.03	RL78/G11 V1.02.02.04	RL78/G12 V2.04.03.01	RL78/G13 V2.05.03.01	RL78/G14 V2.05.03.02	RL78/G1A V2.04.01.02	RL78/G1C V1.03.02.01	RL78/G1D V1.01.02.03	RL78/G1E V1.04.02.04	RL78/G1F V1.01.02.03	RL78/G1G V1.01.01.03	RL78/G1H V1.01.02.03	RL78/H1D V1.00.00.05
		Version *1												
1	Timer array unit input clock sauce	/	/	/	/	/	/	/	/	/	/	/	/	/
2	24-pin device TAU0 channel 1 setting restriction	/	/	/	/	/	/	/	/	/	○	/	/	/
3	Setting value of option byte C1H	/	/	/	/	/	/	/	/	/	/	/	/	/
4	Real-time clock API function	/	/	/	/	/	/	/	/	/	○	/	○	/
5	Unit for 'Gain setting' of ΔΣ A/D CONVERTER	/	/	/	/	/	/	/	/	/	/	/	/	○

○: Applicable, /: Not applicable

*1: These version numbers are stated in the file headers of the source code which is generated by the code generator.

Table 5-2 List of Points for Restriction

No	Description	RL78/F12 V2.04.03.01	RL78/F13 V22.03.04.01.	RL78/F14 V2.03.04.012.	RL78/F15 V1.01.04.011.	RL78/F1E V1.01.03.011.	RL78/I1A V2.04.03.01	RL78/I1B V1.03.02.03	RL78/I1C V1.01.02.04	RL78/I1D V1.01.02.05	RL78/I1E V1.03.02.03	RL78/L12 V2.04.02.01	RL78/L13 V1.04.02.03	RL78/L1A V1.01.03.01	RL78/L1C V1.03.01.04
		Version *1													
1	Timer array unit input clock sauce	○	○	○	/	/	/	/	/	/	/	/	/	/	/
2	24-pin device TAU0 channel 1 setting restriction	/	/	/	/	/	/	/	/	/	/	/	/	/	/
3	Setting value of option byte C1H	/	/	/	/	○	/	/	/	/	/	/	/	/	/
4	Real-time clock API function	/	/	/	/	/	/	/	/	/	○	/	/	/	/
5	Unit for 'Gain setting' of ΔΣ A/D CONVERTER	/	/	/	/	/	/	/	/	/	/	/	/	/	/

○: Applicable, /: Not applicable

*1: These version numbers are stated in the file headers of the source code which is generated by the code generator.

7.2   Details of Points for Restriction

7.2.1   Timer array unit input clock sauce

When the clock sauce of a timer input is set as a RTC1HZ output by setup of a timer array unit, a setup about the output of the RTC1HZ terminal of a real-time clock becomes invalid. The code which outputs RTC1HZ then is not generated.

[Workaround]   When you set to a RTC1HZ signal by setup of a timer array unit, please choose a setup which uses a real-time clock and add the code which outputs RTC1HZ.

7.2.2   24-pin device TAU0 channel 1 setting restriction

In the 24-pin device, interval timer is only selectable for the TAU0 channel 1 setting.

[Workaround]   There is no workaround.
In the 32-pin device, other timer functions besides "Interval timer" are selectable for the TAU0 channel 1 setting. Refer to the setting to make a correction.

7.2.3   Setting value of option byte C1H

The set value of option byte C1H is wrong.

Wrong: CLKMB = 0 when " Unused" is set, CLKMB = 1 when "Used" is set.
Right: CLKMB = 1 when " Unused" is set, CLKMB = 0 when "Used" is set.

[Workaround]   After generating the code, set the CLKMB of C1H to the correct value from the properties of the Build Tool (Link Options - Device - User option byte value).

7.2.4   Real-time clock API function

An unnecessary wait time code is output in the R_RTC_Set_AlarmOn().
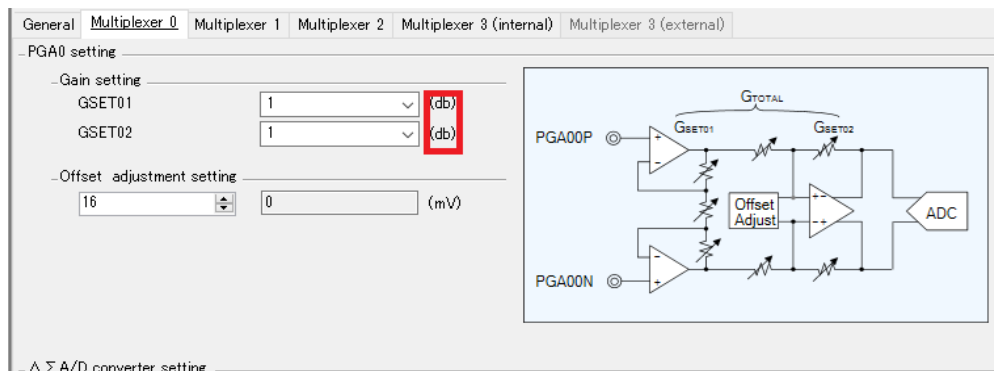
```
/* Change the waiting time according to the system */
for (w_count = 0U; w_count < RTC_WAITTIME_2FRTC; w_count++)
{
    NOP();
}
```

[Workaround]   There is no workaround.
I Delete the wait time code in the R_RTC_Set_AlarmOn () function after generating the code.

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7.2.5   Unit for 'Gain setting' of ΔΣ A/D CONVERTER

The unit of Multiplexer 0/1/2/3(Internal)/3(external) are 'db' but it should be 'Gain'.

[Workaround]   Please interpret 'db' as 'Gain' when use GSET01 and/or GSET02.

8.   Points of Caution

This section describes points for caution regarding the CS+ Code Generator for RL78 (CS+ for CC) (CS+ for CA, CX) V2.18.00

8.1   List of Points for Caution

Table 6-1 List of Points for Caution

No	Description	RL78/G10 V1.05.02.03	RL78/G11 V1.02.02.04	RL78/G12 V2.04.03.01	RL78/G13 V2.05.03.01	RL78/G14 V2.05.03.02	RL78/G1A V2.04.01.02	RL78/G1C V1.03.02.01	RL78/G1D V1.01.02.03	RL78/G1E V1.04.02.04	RL78/G1F V1.01.02.03	RL78/G1G V1.01.01.03	RL78/G1H V1.01.02.03	RL78/H1D V1.00.00.05
1	Coding rule of MISRA-C.	○	○	○	○	○	○	○	○	○	○	○	○	○
2	High-speed on-chip oscillator frequency select register	○	○	○	○	○	○	○	○	○	○	○	○	○
3	Internal low-speed or internal high-speed oscillator trimming	○	○	○	○	○	○	○	○	○	○	○	○	○
4	Serial array unit	/	/	/	/	/	/	/	/	/	/	/	/	/
5	Flash memory CRC operation function (high-speed CRC)	/	○	○	○	○	○	○	○	○	○	○	○	○
6	Port mode select register (PMS)	/	○	/	/	○	/	○	○	○	○	○	○	○
7	LIN-bus function of UART	/	○	○	○	○	○	○	○	○	○	○	○	○
8	Extension code, wakeup function and multimaster of serial interface IICA or IIC0	○	○	○	○	○	○	○	○	○	○	○	○	○
9	CAN controllers	/	/	/	/	/	/	/	/	/	/	/	/	/
10	Safety Functions	○	○	○	○	○	○	○	○	○	○	○	○	○
11	USB	/	/	/	/	/	/	/	/	/	/	/	/	/
12	RI78V4 project	/	/	/	/	/	/	/	/	/	/	/	/	/
13	DTC function (CS+ for CA,CX)	○	○	○	○	○	○	○	○	○	○	○	○	○
14	High Speed DTC chain transfer	/	○	○	○	○	○	○	○	○	○	○	○	○
15	Fast Mode Plus setting in IICA slave	○	○	○	○	○	○	○	○	○	○	○	○	○
16	high-speed on-chip oscillator (CS+ for CA,CX)	/	/	/	/	/	/	/	/	/	/	/	/	/
17	Pin Configurator (CS+ for CA,CX)	○	○	○	○	○	○	○	○	○	○	○	○	○

○: Applicable, /: Not applicable

*1: These version numbers are stated in the file headers of the source code which is generated by the code generator.

Table 6-2 List of Points for Caution

No	Description	Version *1 RL78/F12 V2.04.03.01	RL78/F13 V2.03.04.01V2	RL78/F14 V2.03.04.01V2	RL78/F15 V1.01.04.01V1	RL78/F1E V1.01.03.01V1	RL78/I1A V2.04.03.01	RL78/I1B V1.03.02.03	RL78/I1C V1.01.02.04	RL78/I1D V1.01.02.05	RL78/I1E V1.03.02.03	RL78/L12 V2.04.02.01	RL78/L13 V1.04.02.03	RL78/L1A V1.01.03.01	RL78/L1C V1.03.01.04
1	Restrictions of the coding rule of MISRA-C.	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2	Restrictions of High-speed on-chip oscillator frequency select register	○	○	○	○	○	/	○	○	○	○	○	○	○	○
3	Restrictions of internal low-speed or internal high-speed oscillator trimming	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4	Restriction of a serial array unit	/	/	/	/	/	○	/	/	/	/	/	/	/	/
5	Restrictions of Flash memory CRC operation function (high-speed CRC)	○	○	○	○	○	○	○	○	○	○	○	○	○	○
6	Restrictions of Port mode select register (PMS)	/	○	○	○	○	○	○	○	○	○	/	○	○	○
7	Cautions of the LIN-bus function of UART	○	○	○	○	○	○	○	○	○	○	○	○	○	○
8	Cautions of extension code, wakeup function and multimaster of serial interface IICA or IIC0	○	○	○	○	○	○	○	○	○	○	○	○	○	○
9	Cautions of CAN controllers	/	○	○	○	○	/	/	/	/	/	/	/	/	/
10	Cautions of Safety Functions	○	○	○	○	○	○	○	○	○	○	○	○	○	○
11	Restriction of USB	/	/	/	/	/	/	/	/	/	/	/	/	/	○
12	Restriction of RI78V4 project	/	/	/	/	/	/	/	/	/	/	/	/	/	/
13	Cautions when using a DTC function (CS+ for CA,CX)	○	○	○	○	○	○	○	○	○	○	○	○	○	○
14	Cautions of High Speed DTC chain transfer	○	○	○	○	○	○	○	○	○	○	○	○	○	○
15	Fast Mode Plus setting in IICA slave	○	○	○	○	○	○	○	○	○	○	○	○	○	○
16	Cautions of a high-speed on-chip oscillator (CS+ for CA,CX)	/	/	/	/	/	○	/	/	/	/	/	/	/	/
17	Cautions of Pin Configurator (CS+ for CA,CX)	○	○	○	○	○	/	○	○	○	○	○	○	○	○

○：Applicable, /: Not applicable

*1: These version numbers are stated in the file headers of the source code which is generated by the code generator.

8.2   Details of Points for Caution

8.2.1   Coding rule of MISRA-C

Compliance with the MISRA-C (Guidelines for the Use of the C Language in Vehicle Based Software) coding convention is not supported for source code output by the code generator.

8.2.2   High-speed on-chip oscillator frequency select register

Code generator is not equivalent to a setup of high-speed on-chip oscillator frequency select register.

8.2.3   Internal low-speed or internal high-speed oscillator trimming

Code generator is not equivalent to a setup of internal low-speed or internal high-speed oscillator trimming register.

8.2.4   Serial array unit

Code generator is not equivalent to a setup of single-wire UART mode and DMX512 communication.

8.2.5   Flash memory CRC operation function (high-speed CRC)

Code generator does not correspond to a flash memory CRC operation function (high-speed CRC). Please refer to application note r01an0736.
https://www.renesas.com/search/keyword-search.html#genre=document&q=r01an0736

8.2.6   Port mode select register (PMS)

Code generator does not correspond to a port mode select register (PMS).

8.2.7   LIN-bus function of UART

The code generator is not supporting the LIN-bus functions of serial interface UART0, UART2, UART3, UART6 or UARTF.

8.2.8   Extension code, multimaster, wakeup function of serial interface IICA or IIC0

The code generator is not supporting the extension code, multimaster, wakeup function of serial interface IIC.

8.2.9   CAN controllers

The code generator is not supporting the CAN Controllers.

8.2.10 Safety Functions

RAM parity error detection function of Safety Functions is not supported.

8.2.11 USB

The code generator is not supporting the USB host, USB function.

8.2.12 RI78V4 project

The Code generator can't be used in a project of RI78V4. But code generator is shown to a project of RI78V4. Even if a code is generated, RI78V4 will be an unsupported purpose build error.

8.2.13 DTC function (CS+ for CA,CX)

When DTC is used, the following warning message is displayed and an object file is not generated.

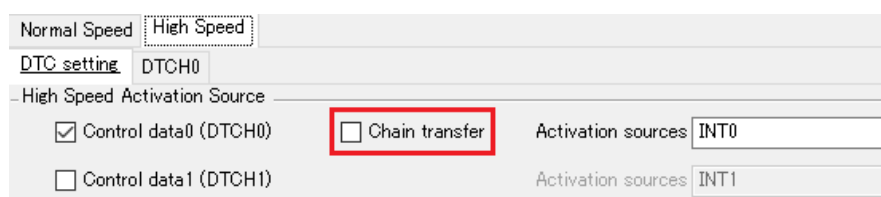CC78K0R warning W0837: Output assembler source file , not object file.

[Workaround]

Set up the following individual option of building.
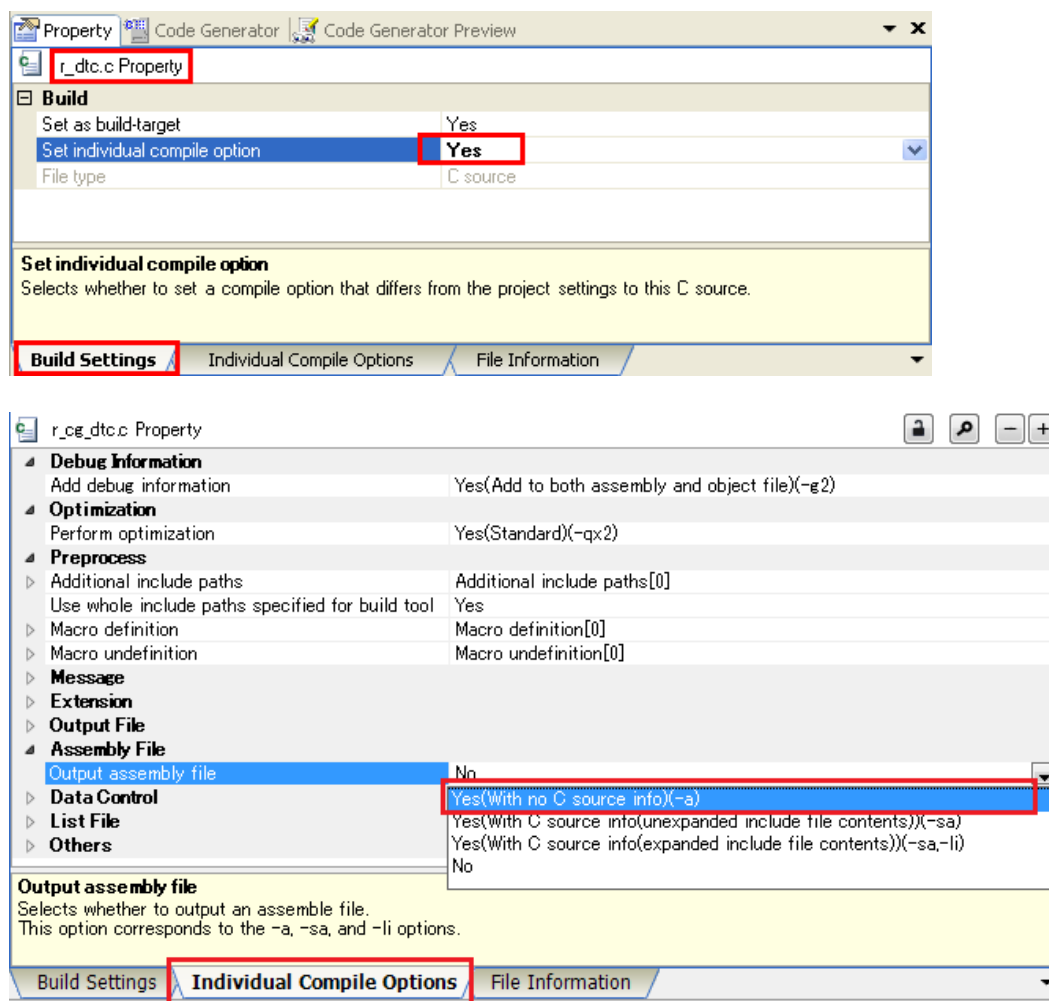
8.2.14 High Speed DTC chain transfer

Although there are chain transfer setting items of High Speed DTC, code corresponding to chain transfer is not supported.

[Workaround]   It cannot be used for chain transfer.

8.2.15 Fast Mode Plus setting in IICA slave

If the Fast Mode Plus is set when using the IICA slave, IICA Low level range setting register (IICWLn, n= channel number), and IICA High level range setting register (IICWHLn) are not set correctly.

[Workaround]　　　There is no workaround.

After doing code generator, please rewrite the numerical value of the register setting of IICWLn, IICWHn in the R_IICAn_Create function. I depend on a system for the numerical value. Please change device UM to reference.

8.2.16 High-speed on-chip oscillator (CS+ for CA,CX)

When a high-speed on-chip oscillator clock is set up by CubeSuite+ RL78, 78K0R, and 78K0 code generator V2.01.00 or earlier, If it is read by CubeSuite+V2.03.00, a clock frequency setup of a high-speed on-chip oscillator may not be right.

[Workaround]　　　Re-set up the frequency right in that case.

8.2.17 Pin Configurator (CS+ for CA,CX)

There is a pin which is not reflected even if it performs reflection to pin configurator from code generator.
Even if it sets up using a code generator PIOR function, it is not reflected to pin configurator.

[Workaround]　　　Edit terminal information with pin configurator.

Revision History

		Description	
Rev.	Date	Page	Summary
1.00	Jul 22, 2019	-	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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