

# Code Generator for RL78(CS+ for CA,CX) V2.07.00

## Release Note

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# Chapter 1. Target Devices

Below is a list of devices supported by the Code Generator for RL78/I1A V2.03.01.03			
PIN		Device name	
20pin	R5F1076C	R5F1076C	
30pin	R5F107AC, R5F107AE	R5F107AC, R5F107AE	
32pin	R5F107BC	R5F107BC	
38pin	R5F107DE		
The Code Generator is based on the following documents.			
Manual Name Document Number			
RL78/I1A User's Manual: Hardware		R01UH0169JJ0210 Rev.2.10	
		R01UH0169EJ0210 Rev.2.10	

Below is a list of devices supported by the Code Generator for RL78/G12 V2.03.01.03		
PIN	Device name	
20pin	, , ,	10268, R5F10269, R5F1026A 10368, R5F10369, R5F1036A
24pin	R5F10277, R5F10278, R5F10279, R5F1027A R5F10377, R5F10378, R5F10379, R5F1037A	
30pin	R5F102A7, R5F102A8, R5F102A9, R5F102AA R5F103A7, R5F103A8, R5F103A9, R5F103AA	
The Code Generator is based on the following documents.		
Manual Name Document Number		
RL78/G12 User's Manual: Hardware		R01UH0200JJ0200 Rev.2.00
		R01UH0200EJ0200 Rev.2.00



PIN		Device name	
	R5F1006A, R5F1006C, R5I	F1006D, R5F1006E	
20pin	R5F1016A, R5F1016C, R5I	F1016D, R5F1016E	
	R5F1007A, R5F1007C, R5I	F1007D, R5F1007E	
24pin	R5F1017A, R5F1017C, R5I	F1017D, R5F1017E	
	R5F1008A, R5F1008C, R5I	F1008D, R5F1008E	
25pin	R5F1018A, R5F1018C, R5I	F1018D, R5F1018E	
	R5F100AA, R5F100AC, R5	F100AD, R5F100AE, R5F100AF, R5F100AG	
30pin	R5F101AA, R5F101AC, R5	F101AD, R5F101AE, R5F101AF, R5F101AG	
	R5F100BA, R5F100BC, R5	F100BD, R5F100BE, R5F100BF, R5F100BG	
32pin	R5F101BA, R5F101BC, R5	F101BD, R5F101BE, R5F101BF, R5F101BG	
	R5F100CA, R5F100CC, R5	F100CD, R5F100CE, R5F100CF, R5F100CG	
36pin	R5F101CA, R5F101CC, R5	F101CD, R5F101CE, R5F101CF, R5F101CG	
	R5F100EA, R5F100EC, R5	F100ED, R5F100EE, R5F100EF, R5F100EG, R5F100EH	
40pin	R5F101EA, R5F101EC, R5	F101ED, R5F101EE, R5F101EF, R5F101EG, R5F101EH	
	R5F100FA, R5F100FC, R5	F100FD, R5F100FE, R5F100FF, R5F100FG, R5F100FH	
	R5F100FJ, R5F100FK, R5F		
44pin	R5F101FA, R5F101FC, R5	F101FD, R5F101FE, R5F101FF, R5F101FG, R5F101FH	
	R5F101FJ, R5F101FK, R5F	F101FL	
	R5F100GA, R5F100GC, R5	5F100GD, R5F100GE, R5F100GF, R5F100GG, R5F100GH	
19 nin	R5F100GJ, R5F100GK, R5	R5F100GJ, R5F100GK, R5F100GL	
48pin	R5F101GA, R5F101GC, R5F101GD, R5F101GE, R5F101GF, R5F101GG,		
	R5F101GJ, R5F101GK, R5		
		F100JE, R5F100JF, R5F100JG, R5F100JH	
52pin	R5F100JJ, R5F100JK, R5F		
0 <b>_</b> p		F101JE, R5F101JF, R5F101JG, R5F101JH	
	R5F101JJ, R5F101JK, R5F		
		R5F100LC, R5F100LD, R5F100LE, R5F100LF, R5F100LG, R5F100LH	
64pin	R5F100LJ, R5F100LK, R5F	-100LL F101LE, R5F101LF, R5F101LG, R5F101LH	
		R5F101LJ, R5F101LK, R5F101LL R5F100MF, R5F100MG, R5F100MH, R5F100MJ, R5F100MK, R5F100ML	
80pin		5F101MH, R5F101MJ, R5F101MK, R5F101ML	
		F100PH, R5F100PJ, R5F100PK, R5F100PL	
100pin		F101PH, R5F101PJ, R5F101PK, R5F101PL	
	R5F100SH, R5F100SJ, R5		
128pin	R5F101SH, R5F101SJ, R5		
e Code Generat	tor is based on the following do	cuments.	
N	lanual Name	Document Number	
		R01UH0146JJ0300 Rev.3.00	
RL78/G13 User's Manual: Hardware			



PIN	Device name		
30pin	R5F104AA, R5F104AC, R5	R5F104AA, R5F104AC, R5F104AD, R5F104AE, R5F104AF, R5F104AG	
32pin	R5F104BA, R5F104BC, R5	5F104BD, R5F104BE, R5F104BF, R5F104BG	
36pin	R5F104CA, R5F104CC, R	5F104CD, R5F104CE, R5F104CF, R5F104CG	
40pin	R5F104EA, R5F104EC, R5	5F104ED, R5F104EE, R5F104EF, R5F104EG, R5F104EH	
44pin	R5F104FA, R5F104FC, R5 R5F104FJ	5F104FD, R5F104FE, R5F104FF, R5F104FG, R5F104FH	
48pin	R5F104GA, R5F104GC, R5F104GD, R5F104GE, R5F104GF, R5F104GG, R5F104GH R5F104GJ, R5F104GK, R5F104GL		
52pin	R5F104JC, R5F104JD, R5F104JE, R5F104JF, R5F104JG, R5F104JH R5F104JJ, R5F104JK, R5F104JL		
64pin	R5F104LC, R5F104LD, R5F104LE, R5F104LF, R5F104LG, R5F104LH R5F104LJ, R5F104LK, R5F104LL		
80pin	R5F104MF, R5F104MG, R5F104MH, R5F104MJ, R5F104MK, R5F104ML		
100pin	R5F104PF, R5F104PG, R5F104PH, R5F104PJ, R5F104PK, R5F104PL		
he Code Genera	ator is based on the following do	cuments.	
Manual Name Document Number		Document Number	
PI 78/C14 I	Jser's Manual: Hardware	R01UH0186JJ0200 Rev.2.00	
RE70/014 Users Manual. Hardware		R01UH0186EJ0200 Rev.2.00	

Below is a list of devices supported by the Code Generator for RL78/G1A V2.03.01.03			
PIN		Device name	
25pin	R5F10E8A, R5F10E8C, R5	R5F10E8A, R5F10E8C, R5F10E8D, R5F10E8E	
32pin	R5F10EBA, R5F10EBC, R	R5F10EBA, R5F10EBC, R5F10EBD, R5F10EBE	
48pin	R5F10EGA, R5F10EGC, R	R5F10EGA, R5F10EGC, R5F10EGD, R5F10EGE	
64pin	R5F10ELC, R5F10ELD, R5F10ELE		
The Code Generator is based on the following documents.			
Manual Name Document Number			
R01UH0305JJ0200 Rev.2.00		R01UH0305JJ0200 Rev.2.00	
R01UH0305EJ0200 Rev.2.00			



Below is a list of devices supported by the Code Generator for RL78/F12 V2.03.01.03			
PIN	Device name		
20pin	R5F1096E, R5F1096D, R5F	F1096C, R5F1096B, R5F1096A, R5F10968	
30pin	R5F109AE, R5F109AD, R5	F109AC, R5F109AB, R5F109AA	
32pin	R5F109BE, R5F109BD, R5	R5F109BE, R5F109BD, R5F109BC, R5F109BB, R5F109BA	
48pin	R5F109GE, R5F109GD, R5F109GC, R5F109GB, R5F109GA		
64pin	R5F109LE, R5F109LD, R5F109LC, R5F109LB, R5F109LA		
The Code Generator is based on the following documents.			
Manual Name Document Number			
R01UF RL78/F12 User's Manual: Hardware		R01UH0231JJ0110 Rev.1.10	
		R01UH0231EJ0111 Rev.1.11	

Below is a list of devices supported by the Code Generator for RL78/L12 V2.03.01.03			
PIN	Device name		
32pin	R5F10RBC, R5F10RBA, R	R5F10RBC, R5F10RBA, R5F10RB8	
44pin	R5F10RFC, R5F10RFA, R5	5F10RF8	
48pin	R5F10RGC, R5F10RGA, R5F10RG8		
52pin	R5F10RJC, R5F10RJA, R5F10RJ8		
64pin	R5F10RLC, R5F10RLA		
The Code Generator is based on the following documents			
Manual Name Document Number			
R01UH033 RL78/L12 User's Manual: Hardware		R01UH0330JJ0200 Rev.2.00	
	R01UH0330EJ0200 Rev.2.00		



Below is a list of devices supported by the Code Generator for RL78/L13 V1.03.01.03			
PIN	Device name		
64pin	R5F10WLA, R5F10WLC, R5F10WLD, R5F10WLE, R5F10WLF, R5F10WLG		
80pin	R5F10WMA, R5F10WMC, R5F10WMD, R5F10WME, R5F10WMF, R5F10WMG		
The Code Generator is based on the following documents			
Ма	Manual Name Document Number		
RI 78/L13 User's Manual: Hardware		R01UH0382JJ0100 Rev.1.00	
R01UH0382EJ0100 Rev.1.00			

Below is a list of devices supported by the Code Generator for RL78/G1E V1.03.01.03		
PIN	Device name	
64pin	R5F10FLC, R5F10FLD, R5F10FLE	
80pin	R5F10FMC, R5F10FMD, R5F10FME	
The Code Generator is based on the following documents		
Manual Name Document Number		
RL78/G1E User's Manual: Hardware		R01UH0353JJ0200 Rev.2.00

Below is a list of devices supported by the Code Generator for RL78/G10 V1.04.01.03		
PIN	Device name	
10pin	R5F10Y14, R5F10Y16, R5F10Y17	
16pin	R5F10Y44, R5F10Y46, R5F10Y47	
The Code Generator is based on the following documents		
Manual Name Document Number		
RI 78/G10 User's Manual: Hardware		R01UH0384JJ0200 Rev.2.00
	R01UH0384EJ0200 Rev.2.00	



Below is a list of devices supported by the Code Generator for RL78/F13 V2.02.01.03									
PIN		Device name							
20pin	R5F10A6A, R5F10A6C, R5	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		F10ALE, R5F10ALF, R5F10ALG F10BLE, R5F10BLF, R5F10BLG							
80pin	R5F10AME, R5F10AMF, R R5F10BME, R5F10BMF, R								
The Code Generate	or is based on the following doo	cuments							
Μ	anual Name	Document Number							
RL78/F13.F14	User's Manual: Hardware	R01UH0368JJ0100 Rev.1.00							
······································		R01UH0368EJ0100 Rev.1.00							

Below is a list of devices supported by the Code Generator for RL78/F14 V2.02.01.03								
PIN	Device name							
30pin	R5F10PAD, R5F10PAE	SF10PAD, R5F10PAE						
32pin	R5F10PBD, R5F10PBE							
48pin	R5F10PGD, R5F10PGE, R5F10PGF, R5F10PGG, R5F10PGH, R5F10PGJ							
64pin	R5F10PLE, R5F10PLF, R5F10PLG, R5F10PLH, R5F10PLJ							
80pin	R5F10PME, R5F10PMF, R	5F10PMG, R5F10PMH, R5F10PMJ						
100pin	R5F10PPE, R5F10PPF, R5	F10PPG, R5F10PPH, R5F10PPJ						
The Code Generator	r is based on the following doo	cuments						
Ма	nual Name	Document Number						
RL78/F13,F14 U	lser's Manual: Hardware	R01UH0368JJ0100 Rev.1.00						
		R01UH0368EJ0100 Rev.1.00						



PIN		Device name								
32pin	R5F10JBC, R5F10KBC									
48pin	R5F10JGC, R5F10KGC	R5F10JGC, R5F10KGC								
ne Code Generat	or is based on the following do	cuments								
N	lanual Name	Document Number								
RL78/G1C	User's Manual: Hardware	R01UH0348JJ0100 Rev.1.00								
		R01UH0348EJ0100 Rev.1.00								

Below is a list of devices supported by the Code Generator for RL78/L1C V1.02.01.03								
PIN		Device name						
	R5F110MJ, R5F110MH, R5	R5F110MJ, R5F110MH, R5F110MG, R5F110MF, R5F110ME,						
80pin	R5F111MJ, R5F111MH, R5F111MG, R5F111MF, R5F111ME							
400 :	R5F110PJ, R5F110PH, R5F110PG, R5F110PF, R5F110PE,							
100pin	R5F111PJ, R5F111PH, R5	F111PG, R5F111PF, R5F111PE						
The Code Generat	or is based on the following do	cuments						
N	lanual Name	Document Number						
RL78/L1C U	ser's Manual: Hardware	R01UH0409JJ0200 Rev.2.00						
		R01UH0409EJ0200 Rev.2.00						

Below is a list of devices supported by the Code Generator for RL78/I1B V1.02.01.03									
PIN		Device name							
80pin	R5F10MME, R5F10MPG	25F10MME, R5F10MPG							
100pin	R5F10MPE, R5F10MPG	R5F10MPE, R5F10MPG							
The Code Generat	or is based on the following do	cuments							
M	lanual Name	Document Number							
RL78/I1B User's Manual: Hardware		R01UH0407JJ0200 Rev.2.00							
		R01UH0407EJ0200 Rev.2.00							



Below is a list of devices supported by the Code Generator for RL78/I1D V1.00.02.03									
PIN		Device name							
20pin	R5F11768, R5F11769, R5F	5F11768, R5F11769, R5F1176A							
24pin	R5F11778, R5F11779, R5F	25F11778, R5F11779, R5F1177A							
30pin	R5F117A8, R5F117A9, R5F	R5F117A8, R5F117A9, R5F117AA, R5F117AC							
32pin	R5F117BA, R5F117BC	R5F117BA, R5F117BC							
48pin	R5F117GA, R5F117GC								
The Code Generator	is based on the following doo	cuments							
Ма	nual Name	Document Number							
RL78/I1D Use	r's Manual: Hardware	R01UH0474JJ0100 Rev.1.00							
		R01UH0474EJ0100 Rev.1.00							

Below is a list of devices supported by the Code Generator for RL78/G1G V1.00.01.03									
PIN		Device name							
30pin	R5F11EA8, R5F11EAA	5F11EA8, R5F11EAA							
32pin	R5F11EB8, R5F11EBA								
44pin	R5F11EF8, R5F11EFA	R5F11EF8, R5F11EFA							
The Code Generator	r is based on the following do	cuments							
Ma	nual Name	Document Number							
RL78/G1G Use	er's Manual: Hardware	R01UH0499JJ0100 Rev.1.00							
		R01UH0499EJ0100 Rev.1.00							



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
Code Generator/PinView Plug-in	RL78 except the above,
	RX



# Chapter 2. User's Manuals

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

Manual Name	Document Number
CS+ Code Generator Peripheral Function Operation	R20UT3104EJ0100
CS+ Code Generator Pin View	R20UT3105EJ0100
CS+ RL78 Pin Configurator	R20UT3106EJ0100
CS+ Code Generator RL78 API Reference	R20UT3102EJ0100
CubeSuite+ V2.02.00 Message	R20UT2871EJ0100



# Chapter 3. Key Points for Selecting Uninstallation Method

There are two ways to uninstall this product.

- Use the integrated uninstaller (uninstalls CS+)
- Use separate uninstaller (uninstalls this product only)

To use the separate uninstaller, select the following from the Control Panel:

• Programs and Features (Windows Vista, Windows 7, Windows 8) Then select "CS+ for CA,CX Code Generator for RL78".



# Chapter 4. Changes

This chapter describes change from Code Generator for RL78 (CS+ for CA,CX) V2.06.00 to V	2.07.00
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		Corresponds of code generation																
		RL78G1G	RL78/11D	RL78/I1B	RL78/L1C	RL78/G1C	RL78/F13	RL78/F14	RL78/G10	RL78/G1E	RL78/L13	RL78/L12	RL78/F12	RL78/G1A	RL78/G12	RL78/G13	RL78/G14	RL78/I1A
		G1G	/11D	/I1B	/L1C	/G10	/F13	/F14	/G10	/G1E	/L13	/L12	/F12	/G1/	/G12	/G13	/G14	/11A
No	Description		<1	<1			$\leq$	$\leq$			<	$\leq 2$	$\leq$					V2.
		.00	.00.	.02.	.02.	.02.	2.02	2.02	1.04	1.03	1.03	2.03.	2.03	2.04	2.03	2.03	2.04	03.
		V1.00.01.03	V1.00.02.03	V1.02.01.03	V1.02.01.03	V1.02.01.03	V2.02.01.03	V2.02.01.03	V1.04.01.03	V1.03.01.03	V1.03.01.03	V2.03.01.03	V2.03.01.03	V2.04.01.03	V2.03.01.03	V2.03.01.03	V2.04.01.03	03.01.03
1	Output code changes of real-time clock	۵۵ ا	۵۵ ا	-	- -	-	- α	<u></u> -	ω /	ω /	ω /	۵۵ ا	ω/	ω /	ω -	ω -	ω -	-
2	Output code changes of serial array unit	/	/	-	-	-	-	-	/	/	1	/	/	/	-	-	-	-
3	Addition of PMC register setup	/	1	-	-	-	-	-	/	/	1	1	/	/	-	-	-	/
4	Output code changes of the receiving function of UARTn	/	/	-	-	-	-	-	/	/	/	/	/	/	-	-	-	-
5	Control correction of a competition pin	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/
6	GUI correction of an A/D converter	/	/	-	-	-	-	-	/	/	/	/	/	/	-	-	-	/
7	Conversion time setup of A/D correction	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/	/	/
8	Changes of square wave output of a timer	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/
9	Changes of the TTL check box of a port	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/
10	Changes of PIOR setup	/	/	/	/	/	/	-	/	/	/	/	/	/	/	/	-	/
11	Changes of TAU1 setup	/	/	/	/	/	/	-	/	/	/	/	/	/	/	/	-	/
12	Changes of UART2 setup	/	/	/	/	/	/	-	/	/	/	/	/	/	/	/	-	/
13	Changes of key interrupt function	/	/	-	-	-	/	/	/	/	/	/	/	/	-	/	/	/
14	Changes of Simplified I2C	/	/	-	-	-	-	-	/	/	/	/	/	/	-	-	-	/
15	Additional function generation file mode	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Changes of hdwinit() function	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Changes of the timer RD and the timer RJ0	/	/	/	/	/	/	-	/	/	/	/	/	/	/	/	-	/
18	Changes of input pulse interval measurement of TAU	/	/	-	-	-	-	-	/	/	/	-	-	-	-	-	-	-
19	Changes the notation of a power supply	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/	/
20	Changes of an option byte setup	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/	/
21	Changes of the port for RL78/G1A	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/	/	/
22	It corresponds to renewal of device user's manual.	/	/	-	-	/	-	-	-	-	-	-	-	-	-	-	-	-
23	Changes the RL78/G13 Product in a 100-Pin Package is Selected	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/
24	Changes the Key Input Interrupt Setting	/	/	/	/	/	/	/	/	/	/	-	/	/	/	/	/	/
25	Changes the A/D Converter Operation Setting	/	/	/	/	/	/	/	/	/	/	/	/	-	/	/	/	/
26	Changes the Timer KB20 is in Use	/	/	/	/	/	/	/	/	/	-	/	/	/	/	/	/	/
27	Changes the clock frequency of operation	/	/	/	/	/	-	-	/	-	/	-	-	-	-	-	-	-
28	Changes the watch error correction of real- time clock	/	/	-	-	-	-	-	/	/	-	-	-	-	/	-	-	-
29	Changes of CPU and peripheral clock (fCLK) in the clock generator settings.	/	/	/	/	/	-	-	/	/	/	/	/	/	/	/	/	/
30	Changes for Using the Remote Control Carrier Wave Mask Signal	/	/	/	/	/	/	/	/	/	-	-	/	/	/	/	/	/



# Code Generator for RL78(CS+ for CA,CX) V2.07.00

														r		-		
31	Changes for processing to Reflect the Pin Configurator When the A/D Converter is Set.	/	/	/	/	/	-	-	/	/	/	/	-	-	-	-	-	-
32	Changes the Case When Ports that Are Not Available in the MCU Are Displayed.	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/
33	Changes of the serial array unit1 for UART2	/	/	/	/	/	/	/	/	-	/	/	/	/	/	/	/	/
34	Changes Setting of P20 and P21 of Port2	/	/	/	-	/	/	/	/	/	/	/	/	/	/	/	/	/
35	Changes Setting of Port1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	-	/
36	Changes setting of PMC register	/	/	/	/	/	/	/	/	/	0	/	/	/	/	/	/	/
37	Changes setting of interval timer	/	/	/	0	0	/	/	/	/	0	0	/	0	0	0	0	0
38	Changes for CPU stack pointer monitor function	/	/	/	/	/	0	/	/	/	/	/	/	/	/	/	/	/
39	Changes for comparator setting	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0
40	Changes for DTC setting	/	/	/	/	/	0	0	/	/	/	/	/	/	/	/	/	/
41	Changes for the voltage detection circuit to "Interrupt Mode"	/	/	/	/	/	0	0	/	/	/	0	/	0	/	/	/	0
42	Changes saving projects with setting for the A/D convertor	/	/	/	0	/	/	/	/	/	/	/	/	/	/	/	/	/
43	Changes for reflection of pin configurations in generated code	/	/	/	/	/	/	/	/	/	/	/	/	/	0	0	0	/

• : Correspondence, -: Not correspondence(finish of correction), /: Outside of function



## 4.1 Details of Changes

4.1.1 Output code changes of real-time clock

a) The output code of R\_RTC\_Set\_ConstPeriodInterruptOff() was changes.

```
Before:
 void R_RTC_Set_ConstPeriodInterruptOff(void)
 {
      RTCC0 &= <u>88</u>_RTC_INTRTC_CLEAR;
      RTCIF = 0U;
                       /* clear INTRTC interrupt flag */
 }
 After:
 void R_RTC_Set_ConstPeriodInterruptOff(void)
 {
    RTCC0 &= _F8_RTC_INTRTC_CLEAR;
    RTCC1 &= (uint8 t)~ 08 RTC INTC GENERATE FLAG;
    RTCIF = 0U; /* clear INTRTC interrupt flag */
 }
b) The output code of R_RTC_Interrupt() was changes.
 - When an alarm interrupt function is checked.
 Before:
    _interrupt void R_RTC_Interrupt(void)
 {
   R_RTC_Callback_Alarm();
 }
 After:
   _interrupt static void r_rtc_interrupt(void)
 {
    if (1U == WAFG)
    {
      RTCC1 &= (uint8_t)~_10_RTC_ALARM_MATCH;
                                                          /* clear WAFG */
      r_rtc_callback_alarm();
    }
 }
 - When a constant-period interruption function is checked
 Before:
   _interrupt void R_RTC_Interrupt(void)
 {
  R_RTC_Callback_ConstPeriod();
 }
 After:
    _interrupt static void r_rtc_interrupt(void)
 {
    if (1U == RIFG)
    {
      RTCC1 &= (uint8_t)~_08_RTC_INTC_GENERATE_FLAG; /* clear RIFG */
      r_rtc_callback_constperiod();
    }
 }
```

a) and b) issues has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.02.



## 4.1.2 Output code changes of serial array unit

a) The following function which was not supported by SAU1 was added. void R\_SAU0\_Set\_SnoozeOn(void)

void R\_SAU0\_Set\_SnoozeOff(void)

```
b) The function of simple IIC was changed.
 Before:
 void R_IIC00_StartCondition(void)
 {
     SO0 &= ~_0001_SAU_CH0_DATA_OUTPUT_1; /* clear IIC00 SDA */
     SOE0 |= _0001_SAU_CH0_OUTPUT_ENABLE; /* enable IIC00 output */
     SO0 &= ~_0100_SAU_CH0_CLOCK_OUTPUT_1;
                                                       /* clear IIC00 SCL */
                                                /* enable IIC00 */
     SS0 |= _0001_SAU_CH0_START_TRG_ON;
 }
 After:
 void R_IIC00_StartCondition(void)
 {
   volatile uint8_t w_count;
   SO0 &= ~_0001_SAU_CH0_DATA_OUTPUT_1; /* clear IIC00 SDA */
   /* Wait for 5us */
   for (w_count = 0U; w_count <= IIC00_WAITTIME; w_count++)
   {
     NOP();
   SO0 &= ~_0100_SAU_CH0_CLOCK_OUTPUT_1; /* clear IIC00 SCL */
   SOE0 |= _0001_SAU_CH0_OUTPUT_ENABLE; /* enable IIC00 output */
   SS0 |= _0001_SAU_CH0_START_TRG_ON; /* enable IIC00 */
 }
 Before:
 void R_IIC00_StopCondition(void)
 {
                                                /* disable IIC00 */
     ST0 |= _0001_SAU_CH0_STOP_TRG_ON;
     SOE0 &= ~_0001_SAU_CH0_OUTPUT_ENABLE;
                                                        /* disable IIC00 output */
     SO0 &= ~_0001_SAU_CH0_DATA_OUTPUT_1; /* clear IIC00 SDA */
     SO0 |= _0100_SAU_CH0_CLOCK_OUTPUT_1; /* set IIC00 SCL */
     SO0 |= _0001_SAU_CH0_DATA_OUTPUT_1; /* set IIC00 SDA */
 }
 After:
 void R_IIC00_StopCondition(void)
 {
   volatile uint8_t w_count;
   ST0 = 0001 SAU CH0 STOP TRG ON;
                                               /* disable IIC00 */
   SOE0 &= ~_0001_SAU_CH0_OUTPUT_ENABLE;
                                                  /* disable IIC00 output */
   SO0 &= ~_0001_SAU_CH0_DATA_OUTPUT_1;
                                                 /* clear IIC00 SDA */
   SO0 |= _0100_SAU_CH0_CLOCK_OUTPUT_1; /* set IIC00 SCL */
   /* Wait for 5us */
   for (w_count = 0U; w_count <= IIC00_WAITTIME; w_count++)
   {
     NOP();
   SO0 |= _0001_SAU_CH0_DATA_OUTPUT_1;
                                                /* set IIC00 SDA */
 }
```





a), b) and c) issues has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.02.

## 4.1.3 Addition of PMC register setup

A setup of the PMC register was added about the combination terminal of each circumference. [The terminal to which a PMC register setup was added] •20,24,25,30, 32pin devices P00/ANI17/TI00/TxD1 P01/ANI16/TO00/RxD1 •other devices P02/ANI17/SO10/TxD1 P03/ANI16/SI10/RxD1/SDA10



## 4.1.4 Output code changes of the receiving function of UARTn

The output code of the receiving function of UARTn was corrected. The following is a case of UART0. [r\_cg\_serial.c] MD\_STATUS R\_UART0\_Receive(uint8\_t \* const rx\_buf, uint16\_t rx\_num) { MD\_STATUS status = MD\_OK; if  $(rx_num < 1U)$ { status = MD\_ARGERROR; } else g\_uart0\_rx\_count = 0U; g\_uart0\_rx\_length = rx\_num; gp\_uart0\_tx\_address = rx\_buf; } return (status); }

Before : gp\_uart0\_tx\_address = rx\_buf;
After : gp\_uart0\_rx\_address = rx\_buf;

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.03

## 4.1.5 Control correction of a competition pin

Control of the competition pin when simple-I2C of 24 and 25 pin device of RL78/G13 is set up was corrected.

Before :	P17/SDA11
	P30/SCL11
After :	P50/SDA11
	P30/SCL11

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.03

## 4.1.6 GUI correction of an A/D converter

In the A/D converter, it corrected so that the message displayed with the fixed value as the number of analog input channels might be dynamically displayed according to a number of channels.

Operation mode setting		
<ul> <li>Continuous select mode</li> </ul>	🔿 Continuous scan mode	
🔘 One-shot select mode	🔘 One-shot scan mode	
ANIO - ANI7 analog input selection	ANIO - ANI3	*



## 4.1.7 Conversion time setup of A/D correction

In the A/D converter, it corrected so that the message displayed with the fixed value as the number of analog input channels might be dynamically displayed according to a number of channels. In the RL78/G1A A/D converter, since conversion time was not able to be set up, it corrected that an A/D converter could not be used.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.05

## 4.1.8 Changes of square wave output of a timer

If code is generated so that timers TAUx (x is 1 to 7) of an 80-, 100-, or 128-pin MCU can output square wave, the values of the TOM1 and TOL1 registers, which control TAUx, are not set but those of the TOM0 and TOL0 registers are set.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.06

## 4.1.9 Changes of the TTL check box of a port

There is no check box which sets TTL as P10 and P11 with 30-pin MCU.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.06

## 4.1.10 Changes of PIOR setup

In the code for setting registers PIOR01 and PIOR04 to 1s in an arrangement of pin assignments, incorrect pins are assigned to INTP10 and INTP11 as follows:

Incorrect:Correct:P110 assigned to INTP10P100 assigned to INTP10P111 assigned to INTP11P110 assigned to INTP11

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.06

## 4.1.11 Changes of TAU1 setup

If code is generated in an 80- or 100-pin MCU, no one except "interval" can be selected in the functional selection of timer TAU1.



## 4.1.12 Changes of UART2 setup

If the code is generated for making settings of UART2 and any of the ports except 13 and 14, an error arises in building it.

Example:

If you use UART2 and set ports 10, 11, and 12 to the output state, the following code is generated; however, the last "|" is unnecessary:

PMC1 = • • • | \_80\_PMCn7\_NOT\_USE | ;

If build is performed including this code, an error arises. It must be read as follows:

 $PMC1 = \cdot \cdot \cdot | _80_PMCn7_NOT_USE ;$ 

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.06

## 4.1.13 Changes of key interrupt function

If you make settings of the key interrupt flag and the triggering edge, the settings cannot properly be reflected to the KRCTL register by the generated code.

### Example:

If you select Use among from the key flag pull-down list and Falling Edge among from the triggering edge pull-down list, the code generator generates the following incorrect codes.

KRCTL |= \_00\_KR\_FLAG\_UNUSED;

KRCTL |= \_01\_KR\_EDGE\_RISING;

The correct codes are as follows:

KRCTL |= \_01\_KR\_FLAG\_USED;

KRCTL |= \_00\_KR\_EDGE\_FALLING;

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V1.00.06

## 4.1.14 Changes of Simplified I2C

I When a receiving byte is set to 1 by Simplified I2C, it does not operate normally.



## 4.1.15 Additional function generation file mode

"Output control of API function" has been added to the Code Generator Property for RL78, 78K0R, and 78K0.

"Output all API functions according to the setting": Outputs necessary API functions according to the GUI settings (conventional output method).

"Output only initialization API function": Outputs only initialization functions (Create functions) regardless of the GUI settings.

Users can configure the settings such as interrupt functions according to their needs.

۵ 🚰	Code Generator Property	• +
🗆 Pre	oduct Information	
Ver	rsion	V1.03.03.04
Re	elease date	8/30/2012
🗆 Ge	enerate File Mode	
Ou	Itput control of API function	Output only initialization API function
Ge	enerate file	Output all API functions according to the setting
Ou	itput folder	Output only initialization API function
Re	eport type	птистие
Re	egister files	Output files to project
🗆 Pir	n Configurator Reflect Mode	
Mo	ode	Reflected



## 4.1.16 Changes of hdwinit() function

We have changed the initial code for the hdwinit() and main() functions.

```
void hdwinit(void)
{
    DI();
    R_Systeminit();
    EI();
}
```

The above code has been changed to the code given below. Accordingly, interrupts are not enabled within the hdwinit function.

```
void hdwinit(void)
{
    DI();
    R_Systeminit();
}
```

Interrupts are now enabled within the main() function.

```
* Function Name: main
* Description : This function implements main function.
                                      void main(void)
{
 R_MAIN_UserInit();
 /* Start user code. Do not edit comment generated here */
 while (1U)
 {
   ;
 }
 /* End user code. Do not edit comment generated here */
}
           * Function Name: R_MAIN_UserInit
* Description : This function adds user code before implementing main function.
                                                               **********
void R_MAIN_UserInit(void)
{
 /* Start user code. Do not edit comment generated here */
 EI();
 /* End user code. Do not edit comment generated here */
}
```



When an old project is used in code generation, the definitions of variables within the main function may lead to errors.

```
[Old project]
void main(void)
{
    /* Start user code. Do not edit comment generated here */
    char c;
    while (1U)
    {
    ...
```

[When an old project is loaded into CubeSuite+V1.03.00 and used for code generation] void main(void)

```
{
  R_MAIN_UserInit();
  /* Start user code. Do not edit comment generated here */
  char c;
               <- error!!
  while (1U)
  {
    ...
In that case, use { }.
void main(void)
{
  R_MAIN_UserInit();
  /* Start user code. Do not edit comment generated here */
              <- add "{"
  {
    char c;
             <- not error!
    while (1U)
    {
       }
              <- add "}"
  }
```



## 4.1.17 Changes of the timer RD and the timer RJ0, and new restriction

### a) Change of the timer RD

When the frequency of the high-speed on-chip oscillator clock is 64 MHz, the period and duty cycle for timer RD in PWM mode are incorrect. Although pins multiplexed with PWM are usually marked "!" in the port-setting view to indicate that the other functions are not usable in PWM mode, port pins being used by timer RD are not marked "!".

### b) Change of the timer RJ0

Change of the fault in timer RJ pulse period measurement mode.

Specify desired values for the count source and TRJIO0 polarity, and 0xffff for the count value. After code generation by CubeSuite+, correct a part of the output interrupt handler in the following way.

```
[Output source code]
__interrupt static void r_tmr_rj0_interrupt(void)
{
  if ((TRJCR0 & _20_TMRJ_UNDERFLOW_OCCUR) != 0U)
  {
    g_tmrj0_underflow_count += 1U;
    TRJCR0 &= (uint8_t)~_20_TMRJ_UNDERFLOW_OCCUR;
  }
  if ((TRJCR0 & _10_TMRJ_ACTIVE_EDGE_UNRECEIVED) != 0U)
  {
    g_tmrj0_width = (uint32_t)(g_tmrj0_trj_count - TRJ0 + 1U +
             (g_tmrj0_underflow_count * (_FFFF_TMRJ_TRJ0_VALUE + 1U)));
    g_tmrj0_trj_count = (uint32_t)TRJ0;
    g_tmrj0_underflow_count = 0U;
    TRJCR0 &= (uint8_t)~_10_TMRJ_ACTIVE_EDGE_UNRECEIVED;
  }
}
[Correct code]
        g_tmrj0_width = (uint32_t)(_FFFF_TMRJ_TRJ0_VALUE - TRJ0 + 1U +
```

(g\_tmrj0\_underflow\_count \* (\_FFFF\_TMRJ\_TRJ0\_VALUE + 1U))); g\_tmrj0\_trj\_count in the above expression must be the specified count value. When the count value is 0xffff, for example, enter \_FFFF\_TMRJ\_TRJ0\_VALUE.



```
c) Addition of restriction about timer RJ0
```

The interruption function in timer RJ0 pulse width measurement mode has fault.

If you select pulse width measurement from among the operating modes of the RJ0 timer, the code generator generates erroneous code

Example:

If you make the above settings for the RJ0 timer and use the code generator under the following settings, errors arise in the generated interrupt handler:

- Count source: any
- Polarity of TRJIO0: positive or negative
- Count value: 0x64

```
[Output source code]
```

```
__interrupt static void r_tmr_rj0_interrupt(void)
{
    if ((TRJCR0 & _20_TMRJ_UNDERFLOW_OCCUR) != 0U)
    {
        g_tmrj0_underflow_count += 1U;
        TRJCR0 &= (uint8_t)~_20_TMRJ_UNDERFLOW_OCCUR;
    }
    if ((TRJCR0 & _10_TMRJ_ACTIVE_EDGE_UNRECEIVED) != 0U)
    {
        g_tmrj0_width = (uint32_t)(_0064_TMRJ_TRJ0_VALUE - TRJ0 + 1U +
            (g_tmrj0_underflow_count * (_0064_TMRJ_TRJ0_VALUE + 1U)));
        g_tmrj0_underflow_count = 0U;
        TRJCR0 &= (uint8_t)~_10_TMRJ_ACTIVE_EDGE_UNRECEIVED;
    }
}
```

```
[The code to correct ]
volatile uint32_t g_tmrj0_trj_count = 0U; (A global variable is added)
```

```
_interrupt static void r_tmr_rj0_interrupt(void)
{
  if ((TRJCR0 & _20_TMRJ_UNDERFLOW_OCCUR) != 0U)
  {
    g_tmrj0_underflow_count += 1U;
    TRJCR0 &= (uint8_t)~_20_TMRJ_UNDERFLOW_OCCUR;
  }
  if ((TRJCR0 & _10_TMRJ_ACTIVE_EDGE_UNRECEIVED) != 0U)
  {
    g_tmrj0_width = (uint32_t)(g_tmrj0_trj_count - TRJ0 + 1U +
             (g_tmrj0_underflow_count * (_0064_TMRJ_TRJ0_VALUE + 1U)));
    g_tmrj0_trj_count = (uint32_t)TRJ0;
    g_tmrj0_underflow_count = 0U;
   TRJCR0 &= (uint8_t)~_10_TMRJ_ACTIVE_EDGE_UNRECEIVED;
 }
}
```



## 4.1.18 Changes of input pulse interval measurement of TAU

It corrected that the right measured value was not able to be acquired for the input pulse interval measurement function of TAU, and a high / low width measurement function by interruption function r\_taux\_channelx\_interrupt() at the time of use.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.00.00.

## 4.1.19 Changes the notation of a power supply

Although there was not EVDD in RL78/G12 device, it corrected that the notation remained on GUI.

[bef	fore]		
	🚮 Reflect in Pin 📲 Generate Code 🛛 🏂 🗯	💉 / <sup>7</sup> 💁 🙆 🖉 📣 🍰 🗋	
	Pin assignment Clock setting On-chip debug settin	g Confirming reset source Safety functions	
	- Operation mode setting		
	O High speed main mode 2.7 (V) ≤ VDD ≤ 5.5 (V)		
	O High speed main mode 2.4 (V) ≤ VDD ≤ 5.5 (V)		
	○ Low speed main mode 1.8 (V) $\leq$ VDD $\leq$ 5.5 (V)		
	- EVDD setting		
	④ 4.0 (V) ≤ EVDD ≤ 5.5 (V)	O 2.7 (V) ≤ EVDD ≤ 5.5 (V)	○ 2.4 (V) ≤ EVDD ≤ 5.5 (V)
	O 1.8 (V) ≤ EVDD ≤ 5.5 (V)		
	- Main system clock (fMAIN) setting		
	<ul> <li>High-speed OCO (fIH)</li> </ul>	<ul> <li>High-speed system clock (fMX)</li> </ul>	
	- High-speed OCO clock setting		
	Operation     Frequency	24 🖌 (MHz)	

#### [after]

Property * Code Generator*		
🥁 Reflect in Pin 🎽 Generate Code 🛛 🚣 🗯	📽 🎜 💁 🙆 🦓 🖓 🍰 🗋	
Pin assignment Clock setting On-chip debug setti	ng Confirming reset source Safety functions	
- Operation mode setting		
O High speed main mode 2.7 (V) ≤ VDD ≤ 5.5 (V)		
O High speed main mode 2.4 (V) ≤ VDD ≤ 5.5 (V)		
○ Low speed main mode 1.8 (V) $\leq$ VDD $\leq$ 5.5 (V)		
-VDD setting		
	<u> </u>	○ ○ 4 4 1 1 1 D D . E E 4 1
④ 4.0 (V) ≤ VDD ≤ 5.5 (V)	O 2.7 (V) ≤ VDD ≤ 5.5 (V)	○ 2.4 (V) ≤ VDD ≤ 5.5 (V)
<ul> <li>● 4.0 (V) ≤ VDD ≤ 5.5 (V)</li> <li>● 1.8 (V) ≤ VDD ≤ 5.5 (V)</li> </ul>	O 2.7 (V) ≤ VDD ≤ 5.5 (V)	2.4 (V) 2 VDD 2 5.5 (V)
	O 2.7 (V) ≤ VDD ≤ 5.5 (V)	0 2.4 (V) 2 VDD 2 5.5 (V)
O 1.8 (V) ≤ VDD ≤ 5.5 (V)	<ul> <li>O 2.7 (V) ≤ VDD ≤ 5.5 (V)</li> <li>O High-speed system clock (fMX)</li> </ul>	0 24(0)200255(0)
<ul> <li>O 1.8 (V) ≤ VDD ≤ 5.5 (V)</li> <li>Main system clock (fMAIN) setting</li> </ul>	-	0 24(0)200255(0)

#### This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.00.00.

## 4.1.20 Changes of an option byte setup

In the 20-pin product of the RL78/G12 group, the option byte (0C1H) is not set to a correct value. This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.00.01.



## 4.1.21 Changes of the port for RL78G1/A

a) It does not become an output, even if the port 13 is set as an output and it performs code generation.

b) Even if it interrupts INTP2 with INTP1 and sets up, the right value is not set as PMC5.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.00.01.

## 4.1.22 It corresponds to renewal of device user's manual

It corresponded to the renewal of revision of the device user's manual.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.04.00.

## 4.1.23 Changes the RL78/G13 Product in a 100-Pin Package is Selected

When a product of the RL78/G13 group in a 100-pin package is selected, starting the pin configuration tool after changing the package type from FB to FA in the pin configuration tool property terminates the CubeSuite+.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.

## 4.1.24 Changes the Key Input Interrupt Setting

The setting of Key interrupt flag and Detection edge may not be saved. When saving the project after making the new setting and then reloading the project, the setting reverts to the original setting as the new one had not been saved.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.

## 4.1.25 Changes the A/D Converter Operation Setting

The Conversion time mode of the Conversion time setting may not be saved. When saving the project after making the new setting and then reloading the project, the setting reverts to the original setting as the new one had not been saved.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.

## 4.1.26 Changes the Timer KB20 is in Use

When the timer KB20 is in use, the settings for Standalone mode (period controlled by external trigger input) and Interleave PFC (power factor correction) output mode may prevent the correct output of the API functions.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.

## 4.1.27 Changes the clock frequency of operation

The list of 2, 3, and six MHz was added to the frequency of the high-speed on-chip oscillator clock. Therefore, if the project before Cubesuite+V2.03.00 is read, the clock frequency of a high-speed on-chip oscillator may shift. Please re-set up the frequency right in that case.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.

## 4.1.28 Changes the watch error correction of real-time clock

The error correction of real-time clock function of the real-time clock was deleted. This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.03.00.



## 4.1.29 Changes of CPU and peripheral clock (fCLK) in the clock generator settings When the 20-pin, 30-pin, or 32-pin package is selected for the RL78/F13 or RL78/F14 group and a

divided frequency is selected for CPU and peripheral clock (fCLK) in the clock generator settings, the register settings are not output.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.04.00.

## 4.1.30 Changes for Using the Remote Control Carrier Wave Mask Signal

Change an error in the R\_TAU0\_Channel2\_Stop function for output when PWM output (remote control carrier wave mask signal) is selected in timer channel 2.

Example:Source code before modified

TO0 &= ~\_0004\_TAU\_CH2\_OUTPUT\_VALUE\_1 | ~\_0008\_TAU\_CH3\_OUTPUT\_VALUE\_1 |

~\_0010\_TAU\_CH4\_OUTPUT\_VALUE\_1 | ~\_0020\_TAU\_CH5\_OUTPUT\_VALUE\_1;

Source code after modified

TO0 &= ~\_0004\_TAU\_CH2\_OUTPUT\_VALUE\_1 & ~\_0008\_TAU\_CH3\_OUTPUT\_VALUE\_1 &

~\_0010\_TAU\_CH4\_OUTPUT\_VALUE\_1 & ~\_0020\_TAU\_CH5\_OUTPUT\_VALUE\_1;

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.04.00.

# 4.1.31 Changes for processing to Reflect the Pin Configurator When the A/D Converter is Set

Changes for when the Reflect in PIN button is pressed after A/D converter settings are made, the error message below might be displayed for some pins. This indicates failure of reflection in the Pin Configurator.(E0300004: The setting of pin No. XXX was not changed) This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.04.00.

## 4.1.32 Changes the Case When Ports that Are Not Available in the MCU Are Displayed.

When an RL78/G14 group MCU in the 80-pin package is selected, the settings for the P80 and P81 ports, which are not available in the selected MCU, are displayed.

This issue has been corrected in Code Generator for RL78,78K0R,78K0 V2.04.00.

## 4.1.33 Changes of the serial array unit1 for UART2

A register setup at the time of use was corrected for UART2 of the serial array unit 1 by the "transmit" or "transmit/recive"

```
Example:Source code before modified
void R_UART2_Create(void)
{
    /* Set TxD2 pin */
    PMC1 = 0xF7U;
    P1 |= 0x08U;
    PM1 = 0xF7U;
     . . . . . . . . . .
}
Source code after modified
void R_UART2_Create(void)
{
    /* Set TxD2 pin */
     PMC1 &= 0xF7U;
    P1 |= 0x08U;
    PM1 &= 0xF7U:
     . . . . . . . . . .
}
```



## 4.1.34 Changes Setting of P20 and P21 of Port

For port 2, even if input to or output port pins P20 and P21, which are multiplexed with analog pin functions, is selected, the generated code will not reflect the settings of the port mode control register (PMC register).

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.05.00.

## 4.1.35 Changes Setting of Port1

When the port (P12, P13, P16, P17) for port1, the Code Generator outputs the unnecessary operator and value "| \_33\_PMC1\_DEFAULT". This is because the initial settings for unused bits in the PMC1 register are incorrect.

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.05.00.

## 4.1.36 Changes setting of PMC register

For port 2, even if input to or output from port pins P20 to P27, which are multiplexed with analog pin functions, is selected, the generated code will not reflect the settings of the port mode control register (PMC register).(RL78/L1C)

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.37 Changes setting of interval timer

On the Channel 1 and Channel 3 tabbed pages when "Timer" is selected in the tree view, selecting "Higher and lower 8 bits" under "Interval mode setting" leads to "Generates INTTM01 when counting is started" being grayed out to indicate that it has become non-selectable.

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.38 Changes for CPU stack pointer monitor function

The order of statements in the procedure for setting the registers for CPU stack pointer monitor function\* is erroneous as shown below. Note: CPU stack pointer monitor function is a security function of the MCU.

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.39 Changes for comparator setting

When a comparator is set, code for clock supply is not output. This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.40 Changes for DTC setting

A project is not saved after code generation when high-speed transfer by the DTC is set. DTC activating source numbers are not set correctly for the DTC vector addresses. This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.41 Changes for the voltage detection circuit to "Interrupt Mode"

Operation of the voltage detection circuit is in "reset mode" even if "interrupt mode" is selected. This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.



## 4.1.42 Changes saving projects with setting for the A/D convertor

When a project configured with the below settings for the A/D convertor is read, the "A fatal error occurred" dialog box is displayed, after which CS+ operation is terminated.

- Selection of analog input pins from among ANI0-ANI2, ANI5, and ANI6: ANI0-ANI1

- VREF(+) setting:
- AVREFP
- VREF(-) setting:
- AVREFM

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.

## 4.1.43 Changes for reflection of pin configurations in generated code

When the "Reflect PIN" button is pressed after setting the input/output modes of port pins, "I/O" is always displayed regardless of the selected input/output modes.

This issue has been corrected in Code Generator for RL78(CS+ for CA,CX) V2.07.00.



# Chapter 5. Cautions

This section describes cautions for using Code Generator for RL78(CS+ for CA,CX).

#### Corresponds of code generation RL78/G14 RL78/11A RL78/G1G 몬 몬 Р RL78/G10 RL78/G13 RL78/F13 RL78/F14 RL78/G1E RL78/L13 RL78/G1A RL78/G12 RL78/F12 L78/L1C L78/L12 L78/I1B \_78/I1D <u>-78/G1C</u> No Description V1.00.01.03 V1.00.02 V1.02.01 V1.02.01 V1.02.01 V2.03.01 V2.02.01 V2.02.01 V1.04.01 V1.03.01 V1.03.01 V2.03.01 V2.04.01 V2.03.01 V2.03.01 V2.04.01 V2.03.01 . ය .03 . 33 . റ്റ . റ്റ . ල .03 . റ്റ . 33 . C3 .03 . C3 .03 .03 . 33 . 3 Cautions of t7he LIN-bus function of UARTO, 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 UART2, UART3, UART6 or UARTF. 2 Cautions of extension code, wakeup function 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 and multimaster of serial interface IICA or IIC0 Cautions of the operation for slave transmission 3 -\_ \_ \_ \_ \_ \_ Ι 1 1 1 \_ \_ of serial interface IICA or IICO. Cautions of cooperation with the linker option 4 Cautions of CAN controllers 5 Cautions of PORT 6 \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ Cautions of the SNOOZE mode of Serial array 7 unit 1 Cautions of setup of a real-time clock 8 \_ \_ \_ \_ \_ \_ \_ \_ 9 Cautions when using a DTC function 0 0 Cautions of initial function of an A/D converter 10 \_ \_ \_ \_ Cautions of initial function at the time of setting 11 -\_ \_ \_ \_ \_ \_ \_ \_ up UART transmission Conversion time setup of A/D correction 12 Cautions of Complementary assistant PWM 13 1 / / 1 1 1 1 I 1 mode of Timer RD Cautions of Pin Configurator 14 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Cautions of Safety Functions 15 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Cautions of critical errors 16 Cautions of file merger 17 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Cautions of timer array unit input clock sauce 18 0 0 Cautions of a high-speed on-chip oscillator 19 0 0 0 0 0 0 0 0 0 Cautions of debugging monitor's size 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

5.1 Cautions List

○ : Correspondence, -: Not correspondence, /: Outside of function.



## 5.2 Cautions Details

## 5.2.1 Cautions of the LIN-bus function of UART0 or UART2 or UART3 or UART6

The code generator is not supporting the LIN-bus functions of serial interface UART0 or UART2 or UART3 or UART6. [Workaround] There is no workaround.

# 5.2.2 Cautions of 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.

[Workaround] There is no workaround.

## 5.2.3 Cautions of the operation for slave transmission of serial interface IICA or IIC0

During slave transmission, if the master receiver does not return an ACK after the final data is received, then the error API IICA\_SlaveErrorCallback(MD\_NACK) will be called, regardless of whether the actual slave transmission process ended. For this reason, the program will not terminate normally.

[Work-around] RL78 Code Generator is corrected in V2.03.00.

```
void IICA_SlaveHandler(void)
{
      if (TRC0 == 1U)
           if ((ACKD0 == 0U) && (glicaTxCnt != 0))
           {
               IICA_SlaveErrorCallback(MD_NACK);
           }
           else
           {
               if (glicaTxCnt > 0U)
               {
                    IICA = *gplicaTxAddress;
                    gplicaTxAddress++;
                    glicaTxCnt--;
               }
               else
               {
                    IICA_SlaveSendEndCallback();
                    WREL0 = 1U;
               }
           }
      }
}
```



## 5.2.4 Cautions of cooperation with the linker option

The setting of on the chip debugging of the code generation is not coordinated with " Set user option byte" of link-option. [Workaround] There is no workaround.

## 5.2.5 Cautions of CAN controllers

The code generator is not supporting the CAN Controllers. [Workaround] There is no workaround.

## 5.2.6 Cautions of PORT

There are notes in the port setting of RL78/G13(R5F100LJ, R5F100LK, R5F100LL). Please do not use a item of P43, P52, P53, and P54 ("TTL buffer" or "N-ch"). [Workaround] RL78 Code Generator is corrected in V1.00.02.

## 5.2.7 Cautions of the SNOOZE mode of Serial array unit 1

The code generation of RL78/G13 in not supporting the SNOOZE mode of serial array unit 1.

[Workaround] RL78 Code Generator is corrected in V1.00.02.

## 5.2.8 Cautions of a setup of a real-time clock

When a clock sauce is set to 15(fIL)kHz on device, clock function cannot be used. However, it is displayed on GUI that clock function seems to be used with 15(fIL)kHz. Please do not set up clock function.

[Workaround] RL78 Code Generator is corrected in V1.00.02.



## 5.2.9 Cautions when using a DTC function

When DTC is used, please set up the following individual option of building. The DATA section is added for DTC to output sauce file "r\_cg\_dtc.c." Unless the individual option is set up, the following warning message is displayed and an object file is not generated.

( CC78K0R warning W0837: Output assembler source file , not object file )

Property 📲 Code Generator 🔙 Code Ge	nerator Preview 🗸 🗸				
🛀 r_dtc.c Property					
🗆 Build					
Set as build-target	Yes				
Set individual compile option	Yes				
File type	C source				
riio (ypo	0.00000				
Set individual compile option					
Selects whether to set a compile option that di	ffers from the project settings to this C source				
Selects whether to set a comple option that a	neis nom the project settings to this c source.				
Build Settings 🔏 Individual Compile Optic	ons 🖌 File Information 🖊 📼 👻				
🛀 r_cg_dtc.c Property					
Debug Information					
Add debug information	Yes(Add to both assembly and object file)(-g2)				
<ul> <li>Optimization</li> </ul>					
Perform optimization	Yes(Standard)(-qx2)				
A Preprocess					
Additional include paths	Additional include paths[0]				
Use whole include paths specified for build tool	Yes				
Macro definition	Macro definition[0]				
Macro undefinition	Macro undefinition[0]				
Message					
▷ Extension					
Output File					
A Assembly File					
Output assembly file	No				
Data Control	Yes(With no C source info)(-a)				
▷ ListFile	Yes(With C source into(unexpanded include file contents))(-sa)				
▷ Others	Yes(With C source info(expanded include file contents))(-sa,-li)				
Output assembly file	No				
Selects whether to output an assemble file.	<u> </u>				
This option corresponds to the -a, -sa, and -li option	18.				
Build Settings Individual Compile Option	s File Information				
Thurwiddar complie Option					

[Workaround] There is no workaround



## 5.2.10 Cautions of initial function of an A/D converter

After making the port 2 a setup which does not compete with an A/D converter, the initialization function at the time of setting up an analog input terminal by an A/D converter has an error. Source code outputted by  $R_ADC_Create()$  "PM2 |= 0x??;" The value of 0x?? has an error.

[Workaround] Please set up an A/D converter before setting up the port 2. The right value will be reflected if the port 2 is finally set up. RL78 Code Generator is corrected in V1.00.06.

## 5.2.11 Cautions of initial function at the time of setting up UART transmission

The source code of a SDRmn register setup is not outputted to initialization function R\_UARTn\_Create() at the time of choosing only UART transmission.

[Workaround] There is no workaround. RL78 Code Generator is corrected in V1.00.06.

## 5.2.12 Conversion time setup of A/D correction

Conversion time of the A/D converter of RL78/G1A cannot be set up. Therefore, an A/D converter cannot be used.

[Workaround] There is no workaround. RL78 Code Generator is corrected in V1.00.05.

## 5.2.13 Cautions of Complementary assistant PWM mode of Timer RD

When TimerRD Complementary PWM mode is used using a high-speed system clock by clock setup of RL78/G14, it is necessary to change a setup of an option byte. RL78/G14 512 pages of R01UH0186JJ0100 Rev.1.00 edited by user's manual hardware Please refer to Notes 1.

[Workaround] There is no workaround. RL78 Code Generator is corrected in V1.00.06.

## 5.2.14 Cautions of Pin Configurator

The Pin Configurator tool of RL78 was supported from CubeSuite+V1.03.00. However, there is the following restriction.

- 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.

In the above-mentioned case, please edit terminal information with pin configurator.

[Workaround] There is no workaround.

## 5.2.15 Cautions of Safety Functions

RAM parity error detection function of Safety Functions has not corresponded.

[Workaround] There is no workaround.



## 5.2.16 Cautions of critical errors

When the following operation is performed by the code generator of 78K0R/Fx3, a critical error occurs.

#### a) Clock

- Check in the two following items.

Internal low-speed oscillation clock (fIL) setting									
Operation	Frequency	30	(kHz)						
Stops internal low-speed oscillation in STOP mode									
Enables internal low-speed oscillation (fIL) operation setting for system clock (fCLK)									
- CPU and peripheral clock setting									
PLL clock frequency (fPLL) 4 (clock through mode: fPLL = fMAIN)									
PLL lockup time 128 (2^9/fMAIN)									
CPU and peripheral clock (fCLK)		30 (fil.)	(kHz)						
- Clock monitor setting									
ciccit monitor botting									

#### - Selection of a serial panel will generate an exception.

Property	Code Generator*		_				
🔣 Reflect in P	in 🛛 🖳 Generate Code	🚣 \$0	e 7 A	· 🏵 🔗	<b>"</b> 🖧		
	:	Fraguanau	20				
Error(E0200	001)		<b>3</b>			×	
8	A critical error occurred. [Direct Error Cause] Index was out of range. I collection. Parameter name: index	Must be non-r	negative and le	ss than the s	ize of the		
. 🔸 🚵 Re	ecode Screen			OK	Help		

There is no workaround. RL78 Code Generator is corrected in V2.00.01

#### b) Timer and serial

- Use interruption for the channel 3 of timer TAU2 in a certain mode.

- If a clock of operation checks one serial of serial SAU0, SAU1, and SAU2 "Operation clock select INTTM23", an exception will occur.

SAUO SAU1 SAU2 UARTFO UARTF1
Channel UART2 IIC20
- Function
Channel 0 UART2 💌 Transmit/receive function 💌 🗹 Operation clock select INTTM23
Channel 1 Unused 💌
Error(E0200001)
A critical error occurred.
[Direct Error Cause] Index was out of range. Must be non-negative and less than the size of the collection. Parameter name: index
+ OK Help

There is no workaround. RL78 Code Generator is corrected in V2.00.01



## 5.2.17 Cautions of file merge

If you select Merge File in Generate File Mode in the property of code generator and the source codes are written between each comment below, the file will be merged.

/\* Start user code. Do not edit comment generated here \*/

/\* End user code. Do not edit comment generated here \*/

However, if the number of braces ("{" and "}") in the edited source codes

(including the comments) are not the same, the edited source codes may disappear when you run the code generator.

[Workaround] There is no workaround.

## 5.2.18 Cautions of 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.

## 5.2.19 Cautions of a high-speed on-chip oscillator

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.

Please re-set up the frequency right in that case.

[Workaround] There is no workaround.

## 5.2.20 Cautions of debug area size

Even if it checks by on-chip debugging operation setup "for it not to be used", debugging monitor area size will be secured.

[Workaround]

Please write 0 to the debugging monitor area size of Link Options.

Ξ	Device	
	Set enable/disable on-chip debug by link option	Yes(-go)
	Option byte values for OCD	HEX 04
	Debug monitor area start address	HEX FEOD
	Debug monitor area size[byte]	512 -> 0
	Set user option bute	Yee(-ab)
н	eina link directive fle	
	Common Options / Compile Options / Assemble Options	Link Ontions



# Chapter 6. Restrictions

This section describes the restrictions for the Code Generator for RL78 (CS+ for CA,CX).

## 6.1 Restrictions List

		Corresponds of code generation																
N	Description	RL78/G1G	RL78/I1D	RL78/I1B	RL78/L1C	RL78/G1C	RL78/F13	RL78/F14	RL78/G10	RL78/G1E	RL78/L13	RL78/L12	RL78/F12	RL78/G1A	RL78/G12	RL78/G13	RL78/G14	RL78/11A
		V1.00.01.03	V1.00.02.03	V1.02.01.03	V1.02.01.03	V1.02.01.03	V2.02.01.03	V2.02.01.03	V1.04.01.03	V1.03.01.03	V1.03.01.03	V2.03.01.03	V2.03.01.03	V2.04.01.03	V2.03.01.03	V2.03.01.03	V2.04.01.03	V2.03.01.03
1	Restrictions of the coding rule of MISRA- C.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Restrictions of High-speed on-chip oscillator frequency select register	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	/
3	Restrictions of internal low-speed or internal high-speed oscillator trimming	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Restriction of a serial array unit	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0
5	Restrictions of Flash memory CRC operation function (high-speed CRC)	0	0	0	0	0	0	0	/	0	0	0	0	0	0	0	0	0
6	Restrictions of Port mode select register (PMS)	0	0	0	0	0	0	0	/	0	0	/	/	/	/	/	0	/

 $\circ$  : Correspondence, /: Outside of function



## 6.2 Restrictions Details

## 6.2.1 Restrictions of the 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.

## 6.2.2 Restrictions of 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

## 6.2.3 Restrictions of 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

## 6.2.4 Restriction of a serial array unit

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

## 6.2.5 Restrictions of 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 r01an0736ej.

http://www.renesas.com/req/keyword\_search.do?event=keywordSearch&q=r01an0736ej

## 6.2.6 Restrictions of Port mode select register (PMS)

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



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