C/C++ Compiler Package for RX Family V3.07.00

Release Note

Thank you for using our product.

This document describes the restrictions and points for caution. Read this document before using the product.

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1. User's Manuals

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

Name	Document Number
CC-RX Compiler User's Manual	R20UT3248EJ0114
CS+ Integrated Development Environment User's Manual: CC-RX Build Tool Operation	R20UT3478EJ0112

2. Changes

This section describes the changes resulting from the following version upgrades.

For Windows: CC-RX V3.06.00 to V3.07.00

For Linux: CC-RX V3.06.02 to V3.07.00

2.1 Support for the definition of weak symbols in assembly language

Weak symbols can now be defined in assembly language.

2.2 Improvement to optimization by the -case option

Optimization in cases where specification of the -case=auto option is specified was improved.

Example of source code (test.c)

```
unsigned char func(unsigned char key){
  switch(key & 0x3){
  default:
  case 0:
    return (2);
  case 1:
    return (3);
  case 2:
    return (1);
  case 3:
    return (4);
  }
}
```

Code output (crx -isa=rxv1 -speed -output=src test.c)

<CC-RX V3.06.00>

```
        .SECTION        P,CODE
_func:
        .STACK          _map=4
        AND #03H, R1
        CMP #01H, R1
        BEQ L14
L11:    ; entry
        CMP #02H, R1
        BEQ L15
L12:    ; entry
        CMP #03H, R1
```

<CC-RX V3.07.00>

```
        .SECTION        P,CODE
_func:
        .STACK          _map=4
        AND #03H, R1
        MOV.L #_L10, R14
        MOVU.B [R14,R1], R1
        RTS
        .SECTION        L,ROMDATA,ALIGN=4
_L10:
        .byte     02H,03H,01H,04H
        .END
```

BEQ L16 L13: ; bb10 MOV.L #00000002H, R1 RTS L14: ; switch_clause_bb4 MOV.L #00000003H, R1 RTS L15: ; switch_clause_bb6 MOV.L #00000001H, R1 RTS L16: ; switch_clause_bb8 MOV.L #00000004H, R1 RTS .END	

2.3 Rectified point for caution

The following point for caution no longer applies. For details, refer to Tool News.

- Note on counting of the inner loop in a nested loop structure (No. 68)

2.4 Other changes and improvements

Other changes and improvements are described below.

- Rectification of the output of cross-reference information

In V3.04.00 to V3.06.00, a cross-reference file was not generated for a C++ file. This problem has been rectified.

- Rectification of the library generator(lbgrx) for Linux

F0593321 error could occur when multiple accounts used the library generator on Linux. This problem has been rectified.

- Correction of internal errors

Internal errors sometimes occurred in the build process in previous revisions. These errors have been corrected.

3. Standard Libraries

This chapter describes restrictions on standard libraries included in the RX Family C/C++ Compiler.

This compiler package includes four library files (*.lib) for the RX600. You can use any of the library files if they correspond to the options that you wish to specify. Using these files shortens the time required for building.

3.1 Library files

Table 3.1 shows the standard library files and compiler options.

[NOTE]

The compiler options you specify should be the same as the microcontroller options defined for each of the library files listed in Table 3.1. Otherwise these library files are not usable, so specify your compiler options in the library generator to generate your own library file.

Table 3.1 Library Files

Library File	**Purposes**	**Optimize Options**	**Microcontroller Options** *1		
			-endian	**-cpu** **-rtti** **-exception** **-noexception**	**Others** *2
rx600lq.lib	For use with RX600 MCUs Priority in optimization: Speed Little endian	-speed -goptimize	-endian=little	-cpu=rx600 -rtti=on -exception	-round=nearest -denormalize=off -dbl_size=4 -unsigned_char -unsigned_bitfield -bit_order=right -unpack -fint_register=0 -branch=24
rx600ls.lib	For use with RX600 MCUs Priority in optimization: Size Little endian	-size -goptimize			
rx600bq.lib	For use with RX600 MCUs Priority in optimization: Speed Big endian	-speed -goptimize	-endian=big		
rx600bs.lib	For use with RX600 MCUs Priority in optimization: Size Big endian	-size -goptimize			

Notes: 1. For details on microcontroller options, see the “Microcontroller Options” columns of the “(1) Compile Options” of section A.1.3, “Options” in the CS+ Integrated Development Environment User’s Manual: RX Build.

2. The listed option settings produce the same behavior as the default settings.

3.2 Using the library files

Copy the library file(s) included in the package from the "lib" directory into a desired directory.

Then specify one of the copied library files for the **-library** option and start the linkage processing.

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Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Dec.01.2024	-	Newly created.
1.01	Jan.20.2025	3	Fixed 2.2.

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)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

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