

# C Compiler Package for RL78 Family V1.12.00

## Release Note

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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-RL Compiler User's Manual	R20UT3123EJ0112
CS+ Integrated Development Environment User's Manual: CC-RL Build Tool Operation	R20UT3284EJ0111

## 2. Changes

This section describes changes to CC-RL from V1.11.00 to V1.12.00.

### 2.1 Change to the specification of the free evaluation editions

For the free evaluation editions, after the trial period of 60 days from the day of the first building by the compiler, a restriction on the linkage size (the total section size which can be allocated to the ROM area) applied. This has been replaced by a restriction on the available optimization levels (-Onothing and -Olite). The restriction on the linkage size (64 Kbytes) no longer applies.

The -Olite option has been added to CC-RL V1.12.00 for optimizing at an intermediate level between the -Onothing and -Odefault options. For details, refer to the user's manual.

### 2.2 Addition of the -SECURITY\_OPT\_BYTE option

The -SECURITY\_OPT\_BYTE option for setting the control values for the security option byte has been added. For details on the control values for the security option byte, refer to the user's manual of the device.

### 2.3 Addition of the -FLASH\_SECURITY\_ID option

The -FLASH\_SECURITY\_ID option for setting the flash programmer security ID (serial programming security ID) has been added. For details on the flash programmer security ID (serial programming security ID), refer to the user's manual of the device.

### 2.4 Addition of the -SPLIT\_SECTION option

The -SPLIT\_SECTION option for allocating sections having the same name without concatenation between objects during the automatic allocation of sections has been added. For example, this enables allocating sections having the same name to extend across the mirror source area.

### 2.5 Addition of the -DSP\_MEMORY\_AREA option

The -DSP\_MEMORY\_AREA option for preventing the allocation of sections to the memory area for the flexible application accelerator (FAA) has been added.

### 2.6 Addition of the -STRIDE\_DSP\_MEMORY\_AREA option

The -STRIDE\_DSP\_MEMORY\_AREA option for allocating sections by having them extend across the memory area for the flexible application accelerator (FAA) during the automatic allocation of sections has been added.

### 2.7 Addition of the -RAM\_INIT\_TABLE\_SECTION option

The -RAM\_INIT\_TABLE\_SECTION option for embedding an information table for use in RAM initialization in executable files has been added. Using this option removes the need to write initialization code in a startup routine every time a section is added to the program.

### 2.8 Specification of multiple -crc options

Specifying multiple -crc options at the same time enables CRC calculation in multiple areas at once.

### 2.9 Improvement to the automatic allocation of sections

The algorithm for the automatic allocation of sections by the -AUTO\_SECTION\_LAYOUT option has been improved. This may further reduce code sizes obtained with the option.

### 2.10 Improvement to the -rrm option

The range of devices with which the -rrm option can be used has been expanded.

### 2.11 Elimination of an unnecessary message in response to the va\_start macro

The problem of an unnecessary warning (W0520549) occurring when using the va\_start macro has been eliminated.

## 2.12 Function expansion for the .SECTION directive

The COMDAT argument can be specified for the .SECTION directive. When multiple source files include sections having the same COMDAT argument, only one section is selected during linking. This function can avoid errors in linkage even in the case of multiple source files including external symbols with the same name.

## 2.13 Function expansion for the .SECTION or .CSEG directive

Using the .SECTION or .CSEG directive enables setting the flash programmer security ID (serial programming security ID) in an assembly source file. For details on the flash programmer security ID (serial programming security ID), refer to the user's manual of the device.

## 2.14 Support of the C++ language [technical preview edition]

The -lang=cpp14 option, which selects the compilation of files with the cpp, cp, or cc extension as source files in the C++ language (the language standard is C++14), has been released as the technical preview edition.

### 2.14.1 Technical preview edition

The purpose of the technical preview edition is to obtain ways to improve functionality through customer feedback. In CC-RL V1.12.00, the -lang=cpp14 option has been released as the technical preview edition. Confirm the following items if you will be using this option.

- Do not use the -lang=cpp14 option for developing products since this option is only for evaluation and its operation is not guaranteed.
- Several points for caution apply to the C++14 language specification, libraries, and debugging facilities for use. For details, refer to the "CC-RL C++14 Technical Preview Edition User's Manual" which can be downloaded from the following product page.  
C Compiler Package for RL78 Family: [https://www.renesas.com/rl78\\_c](https://www.renesas.com/rl78_c)
- When the -lang=cpp14 option is used, the following warning message is output.  
W0519999: The -lang=cpp14 option in CC-RL V1.12.00 is a technical preview edition. It cannot be used in product development.
- Please send us your comments and requests regarding this option. You will find an input format for this purpose in the "CC-RL C++14 Technical Preview Edition User's Manual" mentioned above.

### 2.14.2 Option specification

[Specification format]

-lang=cpp14

Compilation is executed in accord with the C++14 standard. For details on the specification, refer to the "CC-RL C++14 Technical Preview Edition User's Manual" mentioned above.

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**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Dec.01.22		Newly created.

# 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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