

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.

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Chapter 1. Target Devices

The target devices supported by the CC-RH compiler are listed on the Website.

Please see the URL below.

CS+ Product Page:

<http://www.renesas.com/cs+>

Chapter 2. User's Manuals

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

Manual Name	Document Number
CC-RH Compiler User's Manual	R20UT3516EJ0106
CS+ Integrated Development Environment User's Manual: CC-RH Build Tool Operation	R20UT3283EJ0107

Chapter 3. Keywords When Uninstalling the Product

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)

To use the Windows uninstaller, select "CS+ CC-RH V2.01.00" from "Programs and Features" of the control panel.

Chapter 4. Changes

This chapter describes changes to the CC-RH compiler from V2.00.00 to V2.01.00.

Note that the features and changes that are only available to users holding a registered license for the Professional edition are indicated as **[Professional edition]**.

4.1 Addition of checking source code across multiple files against MISRA-C:2012 rules **[Professional edition]**

The `-misra_intermodule` option has been added to check source code across multiple files against MISRA-C:2012 rules.

Although source code had previously only been checked within the individual files, specifying this option now enables the checking of source code across multiple files.

4.2 Extensions to the checking of source code against MISRA-C:2012 rules **[Professional edition]**

The following rule numbers have been added as arguments of the `-Xmisra2012` option for checking source code against MISRA-C:2012 rules.

Required rules: **8.5** and **8.6**

The following shows the number of MISRA-C:2012 rules which can be checked by each revision.

<i>Classification of Rules: Number of Rules</i>	<i>V2.00.00</i>	<i>V2.01.00</i>
Mandatory rules: 16	7	7
Required rules: 108	86	88
Recommended rules: 32	26	26
Total: 156	119	121

4.3 Link-time Optimization

Link-time optimization in the form of the removal of unused functions and variables has been added.

Unlike conventional optimization at compilation, the entire program is analyzed at linkage. Thus global functions and global variables can be removed if they are unused.

The following options have been added for this feature.

- Compile option

-goptimize	Adds information for link-time optimization when a C source file is compiled. The files that were compiled with this option are the targets for link-time optimization.
- Assemble option	
-goptimize	Adds information for link-time optimization when an assembly source file is compiled.
- Link options	
-optimize / -nooptimize	Selects or deselects link-time optimization.
-symbol_forbid	Suppresses link-time optimization in units of functions or variables.
-section_forbid	Suppresses link-time optimization in units of sections.
-absolute_forbid	Suppresses link-time optimization for a range of absolute addresses.

4.4 Addition of a feature for changing a section name when a library file is input

The `-lib_rename` linkage option has been added. With this option, section names or symbol names in a file within a library that is input at the time of linkage can be changed and linked.

4.5 C99 standard library functions

The following C99 standard library functions have been supported.

- `acosl()`, `asinl()`, `atanl()`, `atan2l()`, `cosl()`, `sinl()`, `tanl()`, `coshl()`, `sinhl()`, `tanh1()`, `expl()`, `frexpl()`, `ldexpl()`, `logl()`, `log10l()`, `modfl()`, `fabsl()`, `powl()`, `sqrtl()`, `ceil()`, `floorl()`, `round()`, `roundf()`, `roundl()`, `lround()`, `lroundf()`, `lroundl()`, `llround()`, `llroundf()`, `llroundl()`, `trunc()`, `truncf()`, `truncl()`, `fmodl()`, `copysignl()`, `fmaxl()`, `fminl()`

4.6 Rectified points for caution

The following two points for caution no longer apply. For details, refer to Tool News.

- Point for caution regarding constant expressions that include type conversion from the floating-point type to the 64-bit integer type (No.23)
- Point for caution when the `-Xmisra2012` option is specified (No.24)

4.7 Other changes and improvements

Other major changes and improvements are described below.

- (a) Interlinking of the -pid option and the CS+ debugger

The PID offset function of the CS+ debugger is now supported.

- (b) Change to the operation of preprocessing

When the -Xdbl_size and -Xround options were specified at the same time as the -P option, a warning message was output and ignored.

Now, when these options are also enabled with the -P option specified, the values of predefined macros `__DBL4`, `__DOUBLE_IS_32BITS__`, and `__ROZ` are reflected in the results of preprocessing.

- (c) Enhancement of optimization

The code size and speed of execution have been improved, mainly by adding optimization in terms of conditional branches and the order of memory access.

Other optimization processes have also been enhanced.

- (d) Correction of internal errors

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

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Renesas Electronics Corporation

TOYOSU FORESIA, 3-2-24 Toyosu, Koto-ku, Tokyo 135-0061, Japan

Renesas Electronics America Inc.

1001 Murphy Ranch Road, Milpitas, CA 95035, U.S.A.
Tel: +1-408-432-8888, Fax: +1-408-434-5351

Renesas Electronics Canada Limited

9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

Renesas Electronics Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-651-700

Renesas Electronics Europe GmbH

Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.

Room 1709 Quantum Plaza, No.27 ZhichunLu, Haidian District, Beijing, 100191 P. R. China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.

Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, 200333 P. R. China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited

Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852 2886-9022

Renesas Electronics Taiwan Co., Ltd.

13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.

80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.

Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.

No.777C, 100 Feet Road, HAL 2nd Stage, Indiranagar, Bangalore 560 038, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.

17F, KAMCO Yangjae Tower, 262, Gangnam-daero, Gangnam-gu, Seoul, 06265 Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5338