Contributing to more efficient embedded system development

Renesas C Compilers

https://www.renesas.com/compiler_licenses

Powerful Forms of Optimization to Shorten the Execution Times of Programs and Reduce Code Size

Renesas C compilers bring out the performance of Renesas original cores and provide powerful optimization facilities which contribute to greater efficiency in the development of embedded systems.

C compiler package for RL78 family	**(CC-RL)**	https://www.renesas.com/rl78_c
C/C++ compiler package for RX family	**(CC-RX)**	https://www.renesas.com/rx_c
C compiler package for RH850 family	**(CC-RH)**	https://www.renesas.com/rh850_c

Joining the EEMBC*

Renesas has joined the EEMBC* as a measure for further improving the performance of Renesas C compilers.

*Embedded Microprocessor Benchmark Consortium
www.eembc.org/memberinfo/memberlist.php

C compiler trial available

Renesas provides C compilers that can be downloaded free of charge for trial use. After you purchase a Renesas C compiler, you can remove restrictions on it by registering your license key.

During the evaluation period: You can use the C compilers with no limitations on functionality.
The evaluation period expires 60 days after the first build following the initial installation of the compiler.

After the evaluation period: You can continue to use the C compiler, although limitations apply to the functionality, and to either the size of linkable object code or available optimization levels depending on the CC-RL version.
The functionality is limited to that of the standard edition and the size of linkable object code is limited as follows: 64 KB for CC-RL V1.11.00 and earlier versions, 128 KB for CC-RX, and 256 KB for CC-RH.
For CC-RL V1.12.00 and later versions, only the -Onothing (debug precedence) or -Olite (partial optimization) optimization level is selectable.

Extended Functionality for Embedded System Development

The C compilers provide a wide range of extended functionality (#pragma directives, Intrinsic functions, and so on) to simplify the development of embedded systems. The extended functionality of a given compiler depends on the architecture of the MCU family and thus differs slightly from compiler to compiler.

#pragma directives

The #pragma directives we provide to work with our C compilers simplify specifying the allocation of functions and data, the writing of functions to work as interrupt handlers, and other tasks required in the writing of embedded software.

Intrinsic functions

The Renesas C compilers provide various intrinsic functions that will be replaced by instructions that directly control hardware.

Optimization options

Individual levels of and items for optimization can be specified. The volatile option is used to suppress optimization by the compilers to the extent that the order and number of times in access to external variables match the corresponding items in the source program.

Coding in assembly language

You can code functions in assembly language within a C source program. The coded functions can be called in the same way as ordinary functions.

Professional Editions: Even Greater Efficiency and Quality of Development

The following table lists the features and state of support for each compiler. For details, see "Renesas Compilers Professional Editions", which you can reference by searching the Renesas website with the keyword "R20UT4026".

✓ Supported | — Support not intended

Features of the professional editions	CC-RL	CC-RX	CC-RH
Checking of source code against MISRA-C:2004/2012 rules	✓	✓	✓
Detection of stack smashing	✓	✓	✓
Enhanced security for dynamic memory management functions	✓	✓	✓
Detection of illicit indirect function calls	✓	✓	✓
Half-precision floating point	—	—	✓
Synchronization features in the updating of control registers	—	—	✓

Operating Environment

The C compilers support Windows and Linux operating systems.

Various Licenses Selectable to Suit Your Pattern of Development

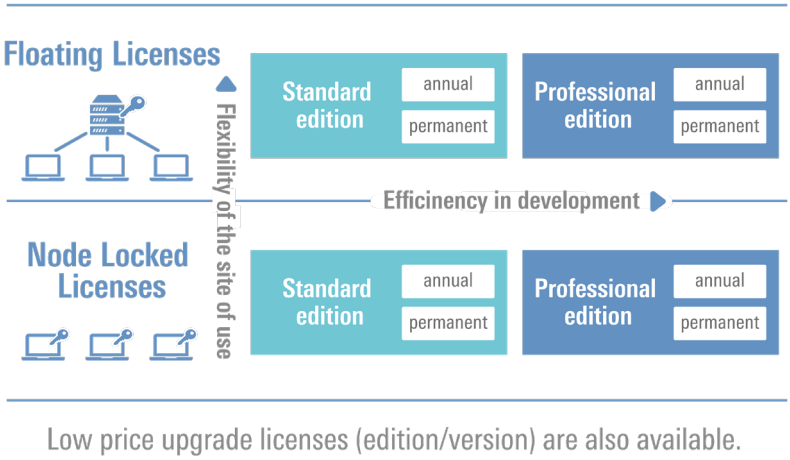
You can choose the license that best suits your development needs from among the eight combinations of Renesas compiler license types shown at right.

The permanent licenses we provide impose no limit on the period of use, while annual licenses are valid for one year. The various combinations give you flexibility in terms of introducing licenses in response to changes in patterns of development.

If you already have a license, upgrades are available at reduced prices.

Details www.renesas.com/compiler_licenses

* The same license can be used with both CS+ and e² studio.
* The sale of licenses with installation media (CD or DVD) has ended. Download the installer from the Renesas website.



Low price upgrade licenses (edition/version) are also available.

Services and Products Related to Long-Term Use and Functional Safety

Compiler maintenance service

Renesas offers a maintenance service for a specific compiler version. This is intended to provide a sense of ease to long-term users of the given compiler. This service incurs a charge.

Details www.renesas.com/compiler-maintenance

Compiler qualification service

Renesas offers a support service for certifying that development tools meet the requirements of ISO 26262, *Road vehicles — Functional safety*. This service incurs a charge.

Details www.renesas.com/compiler-qualification

IEC 61508 Certification Kit for RX Compilers

This kit supports the certification of RX compilers as development tools that meet the requirements of the IEC 61508 functional safety standard.

Details www.renesas.com/iec61508-certification-kit-rx-c

Download

For the download and installation procedures, see the following document:

Renesas Compiler Installation Guide
www.renesas.com/cc-guide

Videos

You can learn about the types of compiler licenses and license registration by watching the video.

www.renesas.com/compiler_licenses_video

FAQ en-support.renesas.com/knowledgeBase

Community community.renesas.com

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