CS+ for CC V8.13.00

Release Note

R20UT5582EJ0100
Rev.1.00
Dec 01, 2024

Contents

1. Target Devices

The target devices supported by the CS+ are listed on the Website.

Please see this URL.

CS+ Product Page

https://www.renesas.com/cs+

2. User's Manuals

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

Manual Name	Document Number
CS+ V8.02.00 Installer	R20UT4525EJ0100
CS+ V8.13.00 Editor	R20UT5561EJ0100
CS+ V8.13.00 Python Console	R20UT5567EJ0100
CS+ V5.00.00 Updater	R20UT3942EJ0100
CS+ V8.13.00 Message	R20UT5563EJ0100
CS+ V8.13.00 Project Operation	R20UT5562EJ0100
CS+ V8.11.00 Analysis Tool	R20UT5394EJ0100
CS+ V8.13.00 RH850 Debug Tool	R20UT5566EJ0100
CS+ V8.13.00 RX Debug Tool	R20UT5565EJ0100
CS+ V8.13.00 RL78 Debug Tool	R20UT5564EJ0100
CS+ User's Manual: CC-RH Build Tool Operation	R20UT3283EJ0113
CS+ User's Manual: CC-RL Build Tool Operation	R20UT3284EJ0113
CS+ User's Manual: CC-RX Build Tool Operation	R20UT3478EJ0112
CS+ V8.13.00 GHS CCRH850 Build Tool Operation	R20UT5560EJ0100

* GHS: Green Hills Software, LLC

3. Uninstallation

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+ for CC] from [Apps & features] from [Settings] of Windows or [Programs and Features] of the control panel.

4. Improvements and Changes

This chapter describes changes from V8.12.00 to V8.13.00.

4.1 Improvements and changes to CS+

4.1.1 Enhanced support for Renesas compilers [RL78][RH850][RX]

Support for the following compiler have been added.

- C Compiler Package for RL78 Family CC-RL V1.15.00
- C Compiler Package for RH850 Family CC-RH V2.07.00
- C/C++ Compiler Package for RX Family CC-RX V3.07.00

For details of updates and points for caution on the compiler, refer to the release note for the compiler.

4.1.2 Enhanced support for GHS compilers [RH850]

Support for the following versions of the RH850 compiler from GHS has been added.

- 2024.1.4

4.1.3 Improvement to the operation in conversion from a CubeSuite project

The operation when a project file (*.cspj) for CubeSuite was opened and [No] was selected in response to the Q0268001 message (“Open the CubeSuite project without changing the settings?”) has now been improved.

Note: When you open a project file for CubeSuite in CS+ V8.12.00, if an error appears in the selection of a project after the selection of [No] in response to the Q0268001 message, the procedure is to click on [OK] and [Cancel] in sequence, close the Project Convert Setting dialog box, and re-open the project file for CubeSuite.

4.1.4 Improvement to the operation when changing the microcontroller

The contents of the project remain the same even if an attempt is made to change the microcontroller to the same product type.

When you have selected the same microcontroller in the Change Microcontroller dialog box as that used in the current project, the message “The selected microcontroller is the same product type as that used in the project.” appears in the right side of the dialog box and the [OK] button is disabled.

4.2 Additions and improvements to the build tool

4.2.1 Improvement to the function for updating I/O header files [RL78][RH850]

When you have selected [Generate I/O Header File] from the right-click menu after having selected multiple build tool nodes in the Project Tree panel, you can simultaneously update the I/O header files for multiple projects.

4.2.2 Improvement to the dialog box for editing the [Rule check exclusion file] property [RX]

Among the properties of the build tool, the dialog box which is displayed by clicking on the […] button on the [Compile Options] tabbed page > [MISRA-C Rule Check] category > [Rule check exclusion file] property has been changed to the Path Edit dialog box. This enables selecting a folder in the Browse For Folder dialog box.

Accompanying this, the maximum number of specifiable files in the [Rule check exclusion file] property has been changed from 65536 to 65535.

4.3 Additions and improvements to the debug tool

The abbreviations listed below collectively denote the corresponding tools in this section.

OCD (serial):

Serial or FINE interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (JTAG):

JTAG interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (LPD):

LPD connection for the E1 emulator, E20 emulator, and E2 emulator

4.3.1 Improvement to the performance of the debugging function for the flexible application accelerator (FAA) [RL78]

In the debugging function for the FAA, the response to the stepped execution of a program and the display of the contents of memory in the [Memory] panel has been improved.

4.3.2 Addition of types of components supported on the [Virtual Board] panel [RL78]

Applies to: The simulators for RL78/G10, RL78/G11, RL78/G12, RL78/G13, RL78/G13A, RL78/G14, RL78/L12, RL78/G1F, RL78/G23, RL78/G15, RL78/G22, RL78/G16 and RL78/G24 devices

Support for the following types of component has been added to the [Virtual Board] panel.

- DA16200(UART), Key Matrix, Infrared Remote Control, Ultrasonic sensor

4.3.3 Addition of the [Save ID code] property [RX]

Applies to: OCD(Serial), OCD(JTAG) RX

The [Save ID code] property has been added to the [Connect Settings] tabbed page > [Flash] category.

Selecting [Yes] for this property leads to saving of the value of the [ID Code] property in CS+.

4.3.4 Addition of the [Search for global variables even outside the current scope] property

The [Search for global variables even outside the current scope] property has been added to the [Download File Settings] tabbed page > [Debug Information] category.

When load module files are downloaded and global variables for which the scope has not been specified are registered in a watch expression, searching for global variables had only proceeded within the current scope of the PC value. However, this has been improved so that searching for global variables is made to proceed outside the current scope of the PC value by selecting [Yes] in the [Search for global variables even outside the current scope] property.

4.4 Additions to the Python console

4.4.1 Addition of functions for use in external communications with the Python 3 execution environment

The following functions for controlling CS+ in the Python 3.x execution environment have been added.

csplus.get_time_measurement_result	Gets the result of measurement by the specified timer.
csplus.get_timer_providers	Gets the supported timer providers.
csplus.get_timers	Gets the names of timers.
csplus.is_timer_supported	Checks if the timer provider that is currently selected supports the timer function.
csplus.select_timer_provider	Specifies the timer provider which is to be used for timer-related functions.

5. Points for Caution

This section describes points for caution regarding CS+.

5.1 Points for caution regarding CS+ (general)

5.1.1 File names

The following rules apply to folder and file names.

Types of Folder and File Names	Rules
Paths (folder and file names)	● Naming folder and file names complies with rules for naming files in Windows. ➢ Do not use folder and file names which cannot be created in Windows Explorer. The following characters are not usable. \, /, :, *, ?, ", <, >, | ➢ English upper-case (A – Z) and lower-case (a – z) characters are not distinguished from each other. ● Up to 259 characters can be used. ● The following character cannot be used. ➢ Characters in system-dependent character codes ➢ ^ [CC-RH/CC-RL] ● Network path names cannot be used. Assign such names to drives.
Build mode names (names of folders output by a linker)	● Also refer to the notes on paths (folder and file names) above. ● The following characters are not usable. ➢ , = ; ➢ - [Only the first character for CC-RX]
Source file names Load module names Project names (names of files output by a linker)	● Also refer to the notes on paths (folder and file names) above. ● Only the characters a to z, A to Z, 0 to 9, . (period), _ (underscore), +, and - are usable. However, a period (.) cannot be used at the start or end of a file name. Plus (+) and minus (-) cannot be used at the start of a file name. ● Do not use source files with the same names. If such files exist along different paths, the names cannot be distinguished.

5.1.2 Panel display

If your hardware environment does not meet the recommended specifications for CS+, the [Property] panel may appear small and have scrambled contents.

If this happens, move the [Property] panel outside the split panel area.

- Enable [Dockable], and make it a docking panel
- Enable [Floating], and make it a floating panel

5.1.3 [Editor] panel

- When a label is selected and the [Jump to Function or Variable] feature is used from the context menu, execution does not jump to the label.
- The following notes apply to the editor, when source files with the same name but from different folders are registered with a main project and a sub project, and load modules from both the main project and sub project are downloaded.
  - The address of the main project is displayed on the file.
  - At jumping to a source file from disassembled code, the file registered with the main project is opened.
  - If the file is opened from either project, only one file will be opened.
- On Windows 10 and Windows 11, the display may become unclear due to anti-aliasing.
- When saving a file in the [Save As] dialog box, the extension listed at the top of the [Save as type] drop-down list is automatically added unless another extension is specified. Note however, that an extension is not added when a file name is input with an extension that is selected in the [Save as type] drop-down list or with an extension that is registered with Windows. When an automatically added extension is not as expected, modify the name of the file by using, for example, Explorer.
- Printing the contents of the Editor panel is not possible in an environment with .NET Framework 4.6 installed. To do so in that case, use an editor other than that of CS+.
- When the floating [Editor] panel is displayed on Windows 11, snap layouts are not displayed even if the mouse cursor is hovered over the maximize button.
  Workaround: Enter the Windows key + Z.
- Immediately after colors have been customized with [General – Font and Color] in the Option dialog box, the character strings for the search are not highlighted. To highlight these strings, restart CS+.

5.1.4 Creating new projects

Applies to: RX

If a new project is created by selecting [Empty Application[CC-RX]] under the environment for the RX, building the project may lead to the following errors.

```
** L2132 (E) Cannot find "D" specified in option "rom"
** L2132 (E) Cannot find "D_1" specified in option "rom"
** L2132 (E) Cannot find "D_2" specified in option "rom"
```

If you encounter these errors, change the setting of [ROM to RAM mapped section] on the [Link Options] sheet in CS+.

5.1.5 Tutorials

The Code Generator Plug-in, Pin Configurator Plug-in and Program Analyzer Plug-in are used in tutorials.

Enable them through the [Plug-in Manager] dialog box.

5.1.6 Starting multiple instances of CS+

Two or more instances of CS+ can be started on the same host machine, but if you do so, take note of the points listed below.

- When two or more instances of CS+ are started, the most recent information to have been written is saved in the information file for each user's own PC.
- When two or more instances of CS+ are started, the most recent information to have been written is saved in the information file for the stack analysis tools (including CallWalker).
- When the same project file is used in two or more instances of CS+, the most recent information to have been written is saved.
- When the same project file is used in two or more instances of CS+, do not attempt building from more than one instance at the same time since the names of the output files will be identical.

5.1.7 Loading projects by using earlier versions of CS+

If the version of CS+ being used to load a project is earlier than the CS+ version with which the project was created, some settings may be cleared since the earlier versions of CS+ do not recognize them.

5.1.8 .NET Framework from Microsoft Corporation

CS+ outputs the following message and is closed if the version of the .NET Framework you are using is earlier than 4.6.2.

E0200010

Failed to launch this product.

Please install the Microsoft .NET Framework 4.6.2 or later on this PC.

In such cases, obtain a later version of the .NET Framework from the Web page of Microsoft Corporation and install it before starting up CS+ for CC.

Note that the update manager for CS+ for CC is not usable for updating the .NET Framework.

5.1.9 Dual-bank function of the code flash memory

Applies to: RX26T, RX65N/RX651-2M, RX65W-A, RX671, RX66N, RX72N and RX72M group

Products of the RX26T group with 512 KB of ROM, RX65N and RX651 groups with 2 or 1.5 MB of ROM, RX65W-A, RX671, RX66N, RX72N and RX72M support the dual-bank function of the code flash memory. In CS+, you can select the linear or dual mode during the process of setting up a project.

In use of dual mode, select the type name with "_DUAL".

5.1.10 Smart Manual

Applies to: RX, RL78

When the Smart Manual does not support the target MCU of an open project, the user's manuals are not displayed.

5.1.11 Smart Manual for CS+ for CC V8.09.00 or an earlier version

Applies to: RL78, RX

The form of distribution of the database for the Smart Manual has been changed from April 2023.

Versions of manuals that were updated or disclosed after April 2023 cannot be automatically opened in the Smart Manual panel for CS+ for CC V8.09.00 or an earlier version.

Consider updating of the version of CS+ to CS+ for CC V8.10.00 or later.

5.1.12 CS+ Partner OS Aware Debugging Plug-in

Applies to: RL78, RX

When CS+ is started with the CS+ Partner OS Aware Debugging Plug-in enabled and by using CubeSuite+.exe (without the Main window), the error message "(0202002) Opening a project failed." is returned.

This can be avoided in either of the following ways.

- Start CS+ by specifying an option to prevent reading of the CS+ Partner OS Aware Debugging Plug-in for CubeSuite+.exe.
  Example: CubeSuite+.exe /np PartnerOS ...
- Turn off the CS+ Partner OS Aware Debugging Plug-in before starting CS+ with CubeSuite+.exe (without the Main window).

How to turn off the plug-in:

Start CS+ (with the Main window) or CubeSuite+ (CubeSuiteW+.exe).
Select [Plug-in Setting...] from the [Tool] menu to display the [Plug-in Manager] dialog box.
Deselect the [CS+ Partner OS Aware Debugging Plug-in] checkbox.

5.1.13 RX72M

When creating a new RX72M project, there are differences between the register definition contents of iodefine.h and the contents of the RX72M User's Manual.

Applicable iodefine.h file version is V1.00A and earlier.

1. Error : unsigned short ACKCMDER:1;

   Correct : unsigned short ACKCMDERR:1;

2. Error : unsigned long PSADR:19;

   Correct : unsigned long PSADR:17;

5.1.14 Displaying Find and Replace dialog box

The position of the Find and Replace dialog box is remembered and restored. In a multi-display environment, for example, in case that the sub display is temporarily OFF, the Find and Replace dialog box may not appear due to being off the screen.

In the case, it is possible to move to the visible position in the following way:

1. Immediately after entering Ctrl+F, in other word, with the focus on the Find and Replace dialog box, enter the Alt+Spacebar. The control menu will appear, enter the M key to select [Move].
2. Enter the arrow keys in that state, or move the mouse cursor to display the dialog.

5.1.15 Editing and analyzing C++ source files [RL78]

In a CC-RL project, the following functions regarding a C++ source file cannot be used.

- The smart edit function in the Editor panel
- Functions of an analysis tool
  - Function List panel
  - Variable List panel
  - Analysis Chart panel (except for the [Variable Value Changing Chart] tabbed page)
  - Call Graph panel
  - Class/Member panel

Regarding support for C++ by the CC-RL compiler, refer to the help system, User's Manual: Compiler, or the release notes for the compiler.

5.2 Points for caution regarding build tools

5.2.1 Projects to which C++ source files have been added [RL78]

If a project for CC-RL has been created with CS+ V8.09.00 or a later version, it cannot be opened with CS+ V8.08.00 or an earlier version if any C++ source files have been registered with the project.

This is because CS+ V8.08.00 and earlier versions do not support C++ source files.

5.2.2 Changing the microcontroller

When you change the microcontroller, some options may not be correctly changed because of the difference of specifications between the microcontrollers before and after the change.

For the changed options, messages will be output to the Output panel in the following format.

[Name of a property] <*Setting before the change*> -> <*Setting after the change*>

A source file for starting up CS+ is not updated to take account of the change to the microcontroller.

When you have changed the microcontroller, check the specifications of the microcontroller after the change, modify the source file for starting up CS+, and re-set the options.

5.3 Points for caution regarding design tools

5.3.1 Saving projects

If you save a project that has sub-projects while the [Device Top View] or [Device Pin List] panel is open, then the device top view and device pin list of the main project will always appear.

5.4 Points for caution regarding debugging tools

The abbreviations listed below collectively denote the corresponding tools in this section.

OCD (serial):

Serial or FINE interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (JTAG):

JTAG interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (LPD):

LPD connection for the E1 emulator, E20 emulator, and E2 emulator

5.4.1 Adding sub-projects

Applies to: Common to all debugging tools and devices

If you add a sub-project while a debugging tool is connected, downloading and so on may fail. Only add sub-projects while the debugging tool is disconnected.

5.4.2 Assigning unions to registers

Applies to: All debugging tools for RX

When a union is assigned to a register, it is assumed that the members of the union are assigned to the lower-order bytes of the register. For this reason, the values of the members will be incorrect when displayed as big endian.

5.4.3 Functions with the same name and char-type parameters

Applies to: All debugging tools for RX

When three functions with char-type parameters are defined as shown below, the address of "Func(signed char)" will not be displayed (i.e. the address of "Func(char)" will be displayed instead).

void Func(char);

void Func(signed char);

void Func(unsigned char);

5.4.4 Changing the priority section among overlaid sections

Applies to: All debugging tools for RX

Changing the priority section among overlaid sections is not immediately reflected in debugger operations. To update the display of addresses in the editor, for example, you need to close the file and open it again. To update the display of variables in the [Watch] panel, execute a single step of the program.

5.4.5 Linkage options of CC-RX

Applies to: All debugging tools for RX

CC-RX does not support the ‘-sdebug’ linkage option.

Please set [Outputs debugging information] in the [output] category of the [Link Options] tabbed page to '-debug'.

5.4.6 Breakpoints in for statements or inline-expanded functions

Applies to: All debugging tools for all devices

If a line of C source code includes any of the functions or statements listed below, the instruction is placed at two or more addresses. However, the editor panel shows only one of the addresses.

In cases where a breakpoint is set on this line, the program stops only when the instruction at the address being displayed on the editor panel is executed.

1. Inline-expanded function (*)
2. Template function
3. First line of a for or do-while statement

* Includes those inline-expanded by optimization

5.4.7 Notice of the project of dual mode

Applies to: All debugging tools for RX65N-2M, RX651-2M, RX671, RX66N, RX72N, RX72M group

Group	Size of ROM
RX65N-2M, RX651-2MB, RX671	Less than 1.5MB of ROM
RX66N, RX72N, RX72M	Less than 2.0MB of ROM

In case of a project of a dual mode of a device with above ROM size, a gap exists during the address of the ROM in bank 0 and bank 1.

But data in a gap exists in the following function.

- Memory panel
- Watch panel
- Disassemble panel

[E1/E20/E2/E2Lite]

Read result is 0x00, Write is ignored.

[Simulator]

Read and Write operate correctly.

5.4.8 Notice regarding the IE850A

Applies to: IE850A for RH850

Values larger than 512 K can be specified for the [Trace memory size [frames]] property. If such values are specified, however, only the latest 512 Kbytes of trace data will be used in the display of the [Trace] panel and in the Python console.

5.4.9 Notice regarding the RL78/G1M, RL78/G1N

Applies to: OCD (serial) for RL78/G1M, RL78/G1N

The following properties cannot be used with RL78/G1M and RL78/G1N.

Connect Setting - Connection with Target Board - Low voltage OCD board

5.4.10 Simulation of peripheral modules

Applies to: The simulators for RL78/G10, RL78/G11, RL78/G12, RL78/G13, RL78/G13A, RL78/G14, RL78/L12, RL78/G1F, RL78/G23, RL78/G15, RL78/G22, RL78/G16 and RL78/G24 devices

Operation of CS+ may be incorrect if the user program or a debugging operation makes settings of the SFR which are prohibited in the user's manual for the target device.

5.4.11 Point for caution on time measurement by the simulator when the device is in standby mode

Applies to: The simulators for RL78 and RH850

When the program is on standby (in halt, stop, or snooze mode for an RL78 device and in halt mode for an RH850 device), time measurement by the following facilities does not operate correctly.

(1) Run-break timer facility (for RL78 simulator and RH850 simulator)

The run-break time is not correctly measured in the following cases.

- A forced break occurred in standby mode.
- A program is run following standby mode (run after a forced break).

(2) The Python function debugger.Interrupt.SetTimer (only for the RH850 simulator)

Even if the break time specified with debugger.Interrupt.SetTimer is matched on standby (in halt mode), the break does not occur until the program is released from standby.
This also applies in cases when the break time was specified with debugger.XRumBreak.Set since it is based on the same functionality.

5.4.12 Notice regarding the [Virtual Board] panel

Applies to: The simulators for RL78/G10, RL78/G11, RL78/G12, RL78/G13, RL78/G13A, RL78/G14, RL78/L12, RL78/G1F, RL78/G23, RL78/G15, RL78/G22, RL78/G16 and RL78/G24 devices

When a project that meets all the following conditions is loaded in CS+ for CC V8.11.00 or later and the [Virtual Board] panel is activated, it is read with the virtual components and the simulator disconnected.

- A project created with CS+ for CC V8.09.00 or earlier.
- A project which the microcontroller has been changed.
- A project which the [Virtual Board] panel has been activated.

5.5 Points for caution regarding analysis tools

5.5.1 [Variable Value Changing Chart] tabbed page of the Analysis Chart panel

If a project is opened and saved in CS+ V8.09.00 or an earlier version, the settings for channel 17 and subsequent channels on the [Variable Value Changing Chart] tabbed page of the Analysis Chart panel will be lost.

6. Restrictions

This section describes restrictions on CS+.

6.1 Restrictions imposed by build tool

6.1.1 List of restrictions imposed by build tool

No.	Apples to	Description	Remarks
1	Build Tool CC-RL, CC-RX, CC-RH	[Initial Value] of CRC operation of Linker	-

6.1.2 Details of restrictions imposed by build tool

No.1 [Initial Value] of CRC operation of Linker

Applies to: Build Tool CC-RL, CC-RX, CC-RH

Description: The initial value of the CRC operation set in the property and the initial value applied at the time of linking may differ.

[Example]

1. Specify the following CRC calculation-related properties in the [Hex Output Options] tab.

- [Type of CRC] property: 32-ETHERNET type
- [Output address] and [Target range] properties: Any value
- [Initial value] property: 0

2. Build the project.

Expected value of output option : -CRc=XXXX=YYYYYYYY-ZZZZZZZZ(0)

Actual output option : -CRc=XXXX=YYYYYYYY-ZZZZZZZZ

If (0) is omitted when the calculation method is "32-ETHERNET type", the linker assumes that "FFFFFFFF" is specified as the initial value. As a result, the calculation output to the mot/hex/bin files differs from that specified in the property.

CRC operation-related properties are listed below.

- CC-RL, CC-RH
  The [CRC Operation] category in the [Hex Output Options] tab
- CC-RX
  The [Hex Format] category in the [Hex Output Options] tab

Conditions: The following are conditions for occurrence.

- CS+ for CC V8.10.00~V8.13.00

Compiler package:

- C Compiler Package for RH850 Family CC-RH V1.03.00 to V2.04.01
- C/C++ Compiler Package for RX Family CC-RX V2.04.00 to V3.04.00
- C Compiler Package for RL78 Family CC-RL V1.00.00 to V1.11.00

When any combination of the above and the following CRC operation properties are specified

- [Type of CRC] property: 32-ETHERNET type
  [Initial value] property: 0

Since (0) is not appended to the option, the linker assumes that "FFFFFFFF" is specified and outputs the CRC calculation result to the mot/hex/bin file.

- [Type of CRC] property: CCITT type
  [Initial value] property: 0
  Since (0) is not appended to the option, the linker assumes that "FFFF" is specified and outputs the CRC calculation result to the mot/hex/bin file.
- [Type of CRC] property: SENT(MSB) type or SENT(MSB) type(General-purpose CRC(SENT))
  [Initial value] property: 0
  Since (0) is not appended to the option, the linker assumes that "5" is specified and outputs the CRC calculation result to the mot/hex/bin file.

Workaround: This problem can be avoided by performing one of the following ways:

- Select [No] for the [Outputs the calculation result of CRC] property and specify the -CRc option in the [Other Additional Options] property.
- Using a compiler package version other than the one listed in the "Conditions".

6.2 Restrictions imposed by debugging tools

The abbreviations listed below collectively denote the corresponding tools in this section.

OCD (serial):

Serial or FINE interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (JTAG):

JTAG interface connection for the E1 emulator, E20 emulator, E2 emulator, and E2 emulator Lite

OCD (LPD):

LPD connection for the E1 emulator, E20 emulator, and E2 emulator

6.2.1 List of restrictions imposed by debugging tools

No.	Target tool	Target device	Description	Remarks
1	All debugging tools	RL78, RX, RH850	Division of load modules	-
2	All debugging tools	RL78, RX, RH850	Display of information on variables	-
3	All debugging tools	RL78, RX, RH850	Source files with the same name	-
4	All debugging tools	RL78	C++ facilities of CC-RL	-
5	All debugging tools	RL78, RX, RH850	Saving the States of Debug Tools	-

6.2.2 Details of restrictions imposed by debugging tools

No.1 Division of load modules

Applies to: All debugging tools for RL78, RX, RH850

Description: The restrictions below apply when the CC-RH compiler is used to generate split load modules from a program.

a. Source-level debugging becomes impossible.

b. The second and subsequent output files are not automatically registered with the debugging tool.

Workaround: There is no workaround.

No.2 Display of information on variables

Applies to: All debugging tools for RL78, RX, RH850

Description: If two or more variables defined in a function have the same name, the values of variables that can be viewed when the program has stopped may differ from the expected values. Whether this phenomenon arises depends on the optimization level* selected during the process of compilation.

Note: The optimization level can be set via [Build Tool] – [Common Options] – [Frequently Used Options (Link)].

[Example] In the example below, char-type variable “a” is in the innermost scope at (*1) and int-type variable “a” is in the innermost scope at (*2). Under some conditions, however, only the value of one of the variables will be visible at (*1) and (*2).

```
void main()
{
        int a = 100;
        {
            char a = ‘A’;
            a++; <-(*1)
        }
        a++; <-(*2)
}
```

• Display of (*1) in the [Watch] panel

“a” ‘A’ (0x41) “signed char” “0xfefb1004” // Expected value

or “a” 100 (0x00000064) “int” “0xfefb1000”

• Display of (*2) in the [Watch] panel

“a” ‘B’ (0x42) “signed char” “0xfefb1004”

or “a” 100 (0x00000064) “int” “0xfefb1000” // Expected value

Condition: Optimization other than for debugging at the time of compilation.

Workaround: Select [Optimize for Debugging] as the optimization level before compilation.

No.3 Source files with the same name

Applies to: All debugging tools for RL78, RX, RH850

Description: When two or more files with the same name exist in a load module being debugged, line addresses are not displayed correctly in the editor. Setting of events also does not work correctly.

Example:

C:¥Work¥CS+¥ProjA¥ProjA.mtpj¥Src¥main.c -> A.abs

C:¥Work¥CS+¥ProjB¥ProjB.mtpj¥Src¥main.c -> B.abs

This is a case where the above two load modules are being debugged simultaneously.

Note: Although multiple load modules are used in the above example, this restriction is also applicable to cases where a single load module is in use.

[Conditions] The relative paths to the files from the compilation directory are the same (including the filenames).

Building by CS+

Project file directory (*.mtpj) = compilation directory

Building by using a makefile

Current directory = compilation directory

Workaround: Source files with the same name can be distinguished in either of the following ways.

a. Change the configuration of the folders so that the relative paths to the files from the compilation directory differ.

Before: ProjA¥Src¥main.c
ProjB¥Src¥main.c

After: ProjA¥SrcA¥main.c
ProjB¥SrcB¥main.c

With this change, the relative paths will be as follows.

“SrcA¥main.c”
“SrcB¥main.c”

b. Change the names of the source files so that all of the files to be debugged have unique names.

Before: ProjA¥Src¥main.c
ProjB¥Src¥main.c

After: ProjA¥Src¥mainA.c
ProjB¥Src¥mainB.c

No.4 C++ facilities of CC-RL

Applies to: All debugging tools for RL78

Description: Symbols or functions implemented with the following C++ facilities cannot be debugged.

- Namespaces
- Derived classes
- Templates

Workaround: There is no workaround.

No.5 Saving the States of Debug Tools

Applies to:

- Products with an internal RAM size [byte] of less than 16384 (16K) in the RX Family.

  Product examples: RX110, RX111, RX130, RX13T, RX210, RX220, RX23T, RX62G, RX62T, RX63T

  Products with a built-in RAM size [byte] of 16384 (16K) or more are not subject to this limitation even if they are the above products.
- RL78/G24 * When the debug target is FAA.
- RH850 * When the debug target is set to GTM.

Description: Save the debug tool states does not work. Errors may occur or CS+ response may be lost.

- If an error occurs, the following error message is displayed.

  Error(E0210014) Failed to save RAM or rigister values to the file(<*filename*>).

  [Direct Error Cause]

  Exception of type ‘System.OutOfMemoryException’ was thrown.
- If the rewind feature is used, the following message may be output on the output panel.

  Information(M0210002) : Failed to save RAM or register values for rewinding.

Conditions:

If any of the following operations are performed

- Select [Save debug tool state *N*] from [Save debug tool state] in the Debug menu.
- Click the save icon in [Target state save and load] on the toolbar.
- Run debugger.DebugTool.SaveState(fileName) in the Python console.

If any of the following operations are carried out * The timing of occurrence is at the time of execution or execution stop.

- The action event is set in the [State save event] tab of the Action event dialog box.
- The rewind feature is enabled in the state save feature of the [General - Debug] category in the options dialog.

Workaround: There is no workaround.

6.3 Restrictions imposed by design tools

6.3.1 List of restrictions imposed by design tools

No.	Target tool	Target device	Description	Remarks
1	Code Generator	RH850	The project tree flickers when switching active project	-

6.3.2 Details of restrictions imposed by design tools

No.1 The project tree flickers when switching active project

Applies to: The design tool for RH850

Description: If there are two or more projects on project tree and each project contains [Code Generator], when switching active project from one to the other, the project tree flickers several seconds.

Workaround: There is no workaround.

Revison Record

Rev.	Date	Description	
		Page	Summary
Rev.1.00	Dec 01, 2024	-	First Edition issued

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation or any other use of the circuits, software, and information in the design of your product or system. Renesas Electronics disclaims any and all liability for any losses and damages incurred by you or third parties arising from the use of these circuits, software, or information.
2. Renesas Electronics hereby expressly disclaims any warranties against and liability for infringement or any other claims involving patents, copyrights, or other intellectual property rights of third parties, by or arising from the use of Renesas Electronics products or technical information described in this document, including but not limited to, the product data, drawings, charts, programs, algorithms, and application examples.
3. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
4. You shall be responsible for determining what licenses are required from any third parties, and obtaining such licenses for the lawful import, export, manufacture, sales, utilization, distribution or other disposal of any products incorporating Renesas Electronics products, if required.
5. You shall not alter, modify, copy, or reverse engineer any Renesas Electronics product, whether in whole or in part. Renesas Electronics disclaims any and all liability for any losses or damages incurred by you or third parties arising from such alteration, modification, copying or reverse engineering.
6. Renesas Electronics products are classified according to the following two quality grades: “Standard” and “High Quality”. The intended applications for each Renesas Electronics product depends on the product’s quality grade, as indicated below.
   "Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; industrial robots; etc.
   "High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control (traffic lights); large-scale communication equipment; key financial terminal systems; safety control equipment; etc.

   Unless expressly designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not intended or authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems; surgical implantations; etc.), or may cause serious property damage (space system; undersea repeaters; nuclear power control systems; aircraft control systems; key plant systems; military equipment; etc.). Renesas Electronics disclaims any and all liability for any damages or losses incurred by you or any third parties arising from the use of any Renesas Electronics product that is inconsistent with any Renesas Electronics data sheet, user’s manual or other Renesas Electronics document.
7. No semiconductor product is absolutely secure. Notwithstanding any security measures or features that may be implemented in Renesas Electronics hardware or software products, Renesas Electronics shall have absolutely no liability arising out of any vulnerability or security breach, including but not limited to any unauthorized access to or use of a Renesas Electronics product or a system that uses a Renesas Electronics product. RENESAS ELECTRONICS DOES NOT WARRANT OR GUARANTEE THAT RENESAS ELECTRONICS PRODUCTS, OR ANY SYSTEMS CREATED USING RENESAS ELECTRONICS PRODUCTS WILL BE INVULNERABLE OR FREE FROM CORRUPTION, ATTACK, VIRUSES, INTERFERENCE, HACKING, DATA LOSS OR THEFT, OR OTHER SECURITY INTRUSION (“Vulnerability Issues”). RENESAS ELECTRONICS DISCLAIMS ANY AND ALL RESPONSIBILITY OR LIABILITY ARISING FROM OR RELATED TO ANY VULNERABILITY ISSUES. FURTHERMORE, TO THE EXTENT PERMITTED BY APPLICABLE LAW, RENESAS ELECTRONICS DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THIS DOCUMENT AND ANY RELATED OR ACCOMPANYING SOFTWARE OR HARDWARE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.
8. When using Renesas Electronics products, refer to the latest product information (data sheets, user’s manuals, application notes, “General Notes for Handling and Using Semiconductor Devices” in the reliability handbook, etc.), and ensure that usage conditions are within the ranges specified by Renesas Electronics with respect to maximum ratings, operating power supply voltage range, heat dissipation characteristics, installation, etc. Renesas Electronics disclaims any and all liability for any malfunctions, failure or accident arising out of the use of Renesas Electronics products outside of such specified ranges.
9. Although Renesas Electronics endeavors to improve the quality and reliability of Renesas Electronics products, semiconductor products have specific characteristics, such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Unless designated as a high reliability product or a product for harsh environments in a Renesas Electronics data sheet or other Renesas Electronics document, Renesas Electronics products are not subject to radiation resistance design. You are responsible for implementing safety measures to guard against the possibility of bodily injury, injury or damage caused by fire, and/or danger to the public in the event of a failure or malfunction of Renesas Electronics products, such as safety design for hardware and software, including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult and impractical, you are responsible for evaluating the safety of the final products or systems manufactured by you.
10. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. You are responsible for carefully and sufficiently investigating applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive, and using Renesas Electronics products in compliance with all these applicable laws and regulations. Renesas Electronics disclaims any and all liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
11. Renesas Electronics products and technologies shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You shall comply with any applicable export control laws and regulations promulgated and administered by the governments of any countries asserting jurisdiction over the parties or transactions.
12. It is the responsibility of the buyer or distributor of Renesas Electronics products, or any other party who distributes, disposes of, or otherwise sells or transfers the product to a third party, to notify such third party in advance of the contents and conditions set forth in this document.
13. This document shall not be reprinted, reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
14. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products.

(Note1) “Renesas Electronics” as used in this document means Renesas Electronics Corporation and also includes its directly or indirectly controlled subsidiaries.
(Note2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

(Rev.5.0-1 October 2020)

Corporate Headquarters

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

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.

Contact information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:
www.renesas.com/contact/.