CS+ for CC V8.14.00

Release Note

R20UT5650EJ0100
Rev.1.00
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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+ V8.14.00 Installer	R20UT5672EJ0100
CS+ V8.13.00 Editor	R20UT5561EJ0100
CS+ V8.13.00 Python Console	R20UT5567EJ0100
CS+ V8.14.00 Updater	R20UT5568EJ0100
CS+ V8.14.00 Message	R20UT5669EJ0100
CS+ V8.14.00 Project Operation	R20UT5668EJ0100
CS+ V8.11.00 Analysis Tool	R20UT5394EJ0100
CS+ V8.14.00 RH850 Debug Tool	R20UT5671EJ0100
CS+ V8.13.00 RX Debug Tool	R20UT5565EJ0100
CS+ V8.14.00 RL78 Debug Tool	R20UT5670EJ0100
CS+ User's Manual: CC-RH Build Tool Operation	R20UT3283EJ0113
CS+ User's Manual: CC-RL Build Tool Operation	R20UT3284EJ0114
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 V8.13.00 to V8.14.00.

4.1 Improvements and changes to CS+

4.1.1 Enhanced support for Renesas compilers [RL78]

Support for the following compiler have been added.

- C Compiler Package for RL78 Family CC-RL V1.15.01

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

4.2 Additions and improvements to the build tool

4.2.1 Improvement to the default value of the [Split vector table sections] property for the [Link Options] tabbed page [RL78]

For the [Split vector table sections] property ([Link Options] tabbed page > [Output Code] category) of the build tool, the default value has now been changed from “No” to “Yes (-SPLIT_VECT)”.

This default value enables the efficient allocation of vector table sections.

4.2.2 Improvement to the condition for displaying properties on the [Library Generate Options] tabbed page [RX]

The following two properties of the build tool had only been available when [C99 (-lang = c99)] was selected in the [Library configuration] property. This condition on usage has now been improved so that those properties are available when either [C (C89) (-lang = c)] or [C99 (-lang = c99)] is selected.

• [Enables wchar.h (C89/C99)] property ([Library Generate Options] tabbed page > [Standard Library] category)

• [Enables wctype.h (C89/C99)] property ([Library Generate Options] tabbed page > [Standard Library] category)

4.2.3 Improvement to the properties for the [CPU] category on the [Common Options] tabbed page [RX]

Specification of the following two properties of the build tool by the user had been enabled. However, the properties have now been changed so that user specification is not possible (the properties are now read-only). Suitable values for the properties are automatically set by CS+ because the values must correspond to the microcontroller of the project and the version of compiler.

• [Instruction-set architecture] property ([Common Options] tabbed page > [CPU] category)

• [Microcontroller type] property ([Common Options] tabbed page > [CPU] category)

4.2.4 Improvement to the [ROM to RAM mapped section] property when the microcontroller is changed in a project for an RTOS [RX]

When the microcontroller is changed in a project for an RTOS (RI600V4 or RI600PX), the behavior has now been improved so that the values for the [ROM to RAM mapped section] property ([Link Options] tabbed page > [Section] category) do not change.

When you have changed the microcontroller in a project for RTOS, check the values of the [ROM to RAM mapped section] property and set suitable values as required.

4.2.5 Improvement to the display of the [Output information of members of struct or union] property on the [Link Options] tabbed page [RL78][RH850]

The [Output information of members of struct or union] property ([Link Options] tabbed page > [List] category) of the build tool had not been usable with the following conditions. However, this situation has now been improved.

・CC-RH V1.02.00 ~ V2.00.00
・CC-RL V1.01.00
After improvement, the property can be used with the following conditions
・CC-RH V1.02.00 ~
・CC-RL V1.01.00 ~
See the help system or user's manual for the combinations of conditions that apply with related properties.

4.2.6 Improvement to the initial value for CRC on the [Link Options] tabbed page [RL78][RX][RH850]

When you proceeded with building from a project that met specific conditions, an initial value had not been output to the parameter for the linker's CRC calculation result output option. However, this problem has now been rectified.

For details on restrictions applicable to this item, refer to the following URL.

https://www.renesas.com/support/document-search?keywords=r20TS1092

4.2.7 Improvement to the initial value of CRC in the [CRC Operations] dialog box (1) [RX]

The phenomenon of the initial value not being reflected in the [CRC Operations] dialog box has now been rectified.

[Phenomenon]

Versions: CS+ for CC V8.10.00 ~ CS+ for CC V8.13.00

Steps which produce the phenomenon:

1. In a project for use with CC-RX V3.05.00 or a later version, enter desired values for [Output address], [Target range], and [Type of CRC] in the [CRC Operations] dialog box. Specify a desired value within the range that can be entered for [Initial value], then click on the [OK] button.
2. Re-display the [CRC Operations] dialog box. Change [Initial value] to be blank and click on the [OK] button.
3. Execute either of the following steps.

   3a. Re-display the [CRC Operations] dialog box.

   3b. Change the version of the compiler package in use to V3.04.00 or an earlier version.

   → Following the above steps, [Initial value] would not be blank and the linker would specify the value that had been entered in step 1 during building.

Workaround for the applicable versions: Do not specify [Initial value] as blank. Explicitly specify the value corresponding to the entry being blank (the default value).

4.2.8 Improvement to the initial value of CRC in the [CRC Operations] dialog box (2) [RL78][RX][RH850]

In the message displayed in the [CRC Operations] dialog box, the initial value had not been reflected when [Yes] was selected although it should have automatically been reflected. However, this phenomenon has now been rectified.

[Phenomenon]

Versions: CS+ for CC V8.10.00 to CS+ for CC V8.13.00

Steps which produce the phenomenon:

1. In a project for use with CC-RL V1.12.00 or a later version, CC-RX V3.05.00 or a later version, or CC-RH V2.05.00 or a later version, enter desired values for [Output address], [Target range], and [Type of CRC] in the [CRC Operations] dialog box. Specify a desired value within the range that can be entered for [Initial value], then click on the [OK] button.
2. Re-display the [CRC Operations] dialog box and change [Type of CRC]. If the value of [Initial value] is outside the range that can be entered for new [Type of CRC], the following message would appear.

   The initial value exceeds the limit for the selected type of CRC. Would you like to change the value of the [Initial Value] property to the default value, that is, Empty?

   *If this message does not appear, the situation is outside the scope of this phenomenon.
3. Click on the [Yes] button against the message.

   → [Initial value] is displayed as blank.
4. Click on the [OK] button.

   → Following the above steps, [Initial value] would not be blank and the linker would specify the value that had been entered in step 1 during building.

Workaround for the applicable versions: Re-display the [CRC Operations] dialog box and re-set [Initial value].

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 Change to the default and available values for the [Display update interval [ms]] property during connection to a COM port [RL78]

The default and available values of the [Display update interval [ms]] property in the [Access Memory While Running] category on the [Debug Tool Settings] tabbed page have now respectively been changed to 500 and 100 to 65500.

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, RL78/G24 and RL78/L23 devices

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

Power LED, 14-segment & 8-digit LCD for internal driver

4.3.3 Improvements to FAA debugging [RL78]

• When a label in source code for the FAA is registered in the [Watch] panel, the type information (byte size) has now been corrected to 4 bytes.

• For the settings of the address bus select register (ADBSEL), when bus access from the FAA is enabled for a given peripheral function, the debugger can now read and write the SFRs which have been set for the FAA bus.

4.3.4 Improvement to using the E1 emulator or E20 emulator or E2 emulator or E2 emulator Lite with the RX family

Applies to: OCD(Serial), OCD(JTAG) for RX26T group, Type name: R5F526TFxxx (ROM size 512Kbytes)

When debugging the applicable device using the applicable product and integrated development environment, the following error may occur and debugging may not be able to connect.

E1891727 The specified endian is not corresponding to the endian of CPU.

This problem occurred in a project that meets all of the following conditions, but has now been fixed:

- A project is dual mode of a device.
- Debug tool setting is [Big-endian data] via [Debug Tool] – [Connect Settings] – [Operating Modes of CPU] - [Endian].

4.4 Improvement to the update manager

4.4.1 Improvement to the display of license agreement

In the Software License Agreement dialog box, the display has been improved to clarify the correspondence between the license agreement and the target tool.

4.5 Improvement to the editor facilities

4.5.1 Enabling horizontal scrolling by the mouse wheel

Either of the following operations now produces horizontal scrolling in the editor window.

- Move the mouse wheel forward and backward while holding the [Shift] key down.
- Tilt the mouse wheel to the left and right (on a mouse with a tilt wheel).

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.
- 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 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".

5.1.9 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.

5.1.10 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.

5.1.11 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.

5.1.12 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;

5.1.13 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.

5.1.14 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.

5.2.3 Creating or converting a project from an existing project [RX]

When a project is created by specifying [Pass the file composition of an existing project to the new project] or a project of the e^2 studio or High-performance Embedded Workshop is to be converted into one for CS+, the E0291010 message may appear several times. Click on the [OK] button for the message every time it appears.

If this message appears, confirm that the [Using compiler package version] property ([Common Options] tabbed page > [Version Select] category) has been correctly set after the project was created or converted from an existing project.

5.2.4 Opening Projects Created with CS+ for CC V8.13.00 or Earlier [RX]

In CS+ for CC V8.14.00, the [Instruction-set architecture] and [Microcontroller type] properties have been changed so that user specification is not possible (the properties are read-only).

As a result of this change, when opening a project in CS+ for CC V8.14.00 or later that meets the following conditions, any previously modified value for the [Instruction-set architecture] property will be automatically moved to the [Other additional options] property, and the expected value for the device will be automatically set in the [Instruction-set architecture] property.

Applicable Project Conditions:

- The project was created using CS+ for CC V8.13.00 or an earlier version.
- The [Instruction-set architecture] property was modified from the expected value for the device.

After opening such a project, please check whether the option stored in the [Other additional options] property is still necessary.

Note: Modifying the [Instruction-set architecture] property is not recommended. It is advised to use the expected value for the target device.

Furthermore, if the project meets the following conditions, the following error may occur during the build process:

F0553103:Option '-isa=rxv1 -nofpu' is not appropriate

In such cases, please apply the following workaround.

[Conditions]

- The project was saved in CS+ V8.13.00 or earlier.
- The [Microcontroller type] property under the [CPU] category on the [Common Options] tabbed page set to [RX200 or RX100 series (-cpu=rx200)].
- The [Uses single-precision floating-point operation instructions] property under the [CPU] category on the [Common Options] tabbed page set to [Depends on the Microcontroller type option].
- The [Build simultaneously] property under the [Build Method] category on the [Common Options] tabbed page is set to [Yes].
- The project contains an assembly source.

[Workaround] One of the following:

- Remove “-isa=rxv1” from the [Other additional options] property under the [Other] category on the [Common Options] tabbed page.

Set the [Build simultaneously] property to [No].

5.2.5 Reusing a GHS CCRH850 project [RH850]

There is a case where the build tool property is not displayed when reusing a GHS CCRH850 project.

Versions: CS+ for CC V4.01.00 ~

Phenomenon:

1. Create a project using [Empty Application (GHS CCRH850)]. (This will be referred to as Project_A.)
2. Then, create a new project using [Use Existing GHS Project File (GHS CCRH850)]. (This will be referred to as Project_B.)

   During this step, check the [Pass the file composition of an existing project to the new project] check box and specify the full path to Project_A as the source.

   → After creating Project_B, when you select "GHS CCRH850 (Build Tool)" in the project tree, nothing is displayed in the property panel.

   This also occurs if the kind of projects of Project_A and Project_B are swapped.

Workaround: Create the project without checking the [Pass the file composition of an existing project to the new project]] chec box, then register the same files as the source project and configure the debug tool accordingly.

Remark: When creating a project by reusing [Use Existing GHS Project File (GHS CCRH850)] project, the following elements are typically carried over: the project’s file structure, and debug tool settings (only for the selected debug tool). In this case, build tool settings are not carried over.

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 [512K] can be specified for the [Trace memory size [frames]] property. If such values are specified, however, only the latest 512 K frames 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, RL78/G24 and RL78/L23 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 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

6.1.1 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	-

6.1.2 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.

6.2 Restrictions imposed by design tools

6.2.1 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	-

6.2.2 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.

Revision Record

Rev.	Date	Description	
		Page	Summary
Rev.1.00	Jun 01, 2025	-	First Edition issued

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