RENESAS

CS+ for CC V8.01.00

Release Note

Contents

Chapter 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+

Chapter 2.   User's Manuals

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

Manual Name	Document Number
CS+ V6.00.00 Installer	R20UT3990EJ0100
CS+ V6.00.00 Editor	R20UT3991EJ0100
CS+ V8.01.00 Python Console	R20UT4408EJ0100
CS+ V5.00.00 Updater	R20UT3942EJ0100
CS+ V8.01.00 Message	R20UT4415EJ0100
CS+ V8.01.00 Project Operation	R20UT4402EJ0100
CS+ V8.01.00 Analysis Tool	R20UT4406EJ0100
CS+ V8.01.00 RH850 Debug Tool	R20UT4405EJ0100
CS+ V8.01.00 RX Debug Tool	R20UT4404EJ0100
CS+ V8.01.00 RL78 Debug Tool	R20UT4403EJ0100
CS+ V8.01.00 GHS CCRH850 Build Tool Operation	R20UT4407EJ0100

* GHS: Green Hills Software, Inc.

Chapter 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 the following from the Control Panel:
- Programs and Features

Then select [CS+ for CC].

Chapter 4.   Changes

This chapter describes changes from V7.00.00 to V8.01.00.

4.1   Improvements of CS+

4.1.1   Enhanced Smart Manual features [RL78] [RX]

A feature for displaying the version number of the hardware manual referred to by the smart manual on the device list has been added.
Support by the Smart Manual refers to obtaining descriptions of the SFR and IOR registers by simply hovering the mouse cursor over the register names in the [Editor] panel.

4.1.2   Support for a new emulator [RH850]

CS+ now supports the following new emulator.
You can now use this emulator in combination with CS+ to develop programs for the given types of target MCU.
・IE850A emulator (for RH850/E2x series devices).

4.2   Additions to the build tool

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

Support for the following versions of compilers has been added in CS+ V8.01.00.
- CC-RL V1.08.00
- CC-RH V2.01.00
- CC-RH V1.07.01
- CC-RX V3.01.00

4.2.2   Enhanced support for GHS compilers [RH850]

Support for the following versions of the RH850 compiler from GHS has been added in CS+ V8.01.00.
- 2018.1.5
- 2017.5.5

4.3   Improvements to the debug tool

4.3.1   Addition of the simulation of peripheral modules and current drawn by the RL78/G11 series [RL78]

The facility for the simulation of peripheral modules and current drawn has been extended to support the RL78/G11 series.
With this facility, CS+ V8.01.00 now supports the simulation of peripheral modules and current drawn by the devices with the use only of the virtual environment on a PC even when an actual MCU (on a board) is not connected.

4.3.2   IE850A emulator for RH850/E2x series devices [RH850]

Support for RH850/E2x series devices of IE850A emulator has been added.
With large capacity trace(8GB*1), it is possible to see a program execution history for a long time compared with the E2 emulator(64KB).
*1: only 512KB in CS+V8.01.00

4.3.3   Enhanced support for GHS compilers [RH850]

Support for the following versions of the RH850 compiler from GHS has been added in CS+ V8.01.00.
- 2018.1.5
- 2017.5.5

4.3.4 Improvement to the coverage function [RL78] [RH850] [RX] [emulator] [simulator]

Just after disconnecting a debugger in the state which indicated a coverage by a disassembler and connecting to a debugger once again, a coverage was cleared, but the coverage value when connecting last time, was shown to a disassembler panel.

It was improved so that the coverage value might be cleared by reconnection.

4.4 Improvements to the Python console

4.4.1 Addition of Python functions

The following Python functions have been added.

Function Name	Functional Overview
debugger.SaveRegisterBank.Information	This function displays information on the save register bank.

4.4.2 Support by Python functions for new MCUs

Support for the RL78/G11series by the following Python functions has been added.

Function Name	Functional Overview
debugger.CurrentConsumption.Clear	Clears data on current drawn that have been acquired. 【RL78/G10,G11,G12,G13,G14】 [Simulator]
debugger.CurrentConsumption.Disable	Disables the acquisition of data on current drawn. 【RL78/G10,G11,G12,G13,G14】 [Simulator]
debugger.CurrentConsumption.Enable	Enables the acquisition of data on current drawn. 【RL78/G10,G11,G12,G13,G14】 [Simulator]
debugger.CurrentConsumption.Get	Displays the maximum and average values of data on current drawn that have been acquired. 【RL78/G10,G11,G12,G13,G14】 [Simulator]
debugger.CurrentConsumption.Information	Displays information on data on current drawn that have been acquired. 【RL78/G10,G11,G12,G13,G14】 [Simulator]
CurrentConsumptionInfo	Holds information on data on current drawn that have been acquired (the return value of the debugger.CurrentConsumption.Get function).

4.4.3 Support by Python functions for new emulator

Support for the IE850A by the following Python functions has been added.

Function Name	Functional Overview
debugger.Performance.Delete	This function deletes a condition of performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Performance.Disable	This function disables performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Performance.Enable	This function enables performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Performance.Get	This function references the result of performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Performance.Information	This function displays performance measurement information. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Performance.Set	This function sets performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.PseudoError.Clear	This function clears the error status of all pseudo-errors. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.PseudoError.Get	This function references ECM error information. 【E1/E2/E20/Full-spec emulator/IE850A】

debugger.PseudoError.SetGo	This function sets conditions of a pseudo-error and runs a program. 【E1/E2/E20/Full-spec emulator/IE850A】
debugger.Timer.Detail	This function sets measurement conditions of a conditional timer. 【E1/E2/E20/Full-spec emulator/IE850A】

4.4.4　Addition of a parameter for a Python function

The following parameter for a Python function has been added. [RH850]

Function Name	Newly Added Parameter	Description
debugger.DebugTool.Change	DebugTool.IE850A	This function changes the debug tool. [RH850]

4.4.5　Addition of a return value for a Python function

The following return value for a Python function has been added. [RH850]

Function Name	Newly Added Return Value	Description
debugger.DebugTool.GetType	IE850A	This function displays information about the debug tool. [RH850]

4.4.6　Addition of Python class

The following Python class have been added.

Class Name	Functional Overview
BankedRegisterInfo	This class holds information on the save register bank.

4.4.7　Support for new MCUs by a Python class

Support for the RL78/G11series by the following Python class has been added.

Class Name	Class Overview
CurrentConsumptionInfo	Holds information on data on current drawn that have been acquired. 【RL78/G10,G11,G12,G13,G14】 [Simulator]

4.4.8　Support for new emulator by a Python class

Support for the IE850A by the following Python class has been added.

Class Name	Functional Overview
PerformanceCondition	This class creates conditions of performance measurement. 【E1/E2/E20/Full-spec emulator/IE850A】
PerformanceEventInfo	This class holds performance measurement event information. 【E1/E2/E20/Full-spec emulator/IE850A】
PerformanceInfo	This class holds performance measurement information. 【E1/E2/E20/Full-spec emulator/IE850A】
PseudoErrorCondition	This class creates a pseudo-error condition. 【E1/E2/E20/Full-spec emulator/IE850A】
PseudoErrorInfo	This class holds ECM error information. 【E1/E2/E20/Full-spec emulator/IE850A】

4.5　Improvements to the Update Manager

Encryption method which makes communication with server more secure has been supported.
And the problem that the maximized or minimized window size of update manager was saved has been fixed.

Chapter 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.
・ Folder and file names
  Do not use folder or file names that cannot be created from Windows Explorer.
・ Source file names, load module file names, and project file names
  File names consist of the characters a-z, A-Z, 0-9, the period (.), the underscore (_), plus sign (+), and minus sign (−).
  File names cannot start or end with a period (.).
  Filenames cannot start with a plus sign (+) or minus sign (−).
  CS+ is not case-sensitive to file names.
  File names may have up to 259 characters, including the path.
  Do not use source files with the same file name. Even if they are on different paths, CS+ cannot classify them.
・ File names other than the above
  File names comply with Windows conventions.
  Note that the following characters cannot be used in file names.
  \ / : * ? " < > | ;
  File names cannot start or end with a period (.) or space.
  CS+ is not case-sensitive to file names.
  File names may have up to 259 characters, including the path.
・ Folder names
  Folder names comply with Windows conventions.
  Note that the characters below cannot be used in file names.
  ( ) , =

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   User Account Control (UAC) function (Windows)

If the UAC function is disabled on Windows, then if a user without administrator privileges creates a project, and no Device Dependence Information is installed, installation of the Device Dependence Information will begin, but the installation will fail. If the UAC function is disabled, create projects after logging in with administrator privileges.

5.1.4   Problem with a Windows update program 1

Your computer may suffer a "blue screen" error if you apply the KB2393802 patch published by Microsoft Corporation. If this error occurs, please apply the patch provided by your computer's manufacturer or another source.

5.1.5   Problem with a Windows update program 2

Depending on the Windows update program, starting the CS + for CC in Windows 7 or Windows 8.1 may cause an error or the PC to crash.
In this case, do any of the followings.
・install the latest VC++ 2015 runtime (x86 version)
・apply the latest Windows update program

5.1.6   [Editor] panel

・ When a variable or label is selected and the Jump to Function feature is used from the context menu, execution does not jump to the variable or 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 8.1 and Windows 10, 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+.

5.1.7   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+.

5.1.8   Microsoft IME

If you are using Microsoft Office IME 2010, which is included in Office 2010 from Microsoft Corporation, CS+ may output error E2000006.

Since Microsoft Office IME 2010 may have caused this problem, replace it with Microsoft's standard IME or install the KB2687611 module provided by Microsoft Corporation to fix Microsoft Office IME 2010.

5.1.9   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.

5.1.10   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.

5.1.11   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.

5.1.12   .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 4.5.2.

E0200010
  Failed to launch this product.

Please install the Microsoft .NET Framework 4.5.2 or later on this PC.

In such cases, obtain version 4.5.2 or 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.

5.1.13   Dual-bank function of the code flash memory
Applies to: RX65N/RX651-2M Group
Products of the RX65N and RX651 groups with 2 or 1.5 MB of ROM 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".

5.1.14   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.

5.1.15   Mentions of "R8C" in user's manuals and online help
"R8C" is mentioned in the user's manuals and online help, but CS+ does not support the R8C family.

5.2   Points for caution regarding build tools

5.2.1   Optimization
Applies to: RL78
When the [Maximum number of loop expansions] is set to blank in the   [Optimization(Dteails)] category on the [Compile Options] or [Individual Compile Options] tabbed page of the [Property] panel of the build tool, it is assumed that "2" has been specified, but it's sometimes besides the "2".

5.2.2   Build option import
Build option import fails if setting the value of "Select modules which are output in files" property in the "I/O Header File Generation Options" tab in Build tool property to "Yes" in the project in import destination/source and importing.
Set the value of "Select modules which are output in files" property to "No" in the project of the import destination, and save the project. Then, import the build option after opening the project again.

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): E1 Emulator (serial), E20 Emulator (serial)
OCD (JTAG): E1 Emulator (JTAG), E20 Emulator (JTAG)

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 PC entering the sleep state
Applies to: OCD (JTAG) and OCD (serial)
When a PC running Windows Vista or Windows 7 enters the sleep state, debugging by CS+ cannot be continued after the PC reawakes.
Please set up the PC so that it does not enter the sleep state.

5.4.6 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'.

5.4.7 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

5.4.8 Notice of Debugging CAN Bus Reception Procedures
Applies to: All debugging tools excluding the simulator for RH850
・ The following devices weren't supporting.
   * RH850/D1M1A:R7F701441, R7F701461
   * RH850/E2M:R7F702002
   * R7F702Z02A, R7F702Z04A, R7F702Z12, R7F702Z11

5.4.9 Notice of Pseudo-Error Debugging
Applies to: All debugging tools excluding the simulator for RH850
・ The following devices weren't supporting.
   * RH850/E2M:R7F702002
   * R7F702Z02A, R7F702Z04A, R7F702Z12, R7F702Z11

5.4.10 Notice of Measuring CAN Bus Reception Processing Times
Applies to: All debugging tools excluding the simulator for RH850
・ The following devices weren't supporting.
   * RH850/E2M:R7F702002
   * R7F702Z02A, R7F702Z04A, R7F702Z12, R7F702Z11

5.4.11 Notice of the project of dual mode
Applies to: All debugging tools for RX65N-2M, RX651-2M group
In case of a project of a dual mode of a device with less than 1.5 MB of 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.

5.4.12   Notes of using specified routine function
Applies to: All debugging tools for RX
If the user program is executed when software breakpoints are set with the specified routine function enabled, the user program may become illegal.
To use the specified routine function, use a hardware breakpoint instead of a software breakpoint.

5.4.13   Notes of trace output about writing in data in Bit-Manipulation Instructions
Applies to: All debugging tools for RH850
The values written to the data of Bit-Manipulation Instructions are not output to trace. The values read to the data are output to trace.

Chapter 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): E1 Emulator (serial), E20 Emulator (serial)
OCD (JTAG): E1 Emulator (JTAG), E20 Emulator (JTAG)

6.1.1   List of restrictions imposed by debugging tools

No.	Target tool	Target device	Description	Remarks
1	OCD (serial) OCD (JTAG)	RX64M	Restriction on ID code authentication due to an error	

6.1.2   Details of restrictions imposed by debugging tools

No.1 Condition leading to errors in ID code authentication
Applies to: OCD (serial) and OCD (JTAG) for RX64M
Description: When both of the following conditions are met, an error will occur in ID code authentication making it impossible to continue with debugging.
  [Conditions]
  1. A device having an ID code setting other than all FF is being debugged in user boot mode.
  2. After downloading a program that includes data for the option-setting memory, the CPU is reset by a RESET command, RES# pin reset, or an internal reset.
Workaround: There is no workaround.

No.2 Division of load modules
Applies to: All debugging tool 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.3 Display of information on variables
Applies to: All debugging tool 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.4 Source files with the same name
Applies to: All debugging tool 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

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