User's Manual

CS+ V8.06.00

Integrated Development Environment

User's Manual: Project Operation

Target Device

RL78 Family

RX Family

RH850 Family

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How to Use This Manual

This manual describes the role of the CS+ integrated development environment for developing applications and systems for RH850 family, RX family, and RL78 family, and provides an outline of its features.

CS+ is an integrated development environment (IDE) for RH850 family, RX family, and RL78 family, integrating the necessary tools for the development phase of software (e.g. design, implementation, and debugging) into a single platform.

By providing an integrated environment, it is possible to perform all development using just this product, without the need to use many different tools separately.

Readers	This manual is intended for users who wish to understand the functions of the CS+ and design software and hardware application systems.
Purpose	This manual is intended to give users an understanding of the functions of the CS+ to use for reference in developing the hardware or software of systems using these devices.
Organization	This manual can be broadly divided into the following units. 1.GENERAL 2.FUNCTIONS A.WINDOW REFERENCE B.GLOSSARY C.HOW THE MANUALS ARE ORGANIZED D.INPUT CONVENTIONS E.USING AN EXTERNAL BUILD TOOL F.SHORTCUT KEYS
How to Read This Manual	It is assumed that the readers of this manual have general knowledge of electricity, logic circuits, and microcontrollers.

Conventions

Data significance:	Higher digits on the left and lower digits on the right
Active low representation:	XXX (overscore over pin or signal name)
Note:	Footnote for item marked with Note in the text
Caution:	Information requiring particular attention
Remarks:	Supplementary information
Numeric representation:	Decimal ... XXXX Hexadecimal ... 0xXXXX

TABLE OF CONTENTS

1. GENERAL . . . 7
1.1 Introduction . . . 7
1.2 Features . . . 7
1.3 System Configuration . . . 8
1.4 Operating Environment . . . 9
2. FUNCTIONS . . . 10
2.1 Overview . . . 10
2.2 Start CS+ . . . 11
2.3 Create a Project . . . 13
2.3.1 Start a project . . . 17
2.3.2 Create a new project . . . 18
2.3.3 Add a new subproject . . . 24
2.3.4 Create a project for multi-core [RH850] . . . 25
2.4 Manipulate a Project . . . 30
2.4.1 Open a project . . . 30
2.4.2 Add an existing subproject . . . 31
2.4.3 Project is added to the favorites menu . . . 31
2.4.4 Remove a subproject from the project . . . 32
2.4.5 Change the project name . . . 33
2.4.6 Open a project folder in Explorer . . . 33
2.4.7 Set the build order of projects . . . 34
2.4.8 Open a CubeSuite+ project . . . 35
2.4.9 Convert a CA78K0R or CA78K0 project into a CC-RL project . . . 36
2.4.10 Convert an e^2 studio project into a CS+ project [RX][RL78] . . . 40
2.4.11 Convert a CubeSuite project into a CS+ project . . . 44
2.4.12 Convert a HEW project into a CS+ project . . . 47
2.4.13 Convert a PM+ project into a CS+ project . . . 55
2.4.14 Change the microcontroller . . . 62
2.5 Change the Build Tool Version . . . 64
2.6 Set Build Target Files . . . 64
2.6.1 Add a file to a project . . . 64
2.6.2 Remove a file from a project . . . 68
2.6.3 Remove a file from the build target . . . 69
2.6.4 Classify a file into a category . . . 69
2.6.5 Change the file display order . . . 71
2.6.6 Update file dependencies . . . 71
2.7 Make Settings for Build Operations . . . 75

2.7.1 Import the build options of other project . . . 75
2.7.2 Set the link order of files . . . 76
2.7.3 Change the build order of subprojects . . . 79
2.7.4 Display a list of build options . . . 79
2.7.5 Change the build target project . . . 79
2.7.6 Add a build mode . . . 80
2.7.7 Change the build mode . . . 82
2.7.8 Delete a build mode . . . 83
2.7.9 Set the current build options as the standard for the project . . . 83
2.8 Run a Build . . . 85
2.8.1 Run a build of updated files . . . 87
2.8.2 Run a build of all files . . . 87
2.8.3 Run a build in parallel with other operations . . . 88
2.8.4 Run builds in batch with build modes . . . 90
2.8.5 Compile/assemble individual files . . . 90
2.8.6 Stop running a build . . . 92
2.8.7 Save the build results to a file . . . 92
2.8.8 Delete intermediate files and generated files . . . 92
2.9 Save the Project File . . . 94
2.9.1 Save the project file with a different name . . . 94
2.9.2 Save all files . . . 95
2.9.3 Pack and save the project and this product . . . 95
2.9.4 Close a project . . . 99
2.10 Change the Window Layout . . . 100
2.10.1 Automatically hide panels . . . 100
2.10.2 Float a window . . . 100
2.10.3 Dock windows . . . 100
2.10.4 Display multiple panels . . . 101
2.10.5 Reset the window layout . . . 101
2.11 Accelerate the Startup Time of CS+ . . . 102
2.11.1 Use rapid start . . . 102
2.12 Manipulate CS+ on the Command Line . . . 103

A. WINDOW REFERENCE . . . 108
A.1 Description . . . 108

B. GLOSSARY . . . 297

C. HOW THE MANUALS ARE ORGANIZED . . . 298

D. INPUT CONVENTIONS . . . 300
D.1 Input Conventions . . . 300
D.2 Displaying Icons at Locations of Input Errors . . . 300

E. USING AN EXTERNAL BUILD TOOL 301
E.1 Overview 301
E.2 Create a Debug-dedicated Project. 302
E.3 Add a File to a Project 303
E.3.1 Add a download file 303
E.3.2 Add C source files and other files 304
E.3.3 Remove an added file from a project 307
E.4 Make Settings for Build Operations 308
E.4.1 Set the commands 308
E.4.2 Set the build mode 310
E.4.3 Set the target project for a build 312
E.5 Run a Build 314
E.5.1 Run a build 315
E.5.2 Run a rebuild 316
E.5.3 Run a clean. 316
E.5.4 Run a rapid build. 318
E.5.5 Run a batch build 318
E.5.6 Stop running a build 319
E.5.7 Save the build results to a file. 320
F. SHORTCUT KEYS 321
Revision Record . . . . . C - 1

1. GENERAL

This chapter describes the role of the CS+ integrated development environment for developing applications and systems for the microcontrollers (RH850, RX, and RL78), and provides an outline of its features.

1.1 Introduction

CS+ is an integrated development environment (IDE)[Note] for the microcontrollers.

By integrating the necessary tools for each development phase, it is possible to perform all phases in software development using just this product, without the need to use many different tools separately. Emphasis is placed on making the tools work together, improving development efficiency in many different situations. As an example, the output from the design phase is automatically reflected in the debug phase.

CS+ also has an update feature to automatically obtain this product upgrades via the network, making it simple to maintain the environment required for software development (free downloadable tools excluded).

Note An integrated development environment is a development environment integrating the necessary tools for all phases of software development, including preparation, design/implementation, and debugging, into a single platform framework.

Remark In addition to CS+, emulators and on-chip debugging emulators (emulators for microcontrollers with on-chip debugging facilities built in) are provided, as well as a real-time OS package (for developing systems using real-time OS), making a wide range of development possible.

1.2 Features

CS+'s features are shown below.

(1) Project management
Manage project information, including source-file structure, build options, and settings for connecting to the debug tool.

(2) Design
The pin assignment function makes it possible to output reports called "device pin list" and "device top view" as files, by inputting the pin-configuration status of the microcontroller.
The code generation function can output source code (device driver programs) corresponding to peripheral functions provided by the microcontroller (e.g. systems, ports, and interrupt) by selecting and entering the information required for control in the CS+ panels.

(3) Coding
A tree view of the files included in the project appears in a CS+ panel, and the files can be edited by linking an editor to CS+.

(4) Build
You can configure optimization and other build options in the CS+ panels, enabling you to create efficient load module files and a library file.

Remark It is also possible to link to an external build tool and use it instead of the build tool provided by CS+ (see "E. USING AN EXTERNAL BUILD TOOL").

(5) Debug
You can display your debugging tool's connection settings and debugging information in CS+ panels. There are also many methods for executing programs, enabling you to debug your programs efficiently.

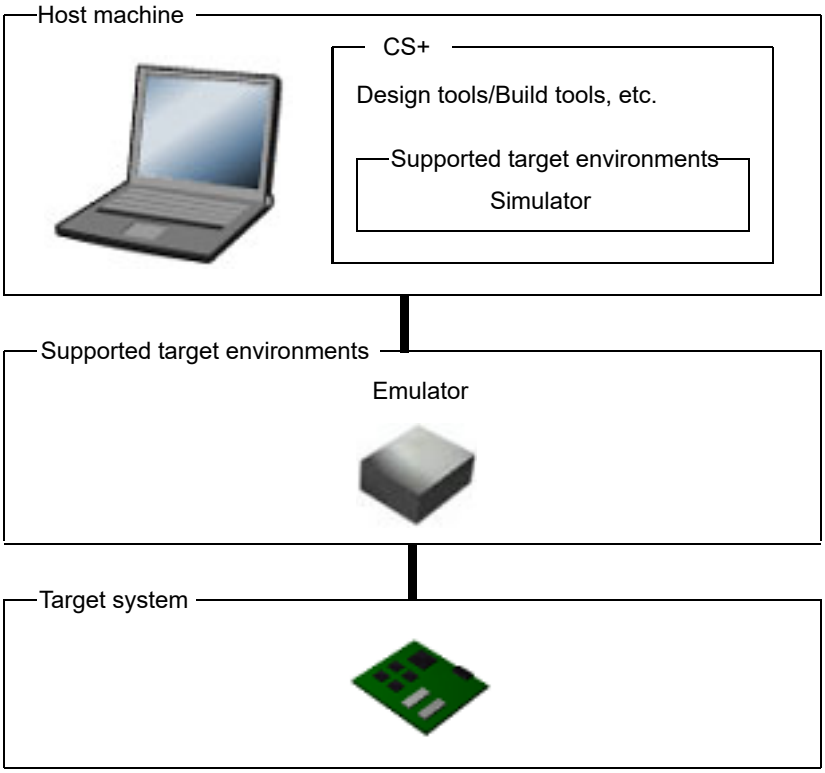
(6) Analysis
You can analyze information while the program is executing, and display information about the functions and variables.

(7) Updates
Communicate with the update server to get the latest version of this product.

1.3 System Configuration

Below is shown an example of the system configuration.

Figure 1.1 System Configuration



Remark The emulator that can be connected differs depending on the microcontroller used in the project. See "CS+ Integrated Development Environment User's Manual: Debug Tool" for details.

1.4 Operating Environment

Below are the system requirements for this product.

(1) Hardware environment

Processor: At least 1 GHz (support for hyper threading/multi-core CPU)
Main memory: At least 1 GB (2 GB or higher for Windows 10 and Windows (64-bit OS)), 2 GB or higher recommended
Display: Resolution at least 1,024 x 768; at least 65,536 colors
Interface: USB 2.0

(2) Software environment

- Windows 8.1 (32-bit OS, 64-bit OS)
- Windows 10 (32-bit OS, 64-bit OS)
- Microsoft .NET Framework 4.5.2
- Microsoft Visual C++ 2015 Redistributable Update 3
- Online help: Internet Explorer, Chrome, or Firefox (The latest version is recommended)
  Offline help: Internet Explorer 11 or higher

(3) Supported target environments

- IECUBE [RL78]
- IE850A [RH850]
- Full-spec emulator [RH850]
- E1 [RH850][RX][RL78]
- E2 emulator [RH850][RX][RL78]
- E2 emulator Lite [RX][RL78]
- E20 [RH850][RX][RL78]
- EZ Emulator [RX][RL78]
- COM Port[RL78]
- Simulator

2. FUNCTIONS

This chapter covers the basic operations of CS+ and the procedure of build using CS+.

2.1 Overview

The procedure starting from the startup of CS+, creating and building projects, and up to saving projects is shown as follows.

(1) Start CS+
Start CS+ (see "2.2 Start CS+").

(2) Create or load a project
Create a new project, or load an existing one (see "2.3 Create a Project" and "2.4 Manipulate a Project").

(3) Set the build tool version
Set the build tool version (see "2.5 Change the Build Tool Version").

(4) Set build target files
Add or remove build target files and update the dependencies (see "2.6 Set Build Target Files").

(5) Set build options
Set the options for the build tool.

Remark See "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details about setting build options.

(6) Run a build
Run a build after making related settings as required (see "2.7 Make Settings for Build Operations" and "2.8 Run a Build").

Remark If there are any commands you wish to run before or after the build process, on the build tool's Property panel, from the [Common Options] tab, in the [Others] category, set the [Commands executed before build processing] and [Commands executed after build processing] properties.
If there are any commands you wish to run before or after the build process at the file level, you can set them from the [Individual Compile Options] tab (for a C source file) and [Individual Assemble Options] tab (for an assembly source file).

(7) Save the project
Save the setting contents of the project to the project file (see "2.9 Save the Project File").

In addition to the above, the following operations are possible.

- Changing the window layout (see "2.10 Change the Window Layout")
- Accelerating the startup time of CS (see "2.11 Accelerate the Startup Time of CS+")
- Manipulating CS on the command line (see "2.12 Manipulate CS+ on the Command Line")

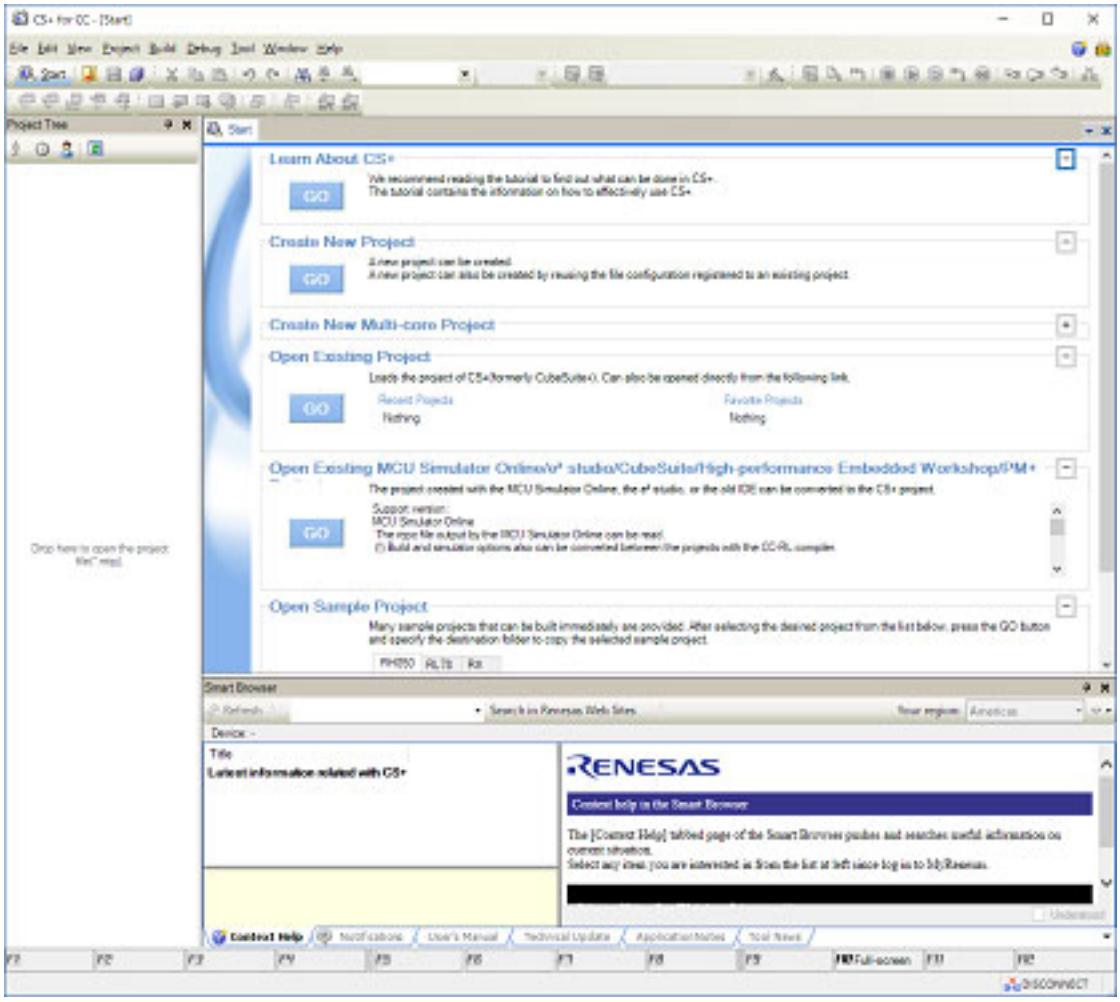
2.2 Start CS+

When CS+ is installed and started for the first time, select Windows [Start] menu >> [Programs] >> [Renesas Electronics CS+] >> [CS+ for CC (RL78,RX,RH850)].

Remark In Windows 8.1, select [CS+ for CC (RL78,RX,RH850)] on the start screen.
In Windows 10, select Windows [Start] menu >> [All apps] >> [Renesas Electronics CS+] >> [CS+ for CC (RL78,RX,RH850)].

The following Main window will be opened.

Figure 2.1 Main Window

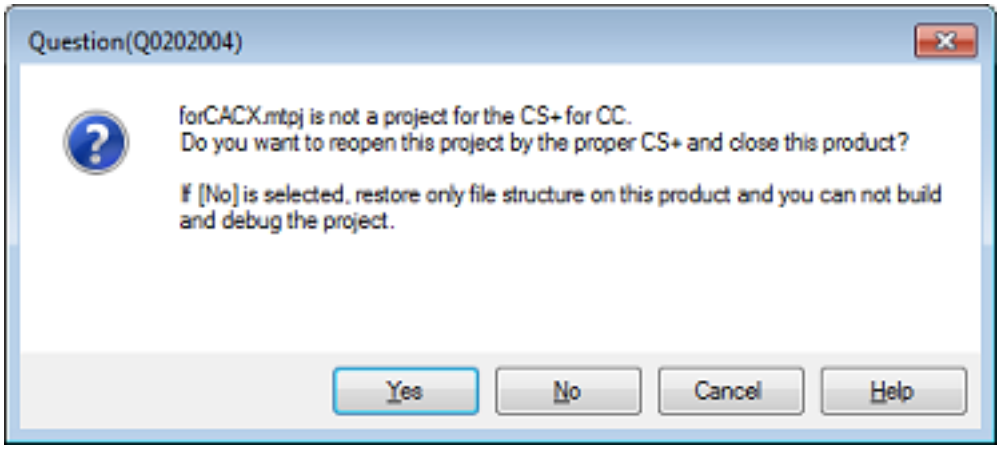


On the second and subsequent occasions, you can startup CS+ from the icon in the task tray when the rapid start (see "2.11.1 Use rapid start") is enabled.

More than one "CS+ for CC" can be started simultaneously. However, since the setting information (customization of panel layout or menus) is common, the setting information of the CS+ for CC that ended last is held.

The extension of project files of "CS+ for CC" and "CS+ for CA,CX" is common. When a project file is double-clicked, CS+ detects its contents and then starts the suitable product and load the project. If an attempt is made to open a project of "CS+ for CA,CX" after "CS+ for CC" has been started, the following Message dialog box is opened.

Figure 2.2 Message Dialog Box



Click [Yes] to end "CS+ for CC" and start "CS+ for CA,CX" to load the project. Click [No] to load the project by "CS+ for CC" without changing the CS+. Click [Cancel] to halt loading. If [No] is clicked, though a project is loaded by "CS+ for CC", it cannot be built or debugged.

Remark The plug-ins other than the build tool, debug tool, and Editor panel are disabled by default (the disabled plug-ins are displayed in the Output panel).
Enable desired plug-ins on the [Additional Function] tab in the Plug-in Manager dialog box opened by selecting [Tool] menu >> [Plug-in Setting...].
To reflect the new settings, restart CS+.

2.3 Create a Project

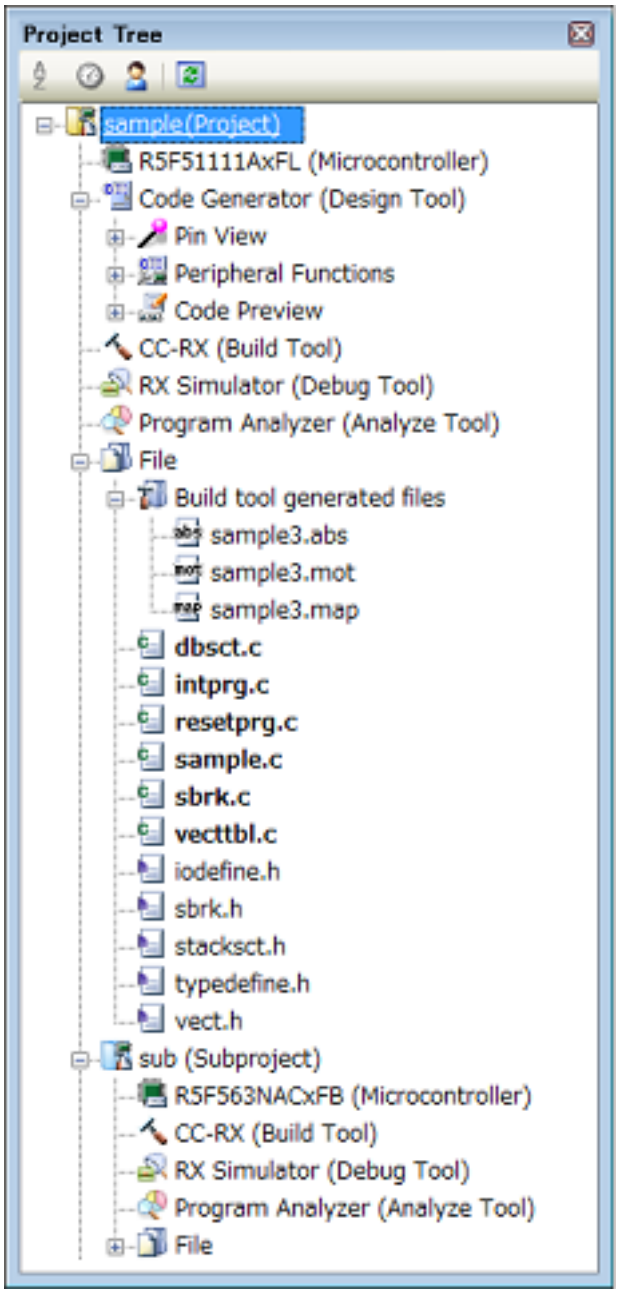
A project is managed by CS+ as the unit for application system development.
CS+ saves settings information used in the project such as the microcontroller, build tool, and source files, to the project file (*.mtpj) and references it.

Remark The following lists types of project files other than *.mtpj.

Extension	Usage
*.mtud	Stores information per project and user (e.g. the layout of each of the panels, the settings for each panel including watch-expressions in the Watch panel, and the settings for properties of the debug tool).
*.rcpe	Renesas common project file (for porting a project to the e^2 studio)

(1) Project tree organization and detailed settings
The project's settings are made on the Project Tree panel.

Figure 2.3 Project Tree Panel



On the project tree, project components are displayed as the nodes below in a tree view.
If you select each component (node or file), its detailed information (properties) is displayed in the Property panel and you can change its settings.
You can also make project settings from the context menu for each component (node or file).

Node	Explanation
Project name (Project) (Hereafter referred to as "Project node")	The project's name.
Microcontroller name (Microcontroller) (Hereafter referred to as "Microcontroller node")	The microcontroller used in the project.
Boot Loader (Configuration Tool for Multi-core node) [RH850] (Hereafter referred to as "Configuration Tool for Multi-core node")	The node for setting application projects which configure a project for multi-core. Note that this node is shown when the project type is a boot loader project.

Node	Explanation
Design Tool name (Design Tool) (Hereafter referred to as "Design Tool node")	The design tool (pin configurator, code generator, smart configurator [RX][RL78], etc.) used. Note that Code Generator (Design Tool) node is not shown when the project type is a debug-dedicated project.
Build tool name (Build tool) (Hereafter referred to as "Build Tool node")	The build tool (compiler, assembler, etc.) used. When the project type is a debug-dedicated project, "None" is shown as *build tool name*.
Debug tool name (Debug Tool) (Hereafter referred to as "Debug Tool node")	The debug tool (in-circuit emulator, simulator, etc.) used.
Program Analyzer (Analyze Tool) (Hereafter referred to as "Analyze Tool node")	The analyze tool used. Note that this node is not shown when the project type is a debug-dedicated project.
File (Hereafter referred to as "File node")	Files registered to the project are displayed directly below the File node.
Download files (Hereafter referred to as "Download files node")	This is a node for adding download files to the project. Note that this node is shown only when the project type is a debug-dedicated project.
Build tool generated files (Hereafter referred to as "Build tool generated files node")	This node is created during a build. Files created by the build tools are displayed directly below the node (except for object files). Note that this node is not shown when the project type is a debug-dedicated project.
Startup [RL78] (Hereafter referred to as "Startup node")	This is a node for adding other than standard startup files to the project. This node is always shown under the File node. Note that this node is not shown when the project type is a debug-dedicated project.
Category name (Hereafter referred to as "Category node")	These user-defined categories are used to classify files into modules.
Subproject name (Subproject) (Hereafter referred to as "Subproject node")	Subprojects added to the project. For subprojects, see "(2) Projects and subprojects".

Remark 1. Only the tools corresponding to the microcontroller in use are shown.

Remark 2. When more than one component are selected, only the tab that is common to all the components is displayed.
When more than one file are selected and their common properties are different, that field is left blank.

Remark 3. See "E. USING AN EXTERNAL BUILD TOOL" for details on a debug-dedicated project.

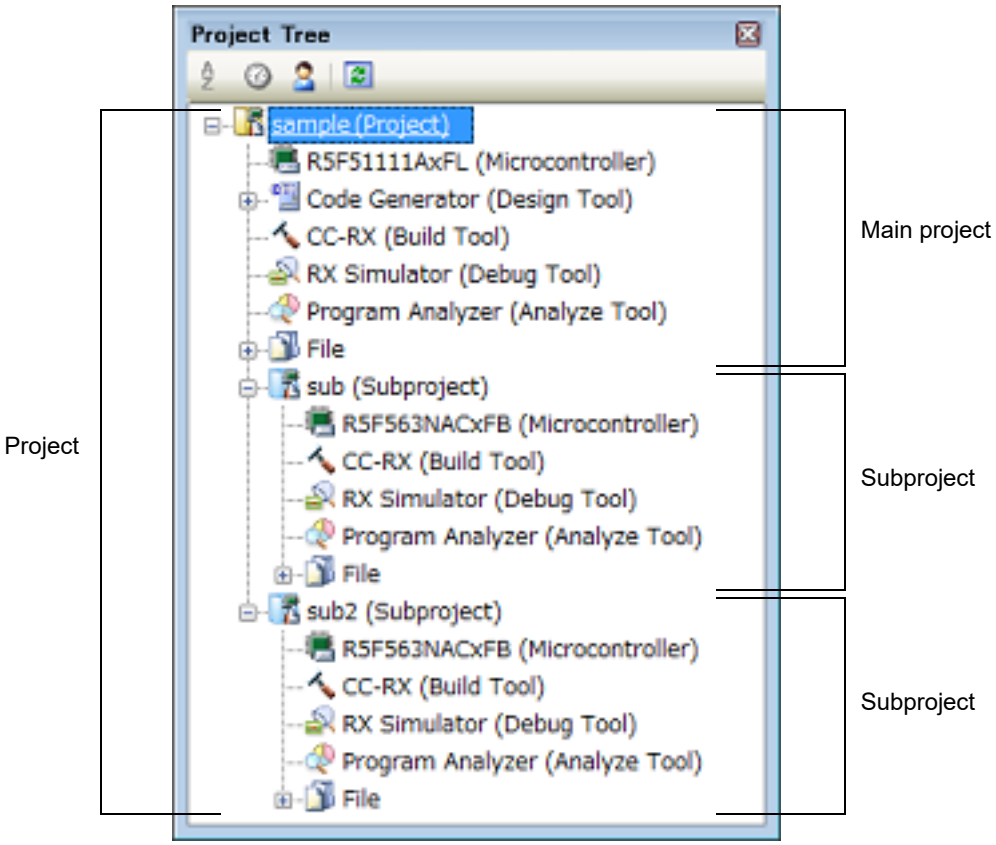
(2) Projects and subprojects

Projects can have subprojects added to the level beneath them.
The subproject's settings information is saved to a subproject file (*.mtsp).
Subprojects, for example, are used in the following ways.

- When also creating a project to create library files used in the project, create a project to create library files as a subproject.
- When developing the same application system for different microcontrollers, create the projects that differ for the microcontroller as subprojects.

When subprojects are added, this manual call the project "main project", as opposed to its subprojects. "Project" is a common term for the main project and subprojects.

Figure 2.4 Project Tree Panel (When Subprojects Added)



In addition, project settings and the settings for subprojects added to a project are independent and have no effect on each other. When making the same settings between the main project and subprojects, or between differing subprojects, select multiple nodes to set on the project tree, and make the settings with the Property panel.

Caution A subproject cannot be added to another subproject.

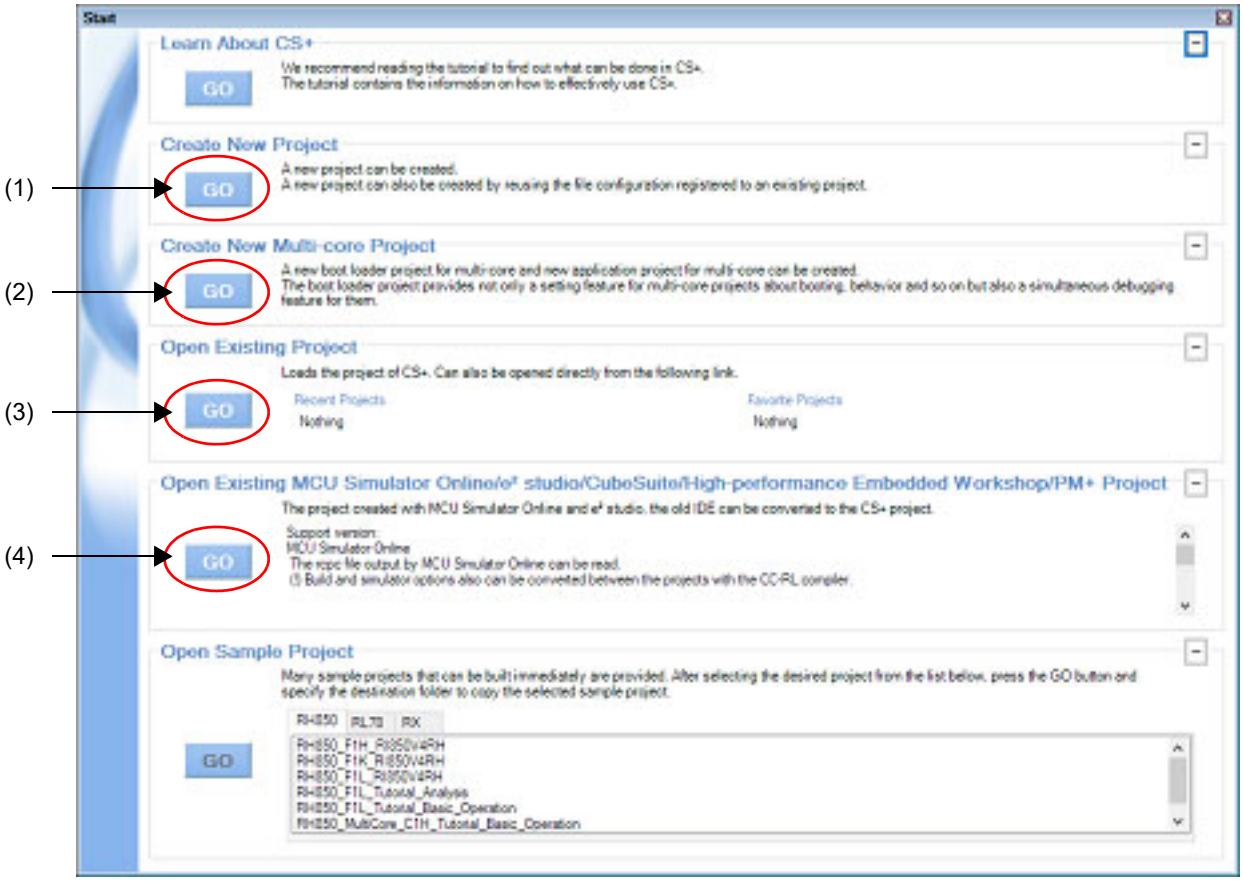
Remark See "2.3.3 Add a new subproject" and "2.4.2 Add an existing subproject", for how to add subprojects.

2.3.1 Start a project

On the tool bar, click Start to open the Start panel. You can click the buttons on the panel to create a new project or open an existing one.

Note that the Start panel opens automatically the first time that CS+ starts.

Figure 2.5 Start Panel



Number	Description
(1)	See "2.3.2 Create a new project".
(2)	See "2.3.4 Create a project for multi-core [RH850]". Note that this area is minimized by default; click ✚ to resize the area.
(3)	See "(1) Open an existing project".
(4)	See "2.4.10 Convert an e² studio project into a CS+ project [RX][RL78]". See "2.4.11 Convert a CubeSuite project into a CS+ project". See "2.4.12 Convert a HEW project into a CS+ project". See "2.4.13 Convert a PM+ project into a CS+ project".

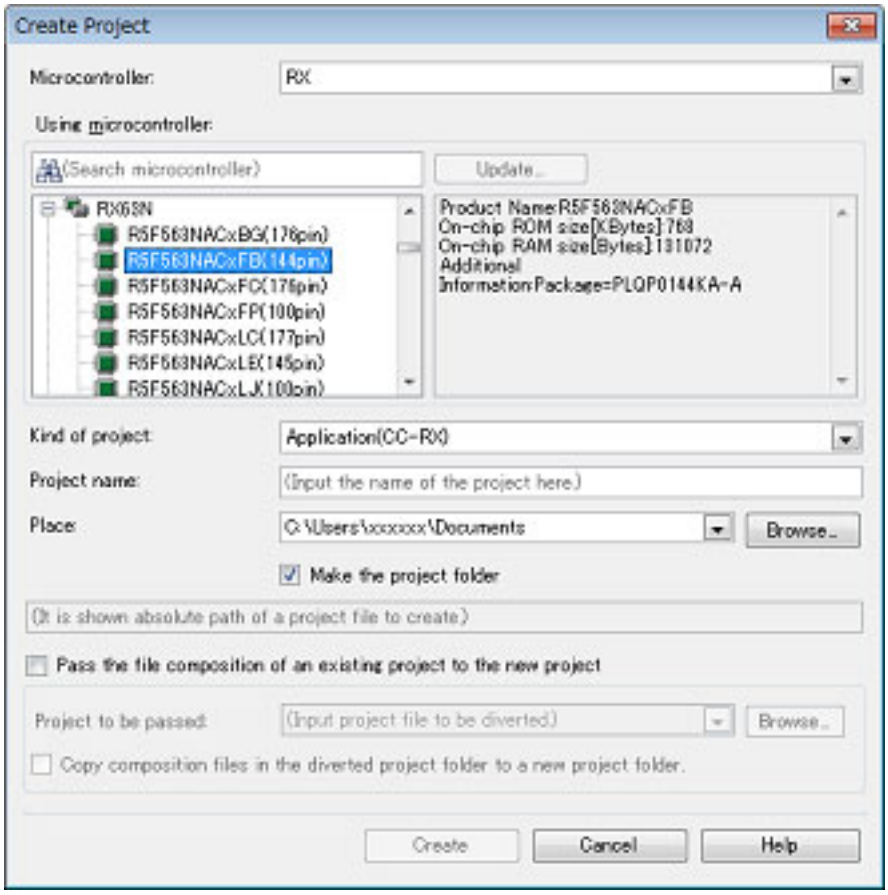
2.3.2 Create a new project

This section describes how to create a new project.

Remark When a project for RH850 multi-core is created, see "2.3.4 Create a project for multi-core [RH850]".

From the [Project] menu, select [Create New Project...], the Create Project dialog box will open.

Figure 2.6 Create Project Dialog Box (When First Started)



Set the items in the order below.

(1) Select the microcontroller type
Select the microcontroller type to use in the project on [Microcontroller].
You can select the item below.

- RH850
- RX
- RL78

(2) Select the microcontroller
Select the microcontroller to use in the project on the [Using microcontroller] area.
If your microcontroller is not in the [Using microcontroller] area, click the [Update...] button.
You can open the CS+ Update Manager window, and check for microcontroller information updates via the network.

Caution The [Update...] button is only enabled when this product is installed using the installer. It is disabled when a packaged item is being used.

(3) Select the project type
Select the project type to create on [Kind of project].
You can select the item below.

- Application(CC-RH/CC-RX/CC-RL)

Select this to generate the load module file and hex file from C source files, by using the build tool provided by CS+.
The generated file will be the debug target.

Caution This item is not displayed when microcontrollers for RH850 multi-core are selected in "(2) Select the microcontroller".

Remark 1. If the build tool is CC-RH, the following start-up source files are generated in the project folder. These files are also registered in the project tree.

File Name	Description
boot.asm	For defining the processing from the occurrence of a reset to a branch to the start-up routine and defining the interrupt vector table
cstart.asm	For defining the start-up routine
iodefine.h	For defining I/O registers
main.c	For defining the empty main function

Remark 2. If the build tool is CC-RX, the following start-up source files are generated in the project folder. The files marked with "OK" in the "Registration in Project Tree" column are also registered in the project tree. When necessary, also register the files marked with "--" in the project tree.

File Name	Description	Registration in Project Tree
ProjectName.c	For defining the main function	OK
dbsct.c	For setting up standard sections	OK
hwsetup.c	For initializing hardware	--
intprg.c	For defining interrupt functions	OK
iodefine.h	For defining I/O registers	OK
lowlvl.src	For defining low-level I/O functions (source file for assembler)	--
lowsrc.c	For defining low-level I/O functions	--
lowsrc.h	Prototypes for low-level I/O functions	--
resetprg.c	For defining initialization for C language	OK
sbrk.c	For defining the function for allocating the heap memory	OK
sbrk.h	For defining the heap size	OK
stacksct.h	For defining pragma for the stack	OK
typedefine.h	For defining typedefine for the types used in sbrk.c, etc.	OK
vect.h	Prototypes for interrupt vector functions	OK
vecttbl.c	For defining the interrupt vector table	OK

Remark 3. If the build tool is CC-RL, the following start-up source files are generated in the project folder. These files are also registered in the project tree.

File Name	Description
cstart.asm	For defining the start-up routine from the occurrence of a reset to a branch to the main function The memory address and stack area need to be modified to match the microcontroller used.

File Name	Description
iodefine.h	For defining the names of I/O registers and interrupt requests
main.c	For defining the empty main function

- C++ Application(CC-RX)
  Select this to generate the load module file and hex file from a C++ source file (only a file that has a main function) and C source files, by using build tool CC-RX provided by CS+.
  The generated file will be the debug target.

  Remark The following start-up source files are generated in the project folder.
  The files marked with "OK" in the "Registration in Project Tree" column are also registered in the project tree. When necessary, also register the files marked with "--" in the project tree.

File Name	Description	Registration in Project Tree
Project-Name.cpp	For defining the main function	OK
dbsct.c	For setting up standard sections	OK
hwsetup.cpp	For initializing hardware	--
intprg.c	For defining interrupt functions	OK
iodefine.h	For defining I/O registers	OK
lowlvl.src	For defining low-level I/O functions (source file for assembler)	--
lowsrc.c	For defining low-level I/O functions	--
lowsrc.h	Prototypes for low-level I/O functions	--
resetprg.c	For defining initialization for C language	OK
sbrk.c	For defining the function for allocating the heap memory	OK
sbrk.h	For defining the heap size	OK
stacksct.h	For defining pragma for the stack	OK
typedefine.h	For defining typedefine for the types used in sbrk.c, etc.	OK
vect.h	Prototypes for interrupt vector functions	OK
vecttbl.c	For defining the interrupt vector table	OK

- Empty Application(CC-RH/CC-RX/CC-RL/GHS CCRH850)
  Select this to generate the load module file, by using build tool CC-RH/CC-RX/CC-RL or build-tool plugin for GHS CCRH850 provided by CS+.
  The generated file will be the debug target.
  Sample startup programs are not generated when the project is created.

- Boot Loader for Multi-core(CC-RH)
  Select this to create a boot loader project for multi-core, by using build tool CC-RH provided by CS+.
  A boot loader project is used to set application projects configuring a project for multi-core.

  Caution This item is displayed only when microcontrollers for RH850 multi-core are selected in "(2) Select the microcontroller".

  Remark The following start-up source files are generated in the project folder.
  These files are also registered in the project tree.

File Name	Description
boot*n*.asm	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
iodefine.h	For defining I/O registers

The core number n is sometimes included in the file name of a startup file (boot*n*.asm) for a core.

- Application for Multi-core(CC-RH)
  Select this to create an application project for multi-core, by using build tool CC-RH provided by CS+.

  Caution This item is displayed only when microcontrollers for RH850 multi-core are selected in "(2) Select the microcontroller".

  Remark The following start-up source files are generated in the project folder.
  These files are also registered in the project tree.

File Name	Description
cstart*n*.asm	For defining the start-up routine for each application
iodefine.h	For defining I/O registers
main.c	For defining the empty main function

  The core number n is sometimes included in the file name of a startup file (cstart*n*.asm) for a core.

- Using Existing GHS Project File(GHS CCRH850)
  Select this to debug a load module file built by the GHS compiler.
  This makes it easier to build based on existing GHS project files.

- Library(CC-RH/CC-RX/CC-RL/GHS CCRH850)
  Select this to generate a library file for a user library, by using build tool CC-RH/CC-RX/CC-RL or build-tool plugin for GHS CCRH850 provided by CS+.

- Debug Only
  Select this to debug a load module file or hex file generated with a build tool other than the one provided by CS+ (i.e. creates a debug-dedicated project).
  See "E. USING AN EXTERNAL BUILD TOOL" for details on how to create and use the debug-dedicated project.

(4) Specify the project name and location to create the project file
Specify the name of the project and the location to create the project file in [Project name] and [Place].
If you don't create a folder with the project name under the specified location, clear the [Make the project folder] check box.

Caution 1. When directly entering the location to create the project file, enter it as an absolute path.

Caution 2. The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

Remark It is recommended to specify the same folder as the diverted project for the location to create the project file.
If a folder different from the diverted project is specified, there is a possibility that path determination fails and a build error is occurred.

(5) Specify the reuse of the file structure of an existing project
When creating a project that reuses the file structure of an existing project, check [Pass the file composition of an existing project to the new project] and specify the location of the project filename to reuse in [Project to be passed].

Caution 1. You cannot specify an e^2 studio, CubeSuite, High-performance Embedded Workshop, or PM+ project file.
If you wish to copy an existing e^2 studio, CubeSuite, High-performance Embedded Workshop, or PM+ project, open the project in CS+, then save it as a CS+ project (see "2.4.10 Convert an e^2 studio project into a CS+ project [RX][RL78]", "2.4.11 Convert a CubeSuite project into a CS+ project", "2.4.12 Convert a HEW project into a CS+ project", "2.4.13 Convert a PM+ project into a CS+ project" for details). Next, specify the saved project file in this area.

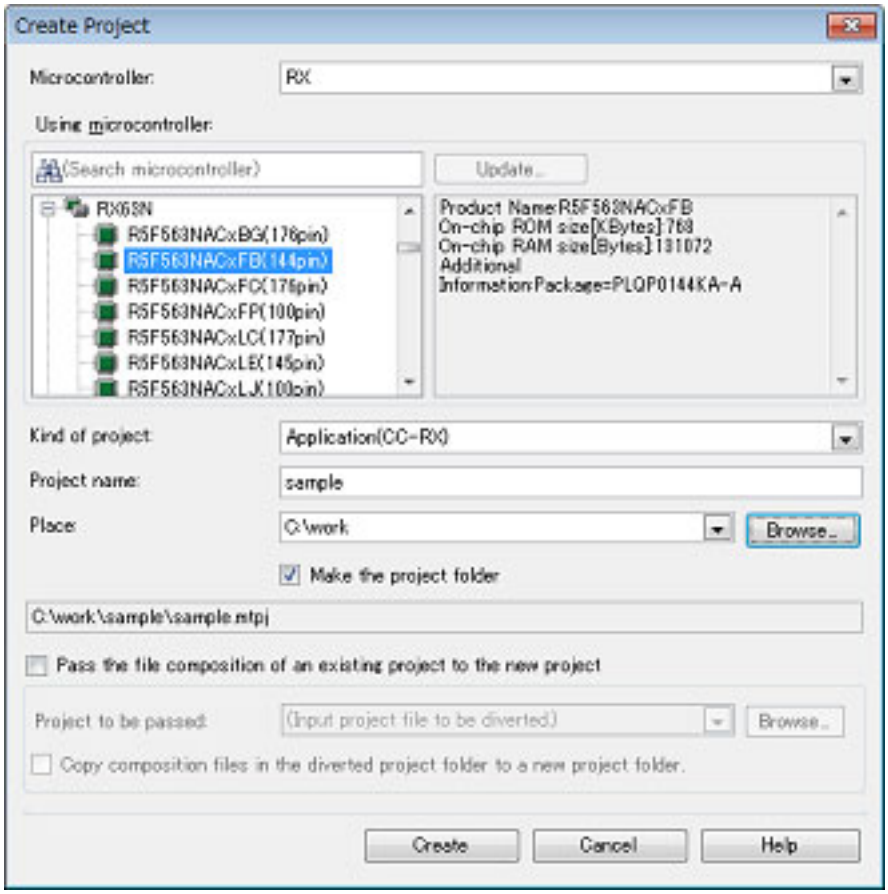
Caution 2. When you create a project, only the settings for the default debug tool will be imported.
In the RX family, however, internal processing is common to the emulator and simulator, so the settings are imported regardless of which debug tool is selected.

Remark 1. When the version of the build tool used in the source project is different from the version of the build tool in the project to be created, it is automatically diverted (the case that "Debug Only" is specified with [Kind of project] is excluded).

Remark 2. [RX] The settings of the properties of the build tool of the existing project are reused, then the properties of the build tool are changed to those for the specified microcontroller. iodefine.h and the start-up source files of the specified microcontroller are copied as sample source files. For the start-up files, create a folder named "*<device name after change>.nnn*" (*nnn* = 000, 001, …) and copy them to that folder.
If you have selected a microcontroller that has a different ROM size from that set in the source project, the differences between the ROM sizes may not be reflected in the value of the [Section start address] property on the [Link Options] tabbed page. Check the value of the [Section start address] property.

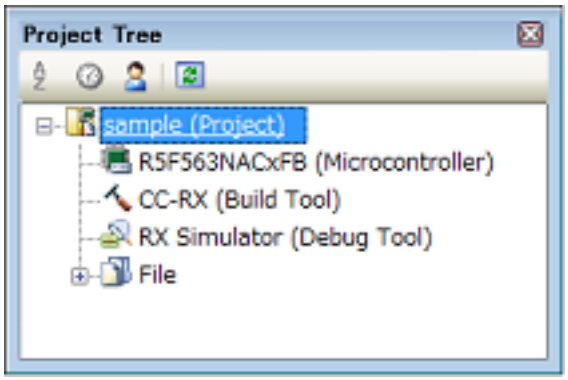
An image of the dialog box after setting the items is shown below.

Figure 2.7 Create Project Dialog Box (After Setting Items)



When you click the [Create] button, the project file is created in the location specified in (4) and the structure of the created project is displayed as a tree in the Project Tree panel.

Figure 2.8 Project Tree Panel (After Creating a New Project)



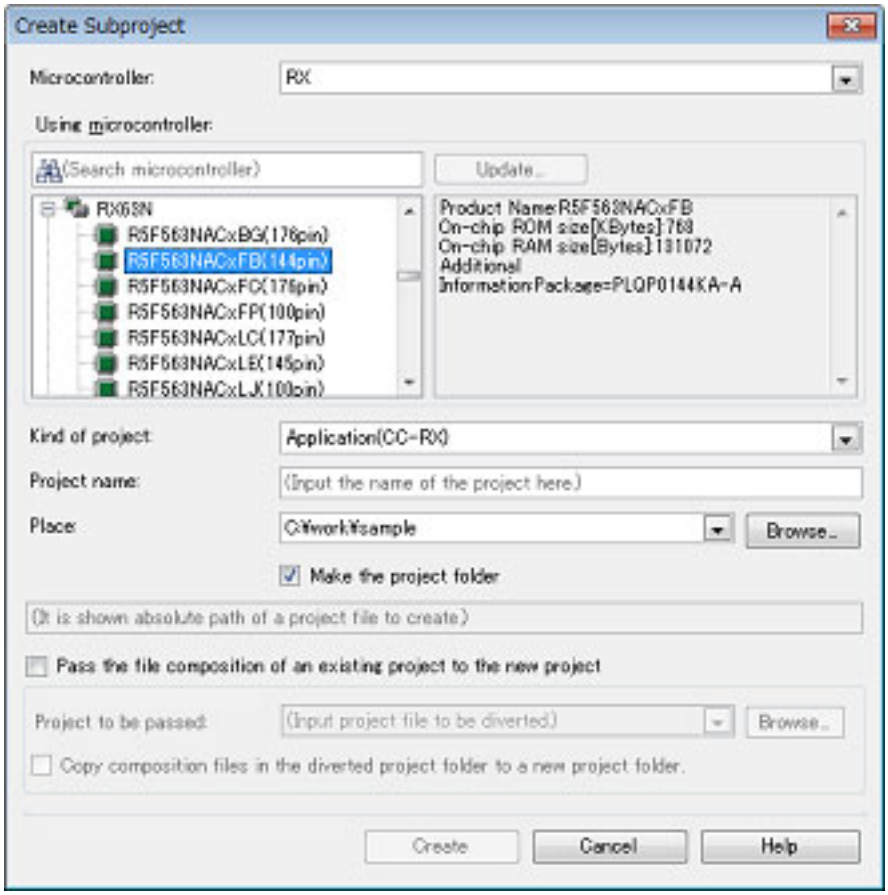
Remark After creating a project, you must add target files to the project in order to perform building or debugging. For details on how to add these files, see the following.

- When "Application" or "Library" is selected on [Kind of project]
  -> See the "2.6.1 Add a file to a project"
- When "Debug Only" is selected on [Kind of project]
  -> See "E.3 Add a File to a Project"

2.3.3 Add a new subproject

Select the Project node on the project tree and if you select [Add] >> [Add New Subproject...] on the context menu, the Create Project dialog box will open.

Figure 2.9 Create Project Dialog Box (When Adding a New Subproject)

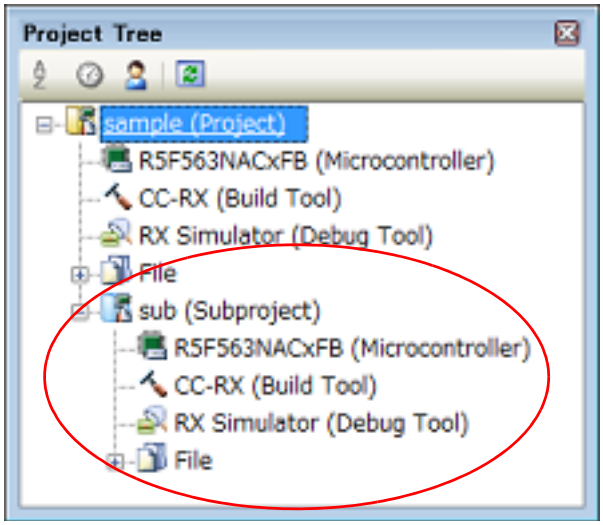


After setting each item on the dialog box, click the [Create] button (For more on the settings for each item, see "2.3.2 Create a new project").

Remark You can create a subproject with CC-RL as the build tool by reusing the file structure of a subproject with CA78K0R or CA78K0 as the build tool (See "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details).

The project tree after adding the subproject will look like the one below.

Figure 2.10 Project Tree Panel (After Adding a Subproject)



2.3.4 Create a project for multi-core [RH850]

A project for multi-core consists of a boot loader project and an application project. The application project creates programs for each CPU core, and the boot loader project manages activation of those programs.

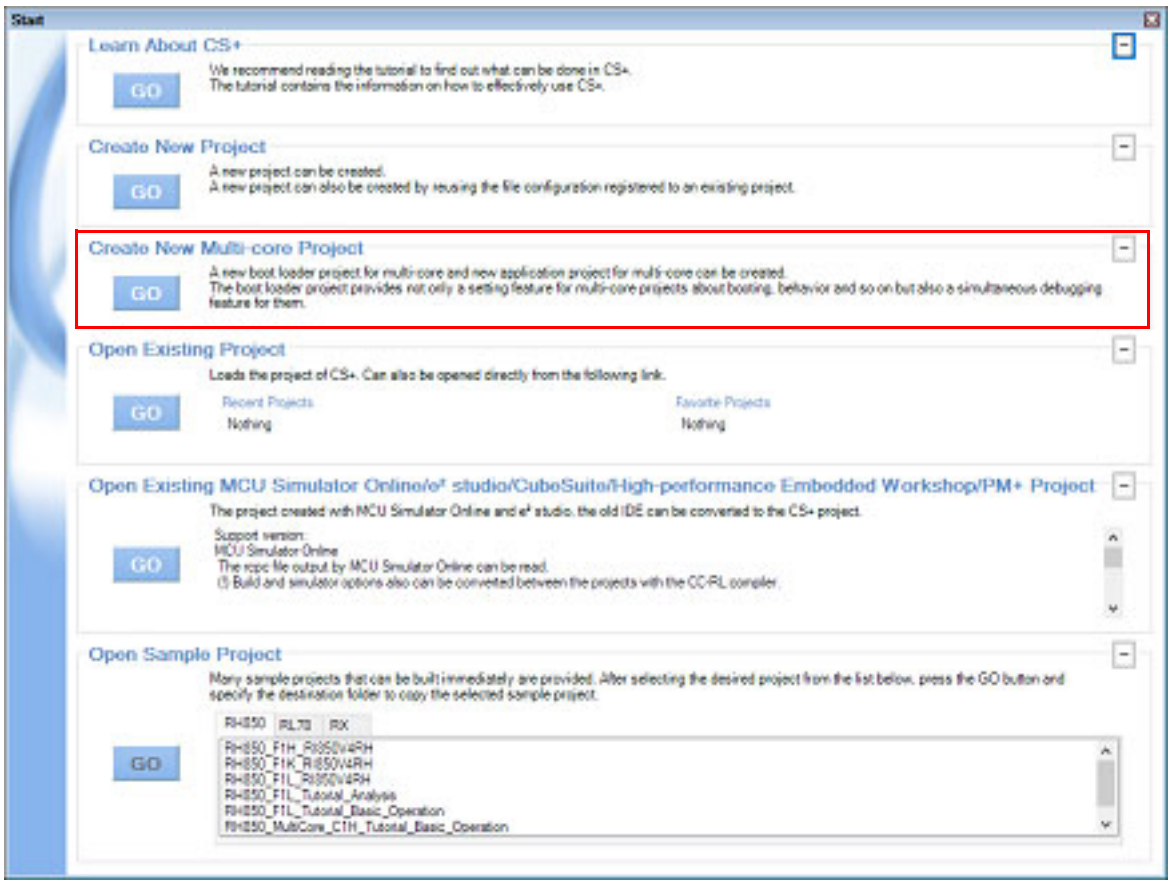
CS+ has a feature for creating the whole of a project with a default structure.

The way to use this is described below.

Remark Create a project in the usual way if you want to freely configure the whole of a project.

On the tool bar, click Start to open the Start panel.

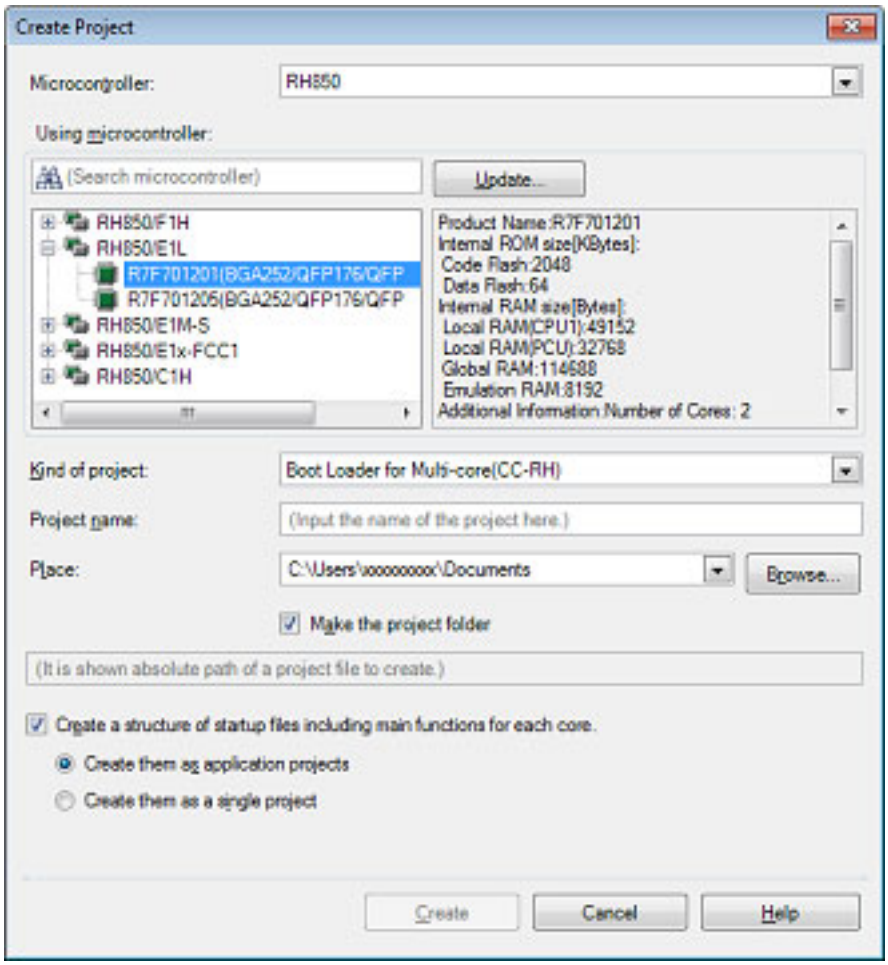
Figure 2.11 Start Panel



Click the [GO] button in the [Create New Multi-core Project] area to open the Create Project dialog box.

Remark The [Create New Multi-core Project] area is minimized by default; click [+] to resize the area.

Figure 2.12 Create Project Dialog Box (When First Started)



Set the items in the order below.

(1) Confirm the microcontroller type
[RH850] is selected on [Microcontroller].

(2) Select the microcontroller
Select the microcontroller to use in the project on the [Using microcontroller] area.
If your microcontroller is not in the [Using microcontroller] area, click the [Update...] button.
You can open the CS+ Update Manager window, and check for microcontroller information updates via the network.

Caution The [Update...] button is only enabled when this product is installed using the installer. It is disabled when a packaged item is being used.

(3) Confirm the project type
[Boot Loader for Multi-core(CC-RH)] is selected on [Kind of project].

(4) Specify the project name and location to create the project file
Specify the name of the project and the location to create the project file in [Project name] and [Place].
If you don't create a folder with the project name under the specified location, clear the [Make the project folder] check box.

Caution 1. When directly entering the location to create the project file, enter it as an absolute path.

Caution 2. The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

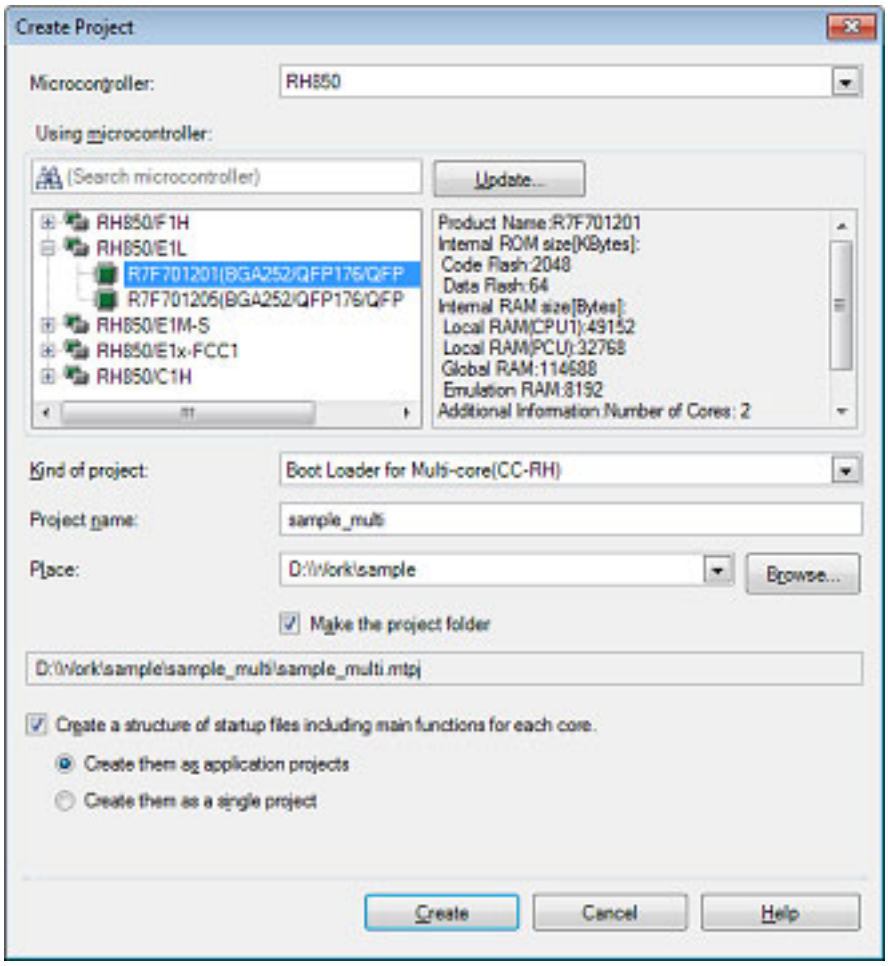
(5) Specify simultaneous creation of a structure of startup files for each core
When simultaneously creating a structure of startup files for each core, select the [Create a structure of startup files including main functions for each core.] check box.

When the [Create a structure of startup files including main functions for each core.] check box has been selected, select either of the following:

- Case where a structure of startup files for each core is created as an application project for the number of cores
  Select [Create them as application projects].
- Case where a single project that includes structures of all startup files is created
  Select [Create them as a single project].

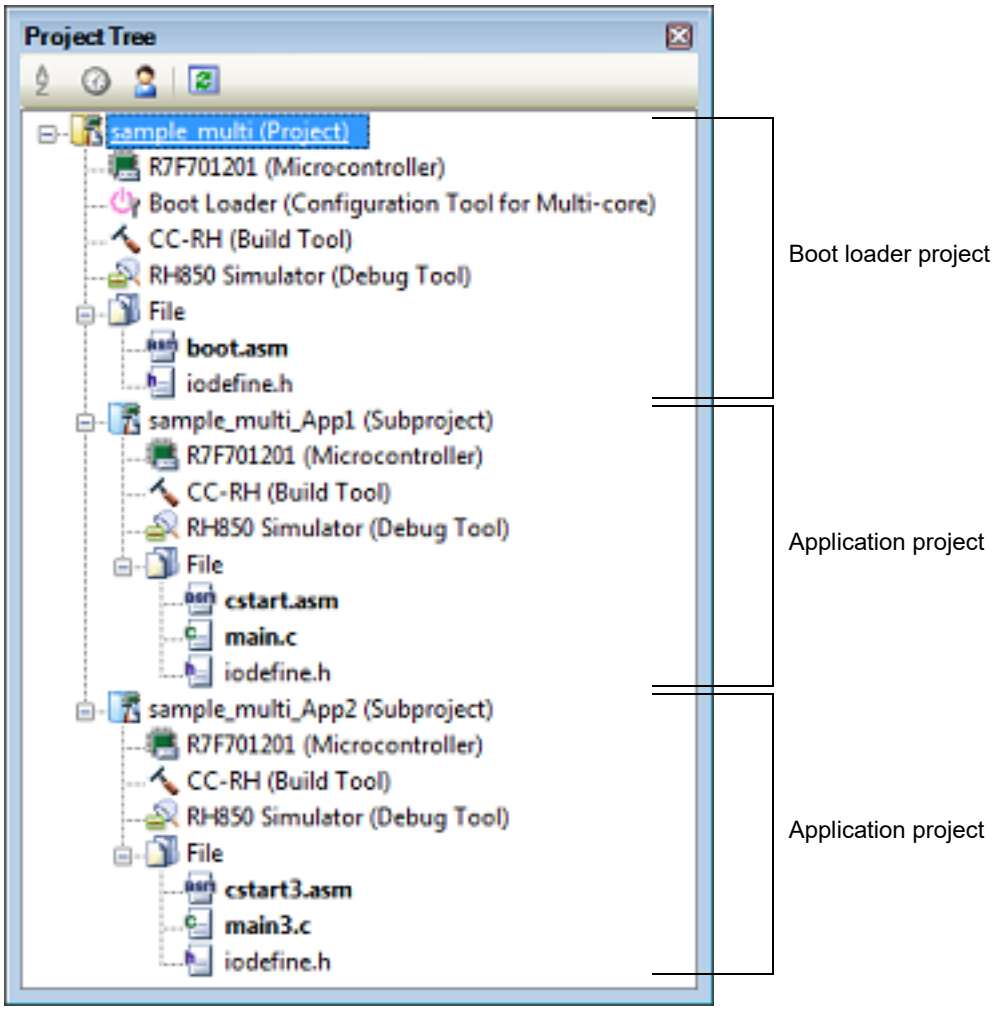
An image of the dialog box after setting the items is shown below.

Figure 2.13 Create Project Dialog Box (After Setting Items)



When you click the [Create] button, the project file is created in the location specified in (4) and the structure of the created project is displayed as a tree in the Project Tree panel.

Figure 2.14 Project Tree Panel (After Creating a New Project)



The start-up source files for each project are also created in the project folder and registered in the project tree.

(1) When [Create a structure of startup files including main functions for each core.] check box is not selected

File Name	Description
boot*n*.asm[Note]	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
iodefine.h	For defining I/O registers

Note The core number *n* is sometimes included in the file name of a startup file for a core.

(2) When [Create a structure of startup files including main functions for each core.] check box and [Create them as application projects] radio button are selected

(a) Start-up source files for the boot loader project

File Name	Description
boot*n*.asm[Note]	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
iodefine.h	For defining I/O registers

(b) Start-up source files for the application project

File Name	Description
cstart*n*.asm[Note]	For defining the start-up routine for each application

File Name	Description
iodefine.h	For defining I/O registers
main*n*.c[Note]	For defining the empty main function

Note The core number *n* is sometimes included in the file name of a startup file for a core.

(3) When [Create a structure of startup files including main functions for each core.] check box and [Create them as a single project] radio button are selected

File Name	Description
boot.asm	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
cstart*n*.asm[Note]	For defining the start-up routine for each application
iodefine.h	For defining I/O registers
main*n*.c[Note]	For defining the empty main function

Note The core number *n* is sometimes included in the file name of a startup file for a core.

Remark 1. The application project name is “*boot-loader-project-name*_App1”.

Remark 2. Add further application projects as subprojects.
See "2.3.3 Add a new subproject" and "2.4.2 Add an existing subproject", for how to add subprojects.

2.4 Manipulate a Project

This section describes how to manipulate a project.

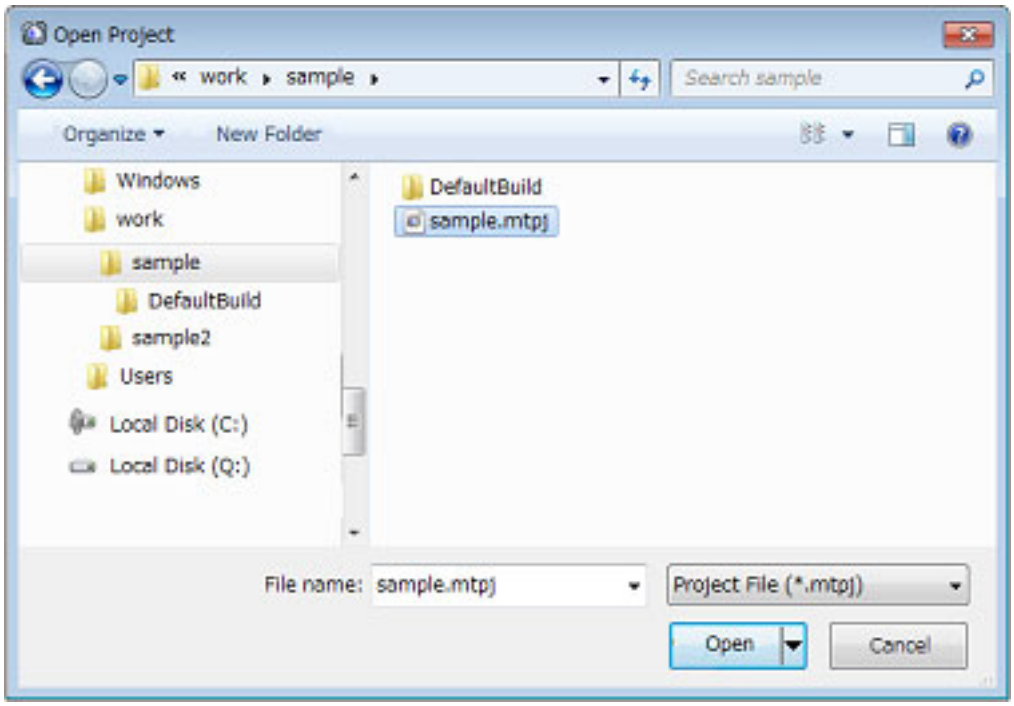
2.4.1 Open a project

Use the following method to open a project.

- Open an existing project
- Open a recently used project
- Open a project from the favorites menu

(1) Open an existing project
Existing projects are opened by specifying the project file.
From the [Project] menu, select [Open Project...], the Open Project dialog box will open.

Figure 2.15 Open Project Dialog Box



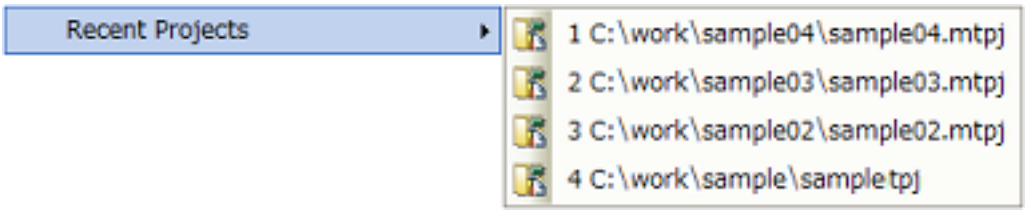
On the dialog box, specify the project file and click the [Open] button.

Remark When CS+ is not running, you can start CS+ and load a project by double-clicking on that project in Explorer.

Caution The name of a network path cannot be used. Assign the name of a path on a drive.

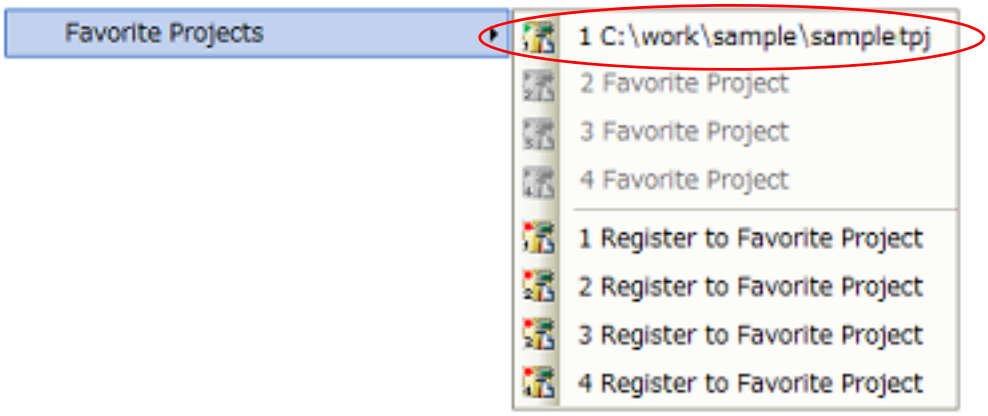
(2) Open a recently used project
You can directly open the most recently used projects (from the most recent to the fourth most recent) from the menu.
From the [File] menu, select [Recent Projects], the path of the recently used projects will display in a cascading menu in order from most recent to fourth most recent. Select the project you wish to open.

Figure 2.16 [Recent Projects] Item



(3) Open a project from the favorites menu
Open a project registered on the favorites menu.
From the [Project] menu, select [Favorite Projects], the path of the projects registered on the favorites menu is displayed as a cascading menu. Select the project you wish to open.

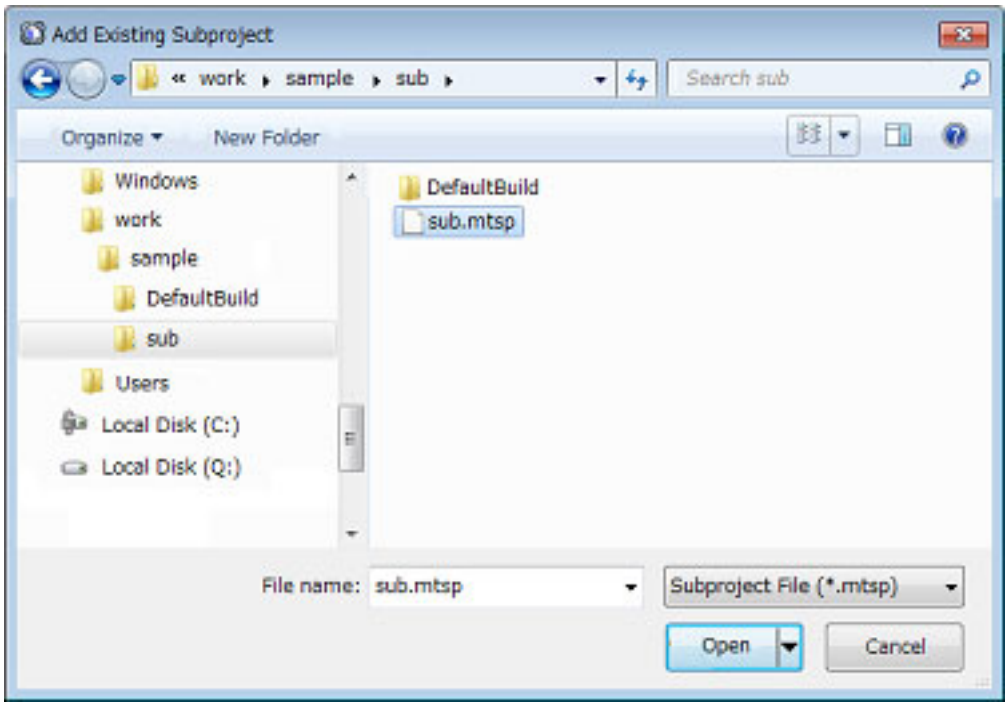
Figure 2.17 [Favorite Projects] Item



2.4.2 Add an existing subproject

Select the Project node on the project tree and if you select [Add] >> [Add Subproject...] on the context menu, the Add Existing Subproject dialog box will open.

Figure 2.18 Add Existing Subproject Dialog Box



On the dialog box, specify the subproject file of the subproject to add and click the [Open] button.

2.4.3 Project is added to the favorites menu

You can add the currently open project to the menu as a "favorite project" (up to four projects).
From the [Project] menu, select [Favorite Projects] >> [*1 - 4* Register to Favorite Project], the path of the currently open project is registered under the [Project] menu >> [Favorite Projects]. The path is also registered in [Favorite project] in the [Open Existing Project] area on the Start panel.

Figure 2.19 [Register to Favorite Project] Item

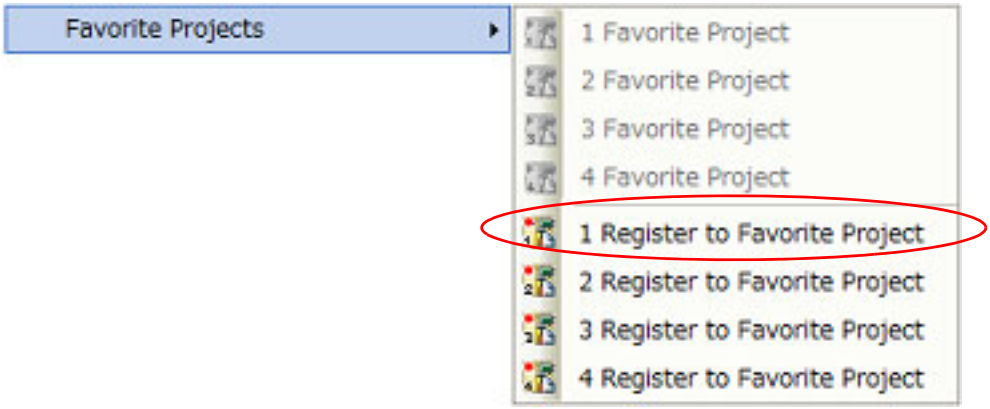
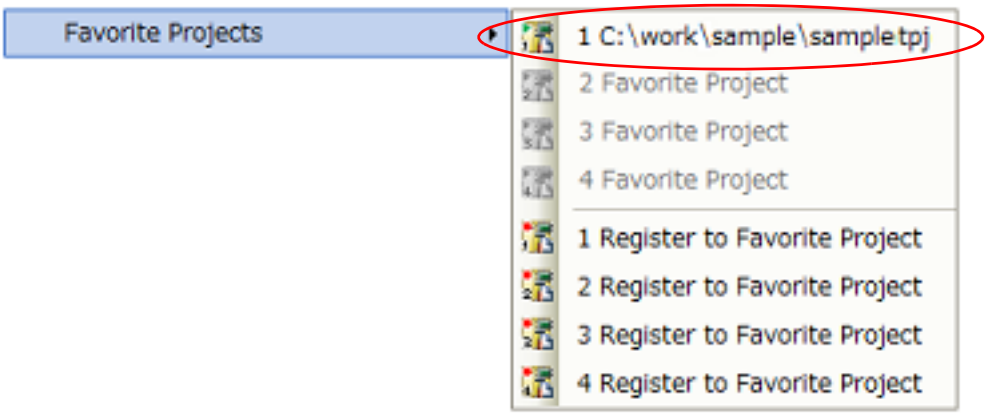


Figure 2.20 [Favorite Projects] Item (After Registering a Project)

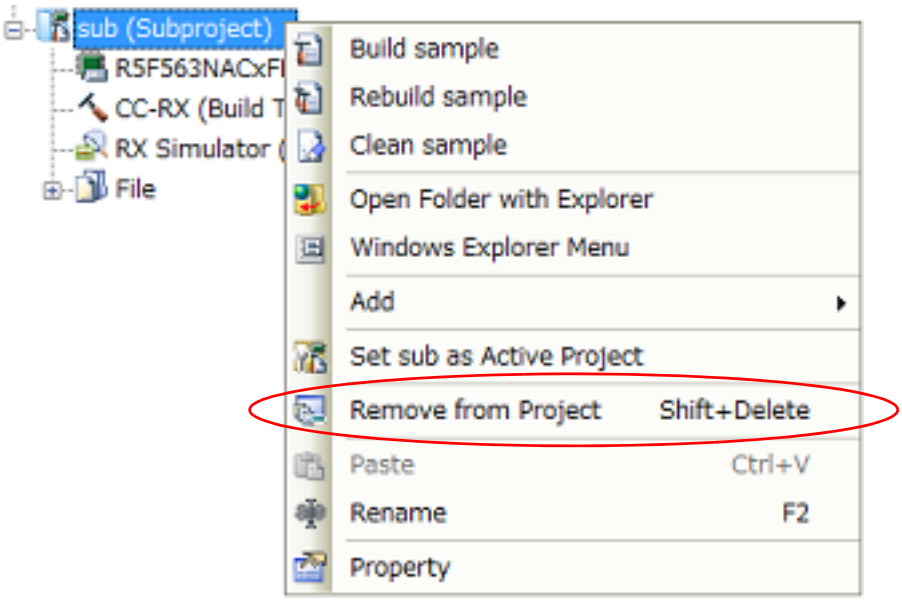


2.4.4 Remove a subproject from the project

To remove a subproject registered to a project from that project, select the Subproject node on the project tree, and select [Remove from Project] on the context menu.

In addition, the subproject file itself is not deleted from the file system.

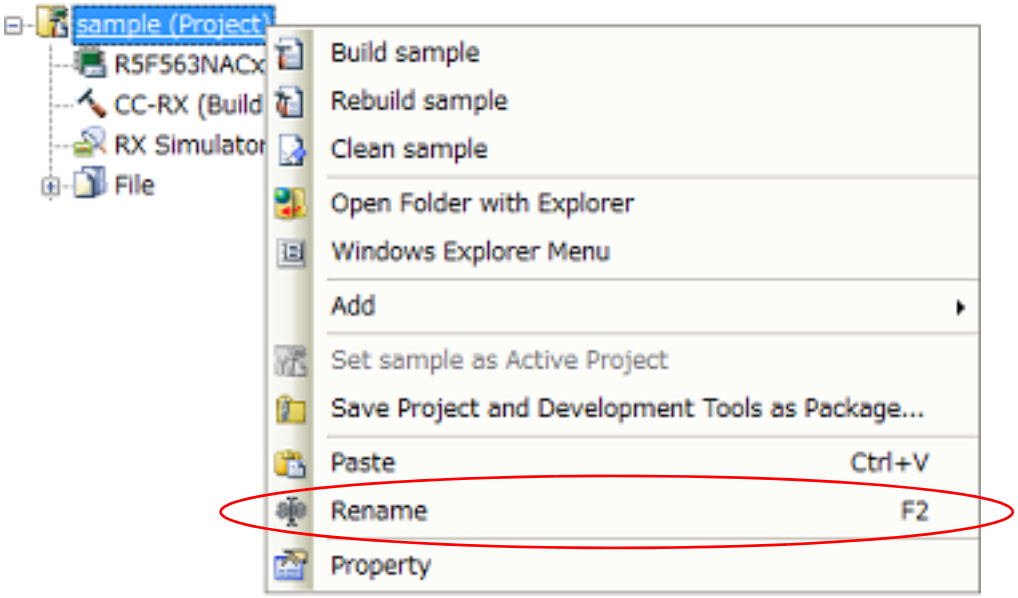
Figure 2.21 [Remove from Project] Item



2.4.5 Change the project name

You can change the name of the project (main project or subproject) on the project tree.
Select the Project node or Subproject node and select [Rename] on the context menu.

Figure 2.22 [Rename] Item (For a Project)

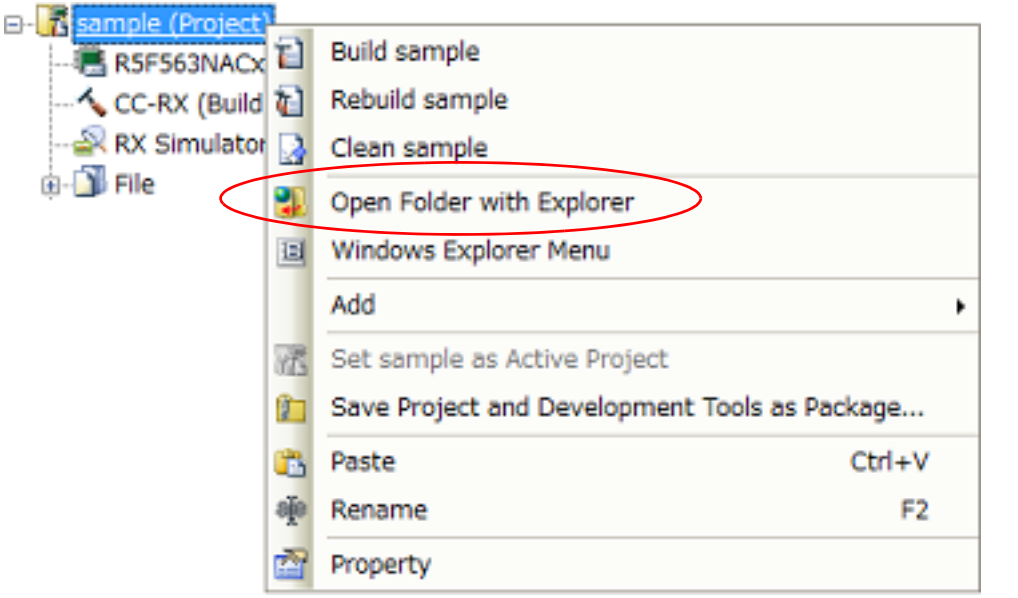


Remark After changing the project name, when you save the project, the actual name of the project file is also changed.

2.4.6 Open a project folder in Explorer

You can open the folder where the project file for a project (main project or subproject) is saved from the project tree in Explorer.
Select the Project node or Subproject node and select [Open Folder with Explorer] on the context menu.

Figure 2.23 [Open Folder with Explorer] Item (For a Project)



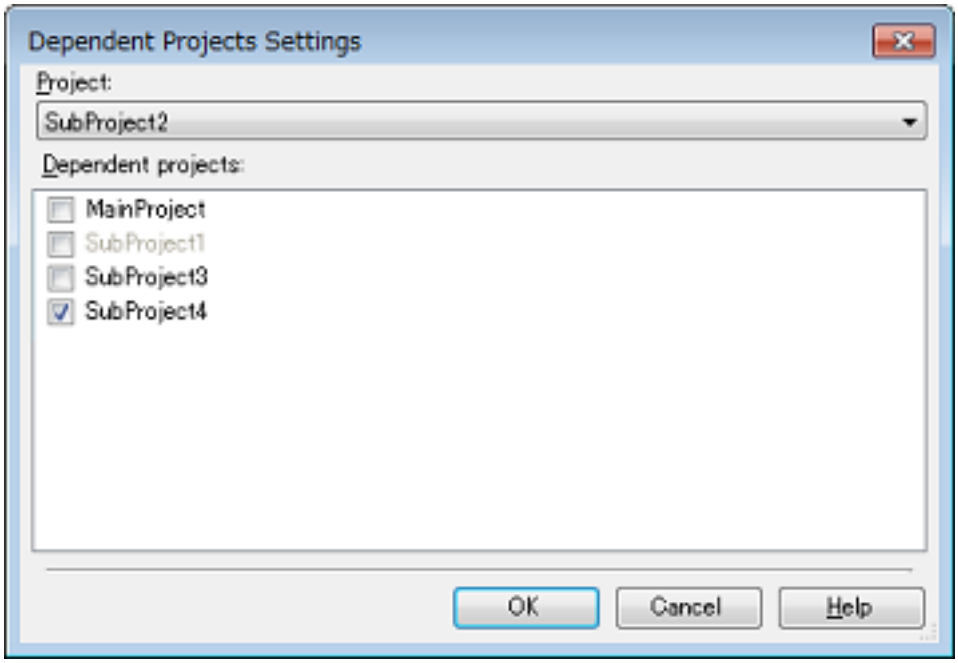
Remark When you select [Open Folder with Explorer] from a file's context menu, the folder the file is saved in is opened in Explorer.

2.4.7 Set the build order of projects

Builds are run in the order of subproject, main project, but when there are multiple subprojects added, the build order of subprojects is their display order on the project tree.
To change the display order of the subprojects on the project tree, drag the subproject to be moved and drop it on the desired location.

However, when dependent projects have been set, builds of those projects are run first.
Dependent projects are set in the Dependent Projects Settings dialog box which is opened by selecting the [Project] menu >> [Dependent Projects Settings...].

Figure 2.24 Dependent Projects Settings Dialog Box

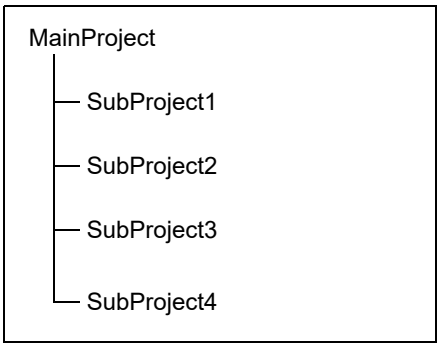


Select the dependent-source project in [Project], select a project to be referenced as the dependent project from a check box in [Dependent projects], and click the [OK] button.

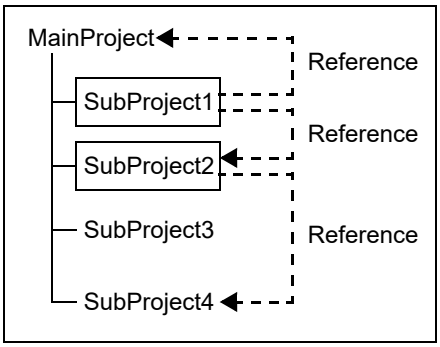
Remark 1. By default, an active project is selected in [Project].

Remark 2. A cyclic-reference project is displayed in gray in [Dependent projects].

Example 1. Builds are run in the following order when no dependent project is set.
SubProject1 -> SubProject2 -> SubProject3 -> SubProject4 -> MainProject



Example 2. Builds are run in the following order when MainProject and SubProject2 are set as dependent projects for SubProject1 and SubProject4 is set as the dependent project for SubProject2.
SubProject4 -> SubProject2 -> MainProject -> SubProject1 -> SubProject3



2.4.8 Open a CubeSuite+ project

A CubeSuite+ project whose build tool is lower than CC-RX V2.02.00 or lower than CC-RH V1.01.00 can also be opened from CS+ with the following method.

(1) Install the compiler package
Copy the compiler folder of the relevant version from the CubeSuite+ installation folder and paste it to the CS+ installation folder.

Copy from: *CubeSuite+ install folder*\CubeSuite+\CC-XX\Vx.xx
Paste to: *CS+ install folder*\CC\CC-XX

Caution This operation must be conducted with administrator privileges of Windows.

(2) Open the CubeSuite+ project
Select [Open Project...] from the [Project] menu with CS+, and then select a CubeSuite+ project file (see "(1) Open an existing project").

(3) Set the version of the compiler package
Select the target version in the [Using compiler package version] property of the build tool (see "2.5 Change the Build Tool Version").

Caution When the compiler package is installed with the above method, it cannot be uninstalled by the integrated uninstaller. Delete all copied folders from Explorer, etc. to uninstall the compiler package.

2.4.9 Convert a CA78K0R or CA78K0 project into a CC-RL project

A project for the CA78K0R or CA78K0 compiler created by using CS+ or CubeSuite+ can be converted into a project for the CC-RL compiler. Make use of the existing file configuration to create a new project for the CC-RL compiler.

When creating the project, it is not necessary to code build-tool dependent source, because the source files are converted for the CC-RL.

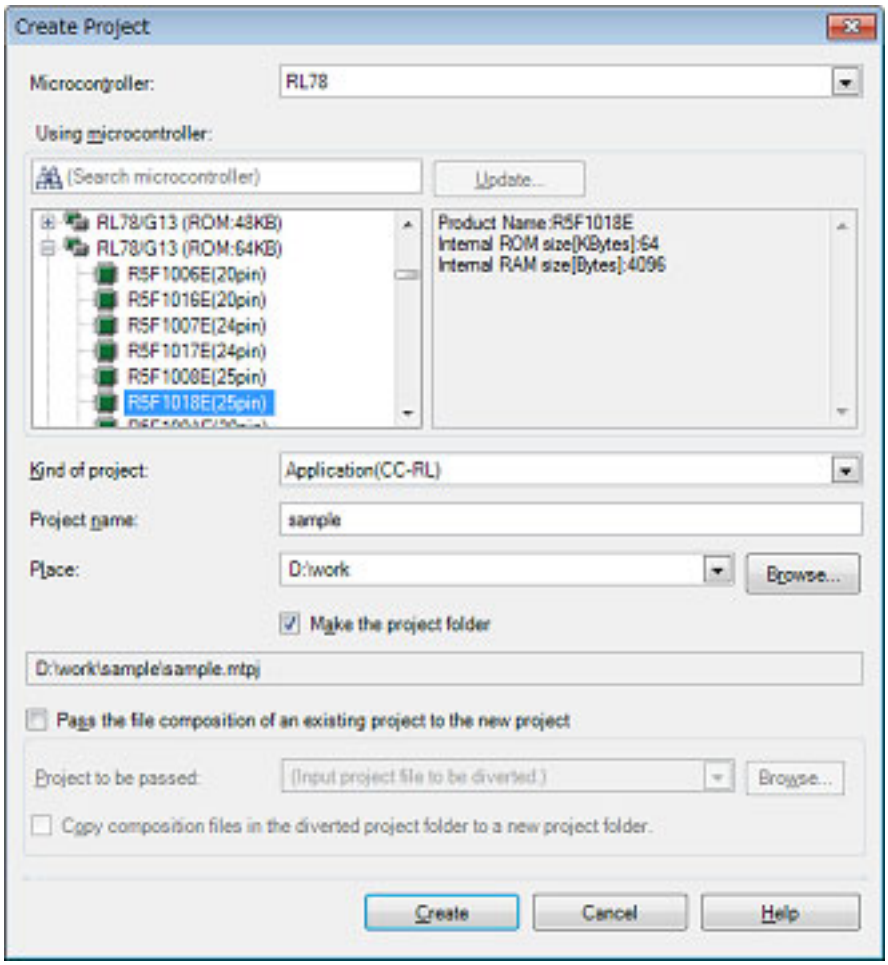
The properties of the build tool are also maintained, and converted for use with the CC-RL.

Caution 1. See "2.4.13 Convert a PM+ project into a CS+ project" about converting a PM+ project into a CS+ project.

Caution 2. In converting projects created by using CA78K0R or CA78K0 to projects for use with CC-RL, conversion will not proceed if the destination folder already contains files with the same names as those of the files to be output. Check that there are no such files in the destination folder before using the converter.

First, from the [Project] menu, select [Create New Project...], the Create Project dialog box will open.

Figure 2.25 Create Project Dialog Box



Set the items in the order below and click the [Create] button.

(1) Select the microcontroller type
Select "RL78" on [Microcontroller].

(2) Select the microcontroller
Select the microcontroller to use in the project on [Using microcontroller].

(3) Select the project type
Under [Kind of project], select "Empty Application(CC-RL)" or "Library(CC-RL)", in accordance with the source project.

(4) Specify the project name and location to create the project file
Specify the name of the project and the location to create the project file in [Project name] and [Place].
If you don't create a folder with the project name under the specified location, clear the [Make the project folder] check box.

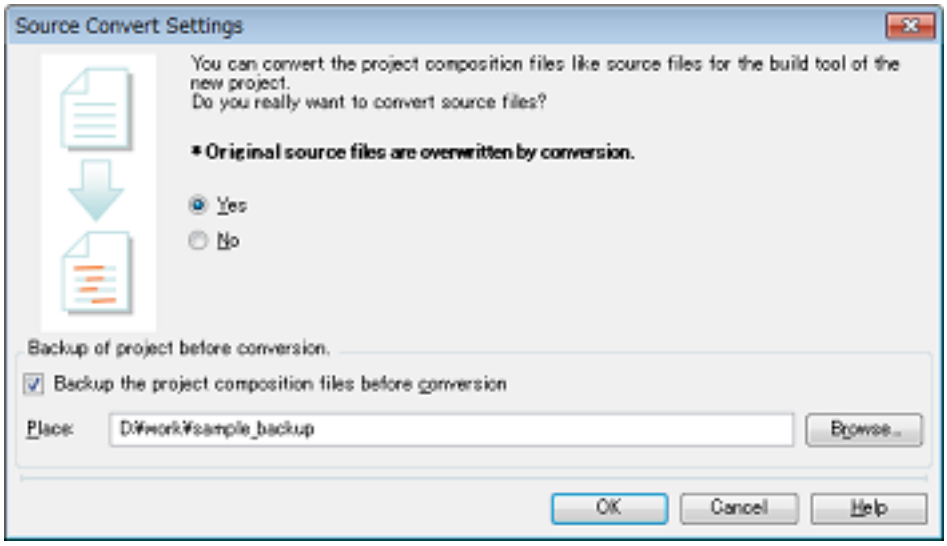
Remark It is recommended to specify the same folder as the diverted project for the location to create the project file.
If a folder different from the diverted project is specified, there is a possibility that path determination fails and a build error is occurred.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(5) Specify the reuse of a CA78K0R or CA78K0 project
Check [Pass the file composition of an existing project to the new project] and specify the location of the project filename to reuse in [Project to be passed].

Click the [Create] button. The Source Convert Setting dialog box [CC-RL] appears.

Figure 2.26 Source Convert Setting Dialog Box



Select [Yes] to perform conversion on the source files.
To save a backup of the entire project (including source files), select the [Backup the project composition files before conversion] check box, and specify a location in which to save the backup.
Click the [OK] button to convert the source files and create the CC-RL project.

Remark The result that a CC-RL project is created by reusing a CA78K0R or CA78K0 project (the versions of the IDE and compiler package, and conversion information of options) is output to a file as project divert information.

- The project divert information file name is "ProjectDivertInformation*n*.txt" (*n* = 2 to 100).
  n is not added normally. It is added if the file to be created already exist.
- The project divert information file is output for each created project (subproject).
- The project divert information file is output to the project folder of the project (subproject).
- The project divert information file is added to the File node of the project (subproject) on the Project Tree panel.

The output format of the project divert information file is shown below.

```
(1)Time and date on which a project was created

(2)<CS+ IDE(Integrated Development Environment Framework) version>
    CS+ IDE: Version of IDE of CA78K0R or CA78K0 project -> Version of IDE
of CC-RL project

(3)<Compiler package version>
    CA78K0R: Version -> CC-RL: Version

(4)<Options not to use(Build mode)>
    Command name(Tab name of build tool property)
     Option
        :

(5)<Options to change(Build mode)>
    Command name(Tab name of build tool property)
     Option of CA78K0R project -> Option of CC-RL project
        :
```

Number	Description
(1)	Time and date on which a project was created The time and date on which a CC-RL project was created by reusing a CA78K0R or CA78K0 project is output using format "*dddd*, *mmmm dd*, *yyyy hh*:*mm*:*ss AM*/*PM*".
(2)	CS+ IDE(Integrated Development Environment Framework) version The version of IDE of a CA78K0R or CA78K0 project and the version of IDE of a CC-RL project are output.
(3)	Compiler package version[Note] The compiler package used in a CA78K0R project and the version, and the compiler package used in a CC-RL project and the version are output. The version of CC-RL is the latest version in the compiler packages which are installed in the CS+ environment.

(4)	Options not to use(*Build mode*)[Note]
	If an option that has been set in a CA78K0R project and is not used in a CC-RL project exists, the information is output for each build mode in the format shown below.
	`Command name(Tab name of build tool property)`
	`Option`
	`:`
	- This item is output only when the corresponding option exists.
	- CA78K0R options are converted into CC-RL options which have the same function. The option that has the same function and different name is not output.
	- Build modes are output in the following order: "DefaultBuild", user-created build mode ("DefaultBuild" is the build mode that CS+ provides by default).

Number	Description

(5)	Options to change(*Build mode*)[Note]
	If an option that has been set in a CA78K0R project and has been changed to use in a CC-RL project exists (in the case that the function is same as CA78K0R, but the parameter does not exist in CC-RL, so it is changed to other one, and the like), the information is output for each build mode in the format shown below.
	
	`Command name(Tab name of build tool property)`
	`Option of CA78K0R project -> Option of CC-RL project`
	:
	- This item is output only when the corresponding option exists.
	- CA78K0R options are converted into CC-RL options which have the same function. The option that has the same function and different name is not output.
	- Build modes are output in the following order: "DefaultBuild", user-created build mode ("DefaultBuild" is the build mode that CS+ provides by default).

Note This item is not output when the source project is a CA78K0 project.

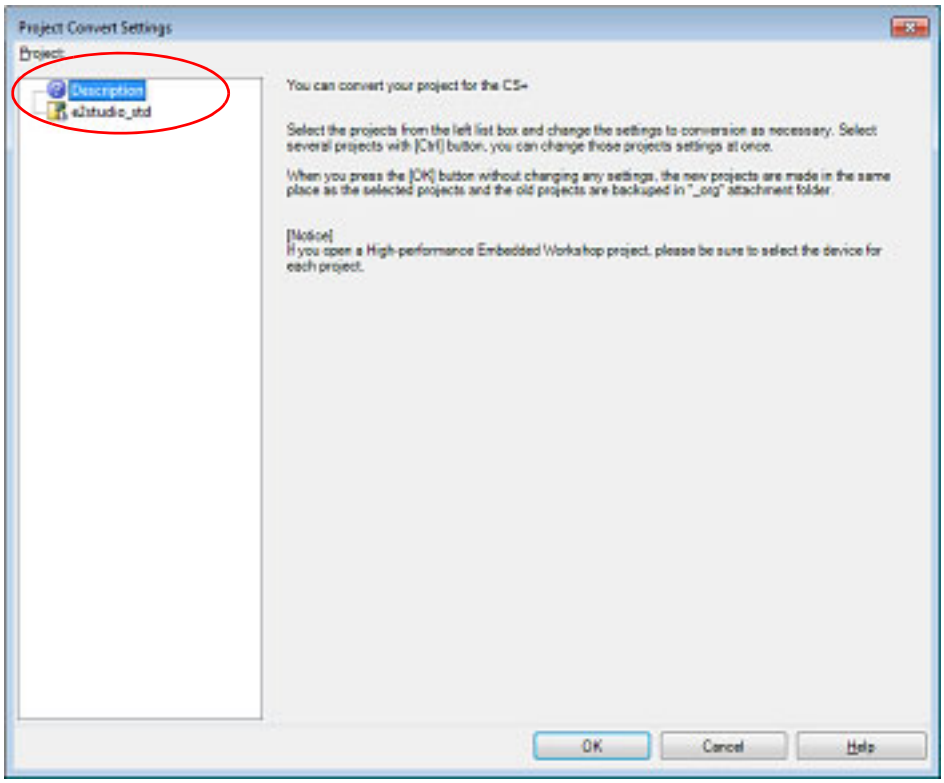
2.4.10 Convert an e^2 studio project into a CS+ project [RX][RL78]

You can convert an e^2 studio project for RX or RL78 into a CS+ project. Select [Open Project...] from the [Project] menu with CS+, and then select a project file (*.rcpc).

Remark The project file (*.rcpc) for e^2 studio is output by using the export function of e^2 studio.

(1) Select the project for conversion settings
The Project Convert Setting dialog box will open.

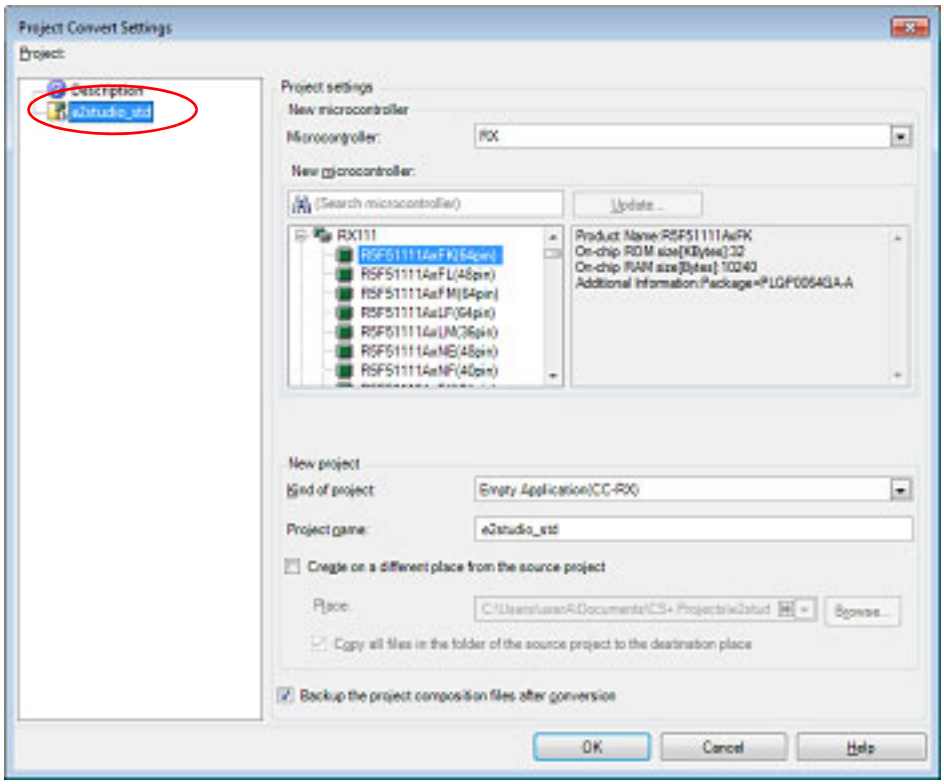
Figure 2.27 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(2) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.28 Project Convert Setting Dialog Box (When Project Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Remark 1. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.

Remark 2. See "Project Convert Setting dialog box" for details about each setting item.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(3) Convert the CS+ project
The e^2 studio project is converted to the CS+ project.

An e^2 studio project is converted to a CS+ project according to the rule below.

- An e^2 studio project is converted to a project with the same name as the original project. After conversion, the project file name will be "*project name*.mtpj".

Remark 1. The target for conversion is the file structure information of the e^2 studio project file, configurations, build options, file exclusion, and link order information.
However, if a different build tool is used, build options (other than include paths and defined macros) are not converted. In addition, if extensions of object files are different, the link order is not converted.

Remark 2. When build options have been added from the version of the target build tools in the e^2 studio project to the version of the build tools after conversion, the added options are set to the build tools' default values after conversion.

Remark 3. The project files after conversion are created in the folder specified in the Project Convert Setting dialog box.

Remark 4. Configurations of the e^2 studio project are replaced with build modes of CS+ after conversion. Any characters that are not allowed in a CS+ folder name, however (\, /, :, *, ?, ", <, >, |) will be replaced by underscores ("_").
When the build mode names have 110 or more characters, they are rounded to 110 characters.
If there is another build mode with the same name after conversion, then the "_*n*_" (*n* = 1, 2, ...) will be appended to the build mode name.

Remark 5. If nesting is to a depth of 20 or more categories, the 20th stage and deeper stages are ignored. Files in such categories are added to the 20th category.
When the category names have 200 or more characters, they are rounded to 200 characters.

Remark 6. [RX] The following e^2 studio and build-tool versions are supported for conversion: e^2 studio V.2.0.0.16 or higher and CC-RX V1.00.00 or higher. The latest version of the compiler package installed on your computer is set as the version of your build tool.

Remark 7. [RX] The settings of the properties of the build tool of the original project are converted, then the properties of the build tool are changed to those for the specified microcontroller. iodefine.h and the start-up source files of the specified microcontroller are copied as sample source files. For the start-up files, create a folder named "<*device name after change*>.*nnn*" (*nnn* = 000, 001, …) and copy them to that folder. If you have selected a microcontroller that has a different ROM size from that set in the source project, the differences between the ROM sizes may not be reflected in the value of the [Section start address] property on the [Link Options] tabbed page. Check the value of the [Section start address] property.

Remark 8. [RL78] The following e^2 studio and build-tool versions are supported for conversion: e^2 studio V.4.0.0.00 or higher and CC-RL V1.00.00 or higher. The latest version of the compiler package installed on your computer is set as the version of your build tool.

Remark 9. The conversion result is output to a file as project convert information.

- The project convert information file name is "ProjectConvertInformation_*projectname*.txt".
- The project convert information file is output to the project folder.
- The project convert information file is displayed under the File node on the Project Tree panel.

The output format of the project convert information file is shown below.

```
(1)Time and date on which a project was converted

(2)<IDE version>
    CS+ IDE: Version [Date]

(3)<Compiler package version>
    Compiler package used in e2 studio project: Version -> Compiler pack-
age used in CS+ project: Version

(4)<Options not to use(Build mode)>
    Tool name of e2 studio (Tab name of build tool property in CS+)
     Option
        :

(5)<Options to change(Build mode)>
    Tool name of e2 studio (Tab name of build tool property in CS+)
     Option of e2 studio project -> Option of CS+ project
        :
```

Number	Description
(1)	Time and date on which a project was converted The time and date on which an e^2 studio project was converted into a CS+ project is output using format "*dddd*, *mmmm dd*, *yyyy hh*:*mm*:*ss AM*/*PM*".
(2)	IDE version and date The version of CS+ and the date are output.
(3)	Compiler package version The compiler package used in an e^2 studio project and the version, and the compiler package used in a CS+ project and the version are output. The version of the compiler package used in a CS+ projects is the latest version in the compiler packages which are installed in the CS+ environment.

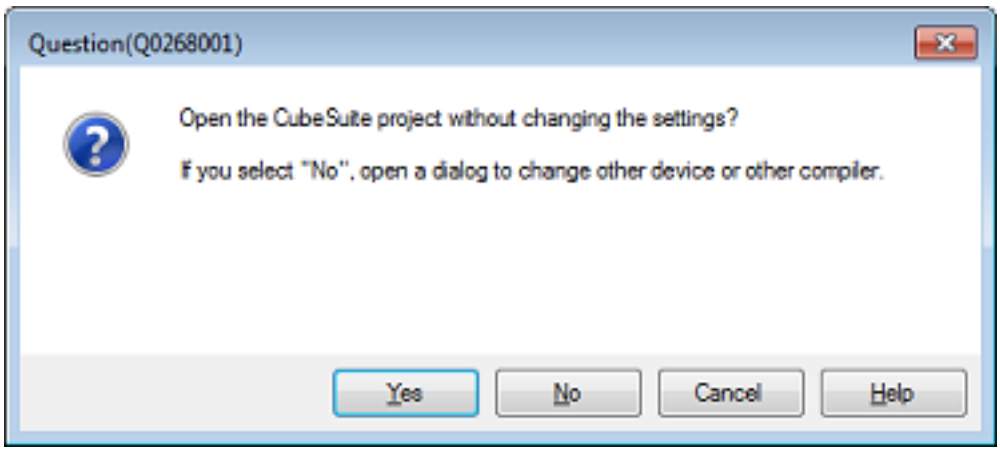
Number	Description
(4)	Options not to use(*Build mode*) If an option that has been set in an e^2 studio project and is not used in a CS+ project (option that has been deleted by upgrading the compiler package, and e^2 studio option) exists, the information is output for each build mode in the format shown below. *Tool name(Tab name of build tool property in CS+)* *Option* : - Build modes are output in the following order: "Debug Build", "Release Build", user-created build mode ("Debug Build" and "Release Build" are the build modes that e^2 studio provides by default. They differ depending on whether the debug information output option is set or not.). - "Other Options" is output if *Tab name of build tool property in CS+* for *Tool name* does not exist.
(5)	Options to change(*Build mode*) If an option that has been set in an e^2 studio project and has been changed to use in a CS+ project (option that the range the parameter can be specified has been changed, and option that has been changed by upgrading the compiler package) exists, the information is output for each build mode in the format shown below. *Tool name(Tab name of build tool property in CS+)* *Option of e^2 studio project -> Option of CS+ project* : - Build modes are output in the following order: "Debug Build", "Release Build", user-created build mode ("Debug Build" and "Release Build" are the build modes that e^2 studio provides by default. They differ depending on whether the debug information output option is set or not.). - "Other Options" is output if *Tab name of build tool property in CS+* for *Tool name* does not exist.

2.4.11 Convert a CubeSuite project into a CS+ project

You can convert a CubeSuite project into a CS+ project. Select [Open Project...] from the [Project] menu with CS+, and then select a project file (*.cspj).

(1) Select the settings for conversion
When a CubeSuite project file is selected, the following message dialog box will open.

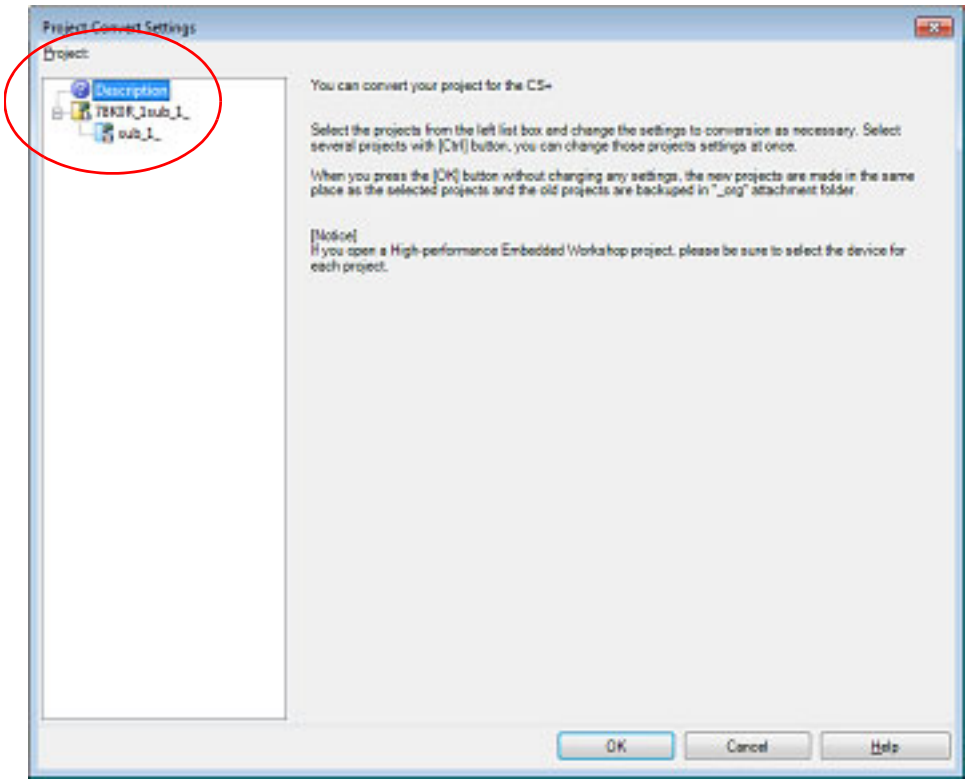
Figure 2.29 Message Dialog Box



If you select the [Yes] button, the CubeSuite project settings are left unchanged, and the conversion to a CS+ project is carried out.
To change the microcontroller or project name, click the [No] button (continue to (2)).

(2) Select the project for conversion settings
The Project Convert Setting dialog box will open.

Figure 2.30 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(3) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.31 Project Convert Setting Dialog Box (When Main Project Is Selected)

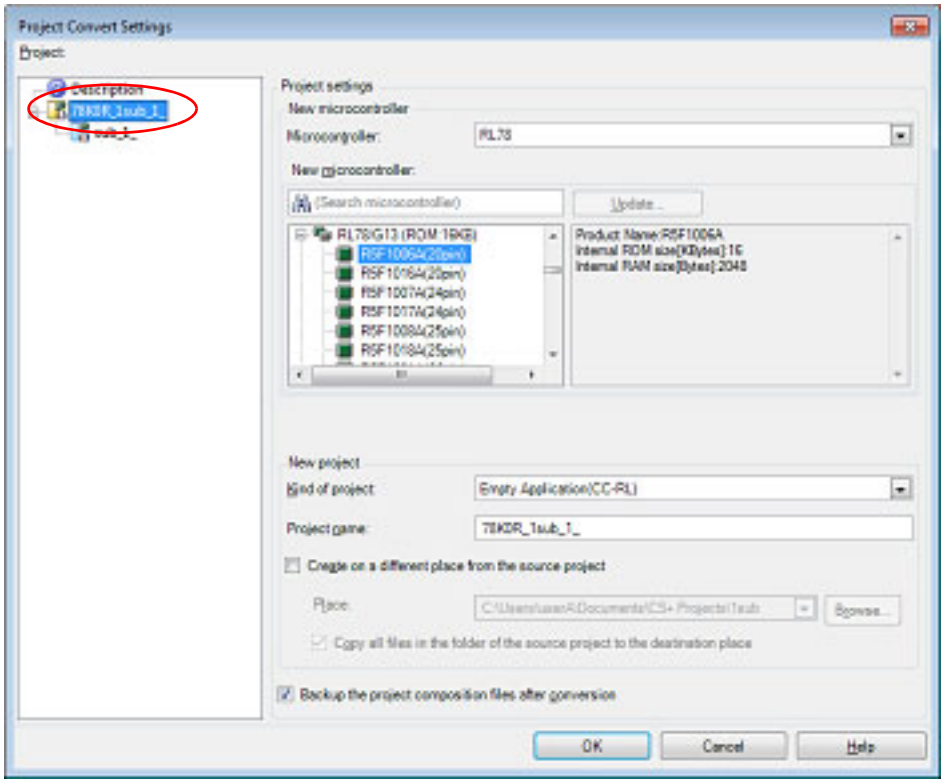
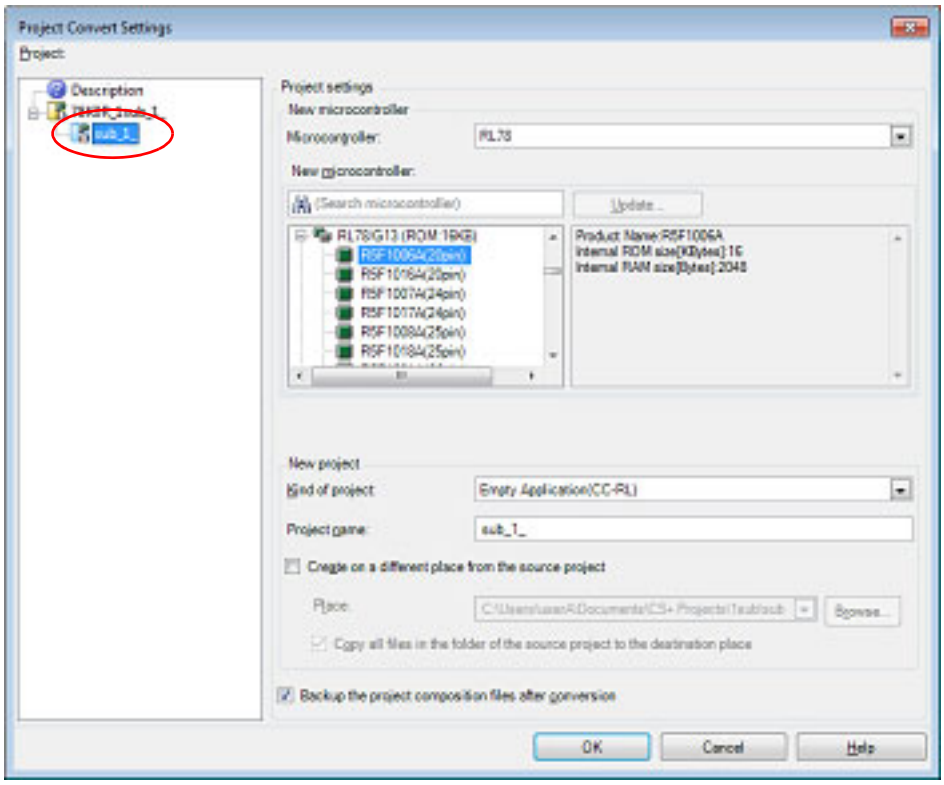


Figure 2.32 Project Convert Setting Dialog Box (When Subproject Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Remark 1. When any subproject does not exist in a CubeSuite project, a subproject is not displayed.

Remark 2. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.

Remark 3. See "Project Convert Setting dialog box" for details about each setting item.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(4) Convert the CS+ project
The CubeSuite project is converted to the CS+ project.

A CubeSuite project is converted to a CS+ project according to the rule below.

- A CubeSuite project is converted to a project with the same name as the original project. After conversion, the project file name will be "*project name*.mtpj".

Remark 1. The project file after conversion is created in the folder the CubeSuite project file was placed in. If there is already a project file with the same name, "*_number_*" (*number*: 1, 2, ...) will be added to the file name.

Remark 2. The build mode and build options information is not the target for conversion, if the build tool is different from the CubeSuite project file.

2.4.12 Convert a HEW project into a CS+ project

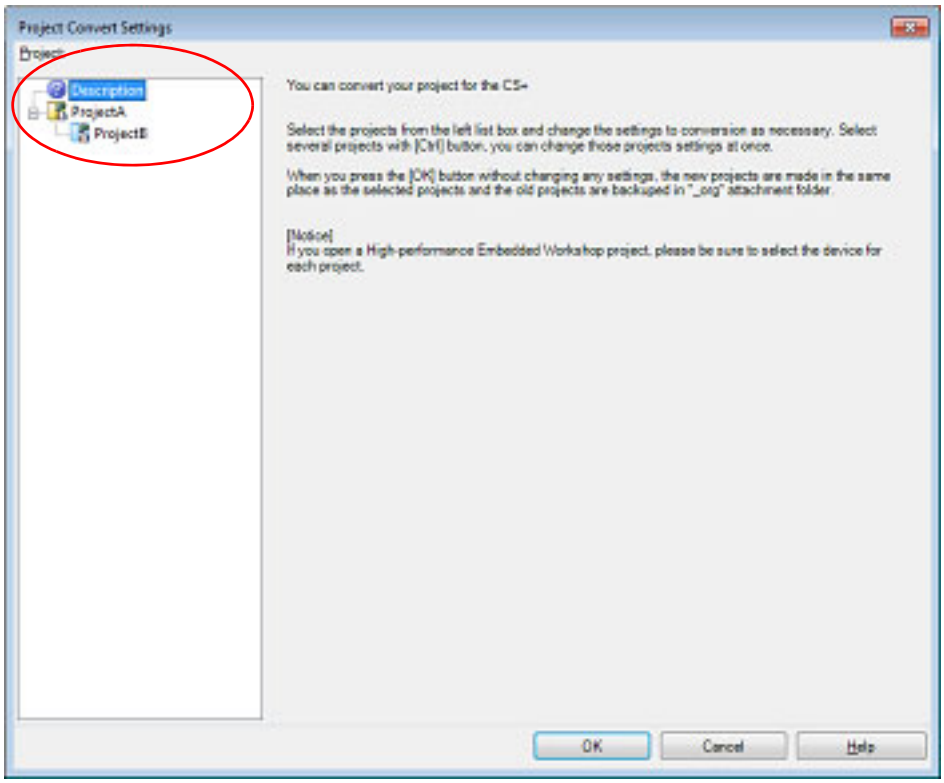
You can convert a High-performance Embedded Workshop (hereafter abbreviated "HEW") project into a CS+ project. Select [Open Project...] from the [Project] menu with CS+, and then select a workspace file (*.hws) or project file (*.hwp).

- When opening from a HEW workspace file (*.hws)
- When opening from a HEW project file (*.hwp)

(1) When opening from a HEW workspace file (*.hws)

(a) Select the project for conversion settings
When a HEW workspace file is selected, the Project Convert Setting dialog box will open.

Figure 2.33 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(b) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.34 Project Convert Setting Dialog Box (When Main Project Is Selected)

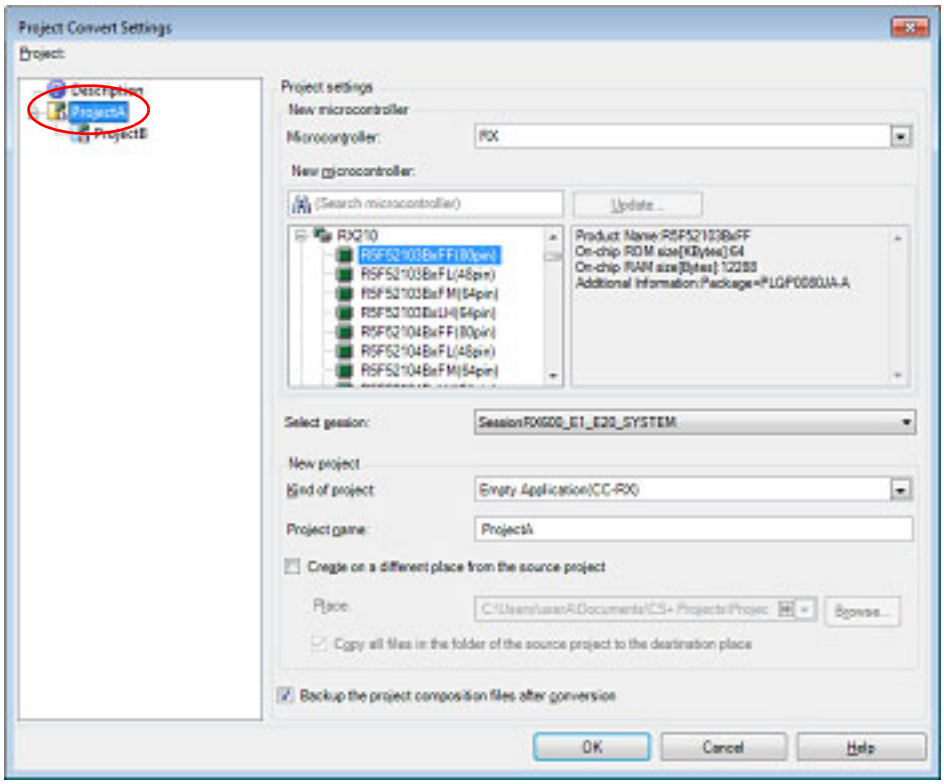
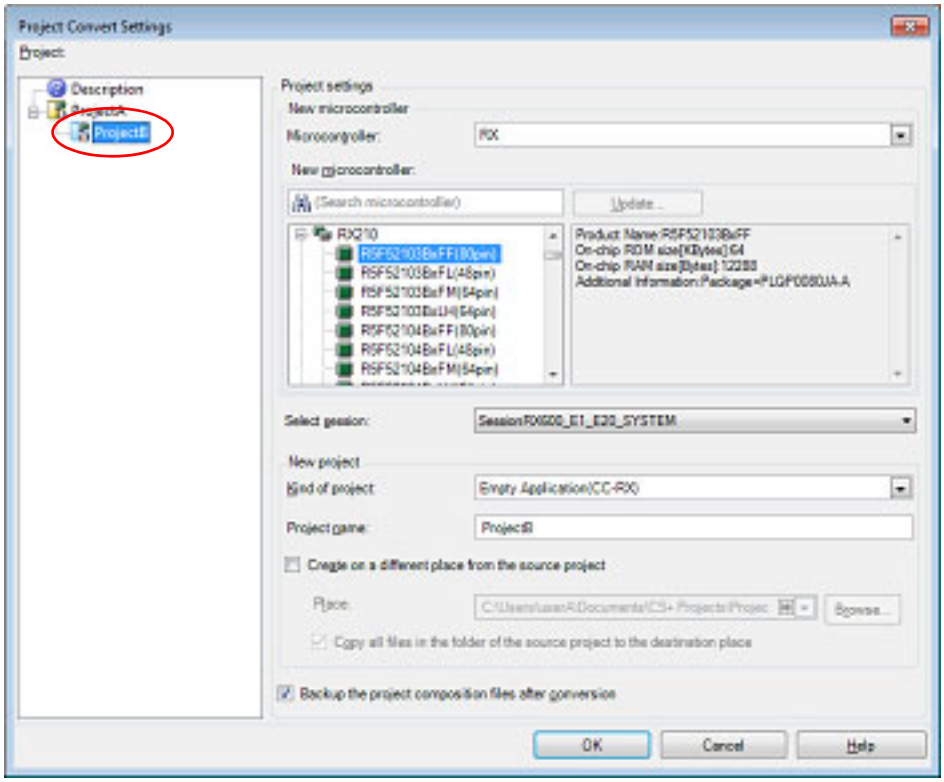


Figure 2.35 Project Convert Setting Dialog Box (When Subproject Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Caution 1. Confirm that the microcontroller of each project is selected before clicking the [OK] button.

Caution 2. The CPU option and section (start) option are not changed in accordance with the selected device. If the device that differs from the HEW project is selected, confirm (change) the CPU option and section (start) option after conversion.

Caution 3. The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

Remark 1. When only one project exists in a HEW project, a subproject is not displayed.

Remark 2. [Select session] is displayed only when multiple sessions exist in a project.

Remark 3. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.

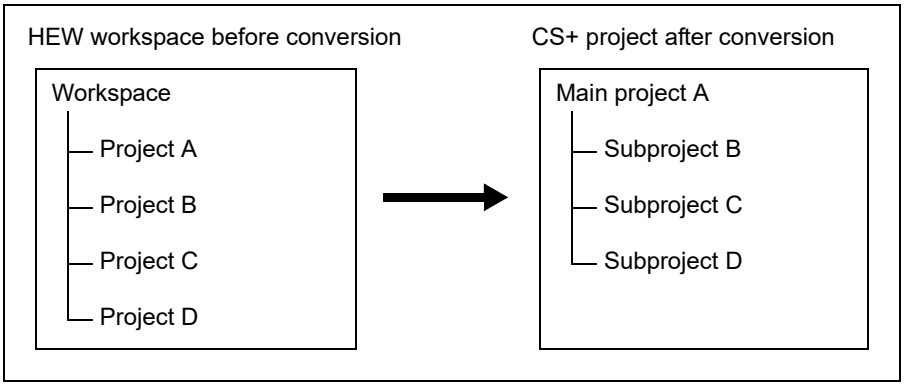
Remark 4. See "Project Convert Setting dialog box" for details about each setting item.

(c) Convert the CS+ project
The HEW project is converted to the CS+ project.

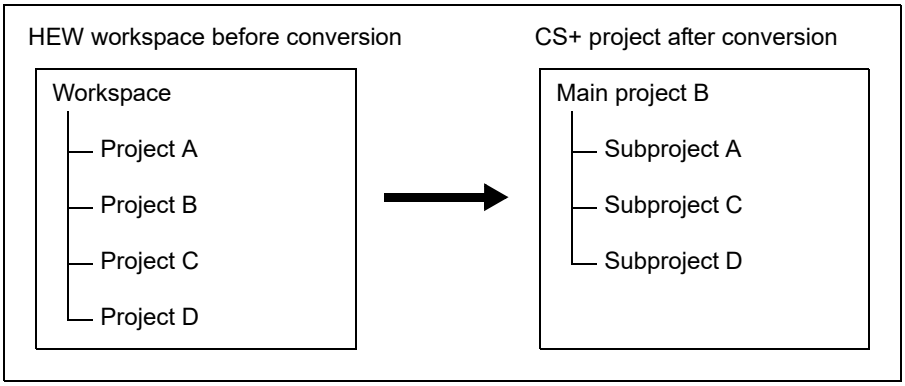
When opening from a HEW workspace file, the project is converted in accordance with the following rules.

- The HEW workspace is not converted.
- A HEW project will be converted into a main project or subproject, depending on the inter-project dependencies described in the workspace file.
  - If there are no inter-project dependencies, then the projects will be added to the project tree in the order they appear in the workspace file.
  - If there are inter-project dependencies, then the first project to appear that is not dependent on any other projects will be the main project.
    Subprojects are built in the order that they appear in the project tree. Thus, projects are added to the project tree in the reverse of the dependency order.

Example 1. If projects A, B, C, D have no inter-dependencies:



Example 2. If project C depends on project A, and projects B and D have no dependencies:



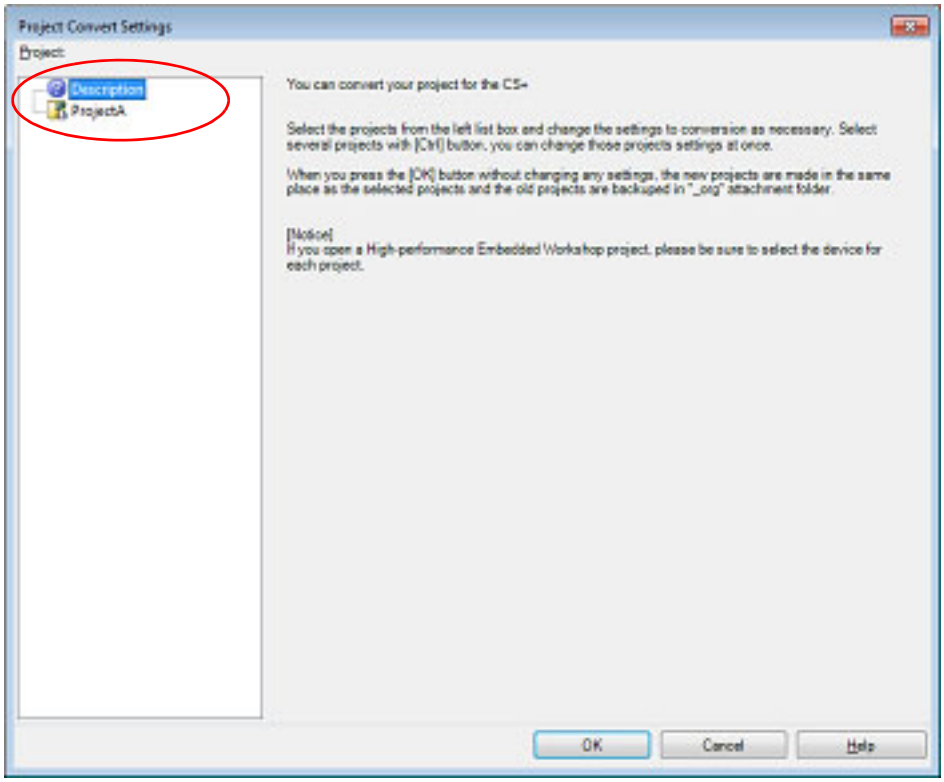
- HEW's placeholders which are used in build options are replaced with CS+'s placeholders. However, the converted placeholder may not indicate the correct information because the concepts differ between HEW and CS+. Change the build options, if necessary.

- After conversion, the main project file name will be "*project name*.mtpj" and the subproject file name will be "*project name*.mtsp".
- After conversion, the main project will be the active project.

(2) When opening from a HEW project file (*.hwp)

(a) Select the project for conversion settings
When a HEW project file is selected, the Project Convert Setting dialog box will open.

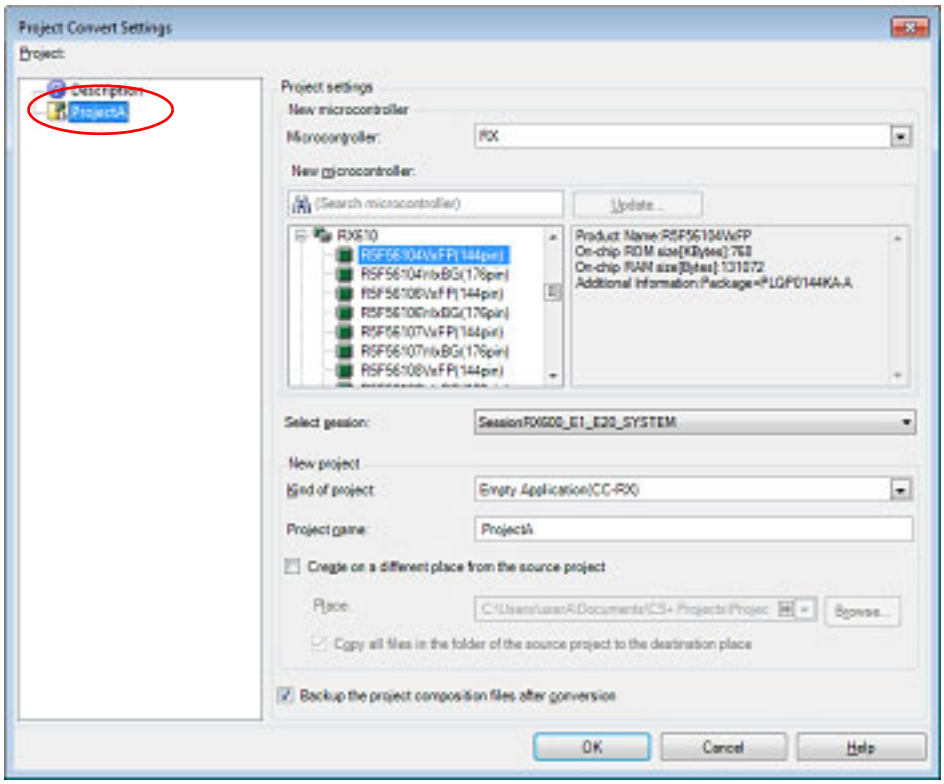
Figure 2.36 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(b) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.37 Project Convert Setting Dialog Box (When Project Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Caution 1. Confirm that the microcontroller is selected before clicking the [OK] button.

Caution 2. The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

Remark 1. [Select session] is displayed only when multiple sessions exist in a project.

Remark 2. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.

Remark 3. See "Project Convert Setting dialog box" for details about each setting item.

(c) Convert the CS+ project
The HEW project is converted to the CS+ project.

When opening from a HEW project file, the project is converted in accordance with the following rules.

- A HEW project is converted to a project with the same name as the original project. After conversion, the project file name will be "project name.mtpj".

Remark 1. When conversion is performed from the HEW project for RX into the CS+ project for RX and from the HEW project for SuperH into the CS+ project for RH850, the target for conversion is the file structure information of the HEW project file, configurations, build options (only a part of options if the HEW project for SuperH is converted into the CS+ project for RH850), file exclusion, and link order information.

- When build options have been added from the version of the target build tools in the HEW project to the version of the build tools after conversion, the added options are set to the build tools' default values after conversion.
- Configurations of the HEW project are replaced with build modes of CS+ after conversion. Any characters that are not allowed in a CS+ folder name, however (\, /, :, *, ?, ", <, >, |) will be replaced by underscores ("_").
  The build mode selected by default is determined by the project temporary file (project-name.tps) corresponding to the project. However, if there is no project temporary file, the build mode will be “DefaultBuild”.
  If the build target file changed by Configurations(,etc.) in the HEW project files, these projects cannot be converted.

- When the link order has been specified in the HEW project, that setting is maintained. [RX]
  Since the available settings for the link order differ with the build mode, the order is converted according to the build mode.
  When the link order has not been specified in the HEW project, linkage proceeds in alphabetical order.
- When files are classified into folders in the tree view of a HEW project, the folders are replaced with the CS+ category after the project has been converted.
  If nesting is to a depth of 20 or more folders (categories), the 20th stage and deeper stages are ignored. Files in such folders are added to the 20th category.

Remark 2. Except when conversion is performed from the HEW project for RX into the CS+ project for RX and from the HEW project for SuperH into the CS+ project for RH850, the target for conversion is only the file structure information of the HEW project file.

Remark 3. The project files after conversion are created in the folder specified in the Project Convert Setting dialog box.

Remark 4. Conversion of projects that were created in HEW V.4.07 or a higher version is supported.
The supported versions of the build tools of HEW are as shown below.

- SHC/C++ Ver.7.0 or higher
- H8C/C++ Ver.6.0.00 or higher
- NC30 V.5.20 Release 1 or higher
- NC308 V.5.20 Release 1 or higher
- NC100 V.1.01 Release 00 or higher
- CCRX V.1.00 Release 00 or higher

Remark 5. The following projects cannot be converted.

- The project contains no tps file for use in setting up HEW (the tps file is automatically created when the project is opened through HEW).
  To avoid this problem, you should open the project through HEW once before starting conversion.
- The project contains multiple cfg files, each of which is used to set up a real-time OS from Renesas Electronics Corp.

Remark 6. The target for conversion is only the HEW project file of the Renesas Electronics compiler.

Remark 7. Converting a HEW project to make it compatible with CS+ succeeds but building of the project leads to an error when any of the following conditions is satisfied.

- Placeholder $(TCINSTALL) is used in the project.
  (TCINSTALL) remains in the project even after conversion but CS+ does not recognize $(TCINSTALL). Placeholder $(TCINSTALL) that has been used as a parameter for [Options] in HEW is simply passed to CS+ and may cause an unintended result (e.g. an error) upon building of the project. For this reason, you should manually change $(TCINSTALL) after converting the project.
- Placeholder $(WORKSPDIR) is used in the project.
  If you select a HEW project file (with extension hwp) in CS+, this is automatically converted to "%ProjectDir%\.." (the directory above the project directory). An error may occur during building of the project if the workspace does not exist in the directory indicated by "%ProjectDir%\..". For this reason, you should manually change "%ProjectDir%\.." after converting the project.
- A custom build phase is used in the project.
  Since all custom phases are deleted upon conversion, an error may occur during building of a project that involved a file output created for a custom build phase in HEW. After converting the project, register the custom build-phase command with the CS+ as a command to be executed before or after each phase as required.
- A custom placeholder is used in the project.
  Custom placeholders are not converted because CS+ does not recognize them. Any custom placeholder that has been used as a parameter for [Options] in HEW is simply passed to the CS+ and may cause an unintended result (e.g. an error) upon building of the project. For this reason, you should manually change the custom placeholders after converting the project.

Remark 8. Other cautions

- $(FILEDIR) is converted to %FileDir%.
  Leaving %FileDir% as it is when the path name is edited in the Path Edit dialog box will lead to the fol-

lowing error: The specified path contains a non-existent folder. (W0205012)
Edit the path names and replace %FileDir% with another placeholder or directory name.

- $(WINDIR) is converted to %WinDir%.
- The order in which folders are displayed in CS+ may differ from that in HEW.
- If a HEW project for which downloaded files have been specified is loaded into CS+, CS+ will show these files as the second and subsequent items in the list of downloaded files for each debug tool.
- The compiler option -output=src is converted to .output=obj (default).
- If you load a library project that has been linked to the standard library into CS+, the linkage setting will be discarded (this is indicated in the log information that is output as a result of loading the project).
- If [Use an existing library file] has been selected for the library generator in HEW, the setting is changed to [Do not add a library file] in CS+. For this reason, linking with the specified library will not proceed (this is indicated in the log information that is output as a result of loading the project).
- Option settings that were made on the [Toolchain Option] tabbed page of HEW are not converted but discarded (i.e. they are not moved across to CS+).
- If a sub-command file has been selected for the linkage editor in HEW, the [Use external subcommand file] setting is discarded when the project is loaded into CS+. The linkage editor options will have their default settings.
- Any files specified with the -library, -input, or -binary option will not be listed in the Link Order dialog box. The result is that the order of linkage for these files will not be selectable.
- RTOS configuration files will not be displayed under the [Configuration file] category node after the project is loaded into CS+.
- RTOS option settings that were made in HEW are discarded. RTOS options will have their default settings in CS+.
- The build mode for RTOS projects will be "DefaultBuild" after the project is loaded into CS+. You will need to change the build mode as required.
- The order of linkage of the assembly output files (ritbl.obj) for an RTOS project will differ from that in HEW.

Remark 9. The conversion result is output to a file as project convert information.

- The project convert information file name is "ProjectConvertInformation_*projectname*.txt".
- The project convert information file is output for each converted project (subproject).
- The project convert information file is output to the project folder of the project (subproject).
- The project convert information file is displayed the File node of the project (subproject) on the Project Tree panel.

The output format of the project convert information file is shown below.

```
(1)<Options not to use(Build mode)>
    Tool name of HEW (Tab name of build tool property in CS+)
     Option
        :
    Tool name of HEW (Tab name of build tool property in CS+:file name)
     Option
        :

(2)<Options to change(Build mode)>
    Tool name of HEW (Tab name of build tool property in CS+)

     Option of HEW project -> Option of CS+ project
        :
    Tool name of HEW (Tab name of build tool property in CS+:file name)
     Option of HEW project -> Option of CS+ project
        :
```

Number	Description
(1)	Options not to use(*Build mode*) If an option that has been set in a HEW project and is not used in a CS+ project (option that has been deleted by upgrading the compiler package, and HEW option) exists, the information is output for each build mode in the format shown below. *Tool name(Tab name of build tool property in CS+)* *Option* : The information for individual compile options is output in the format shown below. *Tool name(Tab name of build tool property in CS+:file name)* *Option* : - Build modes are output in the following order: "Debug Build", "Release Build", user-created build mode ("Debug Build" and "Release Build" are the build modes that HEW provides by default. They differ depending on whether the debug information output option is set or not.). - "Other Options" is output if *Tab name of build tool property in CS+* for *Tool name* does not exist.
(2)	Options to change(*Build mode*) If an option that has been set in a HEW project and has been changed to use in a CS+ project (option that the range the parameter can be specified has been changed, and option that has been changed by upgrading the compiler package) exists, the information is output for each build mode in the format shown below. *Tool name(Tab name of build tool property in CS+)* *Option of HEW project -> Option of CS+ project* : The information for individual compile options is output in the format shown below. *Tool name(Tab name of build tool property in CS+:file name)* *Option of HEW project -> Option of CS+ project* : - Build modes are output in the following order: "Debug Build", "Release Build", user-created build mode ("Debug Build" and "Release Build" are the build modes that HEW provides by default. They differ depending on whether the debug information output option is set or not.). - "Other Options" is output if *Tab name of build tool property in CS+* for *Tool name* does not exist.

2.4.13 Convert a PM+ project into a CS+ project

You can convert a PM+ project into a CS+ project. Select [Open Project...] from the [Project] menu with CS+, and then select a workspace file (*.prw) or project file (*.prj).

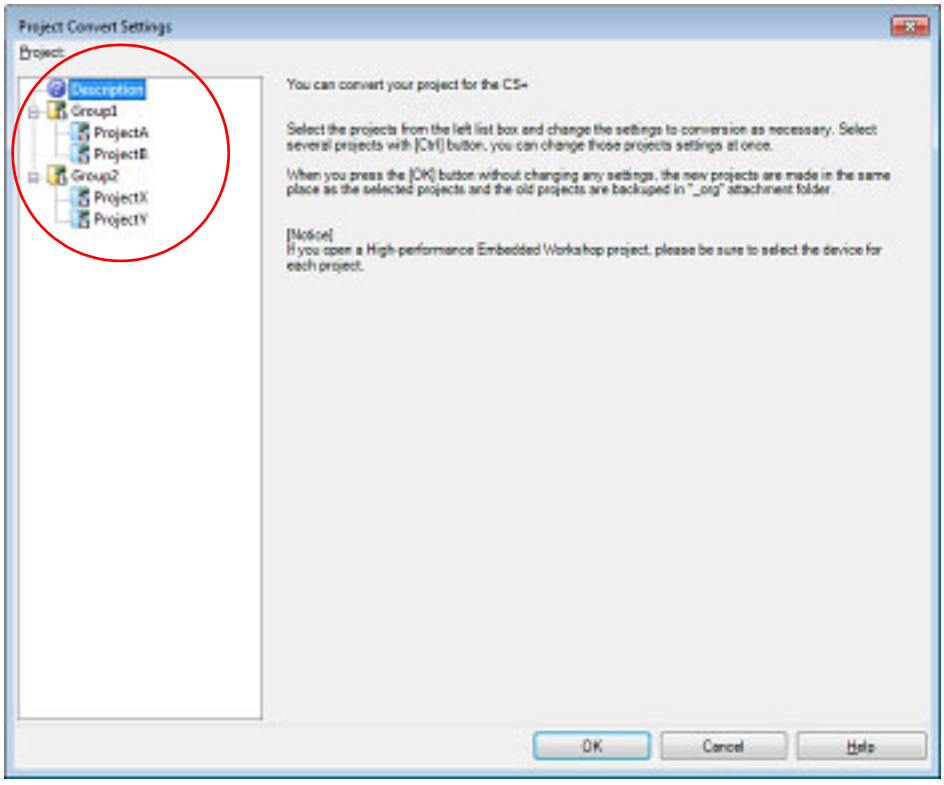
Caution In converting projects created by using CA78K0R or CA78K0 to projects for use with CC-RL, conversion will not proceed if the destination folder already contains files with the same names as those of the files to be output. Check that there are no such files in the destination folder before using the converter.

- When opening from a PM+ workspace file (*.prw)
- When opening from a PM+ project file (*.prj)

(1) When opening from a PM+ workspace file (*.prw)

(a) Select the project for conversion settings
When a PM+ workspace file is selected, the Project Convert Setting dialog box will open.

Figure 2.38 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(b) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.39 Project Convert Setting Dialog Box (When Main Project Is Selected)

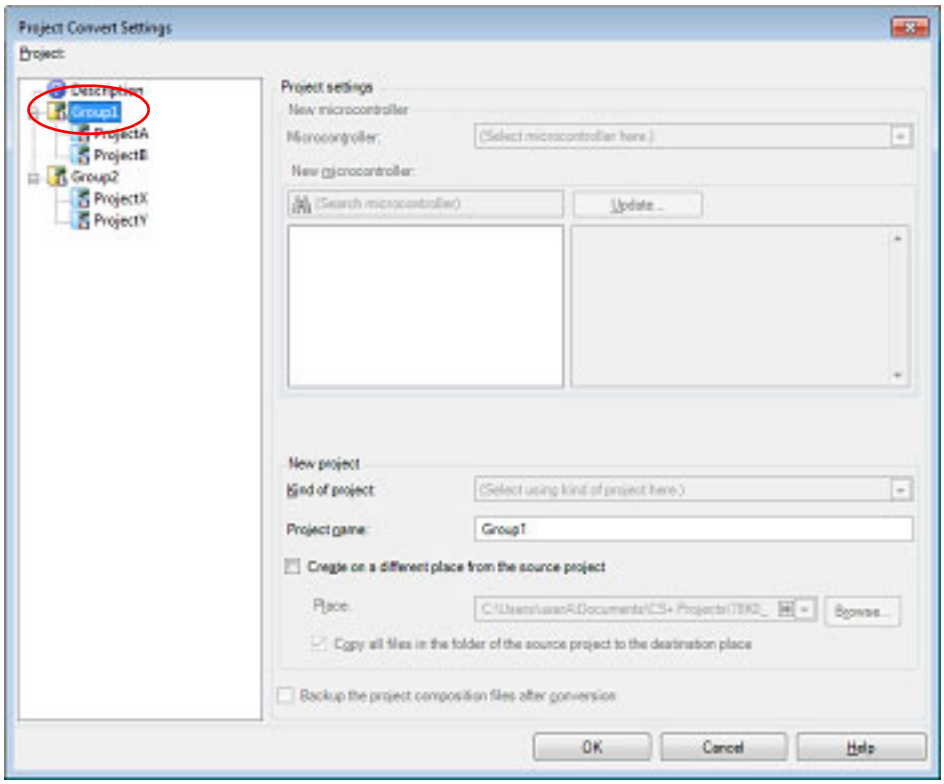
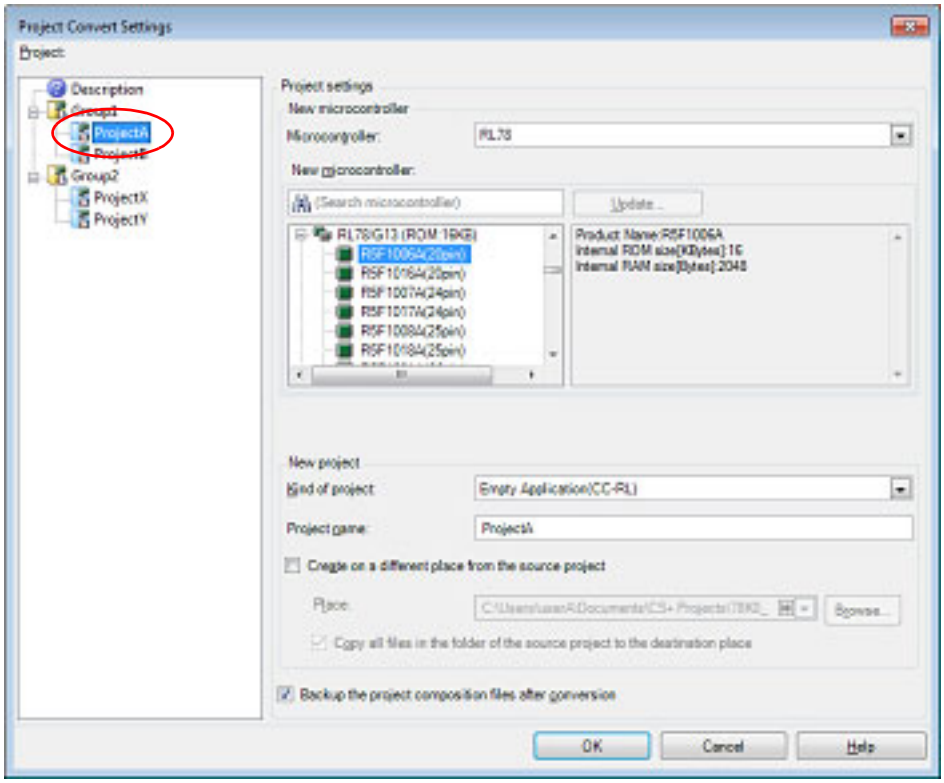


Figure 2.40 Project Convert Setting Dialog Box (When Subproject Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Remark 1. When the main project is selected, the [New microcontroller] area and [Kind of project] in the [New project] area will be invalid.

Remark 2. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.
However, the main project is selected, this item will be invalid.

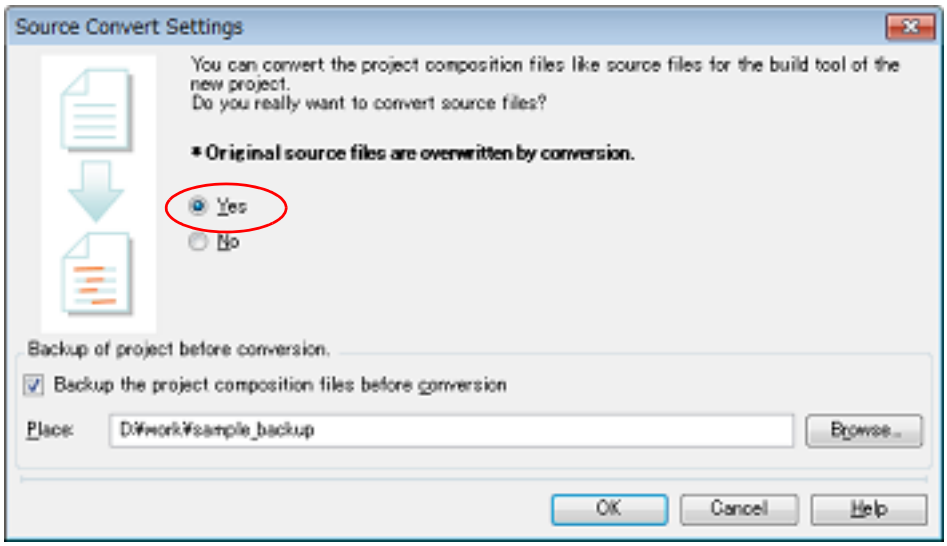
Remark 3. See "Project Convert Setting dialog box" for details about each setting item.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(c) Convert the CS+ project
The PM+ project is converted to the CS+ project.

In converting a project for CA78K0R or CA78K0 to one for CC-RL, the source files are converted.
When you click on the [OK] button, the Source Convert Setting dialog box [CC-RL] will open.

Figure 2.41 Source Convert Setting dialog box

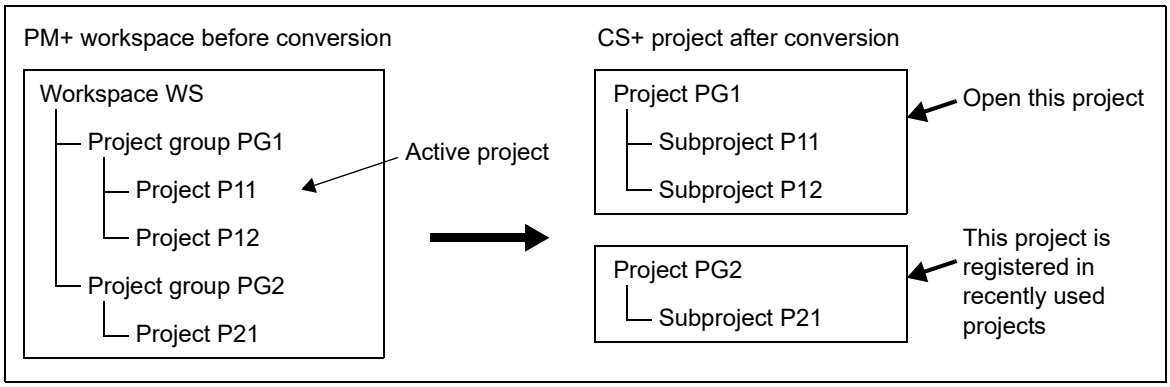


Select [Yes] to convert the source files.
When you wish to save the pre-conversion set of source files, select [Backup the project composition files before conversion] and specify the directory.
Conversion of the source files proceeds in response to clicking on the [OK] button.

PM+ projects are converted to CS+ projects according to the rules below.

- The PM+ workspace is not converted.
- PM+ project groups are divided into projects with the same name as the project group. After conversion, the project file name will be "*project group name*.mtpj".
- PM+ projects are converted to subprojects with the same name as the original project. After conversion, the subproject file name will be "*project name*.mtsp".
- After conversion, the first subproject shown in the Project Tree will be the active project.
- After conversion, the link order in PM+ is not held.

Figure 2.42 PM+ Project Conversion Image



Remark 1. After conversion, CS+ opens the project that was converted from the PM+ project group that includes the active project. Projects other than this project are registered in recently used projects. However, the number of projects that exceeds four is not registered.

Remark 2. The project settings after conversion, of those in the PM+ project group, are set to the same settings as the project listed first in the workspace file. In addition, files are not registered.

Remark 3. If you wish to organize each of the projects into a single project after conversion, add each project as a subproject to a single project.

Remark 4. When loading a workspace that includes projects without build tools specified, build tools are set according to the microcontroller.

Caution 1. Only projects that can be loaded by PM+ and built normally can be loaded into CS+.

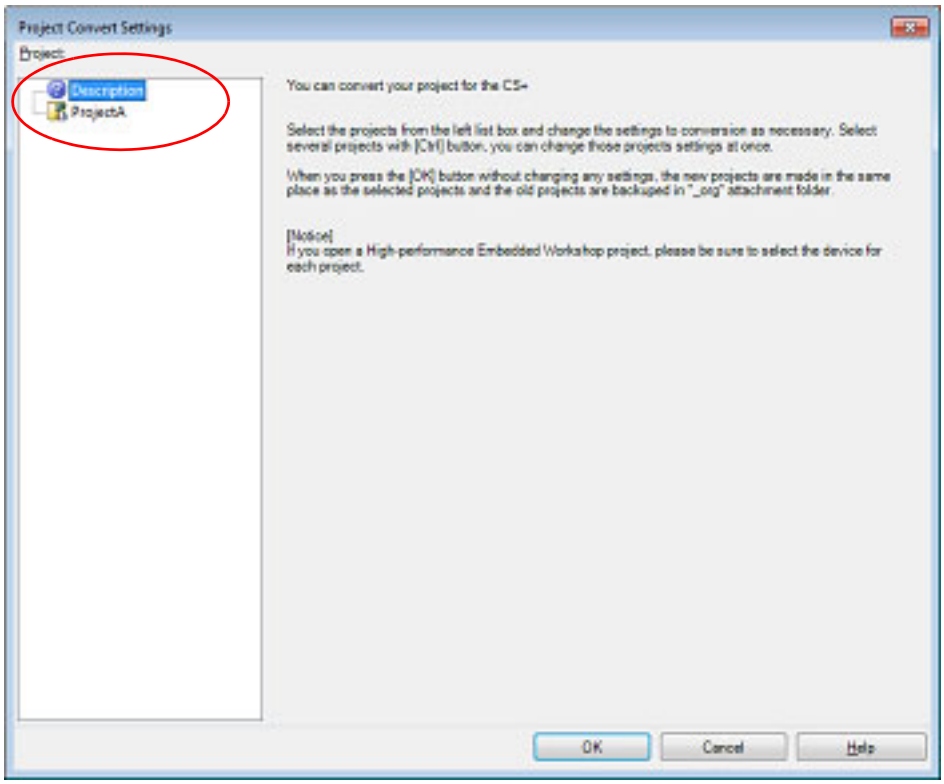
Caution 2. If there is already a subproject file in the same folder and with the same file name (excluding the file extension) as the project file, then the project file will not be saved correctly.
Change the name of the main project or the subproject on the project tree.

Caution 3. When only one project exists in a PM+ workspace, the project will be converted to the main project.

(2) When opening from a PM+ project file (*.prj)

(a) Select the project for conversion settings
When a PM+ project file is selected, the Project Convert Setting dialog box will open.

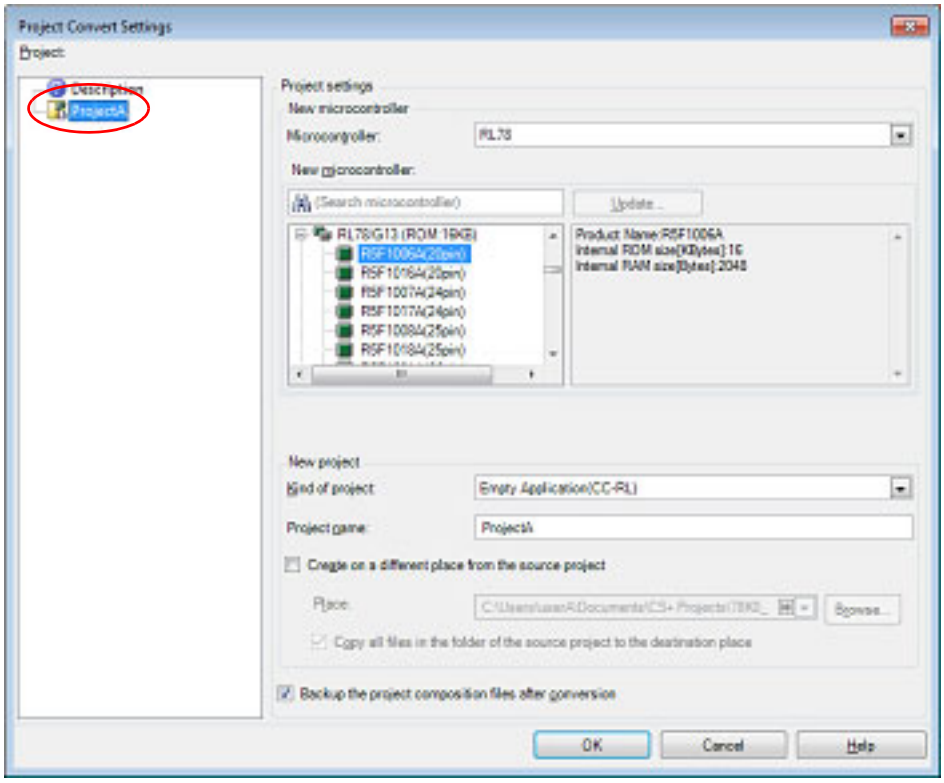
Figure 2.43 Project Convert Setting Dialog Box



The [Project] area shows the configuration of conversion target projects as a tree; select the project for carrying out the conversion settings.

(b) Set the conversion target project
When you select the project, the area on the right shows the conversion target project setting items.

Figure 2.44 Project Convert Setting Dialog Box (When Project Is Selected)



After setting the microcontroller to be used for the conversion target project, and project type, name, and place of creation settings, click the [OK] button.

Remark 1. If you select [Backup the project composition files after conversion], immediately after the conversion the project source files and complete project are packed up and saved.

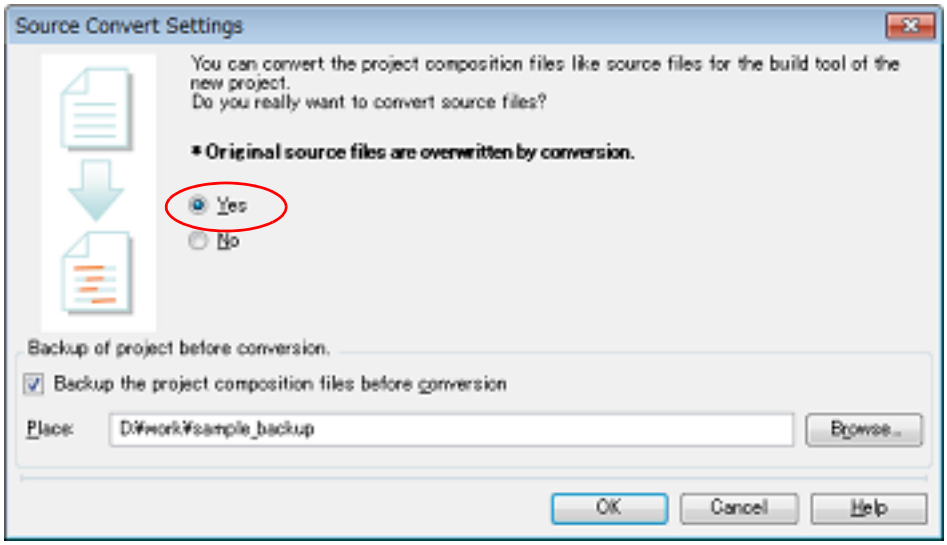
Remark 2. See "Project Convert Setting dialog box" for details about each setting item.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(c) Convert the CS+ project
The PM+ project is converted to the CS+ project.

In converting a project for CA78K0R or CA78K0 to one for CC-RL, the source files are converted.
When you click on the [OK] button, the Source Convert Setting dialog box [CC-RL] will open.

Figure 2.45 Source Convert Setting dialog box



Select [Yes] to convert the source files.
When you wish to save the pre-conversion set of source files, select [Backup the project composition files before conversion] and specify the directory.
Conversion of the source files proceeds in response to clicking on the [OK] button.

PM+ projects are converted to CS+ projects according to the rules below.

- A PM+ project is converted to a project with the same name as the original project. After conversion, the project file name will be "*project name*.mtpj".

Remark When reading a project without build tools specified, build tools are set according to the microcontroller.

Caution Only projects that can be loaded by PM+ and built normally can be loaded into CS+.

Remark 1. The target for conversion is the file structure information of the PM+ project file and the build mode/build options information.
The build mode and build options information is not the target for conversion, if the build tool is different from the PM+ project file.

Remark 2. When build options have been added from the version of the target build tools in the PM+ project to the version of the build tools after conversion, the added options are set to the build tools' default values after conversion.

Remark 3. The project files after conversion are created in the folder the PM+ project file was placed in. If there is already a project file with the same name, "_*number*_" (*number*: 1, 2, ...) will be added to the file name.

Remark 4. After conversion, the build mode will have the same name as that of a PM+ project.
Any characters that are not allowed in a CS+ folder name, however (\, /, :, *, ?, ", <, >, |) will be replaced by underscores ("_").
If there is another build mode with the same name after conversion, then the "_n_" (n = 1, 2, ...) will be appended to the build mode name.

Remark 5. Only the file structure is converted. Build options are not converted.

Remark 6. The conversion result is output to a file as project convert information.

- The project convert information file name is "ProjectConvertInformation_*projectname*.txt".
- The project convert information file is output for each converted project (subproject).
- The project convert information file is output to the project folder of the project (subproject).
- The project convert information file is displayed the File node of the project (subproject) on the Project Tree panel.

The output format of the project convert information file is shown below.

```
(1)Time and date on which a project was converted

(2)<IDE version>
    CS+ IDE: Version [Date]
```

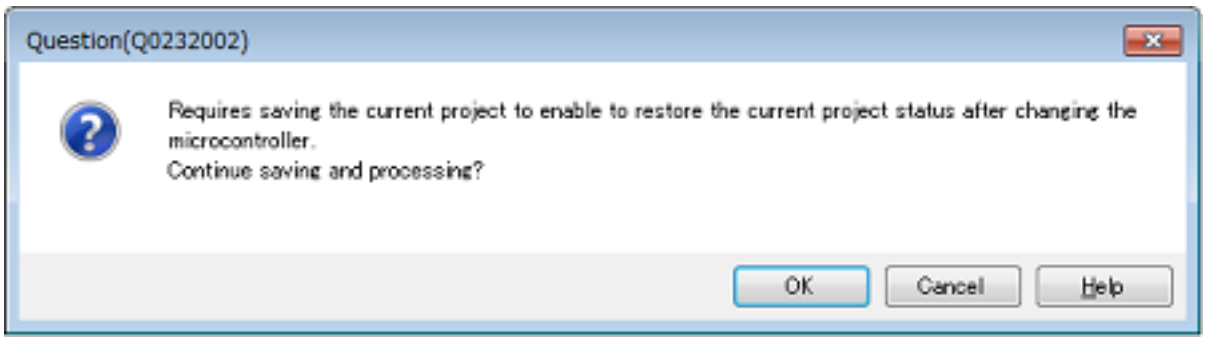
Number	Description
(1)	Time and date on which a project was converted The time and date on which a PM+ project was converted into a CS+ project is output using format "*dddd*, *mmmm dd*, *yyyy hh*:*mm*:*ss AM*/*PM*".
(2)	IDE version and date The version of CS+ and the date are output.

2.4.14 Change the microcontroller

You can change the microcontroller to be used in the created project.

(1) Select the change for the microcontroller
Select the Microcontroller node and select [Change microcontroller...] on the context menu.
The following message dialog box will open.

Figure 2.46 Message Dialog Box

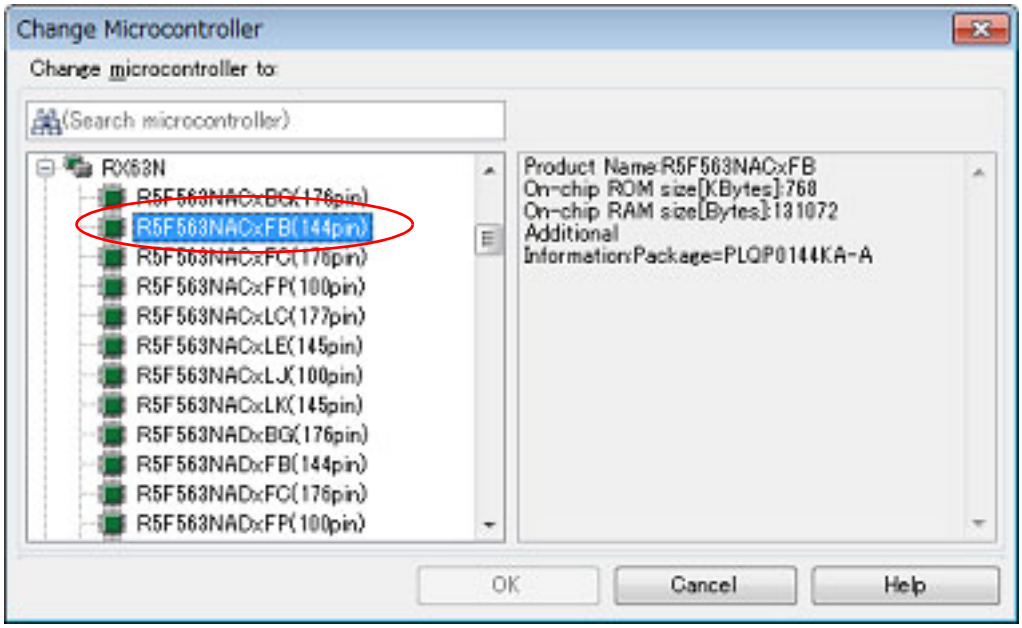


The project needs to be saved before making the following steps (The current project is overwritten by clicking the [OK] button).
To continue the process, click the [OK] button.

Remark When multiple Microcontroller nodes for the projects using the same microcontroller are selected, the microcontroller settings can be changed at one time.

(2) Select the new microcontroller
The Change Microcontroller dialog box will open.
At this time, the current microcontroller is selected in the [Change microcontroller to] area.

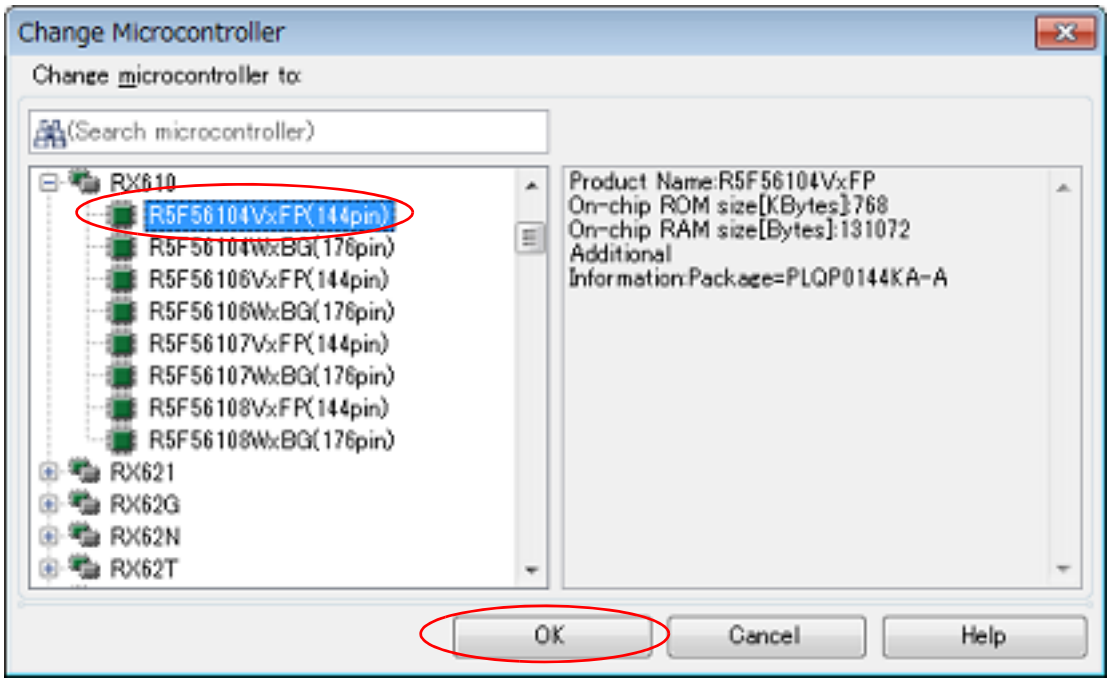
Figure 2.47 Change Microcontroller Dialog Box



After selecting the new microcontroller, click the [OK] button.

Remark The [OK] button becomes valid when the selected microcontroller differs from the current microcontroller.

Figure 2.48 Change Microcontroller Dialog Box (After Selecting New Microcontroller)



(3) Change the microcontroller
The current microcontroller is changed to the selected microcontroller.

Remark 1. The microcontroller can only be changed to another from the same family (RH850, RX, and RL78) that is compatible with the same build tools.

Remark 2. When the microcontroller is changed, it must be disconnected from the debug tool.

Remark 3. When the microcontroller is changed, the project must be saved.

Remark 4. After the microcontroller is changed, information for the pin configurator (design tool), code generator (design tool), and debug tool (except for registration of the Watch panel) is not maintained.

Remark 5. [RX] The settings of the properties of the build tool are changed to those for the specified microcontroller. iodefine.h and the start-up source files of the specified microcontroller are copied as sample source files. For the start-up files, create a folder named "<*device name after change*>.*nnn*" (*nnn* = 000, 001, …) and copy them to that folder. The details of the changes are displayed in the Output panel.
If you have selected a microcontroller that has a different ROM size from that set in the source project, the differences between the ROM sizes may not be reflected in the value of the [Section start address] property on the [Link Options] tabbed page. Check the value of the [Section start address] property.

Caution Although the [Section start address] property on the [Link Options] tabbed page is changed to the value for the specified microcontroller, the specification of addresses with #pragma address is not supported. If a section start address is changed, the size of the resulting section may extend beyond the capacity of the ROM or RAM.

2.5 Change the Build Tool Version

You can change the version of the build tool (compiler package) used in the project (main project or subproject).
Select the build tool node on the project tree and select the [Common Options] tab on the Property panel. Select [Always latest version which was installed] or the version in the [Using compiler package version] property in the [Version Select] category.

Figure 2.49 [Using compiler package version] Property

Remark 1. When the build tool used in the main project and subprojects is the same, you can collectively change the build tool version by selecting all of the Build tool nodes and setting the property.

Remark 2. If you have selected a compiler package that has not been installed (e.g. if you open a project created in another execution environment), then that version is also displayed.

Remark 3. If the options change depending on the compiler package, then the display of the build tool's properties will change according to the selected version.
Properties that are hidden when the version is changed are saved in the project file's settings, and the values will be reproduced when the properties are displayed again.
Options are changed in accordance with the following rules. Information about changes is displayed in the Output panel.

- If you change from an older version to a newer version, the option settings will be inherited and converted (only if necessary).
- If you change from a newer version to an older version, only identical option settings will be inherited. Options that only exist in the older version will be set to the default values.

2.6 Set Build Target Files

Before running a build, you must add the build target files (such as C source file or assembly source file) to the project.
This section explains operations on setting files in the project.

2.6.1 Add a file to a project

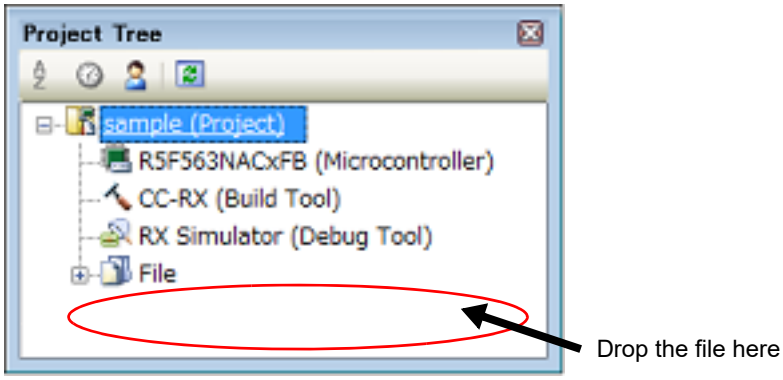
Files can be added to a project by the following methods.

- Adding an existing file
- Creating and adding an empty file

(1) Adding an existing file

(a) Add an individual files
Drag the file from Explorer or the like, and drop it onto the empty space below the project tree.
The file is added below the File node.

Figure 2.50 Project Tree Panel (File Drop Location)



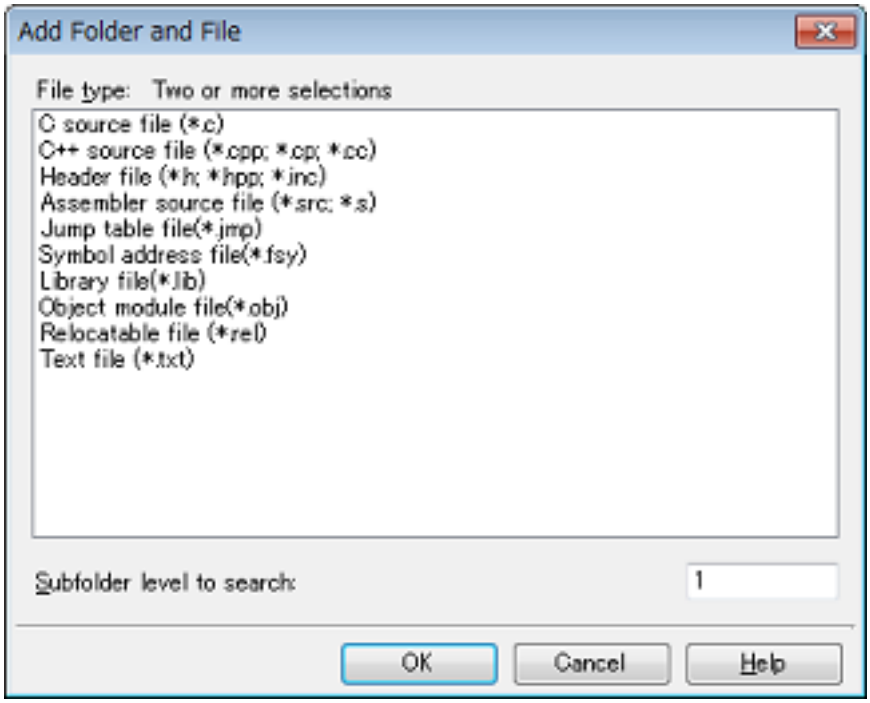
(b) Add a folder

Drag the folder from Explorer or the like, and drop it onto the empty space below the project tree. The Add Folder and File dialog box will open.

Remark You can also add multiple folders to the project at the same time by dragging multiple folders at same time and dropping them onto the project tree.

Caution When the folder with the name that is more than 200 characters is dropped, the folder is added to the project tree as a category with the name that 201st character and after are deleted.

Figure 2.51 Add Folder and File Dialog Box



In the dialog box, select the types of the files to be added to the project and specify the number of levels of the subfolder to be added to the project. And then click the [OK] button.

The file types to be displayed are as follows.

Project for the CC-RH compiler	C source file (*.c) Header file (*.h; *.inc) Assembly source file (*.asm; *.s; *.fsy) Library file (*.lib) Object file (*.obj) Relocatable file (*.rel) Text file (*.txt)
Project for the CC-RX compiler	C source file (*.c) C++ source file (*.cpp; *.cp; *.cc) Header file (*.h; *.hpp; *.inc) Assembler source file (*.src; *.s) Jump table file (*.jmp) Symbol address file (*.fsy) Library file (*.lib) Object module file (*.obj) Relocatable file (*.rel) Text file (*.txt)

Project for the CC-RL compiler	C source file (*.c) Header file (*.h; *.inc) Assembly source file (*.asm; *.s; *.fsy) SMS assembly source file (*.smsasm) Library file (*.lib) Object file (*.obj) Relocatable file (*.rel) Text file (*.txt)
Debug-dedicated project	C source file (*.c) Header file (*.h; *.inc) Assemble file (*.asm; *.s) Object module file (*.obj; *.o) Load module file (*.abs; *.lmf; *.out) Text file (*.txt)

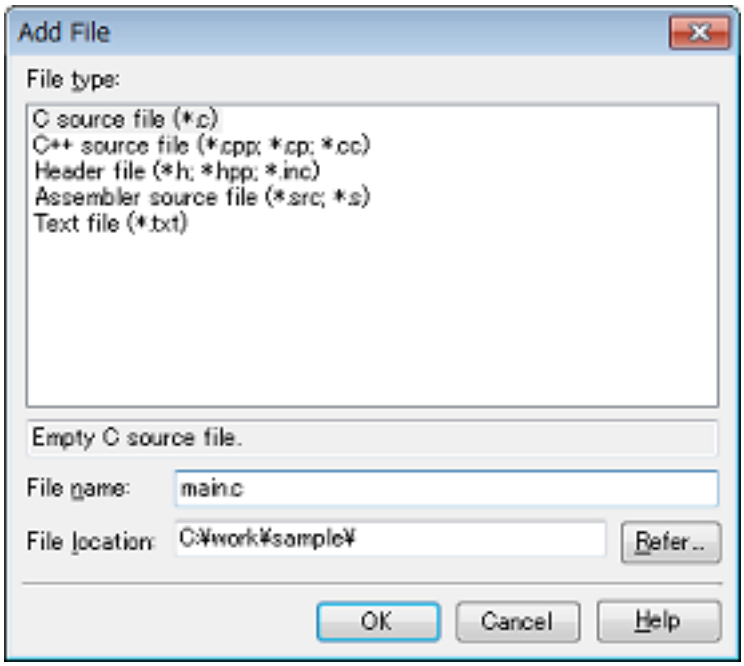
Remark You can select multiple file types by left clicking while holding down the [Ctrl] or [Shift] key.
If nothing is selected, it is assumed that all types are selected.

The folder is added below the File node.
Note that on the project tree, the folder is the category.

Remark When the category node created by the user exists, you can add a file below the node by dropping the file onto the node (see "2.6.4 Classify a file into a category" for a category node).

(2) Creating and adding an empty file
On the project tree, select either one of the Project node, Subproject node, or File node, and then select [Add] >> [Add New File...] from the context menu. The Add File dialog box will open.

Figure 2.52 Add File Dialog Box



In the dialog box, specify the file to be created and then click the [OK] button.

The file types to be displayed are as follows.

Project for the CC-RH compiler	C source file (*.c) Header file (*.h; *.inc) Assembly source file (*.asm; *.s; *.fsy) Text file (*.txt)

Project for the CC-RX compiler	C source file (*.c) C++ source file (*.cpp; *.cp; *.cc) Header file (*.h; *.hpp; *.inc) Assembler source file (*.src; *.s) Text file (*.txt)
Project for the CC-RL compiler	C source file (*.c) Header file (*.h; *.inc) Assembly source file (*.asm; *.s; *.fsy) SMS assembly source file (*.smsasm) Text file (*.txt)
Debug-dedicated project	C source file (*.c) Header file (*.h; *.inc) Assemble file (*.asm; *.s) Text file (*.txt) All files (*.*)

The file is added below the File node.

The project tree after adding the file and folder will look like the one below.

Figure 2.53 Project Tree Panel (After Adding File "main.c")

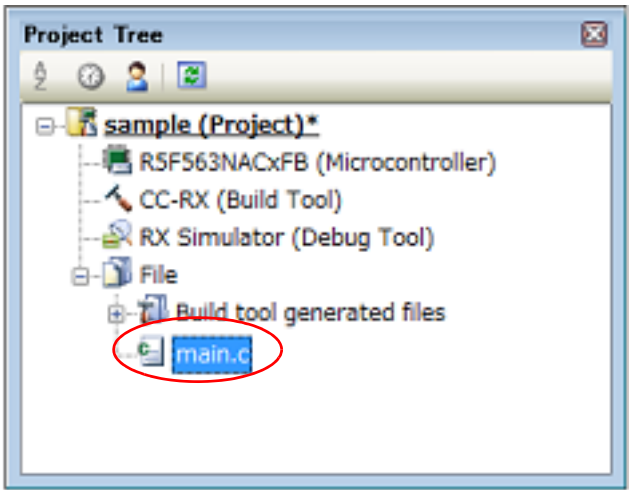
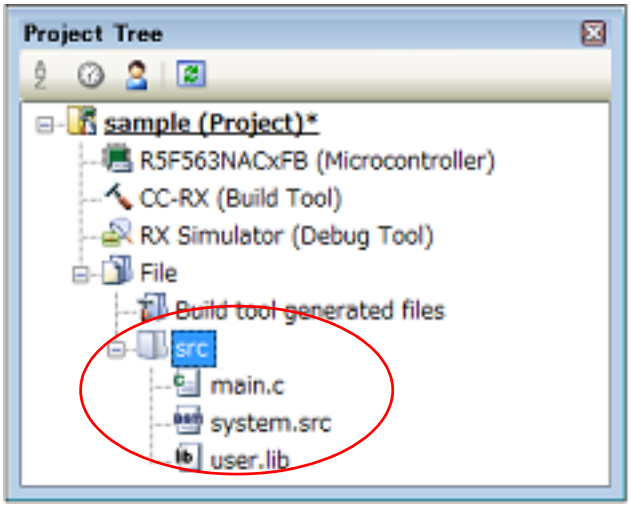


Figure 2.54 Project Tree Panel (After Adding Folder "src")



Remark The location of the file added below the File node depends on the current file display order setting. See "2.6.5 Change the file display order" for the method of changing the file display order.

Caution 1. If the paths differ, you can add source files with the same name.
Note, however, that if the setting of the output file name is left as the default, the output files will have the same name, which will prevent the build from running correctly (for example, when adding D:\sample1\func.c and D:\sample2\func.c, the default output file name for these files is both func.obj).
To avoid this problem, set the output file name for each of those files to a different name with the individual build options for the source files.
Changing the name of the C source file is made with the [Object module file name] property in the [Output File] category from the [Individual Compile Options] tab.
The changing the name of the assembly source file is made with the [Object file name] property in the [Output File] category from the [Individual Assemble Options] tab.
See "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for how to set the individual build options.

Caution 2. If source files with the same name are added, the target file cannot be opened during debugging.

Caution 3. Up to 5000 files can be added to the main project or subproject.

Caution 4. The name of a network path cannot be used for [File location]. Assign the name of a path on a drive.

Caution 5. [CC-RL] An SMS assembly source file (*.smsasm) is only displayed if a device has a Snooze Mode Sequencer (SMS).

When a new file is added, an empty file is created in the location specified in the Add File dialog box.
By double clicking the file name on the project tree, you can open the Editor panel and edit the file.
The files that can be opened with the Editor panel are shown below.

- C source file (*.c)
- Assembly source file (*.asm, *.s)
- SMS assembly source file (*.smsasm)
- Symbol address file (*.fsy)
- Header file (*.h, *.inc)
- List file for assembly program (*.lst, *.lis)
- Preprocessor expanded file for assembly program (*.exp)
- Assemble list file (*.prn)
- Link order specification file (*.mtls)
- Link map file (*.map)
- Library list file (*.lbp)
- Intel Hex file (*.hex)
- Motorola S-record file (*.mot)
- Text file (*.txt)

Remark 1. You can use one of the procedures below to open files other than those listed above in the Editor panel.

- Drag a file and drop it onto the Editor panel.
- Select a file and then select [Open with Internal Editor...] from the context menu.

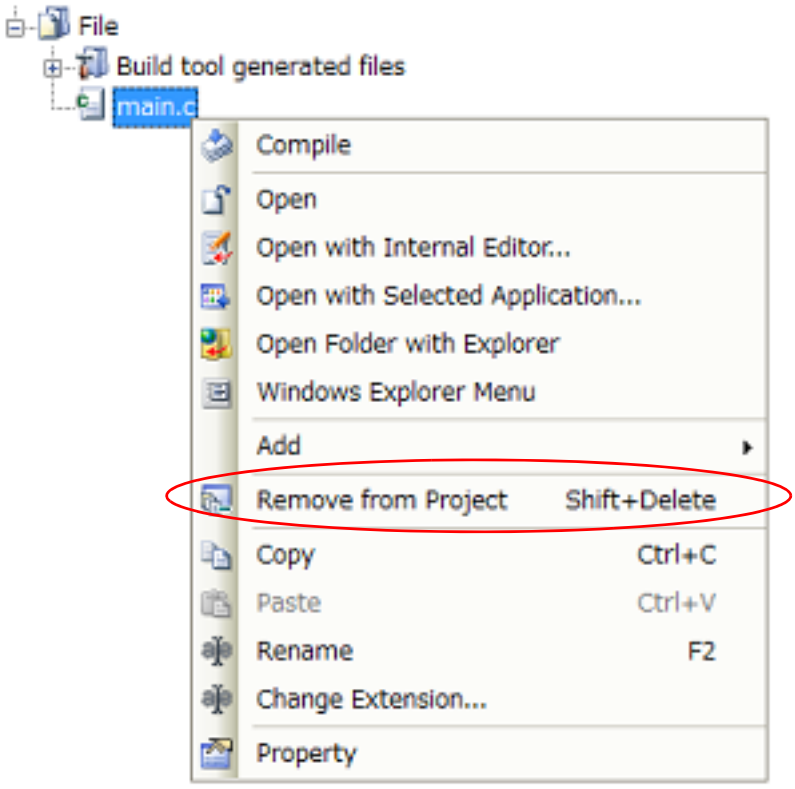
Remark 2. When the environment is set to use an external text editor on the Option dialog box, the file is opened with the external text editor that has been set.
Other files are opened with the applications associated by the host OS.

Caution [CC-RL] An SMS assembly source file (*.smsasm) can only be opened if a device has a Snooze Mode Sequencer (SMS).

2.6.2 Remove a file from a project

To remove the file added to a project, select the file to be removed from the project on the project tree and then select [Remove from Project] from the context menu.

Figure 2.55 [Remove from Project] Item



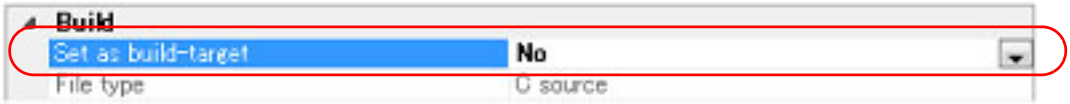
2.6.3 Remove a file from the build target

You can remove the specific file from the build target out of all the files added to the project.

Select the file to be removed from the build target on the project tree and select the [Build Settings] tab on the Property panel.

Select [No] on the [Set as build-target] property in the [Build] category.

Figure 2.56 [Set as build-target] Property



Remark The files that this function can be applied to are C source files, assembly source files, object files, and library files.

2.6.4 Classify a file into a category

You can create a category under the File node and classify files by the category. This makes it easier to view files added to the project on the project tree, and makes it easier to manage files according to function.

To create a category node, select either one of the Project node, Subproject node, or File node on the project tree, and then select [Add] >> [Add New File...] from the context menu.

Figure 2.57 [Add New Category] Item (For File Node)

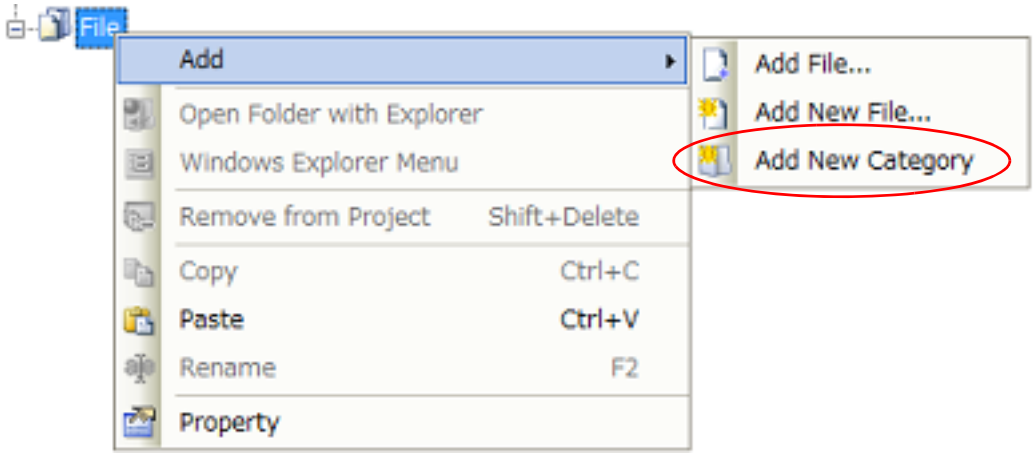
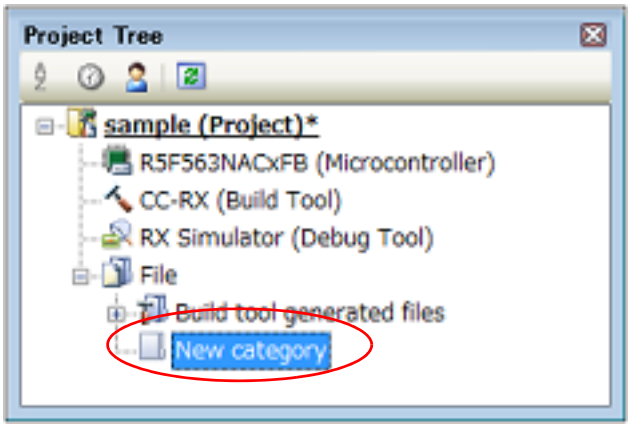


Figure 2.58 Project Tree Panel (After Adding Category Node)



Remark 1. The default category name is "New category".
To change the category name, you can use [Rename] from the context menu of the category node.

Remark 2. You can also add a category node with the same name as the existing category node.

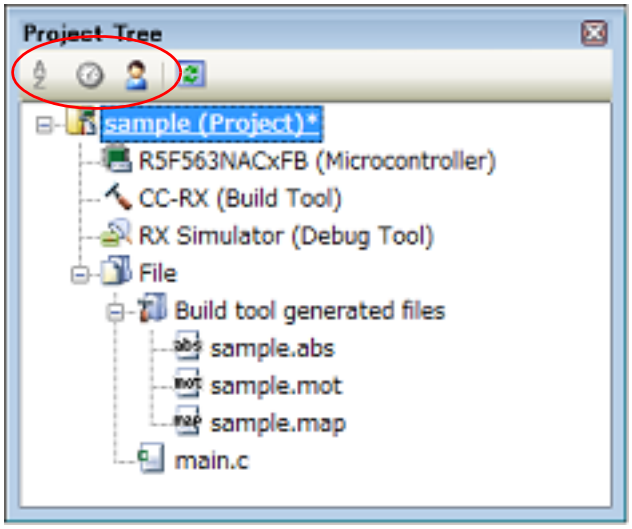
Remark 3. Categories can be nested up to 20 levels.

You can classify files into the created category node by dragging and dropping the file.

2.6.5 Change the file display order

You can change the display order of the files and category nodes by the buttons on the project tree.

Figure 2.59 Toolbar (Project Tree Panel)



Select any of the buttons below on the toolbar of the Project Tree panel.

Button	Description
	Sorts category nodes and files in order of their names. : Ascending order : Descending order : Ascending order
	Sorts category nodes and files in order of their timestamp. : Descending order : Ascending order : Descending order
	Displays category nodes and files in order of the user definition (default). You can change the display order of category nodes and files arbitrarily by dragging and dropping them.

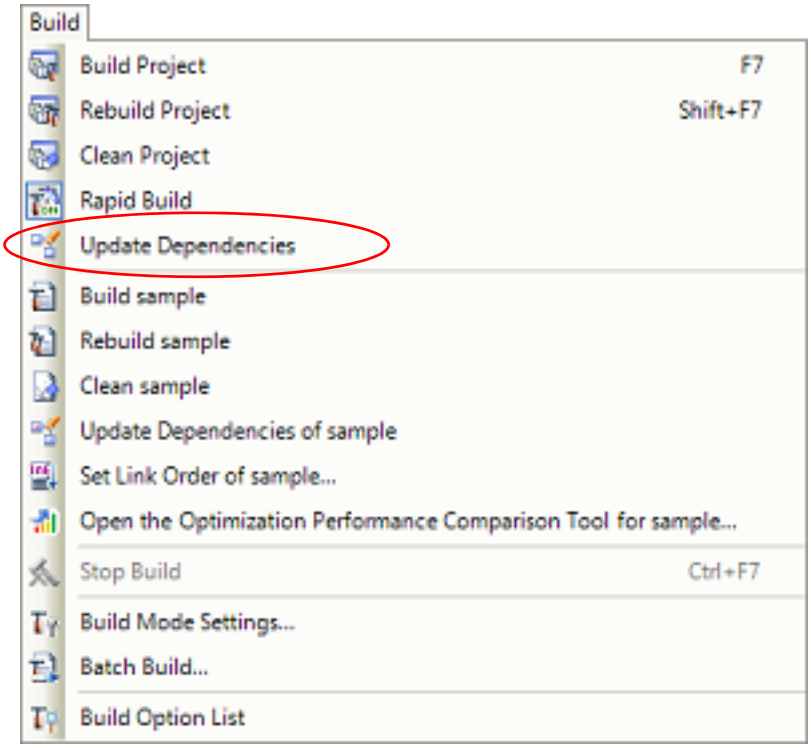
2.6.6 Update file dependencies

When you perform a change (changing include file paths, adding the include statement of the header file to the source file, etc.) that effects the file dependencies in the compile option settings or assemble option settings, you must update the dependencies of the relevant files.

Updating file dependencies is performed for the entire project (main project and subprojects) or active project.

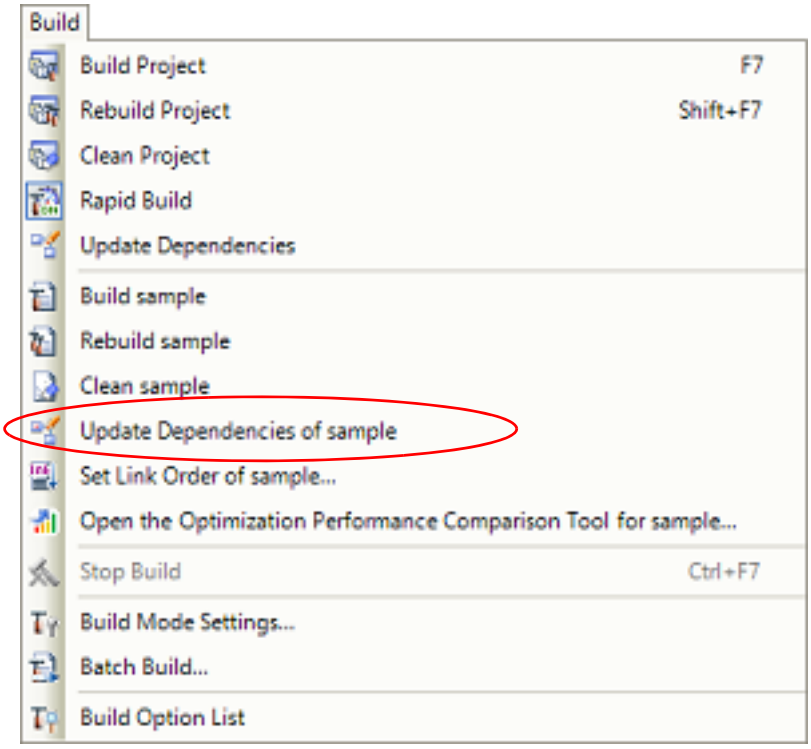
(1) For the entire project
From the [Build] menu, select [Update Dependencies].

Figure 2.60 [Update Dependencies] Item



(2) For the active project
From the [Build] menu, select [Update Dependencies of *active project*].

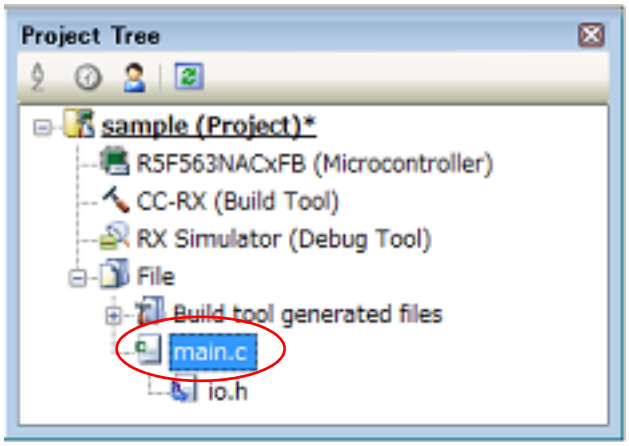
Figure 2.61 [Update Dependencies of *active project*] Item



Remark If there are files being edited with the Editor panel when updating file dependencies, then all these files are saved.

Dependency files (include files) can be displayed under the source file on the project tree.

Figure 2.62 Project Tree Panel (After Displaying Dependency File)



The display of the dependency files is updated on the following timings:

- When the first build is run after the project is loaded
- When on the toolbar is clicked
- When [Update Dependencies] is selected from the [Build] menu
- When [Update Dependencies of *active project*] is selected from the [Build] menu

Remark 1. The display of dependency files is valid only when the [Show dependency files in project tree] check box in the [General - Build] category of the Option dialog box is selected.

Remark 2. Information on the dependency files displayed on the project tree is not saved in the project file.

The points for caution described below do not apply when [Use compiler for updating dependencies to increase accuracy over speed of analysis when the functionality is available] is selected for the [General - Build] category in the Option dialog box and the compiler selected for the project is CC-RH V1.00.00 or a later version, CC-RX V2.00.00 or a later version, or CC-RL V1.00.00 or a later version.

Caution 1. When checking for dependences on include files, CS+ does not support cases of include files to which conditional statements such as #if apply or for which the #include directive is commented out.
Therefore, there is a case where this product regards an include file unnecessary for a build as a necessary file (In the example below, header1.h and header5.h are judged as required for build).

```
#if         0
#include    "header1.h"     /* Dependence relationship judged to exist */
#else                       /* ! zero */
#include    "header2.h"     /* Dependence relationship to exist */
#endif

#define     AAA
#ifdef      AAA
#include    "header3.h"     /* Dependence relationship to exist */
#else
#include    "header4.h"     /* Dependence relationship to exist */
#endif

/*
#include    "header5.h"     /* Dependence relationship judged to exist */
*/
```

Caution 2. When checking for dependences on include files, CS+ does not support include statements that follow comments or comment marks that are on the same line.
Therefore, there is a case where this product regards an include file necessary for a build as a unnecessary file (In the example below, header6.h and header7.h are judged as no-required for build).

```
/* comment */   #include    "header6.h"     /* Dependence relationship
judged not to exist */

/*
comment
*/  #include    "header7.h"               /* Dependence relationship judged
not to exist */
```

2.7 Make Settings for Build Operations

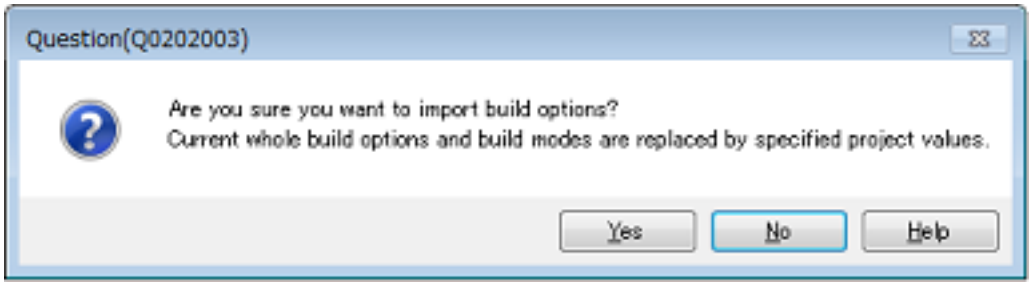
This section explains operations on a build.

- Import the build options of other project
- Set the link order of files
- Change the build order of subprojects
- Display a list of build options
- Change the build target project
- Add a build mode
- Change the build mode
- Delete a build mode
- Set the current build options as the standard for the project

2.7.1 Import the build options of other project

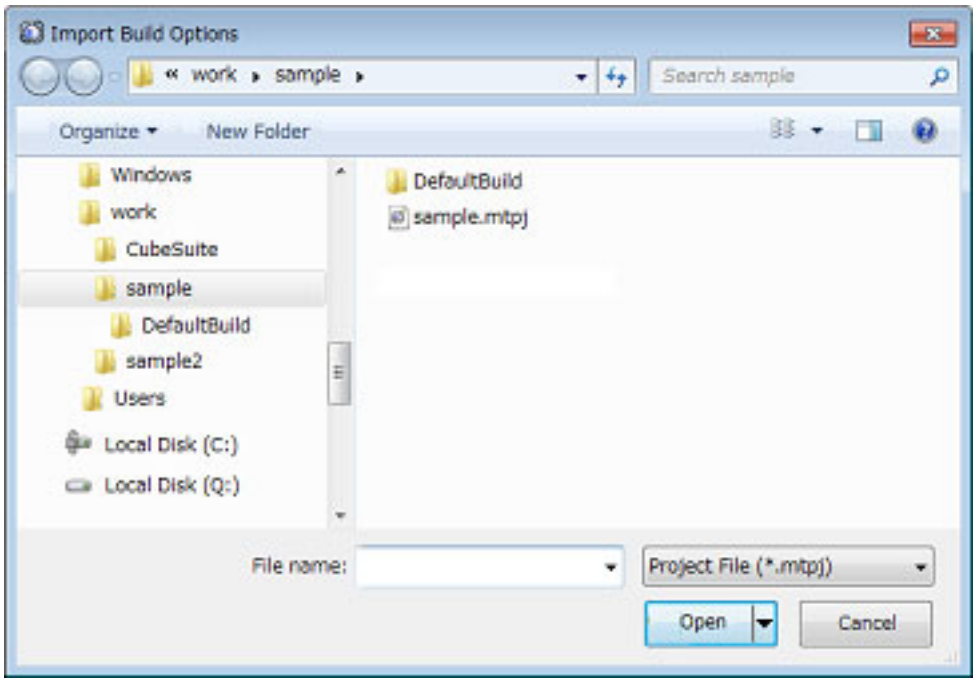
You can import the build options of other project to the current project.
On the project tree, select the Build tool node, and then select [Import Build Options...] from the context menu. The following message dialog box will open.

Figure 2.63 Message Dialog Box



Click [Yes] in the dialog box. The Import Build Options dialog box will open.

Figure 2.64 Import Build Options Dialog Box



In the dialog box, select the target project file for importing the build options and click the [Open] button.
The build options of the selected project file are imported to the current project.

Remark 1. The conditions of the project that is importable are shown below.

- The build tool is the same.
- The type of the project (application, library, etc.) is the same.
- The project has been created by CS+ with the same version.

Remark 2. The target build options for importing are only the general options set in the properties of the build tool.
The setting of the standard build options (see "2.7.9 Set the current build options as the standard for the project") and the individual options are not imported.

Remark 3. All the build modes of the import target are imported.
However, the build modes of the current project (other than DefaultBuild) are deleted.

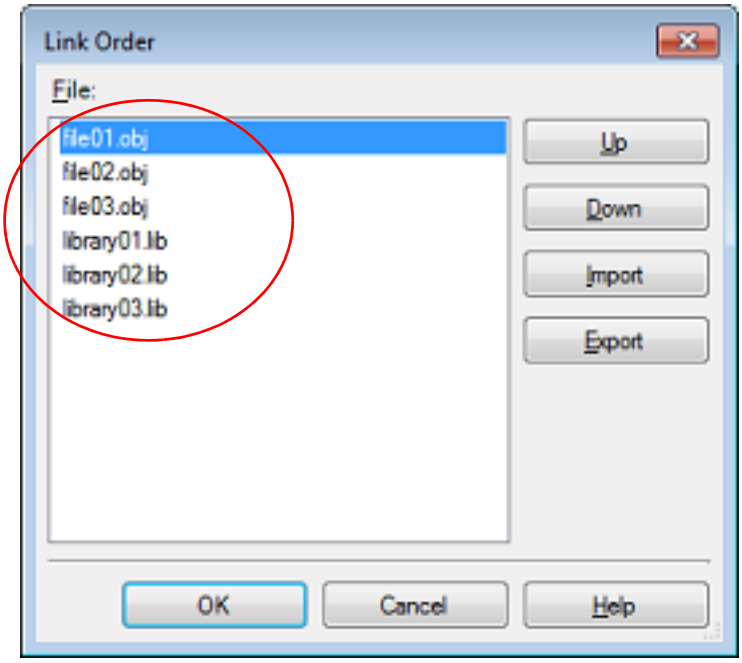
Remark 4. The version of the build tool to be used is imported.

2.7.2 Set the link order of files

The link order of object module files and library files is decided automatically, but you can also set the order.
The procedures for performing this operation are described below.

(1) Open the Link Order dialog box
On the project tree, select the Build tool node, and then select [Set Link Order...] from the context menu. The Link Order dialog box will open.

Figure 2.65 Link Order Dialog Box



The names of the following files are listed in [File] in the order that the files are input to the linker.

- Object module files which are generated from the source files added to the selected main project or subproject
- Object module files which are added directly to the project tree of the selected main project or subproject
- Library files which are added directly to the project tree of the selected main project or subproject

Remark The default order is the order that the files are added to the project.
Object module files generated from newly added source files and newly added object module files are added after the last object module file in the list.
Newly added library files are added to the end of the list.

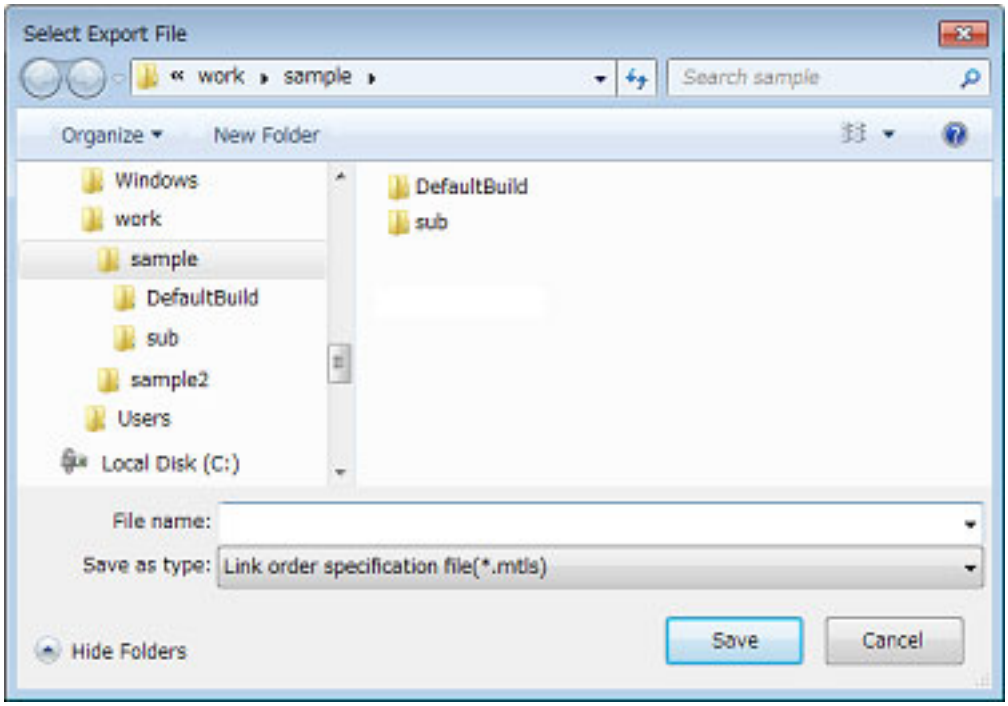
(2) Change the file display order
By changing the display order of the files, you can set the input order of the files to the linker.
Change the file display order by one of the following procedures.

- Move the file name by using the [Up] and [Down] buttons.
- Drag and drop the file name.
- Use a link order specification file.

Remark You can use a link order specification file to change the display order on a file basis.
The procedures for performing this operation are described below.

(a) Generate a link order specification file
Click the [Export] button in the Link Order dialog box to open the Select Export File dialog box.

Figure 2.66 Select Export File Dialog Box



In the dialog box, specify the file (link order specification file) that is output the list of the file names displayed in [File] in the Link Order dialog box.
Click the [Save] button to generate the link order specification file.

Caution Only the file names are output to the link order specification file.
If a file with the same name exists, check the location of the file in the popup display after installing the link order specification file.

(b) Edit the link order specification file
Open the link order specification file with an editor, and then change the description order of the file names.
The code example of the link order specification file is shown below.

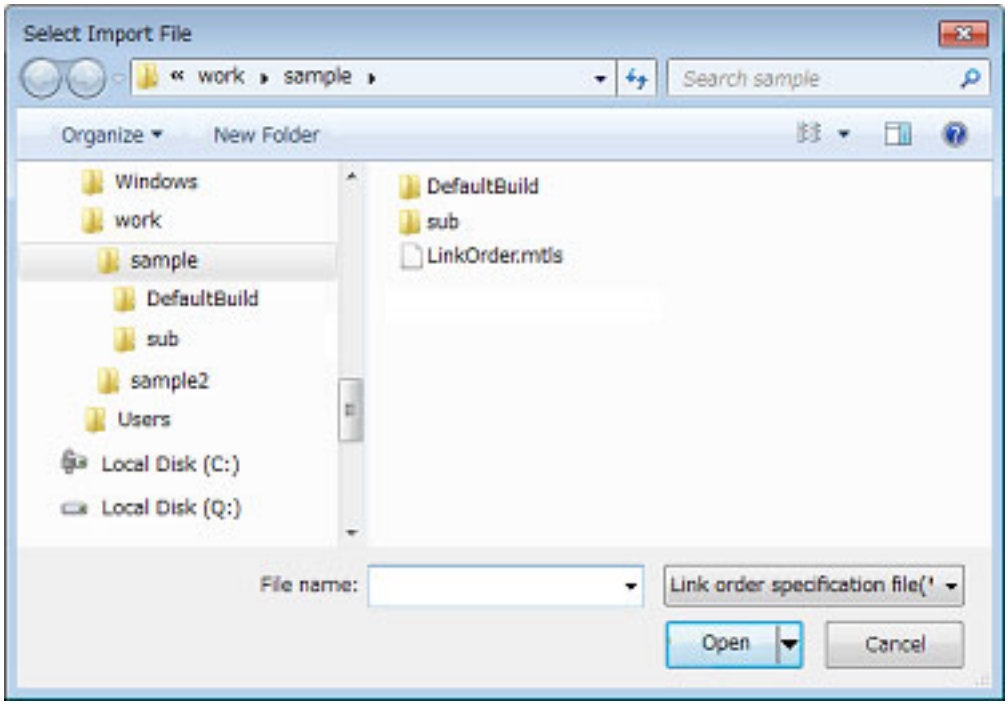
```
# CS+ Vx.xx.xx Link order specification file
# SampleProject: Xxxxxx xx, xxxx

file01.obj
file03.obj
library02.lib
file02.obj
library01.lib
library03.lib
    :
```

The following points should be noted when describing the link order specification file.

- Describe one file name on one line.
- Uppercase characters and lowercase characters are not distinguished for the file name.
- If the line begins with "#", the line is interpreted as a comment.
- A space or tab is ignored.

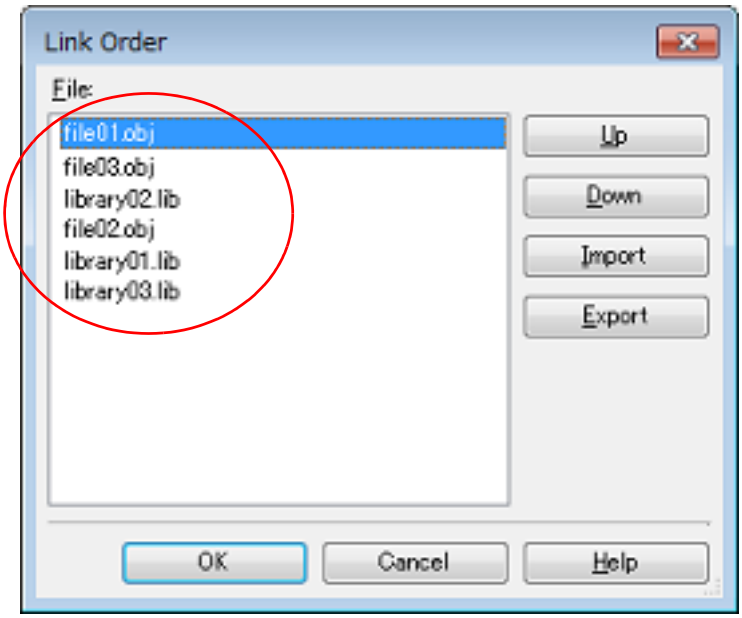
(c) Import the link order specification file
Click the [Import] button in the Link Order dialog box to open the Select Import File dialog box.

Figure 2.67 Select Import File Dialog Box



In the dialog box, select the link order specification file and click the [Open] button.
The description order of the file names are acquired from the selected link order specification file, and then they are reflected in [File] in the Link Order dialog box.

Figure 2.68 Link Order Dialog Box (After Setting Link Order)



Caution 1. The file that is described in the link order specification file and is not added to the project is not displayed.

If the corresponding file exists, the list of the file names will be displayed in the Output panel.

Caution 2. The file that is added to the project and is not described in the link order specification file is displayed in the end of [File].

Caution 3. If a file with the same name exists, check the location of the file in the popup display (it will appear when you hover the mouse cursor over the file name).
To change the link order, use the [Up] and [Down] buttons, or drag and drop the file names.

(3) Set the file link order
Click the [OK] button in the Link Order dialog box to set the input order of the files to the linker.

2.7.3 Change the build order of subprojects

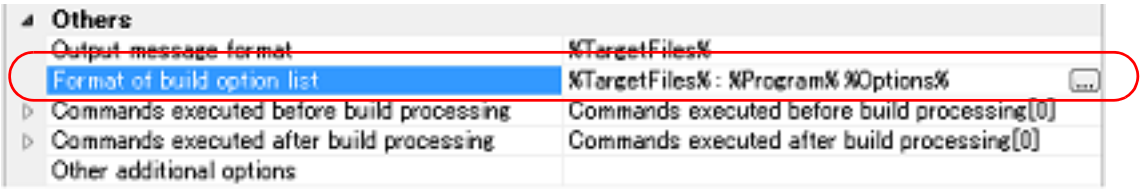
Builds are run in the order of subproject, main project, but when there are multiple subprojects added, the build order of subprojects is their display order on the project tree.
To change the display order of the subprojects on the project tree, drag the subproject to be moved and drop it on the desired location.

2.7.4 Display a list of build options

You can display the list of build options set currently on the build tool's Property panel for the project (main project and subproject).
Select [Build Options List] from the [Build] menu. The current settings of the options for the project will be displayed on the [Build Tool] tab from the Output panel in the build order.

Remark You can change the display format of the build option list.
Select the build tool node on the project tree and select the [Common Options] tab on the Property panel.
Set the [Format of build option list] property in the [Others] category.

Figure 2.69 [Format of build option list] Property



The following placeholders are supported.
%Program%: Replaces with the program name under execution.
%Options%: Replaces with the command line option under build execution.
%TargetFiles%: Replaces with the file name being compile/assemble or making link.
"%TargetFiles% : %Program% %Options%" is set by default.

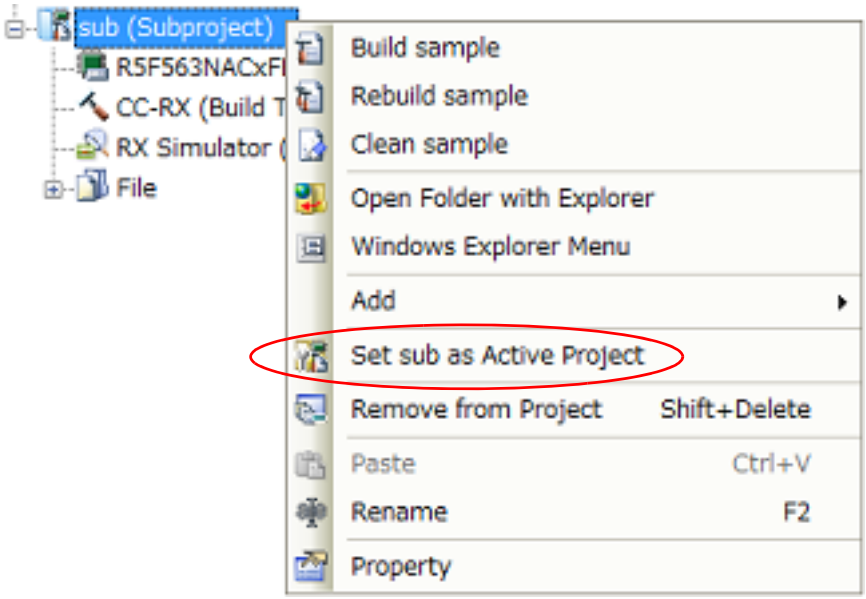
2.7.5 Change the build target project

When running a build that targets a specific project (main project or subproject), you must set that project as the "active project".

Caution The active project will be the debug target.
Note that the active project cannot be set during connection with the debug tool; be sure to disconnect the debug tool before setting the active project.

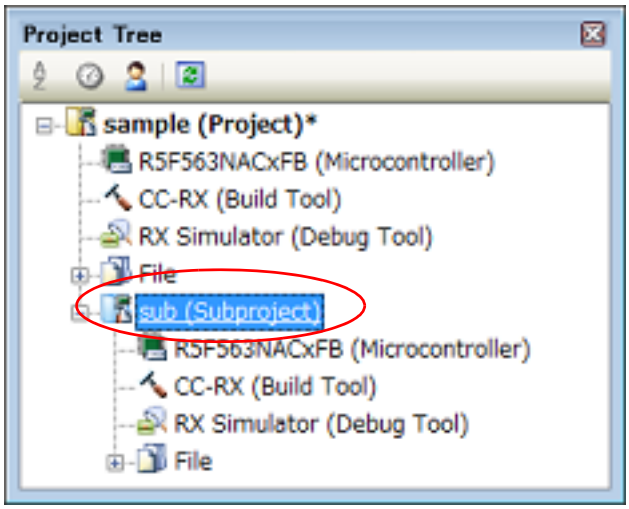
To set the active project, select the main project or subproject to be set as the active project on the project tree and select [Set *selected project* as Active Project] from the context menu.

Figure 2.70 [Set *selected project* as Active Project] Item



When a project is set as the active project, that project is underlined.

Figure 2.71 Active Project



Remark 1. Immediately after creating a project, the main project is the active project.

Remark 2. When you remove a subproject that set as the active project from a project, the main project will be the active project.

Caution When a build is started by a button on the tool bar, the build is run for the entire project.
To run a build only for the active project, start it from the context menu of the active project.

2.7.6 Add a build mode

When you wish to change the build options and macro definitions according to the purpose of the build, you can collectively change those settings.

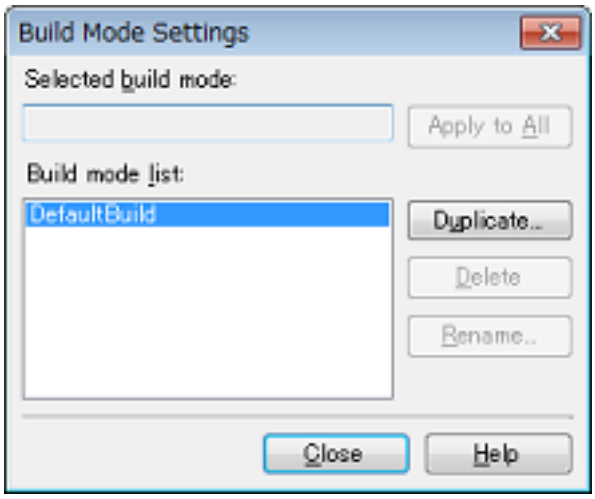
Build options and macro definition settings are organized into what is called "build mode", and by changing the build mode, you eliminate the necessity of changing the build options and macro definition settings every time.

The build mode prepared by default is only "DefaultBuild". Add a build mode according to the purpose of the build.

The method to add a build mode is shown below.

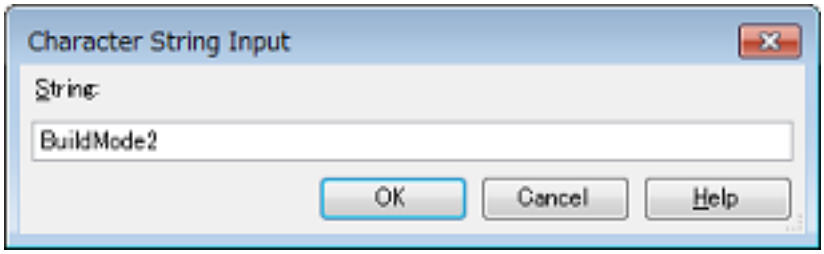
(1) Create a new build mode
Creating a new build mode is performed with duplicating an existing build mode.
Select [Build Mode Settings...] from the [Build] menu. The Build Mode Settings dialog box will open.

Figure 2.72 Build Mode Settings Dialog Box



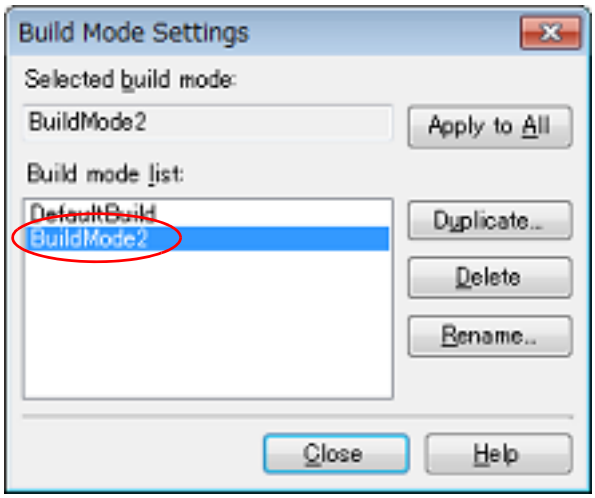
Select the build mode to be duplicated from the build mode list and click the [Duplicate...] button. The Character String Input dialog box will open.

Figure 2.73 Character String Input Dialog Box



In the dialog box, enter the name of the build mode to be created and then click the [OK] button. The build mode with that name will be duplicated.
The created build mode is added to the build modes of the main project and all the subprojects which belong to the project.

Figure 2.74 Build Mode Settings Dialog Box (After Adding Build Mode)



(2) Change the build mode
Change the build mode to the newly created build mode (see "2.7.7 Change the build mode").

(3) Change the setting of the build mode
Select the build tool node on the project tree and change the build options and macro definition settings on the Property panel.

Remark Creating a build mode is regarded a project change.
When closing the project, you will be asked to confirm whether or not to save the build mode.

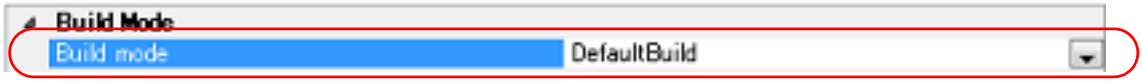
2.7.7 Change the build mode

When you wish to change the build options and macro definitions according to the purpose of the build, you can collectively change those settings.

Build options and macro definition settings are organized into what is called "build mode", and by changing the build mode, you eliminate the necessity of changing the build options and macro definition settings every time.

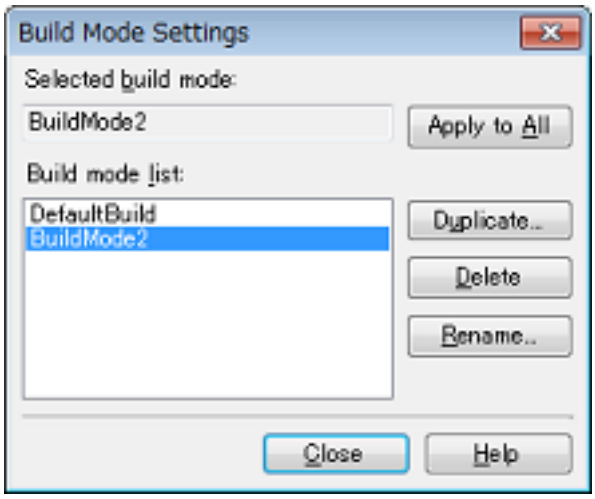
(1) When changing the build mode for the main project or subprojects
Select the Build tool node of the target project on the project tree and select the [Common Options] tab on the Property panel.
Select the build mode to be changed to on the [Build mode] property in the [Build Mode] category.

Figure 2.75 [Build mode] Property



(2) When changing the build mode for the entire project
Select [Build Mode Settings...] from the [Build] menu. The Build Mode Settings dialog box will open.

Figure 2.76 Build Mode Settings Dialog Box



Select the build mode to be changed from the build mode list. The selected build mode will be displayed in [Selected build mode].
Click the [Apply to All] button. The build mode for the main project and all the subprojects which belong to the project will be changed to the build mode selected in the dialog box.

Caution For projects that the selected build mode does not exist, the build mode is duplicated from "DefaultBuild" with the selected build mode name, and the build mode is changed to the duplicated build mode.

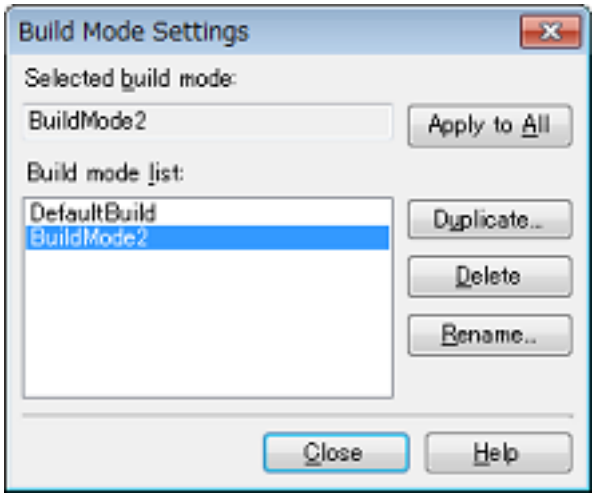
Remark 1. The build mode prepared by default is only "DefaultBuild".
See "2.7.6 Add a build mode" for the method of adding a build mode.

Remark 2. You can change the name of the build mode by selecting the build mode from the build mode list and clicking the [Rename...] button.
However, you cannot change the name of "DefaultBuild".

2.7.8 Delete a build mode

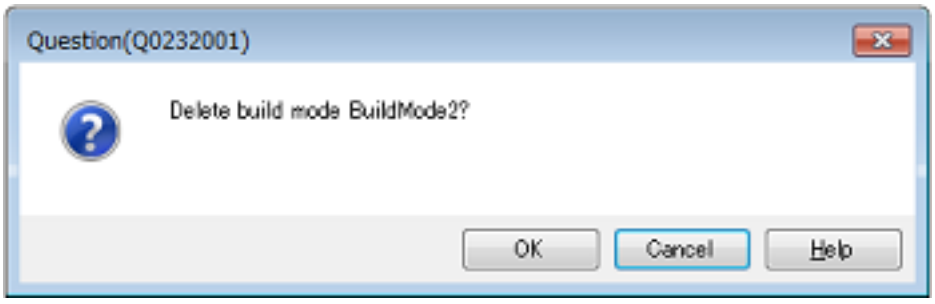
Deleting a build mode is performed with the Build Mode Settings dialog box.
Select [Build Mode Settings...] from the [Build] menu. The dialog box will open.

Figure 2.77 Build Mode Settings Dialog Box



Select the build mode to be deleted from [Build mode list] and click the [Delete] button. The Message dialog box below will open.

Figure 2.78 Message Dialog Box



To continue with the operation, click the [OK] button in the dialog box.
The selected build mode is deleted from the project.

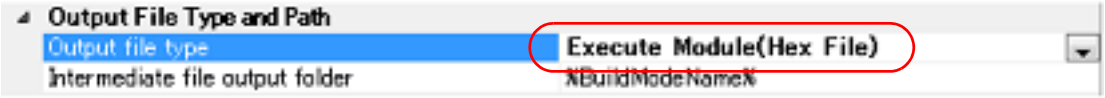
Caution 1. You cannot delete "DefaultBuild".

Caution 2. If the currently set build mode is deleted, "DefaultBuild" is set.

2.7.9 Set the current build options as the standard for the project

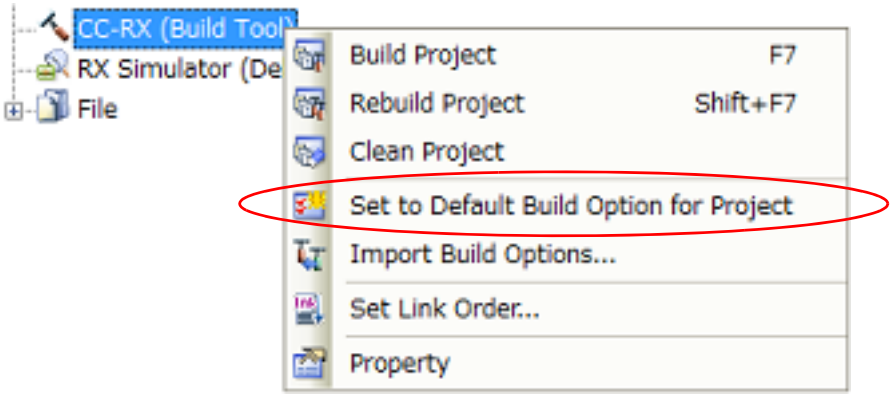
On the build tool's Property panel, if you add a change to the settings for the standard build options, the value of the property will be displayed in boldface.

Figure 2.79 Property Panel (After Changing Standard Build Option)



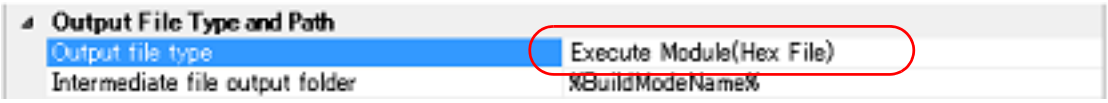
To make the build options for the currently selected project (main project or subproject) the standard build options (remove the boldface), select the Build tool node on the project tree and select [Set to Default Build Option for Project] from the context menu.

Figure 2.80 [Set to Default Build Option for Project] Item



The values of the properties after setting them as the standard build option are as shown below.

Figure 2.81 Property Panel (After Setting Standard Build Option)



Caution When the main project is selected, only the main project settings are made. Even if subprojects are added, their settings are not made.

2.8 Run a Build

This section explains operations related to running a build.

(1) Build types
The following types of builds are available.

Table 2.1 Build Types

Type	Description
Build	Out of build target files, runs a build of only updated files. -> See "2.8.1 Run a build of updated files".
Rebuild	Runs a build of all build target files. -> See "2.8.2 Run a build of all files".
Rapid build	Runs a build in parallel with the change of the build setting. -> See "2.8.3 Run a build in parallel with other operations".
Batch build	Runs builds in batch with the build modes that the project has. -> See "2.8.4 Run builds in batch with build modes".

Remark 1. Builds are run in the order of subproject, main project.
Subprojects are built in the order that they are displayed on the project tree (see "2.7.3 Change the build order of subprojects").
Note that when the build target project depends on another project, the build of the depended project is run before the target project.
Note that if parallel build between projects (see the [General - Build] category of the Option dialog box) is enabled and also there is no dependency between the projects, the execution order of build is not fixed (i.e. dependent on the environment of the PC in use).

Remark 2. If there are files being edited with the Editor panel when running a build, rebuild, or batch build, then all these files are saved.

(2) Speeding-up of build
Two types of facilities are provided to speed up build: simultaneous build and parallel build.
The build time can be shortened in simultaneous build by simultaneously compiling or assembling the files with a single call of the build command and in parallel build by executing multiple build commands in parallel.
See "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details.

(3) Displaying execution results
The execution results of the build (output messages of the build tool) are displayed in each tab on the Output panel.

- Build, rebuild, or batch build
  -> [All Messages] tab and [Build Tool] tab
- Rapid build
  -> [Rapid Build] tab

Figure 2.82 Build Execution Results (Build, Rebuild, or Batch Build)

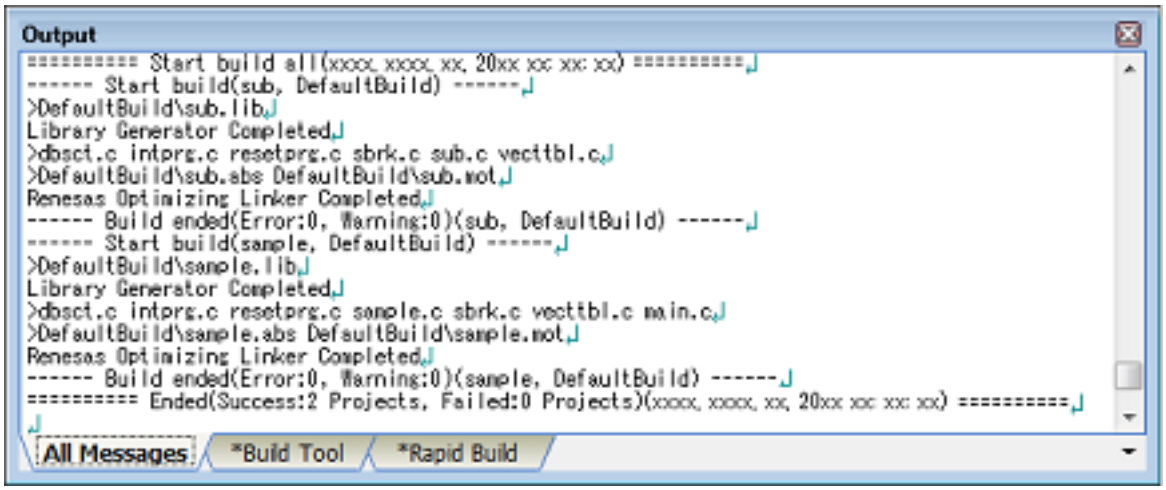
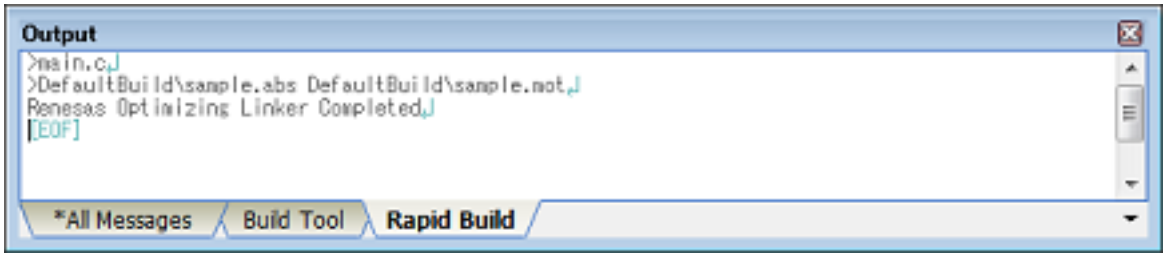


Figure 2.83 Build Execution Results (Rapid Build)



Remark 1. The text in the [Rapid Build] tab becomes dimmed.

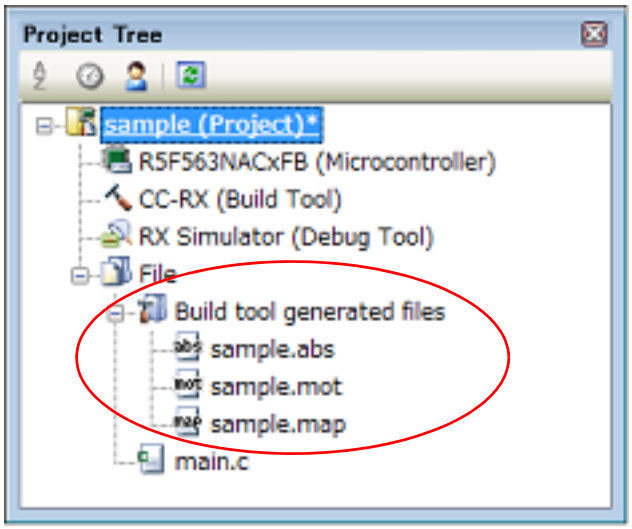
Remark 2. When a file name or line number can be obtained from the output messages, if you double click on the message, you can jump to the relevant line in the file.

Remark 3. If you press the [F1] key when the cursor is on a line displaying the warning or error message, you can display the help related to that line's message.

Remark 4. A project whose build was skipped because an error occurred in a dependent project is included in the count of projects whose build has failed.

Files generated by the build tool appear under the Build tool generated files node on the Project Tree panel.

Figure 2.84 Build Tool Generated Files



Remark Files displayed under the Build tool generated files node are as follows.

- For other than the library project
  Load module file (*.abs)

Intel Hex file (*.hex)
Motorola S-record file (*.mot)
Binary file (*.bin)
Link map file (*.map)
Library file (*.lib)
Library list file (*.lbp)
Error message file (*.err)

- For the library project
  Library file (*.lib)
  Error message file (*.err)

Caution The Build tool generated files node is created during build.
This node will no longer appear if you reload the project after building.

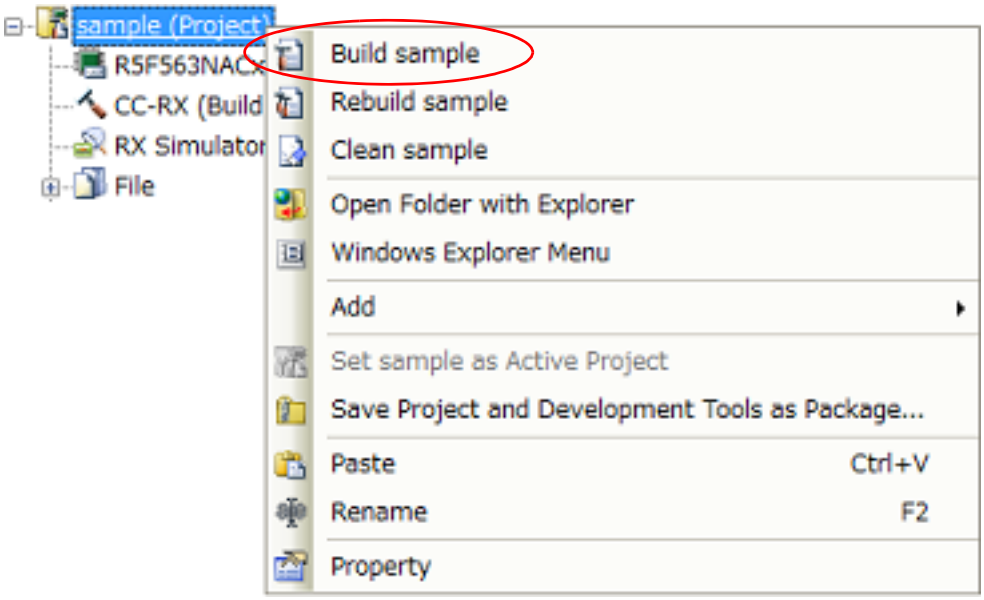
2.8.1 Run a build of updated files

Out of build target files, a build of only updated files is run (hereafter referred to as "build").
Running a build is performed for the entire project (main project and subprojects) or active project (see "2.7.5 Change the build target project").

(1) When running a build of the entire project
Click on the toolbar.

(2) When running a build of the active project
Select the project, and then select [Build *active project*] from the context menu.

Figure 2.85 [Build *active project*] Item



Remark If the build of the included source file is not run after editing the header file and running the build, update the file dependencies (see "2.6.6 Update file dependencies").

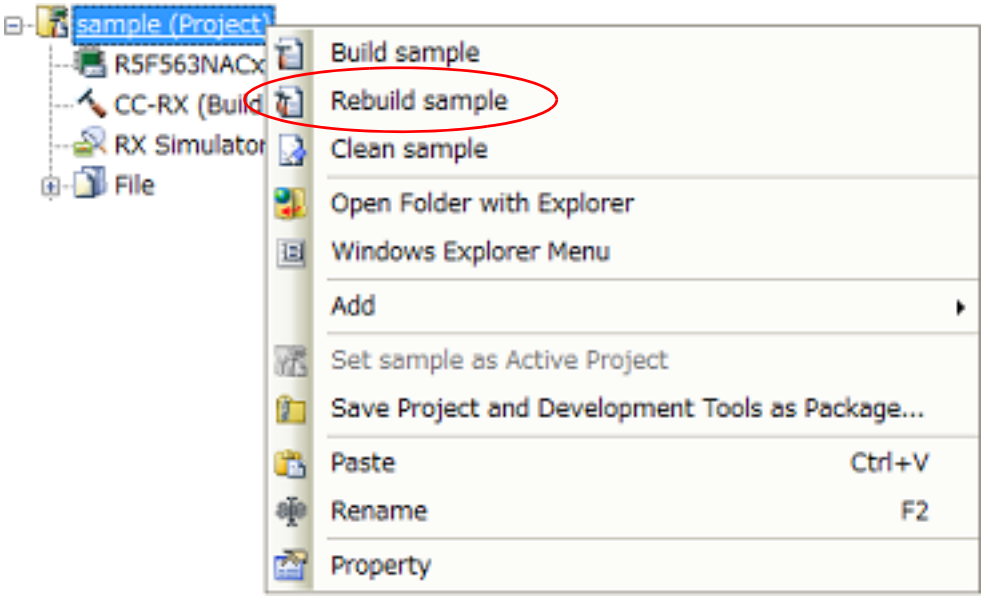
2.8.2 Run a build of all files

A build of all build target files is run (hereafter referred to as "rebuild").
The cross reference file is deleted.
Running a rebuild is performed for the entire project (main project and subprojects) or active project (see "2.7.5 Change the build target project").

(1) When running a rebuild of the entire project
Click on the toolbar.

(2) When running a rebuild of the active project
Select the project, and then select [Rebuild *active project*] from the context menu.

Figure 2.86 [Rebuild *active project*] Item



2.8.3 Run a build in parallel with other operations

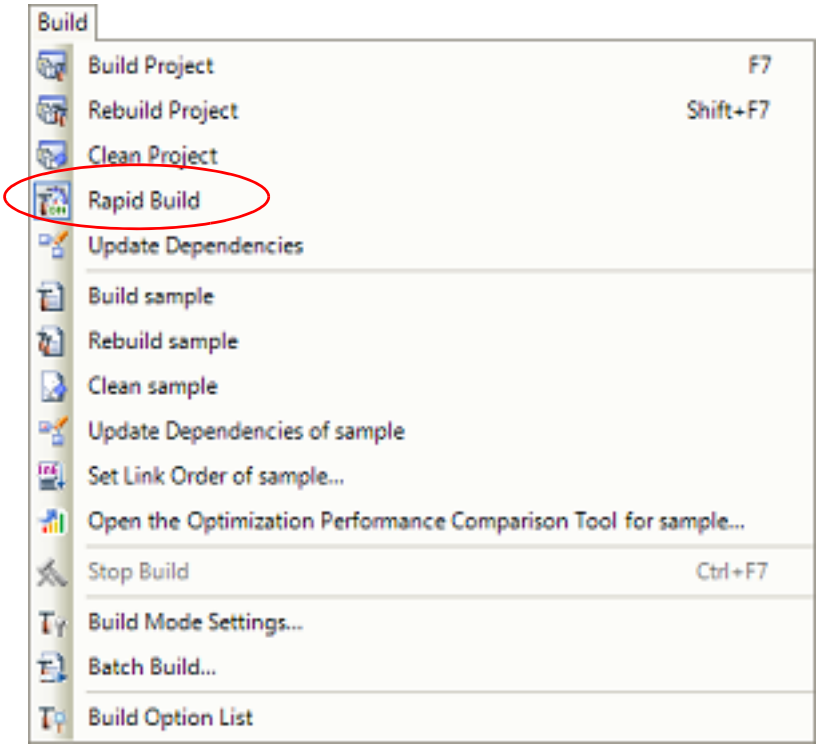
CS+ can automatically start a build when one of the following events occurs (hereafter referred to as "rapid build").

- When any one of the following files that are added to the project is updated: (C source file, assembly source file, symbol address file, header file, object file, relocatable file, and library file)
- When a build target file has been added to or removed from the project
- When the link order of object module files and library files is changed
- When the property of the build tool or build target file is changed

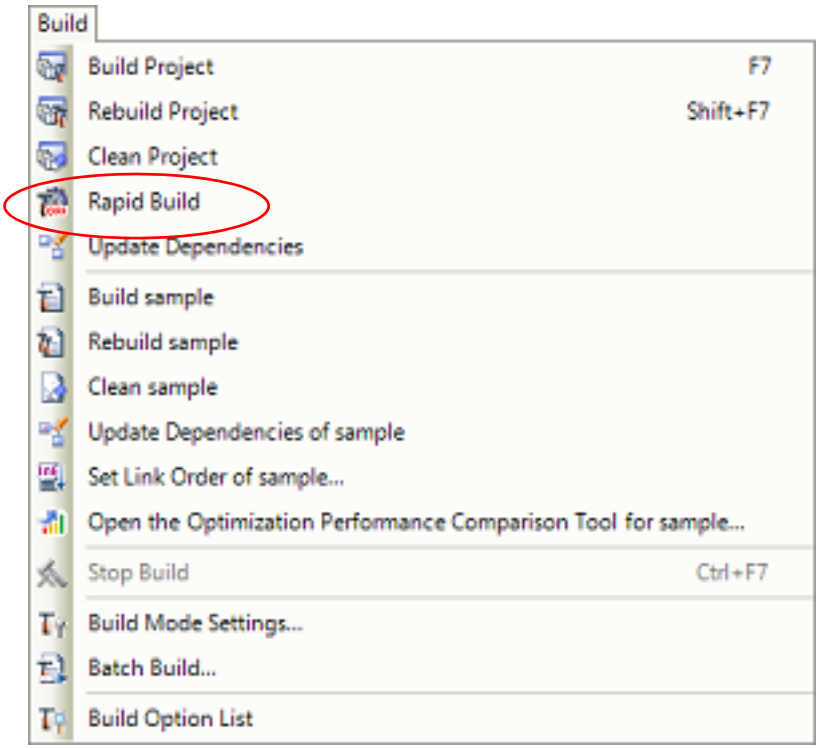
If a rapid build is enabled, it is possible to perform a build in parallel with the above operations.
To enable/disable a rapid build, select [Rapid Build] from the [Build] menu. A rapid build is enabled by default.

Figure 2.87 [Rapid Build] Item

[When a rapid build is valid]



[When a rapid build is invalid]



Remark 1. After editing source files, it is recommend to save frequently by pressing the [Ctrl] + [S] key.

Remark 2. Enable/Disable setting of the rapid build applies to the entire project (main project and subprojects).

Remark 3. If you disable a rapid build while it is running, it will be stopped at that time.

Caution This function will also be enabled in an external text editor if the [Observe registered files changing] check box is selected in the [General - Build] category of the Option dialog box.

2.8.4 Run builds in batch with build modes

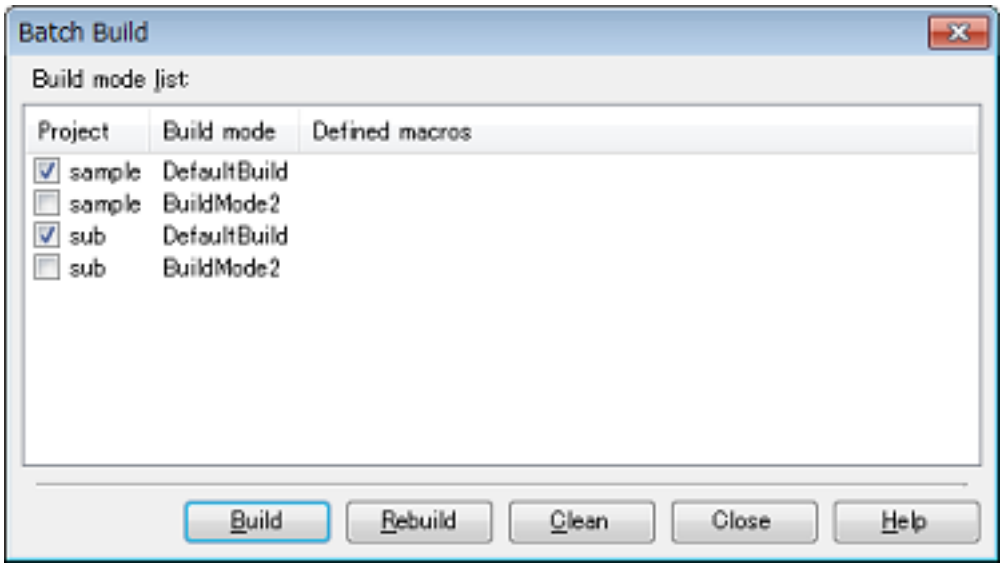
You can run builds, rebuilds and cleans in batch with the build modes that the project (main project and subproject) has (hereafter referred to as "batch build").

Remark See the sections below for a build, rebuild, and clean.

- Build: See "2.8.1 Run a build of updated files".
- Rebuild: See "2.8.2 Run a build of all files".
- Clean: See "2.8.8 Delete intermediate files and generated files".

Select [Batch Build...] from the [Build] menu. The Batch Build dialog box will open.

Figure 2.88 Batch Build Dialog Box



In the dialog box, the list of the combinations of the names of the main project and subprojects in the currently opened project and their build modes and macro definitions is displayed.

Select the check boxes for the combinations of the main project and subprojects and build modes that you wish to run a batch build, and then click the [Build], [Rebuild], or [Clean] button.

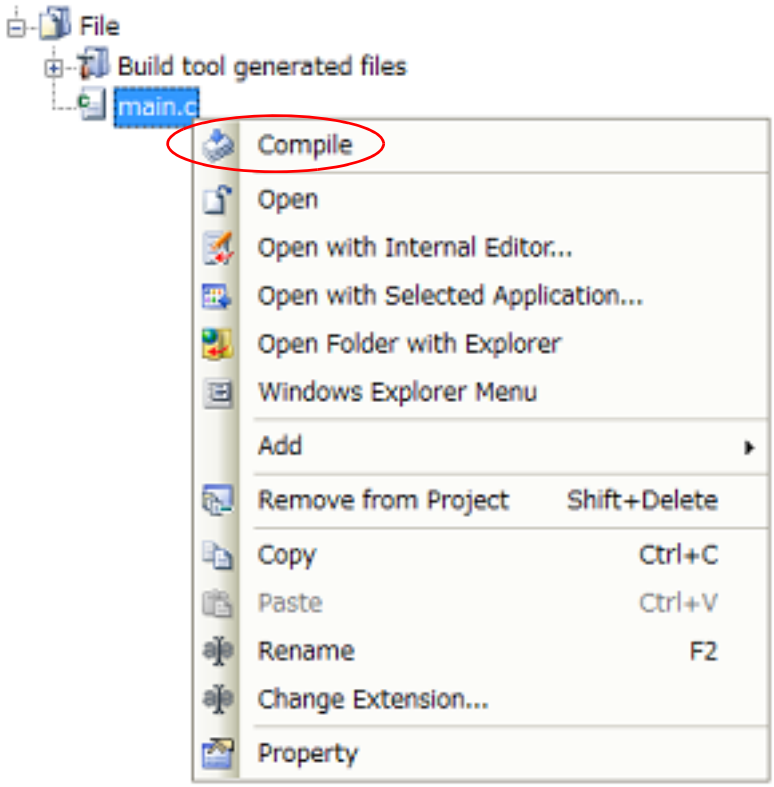
Remark The batch build order follows the project build order, the order of the subprojects, main project.
When multiple build modes are selected for a single main project or subproject, after running builds of the subproject with all the selected build modes, the build of the next subproject or main project is run.

2.8.5 Compile/assemble individual files

You can just compile or assemble for each source file added to the project.

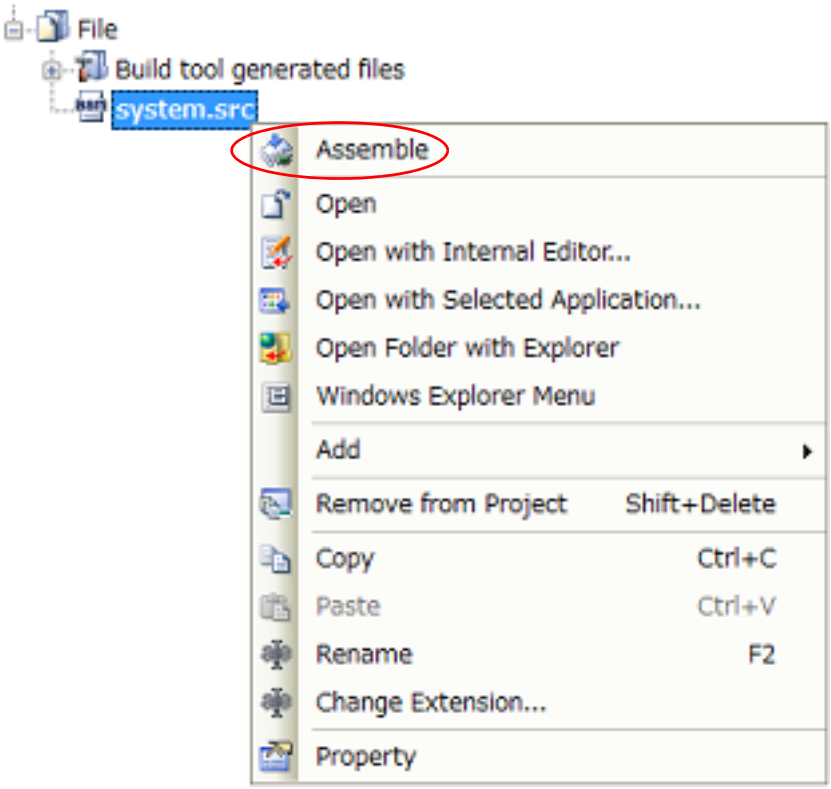
(1) When compiling a C source file
Select the C source file on the project tree and select the [Compile] from the context menu.

Figure 2.89 [Compile] Item



(2) When assembling an assembly source file
Select the assembly source file on the project tree and select the [Assemble] from the context menu.

Figure 2.90 [Assemble] Item



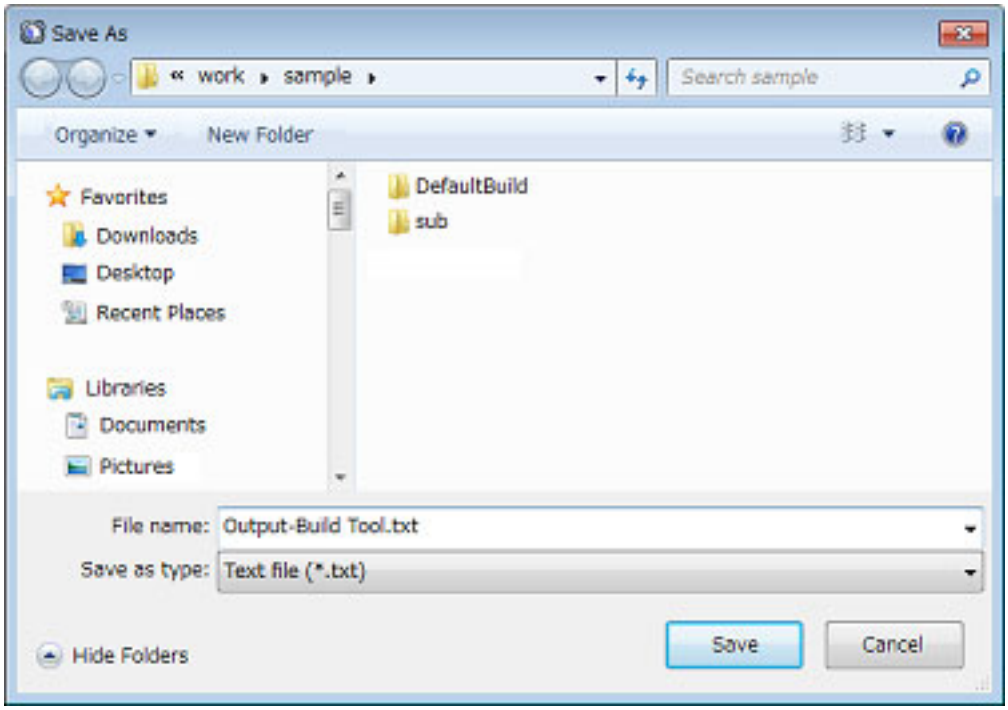
2.8.6 Stop running a build

To stop running a build, rebuild, or batch build, click on the toolbar.

2.8.7 Save the build results to a file

You can save the execution results of the build (output messages of the build tool) that displayed on the Output panel.
Select the [Build Tool] tab on the panel, and then select [Save Output - Build Tool As...] from the [File] menu. The Save As dialog box will open.

Figure 2.91 Save As Dialog Box



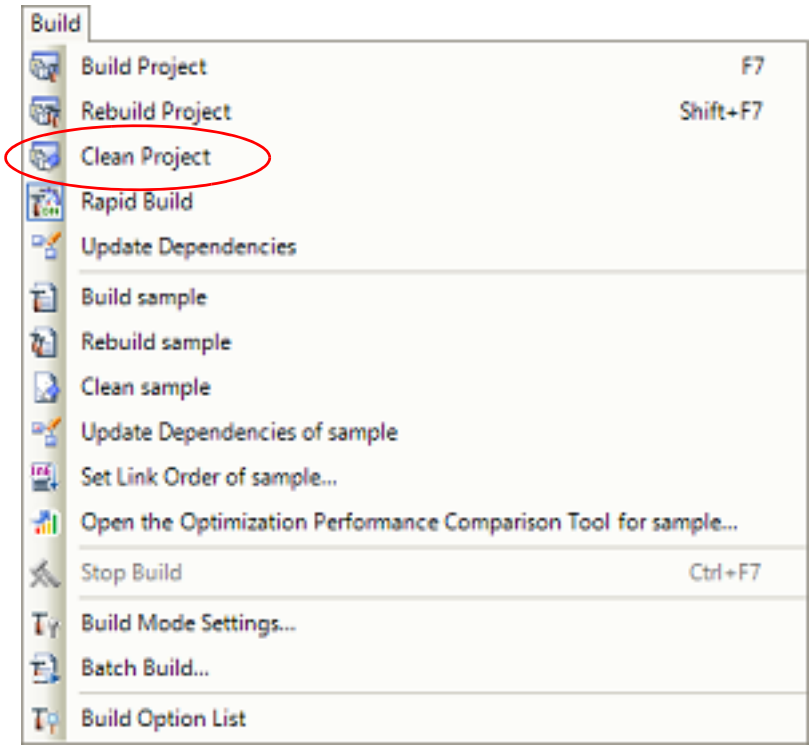
In the dialog box, specify the file to be saved and then click the [Save] button.

2.8.8 Delete intermediate files and generated files

You can delete all the intermediate files and generated files output by running a build (hereafter referred to as "clean").
Running a clean is performed for the entire project (main project and subprojects) or active project (see "2.7.5 Change the build target project").

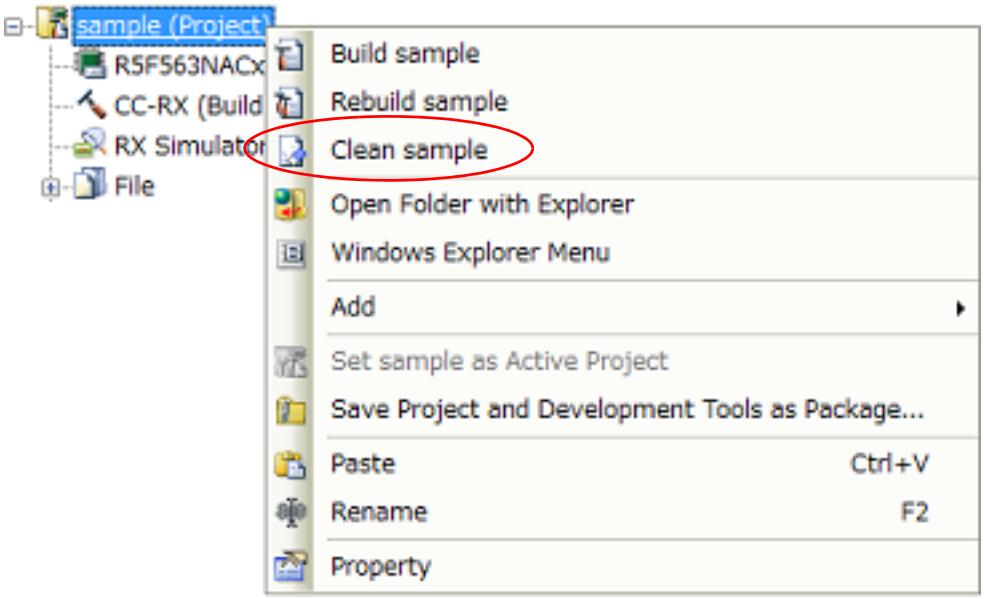
(1) When running a clean of the entire project
From the [Build] menu, select [Clean Project].

Figure 2.92 [Clean Project] Item



(2) When running a clean of the active project
Select the project, and then select [Clean *active project*] from the context menu.

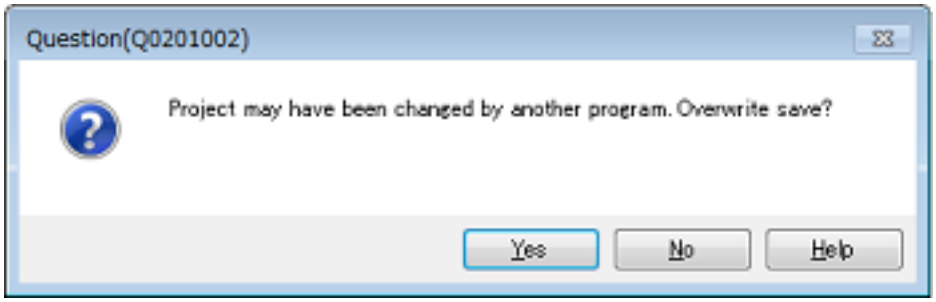
Figure 2.93 [Clean *active project*] Item



2.9 Save the Project File

The project's settings information is saved to the project file (*.mtpj).
Select the [File] or [Project] menu >> [Save Project].
When there is a change in the project, the message dialog box below will open.

Figure 2.94 Message Dialog Box

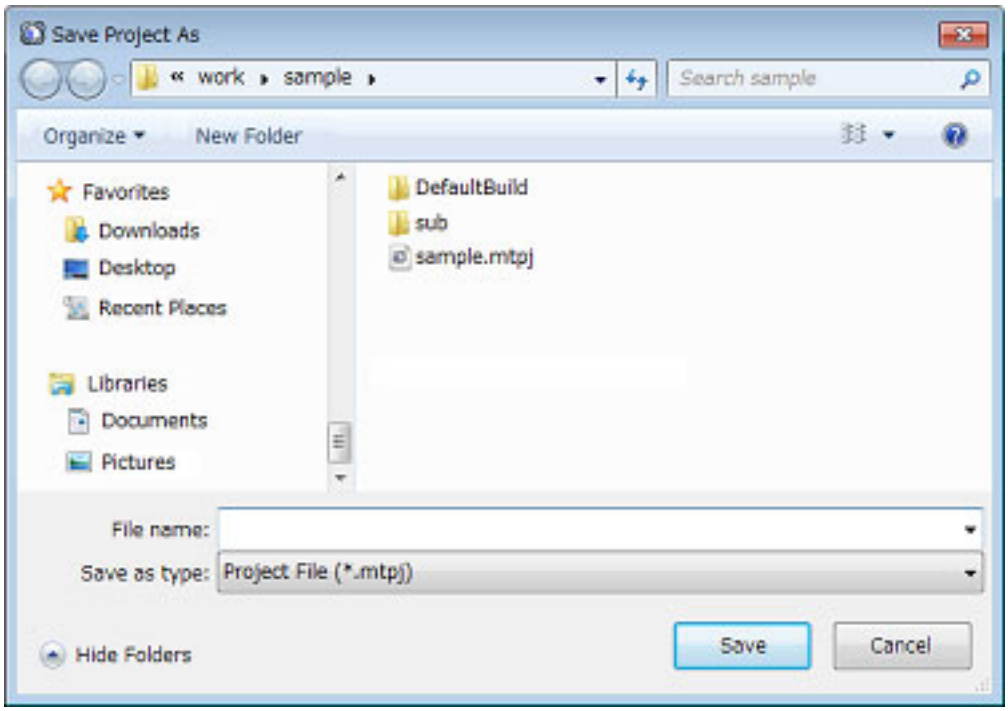


To continue with the operation, click the [Yes] button on the dialog box.
The project file is overwritten with the current settings information.

2.9.1 Save the project file with a different name

You can save the project file with a different name.
From the [File] or [Project] menu, select [Save Project As...], the Save Project As dialog box will open.

Figure 2.95 Save Project As Dialog Box



Specify the save folder and separate project filename (*.mtpj) on the dialog box. The project file is saved in the specified folder with the filename.

Caution 1. The files registered to the project are the same as those in the original project (the files registered to the project are not copied).

Caution 2. If there is already a subproject file in the same folder and with the same file name (excluding the file extension) as the project file, then the project file will not be saved correctly.
Change the name of the main project or the subproject.

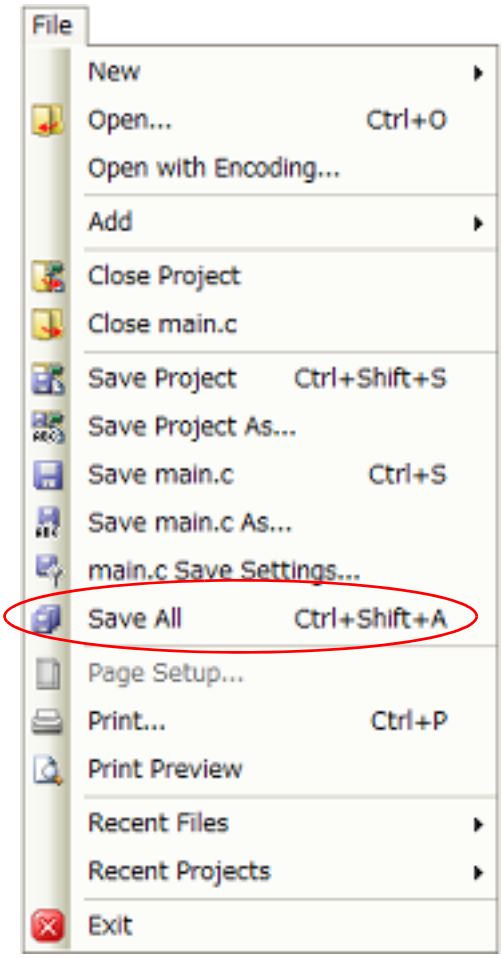
Remark 1. If you save the project file with a different name from the original project file, and then modify one or both of them, then the project files will have different contents.

Remark 2. To save the subproject files, new folders are created with the names "*new project name_n*" (*n*: 1, 2, ...) in the same folder as where the project file is to be saved. One subproject file is saved in one folder.

2.9.2 Save all files

You can save the project file and all the files being edited.
From the [File] or [Project] menu, select [Save All], the project file is overwritten with the current settings information and all files being edited are saved.

Figure 2.96 [Save All] Item

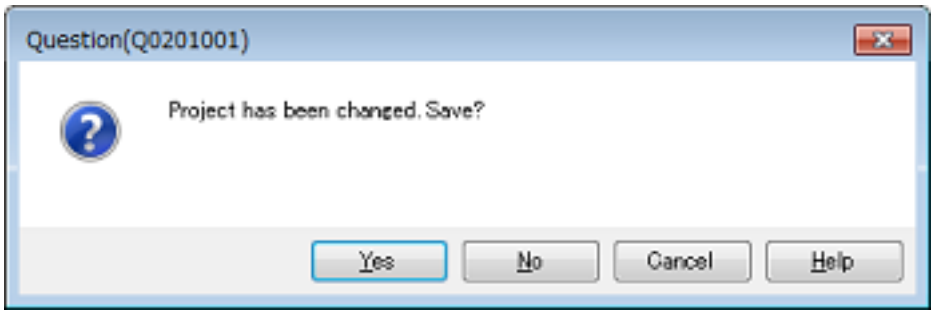


2.9.3 Pack and save the project and this product

You can copy the product suite (IDE, language tools, microcontroller information, etc.) and project set (also includes subprojects if they exist) to a specified folder and save it organized into a single folder.

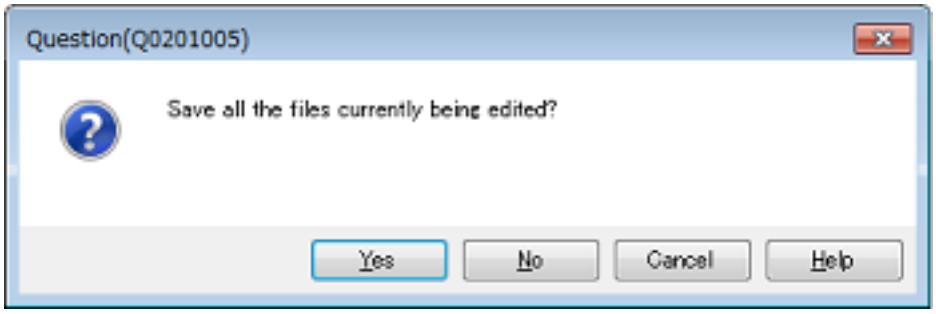
Select the Project node on the project tree and if you select [Save Project and Development Tools as Package] on the context menu.
If the project composition and properties have been changed, the message dialog box below will open.

Figure 2.97 Message Dialog Box



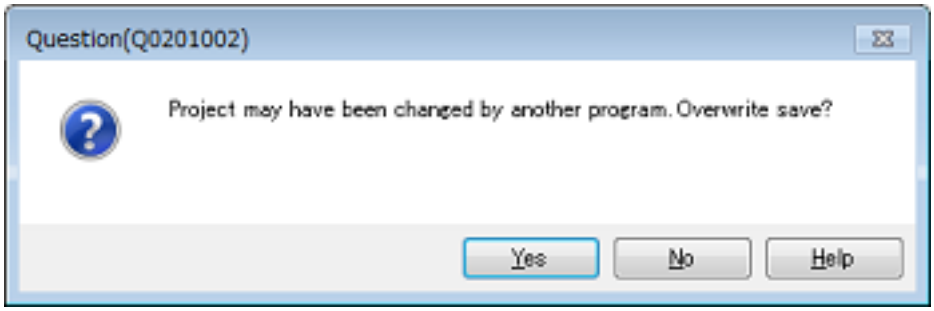
When you save the project, click the [Yes] button. When you don't save the project, click the [No] button.
When files are being edited, the message dialog box below will open.

Figure 2.98 Message Dialog Box



When you save the files, click the [Yes] button. When you don't save the files, click the [No] button.
When using external tools such as an external text editor and files are being edited, the message dialog box below will open.

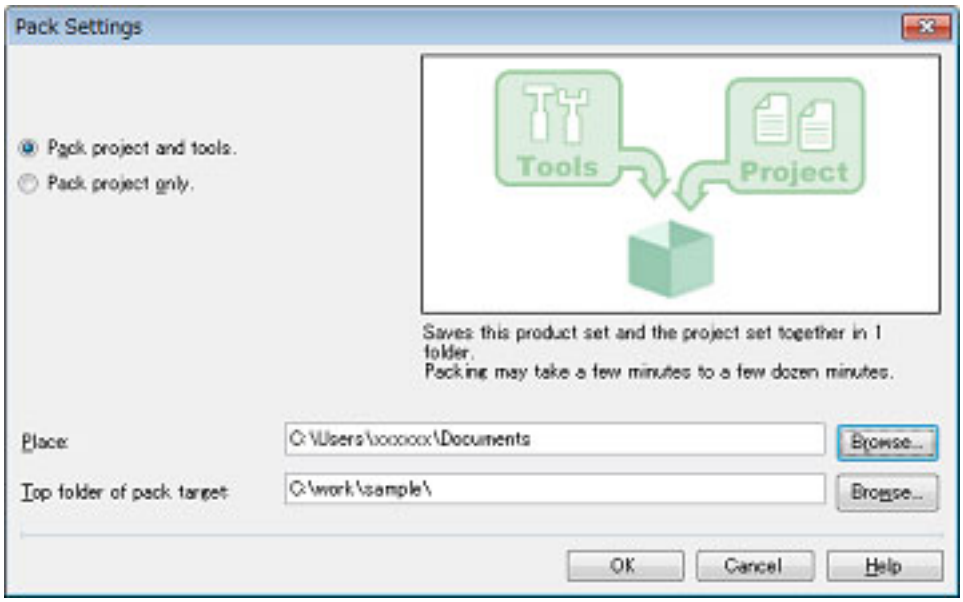
Figure 2.99 Message Dialog Box



Remark This dialog box only appears if in the Option dialog box, in the [General - External Text Editor] category, you selected the [Use external text editor] property.

To continue with the operation, click the [OK] button.
The Pack Settings dialog box will open.

Figure 2.100 Pack Settings Dialog Box

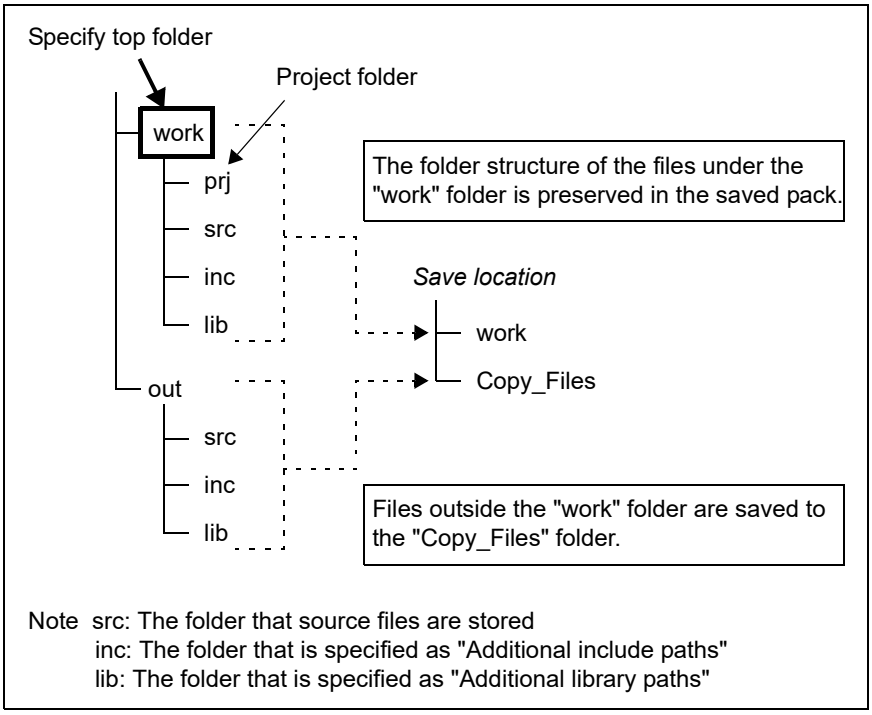


Specify the pack type (project and tools, or project only), save location folder, and the top folder of the packing target on the dialog box.

Caution Specify a folder other than the project folder to save to.

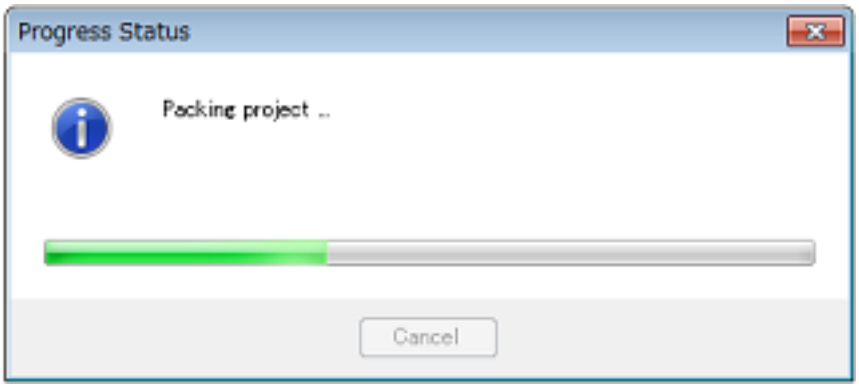
Remark Specify the top folder of the packing target to save with the project folder structure preserved.

Figure 2.101 Sample of Project Pack



If you click the [OK] button, the copy process will begin.
The dialog box below is displayed during the copying process.

Figure 2.102 Copying



The save location folder structure is shown below.

Figure 2.103 Save Location Folder Structure

```
Save location
  ├─ readme.txt        :  The explanation of the structure of the save location
  ├─ errorlog.txt      :  A record of the files that failed to copy
  ├─ Top folder name   :  The folder that is specified as the top folder of the packing target[Note 1]
  ├─ Tools             :  The folder that this product is installed[Note 2]
  └─ Copy_Files        :  The copy location folder for files not placed in the top folder of the packing target[Note 3]
       ├─ copylog.txt  :  A record of the copied files
       ├─ 1            :  The storage folder 1 for copied files[Note 4]
       ├─ 2            :  The storage folder 2 for copied files[Note 4]
       :
```

Note 1. The following files in the top folder of the packing target specified in the Pack Settings dialog box are stored.

- All files in the project folder
- All files in the folders specified in the [Additional include paths] and [Additional library paths] properties of the build tool, and the C source file or assembler source file that is the build target
- Files added to the project

Note 2. If you save the project only in the Pack Settings dialog box, this folder is not created.

Note 3. Files that are not in the top folder of the packing target are stored in folders for each identical path.

Note 4. The digits in the folder name are adjusted by the required number of folders. For example, for 2 digits, the name is "01", "02", and so on.

Caution 1. Information on the start menu is not a subject of the save. When using the save location tools, follow the content of readme.txt in the save folder.

Caution 2. Information on the tool installation is not a subject of the save. To uninstall the save location tools, delete the entire save folder.

Caution 3. Custom settings made in the Option dialog box and User Setting dialog box are not saved. When you use tools from the saved file, the environment will be configured to the default settings.

Caution 4. Tools in the save folder cannot be updated.

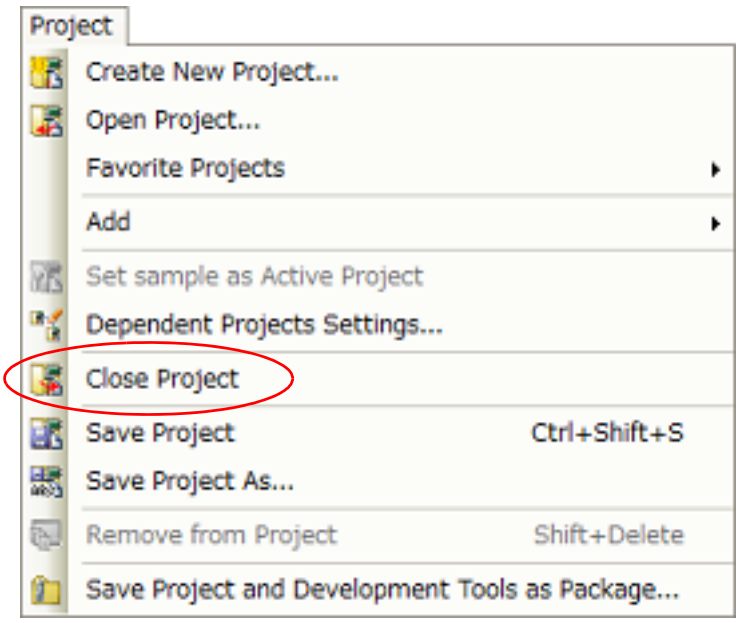
Caution 5. Files not placed inside the top folder of the packing target that is specified in the Pack Settings dialog box are copied to the Copy_Files folder when saving, so when using the save location project, you must re-register the files to the project.

Caution 6. Emulator drivers are not saved. If you use a pack on another computer, you must install the drivers separately.

2.9.4 Close a project

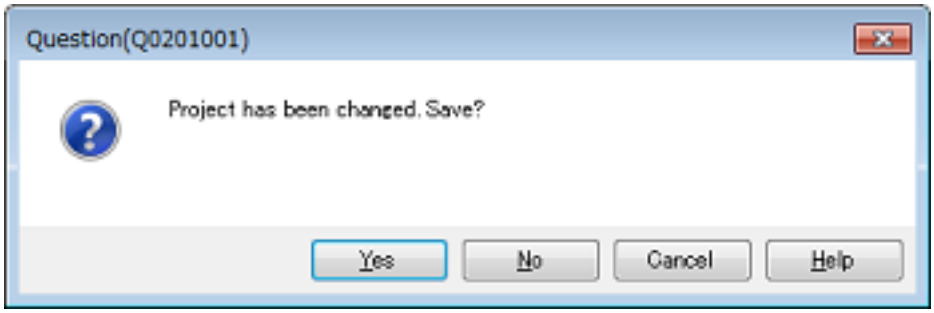
To close a project, select the [File] or [Project] menu >> [Close Project].

Figure 2.104 [Close Project] Item



When the open project or changed files are not saved, a Message dialog box is displayed.

Figure 2.105 Message Dialog Box



Click the [Yes] button to save, click the [No] button to not save.

Caution If you have changed build options prior to building and close a project without saving it, the build options in the project file may not match the contents of the load module. Be sure to save a project before closing it if you have changed build options.

2.10 Change the Window Layout

This section describes how to change the CS+ window layout.

2.10.1 Automatically hide panels

Panels support the auto-hide feature.
When the auto-hide feature is in use, unused panels are minimized on the edge of the frame, making it possible to display more information at one time.

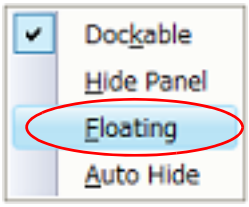
(1) Enabling the auto-hide feature
To enable the auto-hide feature, click on the panel to hide to select it.
Right click on the panel's title bar, and select [Auto hide] or click on the panel's title bar .
When an auto-hidden panel loses the focus, a minimized icon and its panel name appear on the edge of the frame as a tab.
To display the auto-hidden panel, move the mouse cursor over the tab. The panel opens from the tab, and becomes available.
When the panel loses the focus again, the panel will be minimized as the tab.

(2) Disabling the auto-hide feature
To disable the auto-hide feature, click on the panel to hide to select it.
Right click on the panel's title bar, and select [Auto hide] or click on the panel's title bar .

2.10.2 Float a window

To float a window, click on its title bar and move it.
You can also double click the title bar of the window you wish to float, or right click and select [Floating].

Figure 2.106 Context Menu



2.10.3 Dock windows

You can dock a floating window to the main window.
Click and drag the title bar of the window you wish to dock. Docking indicators appears automatically in the center, top, bottom, left, and right of the main window.
When the mouse pointer moves over one of the docking indicators, part of the window background becomes blue. If you release the mouse pointer at this point, the window will be docked in the blue area.
Selecting the indicators allows the window to be placed freely, as shown below.

	Places in the upper part of CS+
	Places in the left part of CS+
	Places in the right part of CS+
	Places in the lower part of CS+
Above	Places in the upper part of the target panel
Left of	Places in the left part of the target panel
Right of	Places in the right part of the target panel
Below	Places in the bottom part of the target panel
Center of	Places in the target panel as a tab

You can also double click the title bar of the window or right click and select [Floating]. This docks the window at its former docking position.
You can adjust the size of windows docked to the main window by clicking and dragging the splitters.

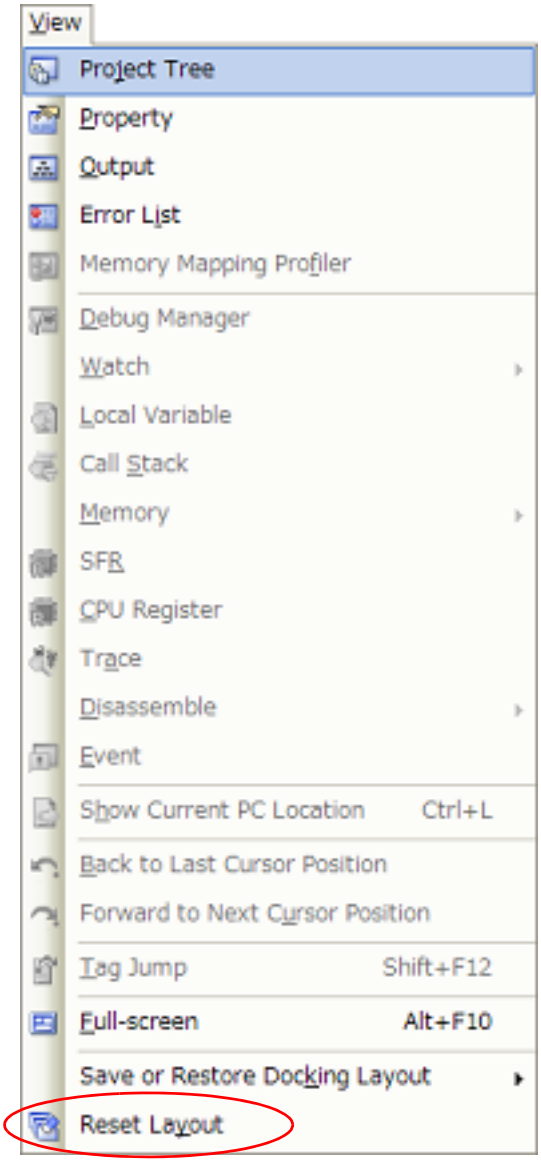
2.10.4 Display multiple panels

Click on a panel you wish to view, and drag it over another panel you wish to view simultaneously. As described in "2.10.3 Dock windows", a docking indicator appears. Move the mouse pointer to , and release the mouse over the location where you wish to place the panel (left, right, top, or bottom).

2.10.5 Reset the window layout

From the Main window's [View] menu, select [Reset Layout]. The window layout is returned to its initial state.

Figure 2.107 [Reset Layout] Item



2.11 Accelerate the Startup Time of CS+

Use the following method to accelerate the startup time of CS+.

- Use rapid start

2.11.1 Use rapid start

The rapid start function makes CS+ permanently resident, to accelerate the startup time.
You can enable or disable the rapid start in the [General - Startup and Exit] category in the Option dialog box, with option [Reduce startup time by enabling rapid startup] (Default: disabled).

When the rapid start is enabled, after login to Windows, CS+ is in the standby state, and the icon appears in the task tray.

Figure 2.108 Context Menu of Rapid Start Icon

(1) Displaying the main window
To release CS+ from the standby state, and display the Main window, select [Start] in the context menu of the icon, or double-click the icon.
Click the button on the Main window to return CS+ to the standby state (an icon is displayed in the task tray during standby).

(2) Exiting CS+
To exit CS+, select [Exit] in the context menu.

2.12 Manipulate CS+ on the Command Line

You can launch CS+ from the command line (e.g. the Windows command prompt), and control it via command input without displaying the Main window.

This section describes the control of CS+ when launched from the Windows command prompt.
From the command prompt, execute CubeSuite+.exe or CubeSuiteW+.exe, located in the CS+ installation folder.

(1) When executing CubeSuite+.exe
If you execute CubeSuite+.exe, you can launch CS+, load plug-ins, and execute builds without displaying the Main window.
The format to specify on the command line is shown below.

```
CubeSuite+.exeΔ[[[[/bb|/br|/bcb|/bcΔ[build-mode-name]]|[/cve]]]Δ[[/npΔplug-in-
name[,plug-in-name,...]]]Δ[/npall]Δ[[/lpΔplug-in-name[,plug-in-name,...]]]Δ[/
lpall]Δ[plug-in-optionΔ[plug-in-parameter,...]]Δproject-file-name]
```

Δ: One or more spaces
[ ]: Can be omitted
|: When options are separated by pipeline characters ("|"), any one of the options can be specified
...: Pattern in proceeding [ ] can be repeated

Each option is described below.

Option	Description
None	Launch CS+ without displaying the Main window, and exit without performing any actions.
/bbΔ[*build-mode-name*]	Execute a build. Launch without displaying the Main window, build all the projects included in specified *project-file-name*, with the build mode specified by *build-mode-name*, and then exit. If a project does not have the build mode specified by *build-mode-name*, then the build mode is copied based on the DefaultBuild, and the build is performed. If the build mode specified by *build-mode-name* is not defined in the project specified by *project-file-name*, then an error will be displayed, and processing will end. If *build-mode-name* is omitted, then the build will use the DefaultBuild. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/brΔ[*build-mode-name*]	Execute a rebuild. Launch without displaying the Main window, build all the projects included in specified *project-file-name*, with the build mode specified by *build-mode-name*, and then exit. If a project does not have the build mode specified by *build-mode-name*, then the build mode is copied based on the DefaultBuild, and the build is performed. If the build mode specified by *build-mode-name* is not defined in the project specified by *project-file-name*, then an error will be displayed, and processing will end. If *build-mode-name* is omitted, then the build will use the DefaultBuild. If *project-file-name* is omitted, then an error will be displayed, and processing will end.

Option	Description
/bcbΔ[*build-mode-name*]	Perform a clean and then execute a build. Launch without displaying the Main window, build all the projects included in specified *project-file-name*, with the build mode specified by *build-mode-name*, and then exit. If a project does not have the build mode specified by *build-mode-name*, then the build mode is copied based on the DefaultBuild, and the build is performed. If the build mode specified by *build-mode-name* is not defined in the project specified by *project-file-name*, then an error will be displayed, and processing will end. If *build-mode-name* is omitted, then the build will use the DefaultBuild. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/bcΔ[*build-mode-name*]	Perform a clean. Launch without displaying the Main window, build all the projects included in specified *project-file-name*, with the build mode specified by *build-mode-name*, and then exit. If a project does not have the build mode specified by *build-mode-name*, then the build mode is copied based on the DefaultBuild, and the build is performed. If the build mode specified by *build-mode-name* is not defined in the project specified by *project-file-name*, then an error will be displayed, and processing will end. If *build-mode-name* is omitted, then the build will use the DefaultBuild. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/cve	Perform conversion from the specified project file to the common project file (*.rcpe). Remark The common project file (*.rcpe) is a project file that can be output by CS+ and loaded by the e^2 studio that supports this file format. Use the import function of e^2 studio to load the common project file (*.rcpe). Launch without opening the Main window, convert all the projects included in specified *project-file-name*, and then exit. The output folder is the same folder as that of *project-file-name*, and the output file name is the same as *project-file-name* with its extension changed to ".rcpe". The device of the project and subprojects of the conversion source is directly used as the device of conversion destination. If *project-file-name* is omitted, then an error will be displayed, and processing will end. The following conversion is supported. Build Tool of Conversion Source / Build Tool of Conversion Destination CA78K0R / CC-RL CA78K0 / CC-RL

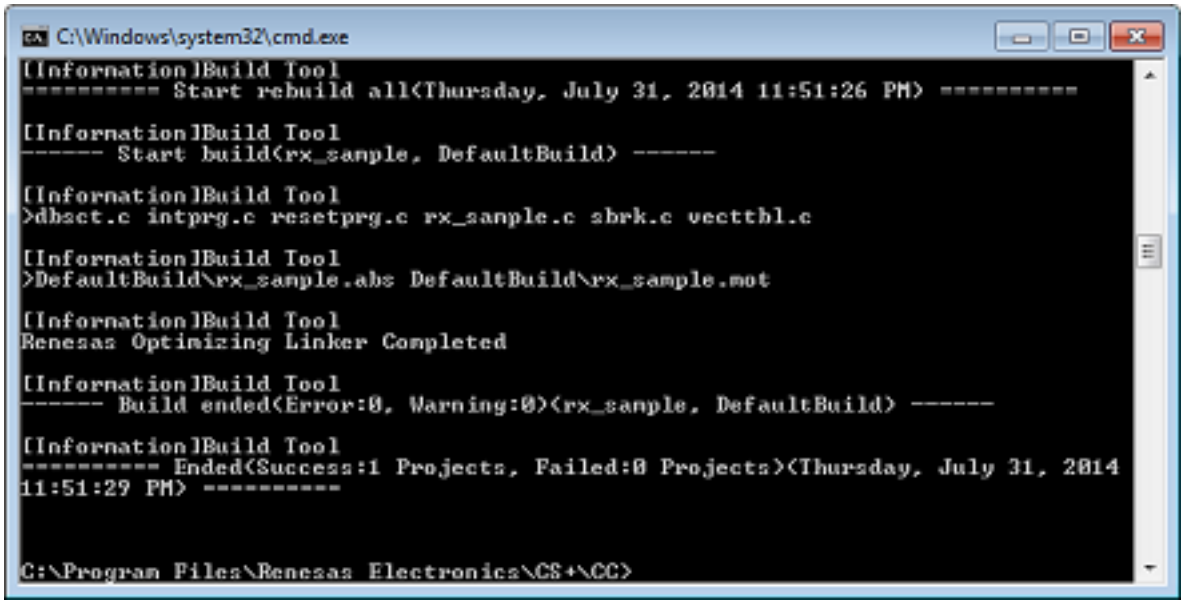
Option	Description
/lpΔ*plug-in-name*[,*plug-in-name*,...]	Start CS+ without displaying the Main window, and with loading the specified plug-ins in the Plugins folder. In *plug-in-name*, specify the name of the folder in which each DLL file is saved. Note that folder names are case-insensitive. You can specify multiple plug-in names by separating them with commas. You can also specify the "/lp" option itself multiple times. Each DLL will be loaded. When a plug-in with the same name is specified for the /np option, the option specified backward of the command line will take precedence. If the plug-in specified by this option does not exist, it will be ignored. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/lpall	Start CS+ without displaying the Main window, and with loading all plugins in the Plugins folder. If this is specified together with the "/np" or “/lp“ option, then this option will take precedence. When a plug-in is specified together with the /npall option, the option specified backward of the command line will take precedence. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/npΔ*plug-in-name*[,*plug-in-name*,...]	Start CS+ without displaying the Main window, and without loading the specified plugins in the Plugins folder. In *plug-in-name*, specify the name of the folder in which each DLL file is saved. Note that folder names are case-insensitive. You can specify multiple plug-in names by separating them with commas. You can also specify the "/np" option itself multiple times. Each DLL will not be loaded. When a plug-in with the same name is specified for the /lp option, the option specified backward of the command line will take precedence. If the plug-in specified by this option does not exist, it will be ignored. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
/npall	Start CS+ without displaying the Main window, and without loading any of the specified plugins in the Plugins folder. If this is specified together with the "/np" or “/lp“ option, then this option will take precedence. When a plug-in is specified together with the /lpall option, the option specified backward of the command line will take precedence. If *project-file-name* is omitted, then an error will be displayed, and processing will end.
*plug-in-option*Δ[*plug-in-parameter*,...]	Specify an option for the plug-in (see "(3) Plug-in Options").
project-file-name	Start CS+ without displaying the Main window, with the specified project file loaded.

Remark 1. When the "/lp", "/lpall", "/np", or "/npall" option is specified, the settings of the Plug-in Manager dialog box are not changed.

Remark 2. While CS+ is running, press the [Ctrl] + [C] keys to forcibly terminate CS+.

The results of execution are output to the command prompt.

Figure 2.109 Command Prompt (If Build Is Executed with CubeSuite+.exe)



(2) When executing CubeSuiteW+.exe
Execute CubeSuiteW+.exe to launch CS+, displaying the Main window and with plugins loaded, in the same manner as when launching it from the [Start] menu.
The format to specify on the command line is shown below.

```
CubeSuiteW+.exeΔ[[/npΔplug-in-name[,plug-in-name,...]]]Δ[/npall]Δ[[/lpΔplug-in-
name[,plug-in-name,...]]]Δ[/lpall]Δ[/noproj]Δ[/nrs]Δ[plug-in-optionΔ[plug-in-
parameter,...]][Δproject-file-name]
```

Δ: One or more spaces
[ ]: Can be omitted
...: Pattern in proceeding [ ] can be repeated

Each option is described below.

Option	Description
None	Start CS+ with the Main window displayed, in the same manner as when launching it from the [Start] menu.
/lpΔ*plug-in-name*[,*plug-in-name*,...]	Start CS+ displaying the Main window, with loading the specified plugins in the Plugins folder. In *plug-in-name*, specify the name of the folder in which the DLL file is saved. Note that folder names are case-insensitive. You can specify multiple plug-in names by separating them with commas. You can also specify the "/lp" option itself multiple times. Each DLL will be loaded. When a plug-in with the same name is specified for the /np option, the option specified backward of the command line will take precedence. If the plug-in specified by this option does not exist, it will be ignored.
/lpall	Start CS+ displaying the Main window, with loading all plug-ins in the Plugins folder. If an invalid option is specified, it will be ignored.

Option	Description
/npΔ*plug-in-name*[,*plug-in-name*,...]	Start CS+ displaying the Main window, without loading the specified plugins in the Plugins folder. In *plug-in-name*, specify the name of the folder in which the DLL file is saved. Note that folder names are case-insensitive. You can specify multiple plug-in names by separating them with commas. You can also specify the "/np" option itself multiple times. Each DLL will not be loaded. When a plug-in with the same name is specified for the /lp option, the option specified backward of the command line will take precedence. If the plug-in specified by this option does not exist, it will be ignored.
/npall	Start CS+ displaying the Main window, without loading any of the specified plug-ins in the Plugins folder. If an invalid option is specified, it will be ignored.
/noproj	Start CS+ displaying the Main window without reading in a project (either a project specified on the command line, or the last used project).
/nrs	If CS+ is already started and in the standby state using rapid start (see "2.2 Start CS+"), ignore this and start another process.
*plug-in-option*Δ[*plug-in-parameter*,...]	Specify an option for the plug-in (see "(3) Plug-in Options").
project-file-name	Start CS+ displaying the Main window, with the specified project file loaded.

Remark When the "/lp", "/lpall", "/np", or "/npall" option is specified, the settings of the Plug-in Manager dialog box are not changed.

(3) Plug-in Options

Below are the plug-in options that can be specified.

Option	Description
/psΔ*script-file-name*	This is the Python Console plug-in option. After loading the project file in CS+, run the code in *script-file-name*. If an unnecessary parameter is specified, and the script file cannot be loaded, then an error will be displayed, and the script file will not be executed.

A sample script file is shown below.

```
debugger.Connect()
debugger.Download.LoadModule(r"C:\project\test\DefaultBuild\test.out")
debugger.Register.GetValue("pc")
breakpoint = BreakCondition()
breakpoint.Address = "func"
debugger.Breakpoint.Set(breakpoint)
debugger.Go(GoOption.WaitBreak)
debugger.Register.GetValue("pc")
```

A. WINDOW REFERENCE

This section describes the windows, panels, and dialog boxes related to the basic operations of CS+ and the procedure of build using CS+.

A.1 Description

Below is a list of the windows, panels, and dialog boxes related to the basic operations of CS+ and the procedure of build using CS+.

Table A.1 Window/Panel/Dialog Box List

Window/Panel/Dialog Box Name	Function Description
Main window	This is the start-up window that opens when CS+ is launched.
Start panel	This panel allows you to easily open a tutorial, access (create/open) a project, or load a sample project.
Create Project dialog box	This dialog box is used to create new projects or subprojects.
Source Convert Setting dialog box [CC-RL]	This dialog box configures the composition files of the source project (the source files and the like) to convert them for the build tool of the project to be created.
Project Convert Setting dialog box	This dialog box includes the settings for conversion from e^2 studio and the old development environment (CubeSuite, HEW, PM+) project (or workspace) to a CS+ project.
Project Tree panel	This panel is used to display components of the microcontroller, build tool, and source file of the project in tree view.
Change Microcontroller dialog box	This dialog box is used to change the microcontroller to be used in the project.
Add File dialog box	This dialog box is used to create a new file and add it to the project.
Add Folder and File dialog box	This dialog box is used to add existing files and folder hierarchies to the project.
Property panel	In this panel, the detailed information on the node that is selected in the Project Tree panel is displayed categorized. Also, the settings of the selected node can be changed.
Character String Input dialog box	This dialog box is used to input and edit characters in one line.
Text Edit dialog box	This dialog box is used to input and edit texts in multiple lines.
Path Edit dialog box	This dialog box is used to edit or add the path or file name including the path.
Smart Browser panel	This panel is used to list various documents (user's manuals, technical updates, application notes, and tool news) related to the device selected for the active project and allow downloading of sample code, if any, that comes with the applicable application notes. This panel is also used to display notifications from Renesas and information which may be useful in the work you are currently doing.
Smart Manual panel [RL78][RX]	This panel allows you to search through information on registers given in hardware manuals.
Output panel	This panel is used to display the message that is output from the build tool/debug tool/each plug-in or the result of the Find In Files with the Find and Replace dialog box.

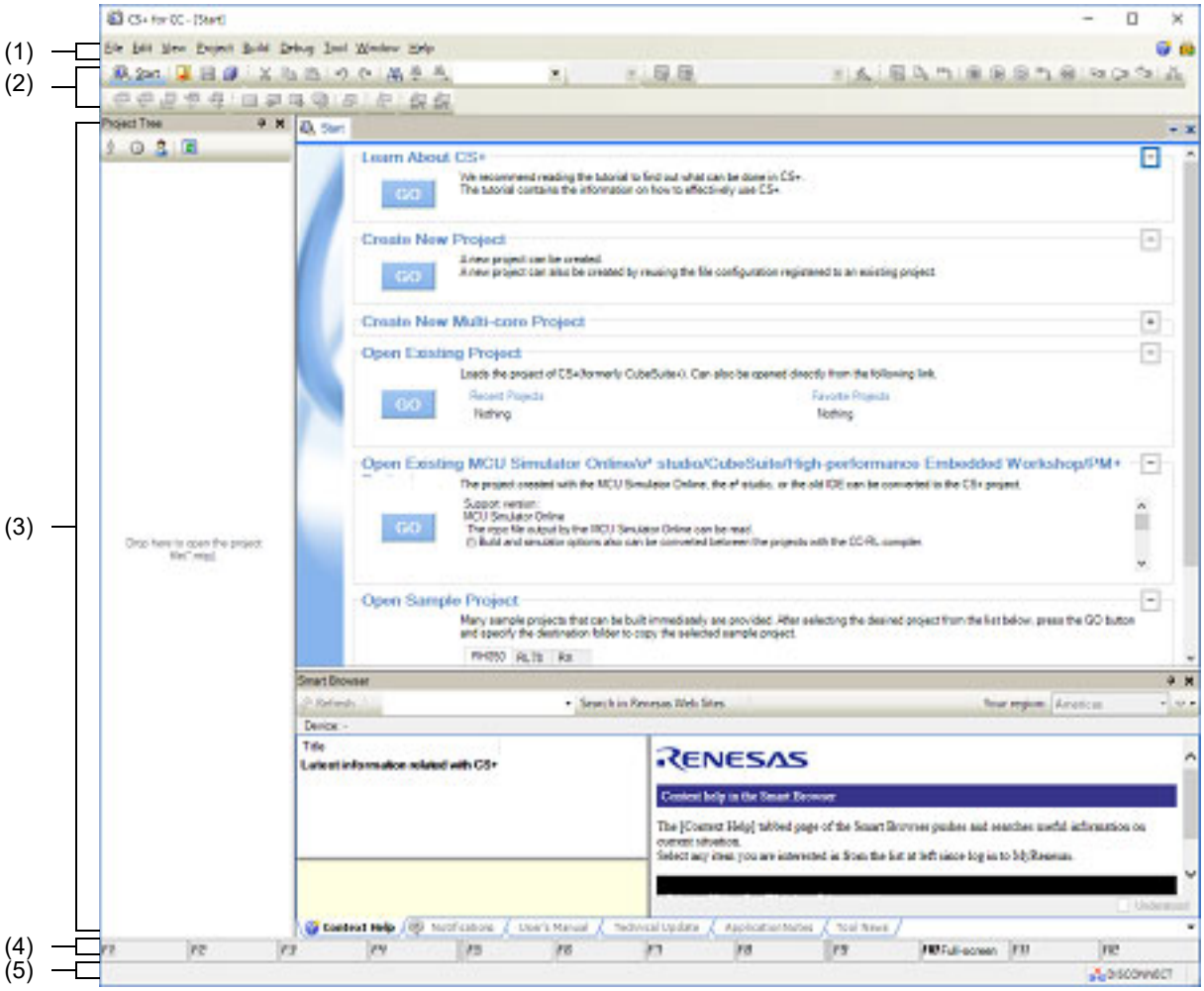
Window/Panel/Dialog Box Name	Function Description
Error List panel	This panel is used to list the information of messages output from the build tool (error information).
Memory Mapping Profiler panel	This panel is used to display the memory mapping information of load modules collected by the build tool. The amount of used memory can be reduced by analyzing the information.
Column Chooser dialog box	This dialog box is used to sort, show/hide the columns displayed on the Memory Mapping Profiler panel. If the display in the panel has been customized, all of those customizations can be returned to the default state in this dialog box.
Filter Settings dialog box	This dialog box is used to set filtering conditions for display of memory mapping information on the Memory Mapping Profiler panel or variable access information on the Functions and Variables Access Table panel.
Dependent Projects Settings dialog box	This dialog box is used to reference/set the dependent projects.
Smart Report dialog box	This dialog box is used to collectively output quality-related information such as a list of source files, build option settings, information on functions and variables, and coverage rates.
Link Order dialog box	This dialog box is used to refer object module files and library files to be input to the linker and configure these link orders.
Optimization Performance Comparison Tool dialog box	This dialog box is used to measure and compare the ROM size or execution speed for the case in which the build options recommended by the build tool are applied.
Build Mode Settings dialog box	This dialog box is used to add and delete build modes and configure the current build mode in batch.
Batch Build dialog box	This dialog box is used to do build, rebuild and clean process in batch with the build mode that the project has.
Progress Status dialog box	This dialog box is used to display how the process has been progressed when the time consuming process is taken place.
Message dialog box	This dialog box is used to display messages output by the various tools.
Pack Settings dialog box	This dialog box is used to pack and save the project and this product.
Option dialog box	This dialog box is used to configure the CS+ environment.
Plug-in Manager dialog box	This dialog box is used to set the plug-ins to be read in when this product is started.
User Setting dialog box	This dialog box allows you to customize toolbars and menus displayed in the Main window.
New Toolbar dialog box	This dialog box is used to create a new toolbar to appear in the Main window.
Rename Toolbar dialog box	This dialog box is used to edit the name of a toolbar created by the user.
Customize Keyboard dialog box	This dialog box is used to assign shortcut keys to the various commands.
Rearrange Commands dialog box	This dialog box allows you to change the arrangement (including addition and deletion) of menu items and buttons in the Main window.

Window/Panel/Dialog Box Name	Function Description
Other Windows... dialog box	This dialog box is used to select one of the divide panels shown in the Main window to activate or close.
Version Information dialog box	This dialog box is used to display versions of CS+ and each plug-in product.
Detail Version Information dialog box	This dialog box is used to display detail version information of this product and the present project information.
One Point Advice dialog box	This dialog box is used to display tips for using CS+.

Main window

This is the start-up window that opens when CS+ is launched.
In this window, you can control the user program execution and open panels.

Figure A.1 Main Window



The following items are explained here.

- [How to open]
- [Description of each area]

[How to open]

- Select Windows [Start] >> [Programs] >> [Renesas Electronics CS+] >> [CS+ for CC (RL78,RX,RH850)].

Remark In Windows 8.1, select [CS+ for CC (RL78,RX,RH850)] on the start screen.
In Windows 10, select Windows [Start] menu >> [All apps] >> [Renesas Electronics CS+] >> [CS+ for CC (RL78,RX,RH850)].

[Description of each area]

Remark Parts of the menus and buttons are displayed only when the corresponding plug-ins are enabled.

(1) Menu bar
This displays common menus.
Contents of each menu can be customized in User Setting dialog box.

(a) [File]
The [File] menu displays file-related menu commands.

New	Display a cascading menu of items to create.
Create New Project...	Closes the current project, and open the Create Project dialog box in order to create a new project. If the currently open project or its files have been modified, then the program will ask if you would like to save your changes.
Create New File	Creates a new blank file ready for editing. The default title for a newly created and unsaved Editor panel is "Source*X*" (where *X* is the unique incremented number for creating the new source file).
Open...	Opens the Open File dialog box for opening files and projects.
Open with Encoding...	Opens the Open File dialog box, in which you can select a file to be opened with a specific encoding, and then the Encoding dialog box, in which you can select the encoding.
Add	Displays a cascading menu of items to add.
Add Subproject...	Opens the Add Existing Subproject dialog box to add an existing subproject to the project.
Add New Subproject...	Opens the Create Project dialog box for adding a new subproject to the project.
Add File...	Opens the Add Existing File dialog box, and add the selected file(s) to the project.
Add New File...	Opens the Add File dialog box, create a file with the selected type, and add it to the project. A file extension is assigned to the new file, and it is opened by the application.
Close Project	Closes the currently open project. If the currently open project or its files have been modified, then the program will ask if you would like to save your changes.
Close File	Closes the Editor panel currently in focus. If the file has been modified, then the program will ask if you would like to save your changes.
Save Project	Saves the settings of the currently open project to a project file.
Save Project As...	Opens the Save Project As dialog box in order to save the settings of the currently open project to a project file with a different name.
Save *Target*	Saves the file that is currently in focus.
Save *Target* As...	Opens the Save As dialog box in order to save the contents of the file currently in focus with a different name.
Target Save Option...	Opens the Save Settings dialog box to set the encoding and newline code to use for the file being edited in the Editor panel.
Save All	Saves all files being updated in the Editor panel and the project.
Page Setup...	Opens the Page Setup dialog box provided by Windows for printing.

Print....	Opens the Print dialog box provided by Windows in order to print the contents of the active Editor panel.
Print Preview	Opens the Print Preview window to preview the source file before printing.
Recent Files	Displays a list of recently used files in a cascading menu to open those files.
1 *Recent File*	Uses this item to open the most recently used file.
2 *Recent File*	Uses this item to open the second most recently used file.
3 *Recent File*	Uses this item to open the third most recently used file.
4 *Recent File*	Uses this item to open the fourth most recently used file.
Recent Projects	Displays a list of recently used projects in a cascading menu to open those projects.
1 *Recent Project*	Uses this item to open the most recently used project.
2 *Recent Project*	Uses this item to open the second most recently used project.
3 *Recent Project*	Uses this item to open the third most recently used project.
4 *Recent Project*	Uses this item to open the fourth most recently used project.
Exit	When the rapid start is enabled, this product enters the wait state. When the rapid start is disabled, exit from this product proceeds. If there are unsaved source files, or main or subproject files, then a Message dialog box will ask if you want to save them.

(b) [Edit]

The [Edit] menu displays editing-related menu commands.

Undo	Undoes the last action.
Redo	Redoes an undone action.
Cut	Cuts the selection and copy it into the clipboard.
Copy	Copies the selection into the clipboard.
Paste	Pastes the contents of the clipboard.
Delete	Deletes the selection.
Select All	Selects all items.
Rename	Changes the name of the selected item.
Find...	Opens the Find and Replace dialog box, or the Trace Search dialog box if the Trace panel has focus, or the Memory Search dialog box if the Memory panel has focus, and perform the specified search.
Replace...	Opens the Find and Replace dialog box and replace the specified string with another string.
Go To...	Opens the Go to Line dialog box if the Editor panel has the focus, and jumps to the specified line. Opens the Go to the Location dialog box if the Disassemble panel, SFR panel [RL78], or IOR panel [RH850][RX] has the focus, and jumps to the specified location.
Bookmark	Displays a cascading menu for the bookmark.

Toggle Bookmark	Insets/deletes the bookmark on the current line.
Next Bookmark	Moves a caret to the position of the next bookmark. This menu is disabled in the following cases. - No bookmark is registered. - A bookmark is registered only in one line with a caret.
Previous Bookmark	Moves a caret to the position of the previous bookmark. This menu is disabled in the following cases. - No bookmark is registered. - A bookmark is registered only in one line with a caret.
Clear All Bookmarks	Clears all the registered bookmarks. This menu is disabled when no bookmark is registered.
List Bookmarks...	Opens the Bookmarks dialog box for displaying the list of bookmarks. This menu is disabled when no bookmark is registered.
Outlining	Displays a cascading menu for controlling expand and collapse states of source file outlining.
Collapse to Definitions	Collapses all nodes that are marked as implementation blocks (e.g. function definitions).
Toggle Outlining Expansion	Toggles the current state of the innermost outlining section in which the cursor lies when you are in a nested collapsed section.
Toggle All Outlining	Toggles the collapsed state of all outlining nodes, setting them all to the same expanded or collapsed state. If there is a mixture of collapsed and expanded nodes, all nodes will be expanded.
Stop Outlining	Stops code outlining and remove all outlining information from source files.
Start Automatic Outlining	Starts automatic code outlining and automatically displayed in supported source files.
Advanced	Displays a cascading menu for performing an advanced operation for the Editor panel.

Increase Line Indent	Increases the indentation of the current cursor line by one tab.
Decrease Line Indent	Decreases the indentation of the current cursor line by one tab.
Uncomment Lines	Removes the first set of line-comment delimiters from the start of the current cursor line, appropriate to the current language (e.g. C++). This operation will only be available when the language of the current source file has line-comment delimiters specified (e.g. C++).
Comment Lines	Places line-comment delimiters at the start of the current cursor line, appropriate to the current language (e.g. C++). This operation will only be available when the language of the current source file has line-comment delimiters specified (e.g. C++).
Convert Tabs to Spaces	Converts all tabs on the current cursor line into spaces.
Convert Spaces to Tabs	Converts each set of consecutive space characters on the current line to tab characters, but only for those sets of spaces that are at least equal to one tab size.
Tabify Selected Lines	Tabifies the current line, causing all spaces at the start of the line (prior to any text) to be converted to tabs where possible.
Untabify Selected Lines	Untabifies the current line, causing all tabs at the start of the line (prior to any text) to be converted to spaces.
Make Uppercase	Converts all letters within the selection to uppercase.
Make Lowercase	Converts all letters within the selection to lowercase.
Toggle Character Casing	Toggles the character cases (uppercase or lowercase) of all letters within the selection.
Capitalize	Capitalizes the first character of every word within the selection.
Delete Horizontal Whitespace	Deletes any excess white space either side of the cursor position, leaving only one whitespace character remaining. If there the cursor is within a word or not surrounded by whitespace, this operation will have no effect.
Trim Trailing Whitespace	Deletes any trailing whitespace that appears after the last non-whitespace character on the cursor line.
Delete Line	Completely delete the current cursor line.
Duplicate Line	Duplicates the cursor line, inserting a copy of the line immediately after the cursor line.
Delete Blank Lines	Deletes the line at the cursor if it is empty or contains only whitespace.

(c) [View]
The [View] menu displays panel and other view-related menu commands.

Project Tree	Shows the Project Tree panel, and move the focus to it.
Property	Shows the Property panel, and move the focus to it. The property selected in the Project Tree panel is shown.
Smart Browser	Shows the Smart Browser panel, and move the focus to it.
Smart Manual	Shows the Smart Manual panel [RL78][RX], and move the focus to it.
Output	Shows the Output panel, and move the focus to it.
Error List	Shows the Error List panel, and move the focus to it.
Memory Mapping Profiler	Shows the Memory Mapping Profiler panel, and move the focus to it.
Debug Manager	Shows the Debug Manager panel.

Watch	Displays a cascading menu for opening a Watch panel.
Watch1	Shows the Watch 1 panel.
Watch2	Shows the Watch 2 panel.
Watch3	Shows the Watch 3 panel.
Watch4	Shows the Watch 4 panel.
Local Variable	Shows the Local Variables panel.
Call Stack	Shows the Call Stack panel.
Memory	Displays a cascading menu for opening a Memory panel.
Memory1	Shows the Memory 1 panel.
Memory2	Shows the Memory 2 panel.
Memory3	Shows the Memory 3 panel.
Memory4	Shows the Memory 4 panel.
SFR [RL78]/IOR [RH850][RX]	Shows the SFR panel [RL78]/IOR panel [RH850][RX].
CPU Register	Shows the CPU Register panel.
Trace	Shows the Trace panel.[IECUBE][Full-spec emulator][Simulator]
Disassemble	Displays a cascading menu for opening a Disassemble panel.
Disassemble1	Shows the Disassemble 1 panel.
Disassemble2	Shows the Disassemble 2 panel.
Disassemble3	Shows the Disassemble 3 panel.
Disassemble4	Shows the Disassemble 4 panel.
Event	Shows the Events panel.
Virtual Board [RL78][Simulator]	Shows the Virtual board panel. This menu is disabled in the case of devices for which the debug tool for the active project does not support the simulation of peripheral modules even if the debug tool has been connected.
Show Current PC Location	Shows the current PC location in the Editor panel. If there is no source information or source file at the PC location, it is shown in a Disassemble panel. If the Editor or Disassemble panel to show the location is already visible, then the focus will move to that panel.
Back to Last Cursor Position	Returns to the last location before moving to the defined location.
Forward to Next Cursor Position	Goes to the move destination.
Python Console	Shows the Python Console panel.
Tag Jump	Jumps to the caret line in the editor indicated by the message (file, line, and column).
Full-screen	Selecting this menu item maximizes the Main window without showing its title bar. Then deselecting this menu item returns the window to its former state. In full-screen display, the window can also be returned to its former state by clicking the full-screen cancellation button in the right top corner of the Main window. Note that this menu item is not selected when CS+ is restarted.

Save or Restore Docking Layout	Displays commands relating to saving and restoring the docking layout in a cascading menu.
Save Layout 1	Saves the docking layout in slot 1. This layout can be restored via the [Restore Layout 1].
Save Layout 2	Saves the docking layout in slot 2. This layout can be restored via the [Restore Layout 2].
Save Layout 3	Saves the docking layout in slot 3. This layout can be restored via the [Restore Layout 3].
Save Layout 4	Saves the docking layout in slot 4. This layout can be restored via the [Restore Layout 4].
Restore Layout 1	Restores a saved docking layout. This command restores the layout saved via the [Save Layout 1]. If no layout has been saved to this slot, the layout from the first startup is restored.
Restore Layout 2	Restores a saved docking layout. This command restores the layout saved via the [Save Layout 2]. If no layout has been saved to this slot, the layout from the first startup is restored.
Restore Layout 3	Restores a saved docking layout. This command restores the layout saved via the [Save Layout 3]. If no layout has been saved to this slot, the layout from the first startup is restored.
Restore Layout 4	Restores a saved docking layout. This command restores the layout saved via the [Save Layout 4]. If no layout has been saved to this slot, the layout from the first startup is restored.
Reset Layout	Returns all settings relating to the layout of the Main window docking panels to their default values.

Remark The layout is saved and restored in each of the following three states.

- Before loading a project
- When a project is loaded and before a debug tool is connected
- When a project is loaded and a debug tool is being connected

(d) [Project]

[Project] menu shows menu items to operate the project.

Create New Project...	Closes the current project and opens the Create Project dialog box to create a new project. Changes the current project or file to the new one. If they have not saved, confirm the user whether to save them.
Open Project...	Closes the current project and opens the Open Project dialog box to open the existing project. Changes the current project or file. If they are not saved, confirm the user whether to save them.

Favorite Projects	Shows the cascading menu to open and add to your favorite project.
1 *path*	Opens the project added by [1 Register to Favorite Project] in [Favorite Projects]. If no project is added, "1 Favorite Project" is shown.
2 *path*	Opens the project added by [2 Register to Favorite Project] in [Favorite Projects]. If no project is added, "2 Favorite Project" is shown.
3 *path*	Opens the project added by [3 Register to Favorite Project] in [Favorite Projects]. If no project is added, "3 Favorite Project" is shown.
4 *path*	Opens the project added by [4 Register to Favorite Project] in [Favorite Projects]. If no project is added, "4 Favorite Project" is shown.
1 Register to Favorite Project	The current project path is added to [1 *path*] in [Favorite Projects].
2 Register to Favorite Project	The current project path is added to [2 *path*] in [Favorite Projects].
3 Register to Favorite Project	The current project path is added to [3 *path*] in [Favorite Projects].
4 Register to Favorite Project	The current project path is added to [4 *path*] in [Favorite Projects].
Add	Shows the cascading menu to add a project to a subproject.
Add Subproject....	Opens the Add Existing Subproject dialog box to add an existing subproject to a project.
Add New Subproject...	Opens the Create Project dialog box to add a new subproject to a project.
Add File...	Opens the Add Existing File dialog box to add the selected file to a project.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to the file to a project. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node to the root of the File node. This allows the category name to be changed. The default category name is "New category". The new category name can be changed to the same name as the existing Category node. Note that this menu is disabled when the build tool is in operation.
Set *Project* Active Project	Sets the selected project or subproject to an active project.
Dependent Projects Settings...	Opens the Dependent Projects Settings dialog box to set the dependent projects. Note that this menu is disabled when the build tool is in operation and any subproject does not exist.
Close Project	Closes the current project. Changes the current project or file to the new one. If they have not saved, confirm the user whether to save them.
Save Project	Saves the configuration information of the current project to the project file.
Save Project As...	Opens the Save Project As dialog box to save the configuration information of the current project to the project file with another name.

Remove from Project	Removes the selected project or subproject from the project. The subproject files or the file themselves are not deleted from the file system.
Output Data for Quality Records Collectively...	Opens the Smart Report dialog box to output data for quality records collectively.
Save Project and Development Tools as Package	Saves a set of the project and this product by copying them in a folder.

(e) [Build]
The [Build] menu shows menu items for the build process.

Build Project	Runs a build of the project. A build of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Rebuild Project	Runs a rebuild of the project. A rebuild of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Clean Project	Runs a clean of the project. A clean of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Rapid build	Toggles the rapid build function between enabled (default) and disabled.
Update Dependencies	When you perform a change that effects the file dependencies in the compile option settings or assemble option settings of the project, updates the dependencies of the relevant files.
Build *active project*	Runs a build of the active project. If the active project is the main project, a build of its subproject is not run. When a dependent project is set for the active project, a build of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Rebuild *active project*	Runs a rebuild of the active project. If the active project is the main project, a rebuild of its subproject is not run. When a dependent project is set for the active project, a rebuild of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Clean *active project*	Runs a clean of the active project. If the active project is the main project, a clean of its subproject is not run. Note that this menu is disabled when the build tool is in operation.
Update Dependencies of *active project*	When you perform a change that effects the file dependencies in the compile option settings or assemble option settings of the active project, updates the dependencies of the relevant files.
Set Link Order of *active project*...	Opens the Link Order dialog box to display object module files and library files of the active project to and set their link orders. Note that this menu is disabled when the build tool is in operation.
Open the Optimization Performance Comparison Tool for *active project*...	Opens the Optimization Performance Comparison Tool dialog box to measure and compare the ROM size or execution speed for the case in which the build options recommended by the build tool are applied.
Stop Build	Cancels the build, rebuild, batch build and clean operation.
Build Mode Settings...	Opens the Build Mode Settings dialog box to modify and add to the build mode.
Batch Build...	Opens the Batch Build dialog box to run a batch build.
Build Option List	Lists the currently set build options in the Output panel.

(f) [Debug]
See the "CS+ Integrated Development Environment User's Manual: Debug Tool" for information about debugging.

(g) [Tool]
The [Tool] menu displays tool-related menu commands.

Options...	Opens the Option dialog box.
Plug-in Setting...	Opens the Plug-in Manager dialog box.
Customize...	Opens the User Setting dialog box.

(h) [Window]
[Window] menu shows menu items to operate the window.

Split	Splits the active Editor panel horizontally. Only the active Editor panel can be split. Other panels will not be split. A panel can be split a maximum of two times.
Remove Split	Removes the split view of the Editor panel.
Close All Panels	Closes all split panels.
1 *Tab name of panel*	Moves the focus to 1 *tab name of panel*.
2 *Tab name of panel*	Moves the focus to 2 *tab name of panel*.
3 *Tab name of panel*	Moves the focus to 3 *tab name of panel*.
4 *Tab name of panel*	Moves the focus to 4 *tab name of panel*.
5 *Tab name of panel*	Moves the focus to 5 *tab name of panel*.
6 *Tab name of panel*	Moves the focus to 6 *tab name of panel*.
7 *Tab name of panel*	Moves the focus to 7 *tab name of panel*.
8 *Tab name of panel*	Moves the focus to 8 *tab name of panel*.
9 *Tab name of panel*	Moves the focus to 9 *tab name of panel*.
Other Windows...	If 10 or more divide panels are open, open the Other Windows... dialog box.

(i) [Help]
The [Help] menu displays help-related menu commands.

Help	Opens the help for this product.
Open Help for *Target*	Opens the help corresponding to the window, panel, dialog box, error message, or other object that currently has focus.
How to Access Help	Shows the cascading menu to select whether help information will be displayed online (in a Web browser) or offline (as before).
Online	Enables (the default) or disables the display of help information online in a Web browser. Online and offline are exclusive of each other.
Offline	Enables or disables (the default) the display of help information offline. Online and offline are exclusive of each other.
One Point Advice...	Opens the One Point Advice dialog box.
Tutorial	Opens the tutorial for this product.
Browse Renesas Electronics Microcontrollers Web	Opens our microcontroller website in the web browser.
Detail Version Information...	Shows the Detail Version Information dialog box.

Check for Updates...	Opens the CS+ Update Manager window, and begin checking for updates.
Launch License Manager...	Launches the License Manager.
About *Product name*...	Opens the Version Information dialog box.

(j) Notifications from Renesas
This button allows you to check for notifications from Renesas regarding the MCU you are using in the active project.
Note that the button only appears when Renesas has released new information on the MCU.

	Click on this button to check new information from Renesas in the Smart Browser panel.

(k) New context help
This button allows you to check information which may be useful in the work you are currently doing.
Note that the button only appears when the context help items have not been read or are already in place.

	Click on this button to check information which may be useful in the work you are currently doing in the Smart Browser panel.

(2) Toolbar
The toolbar shows common command buttons.
Buttons on the toolbar can be customized in User Setting dialog box. You can also create a new toolbar in the same dialog box.

(a) Start & Save
In the Start & Save, the button group concerning the start button, the file operation, and the edit is displayed.

Start	Opens the Start panel.
	Opens the Open File dialog box for opening files and projects.
	Saves the file that is currently in focus.
	Saves all files being updated in the Editor panel and the project.
	Cuts the selection and copy it into the clipboard.
	Copies the selection into the clipboard.
	Pastes the contents of the clipboard.
	Undoes the last action.
	Redoes an undone action.
	Opens the Find and Replace dialog box, or the Trace Search dialog box if the Trace panel has focus, or the Memory Search dialog box if the Memory panel has focus, and perform the specified search.
	Searches backward in the panel being searched, using the specified parameters.
	Searches forward in the panel being searched, using the specified parameters.
	Pressing the [Enter] key leads to the execution of a quick search for the specified word.[Note]
100%	Zooms in and out on the display of the panel that currently has focus. The zoom percentage (25 to 300%) is specified by selecting it from the drop-down list or directly entering the value into the text box. It is also possible to zoom in and out on the display by moving the mouse wheel forward or backward while holding down the [Ctrl] key.

Note The find (including Quick Find) and replace conditions are individually set for the Output panel and Editor panel.
Accordingly, for example, when finding of a word with the Editor panel active proceeds after find-

ing in the Output panel, if the find and replace conditions in use are different, the string found in the Output panel may not be found in the Editor panel.

(b) Build toolbar
Build toolbar shows buttons used in build process.

	Runs a build of the project. A build of a subproject is also run when it is added in the project. Note that this button is disabled when the build tool is in operation.
	Runs a rebuild of the project. A rebuild of a subproject is also run when it is added in the project. Note that this button is disabled when the build tool is in operation.
DefaultBuild	Changes the current build modes for projects (main project and subprojects) simultaneously. All build modes that exist in the current project (main project and subprojects) are displayed in this drop-down list. The current build modes of all projects are same, the build mode is selected by default. If they are not same, it will be blank. The build mode that exists only in part of the project is shown with the mark "*". When the build mode with "*" mark is selected and it does not exist in the project, "DefaultBuild" will be duplicated and set with the selected build mode name. Note that this button is disabled when the build tool is in operation.
	Cancels the build, rebuild, batch build and clean operation.

(c) Solution toolbar
The solution toolbar includes the menus related to solutions.
The solution toolbar provides the following button and function.

Solution List	Opens the Solution List panel.

(d) Bookmark toolbar
Bookmark toolbar shows buttons operating bookmarks on the active Editor panel.
Note that this toolbar is disabled when the Editor panel does not have focus and the debug tool is connected (in mixed display mode).

	Insets/deletes the bookmark on the current line.
	Moves a caret to the position of the previous bookmark. This button is disabled in the following cases. - No bookmark is registered. - A bookmark is registered only in one line with a caret.
	Moves a caret to the position of the next bookmark. This button is disabled in the following cases. - No bookmark is registered. - A bookmark is registered only in one line with a caret.
	Clears all the registered bookmarks. This button is disabled when no bookmark is registered.
	Opens the Bookmarks dialog box for displaying the list of bookmarks.

(3) Panel display area
The following panels are displayed in this area.

- Project Tree panel
- Property panel
- Output panel

Please see each panel section for the details of the contents of the display.

Remark Press the [Ctrl] + [Tab] keys or the [Ctrl] + [Shift] + [Tab] keys to display a list of the active panels and move the focus.

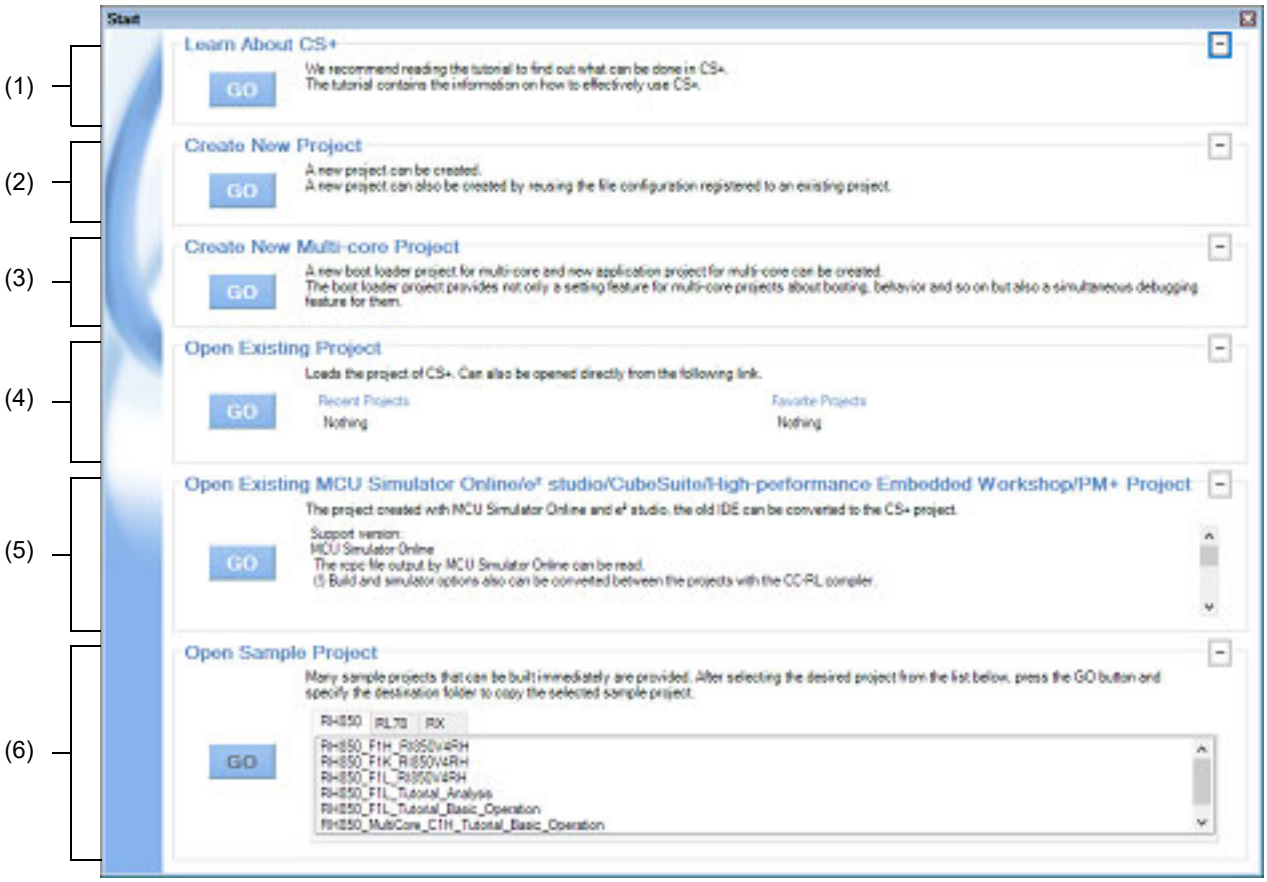
(4) Function keys bar
Shows the function keys assigned to the currently active window, and the function keys available in the main window.
Hover the mouse cursor over a function key button to display a message about that button.

(5) Statusbar
Shows a brief explanation of the currently selected menu item and the various information necessary to debug, etc.
See the "CS+ Integrated Development Environment User's Manual: Debug Tool" for details.

Start panel

This panel allows you to open a tutorial, access (create/open) a project, and load a sample project, with single-click.

Figure A.2 Start Panel



The following items are explained here.

- [How to open]
- [Description of each area]

[How to open]

- On the toolbar, click the Start button.
- From the menu bar, select [Window] >> [Start].

[Description of each area]

(1) [Learn About CS+] area

(a) [Learn About CS+]
Click the GO button to show a tutorial aimed at improving your understanding of CS+.

(2) [Create New Project] area

(a) [Create New Project]
Click the GO button to open the Create Project dialog box, in order to create a new CS+ project file.

(3) [Create New Multi-core Project] area

(a) [Create New Multi-core Project]
Click the GO button to open the Create Project dialog box, in order to create a new boot loader project and a new application project for multi-core.

Remark This area is minimized by default; click + to resize the area.

(4) [Open Existing Project] area

(a) [Recently Project]
This area displays up to four of the most recently used project file names (project names).

(b) [Favorite project]
This area displays up to four of the project file names (project names) in your favorites.

(c) [Open Existing Project]
Click the GO button to open the Open Project dialog box, in order to open an existing CS+ project file (with ".mtpj" extension).

(5) [Open Existing MCU Simulator Online/e^2 studio/CubeSuite/High-performance Embedded Workshop/PM+ Project] area

(a) [Open Existing MCU Simulator Online/e^2 studio/CubeSuite/High-performance Embedded Workshop/PM+ Project]
Click the GO button to open the Open Project dialog box, in order to open an existing project shown below.

- MCU Simulator Online/e^2 studio project file (with ".rcpc" extension)
- CubeSuite project file (with ".cspj" extension)
- HEW workspace file (with ".hws" extension)
- HEW project file (with ".hwp" extension)
- PM+ workspace file (with ".prw" extension)
- PM+ project file (with ".prj" extension).

(6) [Open Sample Project] area

(a) [Open Sample Project]
Load a sample project file (with ".mtpj" extension) provided by CS+.
Select the [*Microcontroller*] tab, then select a sample project from the list. Next, click the GO button to open the Browse For Folder dialog box and specify a folder to which to copy the sample project. After copying the sample to the specified folder, the sample project is loaded.

(7) Button

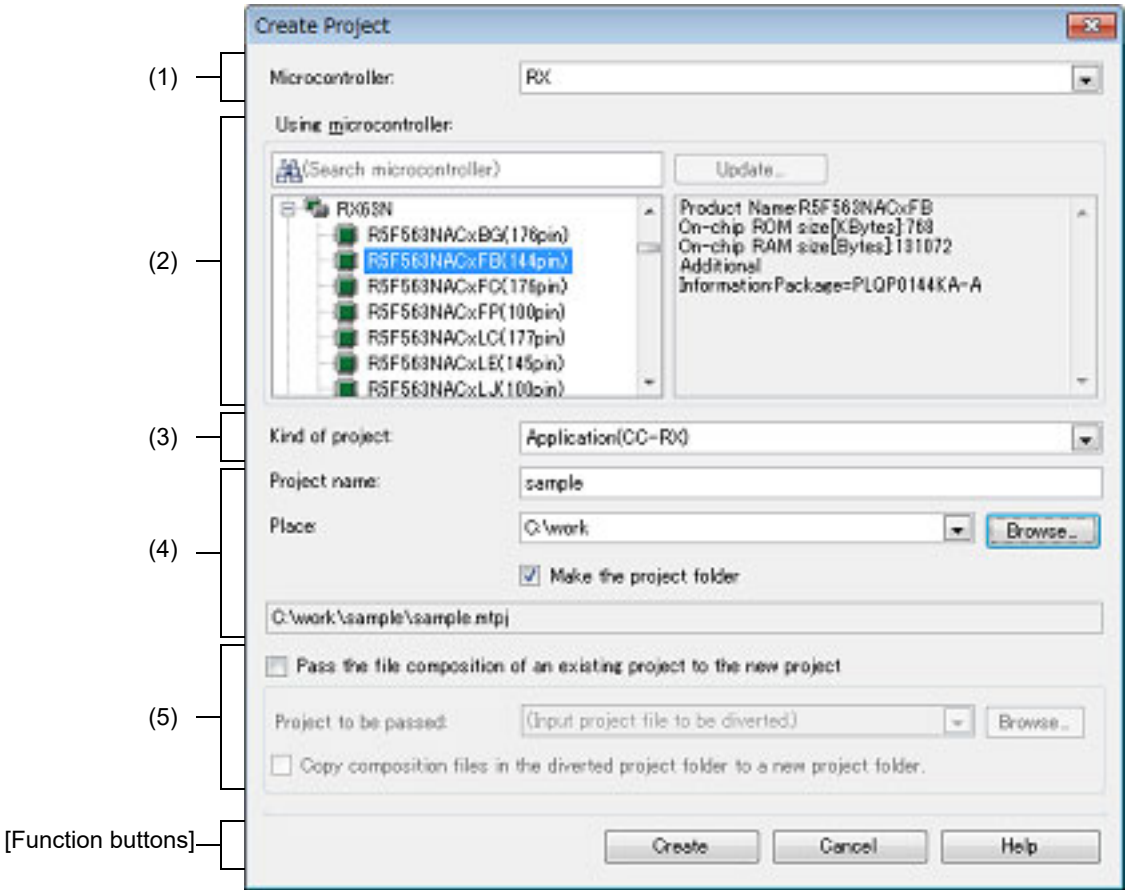
−	Minimizes the area. Only the title text and minimize buttons will be shown.
+	Restores a minimized area.

Create Project dialog box

This dialog box is used to create new projects or subprojects.

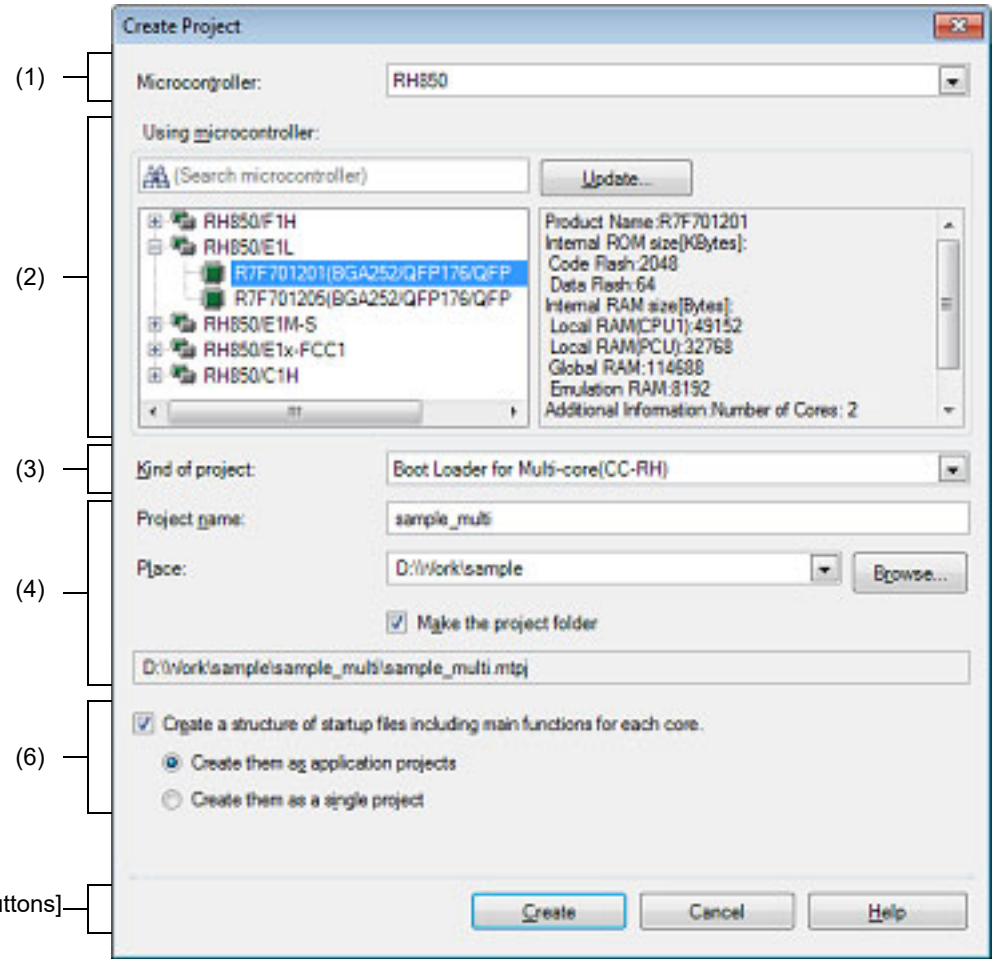
Caution A subproject cannot be added to another subproject.

Figure A.3 Create Project Dialog Box (Opened From Other Area than [Create New Multi-core Project] On Start Panel)



Remark When a subproject is created, the title bar says "Create Subproject".

Figure A.4 Create Project Dialog Box (Opened From [Create New Multi-core Project] Area On Start Panel)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

(1) When creating a main project

- Click the [Start] button in the toolbar to open the Start panel and then click the [GO] button in the [Create New Project] area or [Create New Multi-core Project] area.
- From the [File] menu, select [New] >> [Create New Project...].
- From the [Project] menu, select [Create New Project...].

(2) When creating a subproject

- From the [Project] menu, select [Add] >> [Add New Subproject...].
- On the Project Tree panel, select project or subproject, and then select [Add] >> [Add New Subproject...] from the context menu.

[Description of each area]

(1) [Microcontroller]
Select the microcontroller type to use in the project.
You can select the item below.

- RH850
- RX
- RL78

(2) [Using microcontroller] area
Select a microcontroller to use in the project.

(a) Microcontroller search box
You can search a microcontroller selected in the list of microcontrollers simply.

(b) List of microcontrollers
Select a microcontroller.
The microcontrollers that correspond to the microcontroller type selected in [Microcontroller] are listed and categorized by their nicknames.

Caution If this dialog box is opened from the [Create New Multi-core Project] area on the Start panel, only the microcontrollers for RH850 multi-core are displayed.

The following information on the selected microcontroller that is used in the project is shown in the box at right.

- Product Name
- On-chip ROM size [Kbytes] [RX]
- Internal ROM size [Kbytes] [RH850][RL78]
- On-chip RAM size [Bytes] [RX]
- Internal RAM size [Bytes] [RH850][RL78]
- Additional Information[Note]

Note Other information appears only when present.

(c) Button

Update...	Displays the CS+ Update Manager window. When the microcontroller to be used does not appear in the list, you can search for the microcontroller via the network.

Caution This button is only enabled when this product is installed using the installer. It is disabled when a packaged item is being used.

(3) [Kind of project]
Select the project type to create on [Kind of project].
You can select the item below.

Caution Only [Boot Loader for Multi-core(CC-RH)] can be selected when this dialog box is opened from the [Create New Multi-core Project] area on the Start panel.

- Application(CC-RH/CC-RX/CC-RL)
Select this to generate the load module file and hex file from C source files, by using the build tool provided by CS+.
The generated file will be the debug target.

Caution This item is not displayed when microcontrollers for RH850 multi-core are selected in the [Using microcontroller] area.

Remark 1. If the build tool is CC-RH, the following start-up source files are generated in the project folder. These files are also registered in the project tree.

File Name	Description
boot.asm	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
cstart.asm	For defining the start-up routine from the occurrence of a reset to a branch to the main function
iodefine.h	For defining I/O registers
main.c	For defining the empty main function

Remark 2. If the build tool is CC-RX, the following start-up source files are generated in the project folder. The files marked with "OK" in the "Registration in Project Tree" column are also registered in the project tree. When necessary, also register the files marked with "--" in the project tree.

File Name	Description	Registration in Project Tree
ProjectName.c	For defining the main function	OK
dbsct.c	For setting up standard sections	OK
hwsetup.c	For initializing hardware	--
intprg.c	For defining interrupt functions	OK
iodefine.h	For defining I/O registers	OK
lowlvl.src	For defining low-level I/O functions (source file for assembler)	--
lowsrc.c	For defining low-level I/O functions	--
lowsrc.h	Prototypes for low-level I/O functions	--
resetprg.c	For defining initialization for C language	OK
sbrk.c	For defining the function for allocating the heap memory	OK
sbrk.h	For defining the heap size	OK
stacksct.h	For defining pragma for the stack	OK
typedefine.h	For defining typedefine for the types used in sbrk.c, etc.	OK
vect.h	Prototypes for interrupt vector functions	OK
vecttbl.c	For defining the interrupt vector table	OK

Remark 3. If the build tool is CC-RL, the following start-up source files are generated in the project folder. These files are also registered in the project tree.

File Name	Description
cstart.asm	For defining the start-up routine from the occurrence of a reset to a branch to the main function The memory address and stack area need to be modified to match the microcontroller used.
iodefine.h	For defining the names of I/O registers and interrupt requests
main.c	For defining the empty main function

- C++ Application(CC-RX)
  Select this to generate the load module file and hex file from a C++ source file (only a file that has a main function) and C source files, by using build tool CC-RX provided by CS+.
  The generated file will be the debug target.

  Remark The following start-up source files are generated in the project folder.
  The files marked with "OK" in the "Registration in Project Tree" column are also registered in the project tree. When necessary, also register the files marked with "--" in the project tree.

File Name	Description	Registration in Project Tree
ProjectName.cpp	For defining the main function	OK
dbsct.c	For setting up standard sections	OK
hwsetup.cpp	For initializing hardware	--
intprg.c	For defining interrupt functions	OK
iodefine.h	For defining I/O registers	OK
lowlvl.src	For defining low-level I/O functions (source file for assembler)	--
lowsrc.c	For defining low-level I/O functions	--
lowsrc.h	Prototypes for low-level I/O functions	--
resetprg.c	For defining initialization for C language	OK
sbrk.c	For defining the function for allocating the heap memory	OK
sbrk.h	For defining the heap size	OK
stacksct.h	For defining pragma for the stack	OK
typedefine.h	For defining typedefine for the types used in sbrk.c, etc.	OK
vect.h	Prototypes for interrupt vector functions	OK
vecttbl.c	For defining the interrupt vector table	OK

- Empty Application(CC-RH/CC-RX/CC-RL/GHS CCRH850)
  Select this to generate the load module file, by using build tool CC-RH/CC-RX/CC-RX/CC-RL or build-tool plugin for GHS CCRH850 provided by CS+.
  The generated file will be the debug target.
  Sample startup programs are not generated when the project is created.

- Boot Loader for Multi-core(CC-RH)
  Select this to create a boot loader project for multi-core, by using build tool CC-RH provided by CS+.
  A boot loader project is used to set application projects configuring a project for multi-core.

  Caution This item is displayed only when microcontrollers for RH850 multi-core are selected in the [Using microcontroller] area.

  Remark The following start-up source files are generated in the project folder.
  These files are also registered in the project tree.

  - When [Create a structure of startup files including main functions for each core.] check box is not selected or when [Create a structure of startup files including main functions for each core.] check box and [Create them as application projects] radio button are selected

File Name	Description
boot*n*.asm	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
iodefine.h	For defining I/O registers

- When [Create a structure of startup files including main functions for each core.] check box and [Create them as a single project] radio button are selected

File Name	Description
boot*n*.asm	For defining the processing from the occurrence of a reset to a branch to each application project and defining the interrupt vector table
cstart*n*.asm	For defining the start-up routine for each application
iodefine.h	For defining I/O registers
main*n*.c	For defining the empty main function

The core number n is sometimes included in the file name of a startup file (boot*n*.asm, cstart*n*.asm, or main*n*.c) for a core.

- Application for Multi-core(CC-RH)
  Select this to create an application project for multi-core, by using build tool CC-RH provided by CS+.

Caution This item is displayed only when microcontrollers for RH850 multi-core are selected in the [Using microcontroller] area.

Remark The following start-up source files are generated in the project folder.
These files are also registered in the project tree.

File Name	Description
cstart*n*.asm	For defining the start-up routine for each application
iodefine.h	For defining I/O registers
main.c	For defining the empty main function

The core number n is sometimes included in the file name of a startup file (cstart*n*.asm) for a core.

- Using Existing GHS Project File (GHS CCRH850)
  Select this to debug a load module file built by the GHS compiler.
  This makes it easier to build based on existing GHS project files.
- Library (CC-RH/CC-RX/CC-RL/GHS CCRH850)
  Select this to generate a library file for a user library, by using build tool CC-RH/CC-RX/CC-RL or build-tool plug-in for GHS CCRH850 provided by CS+.
- Debug Only
  Select this to debug a load module file or hex file generated with a build tool other than the one provided by CS+ (i.e. creates a debug-dedicated project).
  See "E. USING AN EXTERNAL BUILD TOOL" for details on how to create and use the debug-dedicated project.

(4) Project Creation area
Set the project to create.

(a) [Project name]
Directly enter the name of the project to create.
The entered project name is followed by the extension, ".mtpj" and this forms the project file name.

Remark When the subproject is created, the entered project name is followed by the extension, ".mtsp" and forms the subproject name.

(b) [Place]
Designate the location to create the project file by directly entering it with absolute path or selecting from the [Browse...] button.
The last designated location is shown in the box. "C:\Users*User name*\Documents" is shown by default when the project is created for the first time.

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(c) Button

Browse...	Opens the Browse For Folder dialog box. When a folder is selected, an absolute path of the folder is shown in [Place].

(d) [Make the project folder]
Use this check box to select whether to create a folder with the project name under the location specified in [Place].
The check box is selected by default.

(e) Project file path
The full path of the project file (specified via [Project name] and [Place]) is shown.

Remark 1. The number of characters that can be entered in [Project name] and [Place] is up to 259 both for the path name and file name together.

Remark 2. When the input for [Project name] violates any restriction, the following messages are shown in the tooltip.

Message	Description
The project name is invalid. Enter characters that can be used as a file name.	The project file name uses characters that are not allowed.
A subproject with the same ID has already been registered.	A subproject with the same ID has already been registered.
The subproject name is invalid. A subproject with the same name cannot be made in the location where the main project exists.	In the specified location there is already a main project with the same name (excluding extension).

Remark 3. When the input for [Place] violates any restriction, the following messages are shown in the tooltip.

Message	Description
The folder name including the path is too long. Make it within 247 characters.	The folder name is more than 247 characters.
The file name including the path is too long. Make it within 259 characters.	The file name with the path is more than 259 characters.
The location where the project is to be created does not exist.	The folder creation was canceled or failed, so that a nonexistent folder has been specified.
The location for project creation is invalid. Enter characters that can be used as a path name.	The file name with the invalid path is designated. The characters, \, /, :, *, ?, ", <, >, |, cannot be used for the folder name.

Remark 4. When the project name and the path name is too long to be shown in each text area, ⏩ is displayed. The absolute path pops up when the mouse cursor is hovered over ⏩.

(5) Pass project area
Set this area when reusing the file composition of the existing project (main or subproject) to create a new project.

Caution 1. This area is not displayed when this dialog box is opened from the [Create New Multi-core Project] area on the Start panel.

Caution 2. When you create a project, only the settings for the default debug tool will be imported.
In the RX family, however, internal processing is common to the emulator and simulator, so the settings are imported regardless of which debug tool is selected.

(a) [Pass the file composition of an existing project to the new project]
Select this check box when reusing the file composition of the existing project to create a new project.
The check box is unselected by default.
The category of the file can be also reused.

Remark [RX] The settings of the properties of the build tool are changed to those for the specified microcontroller. iodefine.h and the start-up source files of the specified microcontroller are copied as

sample source files. For the start-up files, create a folder named "*<device name after change>.nnn*" (*nnn* = 000, 001, …) and copy them to that folder. The details of the changes are displayed in the Output panel.
If you have selected a microcontroller that has a different ROM size from that set in the source project, the differences between the ROM sizes may not be reflected in the value of the [Section start address] property on the [Link Options] tabbed page. Check the value of the [Section start address] property.

(b) [Project to be passed]
Designate the name of the source project when diverting the file composition of the existing project to create a new project.
Designate the name of the source project by directly entering it with absolute path or selecting with the Open Project dialog box after pressing the [Browse...] button.
The last designated location is shown in the box. "C:\Users*User name*\Documents" is the default location when the file is created for the first time.
This field is enabled only when the [Pass the file composition of an existing project to the new project] check box is selected.

Caution You cannot designate the e^2 studio, CubeSuite, HEW, or PM+ project file.

Remark 1. Up to 259 characters can be entered.

Remark 2. When the input violates any restriction, the following messages are shown.

Message	Description
File name with the path is too long. Shorten within 259 characters.	The file name with the path is more than 259 characters.
The divert project does not exist.	The path includes a nonexistent folder, or the specified project file cannot be found.
The divert project name is invalid. Enter characters that can be used as a file name.	The file name with the invalid path is designated. The characters, \, /, :, *, ?, ", <, >, |, cannot be used for the folder name.
The project which is being used can't be diverted.	The currently open project (main project or subproject) has been specified as the source project.
The specified file is invalid. Enter a divert project file.	An existing file that is not a project file or subproject file has been specified.

Remark 3. When the path name is too long to be shown in the text area, ⏩ is displayed. The absolute path pops up when the mouse cursor is hovered over ⏩.

(c) Button

Browse...	Open Project dialog box appears. When a project file is selected, an absolute path of the project file is shown in [Project to be passed].

(d) [Copy composition files in the diverted project folder to a new project folder.]
Select this check box when copying composition files in the project folder of the project specified in [Project to be passed] to a new project folder.
The check box is unselected by default.
This field is enabled only when the [Pass the file composition of an existing project to the new project] check box is selected.

Remark 1. When the version of the build tool used in the source project is different from the version of the build tool in the project to be created, it is automatically diverted (except for a debug-dedicated project).

Remark 2. When the build tool for the project to be created does not support a node of the source project, the node will be displayed as a normal Category node on the project tree (e.g., Startup node or Download files node etc.).

(6) Area for creating a structure of startup files
Set this area when simultaneously creating a structure of startup files for each core.

Caution This area is displayed only when this dialog box is opened from the [Create New Multi-core Project] area on the Start panel.

(a) [Create a structure of startup files including main functions for each core.]
Select this check box when simultaneously creating a structure of startup files for each core.
The check box is selected by default.

(b) [Create them as application projects]
Select this radio button when a structure of startup files for each core is created as an application project for the number of cores.
The radio button is selected by default.
This field is enabled only when the [Create a structure of startup files including main functions for each core.] check box is selected.

(c) [Create them as a single project]
Select this radio button when a single project that includes structures of all startup files is created
This field is enabled only when the [Create a structure of startup files including main functions for each core.] check box is selected.

[Function buttons]

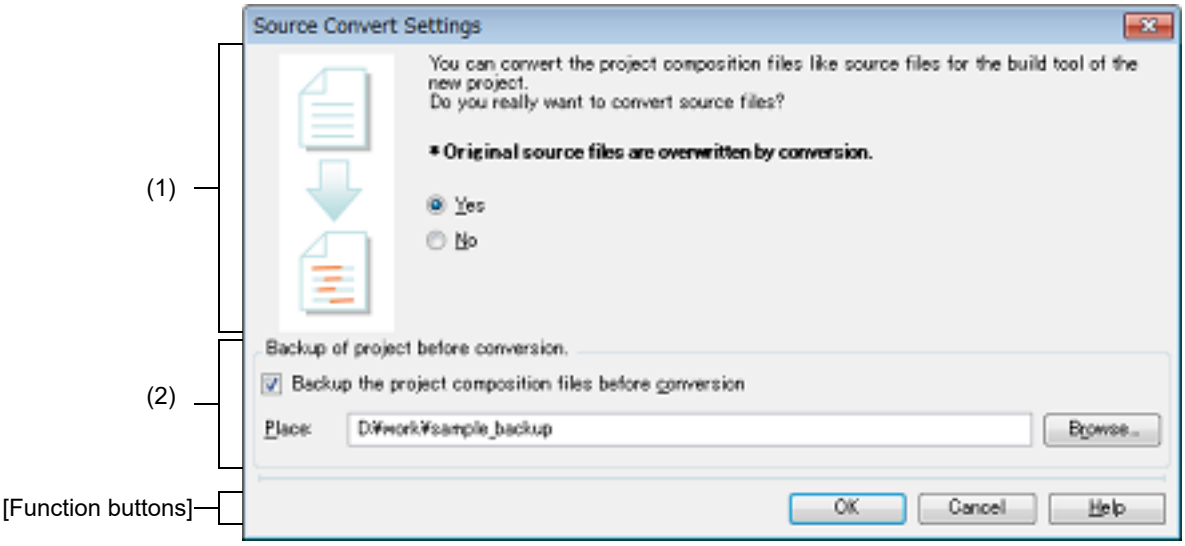
Button	Function
Create	Creates a project according to the designated condition and closes the dialog box. When the [Pass the file composition of an existing project to the new project] check box is selected, creates a project by diverting the file composition of the project (main or subproject) designated in [Project to be passed]. If the build tool of the source project is CA78K0R or CA78K0, and the build tool of the project to create is CC-RL, opens the Source Convert Setting dialog box [CC-RL] to select whether to convert the source files and the like.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

Source Convert Setting dialog box [CC-RL]

This dialog box configures the source files of the source project to convert them for the build tool of the project to be created.

Caution This dialog box is only displayed if the build tool of the source project is CA78K0R or CA78K0, and that of the project to be created is CC-RL.

Figure A.5 Source Convert Setting Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the Create Project dialog box, set the build tool of the source project to CA78K0R or CA78K0, and that of the project to create to CC-RL, and then click the [Create] button.

  Caution You cannot open this dialog box when the [Copy composition files in the diverted project folder to a new project folder] check box is checked from the Create Project dialog box.

- When converting a project for the CA78K0R or CA78K0 compiler created by using PM+, from the Project Convert Setting dialog box, set the build tool of the project to create to CC-RL, and then click the [OK] button.

[Description of each area]

(1) Source convert selection area
Select whether to convert the source files when creating the project.

- When [Yes] is selected
  The source files are converted.
- When [No] is selected
  The source files are not converted.

(2) [Backup of project before conversion.] area
Make settings relating to backing up the source project.

(a) [Backup the project composition files before conversion]
Select this check box when you wish to save backups of the pre-conversion source files in the project folder and those other than in the project folder that has been registered with the project tree.

Caution When this dialog box is displayed from the Project Convert Setting dialog box and a new folder which is different from that for the source project is specified as [Place] in the Project Convert Setting dialog box, the files of the source project for the MCU Simulator Online, e^2 studio, High-performance Embedded Workshop, or PM+ are not included as targets for backup.

(b) [Place]
Specify the location in which to save the entire source project and its source files.
Enter the absolute path directly, or click the [Browse...] button, and select the location via the Browse For Folder dialog box.
By default, "*project-folder-of-project-being-created*_backup" is displayed. If there is already a folder with the same name, a number (2, 3, ...) will be added to the folder name.
This field is enabled only when the [Backup the project composition files before conversion] check box is checked.

(c) Button

Browse...	Opens the Browse For Folder dialog box. When a folder is selected, the path is shown in the text box.

Remark 1. Up to 247 characters can be entered in [Place]. When the input violates any restriction, the following messages are shown.

Message	Description
The folder name including the path is too long. Make it within 247 characters.	The folder name is more than 247 characters.
The folder name is invalid. The following characters cannot be used: :, *, ?, ", <, >, |	The folder name with the invalid path is designated. The characters, :, *, ?, ", <, >, |, cannot be used for the file name and folder name.
The folder in the source project can not be specified.	A folder inside the source project folder is specified.

Remark 2. When the path name is too long to be shown in the text area, is displayed. The absolute path pops up when the mouse cursor is hovered over .

[Function buttons]

Button	Function
OK	Closes this dialog box and converts a project according to the designated condition.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

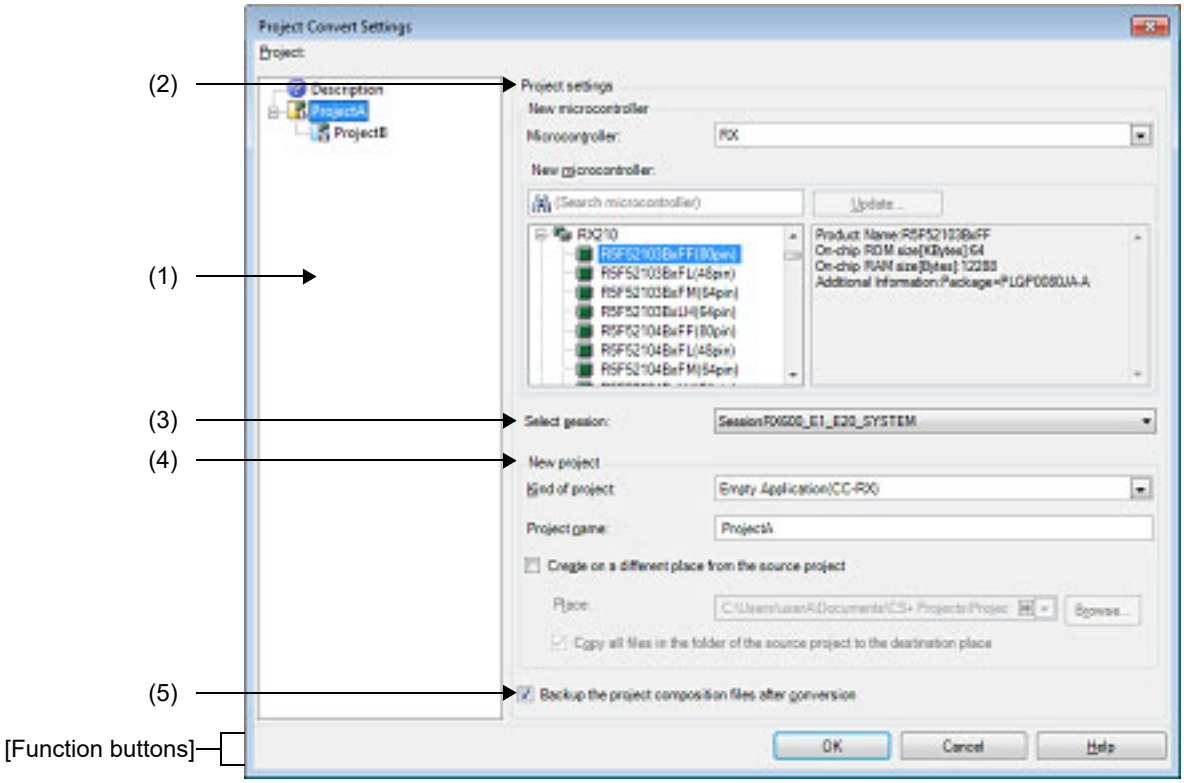
Project Convert Setting dialog box

This dialog box includes the settings for conversion from e^2 studio and the old development environment (CubeSuite, HEW, PM+) project (or workspace) to a CS+ project.

Remark For details of the method of conversion of an old development environment project, see the following.

- "2.4.10 Convert an e^2 studio project into a CS+ project [RX][RL78]"
- "2.4.11 Convert a CubeSuite project into a CS+ project"2.4.12 Convert a HEW project into a CS+ project"
- "2.4.13 Convert a PM+ project into a CS+ project"

Figure A.6 Project Convert Setting Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Project] menu, select [Open Project...] to open the Open Project dialog box.
  And then select an e^2 studio, CubeSuite, HEW, PM+ project (or workspace) and click the [Open] button.
- [Open Existing MCU Simulator Online/e^2 studio/CubeSuite/High-performance Embedded Workshop/PM+ Project] area on the Start panel, click the [GO] button to open the Open Project dialog box.
  And then select an MCU Simulator Online/e^2 studio, CubeSuite, HEW, PM+ project (or workspace) and click the [Open] button.

[Description of each area]

(1) [Project]
This area displays the conversion target project configuration tree. Select the project for carrying out the conversion settings.

	Description node When you make the selection, the area on the right shows a summary of operations in this dialog box.
	Main project node Indicates that this is the main project for the conversion target project. When selected, the area on the right shows the main project setting items.
	Subproject node Indicates that this is the subproject for the conversion target project. When selected, the area on the right shows the subproject setting items.

Remark 1. Holding down the [Ctrl] key and selecting a main project node and subproject node, allows you to make a multiple project setting.

Remark 2. Selecting a main project node and then pressing the [*] key, allows you to expand the selected node.
Selecting a main project node and then pressing the [Shift] + [*] key, allows you to collapse the selected node.

Remark 3. For the following conversions, subproject nodes do not appear.

- In an e^2 studio project
- In a CubeSuite project when there are no subprojects
- In a HEW workspace, when there is only one project
- In a HEW project
- In a PM+ project

Remark 4. When the input for [Place] violates any restriction, the following messages are shown in the tooltip.

Message	Description
Some project names are too long. Make it within 259 characters.	For project settings not selected in this area, the absolute path of the conversion target project file exceeds 259 characters.
The device is not specified in some projects. Select the project in tree view, and please set the device.	The device list of the microcontroller selected for a project that is not selected in this area does not include the settings for that project. This message is shown when CS+ does not support the device for the e^2 studio, CubeSuite, or PM+ project or when a device was not set after the HEW project was opened.

(2) [New microcontroller] area
Carry out the microcontroller settings for the conversion target project.

Remark This area will be invalid when a PM+ workspace is converted and the main project node is selected.

(a) [Microcontroller]
Select a microcontroller type to use in the new project.
You can select the item below.

- RH850
- RX
- RL78

(b) [New microcontroller] area
Select a microcontroller to use in the new project.

<1> Microcontroller search box
You can search a microcontroller selected in the list of microcontrollers simply.

<2> List of microcontrollers
Select a microcontroller.
The microcontrollers that correspond to the microcontroller type selected in [Microcontroller] are listed and categorized by their nicknames.
The following information on the selected microcontroller that is used in the project is shown in the box at right.

- Product Name
- On-chip ROM size [Kbytes] [RX]
- Internal ROM size [Kbytes] [RH850][RL78]
- On-chip RAM size [Bytes] [RX]
- Internal RAM size [Bytes] [RH850][RL78]
- Additional Information[Note]

Note Other information appears only when present.

<3> Button

Update...	Displays the CS+ Update Manager window. When the microcontroller to be used does not appear in the list, you can search for the microcontroller via the network.

Caution This button is only enabled when this product is installed using the installer. It is disabled when a packaged item is being used.

Remark When the selection violates any restriction, the following messages are shown.

Message	Description
Select the device.	Because no device is selected (for example, a device category is selected), it is not possible to determine the project type.

Caution If there is no microcontroller which is the same as that in the source project, a different microcontroller is automatically selected. Confirm the selected microcontroller and change it as required.

(3) [Select session]
Select the session used in the new project from the drop-down list.
Only the sessions in the HEW project that are linked to the target will appear in the drop-down list.

Remark This item is displayed only when the HEW project is converted and there are multiple sessions in it.

(4) [New project] area
Set the project to create.

(a) [Kind of project]
Select the project type to create on [Kind of project].

Caution When the target device is changed in this dialog box while it is open for conversion of a project created by using the CubeSuite, HEW, or PM+, the item chosen in [Kind of project] is returned to the default value (top type in the drop-down list).
For example:
The setting for [Kind of project] changes to the default type (for example, [Application(CC-RH/CC-RX/CC-RL)]) when the device selection is changed.

Remark This item will be invalid when a PM+ workspace is converted and the main project node is selected.

You can select the item below.

- Application(CC-RH/CC-RX/CC-RL)

Select this to generate the load module file and hex file from C source files, by using the build tool provided by CS+.
The generated file will be the debug target.

- Empty Application(CC-RH/CC-RX/CC-RL)
  Select this to generate the load module file, by using build tool provided by CS+.
  The generated file will be the debug target.
  Sample startup programs are not generated when the project is created.
- Library(CC-RH/CC-RX/CC-RL)
  Select this to generate a library file for a user library, by using the build tool provided by CS+.
- Debug Only
  Select this to debug a load module file or hex file generated with a build tool other than the one provided by CS+ (i.e. creates a debug-dedicated project).
  See "E. USING AN EXTERNAL BUILD TOOL" for details on how to create and use the debug-dedicated project.

(b) [Project name]
Directly enter the name of the project to create.
The entered project name is followed by the extension, ".mtpj" and this forms the project file name.

Remark 1. When the subproject is created, the entered project name is followed by the extension, ".mtsp" and forms the subproject name.

Remark 2. When there is an existing project file with the same name in the location for creating the project file, the file name has a number (from 1 to 99) appended thus: "_n_".

(c) [Create on a different place from the source project]
Select this check box when you wish to create the project in a different folder from that for the source project.

(d) [Place]
Designate the location to create the project file by directly entering it with absolute path or selecting from the [Browse...] button.
"C:\Users\<user name>\Documents\CS+ Projects\<a folder for the source project>" is displayed by default.
Note that this item is only enabled when you have selected [Create on a different place from the source project].

Caution The name of a network path cannot be used for [Place]. Assign the name of a path on a drive.

(e) Button

Browse...	Opens the Browse For Folder dialog box. When a folder is selected, an absolute path of the folder is shown in [Place].

Remark 1. The number of characters that can be entered in [Project name] and [Place] is up to 259 both for the path name and file name together.

Remark 2. When the input for [Project name] violates any restriction, the following messages are shown in the tooltip.

Message	Description
The project name is invalid. Enter characters that can be used as a file name.	The project file name uses characters that are not allowed.
The subproject name is invalid. A subproject with the same name cannot be made in the location where the main project exists.	In the specified location there is already a main project with the same name (excluding extension).
Set the project name.	The project name is not specified.

Remark 3. When the input for [Place] violates any restriction, the following messages are shown in the tooltip.

Message	Description
The file name including the path is too long. Make it within 259 characters.	The file name with the path is more than 259 characters.

Message	Description
The location where the project is to be created does not exist.	The folder creation was canceled or failed, so that a nonexistent folder has been specified.
The location for project creation is invalid. Enter characters that can be used as a path name.	The file name with the invalid path is designated. The characters, \, /, :, *, ?, ", <, >, |, cannot be used for the folder name.
Some other projects are same setting. Change the project name or the folder.	Attempt to create a project file with the same absolute path as another project.
Set the place.	The creation location is not specified.

(f) [Copy all files in the folder of the source project to the destination place]
Select this check box when you wish to copy all files in the folder for the source project to the place where the project was created.
All files in the folder and subfolder are copied, including files which are not related to the project, with the exception of the files of the source project itself.
Note that this item is only enabled when you have selected [Create on a different place from the source project].

(5) [Backup the project composition after before conversion]
Select this check box to pack up and save the project source files and complete project immediately after the conversion.

Remark This item will be invalid when a PM+ workspace is converted and the main project node is selected.

The destination folder for saving is on the same level as the conversion target project folder, named "*conversion-target-project-folder*_org".
If there is an existing folder file with the same name, the folder name has a number (from 1 to 99) appended thus: "_n_".

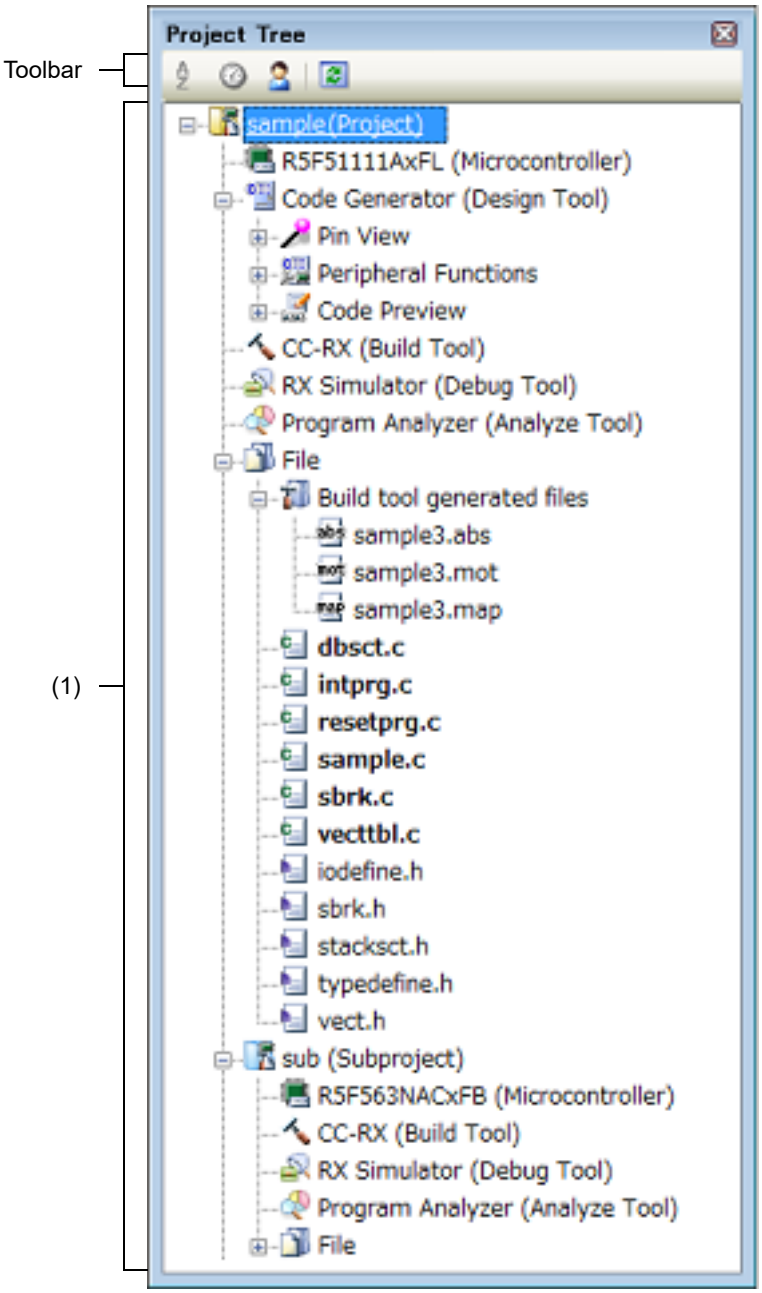
[Function buttons]

Button	Function
OK	Closes this dialog box and converts a project according to the designated condition.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

Project Tree panel

This panel is used to display components of the microcontroller, build tool, and source file of the project in tree view.

Figure A.7 Project Tree Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [Toolbar]
- [[Edit] menu (Project Tree panel-dedicated items)]
- [[Help] menu (Project Tree panel-dedicated items)]
- [Context menu]

[How to open]

- From the [View] menu, select [Project Tree].

[Description of each area]

(1) Project tree area
Project components are displayed in tree view with the following given node.
When each component (the node or file) is selected, the detailed information (property) is displayed in the Property panel. You can change the settings.

Node	Explanation
Project name (Project) (Subsequently called "Project node")	The project's name.
Microcontroller name (Microcontroller) (Hereafter referred to as "Microcontroller node")	The microcontroller used in the project.
Boot Loader (Configuration Tool for Multi-core) [RH850] (Hereafter referred to as "Configuration Tool for Multi-core node")	The node for setting application projects which configure a project for multi-core. Note that this node is shown when the project type is a boot loader project.
Design Tool name (Design Tool) (Hereafter referred to as "Design Tool node")	The design tool (pin configurator, code generator, smart configurator [RX][RL78], etc.) used. Note that Code Generator (Design Tool) node is not shown when the project type is a debug-dedicated project.
Build tool name (Build Tool) (Hereafter referred to as "Build Tool node")	The build tool (compiler, assembler, etc.) used. When the project type is a debug-dedicated project, "None" is shown as *build tool name*.
Debug tool name (Debug Tool) (Hereafter referred to as "Debug Tool node")	The debug tool (in-circuit emulator, simulator, etc.) used.
Program Analyzer (Analyze Tool) (Hereafter referred to as "Analyze Tool node")	The analyze tool used. Note that this node is not shown when the project type is a debug-dedicated project.
File (Hereafter referred to as "File node")	Files registered to the project are displayed directly below the File node.
Download files (Hereafter referred to as "Download files node")	This is a node for adding download files to the project. Note that this node is shown only when the project type is a debug-dedicated project.
Build tool generated files (Hereafter referred to as "Build tool generated files node")	This node is created during a build. Files created by the build tools are displayed directly below the node (except for object files). This node is always shown under the File node. Displayed files cannot be renamed, deleted, or moved. This node is always displayed below the File node. This node will no longer appear if you reload the project after building. Note that this node is not shown when the project type is a debug-dedicated project.
Startup [RL78] (Hereafter referred to as "Startup node")	This is a node for adding other than standard startup files to the project. This node is always shown under the File node. Note that this node is not shown when the project type is a debug-dedicated project.

Node	Explanation
Category name (Hereafter referred to as "Category node")	These user-defined categories are used to classify files into modules (see ""). Note that this node is always shown under the files node.
Subproject name (Subproject) (Hereafter referred to as "Subproject node")	Subprojects added to the project.

Remark 1. Only the tools corresponding to the microcontroller in use are shown.

Remark 2. When more than one component are selected, only the tab that is common to all the components is displayed.
When more than one file are selected and their common properties are different, that field is left blank.

Remark 3. See "E. USING AN EXTERNAL BUILD TOOL" for details on a debug-dedicated project.

Caution The name of a network path cannot be used for project tree area. Assign the name of a path on a drive.

This area has the following functions.

(a) Import project files
If you drag the project file from the windows explorer and drop in this area, you can open the project in Main Window.

(b) Add subprojects
You can add subprojects by one of the following procedure.

<1> Add an existing subproject

- Select Project node or Subproject node. Then select [Add] >> [Add Subproject...] in [File] or [Project] menu. Add Existing Subproject dialog box appears. Select subproject files to add.
- Select [Add] >> [Add Subproject...] in the context menu of Project node or Subproject node. Add Existing Subproject dialog box appears. Select subproject files to add.

<2> Add new subproject

- Select Project node or Subproject node. Then select [Add] >> [Add New Subproject...] in [File] or [Project] menu. Create Project dialog box appears. Create a new subproject file.
- Select [Add] >> [Add New Subproject...] in the context menu of Project node or Subproject node. Create Project dialog box appears. Create a new subproject file.

(c) Remove a subproject from a project
You can remove a subproject from a project by one of the following procedure.

- Select the subproject that you want to delete, then select [Remove from Project] in [Project] menu.
- Select the subproject that you want to delete, then select [Remove from Project] in the context menu.

Caution If the selected subproject is the active project, then it cannot be removed from the project.

(d) Move subprojects
You can move subprojects by the following procedure.

- Drag the subproject you want to move, then drop it in the destination.

Remark You can run multiple CS+ and drop the subproject to a different project. In this case, the dropped subproject is copied, not moved.

(e) Select multiple nodes
You can select multiple nodes in sequence by the following procedure.

- Click or place the cursor on the start node then click with pressing the [Shift] key or place the cursor on the end node.

You can select multiple nodes one by one by the following procedures.

- Click on the node with pressing the [Ctrl] key.

- Place the cursor key on the node with pressing the [Ctrl] key then press [Space] key.

(f) Expand/collapse a node
You can expand the selected node by the following procedure.

- Select the node and then press the [*] key.

You can collapse the selected node by the following procedure.

- Select the node and then press the [Shift] + [*] key.

(g) Adding a file
You can add a file by one of the following procedures.
The files are added below the File node.

<1> Adding an existing file

- Select either one of the Project node, Subproject node, File node or a file. Then select [Add] >> [Add File...] from the [File] menu. The Add Existing File dialog box will open. Select the file to be added.
- Select either one of the Project node, Subproject node, File node. Then select [Add] >> [Add File...] from the context menu. The Add Existing File dialog box will open. Select the file to be added.
- Copy the file using such as Explorer and then point the mouse to this area. Select [Paste] from the [Edit] menu.
- Drag a file using such as Explorer and drop it onto the location in this area where you want to add it to.

Remark If you drag the file using such as Explorer and drop it onto the empty space below the lower project tree, it is assumed that you have dropped it onto the Main project.

<2> Adding a new file

- Select either one of the Project node, Subproject node, File node or a file. Then select [Add] >> [Add New File...] from the [File] menu. The Add File dialog box will open. Designate the file to be created.
- Select either one of the Project node, Subproject node, File node. Then select [Add] >> [Add New File...] from the context menu. The Add File dialog box will open. Designate the file to be created.

Remark A blank file is created at the location designated in the Add File dialog box.

(h) Removing a file from the project
You can remove a file from the project by one of the following procedures.
The file itself is not deleted from the file system.

- Select the file you want to remove from the project and then select [Remove from Project] from the [Project] menu.
- Select the file you want to remove from the project and then select [Remove from Project] from the context menu.

(i) Moving a file
You can move a file by the following procedure.
The file is moved below the File node.

- Drag the file you want to move and then drop it onto the destination.

Remark 1. If you drop the file in the main project or subproject, the individual options set in the file are retained.

Remark 2. If you drop the file between the different projects, or onto the main project or subproject in same project, the file is copied, not moved.
Note that the individual option set in the file is not retained.

(j) Adding a category
You can add a category node by one of the following procedures.
The category node is added below the File node.

- Select [Add New Category] from the [Project] menu.
- Select [Add New Category] from the context menu of either one of the Project node, Subproject node, or File node.

Remark 1. The default category name is "New category".

Remark 2. You can also add a category node with the same name as the existing category node.

(k) Moving a category
You can move a category node by the following procedure.
The category node is moved below the File node.

- Drag the category node you want to move and then drop it onto the destination.

Remark 1. If you drop the category node in the main project or subproject, the individual options set in the file in the category node are retained.

Remark 2. If you drop the category node between the different projects, or onto the main project or subproject in same project, the category node is copied, not moved.
Note that the individual option set in the file in the category node is not retained.

(l) Adding a folder
You can add a folder using such as Explorer by the following procedure.
The folder is added below the File node.
The folder is added as a category.

- Drag the folder using such as Explorer and drop it onto the destination. The Add Folder and File dialog box will open. Specify the file types and subfolder levels in the folder to be added.

Caution You cannot drag and drop a folder and file onto this area simultaneously.

(m) Displaying the dependency file
When there is a dependency file for a source file added to the project, the dependency file is displayed under the source file.

The source file without a dependency file	main.c
The source file with a dependency file	main.c io.h

The display of the dependency files is updated on the following timings:

- When the first build is run after the project is loaded
- When on the toolbar is clicked
- When [Update Dependencies] is selected from the [Build] menu
- When [Update Dependencies of *active project*] is selected from the [Build] menu

Remark 1. This function is valid only when the [Show dependency files in project tree] check box in the [General - Build] category of the Option dialog box is selected.

Remark 2. Information on the dependency files displayed on the project tree is not saved in the project file.

(n) Displaying the editing file
When the file added to the project is edited in the Editor panel (exclude the dependency files) and the file is not saved once, the file name is followed by "*".
If the file is saved, "*" will be deleted.

The file that is saved	main.c
The file that is not saved after editing	main.c*

(o) Displaying the source file in boldface that the individual build option is set
The source file icon whose option is different from the project general options (individual compile options or individual assemble options) is changed to the different one from the normal icon.

The file with project general options	main.c
The file with the individual build options	main.c

(p) Highlighting the file with the read-only attribute
The read-only file added to the project is displayed in italic.

The file without the read-only attribute	main.c
The file with the read-only attribute	*main.c*

(q) Highlighting the file that does not exist
The file that is added to the project but does not exist is grayed out and its icon is dimmed.

The file that exists	main.c
The file that does not exist	main.c

(r) Highlighting the build-target file

<1> The file which an error occurred during building (rapid building), rebuilding, compiling or assembling is highlighted as the example below.

The file without errors or warnings	main.c
The file with an error	main.c
The file with a warning	main.c

Remark 1. The file with both an error and a warning is highlighted in red.

Remark 2. The highlight is canceled when the build option (general option or individual option) or the build mode is changed.

<2> The names of the following files are displayed in boldface.

- The source file that has not been compiled after editing
- The source file after a clean has been executed
- The source file after the build tool option has been changed
- The source file after the build mode has been changed

Remark The file names are all displayed in boldface right after the project is opened. The boldface display is canceled after a build is executed.

(s) Highlighting the non build-target file
The file that is set as non build-target is highlighted as shown in the example below.

Build-target file	main.c
Non build-target file	main.c

(t) Highlighting overlay icons
Overlay icons of Windows Explorer set in a project, a file added to the project, and a category (only when a shortcut to the folder is set) is displayed on the left side of the ordinal icon as the example below.

The project that has not been changed	sample (Project)
The project displaying an overlay icon	sample (Project)

Caution The above overlay icon is provided as a sample.
Note that an icon to be displayed differs depending on the tools in use.

The display of overlay icons is updated on the following timings:

- When the project is loaded
- When on the toolbar is clicked
- When [Refresh] is selected from the [Edit] menu

Remark This function is valid only when this product is activated while the [Show overlay icons for Windows Explorer in project tree] check box in the [General - Display] category of the Option dialog box is selected.

(u) Highlighting the category in which a shortcut to a folder is set
The category in which a shortcut to a folder is set is highlighted as shown in the example below.

Ordinal category	source
Category in which a shortcut to a folder has been set	source

(v) Highlighting the project that has been changed
The file component that is added to the project and the property of the project component are changed, the project name is followed by "*" and is displayed in boldface.
The boldface is canceled when the project is saved.

The project that has not been changed	sample (Project)
The project that has been changed	**sample (Project)***

(w) Highlighting the active project
The active project is underlined.

Non-active project	**sample (Project)***
Active project	**sample (Project)***

(x) Updating the status of file highlighting
The state of highlighting for files, read-only files, non-existent files, and overlay icons is updated by the following procedure.

- Select on the toolbar.

(y) Running the editor
The file with the specific extension is opened in the Editor panel. When an external text editor is set to be used in the Option dialog box, the file is opened with the external text editor that has been set. Other files are opened with the applications associated by the host OS.

Caution The file with the extension that is not associated with the host OS is not displayed.

You can open the editor by one of the following procedures.

- Double click the file.
- Select a file and then select [Open] from the context menu.
- Select a file and then press the [Enter] key.

[Toolbar]

	Sorts files and Category nodes in Project tree area in order of their names. : Ascending order : Descending order : Ascending order
	Sorts files in Project tree area in order of the time stamp. : Descending order : Ascending order : Descending order
	Sorts files (other than the dependency files) and Category nodes in Project tree area in order of the user definition (default). Display order is changed by dragging and dropping the file and Category node.
	Refreshes the state of highlighting for files, read-only files, non-existent files, and overlay icons.

[[Edit] menu (Project Tree panel-dedicated items)]

Copy	Copies the selected file or Category node to the clip board. While editing the file name or the category name, the characters of the selection are copied to the clip board. Note that this menu is only enabled when the file (other than the dependency files) or the Category node is selected.
Paste	Inserts the contents of the clip board to the root of the node that is selected on the Project Tree. While editing the file name or the category name, insert the contents of the clip board. Note that this menu is only enabled when the file or the Category node exists. If a project with the same contents is already on the clipboard, however, then if multiple files or Category nodes are selected, and the build tool is running, then it will be invalid.
Rename	You can rename the selected project, subproject, file, and Category node. Press [Enter] key to confirm the rename. Press the [ESC] key to cancel. When the project, subproject, or file is selected, the actual file name is also changed. When the selected file is added to other project, those file names are also changed. Note that this menu is only enabled when the project, subproject, file (other than the dependency files), and Category node is selected. Note that rename is disabled when the build tool is operating.

[[Help] menu (Project Tree panel-dedicated items)]

Open Help for Project Tree Panel	Displays the help of this panel.

[Context menu]

(1) When a Project node is selected

Build *Actively project*	Builds the active project. If the active project is the main project, its subproject is not built. When a dependent project is set for the active project, a build of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Rebuild *Actively project*	Rebuilds the active project. If the active project is the main project, its subproject is not rebuilt. When a dependent project is set for the active project, a rebuild of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Clean *Actively project*	Cleans the active project. If the active project is the main project, its subproject is not cleaned. Note that this menu is disabled when the build tool is in operation.
Open Folder with Explorer	Opens the folder that contains the project file of the selected project with Explorer.
Windows Explorer Menu	Displays the Windows Explorer menu corresponding to the project file for the selected project.

Add	Shows the cascading menu to add subprojects and files to the project.
Add Subproject...	Opens the Add Existing Subproject dialog box to add the selected subproject to a project.
Add New Subproject...	Opens the Create Project dialog box to add the created subproject to a project.
Add File...	Opens the Add Existing File dialog box to add the selected file to a project.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to a project. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node to the root of the File node. This allows the category name to be changed. The default category name is "New category". The new category name can be changed to the same name as the existing Category node. Note that this menu is disabled when the build tool is in operation.
Set *Selected project* Active Project	Sets the selected project to an active project.
Save Project and Development Tools as Package	Saves a set of the project and this product by copying them in a folder.
Paste	This menu is always disabled.
Rename	You can rename the selected project.
Property	Displays the selected project's property in Property panel.

(2) When a Subproject node is selected

Build *Actively project*	Builds the active project. When a dependent project is set for the active project, a build of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Rebuild *Actively project*	Rebuilds the active project. When a dependent project is set for the active project, a rebuild of the dependent project is also run. Note that this menu is disabled when the build tool is in operation.
Clean *Actively project*	Cleans the active project. Note that this menu is disabled when the build tool is in operation.
Open Folder with Explorer	Opens the folder that contains the subproject file of the selected subproject with Explorer.
Windows Explorer Menu	Displays the Windows Explorer menu corresponding to the subproject file for the selected subproject.

Add	Shows the cascading menu to add subprojects, files, and Category nodes to the project.
Add Subproject...	Opens the Add Existing Subproject dialog box to add the selected subproject to a project. The subproject cannot be added to another subproject.
Add New Subproject...	Opens the Create Project dialog box to add the created subproject to a project. The subproject cannot be added to another subproject.
Add File...	Opens Add Existing File dialog box to add the selected file to a project.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to a project. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node to the root of the File node. This allows the category name to be changed. The default category name is "New category". The new category name can be changed to the same name as the existing Category node. Note that this menu is disabled when the build tool is in operation.
Set *Selected subproject* Active Project	Sets the selected subproject to an active project.
Remove from Project	Removes the selected subproject from the project. The subproject file itself is not deleted from the file system with this operation. When the selected subproject is the active project, it cannot be removed from the project. Note that this menu is disabled when the build tool is in operation.
Paste	This menu is always disabled.
Rename	You can rename the selected subproject.
Property	Displays the selected subproject's property in Property panel.

(3) When a Microcontroller node is selected

Change Microcontroller...	Opens the Change Microcontroller dialog box to change the microcontroller. When multiple Microcontroller nodes for the projects using the same microcontroller are selected, the microcontroller settings can be changed at one time.
Property	Displays the selected microcontroller's property in Property panel.

(4) When a Build Tool node is selected

Build Project	Runs a build the selected project (main project or subproject). A build of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Rebuild Project	Runs a rebuild the selected project (main project or subproject). A rebuild of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Clean Project	Runs a clean of the selected project (main project or subproject). A clean of a subproject is also run when it is added in the project. Note that this menu is disabled when the build tool is in operation.
Set to Default Build Option for Project	Sets the current build options as the standard for the project. When a subproject is added, its setting is not made. When the build option that is different from the standard option is set, its property is displayed in boldface.

Import Build Options...	Opens the Import Build Options dialog box to import the build options from the selected project file.[Note]
Set Link Order...	Opens the Link Order dialog box to display object module files and library files to and set their link orders. Note that this menu is disabled when the build tool is in operation.
Property	Displays the selected build tool's property on the Property panel.

Note See "2.7.1 Import the build options of other project" for details about the import function of the build options.

(5) When a Download file node is selected
This node is displayed only for a debug-dedicated project (see "E. USING AN EXTERNAL BUILD TOOL").

Add	Shows the cascading menu to add download files to the project.
Add File...	Opens the Add Existing File dialog box to add the selected file to the project as a download file.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to the file to the project as a download file.
Add New Category	Adds a new Category node directly below this node. This allows the category name to be changed. Up to 200 characters can be specified. The default category name is "New category". You can also add a Category node with the same name as the existing Category node. This menu is disabled when the build tool is in operation and when categories are nested 20 levels.
Open Folder with Explorer	This menu is always disabled.
Windows Explorer Menu	This menu is always disabled.
Remove from Project	This menu is always disabled.
Copy	This menu is always disabled.
Paste	Inserts the contents of the clipboard directly below this node. However, this menu is disabled when the contents of the clipboard exist in the same project.
Rename	This menu is always disabled.
Property	Displays this node's property on the Property panel.

(6) When the File node is selected

Add	Shows the cascading menu to add files and Category nodes to the project.

Add File...	Opens the Add Existing File dialog box to add the selected file to the project. The file is added directly below this node. The added file can be opened with the application corresponds to the file extension.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to the file to the project. The file is added directly below this node. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node directly below this node. This allows the category name to be changed. Up to 200 characters can be specified. The default category name is "New category". You can also add a Category node with the same name as the existing Category node. This menu is disabled when the build tool is in operation and when categories are nested 20 levels.
Open Folder with Explorer	This menu is always disabled.
Windows Explorer Menu	This menu is always disabled.
Remove from Project	This menu is always disabled.
Copy	This menu is always disabled.
Paste	Inserts the contents of the clipboard directly below this node. However, this menu is disabled when the contents of the clipboard exist in the same project.
Rename	This menu is always disabled.
Property	Displays this node's property on the Property panel.

(7) When a file is selected

Compile	Compiles the selected C source file. This menu is only displayed when a C source file (except a non build-target file) is selected. Note that this menu is disabled when the build tool is in operation.
Assemble	Assembles the selected assembly source file. This menu is only displayed when an assembly source file (except a non build-target file) is selected. Note that this menu is disabled when the build tool is in operation.
Execute in Python Console	Opens the Python Console panel to execute the selected Python script file. This menu is displayed only when a Python console script file is selected.
Open	Opens the selected file with the application corresponds to the file extension (see "(g) Adding a file").
Open with Internal Editor...	Opens the selected file with the Editor panel.
Open with Selected Application...	Opens the Open with Program dialog box to open the selected file with the designated application.
Open Folder with Explorer	Opens the folder that contains the selected file with Explorer.
Windows Explorer Menu	Displays the Windows Explorer menu corresponding to the selected file.
Add	Shows the cascading menu to add files and Category nodes to the project.

Add File...	Opens the Add Existing File dialog box to add the selected file to the project. The file is added to the same level as the selected file.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to the file to the project. The file is added to the same level as the selected file. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node at the same level as the selected file. You can rename the category. Up to 200 characters can be specified. The default category name is "New category". You can also add a Category node with the same name as the existing Category node. This menu is disabled when the build tool is in operation and when categories are nested 20 levels.
Remove from Project	Removes the selected file from the project. The file itself is not deleted from the file system. Note that this menu is disabled when the build tool is in operation.
Copy	Copies the selected file to the clipboard. When the file name is in editing, the selected characters are copied to the clipboard.
Paste	This menu is always disabled.
Rename	You can rename the selected file. The actual file is also renamed. When the selected file is added to other project, that file name is also changed.
Change Extension...	Opens a message dialog box to confirm whether to change the file extension. Clicking on the [Yes] button in the dialog box will open the Character String Input dialog box, in which the extension of the selected file can be changed. When multiple files are selected, they are changed at one time. Note that this menu item is disabled if the name of the selected file cannot be changed or the file cannot be removed from the project, or the build tool is in operation.
Property	Displays the selected file's property on the Property panel.

(8) When the Build tool generated files node is selected

Property	Displays this node's property on the Property panel.

(9) When a Category node is selected

Add	Shows the cascading menu to add files and Category nodes to the project.
Add File...	Opens the Add Existing File dialog box to add the selected file to the project. The file is added directly below this node. The added file can be opened with the application corresponds to the file extension.
Add New File...	Opens the Add File dialog box to create a file with the selected file type and add to the file to the project. The file is added directly below this node. The added file can be opened with the application corresponds to the file extension.
Add New Category	Adds a new Category node directly below this node. This allows the category name to be changed. Up to 200 characters can be specified. The default category name is "New category". You can also add a Category node with the same name as the existing Category node. This menu is disabled when the build tool is in operation and when categories are nested 20 levels.
Open Folder with Explorer	Opens a shortcut to the folder that has been set for the selected category in the Explorer. This menu item will be invalid if a shortcut to the folder has not been made.
Windows Explorer Menu	Shows the Windows Explorer menu for a shortcut to the folder that has been set for the selected category. This menu item will be invalid if a shortcut to the folder has not been made.
Remove from Project	Removes the selected Category node from the project. Note that this menu is disabled when the build tool is in operation.
Copy	Copies the selected Category node to the clipboard. When the category name is in editing, the characters of the selection are copied to the clipboard.
Paste	Inserts the contents of the clipboard directly below this node. However, this menu is disabled when the contents of the clipboard exist in the same project. When the category name is in editing, the contents of the clipboard are inserted.
Rename	You can rename the selected Category node.
Property	Displays the selected Category node's property on the Property panel.

Remark 1. When more than one component are selected, the context menu of the last selected component is displayed.

Remark 2. The context menu of the currently selected component is displayed in the blank area under the project tree.

Change Microcontroller dialog box

This dialog box is used to change the microcontroller to be used in the project (See "2.4.14 Change the microcontroller" for details).

Remark 1. The microcontroller can only be changed to another from the same family (RH850, RX, and RL78) that is compatible with the same build tools.

Remark 2. When the microcontroller is changed, it must be disconnected from the debug tool.

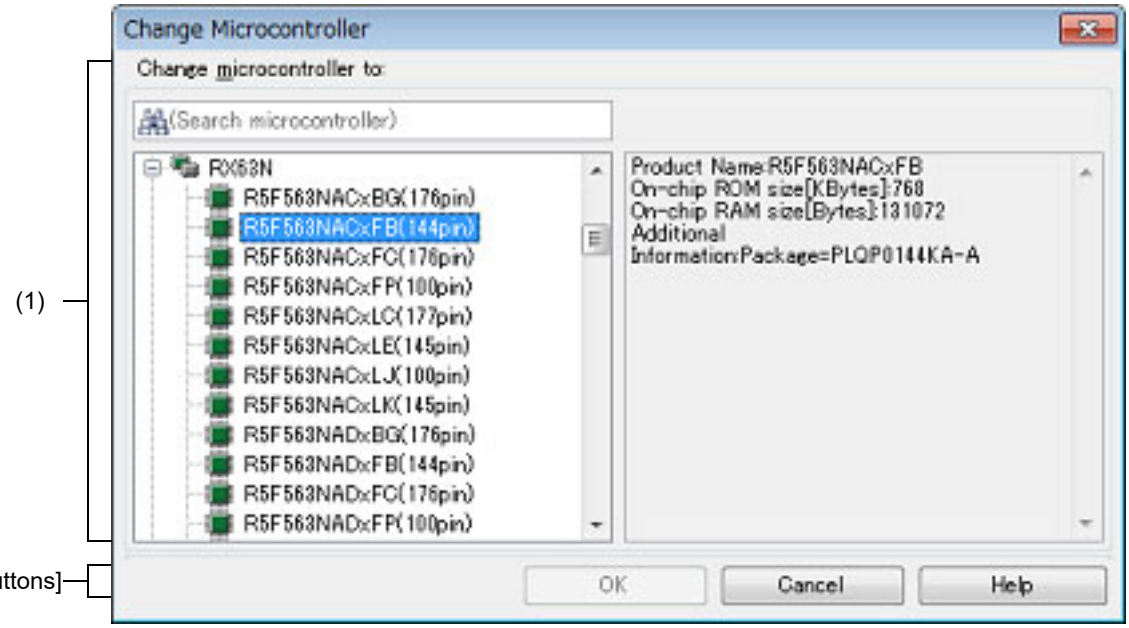
Remark 3. When the microcontroller is changed, the project must be saved.

Remark 4. After the microcontroller is changed, information for the pin configurator (design tool), code generator (design tool), and debug tool (except for registration of the Watch panel) is not maintained.

Remark 5. [RX] The settings of the properties of the build tool are changed to those for the specified microcontroller. iodefine.h and the start-up source files of the specified microcontroller are copied as sample source files. For the start-up files, create a folder named "*<device name after change>.nnn*" (*nnn* = 000, 001, …) and copy them to that folder. The details of the changes are displayed in the Output panel.
If you have selected a microcontroller that has a different ROM size from that set in the source project, the differences between the ROM sizes may not be reflected in the value of the [Section start address] property on the [Link Options] tabbed page. Check the value of the [Section start address] property.

Caution Although the [Section start address] property on the [Link Options] tabbed page is changed to the value for the specified microcontroller, the specification of addresses with #pragma address is not supported. If a section start address is changed, the size of the resulting section may extend beyond the capacity of the ROM or RAM.

Figure A.8 Change Microcontroller Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- On the Project Tree panel, select the microcontroller node, and then select [Change microcontroller...] from the context menu.

[Description of each area]

(1) [Change microcontroller to] area
Select a microcontroller to be used.

(a) Microcontroller search box
You can search a microcontroller selected in the list of microcontrollers simply.

(b) List of microcontrollers
Select a microcontroller.
The microcontrollers can be specified are listed and categorized by their nicknames.
The following information on the selected microcontroller that is used in the project is shown in the box at right.

- Product Name
- On-chip ROM size [Kbytes] [RX]
- Internal ROM size [Kbytes] [RH850][RL78]
- On-chip RAM size [Bytes] [RX]
- Internal RAM size [Bytes] [RH850][RL78]
- Additional Information[Note]

Note Other information appears only when present.

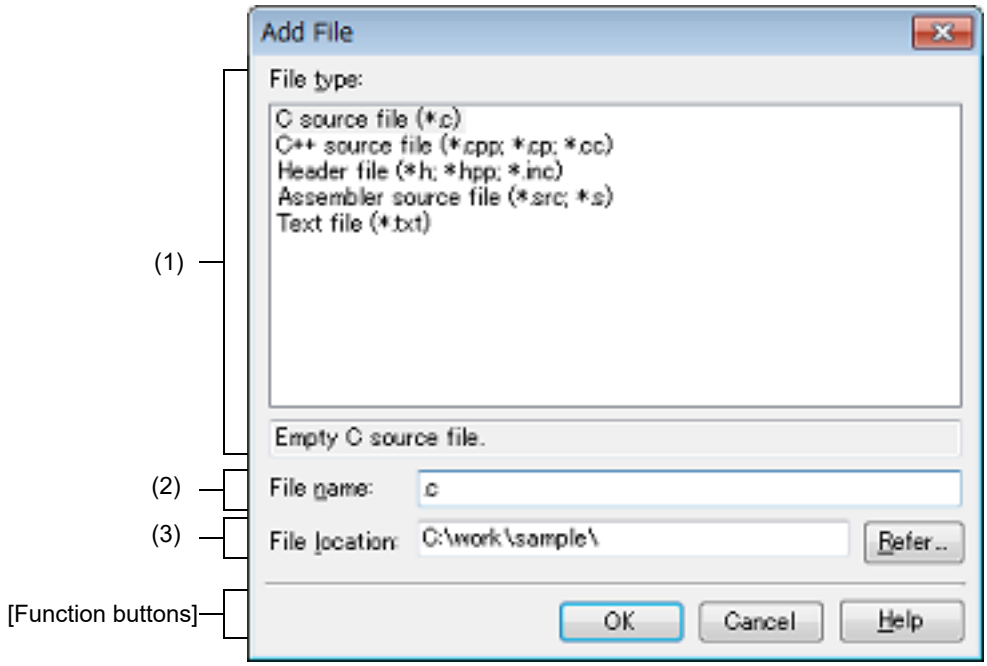
[Function buttons]

Button	Function
OK	Closes this dialog box and changes the microcontroller according to the designated condition. Note that this button is invalid when the target microcontroller after the change is the same as the current microcontroller or is selected by its nickname from the list of microcontrollers.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

Add File dialog box

This dialog box is used to create a new file and add it to the project.

Figure A.9 Add File Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [File] menu, select [Add] >> [Add New File...].
- On the Project Tree panel, select the Project node, Subproject node, File node, Category node, or Download files node, and then select [Add] >> [Add New File...] from the context menu.

[Description of each area]

(1) [File type] area
Select the type of the file to be created.
When the file type is selected, the description is displayed at the lower box.

(2) [File name] area
Directly enter the name of the file to be created.
".c" is displayed by default.

Remark If any extension is not designated, the one selected in the [File type] area will be added.
Also, if the extension different from the one selected in the [File type] area is designated, the one selected in the [File type] area will be added (for example, if you designate "aaa.txt" as the file name and select "C source file (*.c)" as the file type, the file is named as "aaa.txt.c").
Note that if [All files (*.*)] is selected in the [File type] area, no extension will be added.

Caution The name of a network path cannot be used for [File location]. Assign the name of a path on a drive.

(3) [File location] area
Designate the location to be created the file by directly entering its path or selecting from the [Refer...] button.

The path of the project folder is displayed by default.
However, when this dialog box is opened from the context menu in the Category node (only when a shortcut to the folder has been made and the folder exists), the path to the folder specified in the category is displayed.

(a) Button

Refer...	Opens the Browse For Folder dialog box. If a folder is selected, the path will be added in the text box.

Remark 1. If the text box is blank, it is assumed that the project folder is designated.

Remark 2. If the relative path is designated, the reference point of the path is the project folder.

Remark Up to 259 characters (path and file name combined) can be specified in the [File name] area and [File location] area. When the input violates any restriction, the following messages will be shown on the [File name] area in the tooltip.

Message	Description
The file name including the path is too long. Make it within 259 characters.	The file name with the path is more than 259 characters.
The specified path contains a folder that does not exist.	The path contains a folder that does not exist.
The file name or path name is invalid. The following characters cannot be used: \, /, :, *, ?, ", <, >, |	The file name with the invalid path is designated. The following characters cannot be used for the file name and folder name: \, /, :, *, ?, ", <, >, |

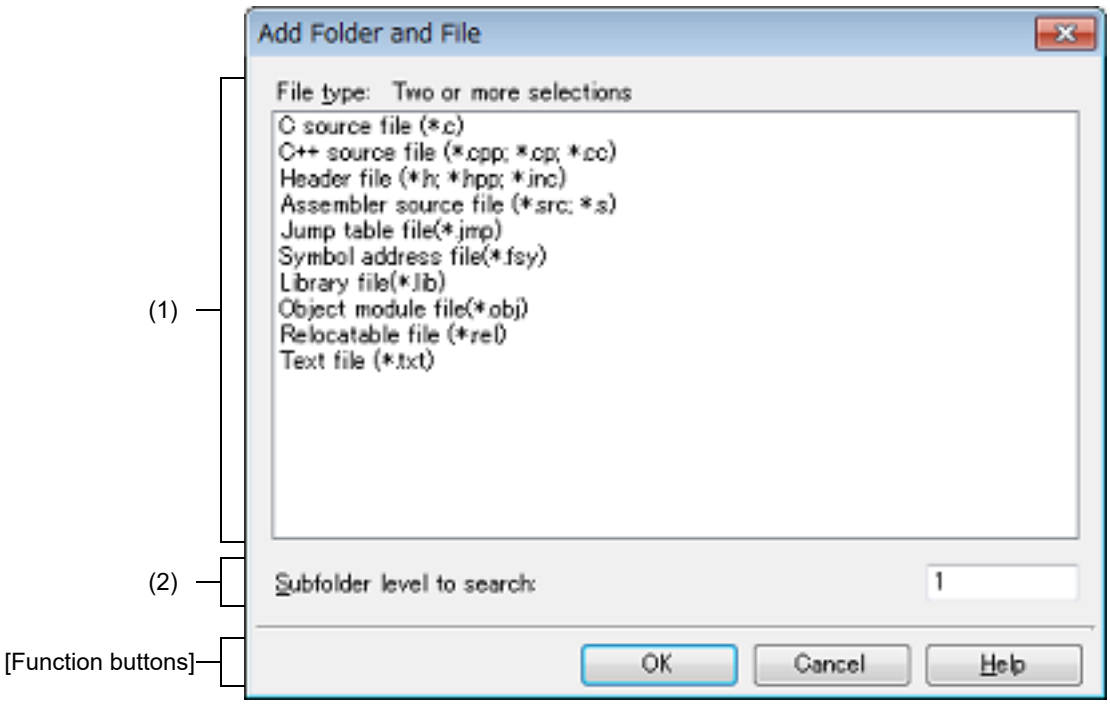
[Function buttons]

Button	Function
OK	Creates the file with the entered file name, adds it to the project, and opens with the Editor panel. And then closes this dialog box.
Cancel	Does not create a file and closes this dialog box.
Help	Displays the help of this dialog box.

Add Folder and File dialog box

This dialog box is used to add existing files and folder hierarchies to the project.
The folder is added as a category.

Figure A.10 Add Folder and File Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- Drag the folder from Explorer or the like, and drop it on the Project Tree panel.

[Description of each area]

(1) [File type] area
Select the type of the file to be added to the project.
You can select multiple file types by left clicking while holding down the [Ctrl] or [Shift] key.
If nothing is selected, it is assumed that all types are selected.

(2) [Subfolder level to search] area
Directly enter the number of levels of the subfolder to be added to the project.
"1" is displayed by default.

Remark Up to 10 (decimal number) can be specified.
When the input violates any restriction, the following messages will be shown in the tooltip.

Message	Description
Fewer than 0 or more than 10 values cannot be specified.	More than 10 subfolder levels have been specified.

Message	Description
Specify in decimal.	A number in other than decimal or a string has been specified.

Caution The name of a network path cannot be used. Assign the name of a path on a drive.

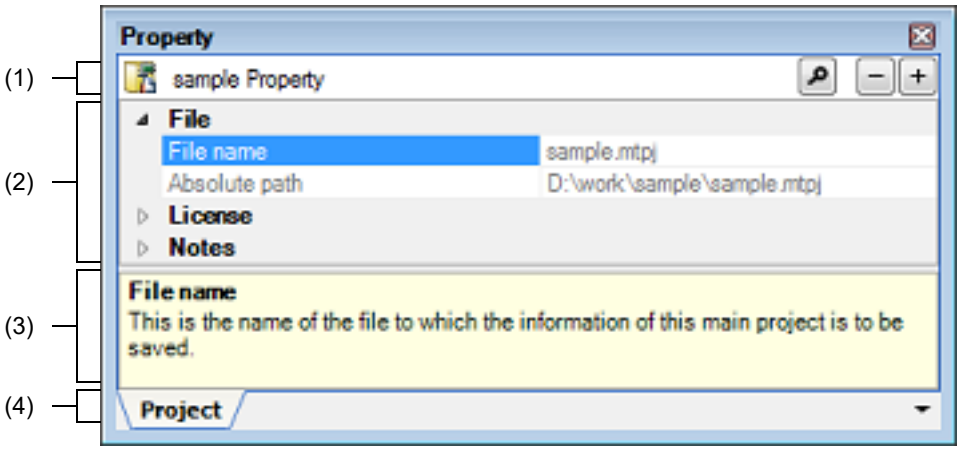
[Function buttons]

Button	Function
OK	Adds the folder that was dragged and dropped and the files in that folder to the project. And then closes this dialog box.
Cancel	Does not add the folder and files, and then closes this dialog box.
Help	Displays the help of this dialog box.

Property panel

In this panel, the detailed information on the node that is selected in the Project Tree panel is displayed categorized. Also, the settings of the selected node can be changed. This also shows the type of the [Generate Code] button clicked in the Code Generator panel and information about the file selected in the Code Generator Preview panel, and changes settings.

Figure A.11 Property Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [Dialog boxes opened from the Property panel]
- [[Edit] menu (Property panel-dedicated items)]
- [[Help] menu (Property panel-dedicated items)]
- [Context menu]

[How to open]

- Select either one of the Project node, Subproject node, Microcontroller node, Design Tool node, Build Tool node, Debug Tool node, Analyze Tool node, file, or Category node in Project Tree panel. Then select [Property] in [View] menu, or in the context menu.
- On the Code Generator panel, click [Generate Code] button, and then select [Property] from the [View] menu or context menu.
- On the Code Generator Preview panel, select file, and then select [Property] from the [View] menu or context menu.

Remark When either one of the Project node, Subproject node, Microcontroller node, Design Tool node, Build Tool node, Debug Tool node, Analyze Tool node, file, or Category node is selected in Project Tree panel while the Property panel is open, the detailed information of the selected node is displayed.

[Description of each area]

(1) Name for the selected node area and button group

(a) Name for the selected node area
In this area, the name of the selected node in Project Tree panel is displayed.
This area is left blank when multiple nodes are selected.

(b) button group

	Locks properties to prevent the property value from being modified by wrong operation of a mouse or a keyboard. : locks properties. : unlocks properties. This button is only on the following tabs. - Tabs displayed when the Build Tool node is selected - Tabs displayed when the C source file, C++ source file [CC-RX], assembly source file [CC-RH][CC-RL], assembler source file [CC-RX][CC-RL], object file [CC-RH][CC-RL], and object module file [CC-RX] - Tabs displayed when the library file is selected (except for [File Information] tab)
	Opens the Find and Replace dialog box with the [Quick Find] tab target. Property names, property values, and active-help character strings can be found.
	Collapses the entire currently displayed detailed information display/change area.
	Expands the entire currently displayed detailed information display/change area.

(2) Detailed information display/change area
In this area, the detailed information on the node that is selected in the Project Tree panel is displayed categorized in the list. Also, you can directly change the settings of the selected node. The node includes; Project node, Subproject node, Microcontroller node, Design Tool node, Build Tool node, Debug Tool node, Analyze Tool node, file, and Category node.
The ⊟ mark indicates all the items in the category are expanded. The ⊞ mark indicates all the items are shrunk. You can expand/shrink the items by clicking these marks or double clicking the category name.
If the HEX mark is displayed, only the hex number is allowed in the text box.
Please see the information on each tab for the details of the display/setting in the category and its contents.

(3) Property description area
In this area, brief description of the categories and their contents selected in the Detailed information display/change area is shown.

(4) Tab selection area
Categories for the display of the detailed information are changed when a tab is selected.
In this panel, the following tabs are contained (see the section explaining each tab for the details on the contents of the display or the method of the setting on the tab).

(a) When the following nodes are selected in the Project Tree panel

Project node	[Project] tab
Subproject node	[Subproject] tab
Microcontroller node	[Microcontroller Information] tab
Configuration Tool for Multi-core node	[Boot Loader] tab [RH850]
Design Tool node	See "CS+ Integrated Development Environment User's Manual: Pin Configurator / Code Generator Pin View Operation" and "CS+ Integrated Development Environment User's Manual: Code Generator Peripheral Function Operation" for details about tabs.
Build Tool node (Except for a debug-dedicated project[Note])	See the "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details about tabs.
Build Tool node (For a Debug-dedicated project[Note])	[Build Options] tab
Debug Tool node	See the "CS+ Integrated Development Environment User's Manual: Debug Tool" for details about tabs.

Analyze Tool node	See the "CubeSuite+ Integrated Development Environment User's Manual: Analysis" for details about this tab.
File	[File Information] tab See the "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details about the tabs other than the [File Information] tab.
Category node	[Category Information] tab

Note For details on the debug-dedicated project, see "E. USING AN EXTERNAL BUILD TOOL".

Remark When more than two components are selected in Project Tree panel, only the tab that is common to all the components is displayed. If the property is modified, that is taken effect to the selected components all of which are common to all.

[Dialog boxes opened from the Property panel]

The following dialog boxes are opened from the Property panel.

- Character String Input dialog box
  See "Character String Input dialog box" for details.
- Text Edit dialog box
  See "Text Edit dialog box" for details.
- Path Edit dialog box
  See "Path Edit dialog box" for details.

[[Edit] menu (Property panel-dedicated items)]

Undo	Undoes any property changes being done.
Cut	Cuts the selected text to the clip board while editing the property.
Copy	Copies the selected text in the property to the clip board.
Paste	Pastes the contents of the clip board to the property while editing the property.
Delete	Deletes the selected text while editing the property.
Select All	Selects all the text in the selected property while editing the property.
Find...	Opens the Find and Replace dialog box with the [Quick Find] tab target.

[[Help] menu (Property panel-dedicated items)]

Open Help for Property Panel	Displays the help of this panel or the currently displayed tab.

[Context menu]

Undo	Undoes any property changes being done.
Cut	Cuts the selected text to the clip board while editing the property.
Copy	Copies the selected text in the property to the clip board.
Paste	Pastes the contents of the clip board to the property while editing the property.
Delete	Deletes the selected text while editing the property.

Select All	Selects all the text in the selected property while editing the property.
Reset to Default	Restores the configuration of the selected item to default of the project default configuration. For [Individual Compile Options] tab and [Individual Assemble Options] tab, restores to the configuration of the general option.
Reset All to Default	Restores the configuration of the current tab to default of the project default configuration. For [Individual Compile Options] tab and [Individual Assemble Options] tab, restores to the configuration of the general option.

[Project] tab

This tab shows the detailed information on projects (main project) categorized by the following and the configuration can be changed.

(1) [File]
(2) [License]
(3) [Notes]

[Description of each category]

(1) [File]
The detailed information on files is displayed.

File name	Displays the file name of the file to save the information on the main project.	
	Default	*Name of the main project file*
	How to change	Changes not allowed
Absolute path	Displays the absolute path of the main project file to save the information on them.	
	Default	*Absolute name of main projects*
	How to change	Changes not allowed

(2) [License]
The detailed information on a license is displayed and their configuration can be changed.

Use standard edition for floating license	Select whether to use only a floating license for the standard edition.		
	Default	Yes	
	How to change	Select a value from the drop-down list.	
	Restriction	Yes	Uses a floating license for the standard edition.
		No	Uses a floating license for editions other than the standard edition.
Standard edition for floating license is currently in use	Displays if a floating license for the standard edition is used.		
	Default	Yes	
	How to change	Changes not allowed	

(3) [Notes]
The detailed information on records is displayed and their configuration can be changed.

Memo	Add memos to main projects. Memo is added one item in one line. The added memos are displayed as subproperty.	
	Default	Memo [*Number of items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can use a text box directly enter the text.
	Restriction	Up to 256 characters Up to 256 characters are allowed.

[Subproject] tab

This tab shows the detailed information on subproject categorized by the following and the configuration can be changed.

(1) [File]
(2) [License]
(3) [Notes]

[Description of each category]

(1) [File]
The detailed information on files is displayed.

File name	Displays the file name of the file to save the information on the subproject.		
	Default	*Name of the subproject file*	
	How to change	Changes not allowed	
Relative path	Displays the relative path of the subproject file to which subproject information is saved, from the location of the main project. This property is shown only when the subproject is selected in Project Tree panel. Note that if the relative path does not exist (such as the case that the main project and subproject are in the different drive), it is not displayed.		
	Default	*Relative path from the main project*	
	How to change	Changes not allowed	
Absolute path	Displays the absolute path of the subproject file to save the information on them.		
	Default	*Absolute name of subprojects.*	
	How to change	Changes not allowed	
Save with absolute path	Select whether to save the subproject information to a subproject file using the absolute path.		
	Default	No	
	How to change	Select a value from the drop-down list.	
	Restriction	Yes	Saves the file using the absolute path.
		No	Saves the file using the relative path.

(2) [License]
The detailed information on a license is displayed and their configuration can be changed.

Use standard edition for floating license	Select whether to use only a floating license for the standard edition.		
	Default	Yes	
	How to change	Select a value from the drop-down list.	
	Restriction	Yes	Uses a floating license for the standard edition.
		No	Uses a floating license for editions other than the standard edition.
Standard edition for floating license is currently in use	Displays if a floating license for the standard edition is used.		
	Default	Yes	
	How to change	Changes not allowed	

(3) [Notes]
The detailed information on records is displayed and their configuration can be changed.

Memo	Add memos to subprojects. Memo is added one item in one line. The added memos are displayed as subproperty.	
	Default	Memo [*Number of items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can use a text box directly enter the text.
	Restriction	Up to 256 characters Up to 256 characters are allowed.

[Microcontroller Information] tab

This tab shows the detailed information on microcontrollers configured in the project, categorized by the following and the configuration can be changed.

(1) [File Information]
(2) [Microcontroller Information]
(3) [IOR Display Type] [RH850]
(4) [Notes]

[Description of each category]

(1) [File Information]
The detailed information on the file is shown.

File name	Displays device file name.	
	Default	*Device file name*
	How to change	Changes not allowed
Absolute path	Displays the absolute path of the device file.	
	Default	*The absolute path of the device file*
	How to change	Changes not allowed

(2) [Microcontroller Information]
The detailed information on microcontrollers is displayed and their configuration can be changed.

Microcontroller name	Displays microcontrollers to use in the project or the subproject.	
	Default	*Microcontrollers used in the main project or the subproject*
	How to change	Changes not allowed
Nickname	Displays the nickname of the microcontroller to use.	
	Default	*The nickname of the microcontroller to use*
	How to change	Changes not allowed
File version	Displays the device file version of the microcontroller to use.	
	Default	*The device file version of the microcontroller to use*
	How to change	Changes not allowed
Bank size [KBytes]	Displays the bank size of the microcontroller being used in Kbytes, as a decimal number. Note that this property is only shown for microcontrollers with a memory bank.	
	Default	*The bank size recorded in your microcontroller's device file*
	How to change	Changes not allowed
Internal ROM size [KBytes]	Displays internal ROM size [KBytes]of the microcontroller to use in decimal number.	
	Default	*Internal ROM size of the microcontroller to use*
	How to change	Changes not allowed

Internal RAM size [Bytes]	Displays internal RAM size [KBytes] of the microcontroller to use in decimal number.	
	Default	*Internal RAM size of the microcontroller to use*
	How to change	Changes not allowed
Reset vector address	This is the reset vector address of the microcontroller to use. See the user's manual of the device for the reset vector address. Note that this property is displayed when the device has PE1 or is a single-core device.	
	Default	*The peculiar value for the target device*
	How to change	Directly enter in the text box.
	Restriction	0 to FFFFFFFF (hexadecimal number without 0x)
Reset vector address of PE*n*	This is the reset vector address of PE*n* of the microcontroller to use (*n*: core number). See the user's manual of the device for about the reset vector address. Note that this property is displayed when the device has PE1.	
	Default	*The peculiar value for the target device*
	How to change	Directly enter in the text box.
	Restriction	0 to FFFFFFFF (hexadecimal number without 0x)

(3) [IOR Display Type] [RH850]
The detailed information on the IOR display type is shown.

IOR display type	Displays the IOR display type of the project.	
	Default	*IOR display type of the project*
	How to change	Changes not allowed

(4) [Notes]
The detailed information on records is displayed and their configuration can be changed.

Memo	Add memos to the microcontroller information. The memo is added one item in one line. The added memos are displayed as subproperty.	
	Default	Memo [*Number of items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can use a text box directly enter the text.
	Restriction	Up to 256 characters Up to 256 characters are allowed.

[Build Options] tab

This tab shows the detailed information on the build tool for the debug-dedicated project (see "E. USING AN EXTERNAL BUILD TOOL") categorized by the following and the configuration can be changed.

(1) [Build Mode]
(2) [Build]
(3) [Notes]

[Description of each category]

(1) [Build Mode]
The detailed information on the build mode is displayed and the configuration can be changed.

Build mode	Select the build mode to be used during a build. Note that this property is not applied to [Reset All to Default] from the context menu.		
	Default	DefaultBuild	
	How to change	Select from the drop-down list.	
	Restriction	DefaultBuild	Runs a build with the default build mode that is set when a new project is created.
		Build mode that is added to the project (other than Default-Build)	Runs a build with the build mode that is added to the project (other than Default-Build).

(2) [Build]
The detailed information on a build is displayed and their configuration can be changed.

Commands executed in the project building	Specify the commands to be executed when running a build (see "E.5.1 Run a build") of the debug-dedicated project. The following placeholders are supported. %ActiveProjectDir%: Replaces with the absolute path of the active project folder. %ActiveProjectName%: Replaces with the active project name. %BuildModeName%: Replaces with the build mode name. %MainProjectDir%: Replaces with the absolute path of the main project folder. %MainProjectName%: Replaces with the main project name. %MicomToolPath%: Replaces with the absolute path of the install folder of this product. %ProjectDir%: Replaces with the absolute path of the project folder. %ProjectName%: Replaces with the project name. %TempDir%: Replaces with the absolute path of the temporary folder. %WinDir%: Replaces with the absolute path of the Windows system folder. When "#!python" is described in the first line, the contents from the second line to the last line are regarded as the script of the Python console, and then executed when running a build. The placeholders can be described in the script.	
	Default	Commands executed in the project building[0]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can enter directly in the text box.
	Restriction	Up to 1023 characters Up to 64 commands can be specified.

Commands executed in the project cleaning	Specify the commands to be executed when running a clean (see "E.5.3 Run a clean") of the debug-dedicated project. The following placeholders are supported. %ActiveProjectDir%: Replaces with the absolute path of the active project folder. %ActiveProjectName%: Replaces with the active project name. %BuildModeName%: Replaces with the build mode name. %MainProjectDir%: Replaces with the absolute path of the main project folder. %MainProjectName%: Replaces with the main project name. %MicomToolPath%: Replaces with the absolute path of the install folder of this product. %ProjectDir%: Replaces with the absolute path of the project folder. %ProjectName%: Replaces with the project name. %TempDir%: Replaces with the absolute path of the temporary folder. %WinDir%: Replaces with the absolute path of the Windows system folder. When "#!python" is described in the first line, the contents from the second line to the last line are regarded as the script of the Python console, and then executed when running a build. The placeholders can be described in the script.	
	Default	Commands executed in the project cleaning[0]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can enter directly in the text box.
	Restriction	Up to 1023 characters Up to 64 commands can be specified.

(3) [Notes]
The detailed information on records is displayed and their configuration can be changed.

Memo	Add memos to this build tool. Memo is added one item in one line. The added memos are displayed as subproperty. Note that this setting is common to all the build modes.	
	Default	Memo[*number-of-items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can enter directly in the text box.
	Restriction	Up to 256 characters Up to 256 items can be specified.

[File Information] tab

This tab shows the detailed information on each file categorized by the following and the configuration can be changed.

(1) [File Information]
(2) [Notes]

[Description of each category]

(1) [File Information]
The detailed information on the file is displayed and the configuration can be changed.

File name	The file name is displayed. Change the file name on the project tree.		
	Default	*file name*	
	How to change	Changes not allowed	
Relative path	The relative path from the project folder is displayed.		
	Default	*The relative path from the project folder*	
	How to change	Changes not allowed	
Absolute path	The absolute path of the file is displayed.		
	Default	*The absolute path of the file*	
	How to change	Changes not allowed	
Save with absolute path	Select whether to save the file location with the absolute path. This property is not displayed if the Property panel being displayed while a dependency file is selected on the project tree.		
	Default	No	
	How to change	Select from the drop-down list.	
	Restriction	Yes	Saves the file location with the absolute path.
		No	Saves the file location with the relative path.
Last update	The time and date on which this file was changed last is displayed.		
	Default	*File updated time and date*	
	How to change	Changes not allowed	
Writable	Select whether to enable writing to the file. This property is not displayed if the Property panel being displayed while a dependency file is selected on the project tree.		
	Default	Yes (when the file is write enabled) No (when the file is not write enabled)	
	How to change	Select from the drop-down list.	
	Restriction	Yes	Enables the file to write.
		No	Does not enable the file to write.

(2) [Notes]
The detailed information on notes is displayed and the configuration can be changed.
This category is not displayed if the Property panel being displayed while a dependency file is selected on the project tree.

Memo	Add memos to the file. Add one item in one line. The specified memo is displayed as the subproperty.	
	Default	Memo[*number of items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can enter directly in the text box.
	Restriction	Up to 256 characters Up to 256 items can be specified.

[Category Information] tab

This tab shows the detailed information on the category node (the category that the user added), Files node, and Build tool generated files node categorized by the following and the configuration can be changed.

Note that if multiple source files exist under the category node (the category of files that the user added) or file node, the same type of tabs (e.g., [Individual Compile Options] tab and [Individual Assemble Options] tab) among the tabs for those source files are merged into a single tab. See the "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details about tabs.

(1) [Category Information]
(2) [Notes]

[Description of each category]

(1) [Category Information]
The detailed information on the category is displayed and the configuration can be changed.

Category name	Specify the name of the category to categorize files. This property of the Files node and Build tool generated files node is displayed in gray and you cannot change the attribute.	
	Default	*Category name of files*
	How to change	Directly enter in the text box.
	Restriction	1 to 200 characters
Shortcut to a folder	Specify a shortcut to a folder. If a relative path is specified, the reference point of the path is the main project or sub-project folder. This property of the Files node and Build tool generated files node is not displayed.	
	Default	Blank
	How to change	Directly enter in the text box or edit by the Browse For Folder dialog box which appears when clicking the [...] button.
	Restriction	Up to 247 characters

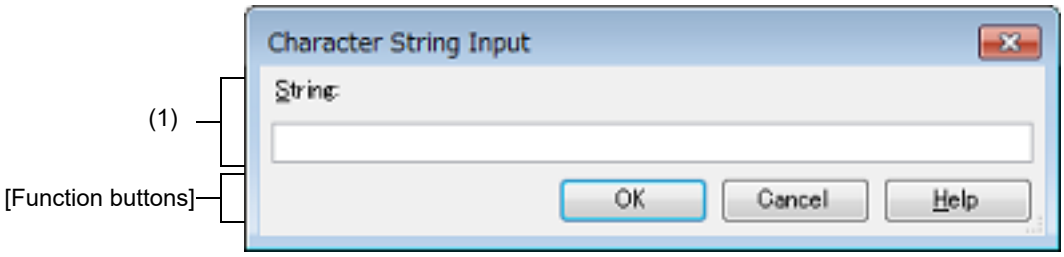
(2) [Notes]
The detailed information on notes is displayed and the configuration can be changed.
This category of the Files node and Build tool generated files node is not displayed.

Memo	Add memos to the category of files. Add one item in one line. The specified memo is displayed as the subproperty.	
	Default	Memo[*number of items*]
	How to change	Edit by the Text Edit dialog box which appears when clicking the [...] button. For the subproperty, you can enter directly in the text box.
	Restriction	Up to 256 characters Up to 256 items can be specified.

Character String Input dialog box

This dialog box is used to input and edit characters in one line.

Figure A.12 Character String Input Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- On the Project Tree panel, after selecting a file, open the message dialog box by selecting [Change Extension...] from the context menu.
  And then click the [Yes] button in the dialog box.
- Select the property corresponding with this dialog box on the Property panel, and then click the [...] button.
- In the Build Mode Settings dialog box, select a build mode to be duplicated from [Build mode list], and then click the [Duplicate...] button.

[Description of each area]

(1) [String] area
Input characters in one line.
By default, the current value of the area that this dialog box is called from is reflected to this area.
You cannot start a new line.

Remark Up to 32767 characters can be entered.
When the input violates any restriction, the following messages will be shown in the tooltip.

Message	Description
More than *maximum number of restriction in the property that called this dialog box* characters cannot be specified.	The numbers of input characters exceeds the maximum number of restriction in the property that called this dialog box.

(a) Button

	The placeholders which can be specified for the area that this dialog box is called from are displayed in a popup (ascending order). If a placeholder is selected, the string will be surrounded with percentage signs ("%"), and displayed in [String].

Caution This button is displayed only when the caller of this dialog box supports placeholders.

Remark The placeholders which can be specified differ depending on the area that this dialog box is called from.
For the specific placeholder, see the description of the area that this dialog box is called from.

[Function buttons]

Button	Function
OK	Reflects the entered characters to the area that this dialog box is called from and closes this dialog box.
Cancel	Does not reflect the entered characters to the area that this dialog box is called from and closes this dialog box.
Help	Displays the help of this dialog box.

Text Edit dialog box

This dialog box is used to input and edit texts in multiple lines.

Figure A.13 Text Edit Dialog Box (When Caller Supports Placeholders)

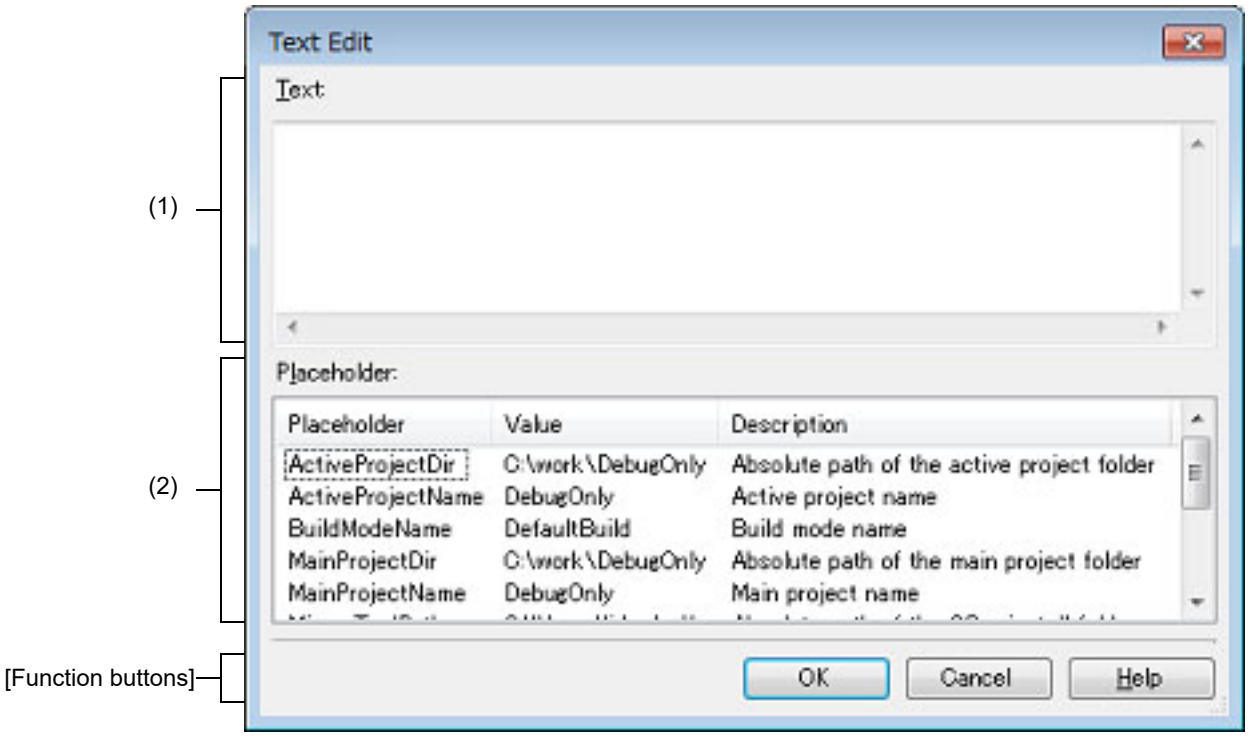
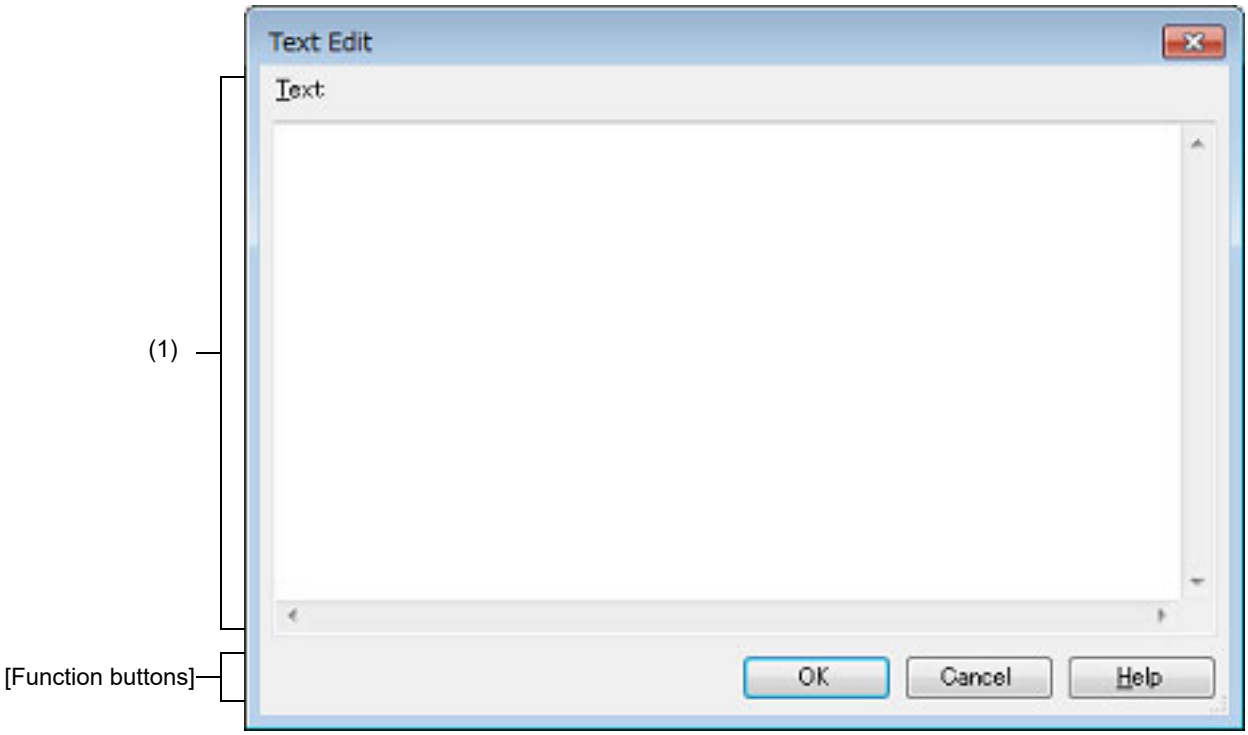


Figure A.14 Text Edit Dialog Box (When Caller Does Not Support Placeholders)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- Select the property corresponding with this dialog box on the Property panel, and then click the [...] button.

[Description of each area]

(1) [Text]
Edit texts in multiple lines.
By default, the current value of the area that this dialog box is called from is reflected in this area.

Remark Up to 500 lines and 500 characters can be entered. Note that the upper limit value is differing depending on the area that this dialog box is called from.
When the input violates any restriction, the following message will be shown in the tooltip.

Message	Description
More than *maximum number of restriction in the property that called this dialog box* characters cannot be specified. The current number of characters is displayed between brackets at the beginning of the line in excess of the limit.	The numbers of input characters exceeds the maximum number of restriction in the property that called this dialog box.

(2) [Placeholder]
The list of placeholders which can be specified for the area that this dialog box is called from is displayed (ascending order).
Double click a row to surround the placeholder with percentage signs ("%"), and display it in [Text].

(a) [Placeholder]
This area displays the placeholder.

(b) [Value]
The string is displayed after replacement with the placeholder.

(c) [Description]
This area displays the description of the placeholder.

Remark The placeholders which can be specified differ depending on the area that this dialog box is called from.
For the specific placeholder, see the description of the area that this dialog box is called from.

[Function buttons]

Button	Function
OK	Reflects the entered text to the text box that opened this dialog box and closes this dialog box.
Cancel	Does not reflect the entered text to the text box that opened this dialog box and closes this dialog box.
Help	Displays the help of this dialog box.

Path Edit dialog box

This dialog box is used to edit or add the path or file name including the path.

Figure A.15 Path Edit Dialog Box (When Editing Path)

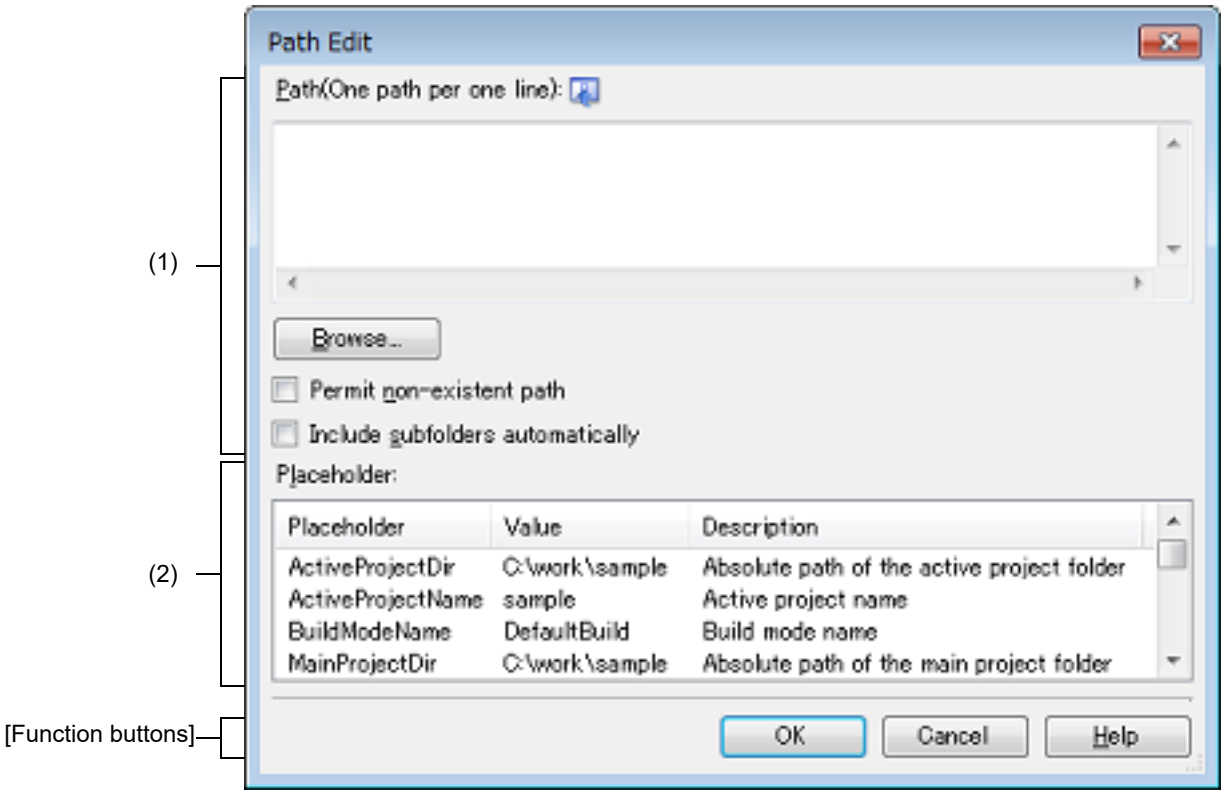
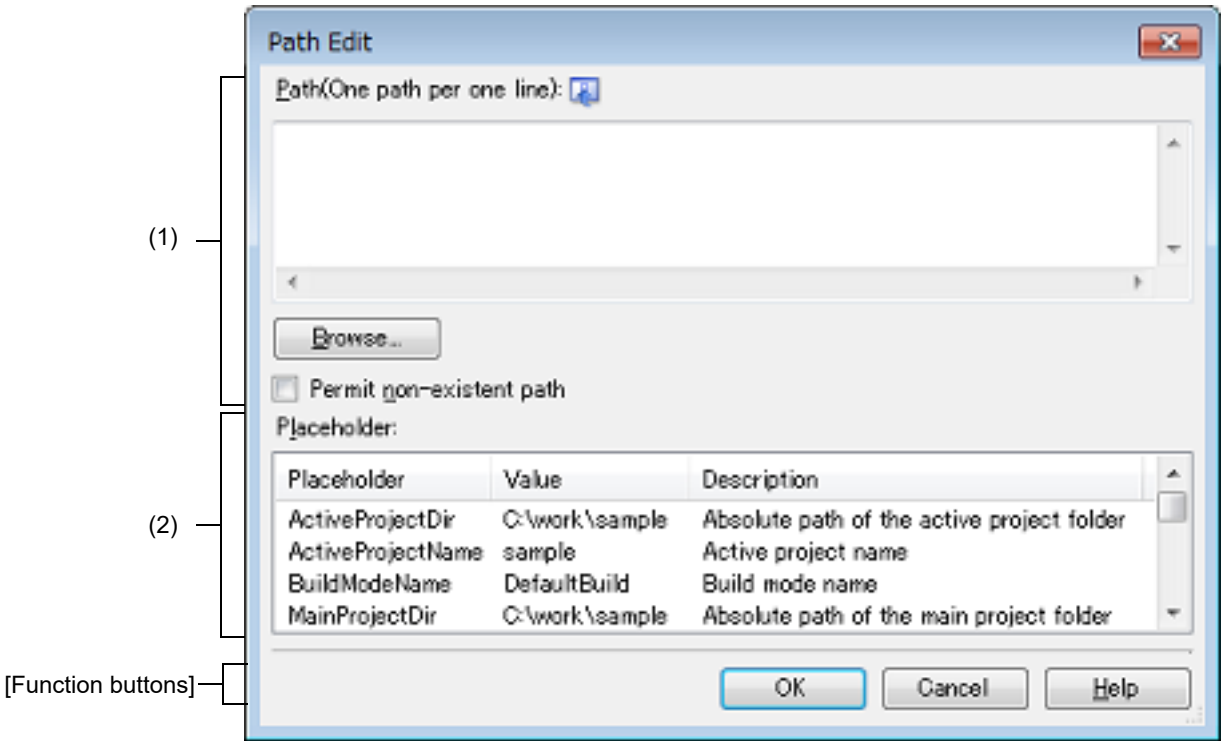


Figure A.16 Path Edit Dialog Box (When Editing File Name Including Path)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- Select the property corresponding with this dialog box on the Property panel, and then click the [...] button.

[Description of each area]

(1) Path edit area
Edit or add the path or file name including the path.

(a) [Path(One path per one line)]
Edit or add the path or file name including the path by directly entering it.
The path or file name including the path can be designated in multiple lines. Designate the path or file name including the path at a line.
By default, the current contents of the text box that opened this dialog box are reflected in this area.

The path can be added by one of the following methods.

- Click the [Browse...] button, and then select the folder in the Browse For Folder dialog box.
- Drag and drop the folder using such as Explorer.

The file names including the path can be added by one of the following methods.

- Select a file in the dialog box that is opened by clicking the [Browse...] button.
- Drag and drop the file using such as Explorer.

Caution If an extremely long absolute path is specified as a relative path, an error could occur when clicking the [OK] button. In this case, designate the absolute path.

Remark Up to 10000 lines can be entered. Up to the maximum characters that are limited by the Windows OS can be entered.
When the input violates any restriction, the following messages will be shown in the tooltip.

Message	Description
Specify a path.	The line contains space characters only.
The path is too long. Specify a path with a number of characters equal to or fewer than *maximum number of restriction in the property that called this dialog box.*	The file name including the path exceeds the maximum number of restriction in the property that called this dialog box.
The specified path contains a folder that does not exist.	The path contains a folder that does not exist.
The file name or path name is invalid. The following characters cannot be used: \, /, :, *, ?, ", <, >, |	The file name with the invalid path is designated. The following characters cannot be used for the file name and folder name: \, /, :, *, ?, ", <, >, |
More than *maximum number of paths or files specified by the caller* lines cannot be specified.	The number of paths or files which have been entered exceeds the maximum number of restriction in the property that called this dialog box.

(b) Button

Browse...	- When adding the path Opens the Browse For Folder dialog box. If a folder is selected, the path will be added in [Path(One path per one line)]. - When adding the file name including the path Opens the dialog box to select a file. If a file is selected, the file will be added in [Path(One path per one line)].

(c) [Permit non-existent path]
When this check box is selected, the existence of the path specified in [Path(One path per one line)] or the validity of the character string specified in the path is not checked.

(d) [Include subfolders automatically]
Select this check box and then click the [Browse...] button to specify the path. The path will be added, including subfolders, to [Path(One path per one line)] (up to five levels deep).

Caution This item is displayed only when adding the path.

(2) [Placeholder] area
The list of placeholders which can be specified for the area that this dialog box is called from is displayed (ascending order).
Double click a row to surround the placeholder with percentage signs ("%") and display it in the path edit area.

(a) [Placeholder]
This area displays the placeholder.

(b) [Value]
This area displays the string after replacement with the placeholder.

(c) [Description]
This area displays the description of the placeholder.

Caution This area is displayed only when the caller of this dialog box supports placeholders.

Remark The placeholders which can be specified differ depending on the area that this dialog box is called from.
For the specific placeholder, see the description of the area that this dialog box is called from.

[Function buttons]

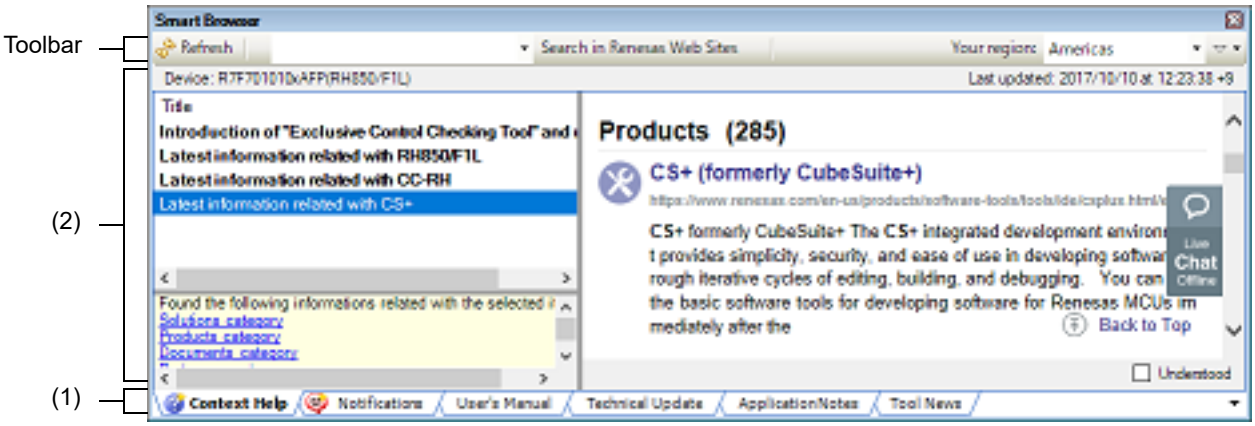
Button	Function
OK	Reflects the entered path to the text box that opened this dialog box and closes this dialog box.
Cancel	Does not reflect the entered path to the text box that opened this dialog box and closes this dialog box.
Help	Displays the help of this dialog box.

Smart Browser panel

This panel is used to list various documents (user's manuals, technical updates, application notes, and tool news) related to the device selected for the active project and allow downloading of sample code, if any, that comes with the applicable application notes. This panel is also used to display notifications from Renesas and information which may be useful in the work you are currently doing.

Caution When an RH850 project is opened, the Smart Browser does not display the contents of user's manuals and sample code in some cases.

Figure A.17 Smart Browser Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [Toolbar]
- [Context menu]

[How to open]

- From the [View] menu, select [Smart Browser].
- On the Solution List panel, click the [Smart Browser] button.

[Description of each area]

(1) Tab selection area
Selecting a tab allows you to switch to the type of document displayed in the Table area.

[Context Help] tab	Information which may be useful in the work you are currently doing
[Notifications] tab	Notifications from Renesas regarding the MCU you are using in the active project
[User's Manual] tab	User's manuals related to the device used in the active project
[Technical Update] tab	Technical updates related to the device used in the active project
[Application Notes] tab	Application notes related to the device used in the active project
[Tool News] tab	Tool news related to the device used in the active project

(2) Table area
This area shows a list of documents or notifications related to the active project and information which may be useful in the work you are currently doing.

(a) [Context Help] tab

Column	Description
Title	Title of the information

Remark If you select a title on the [Context Help] tab, its details are shown in the right side.
The selected title will no longer be in bold type, indicating that you have already read it. When you check [Understood], it indicates that items have already been read, even if items that are the same as the selected ones are added to the list between the next and subsequent times CS+ is started.

(b) [Notifications] tab

Column	Description
Title	Title of the notification
Issue	Issue of the notification

Remark If you select a title on the [Notifications] tab, its details are shown in the right side.
The selected title will no longer be in bold type, indicating that you have already read it.

(c) Other tabs

Column	Description
Status	Indicates whether the document is a new release or an updated version After the release of any new document, the "NEW!" label appears to the left of its title for approximately 60 days. After any document is updated, the "UPDATED" label appears to the left of its title for approximately 60 days. Remark The period which determines display of the "NEW!" or "UPDATED" label may vary with the document.
Title	Title of the document
Document No.	Document number of the document
Rev.	Revision number of the document
Issue	Issue of the document
Sample Code	Indicates whether sample code is available Marked "available" if sample code is available. This column is only on the [Application Notes] tab.
Product	Product covered by the application notes This column only appears on the [Application Notes] tab.
Function	Function covered by the application notes This column only appears on the [Application Notes] tab.
Application & Technology	Application and technology covered by the application notes This column only appears on the [Application Notes] tab.
Remarks	Indicates whether you have already downloaded the document Marked "downloaded" if you have already downloaded the document.

[Toolbar]

Refresh	Loads the latest list of documents from the Renesas Web site. If the information on the panel is refreshed without trouble and there have been changes, the dates of "Last updated" and the list of documents are updated.
Search in Renesas Web Site	Starts a search for character strings on the Renesas Web site that match the character string entered in the text box.
Your region	Selects the region to which the documents listed in the panel are assigned. The following regions are selectable. - Americas - Brazil - Europe/Middle East/Africa - India - Japan - Mainland China/Hong Kong Region - Singapore/South & Southeast Asia/Oceania - South Korea - Taiwan Region
	Shows a cascading menu to open a dialog box for making Smart Browser settings or importing documents that have been downloaded to other folders.
Setting…	Opens the [General - Smart Browser] category of the Option dialog box.
Import Downloaded Documents into the Internal Folder...	Imports documents that have been downloaded to other folders. After importing a document, you can view it in the Smart Browser.
Document Disclaimer	Shows the disclaimer about documents downloaded in the Smart Browser.

[Context menu]

(1) [Context Help] tab

Mark all items as read	Marks all unread items as having been read.

(2) [Notifications] tab

Mark all items as read	Marks all unread items as having been read.
Hide read items	Hides all items that have been read. Note that items are not hidden as soon as they are selected (for reading). They are hidden when this menu item is re-selected or in response to clicking on the [Refresh] button on the toolbar to refresh the view.

(3) Other tabs

Open...	Downloads a document for display in the PDF viewer. Double-clicking on the name of a document leads to the same result. If you are not logged in to "My Renesas", a log-in dialog box will appear. Enter the e-mail address and password you have registered with the Renesas Web site.
Open Folder with Explorer...	Opens the folder to which PDF files have been downloaded in Windows File Explorer.

Download Sample Code...	Opens the Web page from which you can download sample code. This menu is only on the [Application Notes] tab.

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Released under the MIT license
https://github.com/JamesNK/Newtonsoft.Json/blob/master/LICENSE.md
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Caution The above Web site may not be displayed from this document.

Smart Manual panel [RL78][RX]

This panel allows you to search through information on registers given in hardware manuals and the API (Code Generator Plug-in) provided by Renesas.

You can also automatically acquire information on the desired register or API by placing the cursor over the register or API name in the Editor, Disassemble, SFR (for RL78), IOR (for RX), or Watch panel.

Remark 1. The hardware manual (RL78) or register information file (RX) for the target device is automatically downloaded from the Renesas Web site. The destination folder for downloading can be changed on the [General - Smart Manual] category in the Option dialog box.

Remark 2. Check the Smart Browser panel to see whether you have the latest versions of hardware manuals and technical updates. The hardware manuals that have been downloaded may be older than the latest versions available in the Smart Browser panel.

Figure A.18 Smart Manual Panel [RL78]

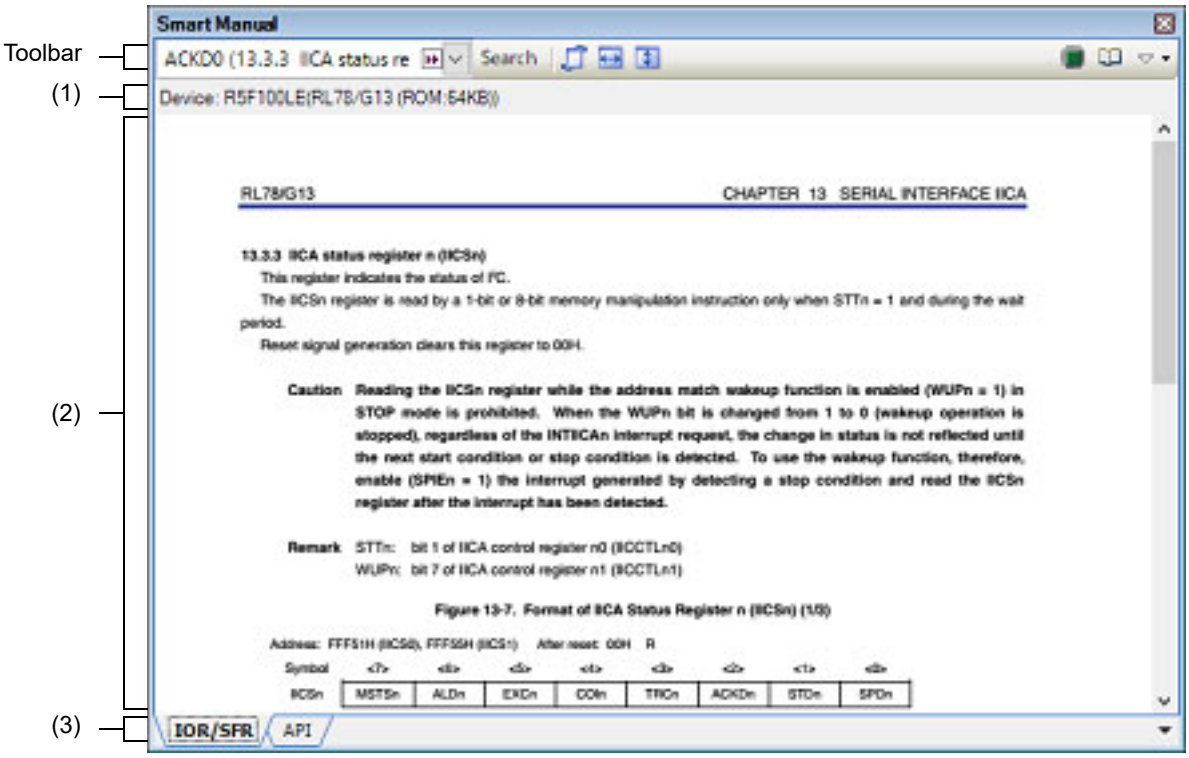
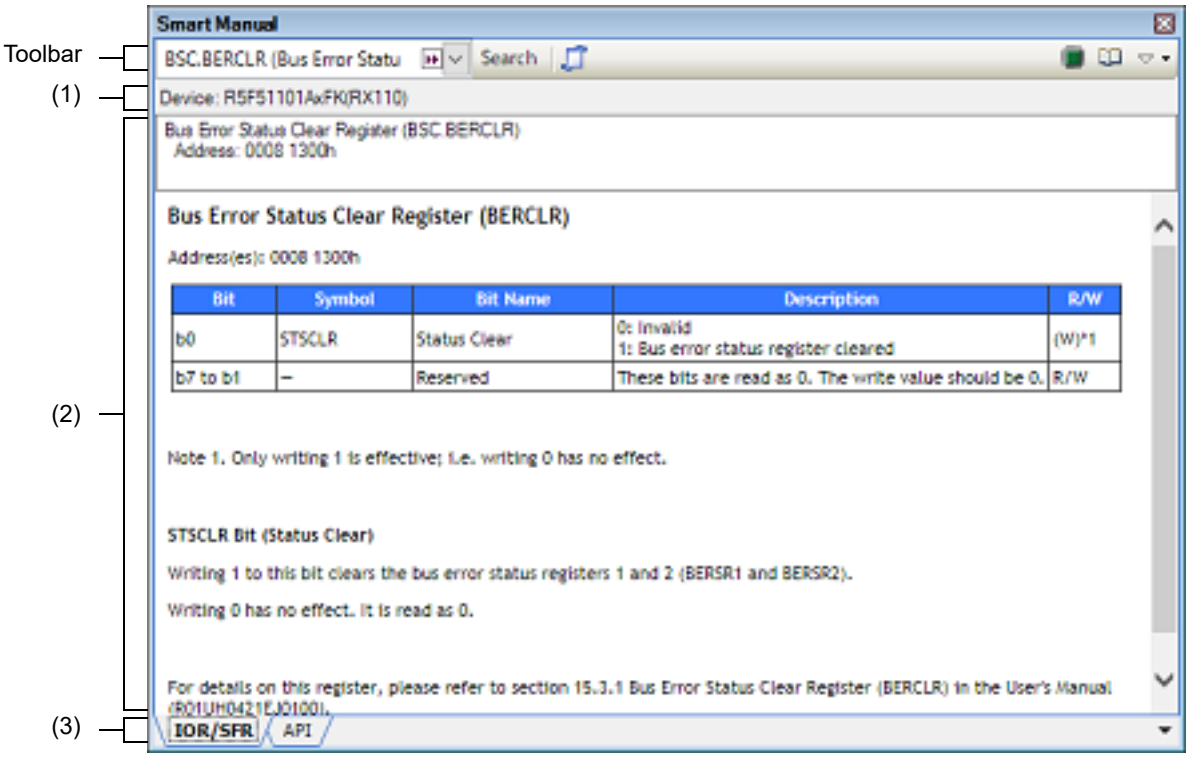


Figure A.19 Smart Manual Panel [RX]



The following items are explained here.

- [How to open]
- [Description of each area]
- [Toolbar]

[How to open]

- From the [View] menu, select [Smart Manual].
- On the Solution List panel, click the [Smart Manual] button.
- With ON, place the mouse cursor over the name of a register or API listed in the Editor, Disassemble, SFR (for RL78), IOR (for RX), or Watch panel while the Smart Manual panel is being hidden by the auto-hide feature as described in "2.10.1 Automatically hide panels"

  Remark This panel will be hidden again if you press the [ESC] key or move the caret or focus from the panel.

[Description of each area]

(1) Device display area
This area shows the target device that includes the register or API displayed in the manual area.

(2) Manual area
This area shows the information that CS+ has found regarding the register or API.
Be sure to read the disclaimer in relation to the information being displayed.

(3) Tab selection area
Selecting a tab allows you to switch which specifications of registers or API functions are displayed in the manual area.
When you place the mouse cursor over the Editor, Disassemble, SFR (for RL78), IOR (for RX), or Watch panel and find the name of a register or API function, the corresponding tab is automatically displayed.

[Toolbar]

Search	When you enter a string in the text box, a list of matching register or API names will appear. Select the required one from the list and click on this button to start searching for information on the register or API in the manual area.
	When this button is ON while the Smart Manual panel is being hidden by the auto-hide feature, placing the mouse cursor over the name of a register or API listed in the Editor, Disassemble, SFR (for RL78), IOR (for RX), or Watch panel opens the Smart Manual panel which starts an automatic search for information on the register or API. The panel will be hidden again if you press the [ESC] key or move the caret or focus from the panel.
	Adjusts the contents of the document display to match the width of the panel.
	Adjusts the contents of the document display to match the height of the panel.
	Lists the devices supported on this panel in the Output panel.
	Opens the hardware manual in the application associated with PDF files under Windows.
	Shows a cascading menu to show the disclaimer.
Document Disclaimer	Shows the disclaimer about the document displayed in this panel.

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https://github.com/pvginkel/PdfiumViewer
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http://www.apache.org/licenses/LICENSE-2.0
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Caution The above Web site may not be displayed from this document.

Output panel

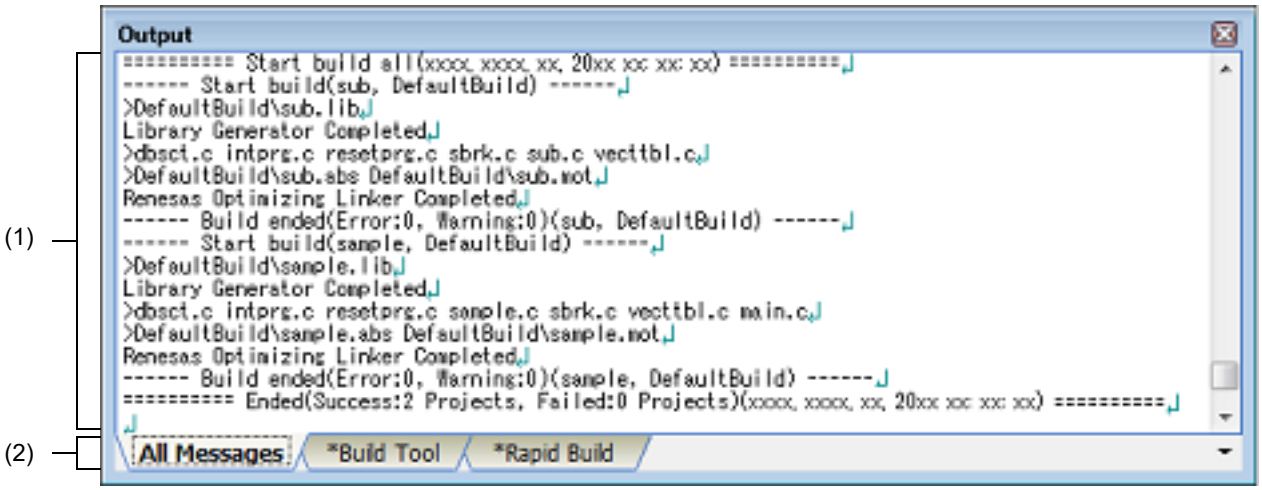
This panel is used to display the message that is output from the build tool/debug tool/each plug-in or the result of the Find In Files with the Find and Replace dialog box.

Messages are shown individually on the tab categorized by the output tool.

The [All Messages] tab consolidates and displays all output messages.

Remark This panel can be zoomed in and out by 100% in the tool bar, or by moving the mouse wheel forward or backward while holding down the [Ctrl] key.

Figure A.20 Output Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [[File] menu (Output panel-dedicated items)]
- [[Edit] menu (Output panel-dedicated items)]
- [Context menu]

[How to open]

- From the [View] menu, select [Output].

[Description of each area]

(1) Message area

Displays messages and the search results output from each tool.

The [All Messages] tab consolidates and displays all output messages.

The message colors differ as follows depends on the type of the output message (the character color/background color is set in the [General - Font and Color] category in the Option dialog box).

Message type	Example (Default)			Description
Normal message	AaBbCc	Character color	Black	Information on something.
		Background color	White	
Warning	AaBbCc	Character color	Blue	Warning for the operation.
		Background color	Normal color	

Message type	Example (Default)			Description
Error message	AaBbCc	Character color	Red	Fatal error or operation disabled because of an error in operation.
		Background color	Light gray	

This area has the following functions.

(a) Tag jump
When the output message is double-clicked, or the [Enter] key is pressed with the caret over the message, Editor panel appears and the destination line number of the file is displayed.
You can jump to the line of the source file that generated the error from the error message output when building.

(b) Display of help
When [Help for Message] in the context menu is selected or [F1] key is pressed while the caret is in the line where the warning message or the error message is displayed, the help with regard to the displayed message or the message at the current caret is displayed.
And a Web browser is displayed and a search for FAQs with regard to the message is started.

Caution When [Online] is selected from [How to Access Help] and the [Search FAQ when the help of a message opens.] check box is selected, the help or FAQs may not be displayed.

- When you wish to display the help and FAQs
  Use the offline help. (From the [Help] menu, select [How to Access Help] >> [Offline].)
- When you wish to display the online help
  Hide FAQs. (Clear the [Search FAQ when the help of a message opens.] check box in the [General - Smart Browser] category of the Option dialog box.)
  FAQs can be searched on the Smart Browser panel. Enter the message number, etc. in the text box and click the [Search FAQ] button.

(c) Save of log
The contents displayed on the currently selected tab can be saved in a text file (*.txt) by selecting [Save Output - *tab name* As...] from [File] menu and opens the Save As dialog box (messages on the tab that is not selected will not be saved).

(2) Tab selection area
Select tabs that messages are output from.
Tabs that are displayed are as follows.

Tab Name	Description
Build Tool	Displays the messages output by the build tool when a build, rebuild, or batch build is executed.
Rapid Build	Displays the messages output by the build tool when a rapid build is executed.
Debug Tool	Displays the message output from the debug tool.
Code Generator	Displays the messages output by the code generator.
Program Analyzer	Displays the message output from the analyze tool.
Find References	Displays a list of locations of references to functions/variables output by the analyze tool. See the "CubeSuite+ Integrated Development Environment User's Manual: Analysis" for details about this tab.
Find and Replace	Displays the Find In Files result with the Find and Replace dialog box.
All Messages	Shows all the messages above by order of output.

Caution Tab is not automatically switched when a new message is output on the non-selected tab.
If this is the case, * is added to the tab informing a new message is output.

[[File] menu (Output panel-dedicated items)]

The following items are exclusive for [File] menu in the Output panel (other items are common to all the panels).

Save Output-*tab name*	Saves the contents on the currently selecting tab in the previously saved text file (*.txt) (see "(c) Save of log"). When this menu is selected for the first time after launching the program, the operation is equivalent to when selecting [Save *tab name* As...]. Note that this operation is invalid while building.
Save Output-*tab name* As...	Opens the Save As dialog box to save the contents on the currently selecting tab in the designated text file (*.txt) (see "(c) Save of log"). Note that this operation is invalid while user program is executed.

[[Edit] menu (Output panel-dedicated items)]

The following items are exclusive to [Edit] menu in the Output panel (other items are all invalid).

Copy	Copies the selected characters to the clip board.
Select All	Selects all the messages displayed on the panel.
Find...	Opens the Find and Replace dialog box with the [Quick Find] tab target.
Replace...	Opens the Find and Replace dialog box with the [Replace in Files] tab target.

[Context menu]

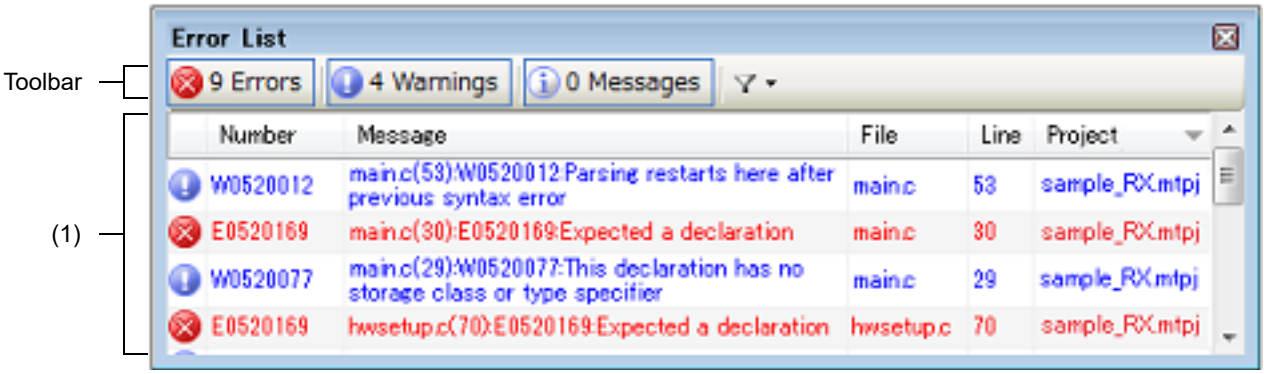
Copy	Copies the selected characters to the clip board.
Select All	Selects all the messages displayed on the panel.
Clear	Deletes all the messages displayed on the panel.
Tag Jump	Jumps to the caret line in the editor indicated by the message (file, line, and column).
Jump to Previous Message	Jumps to the caret line in the editor indicated by the previous message (file and line).
Jump to Next Message	Jumps to the caret line in the editor indicated by the next message (file and line).
Help for Message	Displays the help with regard to the displayed message or the message at the current caret. Note that the help is only for warning/error messages.

Error List panel

This panel is used to list the information of messages output from the build tool (error information).

Remark This panel can be zoomed in and out by 100% in the tool bar, or by moving the mouse wheel forward or backward while holding down the [Ctrl] key.

Figure A.21 Error List Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [Toolbar]
- [[File] menu (Error List panel-dedicated items)]
- [[Edit] menu (Error List panel-dedicated items)]
- [Context menu]

[How to open]

- From the [View] menu, select [Error List].

[Description of each area]

(1) Error information list area
List the information of messages output from the build tool (error information).
The displayed error information can be sorted by clicking each column (ascending order / ascending order).

Column	Description
-	Displays different icons in accord with the different types of message. : Error message : Warning message : Normal message
Number	Displays the message number.
Message	Displays the message.
File	Displays the file name (without any path) of the target that the message indicates. The absolute path will be shown in the tooltip.
Line	Displays the line number of the target that the message indicates.
Project	Displays the project file name (without any path) of the target that the message indicates. The absolute path will be shown in the tooltip.

The error information displayed in this area will be deleted when one of the following events occurs.

- When the target file has been built without outputting the error or warning
- When the target file has been non build-target
- When the target file or subproject has been removed from the project
- When the build mode of the target project has been changed
- When the target project has been cleaned

This area has the following functions.

(a) Tag jump
When the error information is double-clicked, or the [Enter] key is pressed with the caret over the error information, Editor panel appears and the destination line number of the file is displayed.
You can jump to the line of the source file that generated the error from the error message output when building.

(b) Display of help
When [Help for Message] in the context menu is selected or [F1] key is pressed while the caret is in the line where the warning message or the error message is displayed, the help with regard to the currently selected error information is displayed.
And a Web browser is displayed and a search for FAQs with regard to the message is started.

Caution When [Online] is selected from [How to Access Help] and the [Search FAQ when the help of a message opens.] check box is selected, the help or FAQs may not be displayed.

- When you wish to display the help and FAQs
  Use the offline help. (From the [Help] menu, select [How to Access Help] >> [Offline].)
- When you wish to display the online help
  Hide FAQs. (Clear the [Search FAQ when the help of a message opens.] check box in the [General - Smart Browser] category of the Option dialog box.)
  FAQs can be searched on the Smart Browser panel. Enter the message number, etc. in the text box and click the [Search FAQ] button.

(c) Save of log
The contents displayed currently on the panel can be saved in a text file (*.txt) by selecting [Save Error List As...] from [File] menu and opens the Save As dialog box.

[Toolbar]

	Switches between display and non-display of error messages in the Error information list area. The number following the icon is the number of error messages.
	Switches between display and non-display of warning messages in the Error information list area. The number following the icon is the number of warning messages.
	Switches between display and non-display of normal messages in the Error information list area. The number following the icon is the number of normal messages.
	Selects the target range of messages to be displayed in the Error information list area. Current File: File opened with the currently active Editor panel Active Project: Files registered in the active project Opened File: All files opened with the Editor panel

[[File] menu (Error List panel-dedicated items)]

The following items are exclusive for [File] menu in the Error List panel (other items are common to all the panels).

Save Error List	Saves the contents on the panel in the previously saved text file (*.txt) (see "(c) Save of log"). When this menu is selected for the first time after launching the program, the operation is equivalent to when selecting [Save Error List As...]. Note that this operation is invalid while building.
Save Error List As...	Opens the Save As dialog box to save the contents on the panel in the designated text file (*.txt) (see "(c) Save of log"). Note that this operation is invalid while user program is executed.

[[Edit] menu (Error List panel-dedicated items)]

The following items are exclusive to [Edit] menu in the Error List panel (other items are all invalid).

Copy	Copies the selected error information to the clip board.
Select All	Selects all error information displayed on the panel.
Find...	Opens the Find and Replace dialog box with the [Find in Files] tab target.
Replace...	Opens the Find and Replace dialog box with the [Replace in Files] tab target.

[Context menu]

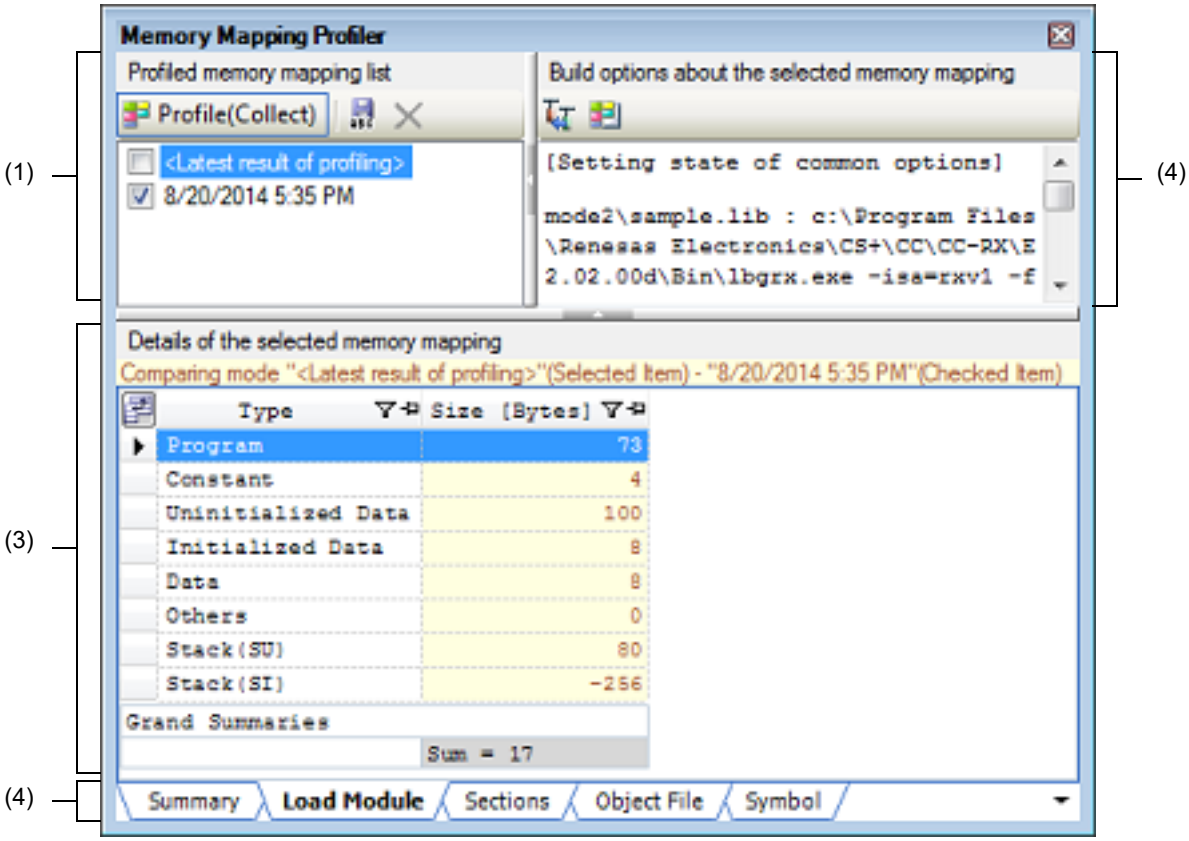
Copy	Copies the selected error information to the clip board.
Select All	Selects all error information displayed on the panel.
Tag Jump	Jumps to the caret line in the editor indicated by the currently selected error information (file, line, and column).
Jump to Previous Message	Jumps to the caret line in the editor indicated by the error information prior to the currently selected error information (file and line).
Jump to Next Message	Jumps to the caret line in the editor indicated by the error information next to the currently selected error information (file and line).
Help for Message	Displays the help with regard to the message of the currently selected error information. Note that the help is only for warning/error messages.

Memory Mapping Profiler panel

This panel is used to display the memory mapping information of load modules collected by the build tool.
The amount of used memory can be reduced by analyzing the information.

Remark This panel can be zoomed in and out by 100% in the tool bar, or by moving the mouse wheel forward or backward while holding down the [Ctrl] key.

Figure A.22 Memory Mapping Profiler Panel



The following items are explained here.

- [How to open]
- [Description of each area]
- [[File] menu (Memory Mapping Profiler panel-dedicated items)]
- [[Edit] menu (Memory Mapping Profiler panel-dedicated items)]
- [Context menu]

[How to open]

- From the [View] menu, select [Memory Mapping Profiler].

[Description of each area]

(1) [Profiled memory mapping list] area
The memory mapping information of load modules collected by the build tool of the active project and the memory mapping information saved by the user are displayed.
The first item displays the memory mapping information collected by the build tool of the active project (item name: <Latest result of profiling>). When no information has been collected, "(Uncollected)" is added to the item name.
The second and subsequent items display the memory mapping information saved by the user.

(a) Button

Profile Profile(Collect)	Switches between collecting and not collecting the memory mapping information at build. When this button is ON, "(Collect)" is added to the button name and the memory mapping information that is output when build of the active project has completed will be collected. When this button is switched from OFF to ON, CS+ checks whether to change the property values of build options to those suitable for profiling (only however in cases where property values can be changed). This button automatically becomes OFF when the active project is switched.
	Opens the Character String Input dialog box in order to save the latest result of profiling (collected result of memory mapping information) as a snapshot. In the dialog box, specify the item name to be displayed in this area (maximum number of input characters: 100). Note that the number of items that can be saved is 10.
	Deletes the selected snapshot. Note that <Latest result of profiling> cannot be deleted.

(2) [Build options about the selected memory mapping] area
The build options used when generating the items selected in the [Profiled memory mapping list] area are listed.

(a) Button

	Imports the build options (except for individual options) used at the time of profiling the items selected in the [Profiled memory mapping list] area as the current build options.
	Opens the Section Settings dialog box to edit the settings related to memory mapping by the build tool. See "CS+ Integrated Development Environment User's Manual: Build Tool Operation" for details about the Section Settings dialog box.

(3) [Details of the selected memory mapping] area
The detailed memory mapping information of the items selected in the [Profiled memory mapping list] area are displayed as a list.
Note that the display contents depend on the build option settings of the build tool in use.

This area has the following functions.

(a) Display the differential result
Differences between the two sets of memory mapping information can be displayed.

- The item selected in the [Profiled memory mapping list] area is the comparison destination and the item whose check box is selected is the comparison source.
  The following string is displayed in the upper part of this area.

```
Comparing mode "Item name of comparison destination"(Selected Item) - "Item
name of comparison source"(Checked Item)
```

- Any string in which "Size" is included in the header name can be the target of difference calculation.
  The cell displaying the differential result is highlighted (the character color/background color is set in the [General - Font and Color] category in the Option dialog box).
  The sum of the values in each line is displayed at the bottom of the list.

(b) Display the current line
The line selected by left-clicking of the mouse is the current line. The icon is displayed at the left edge and the entire line is highlighted.

(c) Specify the selection range of cells
The selection range can be specified for individual cells with the following method.

- Click on the cell with pressing the [Ctrl] key.

A range from the previous current cell to the clicked cell can be selected with the following method.

- Click on the cell with pressing the [Shift] key.

A range from the cell which was selected first to the cell where dragging was ended can be selected with the following method.

- Click on a cell and continue dragging to the desired cell.

(d) Copy the contents of cells
The contents of cells in the selected range can be copied to the clipboard with the following method.

- Select [Copy] in [Edit] menu.

Remark The copied contents can be pasted to a text editor, etc. but cannot be pasted to this panel.

(e) Rearrange the columns
The columns displayed in this area can be rearranged with either of the following methods.

- Drag the header of a column and drop it at its destination.
- Drag a column displayed in the Column Chooser dialog box and drop it at the header of this area.

(f) Specify display or non-display for columns
The columns to be displayed in this area can be set with either of the following methods.

- Select the check box of a column displayed in the Column Chooser dialog box.
- Drag a column displayed in the Column Chooser dialog box and drop it in this area.

The columns not to be displayed in this area can be set with either of the following methods.

- Cancel the selection of the check box of a column displayed in the Column Chooser dialog box.
- Drag the header of a column and drop it outside of this area.

(g) Sort the display contents
The display contents can be sorted (in the ascending order or descending order) with the following method.

- Click on the header of a column.

Multiple columns can be sorted with the following method.

- Click on the header of a column while pressing the [Shift] key.

(h) Filter settings for the display contents
A filter for the display contents can be set for each column with the following method.

- Click on the icon to select the string that is to be used as a filter from the list box.

The strings that can be selected from the list box and the resulting operation when each is selected are shown below.

Selectable String	Operation When Selected
(All)	Displays all display contents.
(Custom)	Opens the Filter Settings dialog box in which the filter conditions can be set.
(Blanks)	Displays blank lines.
(NonBlanks)	Displays lines which are not blank.
List of all display contents	Displays lines which match the selected string.

Remark When a filter is set, the icon changes to .

(i) Fix the display of columns or cancel fixed display
Fixed display (to be displayed always) of a column regardless of this area being horizontally scrolled can be set with either of the following methods.

- Click the icon.
- Drag the header of a column for which fixed display is not set and drop it between columns for which fixed display is set or after the last line for which fixed display is set.

Fixed display of a column can be canceled with either of the following methods.

- Click the icon.
- Drag the header of a column for which fixed display is set and drop it between columns for which fixed display is not set.

(j) Save the display contents
The contents displayed in this area can be saved as a text file (*.txt), CSV (Comma-Separated Variables) (*.csv), or Microsoft Office Excel book (*.xls) with the following method.

- Select [Save Detailed Memory Mapping Data As...] in [File] menu. The Save As dialog box opens. Specify the file in which to save the display contents.

(k) Button

	Opens the Column Chooser dialog box to rearrange columns or set display or non-display for columns.

(4) Tab selection area
The detailed memory mapping information that was acquired through analysis when profiling the items selected in the [Profiled memory mapping list] area are displayed in tabbed pages.
Selecting a tab allows you to switch to information displayed in the [Details of the selected memory mapping] area.
Note that the tabs to be displayed vary with the build option settings of the build tool in use.

[[File] menu (Memory Mapping Profiler panel-dedicated items)]

The following items are exclusive for [File] menu in the Memory Mapping Profiler panel (other items are common to all the panels).

Save Detailed Memory Mapping Data	Saves the contents displayed in the [Details of the selected memory mapping] area in the previously saved file. When this menu is selected for the first time after launching the program, the operation is equivalent to when selecting [Save Detailed Memory Mapping Data As...].
Save Detailed Memory Mapping Data As...	Opens the Save As dialog box to save the contents in the [Details of the selected memory mapping] area in the designated file.

[[Edit] menu (Memory Mapping Profiler panel-dedicated items)]

The following items are exclusive to [Edit] menu in the Memory Mapping Profiler panel (other items are all invalid).

Copy	Copies the selected contents in the [Build options about the selected memory mapping] area or [Details of the selected memory mapping] area to the clip board.
Delete	Deletes the memory mapping selected in the [Profiled memory mapping list] area. Note that <Latest result of profiling> cannot be deleted.
Rename	Changes the name of the saved memory mapping that is selected in the [Profiled memory mapping list] area (exclude <Latest result of profiling>). Up to 100 characters can be specified.
Select All	Selects all data displayed in the [Build options about the selected memory mapping] area or [Details of the selected memory mapping] area.
Find...	Opens the Find and Replace dialog box with the [Find in Files] tab target.
Replace...	Opens the Find and Replace dialog box with the [Replace in Files] tab target.

[Context menu]

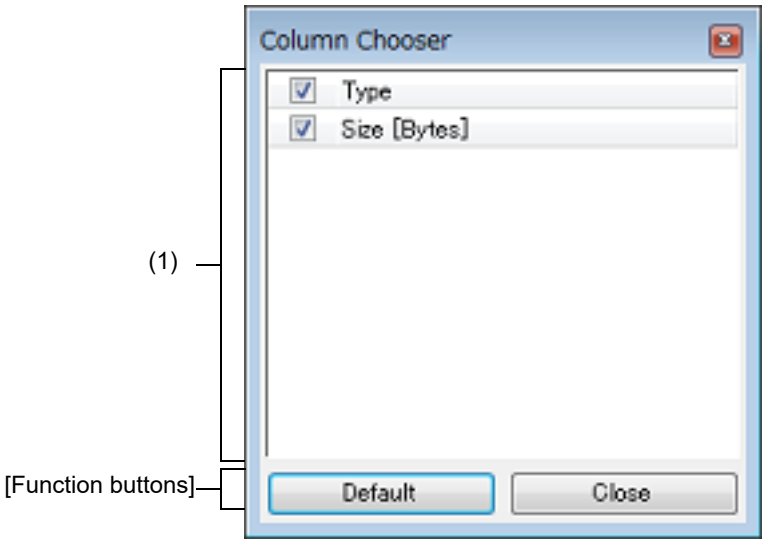
Jump to Source	The character string of the cell selected in the [Details of the selected memory mapping] area is regarded as a symbol name and the source file in which that symbol is defined is opened by the editor.

Copy	Copies the selected contents in the [Build options about the selected memory mapping] area or [Details of the selected memory mapping] area to the clip board.
Delete	Deletes the memory mapping selected in the [Profiled memory mapping list] area. Note that <Latest result of profiling> cannot be deleted.
Select All	Selects all data displayed in the [Build options about the selected memory mapping] area or [Details of the selected memory mapping] area.

Column Chooser dialog box

This dialog box is used to sort, show/hide the columns displayed on the Memory Mapping Profiler panel.
If the display in the panel has been customized, all of those customizations can be returned to the default state in this dialog box.

Figure A.23 Column Chooser Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- On the Memory Mapping Profiler panel, click the button.

[Description of each area]

(1) Item list area
This area displays a list of all columns that can be displayed on the Memory Mapping Profiler panel.
The display order of the columns in this list, and the state of check boxes, are the same as the current sort order and visible/hidden status in the panel.

This area has the following functions.

- Rearrange the columns on the Memory Mapping Profiler panel
  The columns displayed on the panel can be rearranged with the following method.
  - Drag the column displayed in this dialog box and drop it in the [Details of the selected memory mapping] area on the panel.
- Specify display or non-display for columns on the Memory Mapping Profiler panel
  The columns to be displayed on the panel can be set with either of the following methods.
  - Select the check box of a column displayed in this dialog box.
  - Drag a column displayed in this dialog box and drop it in the [Details of the selected memory mapping] area on the panel.

  The columns not to be displayed on the panel can be set with the following method.
  - Cancel the selection of the check box of a column displayed in this dialog box.

[Function buttons]

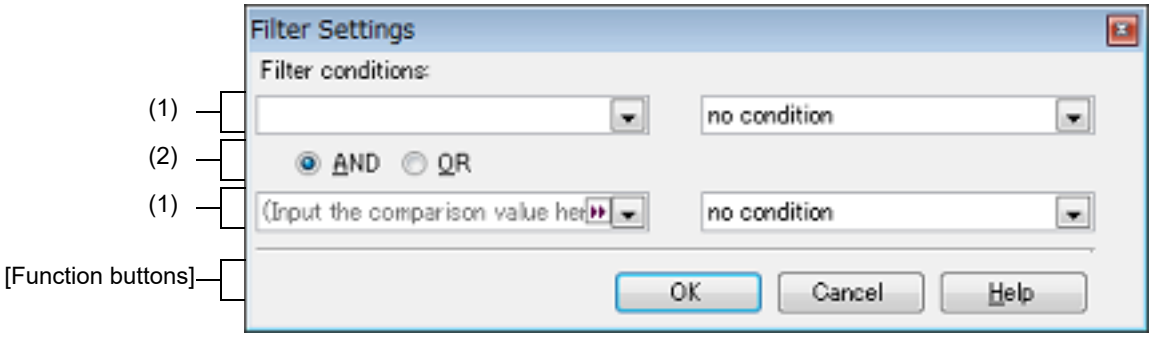
Button	Function
Default	Resets the display order and visible/hidden settings for columns on the Memory Mapping Profiler panel to their default values.
Close	Closes this dialog box.

Filter Settings dialog box

This dialog box is used to set filtering conditions for display of memory mapping information on the Memory Mapping Profiler panel or variable access information on the Functions and Variables Access Table panel.

Remark See the "CS+ Integrated Development Environment User's Manual: Debug Tool" for details about the Functions and Variables Access Table panel.

Figure A.24 Filter Settings Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- Click the filter icon (/) in the [Details of the selected memory mapping] area on the Memory Mapping Profiler panel or in the table area on the Functions and Variables Access Table panel, and then select the [(Custom)].

[Description of each area]

(1) First condition setting area (top)/Second condition setting area (bottom)
Configure the filter conditions.
In the First condition setting area (top)/Second condition setting area (bottom), you can specify up to two conditions. Use the Logical operator buttons ([AND]/[OR]) to set the two conditions as a single filter condition.

(a) Comparison value (left drop-down list)
You can either type the comparison value of for the filter (number or string) directly via the keyboard (up to 2048 characters), or select one from the input history via the drop-down list (maximum 10 items).
By default, the comparison value set in the column currently.

(b) Condition (right drop-down list)
Select the condition for the comparison value specified in (a) above, from the following drop-down list.
By default, the condition set in the column currently is selected.

Item	Comparison Value	
	Numerical Value	Character String
no condition	The comparison value will be ignored (not set as a filter condition).	

Item	Comparison Value	
	Numerical Value	Character String
equals	Compared as numerical value	Compared as character string
does not equal		
is greater than		
is greater than or equal to		
is less than		
is less than or equal to		
begins with	Compared as character string	
does not begin with		
ends with		
does not end with		
contains		
does not contain		

(2) Logical operator buttons
Select the logical relationship holding between the conditions specified in the First condition setting area (top)/ Second condition setting area (bottom) via the following button.

AND	Only the column meeting both condition 1 and condition 2 is displayed. This is mutually exclusive to the [OR] button.
OR	Only the column meeting either condition 1 or condition 2 is displayed. This is mutually exclusive to the [AND] button.

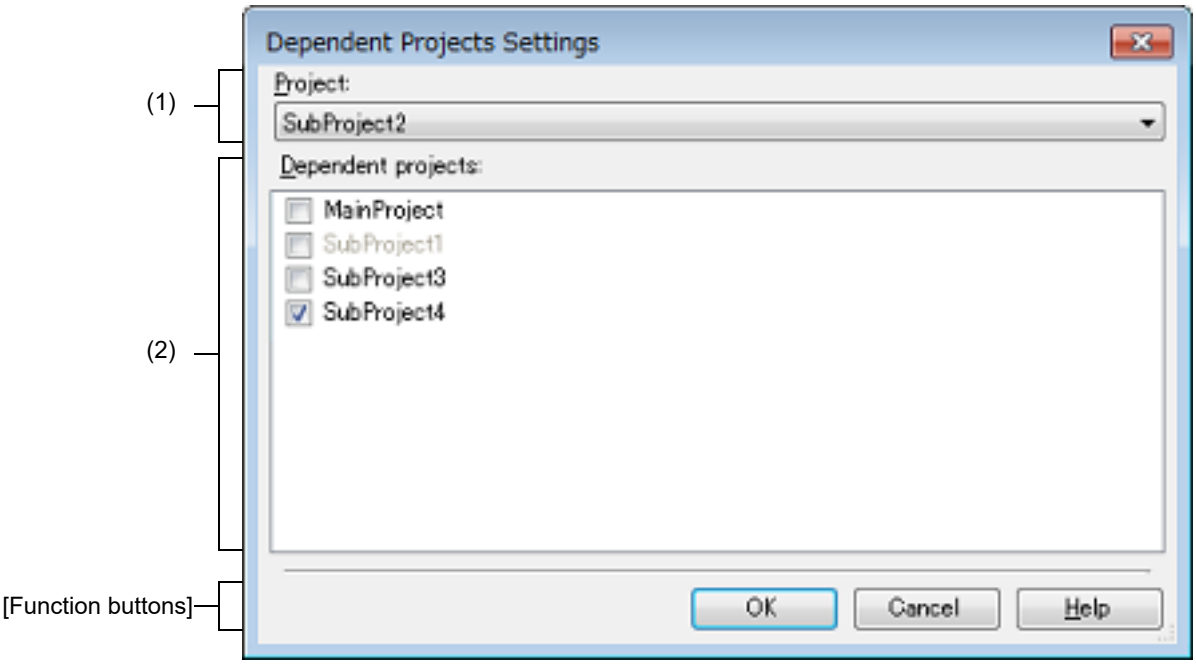
[Function buttons]

Button	Function
OK	Displays the memory mapping information on the Memory Mapping Profiler panel or variable access information in the table area on the Functions and Variables Access Table panel under the specified filtering conditions. If filtering results linked to panel was performed, then all display-filters linked to the panel conducted prior to this are deleted.
Cancel	Ignores the setting and closes this dialog box.
Help	Displays the help of this dialog box.

Dependent Projects Settings dialog box

This dialog box is used to reference/set the dependent projects.

Figure A.25 Dependent Projects Settings Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Project] menu, select [Dependent Projects Settings...].

Caution This item is only enabled when a project where a subproject exists is opened.

[Description of each area]

(1) [Project]
Select a project (dependent-source project) to be targeted when a dependent project is set.
The active project is selected by default.

(2) [Dependent projects]
Select a project to be referenced as the dependent project at build in the check box.
A cyclic-reference project is displayed in gray because it cannot be selected.

Remark You can select all check boxes or clear them by clicking buttons displayed on the upper left of this area.

	Selects all check boxes.
	Clears all check boxes.
	Toggles all check boxes.

Remark When an application project is related to the RH850 boot loader project, the boot loader project and the application project are fixed to the dependent-source project and the dependent project, respectively, and

they cannot be changed.
Note that the boot loader project and the application project are related in the Select Constituent Application Projects dialog box that is opened from the [Constituent application projects] property of the Configuration Tool for Multi-core node.

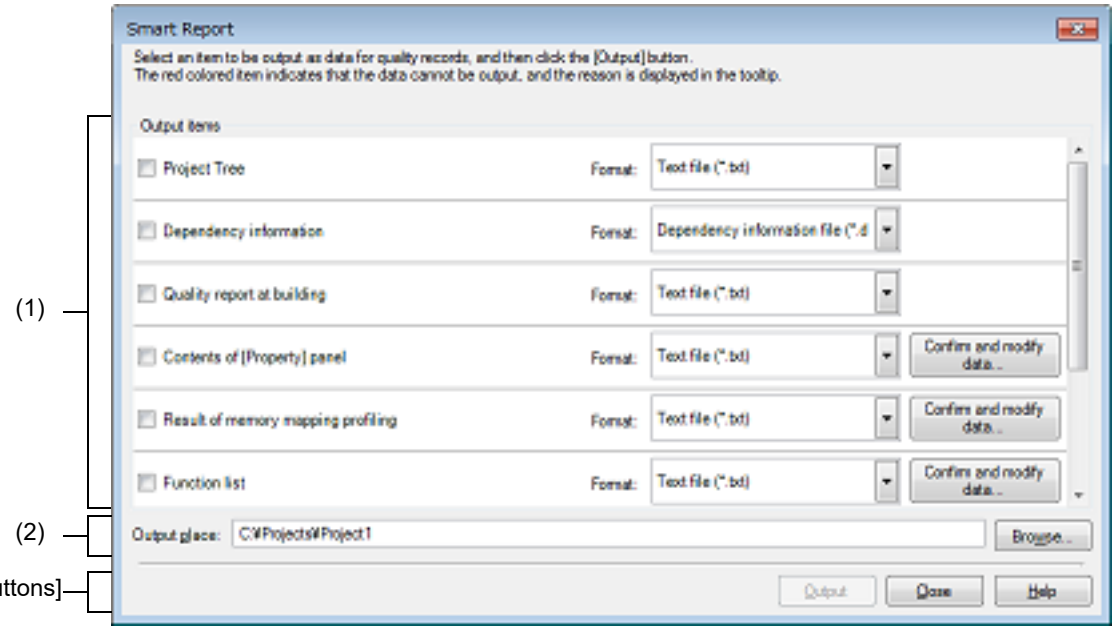
[Function buttons]

Button	Function
OK	Applies all setting and closes this dialog box.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

Smart Report dialog box

This dialog box is used to collectively output quality-related information such as a list of source files, build option settings, information on functions and variables, and coverage rates.

Figure A.26 Smart Report Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Project] menu, select [Output Data for Quality Records Collectively...].
- On the Solution List panel, click the [Smart Report] button.

[Description of each area]

(1) [Output items] area
Select items that you wish to output and their formats.
Items in red text cannot currently be output. If you hold the mouse cursor over such an item, the reason will be indicated by a tooltip. Clicking on the [Confirm and modify data...] button opens a panel in which you can view or modify recorded quality data on the selected item.

Item Name	Output Contents
Project Tree	Displays the contents of the Project Tree panel, with the tree expanded to show all items.
Dependency information	Outputs dependency information on header files that will affect building from the source files.
Quality report at building	Proceeds building in the current build mode and outputs a quality-record information file. Note, however, that a file is not output if building fails.
Contents of [Property] panel	Outputs properties displayed on the Property panel.

Item Name	Output Contents
Result of memory mapping profiling[Note]	Outputs the result of memory-map profiling in the Memory Mapping Profiler panel (information on the tab opened in the [Details of the selected memory mapping] area).
Function list[Note]	Outputs functions displayed on the Function List panel. This item only appears when "Program Analyzer" plug-in is enabled.
Variable list[Note]	Outputs functions displayed on the Variable List panel. This item only appears when "Program Analyzer" plug-in is enabled.
Analysis chart[Note]	Outputs functions displayed on the Analysis Chart panel. This item only appears when "Program Analyzer" plug-in is enabled.
Call graph[Note]	Outputs functions displayed on the Call Graph panel. This item only appears when "Program Analyzer" plug-in is enabled.
Functions and Variables Access Table[Note]	Outputs the functions and variables access table displayed on the Functions and Variables Access Table panel. This item only appears when a "Quick and Effective tool solution - QE" plug-in is enabled.
Build tool information for Compiler Qualification service	Outputs build tool information for the Compiler Qualification service.

Note This item can be output only when the compiler is CC-RH, CC-RX, or CC-RL.

(2) [Output place] area
Directly enter the absolute path or click on the [Browse…] button to designate the folder where you wish to output quality-record data on the selected items.

(a) Button

Browse...	Browse For Folder dialog box appears. When a folder is selected, the absolute path is shown in [Output place].

Remark When the input for [Output place] violates any restriction, the following messages are shown.

Message	Description
The folder name including the path is too long. Make it within 247 characters.	The folder name is more than 247 characters.
The folder name is invalid. The following characters cannot be used: :, *, ?, ", <, >, |	The folder name with the invalid character is designated.

[Function buttons]

Button	Function
Output	Outputs quality-record data on the selected items in the folder designated in the [Output place] and closes this dialog box. A text file containing a summary of the quality records (QualityRecordingSummary.txt) is also output to the same folder. **Caution** This button is disabled if no items are selected or the output of quality-record data is not possible for any selected items.
Close	Closes this dialog box.
Help	Displays the help of this dialog box.

Remark 1. The format of QualityRecordingSummary.txt is shown below.

```
---------------------------------------------------
 (1) CS+ IDE-version [Smart Report]
 (2) Output-date
 (3) main-project-file-name, device-type-of-main-project
 ==========================================================================
 (4) Output-item 1: file-names-of-output-item 1
        :
     Output-item n: file-names-of-output-item n
---------------------------------------------------
```

Remark 2. The format of build tool information for the Compiler Qualification service (InformationForCompilerQualificationService.txt) is shown below.

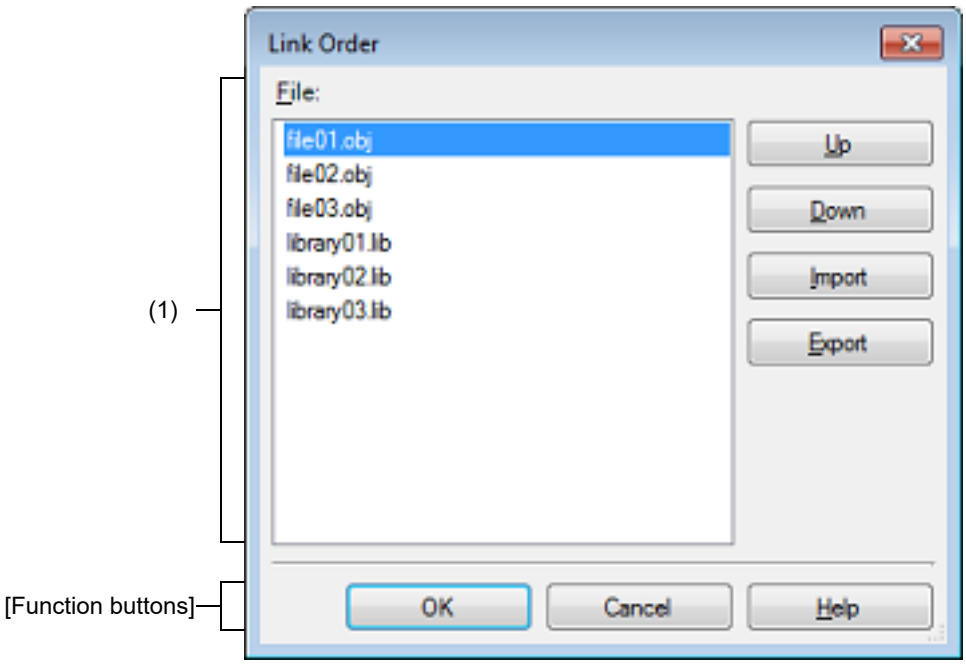
```
(1) CS+ IDE-version [Build tool information for Compiler Qualification ser-
vice]
(2) Output-date
---------------------------------------------------------------------------
(3) Build tool information for Compiler Qualification service
```

Caution *Build tool information for Compiler Qualification service* in the format above will indicate the contents of [Required options] and [Other options].
Options that have been specified for the [Other additional options] property of the build tool are always output as [Required options].

Link Order dialog box

This dialog box is used to refer object module files and library files to be input to the linker and configure these link orders.

Figure A.27 Link Order Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- On the Project Tree panel, select the Build tool node, and then select [Set Link Order...] from the context menu.

[Description of each area]

(1) [File] area
The names of the following files are listed in the order that the files are input to the linker.

- Object module files which are generated from the source files added to the selected main project or subproject
- Object module files which are added directly to the project tree of the selected main project or subproject
- Library files which are added directly to the project tree of the selected main project or subproject

The default order is the order that the files are added to the project.
By changing the display order of the files, you can set the input order of the files to the linker.
To change the display order, use the [Up] and [Down] buttons, or drag and drop the file names.

Remark 1. When the mouse cursor is hovered over a file name, the path of the file appears in a popup. If the file is on the same drive as the project file, then it appears as the relative path; if it is on the different drive, then it appears as the absolute path.

Remark 2. Object module files which are generated from newly added source files and newly added object module files are added after the last object module file in the list. Newly added library files are added to the end of the list.

Remark 3. When the file is dragged and dropped, the multiple files that are next to each other can be selected together.

(a) Button

Up	Moves the selected file to up. If any file is not selected, this button will be disabled.
Down	Moves the selected file to down. If any file is not selected, this button will be disabled.
Import	Opens the Select Import File dialog box. The description order of the file names is acquired from the selected link order specification file, and then it is reflected in [File]. If nothing is displayed in [File], this button will be disabled.
Export	Opens the Select Export File dialog box. Outputs the list of the file names displayed in [File] to the specified link order specification file. If nothing is displayed in [File], this button will be disabled.

Remark See "2.7.2 Set the link order of files" for the method of using the link order specification file.

[Function buttons]

Button	Function
OK	Sets the input order of the files to the linker as the display order in [File] and closes this dialog box.
Cancel	Cancels the link order settings and closes the dialog box.
Help	Displays the help of this dialog box.

Optimization Performance Comparison Tool dialog box

This wizard-type dialog box is used to measure and compare the ROM size or execution speed for the case in which the build options recommended by the build tool are applied.

The measurement method is specified in the first page and the result is displayed in the second page.

Figure A.28 Optimization Performance Comparison Tool Dialog Box (First Page)

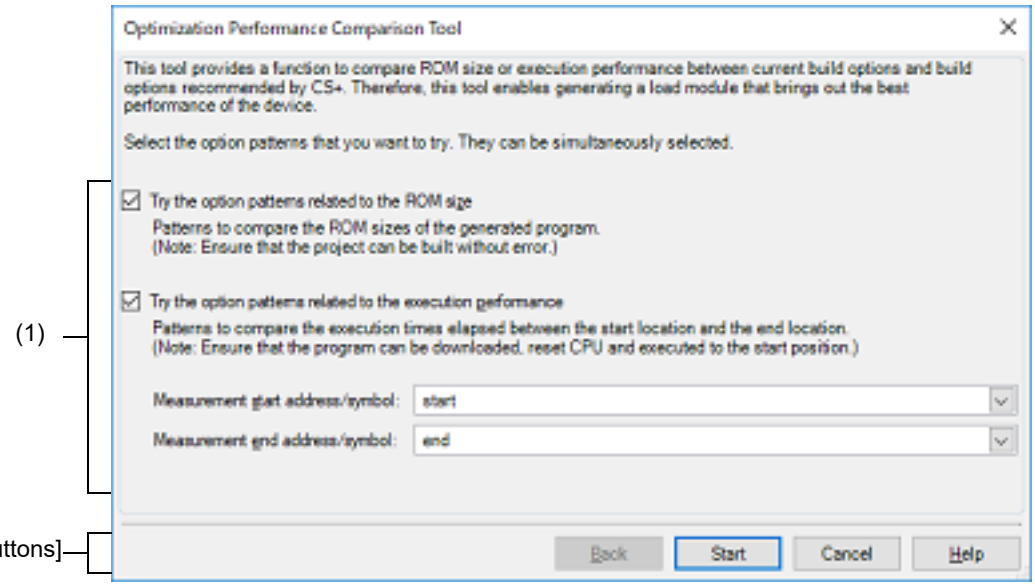
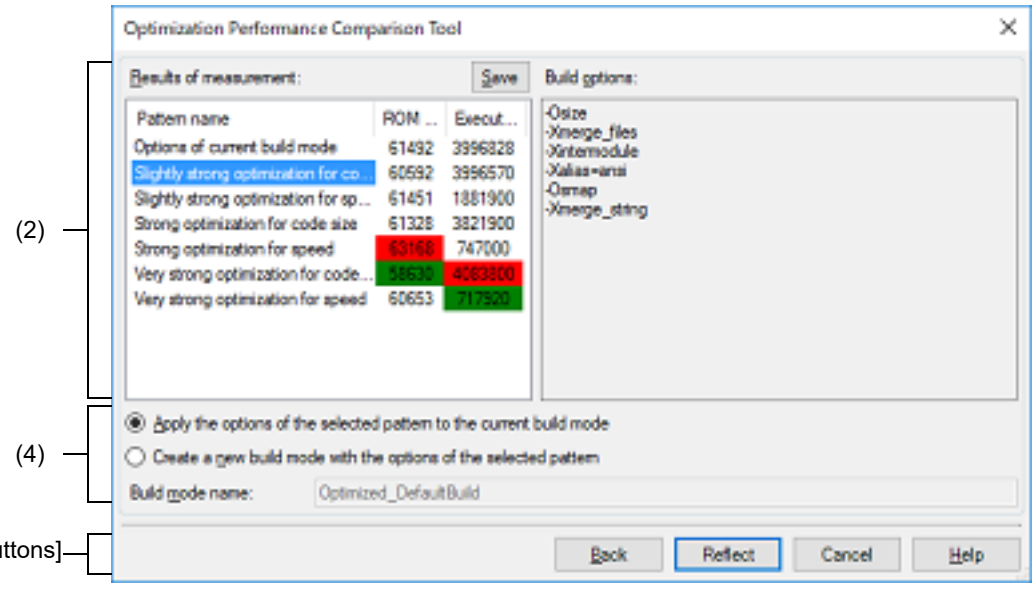


Figure A.29 Optimization Performance Comparison Tool Dialog Box (Second Page)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Build] menu, select [Open the Optimization Performance Comparison Tool for *active project*...].

[Description of each area]

(1) Pattern selection area (first page)
Select whether to try an option pattern related to optimization of the ROM size or an option pattern related to optimization of the execution speed.
Trying both option patterns is also possible.
Along with selected patterns, the current build-mode options are tested.

When trying an option pattern related to optimization of the execution speed, specify the measurement range in [Measurement start address/symbol] and [Measurement end address/symbol].
Directly enter a hexadecimal number or address expression in each text box or select one from the input history via the drop-down list (up to 10 items).

Remark 1. The symbol name at the current caret position can be complemented by pressing the [Ctrl] + [Space] keys in this text box.

Remark 2. If you enter a function name in each text box and one or both functions are inline-expanded due to optimization, errors may occur during measurement or measurement may not be finished. In such cases, you can avoid the errors by adding the following statement before the definition of the function or functions.
#pragma noinline *function name*

(2) [Results of measurement] (second page)
The ROM size and execution speed for each option pattern are displayed.
The value with the highest performance is displayed in green while the value with the lowest performance is displayed in red.
The option pattern selected here can be reflected in the current build options.
Clicking the [Save] button opens the Save As dialog box to allow saving of the contents displayed in [Results of measurement] in a specified file.

(3) [Build options] (second page)
The build options set by each option pattern are displayed.

Remark See the user's manual of the compiler for details about build options.

(4) Area for selecting method of reflection to build mode (second page)
Select which build mode to reflect the build options selected in [Results of measurement] when reflecting the build options.
If the build options are to be reflected as a new build mode, the build mode name can be specified.

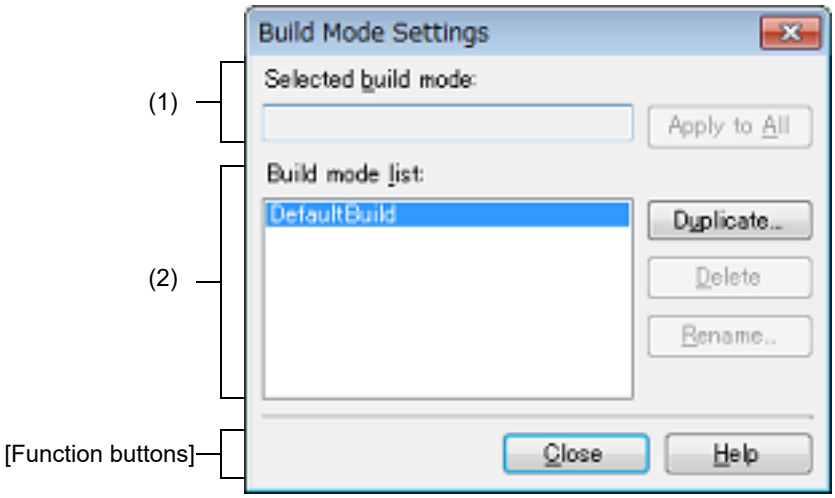
[Function buttons]

Button	Function
Back (second page)	Returns to the first page. Click this button to re-compare the optimization performance.
Start (first page)	Starts to compare the optimization performance. The performance is compared by reflecting the specified option pattern to the build tool and then running the build tool and debug tool. Therefore, building and debugging of the program needs to be possible.
Reflect (second page)	Reflects the build options selected in [Results of measurement] to the build mode and closes this dialog box.
Cancel	Closes this dialog box without performing comparison and reflection of build options.
Help	Displays the help of this dialog box.

Build Mode Settings dialog box

This dialog box is used to add and delete build modes and configure the current build mode in batch.

Figure A.30 Build Mode Settings Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Build] menu, select [Build Mode Settings...].

[Description of each area]

(1) [Selected build mode] area
This area displays the build mode selected in the [Build mode list] area.

(a) Button

Apply to All	Set the build mode of the main project and all subprojects of the currently opened project to the currently displayed build mode.

(2) [Build mode list] area
This area displays all build modes that exist in the currently opening project (main project and subproject) in a list.
The current build modes of all projects are same, the build mode is selected by default. If they are not same, "DefaultBuild" will be selected.
The build mode that exists only in part of the main project and subproject is shown with the mark "*".
Note that the "DefaultBuild" is the default build mode and is always displayed at the top.

(a) Button

Duplicate...	Duplicates the selected build mode. The Character String Input dialog box opens. And the build mode is duplicated with the name entered in the dialog box and added to the main project and all the subprojects in the currently opening project. When the build mode with "*" mark does not exist in the main project or subproject and duplicate the build mode, "DefaultBuild" will be duplicated. Up to 20 build modes can be added.

Delete	Deletes the selected build mode. Note that "DefaultBuild" cannot be deleted. If the currently set build mode is deleted, "DefaultBuild" is set.
Rename...	Renames the selected build mode. Rename the build mode with entered name in the opening the Character String Input dialog box.

Caution When duplicating or renaming the build mode, the existing build mode name cannot be used.

Remark 1. Up to 127 characters can be specified as a build mode name. When the input violates any restriction, the following messages are shown in the tooltip.

Message	Description
A build mode with the same name already exists.	The entered build mode name already exists.
More than 127 characters cannot be specified.	Build mode name is too long (more than 128 characters).
The build mode name is invalid. The following characters cannot be used: \, /, :, *, ?, ", <, >, |	Invalid build mode name is entered. The characters (\, /, :, *, ?, ", <, >, |) cannot be used because the build mode name is used for the folder name.

Remark 2. Up to 20 build modes can be added. When the input violates any restriction, the following messages are shown in the tooltip.

Message	Description
The maximum number of build modes that can be set per project/subproject is 20.	The number of build modes exceed 20.

[Function buttons]

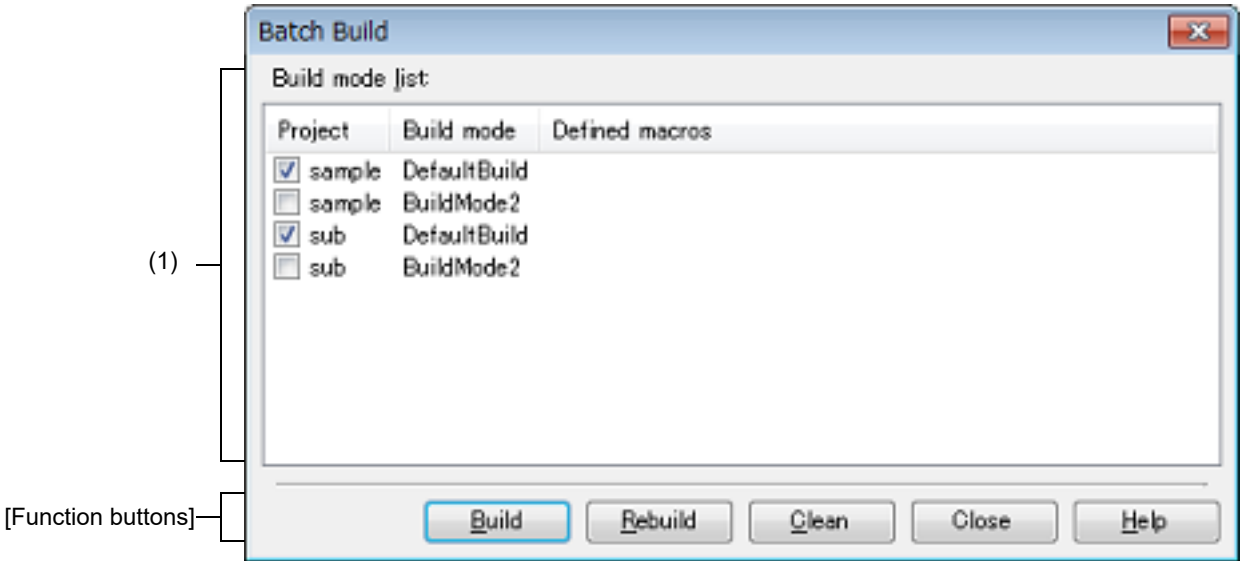
Button	Function
Close	Closes this dialog box.
Help	Displays the help of this dialog box.

Batch Build dialog box

This dialog box is used to run builds, rebuilds and cleans in batch with the build modes that the project (main project and subproject) has.

Remark The batch build order follows the project build order, the order of the subprojects, main project.
When multiple build modes are selected for a single main project or subproject, after running builds of the subproject with all the selected build modes, the build of the next subproject or main project is run.

Figure A.31 Batch Build Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Build] menu, select [Batch Build...].

[Description of each area]

(1) [Build mode list] area
This area displays the list of the combinations of the names of the main project and subprojects in the currently opened project, their build modes, and their macro definitions.

(a) [Project]
This area displays the main project and subprojects in the currently opened project.
Select the check boxes for the combinations of the main project and subprojects and their build modes which you wish to run a build.
When this dialog box is opened for the first time after the project is created, all the check boxes are unchecked.
From the second time, the previous setting is retained.

(b) [Build mode]
This area displays the build modes which the main project and subprojects have.

(c) [Defined macros]

<1> When the target project type is other than a debug-dedicated project
For the combination of the main project and subprojects and their build modes, the defined macros which have been set in the [Compile Options] tab, the [Assemble Options] tab and the [SMS Assemble Options] tab [CC-RL] on the Property panel are separated with "|" and displayed.

The defined macro in the compile option comes before the one in assemble option. They are separated with ", " and displayed.

<2> When the target project type is a debug-dedicated project
This item is invalid.

Remark 1. Use one of the following methods to select multiple rows.

- Left-click the mouse with pressing the [Ctrl] key.
- Left-click the mouse with pressing the [Shift] key.
- Drag the mouse to select a range of rows.

Pressing the space key while a row is selected switches the selected/non-selected state of the check box.

Remark 2. Clicking on the header of each column sorts the entries (in ascending order by default).
Clicking on the same header again sorts the entries in the reverse order.

Remark 3. You can select all check boxes or clear them by clicking buttons displayed on the upper left of this area.

	Selects all check boxes.
	Clears all check boxes.
	Toggles all check boxes.

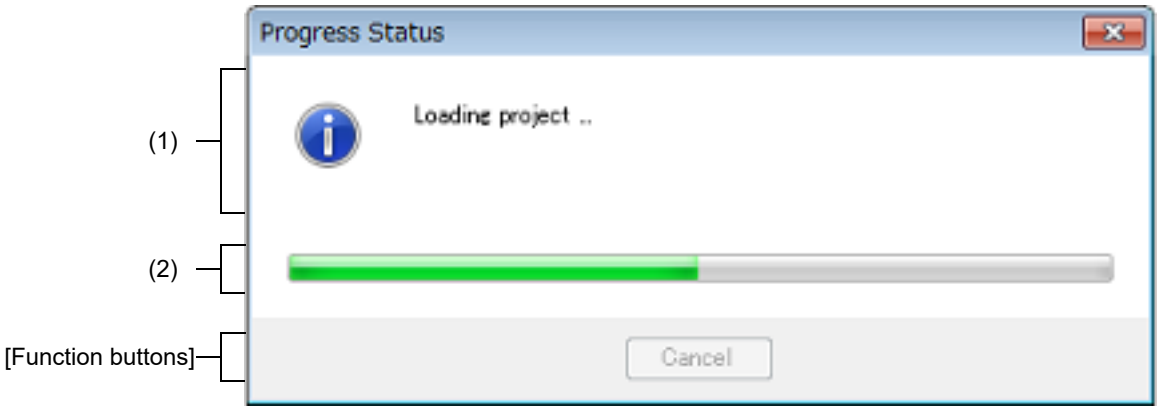
[Function buttons]

Button	Function
Build	Closes this dialog box and runs builds of the selected projects in the respective build modes. The execution result of the builds is displayed on the Output panel. After the builds are complete, the build mode configuration restores to the one before this dialog box was opened. If any project is not selected, this button will be disabled.
Rebuild	Closes this dialog box and runs rebuilds of the selected projects in the respective build modes. The execution result of the rebuilds is displayed on the Output panel. After the rebuilds are complete, the build mode configuration restores to the one before this dialog box was opened. If any project is not selected, this button will be disabled.
Clean	Closes this dialog box and deletes the files which are built in the respective build modes set for the selected projects. The execution result of the cleans is displayed on the Output panel. After the cleans are complete, the build mode configuration restores to the one before this dialog box was opened. If any project is not selected, this button will be disabled.
Close	Closes this dialog box.
Help	Displays the help of this dialog box.

Progress Status dialog box

This dialog box is used to display how the process has been progressed when the time consuming process is taken place.
This dialog box automatically closes when the process in progress is done.

Figure A.32 Progress Status Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- The dialog box automatically opens when a message is output while the time consuming process is in progress.

[Description of each area]

(1) Message display area
Displays the message output while process is in progress (edit not allowed).

(2) Progress bar
The progress bar shows the current progress of the process in progress with the bar length.
When the process is 100% done (the bar gets to the right end), this dialog box automatically closed.

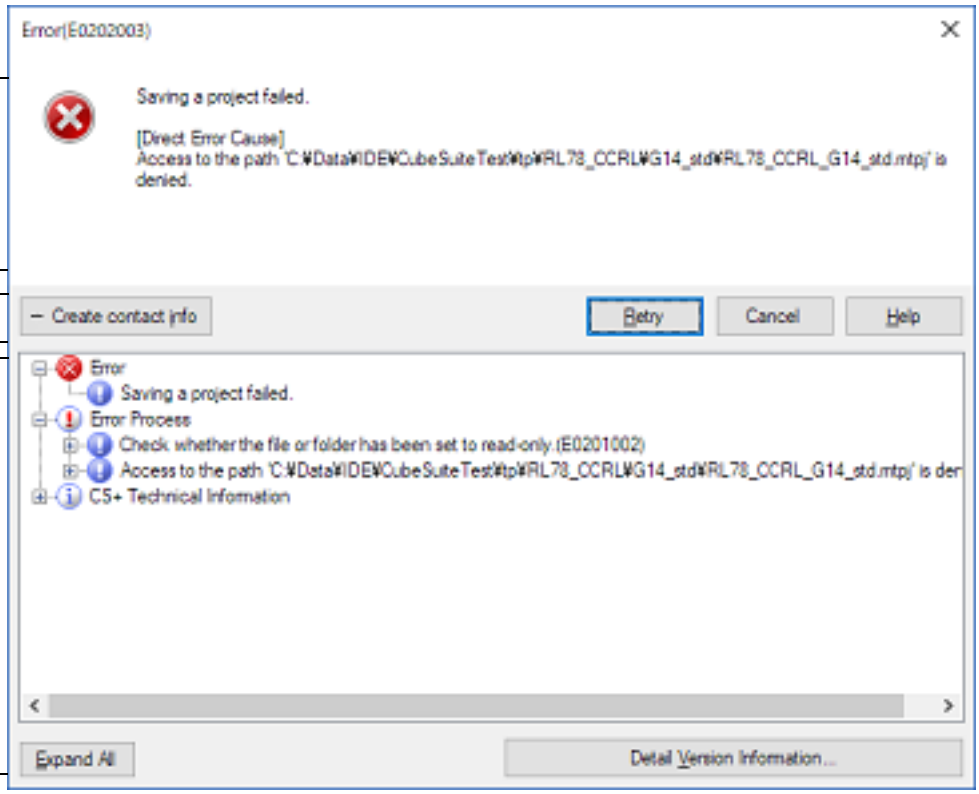
[Function buttons]

Button	Function
Cancel	Cancels the process in progress and closes this dialog box. Note that if the process termination is impossible, this button is disabled.

Message dialog box

This dialog box is used to display messages output by the various tools.

Figure A.33 Message Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [[Edit] menu (Message dialog box-dedicated items)]
- [Context menu]
- [Function buttons]

[How to open]

- The dialog box appears automatically when a message is output.

[Description of each area]

(1) Message area
Shows messages to inform in icons and message information (edit not allowed).
Note that the message is categorized by the following message types and an alphabet to indicate the message type is added to the head of the ID number.

Icon	Message Type		Description
	C	Internal error	Processing terminated (suspended) due to internal error.
	E	Fatal error	Processing terminated (suspended) due to fatal error.
	M	Information	Informational message. Check the message and continue the process.

Icon	Message Type		Description
	Q	Choice	This type of message is displayed when a choice is necessary in order to carry on with the next operation. It performs the selected action.
	W	Warning	Warning message. Check the message and continue the process.

[Direct message type Cause] only appears when there are details for the message output.
Refer to the message displayed in [Direct message type Cause] and its help if you are unable to identify the cause of the issue from the message output and its help.

Remark The message types may differ; for example, the type of the message output may be a warning, while the direct cause is a fatal error.

Example

- Message
  W0240001 : Could not move to the definition location of the symbol. Specify the symbol.
- [Direct Warning Cause]
  Could not move. (E0220005)

(2) Detailed display area
This area displays the information only when there is detailed information in the output message. To display this area, click [Detail] button (the area is not displayed as default).

(a) Contents of display
The details of the output message are displayed in tree view categorized by items (edit not allowed).

Item	Description
Error	Output error message is shown.
Error Process	The function that the error occurred and the function (group) that treated the error are listed by each message statement that shows the error origination (if the messages that show the error origination are same, they are listed together).
Technical Information	Shows the name of the error method by each module name that the error occurred.

When displaying it, the following icon is added.

Icon	Description
	Error or warning
	Error process or warning process
	Technical information
	Character string that shows cause of error or warning
	Module name that error occurs
	Method name that error occurs

(b) Buttons

Expand All	Expands all the node in the list.
Detail Version Information...	Opens the Detail Version Information dialog box.

[[Edit] menu (Message dialog box-dedicated items)]

The following items are exclusive to [Edit] menu in Message dialog box (other items are all invalid).

Copy	Copies the selected characters in the message area to the clipboard.
Select All	Selects all the characters in the message area.

[Context menu]

[Message area]

Copy	Copies the selected characters in the message area to the clipboard.
Select All	Selects all the characters in the message area.
Help for Message	Displays the help with regard to the displayed message.

[Function buttons]

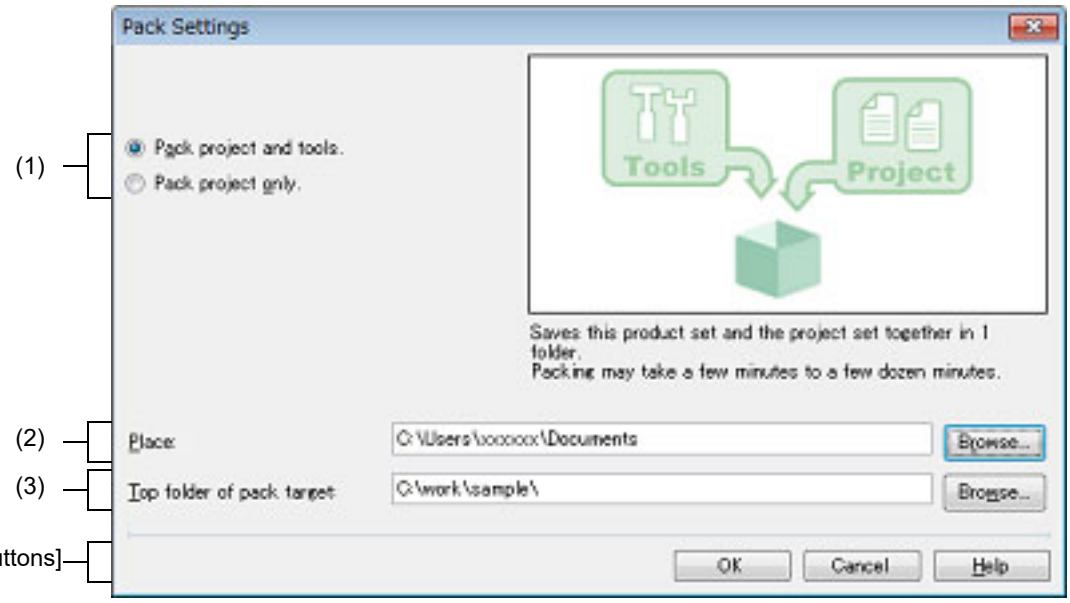
The following items are exclusive to [Edit] menu in Message dialog box (other items are all invalid).

Button	Function
+/- Create contact info	Display/hide the detailed display area. When the detailed display area is displayed, a snapshot of the window and error information on the desktop is saved. Note that this button is available only when there is detailed information.
OK	Closes this dialog box.
Help	Displays the help with regard to the displayed message. And a Web browser is displayed and a search for FAQs with regard to the message is started. **Caution** When [Online] is selected from [How to Access Help] and the [Search FAQ when the help of a message opens.] check box is selected, the help or FAQs may not be displayed. - When you wish to display the help and FAQs Use the offline help. (From the [Help] menu, select [How to Access Help] >> [Offline].) - When you wish to display the online help Hide FAQs. (Clear the [Search FAQ when the help of a message opens.] check box in the [General - Smart Browser] category of the Option dialog box.) FAQs can be searched on the Smart Browser panel. Enter the message number, etc. in the text box and click the [Search FAQ] button.

Pack Settings dialog box

This dialog box is used to pack and save the project and this product.

Figure A.34 Pack Settings Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- On the Project Tree panel, select the Project node, and then select [Save Project and Development Tools as Package...] from the context menu.

[Description of each area]

(1) Pack type selection area
Select the pack type.

Pack project and tools	Packs the project and this product (default).
Pack project only	Packs the project only.

(2) [Place] area
Specify the location in which to save the project and this product.
Enter the absolute path directly, or click the [Browse...] button, and select the location via the Browse For Folder dialog box.

(a) Button

Browse...	Browse For Folder dialog box appears. When a folder is selected, the path is shown in the text box.

Remark 1. Up to 247 characters can be entered in [Place] area. When the input violates any restriction, the following messages are shown.

Message	Description
The folder name including the path is too long. Make it within 247 characters.	The folder name is more than 247 characters.
The folder name is invalid. The following characters cannot be used: :, *, ?, ", <, >, |	The folder name with the invalid path is designated. The characters, :, *, ?, ", <, >, |, cannot be used for the file name and folder name.
The folder name is invalid. Specify a folder other than the project folder.	A folder inside the project folder is specified.
The folder that you will save the project is the same to the project folder. Set another place.	The target project folder for packing is in the folder specified as the location to save the project (Example: A project folder is specified as the top folder of the packing target and a folder above the project folder is specified as the location to save the project folder).

Remark 2. When the path name is too long to be shown in the text area, is displayed. The absolute path pops up when the mouse cursor is hovered over .

(3) [Top folder of pack target] area
Specify the top folder of the packing target.
Enter the absolute path directly, or click the [Browse...] button, and select the location via the Browse For Folder dialog box.

(a) Button

Browse...	Browse For Folder dialog box appears. When a folder is selected, the path is shown in the text box.

Remark 1. Up to 247 characters can be entered in [Top folder of pack target] area. When the input violates any restriction, the following messages are shown.

Message	Description
The folder name including the path is too long. Make it within 247 characters.	The folder name is more than 247 characters.
The folder name is invalid. The following characters cannot be used: :, *, ?, ", <, >, |	The folder name with the invalid path is designated. The characters, :, *, ?, ", <, >, |, cannot be used for the file name and folder name.
Specify a folder that contains the project folder.	A folder that does not contain the project folder is specified.

Remark 2. When the path name is too long to be shown in the text area, is displayed. The absolute path pops up when the mouse cursor is hovered over .

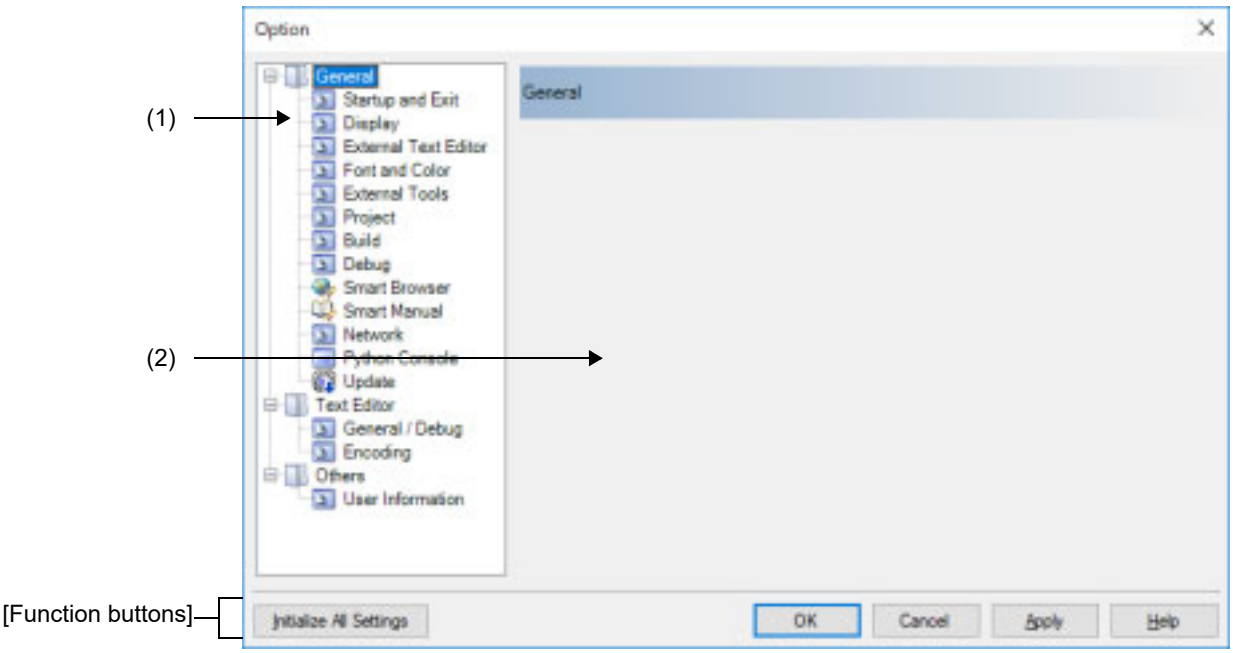
[Function buttons]

Button	Function
OK	Closes this dialog box and packs and saves the project and this product to the designated condition.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

Option dialog box

This dialog box is used to configure the CS+ environment.
All settings made via this dialog box are saved as preferences for the current user.

Figure A.35 Option Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) Category selection area
Select the items to configure from the following categories.

Category	Description
[General - Startup and Exit] category	Configure startup and shutdown.
[General - Display] category	Configure messages from the application.
[General - External Text Editor] category	Configure the external text editor.
[General - Font and Color] category	Configure the fonts and colors shown on each panel.
[General - External Tools] category	Configure the startup of external tools.
[General - Project] category	Configure the project.
[General - Build] category	Configure building.
[General - Debug] category	Configure debugging.

Category	Description
[General - Smart Browser] category	Configure the smart browser.
[General - Smart Manual] category	Configure the smart manual.
[General - Network] category	Configure the network.
[General - Python Console] category	Configure the Python console.
[General - Update] category	Configure update.
[Text Editor - General / Debug] category	Configure general and debug of the text editor.
[Text Editor - Encoding] category	Configure the text editor encoding.
[Other - User Information] category	Configure user information.

(2) Settings
This area is used to configure the various options for the selected category.
For details about configuration for a particular category, see the section for the category in question.

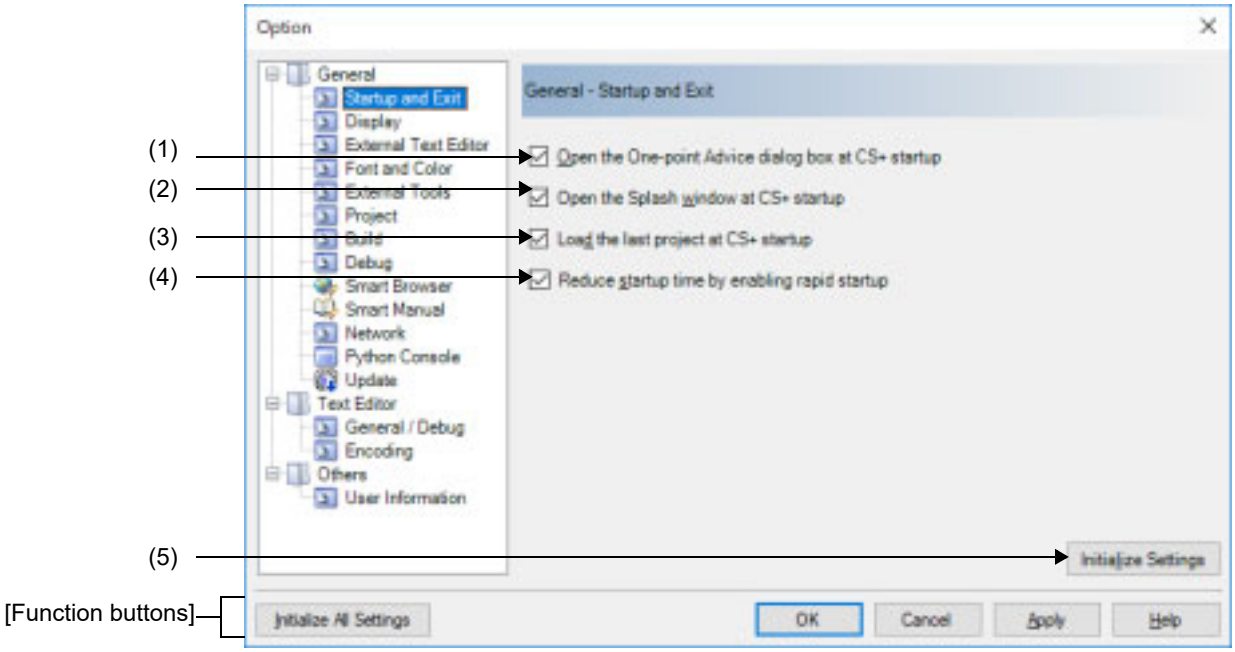
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Startup and Exit] category

Use this category to configure general settings relating to startup and shutdown.

Figure A.36 Option Dialog Box ([General - Startup and Exit] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Open the One-point Advice dialog box at CS+ startup]

☑	Shows the One Point Advice dialog box on startup (default).
☐	Does not show the One Point Advice dialog box on startup.

(2) [Open the Splash window at CS+ startup]

☑	Shows the Splash window on startup (default).
☐	Does not show the Splash window on startup.

(3) [Load the last project at CS+ startup]

☑	Automatically loads the last project on startup (default).
☐	Does not automatically load the last project on startup.

(4) [Reduce startup time by enabling rapid startup]

☑	Reduces startup time by enabling rapid startup.

☐	Disables the rapid start feature (default).

Remark See "2.11.1 Use rapid start" for details about the rapid start.

Caution This item is only enabled when this product is installed using the installer. It is disabled when a packaged item is being used.

(5) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

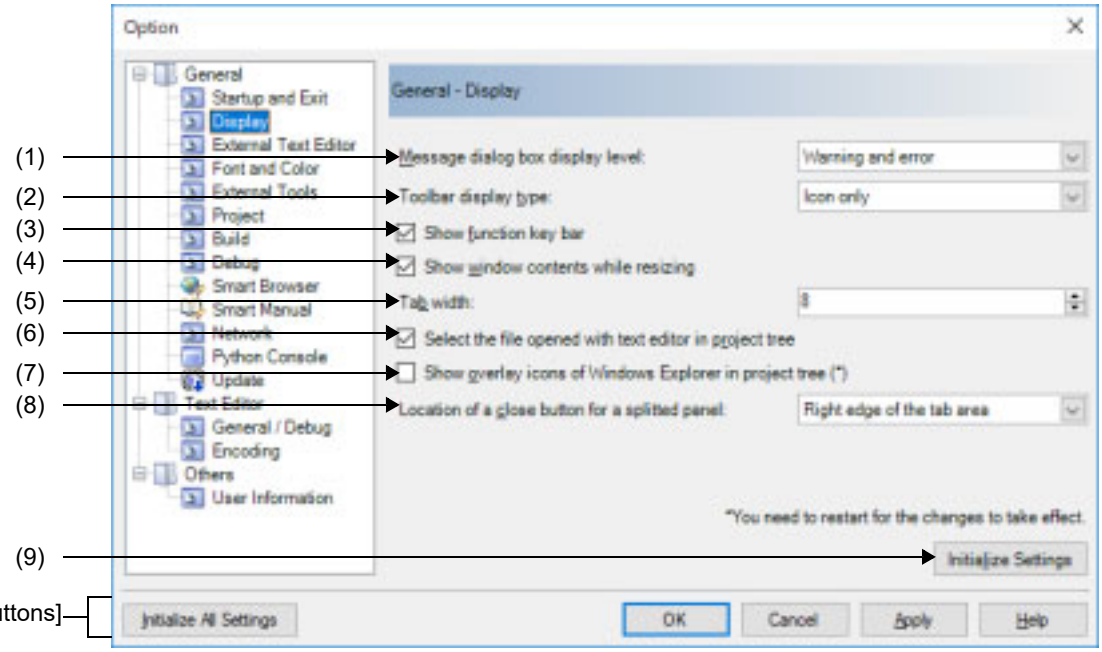
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Display] category

Use this category to configure general settings relating to program messages.

Figure A.37 Option Dialog Box ([General - Display] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Message dialog box display level]
Select the Message dialog box display level (verbosity) from the following drop-down list.
Regardless of this setting, all messages are displayed in the Output panel.

Information, warning and error	Displays all messages in a Message dialog box.
Warning and error	Displays warning and error messages in a Message dialog box (default).
Error only	Only displays error messages in a Message dialog box.
Fatal error only	Only displays fatal error messages in a Message dialog box.

(2) [Toolbar display type]
Use this area to select the format in which to display toolbars on each panel, via the following drop-down list.

Icon only	Displays icons only (default).
Icon and label	Displays both icons and labels (text).

(3) [Show function key commands]

☑	Displays the Function Key bar in the Main window (default).
☐	Does not display the Function Key bar in the Main window.

(4) [Show window contents while resizing]

☑	Resizes the window while displaying areas that were not visible before (default).
☐	Resizes the window without displaying areas that were not visible before.

(5) [Tab width]
Specify the number of tab columns.
Either enter a number between 1 and 16 directly via the keyboard, or specify a number via the buttons. The default is 8.
Note that clicking on the [OK] or [Apply] button while this item remains blank causes the tab setting to remain at the previously saved value.

(6) [Select the file opened with text editor in project tree]

☑	When the Editor panel is activated, the file currently being opened is selected in the Project Tree panel (default).
☐	Even if the Editor panel is activated, the file currently being opened is not selected in the Project Tree panel.

(7) [Show overlay icons for Windows Explorer in project tree]

☑	Displays overlay icons for Windows Explorer in the Project Tree panel.
☐	Does not display overlay icons for Windows Explorer in the Project Tree panel (default).

Caution The change of the setting is reflected after this product restarts.

(8) [Location of a close button for a splitted panel]
Use this area to select the location of a close button for a split panel, via the following drop-down list.

Right edge of the tab area	Displays to the right edge in the tab area (default).
All tabs	Displays to the right edge of the title in all tabs.
Active tab	Displays to the right edge of the title in the active tab.

(9) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

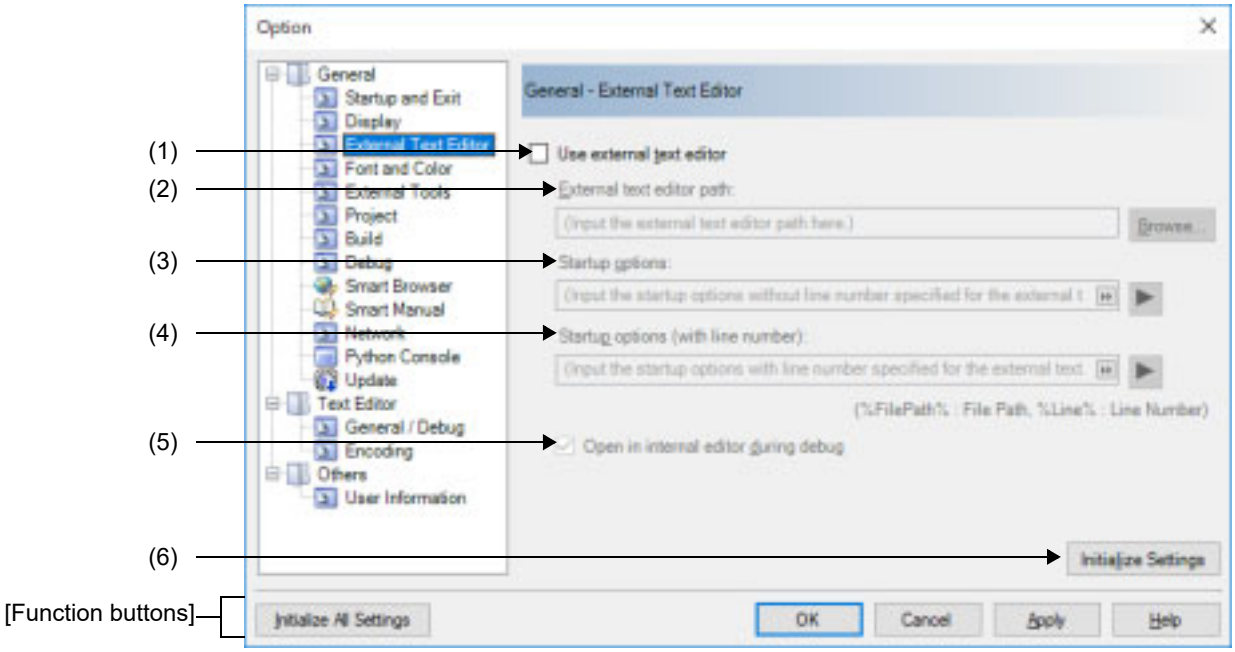
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - External Text Editor] category

Use this category to configure general settings relating to the external text editor.

Figure A.38 Option Dialog Box ([General - External Text Editor] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Use external text editor]

☑	Uses an external text editor as the text editor.
☐	Uses the Editor panel as the text editor (default).

(2) [External text editor path]
Either type in the name of the executable file (including absolute path) for the external text editor directly via the keyboard (up to 259 characters), or click the [Browse...] button, and in the Select External Text Editor dialog box, specify the name of the executable file.
This item is only enabled if the [Use external text editor] check box is selected.

(3) [Startup options]
Specify the startup options (without the line number) for the external text editor (up to 256 characters).
This item is only enabled if the [Use external text editor] check box is selected.
The following placeholders can be specified by the ▶ button.
If you wish to specify more than one option, separate them by spaces.

%FileName%	Passes the name of the file to display to the external text editor.
%FilePath%	Passes the absolute path of the file to display to the external text editor.

%FileRelativePath%	Passes the absolute path of the file from the project folder to display to the external text editor.
%Line%	Passes the caret position (line number) to the external text editor.

(4) [Startup options (with line number)]
Specify the startup options (with the line number) for the external text editor (up to 256 characters).
This item is only enabled if the [Use external text editor] check box is selected.
The following placeholders can be specified by the button.
If you wish to specify more than one option, separate them by spaces.

%FileName%	Passes the name of the file to display to the external text editor.
%FilePath%	Passes the absolute path of the file to display to the external text editor.
%FileRelativePath%	Passes the absolute path of the file from the project folder to display to the external text editor.
%Line%	Passes the caret position (line number) to the external text editor.

(5) [Open in internal editor during debug]
This item is only enabled if the [Use external text editor] check box is selected.

☑	Suppresses starting an external text editor and opens the file to display in the Editor panel during debugging (default).
☐	Opens the file to display in an external text editor.

(6) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

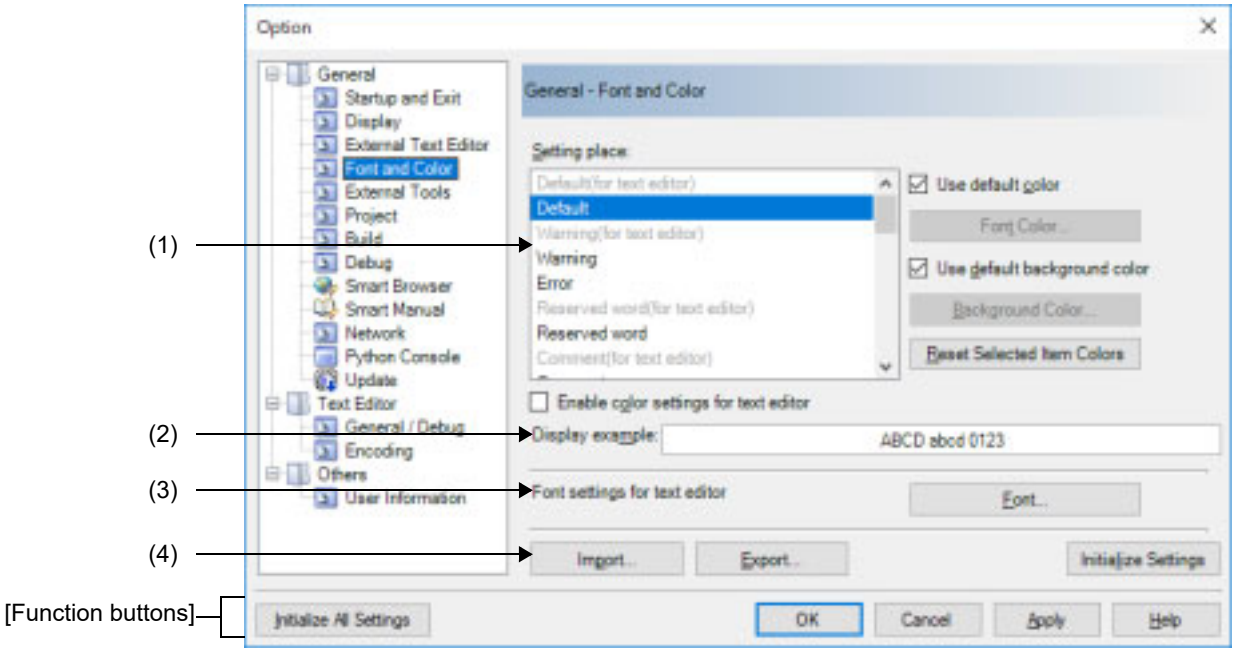
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Font and Color] category

Use this category to configure general settings relating to fonts and colors on each panel.

Figure A.39 Option Dialog Box ([General - Font and Color] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) Color options area
Use this area to configure the colors.

(a) [Setting place] area
Select a location from the list for which the color will be specified.
The relationships between the list items and default color settings are as follows.

Item	Example			Description
Default(for text editor)	AaBbCc	Font color	Black	The standard display color in the text editor.
		Background color	White	
Default[Note 1]	AaBbCc	Font color	Black	The standard display color in all windows and panels[Note 2].
		Background color	White	
Warning(for text editor)	AaBbCc	Font color	Blue	This color indicates that the contents of a load module are older than those of the source file in the text editor.
		Background color	Default color	

Item	Example			Description
Warning	AaBbCc	Font color	Blue	Warning messages are displayed in this color in the Output panel, file names with warnings are displayed in this color in the Project Tree panel, and this color indicates that the contents of a load module are older than those of the source file in the Editor panel[Note 2].
		Background color	Default color	
Error	AaBbCc	Font color	Red	Error messages are displayed in this color in the Output panel, and file names with errors are displayed in this color in the Project Tree panel.
		Background color	LightGray	
Reserved word(for text editor)	AaBbCc	Font color	Brown	The reserved words of your compiler/assembler are displayed in this color in the text editor.
		Background color	Default color	
Reserved word	AaBbCc	Font color	Brown	The reserved words of your compiler/assembler are displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	Default color	
Comment(for text editor)	AaBbCc	Font color	Green	Comments (in the case of a C source file, "/* ... */") are displayed in this color in the text editor.
		Background color	Default color	
Comment	AaBbCc	Font color	Green	Comments (in the case of a C source file, "/* ... */") are displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	Default color	
String literal(for text editor)	AaBbCc	Font color	Gray	String literals are displayed in this color in the text editor.
		Background color	Default color	
String literal	AaBbCc	Font color	Gray	String literals are displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	Default color	
Control code(for text editor)	AaBbCc	Font color	Teal	Control characters are displayed in this color in the text editor.
		Background color	Default color	
Control code	AaBbCc	Font color	Teal	Control characters are displayed in this color in the Output panel and Editor panel[Note 2].
		Background color	Default color	
Highlight(for text editor)	AaBbCc	Font color	Not defined (the default color, and the colors for reserved words, comments, and string literals will be applied)	The outer frame of the background color for highlighting the current line in the text editor. The current line is highlighted when the [Enable line highlight for current] check box is selected for the [Text Editor - General / Debug] category in the Option dialog box.
		Background color	Magenta	
Highlight	AaBbCc	Font color	White	Highlighted areas in plug-in products and the like are displayed in this color and the outer frame of the background color for highlighting the current line in the Editor panel[Note 2].
		Background color	Magenta	

Item	Example			Description
Changed value	AaBbCc	Font color	Tan	Values changed via the execution of a user program are displayed in this color in the Memory panel, CPU Register panel, Local Variables panel, SFR panel, Watch panel.
		Background color	Cream	
Edit value(for text editor)	AaBbCc	Font color	Blue	Operators are displayed in this color in the text editor.
		Background color	Default color	
Edit value	AaBbCc	Font color	Blue	Values forcibly modified by the user are displayed in this color in the Memory panel, CPU Register panel, Local Variables panel, SFR panel, Watch panel and operators are displayed in this color in the Editor panel[Note 2].
		Background color	Default color	
Current PC(for text editor)	AaBbCc	Font color	Black	The row with the current PC position is displayed in this color in the text editor.
		Background color	LightOrange	
Current PC	AaBbCc	Font color	Black	The row with the current PC position is displayed in this color in the Editor panel[Note 2] and Disassemble panel. Only the background color is used in the Editor panel.
		Background color	LightOrange	
Breakpoint(for text editor)	AaBbCc	Font color	Not defined (the default color, and the colors for reserved words, comments, and string literals will be applied)	The line at which a break point is set is displayed in this color in the text editor.
		Background color	SalmonPink	
Breakpoint	AaBbCc	Font color	Black	The line at which a break point is set is displayed in this color in the Editor panel[Note 2] and Disassemble panel. Only the background color is used in the Editor panel.
		Background color	SalmonPink	
Update periodic	AaBbCc	Font color	Pink	Areas configured for real-time display updates are shown in this color in the Memory panel and Watch panel.
		Background color	Default color	
Read or fetch	AaBbCc	Font color	Default color	Locations that have been read or fetched are displayed in this color in the Trace panel [IECUBE] [Simulator].
		Background color	LightGreen	
Write	AaBbCc	Font color	Default color	Locations that have been written are displayed in this color in the Trace panel [IECUBE] [Simulator].
		Background color	Orange	
Read and write	AaBbCc	Font color	Default color	Locations that have been read and written are displayed in this color in the Trace panel [IECUBE] [Simulator].
		Background color	LightSkyBlue	

Item	Example			Description
Lost	AaBbCc	Font color	White	Locations that the value has been got from the debug tool is not correct in the Memory panel.
		Background color	LightGray	
Coverage 100%(for text editor)	AaBbCc	Font color	Not defined (the default color, and the colors for reserved words, comments, and string literals will be applied)	The line for which code coverage is at 100% is displayed in this color in the text editor.
		Background color	LightGreen	
Coverage 100%	AaBbCc	Font color	Default color	The line for which code coverage is at 100% is displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	LightGreen	
Coverage 1 - 99%(for text editor)	AaBbCc	Font color	Not defined (the default color, and the colors for reserved words, comments, and string literals will be applied)	The line for which code coverage is at 1 to 99% is displayed in this color in the text editor.
		Background color	LightPink	
Coverage 1 - 99%	AaBbCc	Font color	Default color	The line for which code coverage is at 1 to 99% is displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	LightPink	
Coverage 0%(for text editor)	AaBbCc	Font color	Not defined (the default color, and the colors for reserved words, comments, and string literals will be applied)	The line for which code coverage is at 0% (not yet executed) is displayed in this color in the text editor.
		Background color	LightGray	
Coverage 0%	AaBbCc	Font color	Default color	The line for which code coverage is at 0% (not yet executed) is displayed in this color in the Editor panel[Note 2] and Disassemble panel.
		Background color	LightGray	
Invalid	AaBbCc	Font color	Gray	Non memory-mapped areas in the Memory panel and filenames in the Project Tree panel that do not actually exist are displayed in this color.
		Background color	Default color	

Note 1. The [Default] text and background colors depend on the Windows settings of the host computer. Here, we use the Windows defaults, which are black text and white background.

Note 2. This setting does not apply to the text editor when the [Enable color settings for text editor] check box is selected.

(b) [Use default color]

☑	Displays items selected via the [Setting place] area using the standard text color.
☐	Displays items selected via the [Setting place] area with a user-defined text color. The [Font color...] button is enabled.

(c) [Use default background color]

☑	Displays items selected via the [Setting place] area using the standard background color.
☐	Displays items selected via the [Setting place] area with a user-defined background color. The [Background Color...] button is enabled.

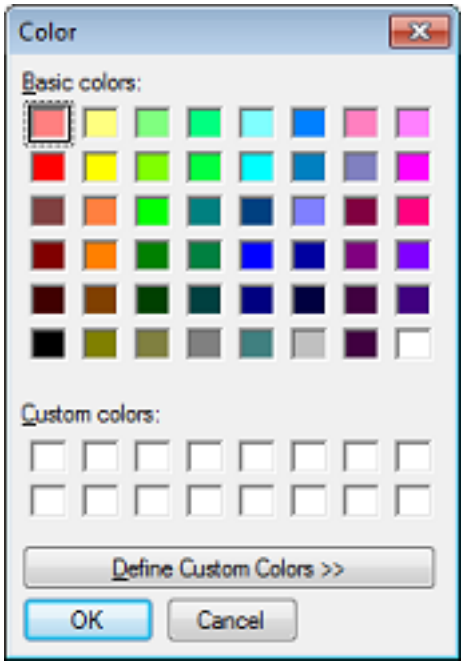
(d) [Enable color settings for text editor]

☑	Enables items for the text editor in the [Setting place] area. This allows you to make individual settings for colors in the text editor regardless of the general settings for panels in CS+.
☐	Disables items for the text editor in the [Setting place] area (default).

(e) Buttons

Font Color...	The Edit Colors Dialog Box opens. Specify the text color of the item selected via the [Setting place] area. Note, however, that this button will be disabled if the [Use default color] check box is selected.
Background Color...	The Edit Colors Dialog Box opens. Specify the background color of the item selected via the [Setting place] area. Note, however, that this button will be disabled if the [Use default background color] check box is selected.
Reset Selected Item Colors	Resets the color information for the item selected via the [Setting place] area to the defaults.

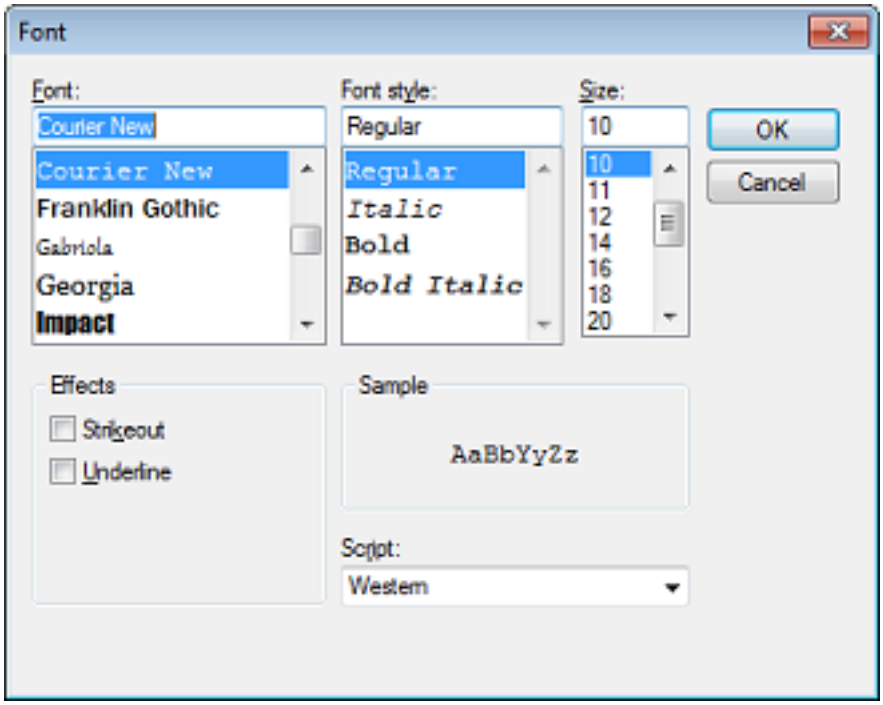
Figure A.40 Edit Colors Dialog Box



(2) [Display example] area
Display sample text using the color and font settings from the Color options area.
By default the string "AaBbCc" is shown, but you can type an arbitrary string directly into the text box.

(3) [Font settings for text editor] area
Click the [Font...] button to open the Font Dialog Box and configure the fonts for your text editor.

Figure A.41 Font Dialog Box



(4) Buttons

Import...	Opens the Open Option Setting File dialog box to refer the settings saved in the file to this category.
Export...	Opens the Save Option Setting File dialog box to save the settings of this category to a file.
Initialize Settings	Returns all currently displayed setting to their default values.

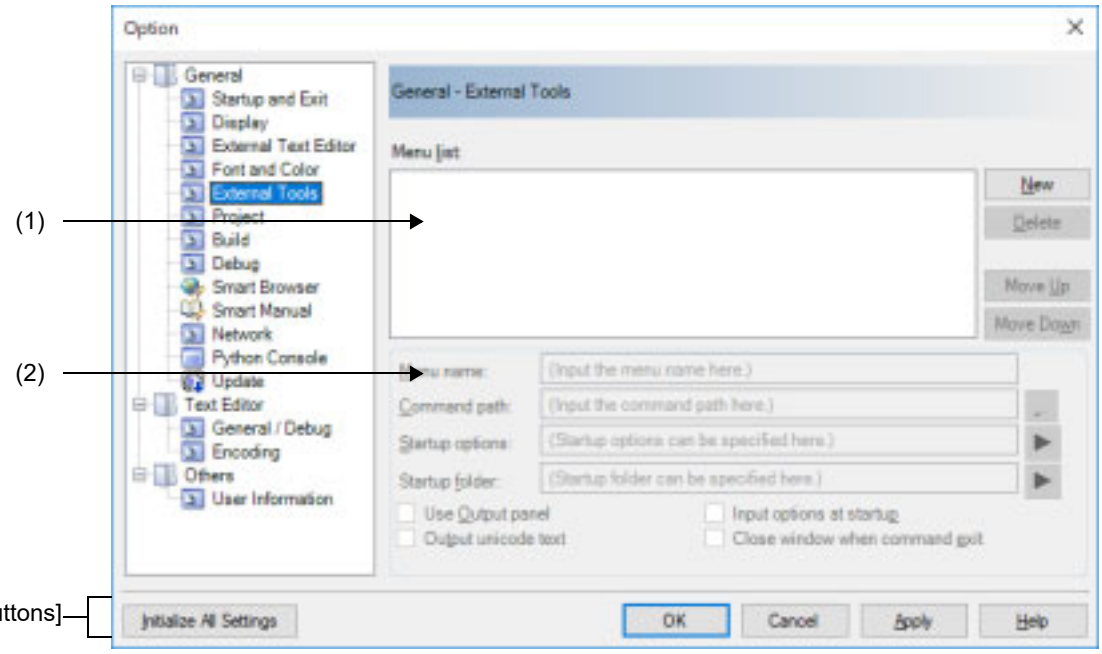
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - External Tools] category

Use this category to register external tools that can be launched directly from CS+, and configure these external tools when they are so launched.
Registering an external tool here allows it to be launched directly via the [Tool] menu.

Figure A.42 Option Dialog Box ([General - External Tools] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) Registered external tools area

(a) [Menu list] area
This area displays a list of menu items (added to the [Tool] menu) for launching external tools that have been added via this dialog box.
To add a new external tool, click the [New] button.
When you click the [New] button, the item "New External Tool" is added to the bottom of the list. In this state, configure the details of the external tool to add in the New registration area.
Up to 8 external tools can be registered.
To change the settings of an external tool that has already been registered, select the name of the external tool to modify and edit the desired setting.
The order of the items on this list is the same as the order in the menu.

(b) Buttons

New	Adds the item "New External Tool" to the bottom of the list for the registration of a new external tool. Note that this button will be disabled if 8 external tools have already been registered.

Delete	Removes the external tool that is selected in the list.
Move Up	Moves the external tool selected in the list up one row.
Move Down	Moves the external tool selected in the list down one row.

(2) New registration area
Use this area to configure the details of a newly added external tool.
Up to 8 external tools can be registered.

(a) [Menu name]
Specify the name to use in the menu for launching the external tool (up to 100 characters).
The name specified here will appear in the [Tool] menu, selecting that item will launch the external tool.
When you finish entering the menu name (the text box loses focus), the name automatically replaces the "New External Tool" string in the list.

(b) [Command path]
Either type in the name of the executable file (including absolute path) for the new external tool directly via the keyboard (up to 259 characters), or click the [...] button, and in the Select Program dialog box, specify the name of the executable file ([Startup folder] is automatically set to the absolute path to the folder where the executable file is located).

(c) [Startup options]
Specify the startup options for the new external tool (up to 256 characters).
The following placeholders can be specified by the button.
If you wish to specify more than one option, separate them by spaces.

%FileName%	The name of the file currently selected in the Project Tree panel is passed to the external tool.
%FilePath%	The absolute path of the file currently selected in the Project Tree panel is passed to the external tool.
%FileRelativePath%	The absolute path from the project folder of the file currently selected in the Project Tree panel is passed to the external tool.
%Line%	If the file currently selected in the Project Tree panel is being edited in the Editor panel, then the line on which the caret is located is passed (if the Editor panel does not have focus, then "1" is passed).
%OutputFile%	The program passes to the external tool the name of the module file (with absolute path) that is output when the project for the item currently selected in the Project Tree panel is built (if there is no selection, then nothing is passed).

(d) [Startup folder]
Specify the absolute path to the folder for launching the external tool (up to 247 characters).
The following placeholders can be specified by the button.
If you wish to specify more than one folder, separate them by spaces.

%ActiveProjectDir%	The absolute path of the active project folder of the item currently selected in the Project Tree panel is passed to the external tool (if the active project does not exist, then nothing is passed).
%ActiveProjectName%	The active project name of the item currently selected in the Project Tree panel is passed to the external tool.
%FileDir%	The absolute path of the folder where the file currently selected in the Project Tree panel exists is passed to the external tool.
%MainProjectDir%	The absolute path of the main project folder of the item currently selected in the Project Tree panel is passed to the external tool (if the main project does not exist, then nothing is passed).
%MainProjectName%	The main project name of the item currently selected in the Project Tree panel is passed to the external tool.
%MicomToolPath%	The absolute path of the install folder of this product is passed to the external tool.

%OutputDir%	The program passes the name of the folder (with absolute path) for the module that is output when the project for the item currently selected in the Project Tree panel is built (if there is no selection, then nothing is passed).
%ProjectDir%	The absolute path of the project folder of the item currently selected in the Project Tree panel is passed to the external tool.
%ProjectName%	The project name of the item currently selected in the Project Tree panel is passed to the external tool.
%TempDir%	The absolute path of the temporary folder is passed to the external tool.
%WinDir%	The absolute path of the Windows system folder is passed to the external tool.

(e) [Use Output panel]

☑	Displays messages that the new external tool outputs to stdout and stderr in the Output panel. Messages will be output to the Output panel's [*Tool Name*] tab ("*Tool Name*" is the string specified in [Menu name]).
☐	Uses the Windows command prompt for messages that the new external tool outputs to stdout and stderr (default).

(f) [Input options at startup]

☑	The Character String Input opens, enabling you to specify startup parameters for the new external tool.
☐	Does not specify startup parameters for the new external tool (default).

(g) [Output unicode text]
This item is only enabled if the [Use Output panel] check box is selected.

☑	Displays messages that the new external tool outputs to stdout and stderr in the Output panel using the Unicode character set.
☐	Displays messages that the new external tool outputs to stdout and stderr in the Output panel using the ASCII character set (default).

(h) [Close window when command exit]
This item is disabled if the [Use Output panel] check box is selected.

☑	Closes the Windows command prompt when the new external tool exits.
☐	Leaves the Windows command prompt open after the new external tool exits (default).

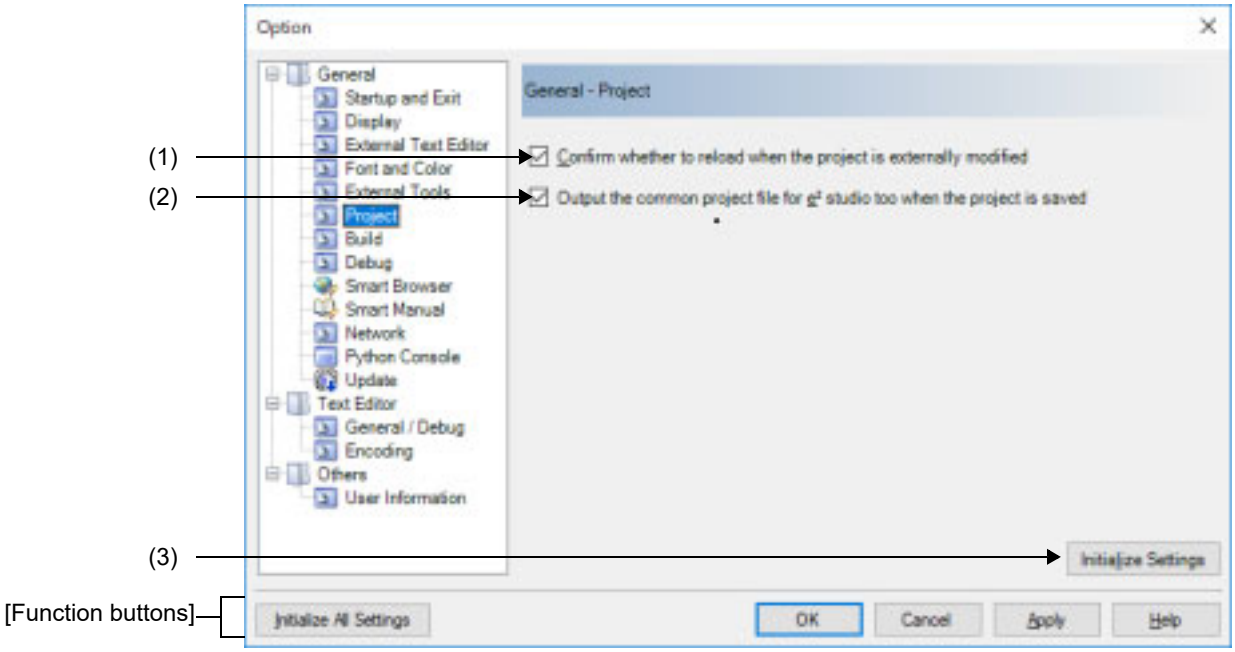
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Project] category

Use this category to configure general settings relating to the project.

Figure A.43 Option Dialog Box ([General - Project] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Confirm whether to reload when the project is externally modified]

☑	Monitors opened project files and subproject files for changes. When there is a change, a Message dialog box confirming whether to reload the file is displayed (default).
☐	Monitors opened project files and subproject files for changes. However, even when there is a change, no Message dialog box is displayed.

(2) [Output the common project file for e^2 studio too when the project is saved]

☑	Outputs the common project file for e^2 studio too when the project is saved (default).
☐	Does not output the common project file for e^2 studio when the project is saved.

(3) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

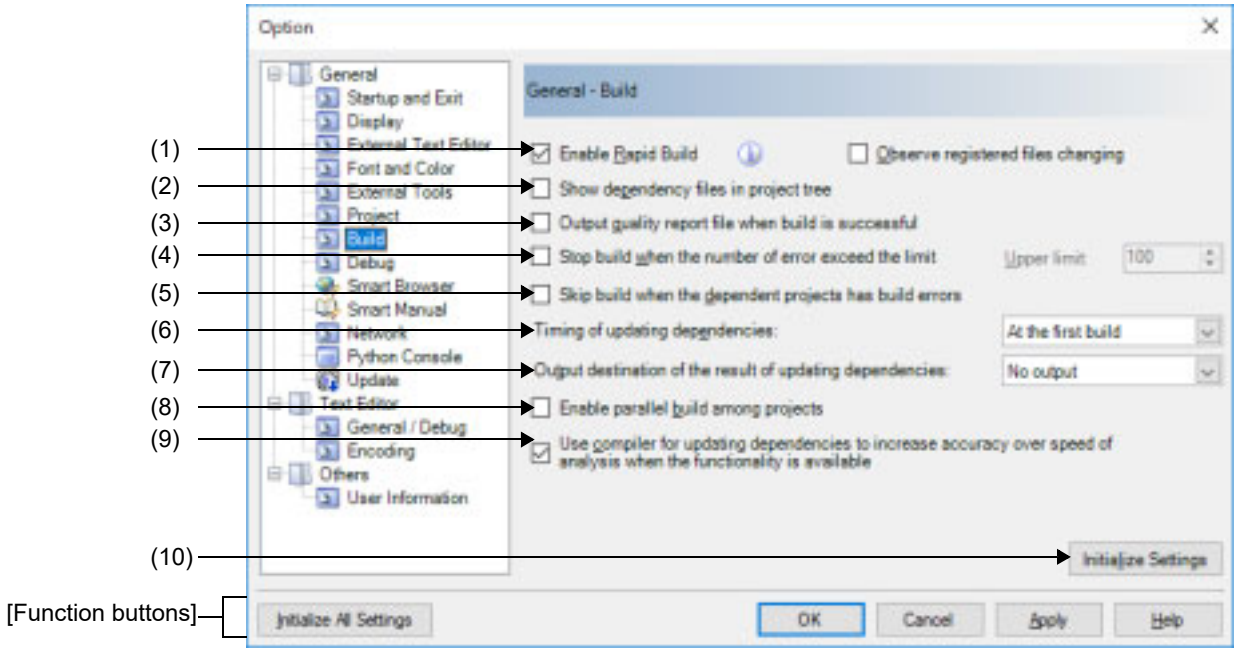
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Build] category

Use this category to configure general setting relating to building.

Figure A.44 Option Dialog Box ([General - Build] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Enable Rapid Build]

☑	Enables the rapid build[Note] feature (default).
☐	Does not use the rapid build feature.

Note This feature automatically begins a build when the source file being edited is saved.
Enabling this feature makes it possible to perform builds while editing source files.
If this feature is used, we recommend saving frequently after editing source files.
For details on the rapid build feature, see the following.

- When the target project type is other than a debug-dedicated project: "2.8.3 Run a build in parallel with other operations"
- When the target project type is a debug-dedicated project: "E.5.4 Run a rapid build"

(a) [Observe registered files changing]

☑	Start s a rapid build when a source file registered in the project is edited or saved by an external text editor or the like.

☐	Does not start a rapid build when a source file registered in the project is edited or saved by an external text editor or the like (default).

Remark This item is only enabled if the [Enable Rapid Build] check box is selected.

Caution 1. The rapid build will not finish if this item is selected, and the files to be built have been registered for automatic editing or overwriting (e.g. by commands executed before or after the build).
If the rapid build does not finish, unselect this item, and stop the rapid build.

Caution 2. If this item is selected, a file that is registered in the project but does not exist (a file grayed out) will not be observed even if it is registered again by the Explorer etc.
To observe the file, reload the project file, or select this item again after unselecting this item and closing this dialog box.

(2) [Show dependency files in project tree]

☑	Displays the file group on which the source file depends on the project tree.
☐	Does not display the file group on which the source file depends on the project tree (default).

(3) [Output quality report file when build is successful]

☑	Output the quality report file when a build is successful.
☐	Does not output the quality report file when a build is successful (default).

Remark 1. The quality report file is not output when a debug-dedicated project is built and compiling or assembling is executed in file units.

Remark 2. The following information item is output to the quality report file.

- Time and date on which the file is created
- Log of the build results
- Information on the command file which is used during building
- Information on the detailed version of this product or the current project

Remark 3. The quality report file is output with the file name "QualityReport(*project-name.build-mode-name*).text" to the project folder of each project.
If a file having the same name exists, it will be overwritten.
It is also shown on the project tree, under the Build tool generated files node.

(4) [Stop build when the number of error exceed the limit]

☑	Stops the build if the total number of errors at the build reaches the number specified in [Upper limit].
☐	Does not stop the build even if the total number of errors at the build reaches the number specified in [Upper limit] (default).

(a) [Upper limit]
Specify the upper limit of the number of errors.
Either enter a number between 1 and 10000 directly via the keyboard, or specify a number via the buttons.
The default is 100.
Note that clicking on the [OK] or [Apply] button while this item remains blank causes the tab setting to remain at the previously saved value.

Remark This item is only enabled if the [Stop build when the number of error exceed the limit] check box is selected.

(5) [Skip build when the dependent projects has build errors]

☑	Checks if there is a build error in the dependent projects immediately before a project is built. When there is an error, the build of that project is skipped.
☐	Does not check if there is a build error in the dependent projects immediately before a project is built and runs the build of that project (default).

(6) [Timing of updating dependencies]
Select the timing for automatically updating dependencies from the drop-down list of either of the following:

At the first build	Updates dependencies immediately before executing the first build after opening the project (default).
At every build	Updates dependencies immediately before executing the build.

(7) [Output destination of the result of updating dependencies]
Select the output destination of the result of updating dependencies from a drop-down list.
The output file indicates file dependencies in the current build mode in a text-tree format. Nodes in the tree consist of source files registered with the project and files dependent on the respective source files. The files are recursively represented in relative paths to the project folder.

No output	Does not output the result of updating dependencies (default).
Output panel	Outputs the result of updating dependencies to the Output panel.
Project folder	Outputs the result of updating dependencies to a file (*.deps). The file is output to a folder below the project folder and having the name of the current build mode.

(8) [Enable parallel build among projects]

☑	Enables a parallel build among projects. Builds projects without any dependency in parallel and in a random order, and reduces the total build time.
☐	Does not perform a parallel build among projects (default).

Caution When projects should not be built in a random order, the dependency between projects needs to be set. See "2.4.7 Set the build order of projects" for the setting of the dependency between projects.

(9) [Use compiler for updating dependencies to increase accuracy over speed of analysis when the functionality is available]

☑	When the compiler which was selected for the project has a facility for acquiring information on dependencies, the use of the compiler to update the information on dependencies improves the precision rather than the speed of analysis (default). The facility for acquiring dependencies is available in CC-RH V1.00.00 and later versions, CC-RX V2.00.00 and later versions, and CC-RL V1.00.00 and later versions.
☐	Selects updating of dependencies through the CS+ facility for acquiring dependencies rather than by use of the compiler.

Remark 1. Enabling this option improves the precision of the analysis of dependencies since checking by the compiler covers dependencies that are within #if directives. A source file which has no modifications is not recompiled during building; however, updating the information on dependencies may take time.

Remark 2. The timing of updating the information on dependencies depends on the settings of [General -Build] - [Timing of updating dependencies] in the [Option] dialog box.

(10) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

[Function buttons]

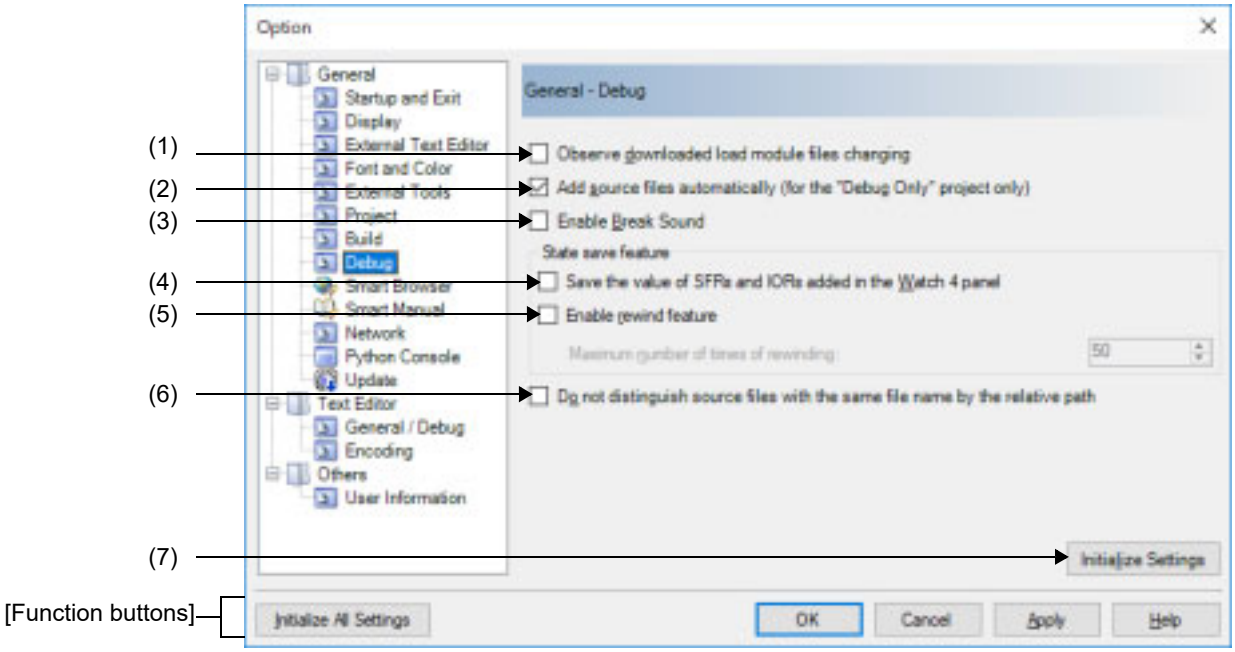
Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.

Button	Function
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Debug] category

Use this category to configure general setting relating to debugging.

Figure A.45 Option Dialog Box ([General - Debug] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Observe downloaded load module files changing]

☑	Monitors load module files downloaded to the debugging tool for changes. When there is a change, a message dialog box confirming whether to execute the download is displayed.
☐	Does not monitor load module files downloaded to the debugging tool for changes (default).

(2) [Add source files automatically (for the "Debug Only" project only)]

☑	In a debug-dedicated project, when downloading a load module file into the debug tool, source files are automatically added to the project tree (default).
☐	In a debug-dedicated project, when downloading a load module file into the debug tool, source files are not automatically added to the project tree.

Caution This function is only valid when a load module file has been added to the Download files node of the project tree.
When a load module file has been added in the [Download File Settings] tab on the Property panel of the debug tool, source files are not added to the project tree.

(3) [Enable Break Sound]

☑	Beeps when the execution of a user program is halted due to a break event (hardware or software break).
☐	Does not beep when the execution of a user program is halted due to a break event (hardware or software break) (default).

(4) [Save the value of SFRs and IORs added in the Watch 4 panel]

☑	Saves also the states of SFRs and IORs registered in the Watch 4 panel when saving the state of the debug tool. Note that only the value of SFRs and IORs which can be read or rewritten will be saved.
☐	Does not save the states of SFRs and IORs registered in the Watch 4 panel when saving the state of the debug tool. Note that only the value of SFRs and IORs which can be read or rewritten will be saved (default).

(5) [Enable rewind feature]

☑	Automatically accumulates the memory and register values just before the debug tool is executed.
☐	Automatically accumulates the memory and register values just before the debug tool is executed (default).

(a) [Maximum number of times of rewinding]
Specify the upper limit for accumulation by the rewind feature.
Either enter a number between 1 and 100 directly via the keyboard, or specify a number via the buttons.
The default is 50.
Note that clicking on the [OK] or [Apply] button while this item remains blank causes the tab setting to remain at the previously saved value.

Remark This item is only enabled if the [Enable rewind feature] check box is selected.

(6) [Do not distinguish source files with the same file name by the relative path]

☑	When a source file in a project is associated with a given address and is to be opened in a new panel or shown in front of an existing display if the file has already been displayed in a panel, the relative path to the file is not used. Selecting this check box may disable the following operations in some projects. - Displaying the current PC mark on the Editor panel - [Go To...] from the context menu on the Editor panel - Displaying the source text in the Mixed display mode on the Disassemble panel - [Jump to Source] from the context menu on the Disassemble panel Select this check box if you wish to designate source files by their filenames alone.
☐	When a source file in a project is associated with a given address and is to be opened in a new panel or shown in front of an existing display if the file has already been displayed in a panel, the relative path to the file is used (default).

Caution If you select this check box and there are multiple source files with the same name within a load module, you may not be able to select the correct files.

(7) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

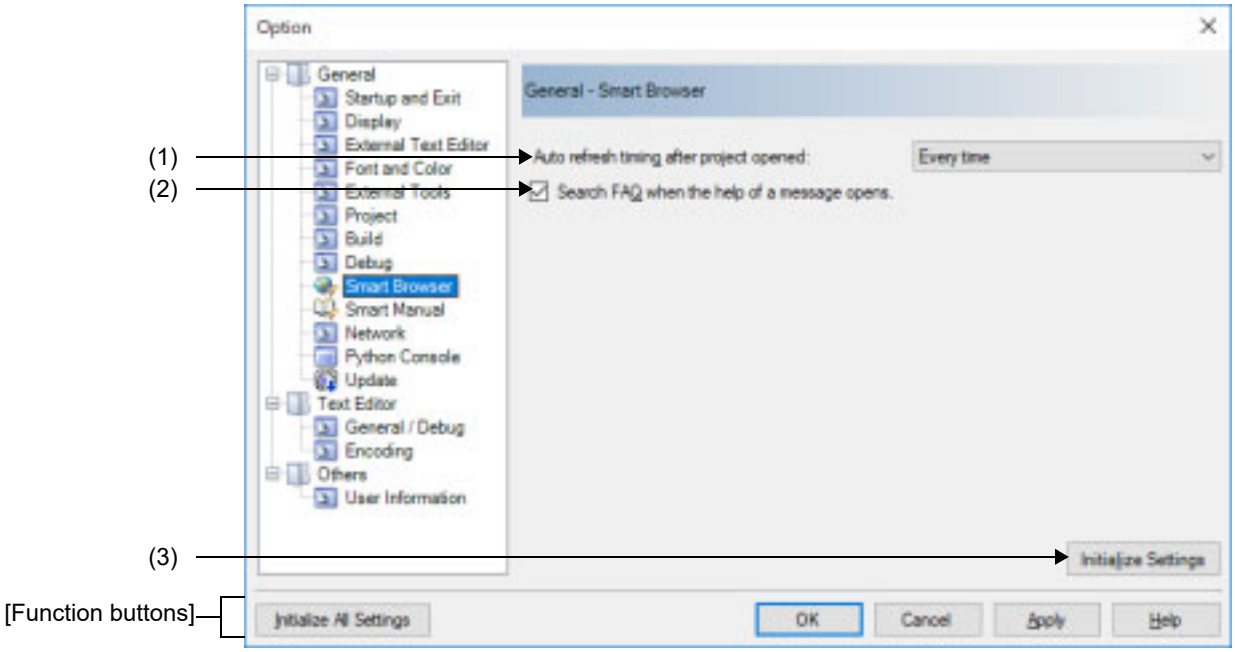
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Smart Browser] category

Use this category to configure general settings relating to the smart browser.

Figure A.46 Option Dialog Box ([General - Smart Browser] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Auto refresh timing after opening the project]
Select automatically refreshing of the display whenever a project is loaded or the active project is switched, the timing of automatic refreshing, or never to proceed with automatic refreshing from the drop-down list.

Once a week	Updates once a week.
Every day	Updates once a day.
Every time	Every time a project is loaded (default).
None	Automatic refreshing will not proceed.

(2) [Search FAQ when the help of a message opens.]

☑	Selects searching for FAQs when the help on messages is opened (default). The FAQs will be displayed in the default browser of Windows.
☐	Searching for FAQs will not proceed when the help on messages is opened.

(3) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

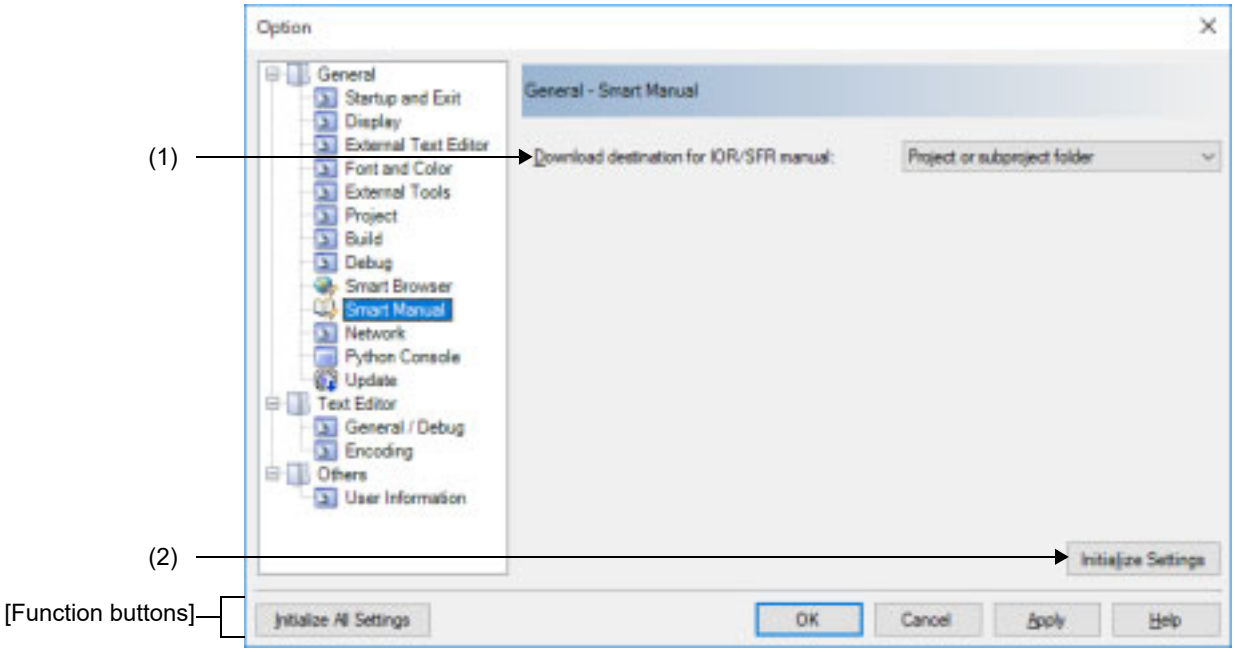
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Smart Manual] category

Use this category to configure general settings relating to the smart manual.

Figure A.47 Option Dialog Box ([General - Smart Manual] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Download destination for IOR/SFR manual]
Select the destination folder for downloading the hardware manual or register information file displayed on the Smart Manual panel [RL78][RX] from the drop-down list.

Project or subproject folder	Saves the information from the hardware manual or the register information file in the SmartManual Docs folder immediately under the folder for the main project or subproject for which the Smart Manual is being displayed (default).
Document folder	Saves the information from the hardware manual or the register information file in the SmartManual Docs folder immediately under the Documents folder for the logged in Windows user.
Do not download	Neither the information from the hardware manual nor the register information file is downloaded for display in the Smart Manual. Thus, the information is not displayed.

(2) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

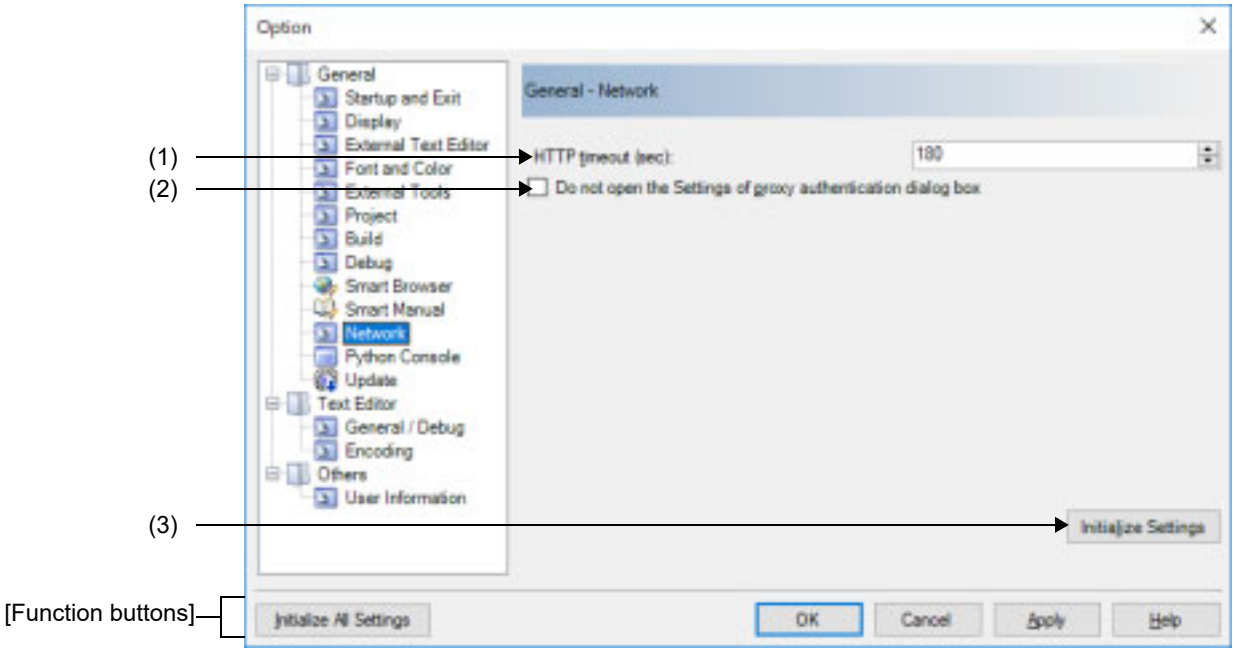
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Network] category

Use this category to configure general setting relating to the network.

Figure A.48 Option Dialog Box ([General - Network] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [HTTP timeout (sec)]
Specify a timeout value for HTTP to apply when the Smart Browser is attempting to acquire a list of the latest documents.
Either enter a number between 0 and 3600 directly via the keyboard, or specify a number via the buttons. The default is 180.
Note that clicking on the [OK] or [Apply] button while this item remains blank causes the tab setting to remain at the previously saved value.

(2) [Do not open the Settings of proxy authentication dialog box]

☑	Opens the Settings of proxy authentication dialog box when the proxy authentication is necessary for the Internet access.
☐	Does not open the Settings of proxy authentication dialog box even if the proxy authentication is necessary for the Internet access. Therefore, the function that the Internet access such as the smart browser is required is not available (default).

(3) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

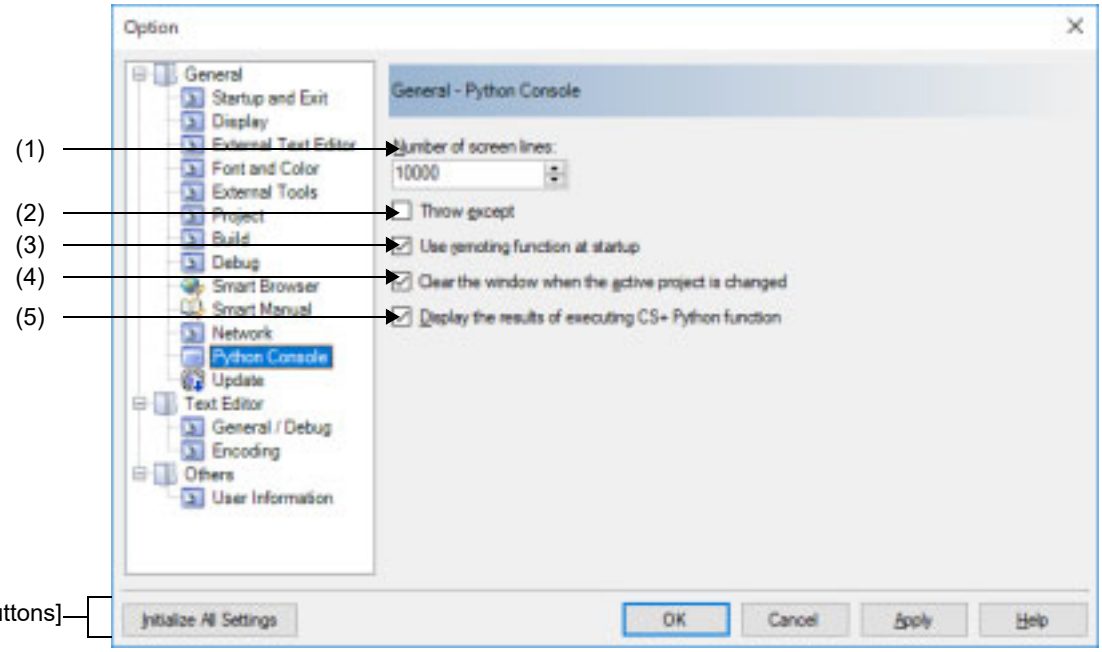
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Python Console] category

Use this category to configure general setting relating to the Python console.

Figure A.49 Option Dialog Box ([General - Python Console] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Number of screen lines]
Specify the number of screen lines for the Python console.
Either enter a number between 5000 and 100000 directly via the keyboard, or specify a number via the buttons. The default is 10000.

Remark This item can be set or referred by using CS+ Python property "common.ViewLine".

(2) [Throw exception]

☑	Throws an exception.
☐	Does not throw an exception (default).

Remark This item can be set or referred by using CS+ Python property "common.ThrowExcept".

(3) [Use remoting function at startup]

☑	Enables the function for linking to external tools when starting the Python console (default).
☐	Disables the function for linking to external tools when starting the Python console.

Remark This item can be set or referred by using CS+ Python property "common.UseRemoting".

(4) [Clear the window when the active project is changed]

☑	Clears the window when the active project is changed (default).
☐	Does not clear the window when the active project is changed.

Remark This item can be set or referred by using CS+ Python property "common.ConsoleClear".

(5) [Display the results of executing CS+ Python function]

☑	Displays the results of executing a CS+ Python function in the Python console (default).
☐	Does not display the results of executing a CS+ Python function in the Python console.

Remark This item can be set or referred by using CS+ Python property "common.ViewOutput".

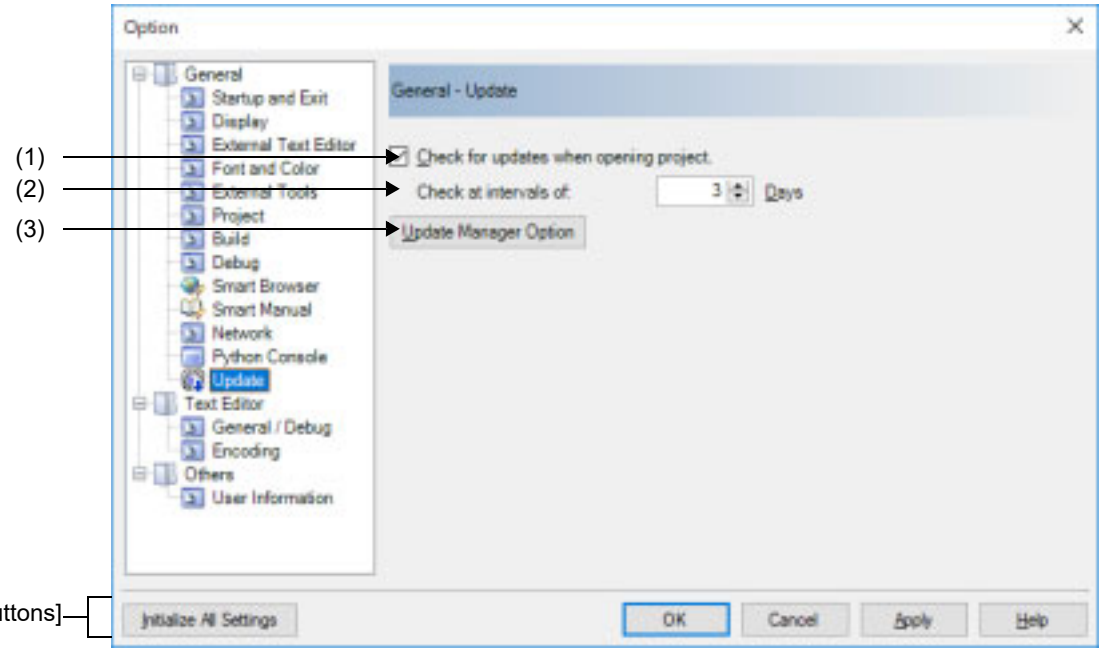
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[General - Update] category

Use this category to configure general setting relating to update.

Figure A.50 Option Dialog Box ([General - Update] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Check for updates when opening project.]

☑	Automatically checks for updates when a project is opened (default).
☐	Does not automatically check for updates when a project is opened.

(2) [Check at intervals of]
Specify the interval at which to check for updates.
Either enter a number between 0 and 99 directly via the keyboard, or specify a number via the ⇕ buttons.

(3) Buttons

Update Manager Option	Displays the Update Manager Options dialog box.

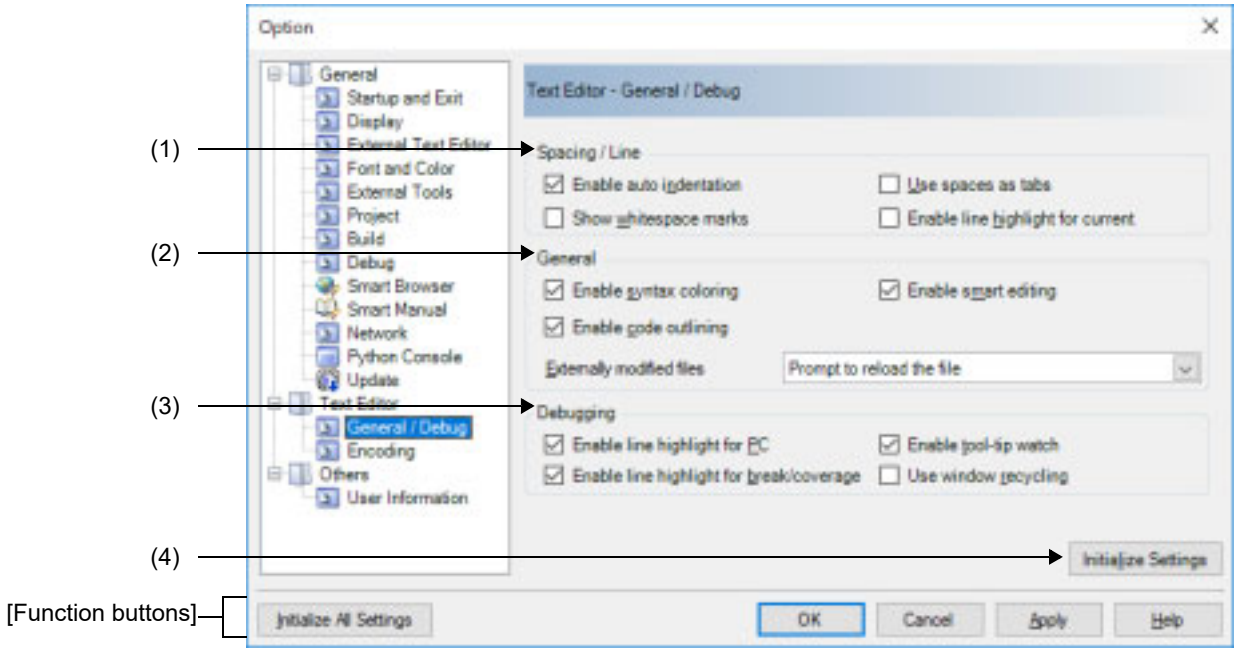
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[Text Editor - General / Debug] category

Use this category to configure general settings relating to the text editor.

Figure A.51 Option Dialog Box ([Text Editor - General / Debug] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Spacing]
Use this area to configure the spacing-related settings in the text editor.

(a) [Enable auto indentation]

☑	Code is intelligently indented depending on the code being typed in the text editor. E.g. Inside a function or not or coding a loop (default).
☐	Code is not indented depending on the code being typed in the text editor.

(b) [Use spaces as tabs]

☑	When you press the [Tab] key in the text editor, a group of space characters is inserted equal to the width of a tab.
☐	When you press the [Tab] key in the text editor, the tab character is inserted (default).

(c) [Show whitespace marks]

☑	Whitespace marks such as space and tab are shown in the text editor.

☐	Whitespace marks such as space and tab are not shown in the text editor (default).

(d) [Enable line highlight for current]

☑	Highlights the current line in the text editor.
☐	Does not highlight the current line in the text editor (default).

(2) [General]
Use this area to configure general settings in the text editor.

(a) [Enable syntax coloring]

☑	Enables the coloring of keywords in the text editor that have supported file-types (default).
☐	No coloring of keywords is displayed in the text editor.

(b) [Enable smart editing]

☑	Enables the smart edit function (default).
☐	Disables the smart edit function.

(c) [Enable code outlining]
This item is only available if the [Enable syntax coloring] check box is selected.

☑	Enables the code outlining feature in the text editor. This enables the expansion and collapse of code blocks for file-types that support it (default).
☐	Does not use the code outlining feature in the text editor.

(d) [Externally modified files]
This item allows you to specify the action to be taken for source files that are modified externally to the CS+.

Prompt to reload the file	When a file open in the text editor is modified externally to the CS+, a message dialog box will be displayed which asks you whether you wish to reload the file or not (default). If you click the [Yes] button on the message dialog box, this will reload the file from disk, losing all current changes to that file in the text editor. If you click the [No] button on the message dialog box, this will ignore the external changes and any existing modifications to that file in the text editor will remain.
Always reload the file	This will automatically reload the file when it is modified externally.
Never reload the file	This will ignore any externally-modified changes to source files and will not reload the file.

(3) [Debugging]
Use this area to configure general settings relating to debugging in the text editor.

(a) [Enable line highlight for PC]

☑	Shows the current PC as a full line highlight in the text editor (default).
☐	Does not show the current PC as a full line highlight in the text editor.

(b) [Enable tool-tip watch]

☑	Shows the value of variables in a tool-tip when hovering the mouse over the variable in the text editor (default).
☐	Does not show the value of variables in a tool-tip.

(c) [Enable line highlight for break/coverage]

☑	Shows the break and coverage as a full line highlight in the text editor (default).

☐	Does not show the break and coverage as a full line highlight in the text editor.

(d) [Use window recycling]

☑	Uses window recycling.
☐	Does not use window recycling (default).

Remark See "CS+ Integrated Development Environment User's Manual: Editor" for details about window recycling.

(4) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

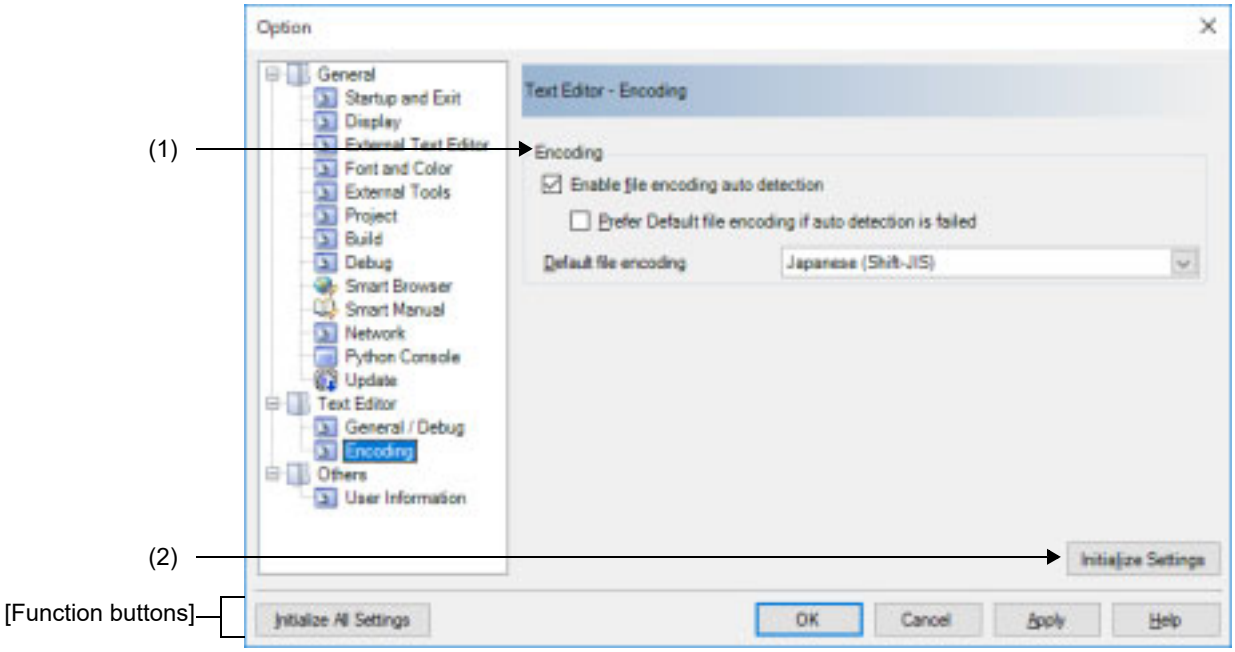
[Function buttons]

Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[Text Editor - Encoding] category

Use this category to configure general settings relating to the text editor.

Figure A.52 Option Dialog Box ([Text Editor - Encoding] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) [Encoding]
Use this area to make the settings related to the encoding used in the text editor.

(a) [Enable file encoding auto detection]

☑	Enables automatic detection of the encoding when a file is read (default).
☐	Disables automatic detection of the encoding when a file is read.

(b) [Prefer Default file encoding if auto detection is failed]
This item is only enabled when the [Enable file encoding auto detection] check box is selected.

☑	The default encoding takes precedence if automatic detection was not possible.
☐	The default encoding does not take precedence if automatic detection was not possible (default).

Remark If automatic detection does not obtain the expected encoding, changing the setting of this option may improve the situation.

(c) [Default file encoding]

This option is for the default file encoding that should be used when creating a new file in the Editor panel and automatic detection of encoding is disabled. In addition this encoding is used when the file being opened has a file encoding that cannot be detected or is not supported in the Editor panel currently.
Select the encoding to be set from the drop-down list.
The items of the drop-down list are displayed according to the following sequence.
Note that the same encoding and encoding which are not supported by the current OS will not be displayed.

- *Default encoding of the current OS* (default)
- Most recently used encodings (maximum 4)
- *Popular encodings for current locale*
  e.g. for United States locale it will be:
  - Western European (Windows)
  - Unicode (UTF-8)
- All other encodings supported by the OS (in alphabetical order)

Caution 1. If you wish to select a different encoding in the text editor and save the file, use [*Target* Save Option...] of the [File] menu for the editing file. Note that [Default file encoding] does not override the setting.

Caution 2. If you wish to make an encoding setting specific to building, modify the corresponding property of the build tool listed in the tables below, respectively. Note that [Default file encoding] does not override these settings.

Compiler Package	Property Of Build Tool
CC-RH	[Character encoding] property in the [Character Encoding] category from the [Compile Options] tab or [Individual Compile Options] tab
	[Character encoding] property in the [Character Encoding] category from the [Assemble Options] tab or [Individual Assemble Options] tab
CC-RX	[Character code of an input program] property in the [Source] category from the [Compile Options] tab, [Individual Compile Options(C)] tab, or [Individual Compile Options(C++)] tab
	[Character code of an output assembly-language file] property in the [Object] category from the [Compile Options] tab, [Individual Compile Options(C)] tab, or [Individual Compile Options(C++)] tab
	[Character code of an input program] property in the [Source] category from the [Assemble Options] tab or [Individual Assemble Options] tab
CC-RL	[Character encoding] property in the [Character Encoding] category from the [Compile Options] tab or [Individual Compile Options] tab
	[Character encoding] property in the [Character Encoding] category from the [Assemble Options] tab or [Individual Assemble Options] tab

(2) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

[Function buttons]

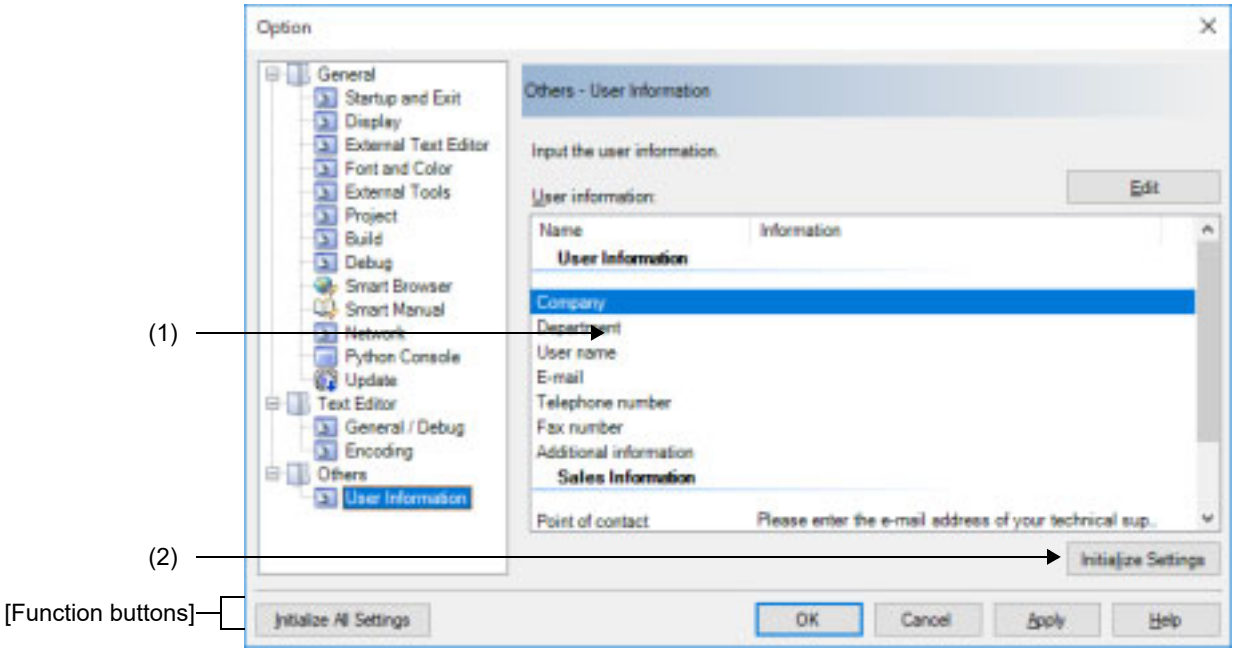
Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.

Button	Function
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

[Other - User Information] category

Use this category to configure other setting relating to user information.

Figure A.53 Option Dialog Box ([Other - User Information] Category)



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Options...].

[Description of each area]

(1) Information area

(a) [User information] area
This area displays a list of user information.
The content in the [Information] field can be edited. To edit the information, select one of the items from the list, click the [Edit] button, and then type the information directly into the text box (up to 256 characters).

(b) Buttons

Edit	Edits the content of the selected [Information] item by typing directly in the text box. This button is disabled if nothing is selected in the list.

(2) Buttons

Initialize Settings	Returns all currently displayed setting to their default values.

[Function buttons]

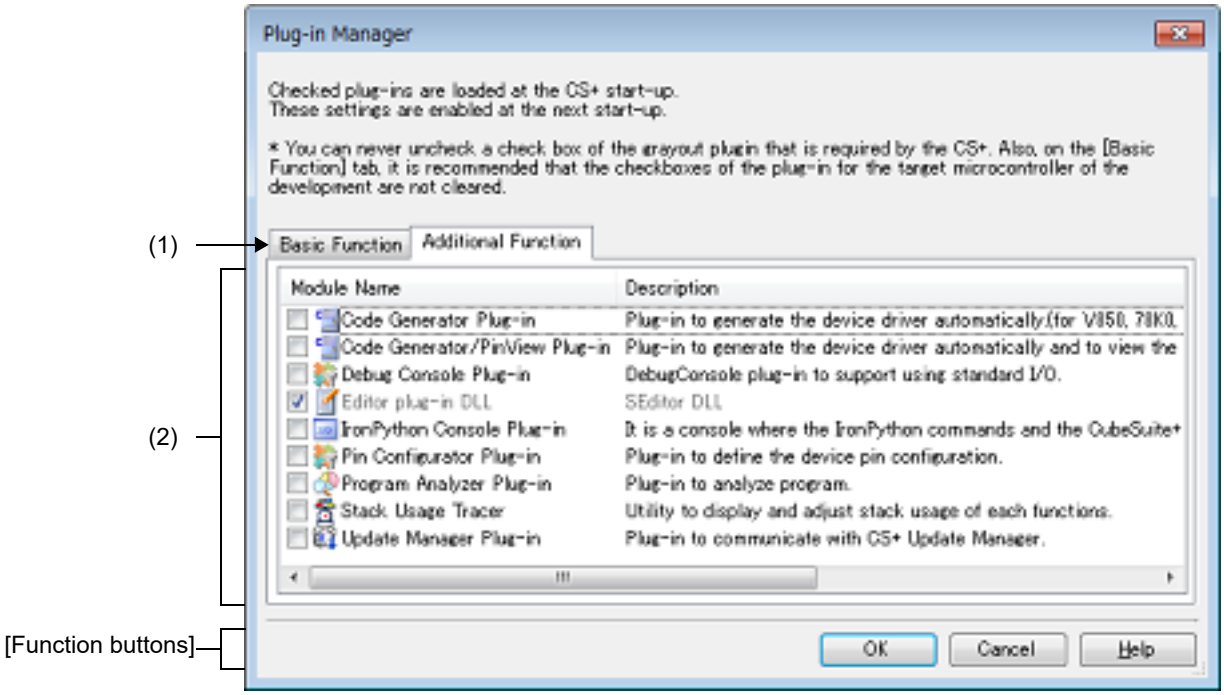
Button	Function
Initialize All Settings	Restores all settings on this dialog box to their default values. Note, however, that newly added items in the [General - External Tools] category will not be removed.
OK	Applies all setting and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.
Apply	Applies all setting (does not close this dialog box).
Help	Displays the help of this dialog box.

Plug-in Manager dialog box

This dialog box is used to set the plug-ins to be read in when this product is started.

Caution The settings in this dialog box are effective from the next time this product is started.

Figure A.54 Plug-in Manager Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Plug-in Setting...].

[Description of each area]

(1) Tab selection area
By selecting a tab, the plug-ins displayed in the plug-in list area are switched.
This dialog box has the following tabs:

- [Basic Function] tab
- [Additional Function] tab

(2) Plug-in list area
Select the plug-ins read when this product is started with check boxes.
For details of displayed items/setting method, see the description of each tab.

Remark You can select all check boxes or clear them by clicking buttons displayed on the upper left of this area.

	Selects all check boxes.
	Clears all check boxes.

	Toggles all check boxes.

[Function buttons]

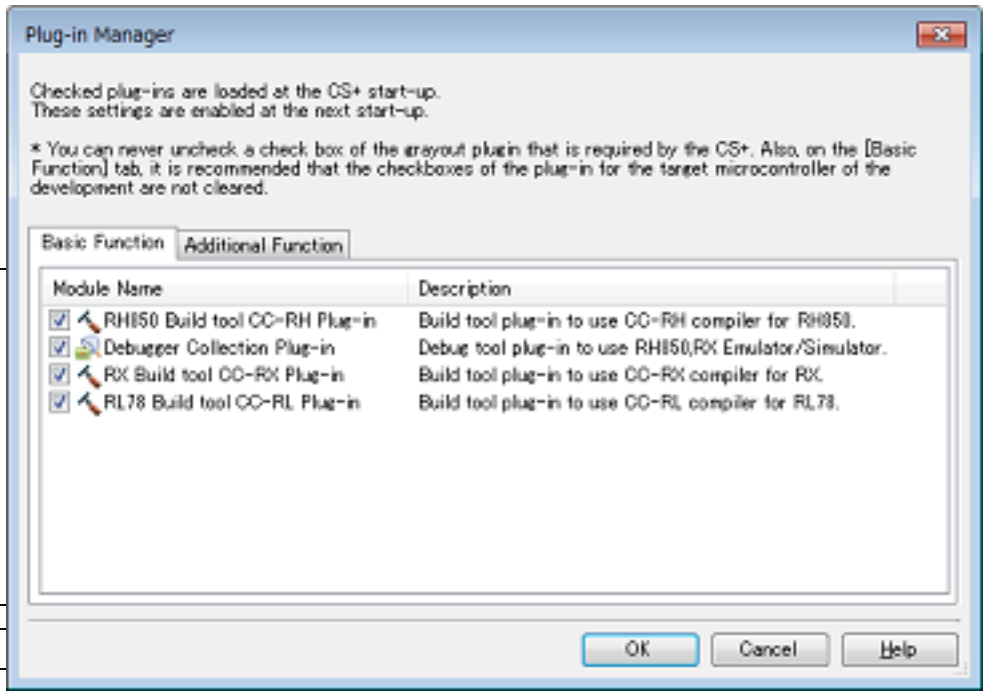
Button	Function
OK	Applies all setting and closes this dialog box.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

[Basic Function] tab

This tab is used to set the build tool and debug tool plug-ins to be read in when this product is started.

Caution We recommend that the check box for the plug-in for the microcontroller that is the target for development is not deselected.
Deselect the check boxes for the build tool and debug tool plug-ins that are for microcontrollers that are not the target for development. For example, if only the plug-in for the build tool is deselected, the file to be downloaded by the debug tool will not be found and an error will occur.

Figure A.55 Plug-in Manager Dialog Box: [Basic Function] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Plug-in Setting...].

[Description of each area]

(1) Plug-in list area
This area shows a list of the build tool and debug tool plug-ins installed in this product, in the following format.

Module Name	Shows the plug-in module names. The plug-ins read in when this product is started are selected with check boxes.
Description	Shows a simple description of the plug-in.

[Function buttons]

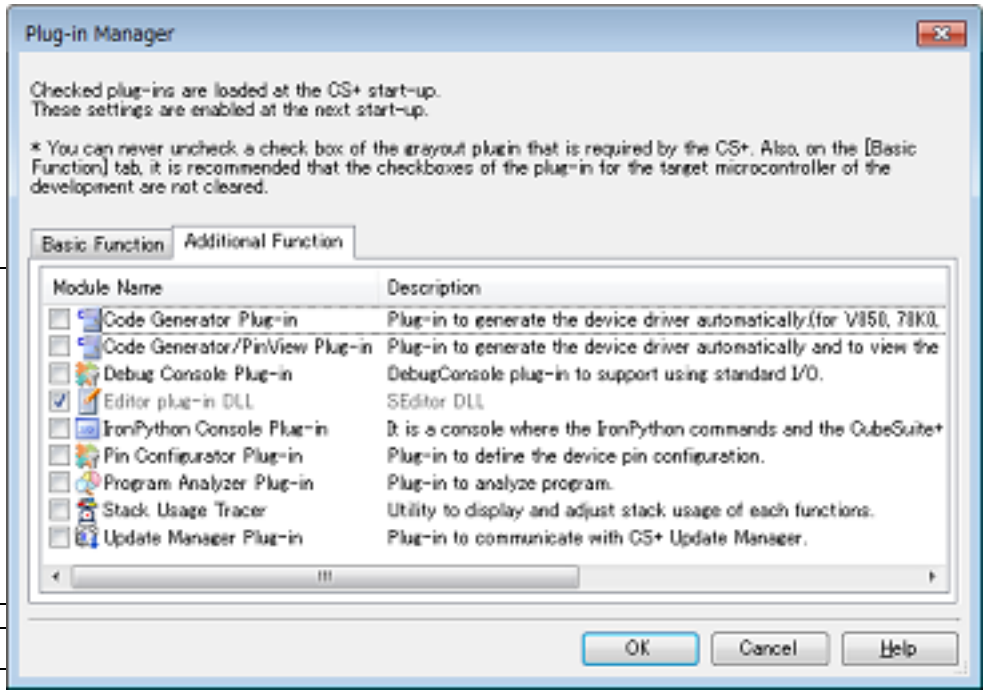
Button	Function
OK	Applies all setting and closes this dialog box.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

[Additional Function] tab

This tab is used to set the plug-ins other than build tool and debug tool plug-ins to be read in when this product is started (plug-ins present in the Plugins folder of this product).

Caution The plug-ins except for the Editor panel are disabled on this tab after default installation.
To use each plug-in, enable it on this tab and then restart CS+.

Figure A.56 Plug-in Manager Dialog Box: [Additional Function] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [Plug-in Setting...].

[Description of each area]

(1) Plug-in list area
This area shows a list of the plug-ins other than build tool and debug tool plug-ins installed in this product (plug-ins present in the Plugins folder of this product), in the following format.

Module Name	Shows the plug-in module names. The plug-ins read in when this product is started are selected with check boxes.
Description	Shows a simple description of the plug-in.

Remark 1. The Editor panel plug-in cannot be removed from the list of those read in, and so the display is grayed out.

Remark 2. When this product is started from the command line, plug-ins below the Plugins folder specified with the /np option do not appear in this area. When the /npall option is specified, plug-ins below the Plugins folder are not read in, and thus nothing appears in this area.
See "2.12 Manipulate CS+ on the Command Line" for details about the /np and /npall options.

[Function buttons]

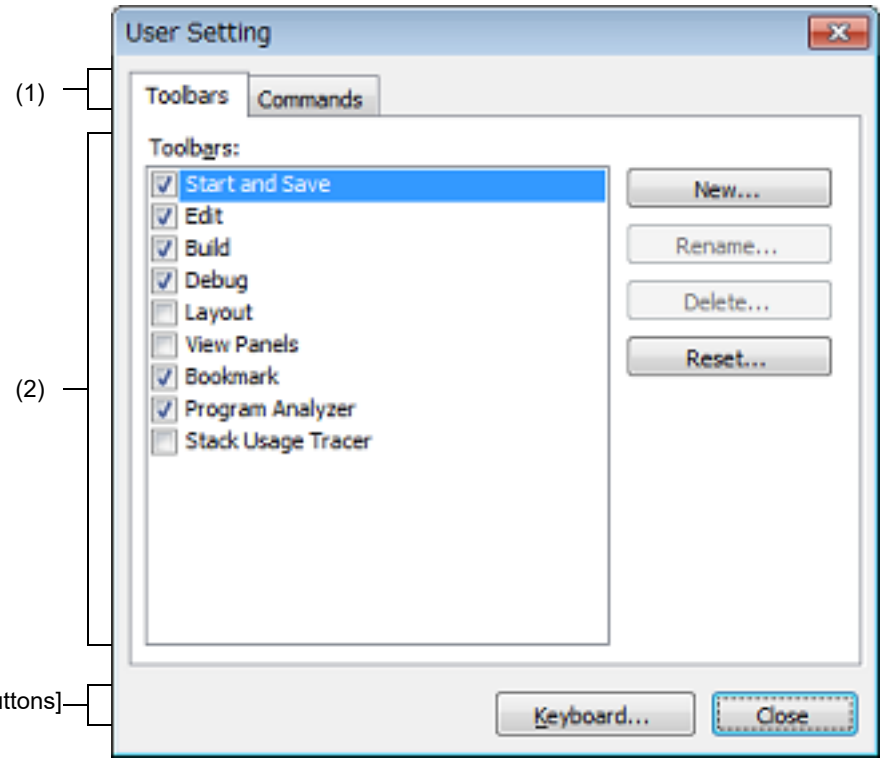
Button	Function
OK	Applies all setting and closes this dialog box.
Cancel	Cancels the designated condition and closes the dialog box.
Help	Displays the help of this dialog box.

User Setting dialog box

This dialog box allows you to customize toolbars and menus displayed in the Main window.
When this dialog box is open, any button on a toolbar or any menu item in a menu bar currently displayed in the Main window can be dragged and dropped to the desired position to change the sequence of buttons or menu items or perform button/menu item deletion.

Caution While this dialog box is open, you cannot use functions of toolbars/menus.
You can use these functions as usual after you close this dialog box.

Figure A.57 User Setting Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [User Setting...].

[Description of each area]

(1) Tab selection area
Tab selection allows you to switch between the customization targets.
This dialog box has the following tabs:

- [Toolbars] tab
- [Commands] tab

(2) Customization area
You can set detailed customization conditions.
For details of displayed items/setting method, see the description of each tab.

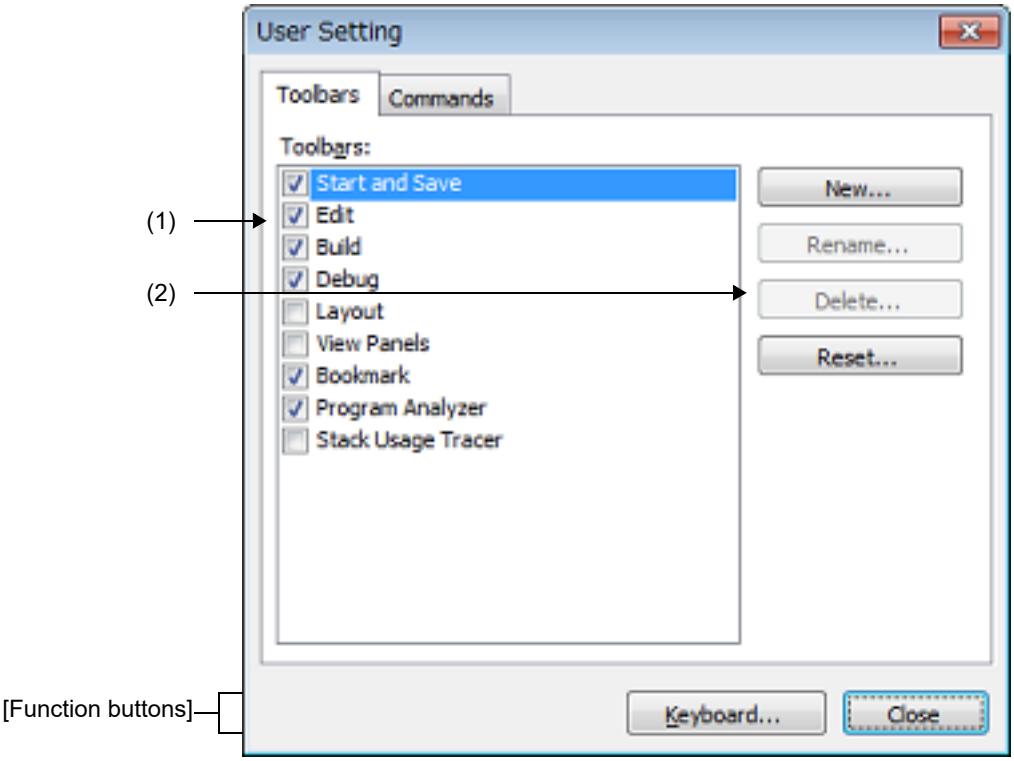
[Function buttons]

Button	Function
Keyboard...	Opens the Customize Keyboard dialog box to assign customized items to keys on the keyboard.
Close	Cancels the toolbar/menu customization setting and closes this dialog box.

[Toolbars] tab

You can set whether toolbars are displayed or not, change toolbar names, and make new toolbars.

Figure A.58 User Setting Dialog Box: [Toolbars] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [User Setting...].

[Description of each area]

(1) [Toolbars] area
Display a list of the names of registered toolbars.
A check mark appears in front of the name of the toolbar currently displayed in the Main window. By removing the check mark, you make a setting so that the toolbar will not be displayed.

(2) Buttons

New...	Opens the New Toolbar dialog box to make a new toolbar. The name of the new toolbar will be added to the list displayed in the [Toolbars] area with a check mark placed in front. Note that there are no buttons on the newly created toolbar. The register buttons on it, use the [Commands] tab.
Rename...	Opens the Rename Toolbar dialog box to change the name of the currently selected toolbar. This function is disabled when a toolbar other than those created by the user is selected.

Delete...	Deletes the selected toolbar. This function is disabled when a toolbar other than those created by the user is selected.
Reset...	Discards all changes made to the selected toolbar and returns it to the default state. When a toolbar created by the user is selected, this button returns the selected toolbar to the state with no buttons registered on it.

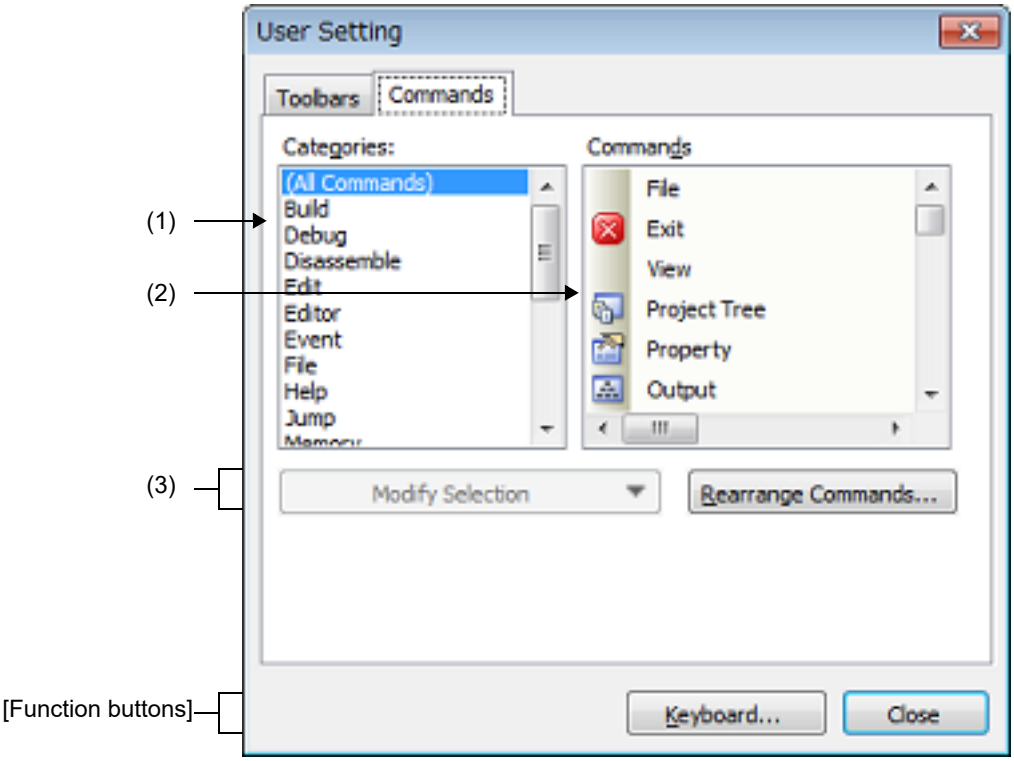
[Function buttons]

Button	Function
Keyboard...	Opens the Customize Keyboard dialog box to assign customized items to keys on the keyboard.
Close	Cancels the toolbar/menu customization settings and closes this dialog box.

[Commands] tab

You can customize items to include on a toolbar or a menu.

Figure A.59 User Setting Dialog Box: [Commands] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Tool] menu, select [User Setting...].

[Description of each area]

(1) [Categories] area
Display a list of the categories of commands that CS+ provides.

(2) [Commands] area
Display a list of the names of commands belonging to the category selected in the [Categories] area, together with their icons (if exist).
When "(All Commands)" is selected in the [Categories] area, the name of all commands that CS+ provides are displayed, together with their icons (if exist).
To add a command on a toolbar/menu, drag and drop the command name in this area onto the toolbar/menu displayed in the actual Main window.

(3) Buttons

Modify Selection	In order that the menu item or the button on a toolbar currently selected in the Main window, displays the following menu items beneath this button:	
	Menu Item	Description
	Reset	Resets the selected menu item/button.
	Delete	Deletes the selected menu item/button.
	Name	Displays the name of the selected menu item/button.
	Default Style	Checking this menu item returns the display style of the selected menu item/button to the default state (by default).
	Text Only (Always)	Checking this menu item displays the selected menu item/button by text only (the icon will not be displayed).
	Text Only (in Menu)	This is enabled only when a menu item is selected. Checking this menu item displays the selected menu item/button by text only (the icon will not be displayed).
	Image and Text	Checking this menu item displays the selected menu item/button by both text and icon.
	Begin a Group	Inserts separator just before the selected menu item/button.
	Recently Used	This item is not supported in this version.
Rearrange Commands...	Opens the Rearrange Commands dialog box for changing the arrangement (including addition and deletion) of menu items and tool bar buttons in the Main window.	

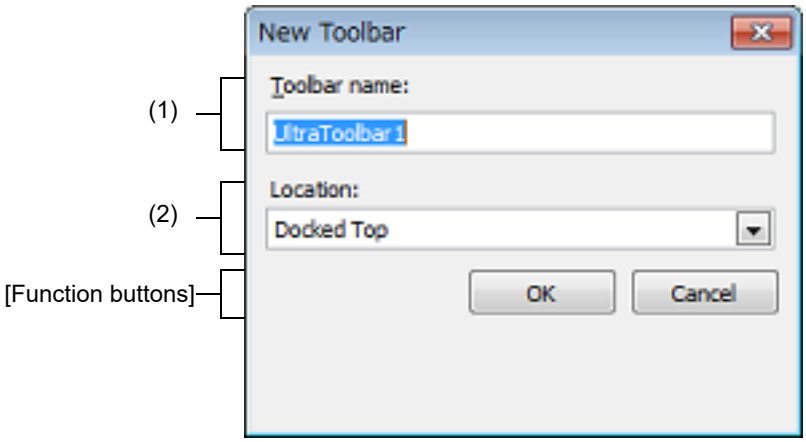
[Function buttons]

Button	Function
Keyboard...	Opens the Customize Keyboard dialog box to assign customized items to keys on the keyboard.
Close	Cancels the toolbar/menu customization setting and closes this dialog box.

New Toolbar dialog box

This dialog box is used to create a new toolbar to appear in the Main window.

Figure A.60 New Toolbar Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- In the [Toolbars] tab of the User Setting dialog box, click the [New...] button.

[Description of each area]

(1) [Toolbar name]
Type in the name of the new toolbar directly via the keyboard.
"UltraToolbar1" is specified by default.

(2) [Location]
Select the location for the new toolbar from the following drop-down list.
The location specified here is the location where the new toolbar will appear immediately after it is created (toolbars can be moved freely by dragging and dropping).

Docked Top	Displays the toolbar at the top of the Main window (default).
Docked Bottom	Displays the toolbar at the bottom of the Main window.
Docked Left	Displays the toolbar on the leftedge of the Main window.
Docked Right	Displays the toolbar on the rightedge of the Main window.
Floating	Displays the toolbar above the Main window, without docking it.

[Function buttons]

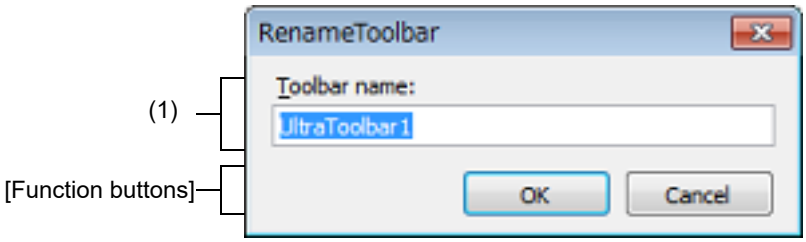
Button	Function
OK	Creates a new toolbar with the specified information, and closes this dialog box. The new toolbar appears in the list on the User Setting dialog box's [Toolbars] tab, with its check box selected.

Button	Function
Cancel	Ignores the setting and closes this dialog box.

Rename Toolbar dialog box

This dialog box is used to edit the name of a toolbar created by the user.

Figure A.61 Rename Toolbar Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- In the [Toolbars] tab of the User Setting dialog box, select the name of a user toolbar and then click the [Rename...] button.

[Description of each area]

(1) [Toolbar name]
Edit the toolbar name directly via the keyboard.
By default, the name of the currently selected toolbar is shown.

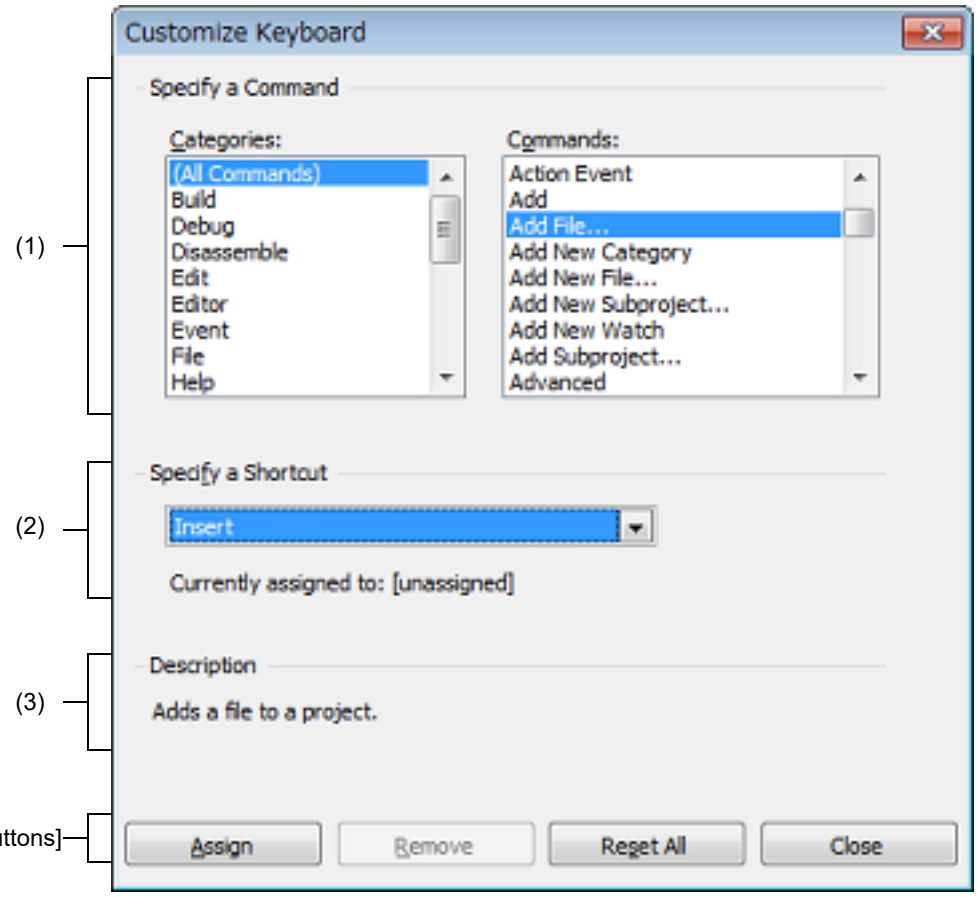
[Function buttons]

Button	Function
OK	Changes the selected toolbar to the specified name, and closes this dialog box.
Cancel	Ignores the setting and closes this dialog box.

Customize Keyboard dialog box

This dialog box is used to assign shortcut keys to the various commands.

Figure A.62 Customize Keyboard Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- In the [Toolbars] tab of the User Setting dialog box, click the [Keyboard...] button.

[Description of each area]

(1) [Specify a Command] area

(a) [Categories]
Display a list of the categories of commands provided by CS+.

(b) [Commands]
Display a list of the commands belonging to the category selected under [Categories] and their associated icons (if any).
If "(All Commands)" is selected under [Categories], then all commands provided by CS+ appear, with their associated icons (if any).

(2) [Specify a Shortcut] area
This area displays the default shortcut key currently assigned to the command selected under [Commands] (if no keys area assigned, then "None" appears).
To change the assigned shortcut key, select a key from the following drop-down list, and then click the [Assign] button.

None	Shift + F1 to F12	Ctrl + Shift + 0 to 9	Alt + Right
Insert	Ctrl + Insert	Ctrl + Shift + A to Z	Alt + Down
Delete	Ctrl + Delete	Ctrl + Shift + F1 to F12	Alt + 0 to 9
F1 to F12	Ctrl + 0 to 9	Alt + Backspace	Alt + F1 to F12
Shift + Insert	Ctrl + A to Z	Alt + Left	
Shift + Delete	Ctrl + F1 to F12	Alt + Up	

[Current assigned to] displays the command currently assigned to the shortcut key specified in the [Specify a Shortcut] area (if no commands are assigned to this key, then "None" appears).

(3) [Description] area
This area displays a popup describing the function of the command selected under [Commands].

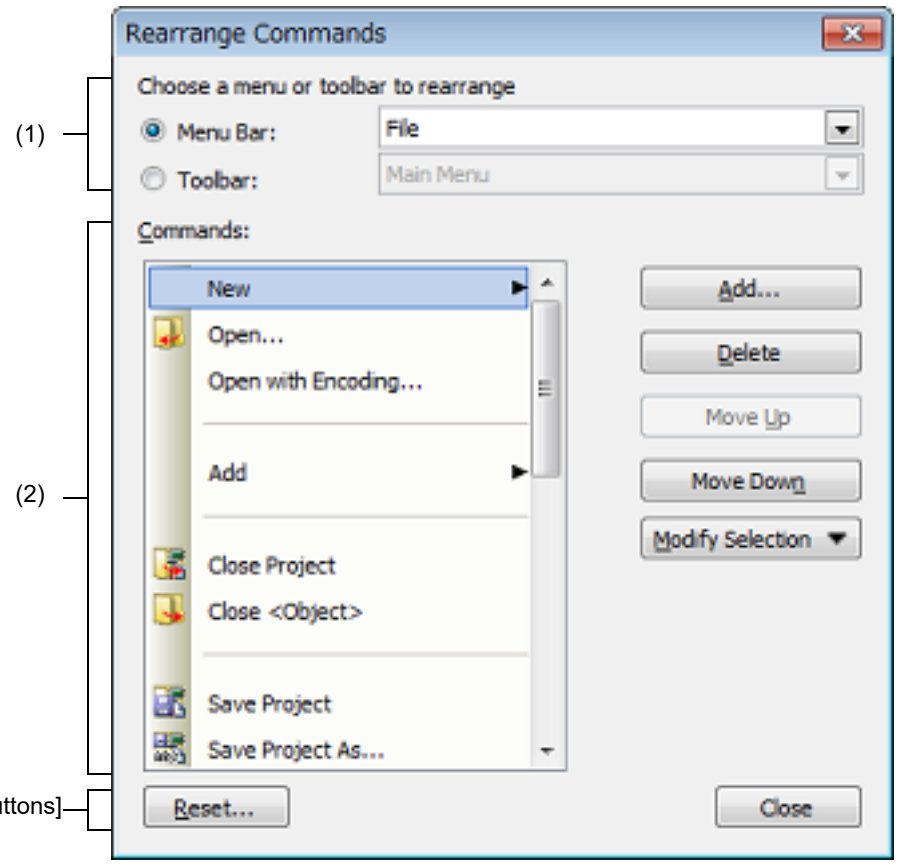
[Function buttons]

Button	Function
Assign	Assigns the shortcut key selected under [Commands] to the command selected under the [Specify a Shortcut] area. Note, however, that this button will be disabled if the key selected in the [Specify a Shortcut] area is already assigned to another command.
Remove	Removes the assignment of the shortcut key selected under the [Specify a Shortcut] area to the command selected under [Commands] ("None" will appear in the [Specify a Shortcut] area drop-down list). Note, however, that this button will be disabled if no keys have been assigned to the command selected under [Commands].
Reset All	Resets all shortcut key setting to their default values.
Close	Ends the shortcut key assignment and closes this dialog box.

Rearrange Commands dialog box

This dialog box allows you to change the arrangement (including addition and deletion) of menu items and buttons in the Main window.

Figure A.63 Rearrange Commands Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- In the [Commands] tab of the User Setting dialog box, click the [Rearrange Commands...] button.

[Description of each area]

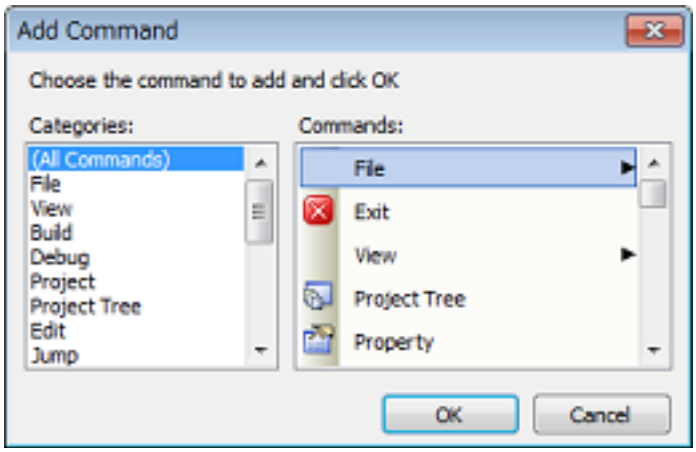
(1) [Choose a menu or toolbar to rearrange] area
This area allows you to specify the item whose position you want to change.
First select the [Menu Bar] if you want to change the menu item or [Toolbar] if you want to change the toolbar button using the option button, and then select the category to be changed from the drop-down list.

(2) [Commands] area
This area displays a list of commands belonging to the category selected in the [Choose a menu or toolbar to rearrange] area which will be displayed in the Main window.
You can change the arrangement of these commands using the following buttons in this area.

Add...	Opens the Add Command Dialog Box for selecting a command to be added above the command currently selected in this area. In the Add Command Dialog Box, all commands that can be added are displayed, grouped by their categories. First select the category of command in the [Categories] area, then select the command you want to add and press the [OK] button (pressing the [Cancel] button cancels the addition of the command and closes this dialog box).
Delete	Deletes the command currently selected in this area.
Move Up	Moves the command currently selected in this area up one line.
Move Down	Moves the command currently selected in this area down one line.
Modify Selection	Displays the following menu items for editing the arrangement of the menu item or button currently selected in this area.

Menu Item	Description
Reset	Resets the selected menu item/button.
Delete	Deletes the selected menu item/button.
Name	Displays the name of the selected menu item/button.
Default Style	Checking this menu item returns the display style of the selected menu item/button to the default state (by default).
Text Only (Always)	Checking this menu item displays the selected menu item/button by text only (the icon will not be displayed).
Text Only (in Menus)	This is enabled only when a menu item is selected. Checking this menu item displays the selected menu item/button by text only (the icon will not be displayed).
Image and Text	Checking this menu item displays the selected menu item/button by both text and icon.
Begin a Group	Inserts separator just before the selected menu item/button.
Recently Used	This item is not supported in this version.

Figure A.64 Add Command Dialog Box



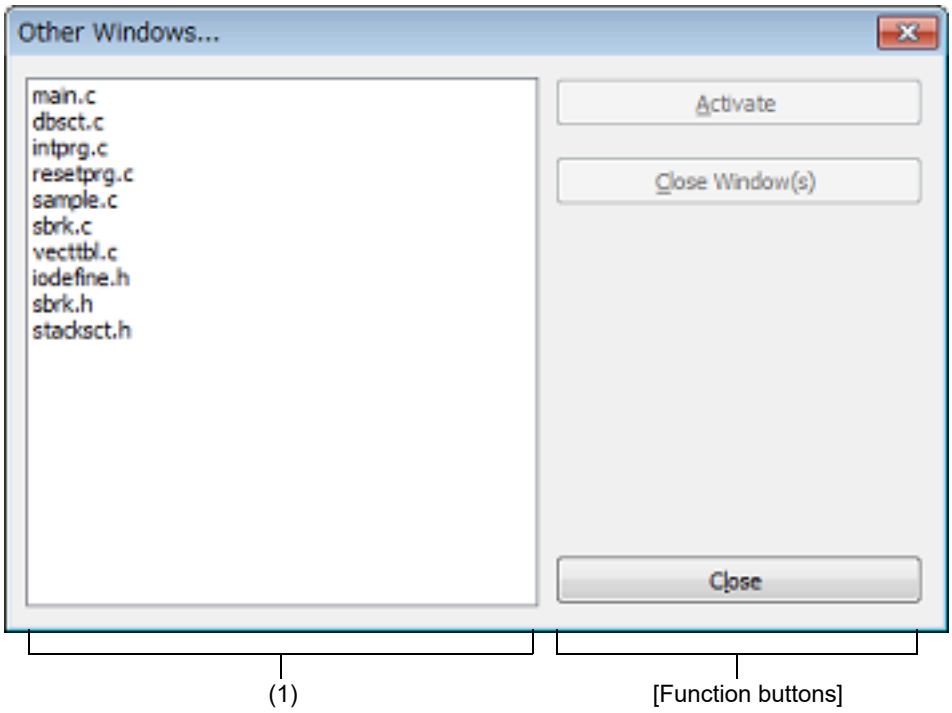
[Function buttons]

Button	Function
Reset...	Restores the arrangement of menu items or toolbar buttons belonging to the category currently selected in the [Choose a menu or toolbar to rearrange] area to its default state.
Close	Finishes the arrangement of commands and closes this dialog box.

Other Windows... dialog box

This dialog box is used to select one of the divide panels shown in the Main window to activate or close.

Figure A.65 Other Windows... Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Window] menu, select [Other Windows...].

Remark [Other Windows...] only appears when ten or more divide panels are open.

[Description of each area]

(1) Select divide panel area
Selecting a divide panel switches the target.

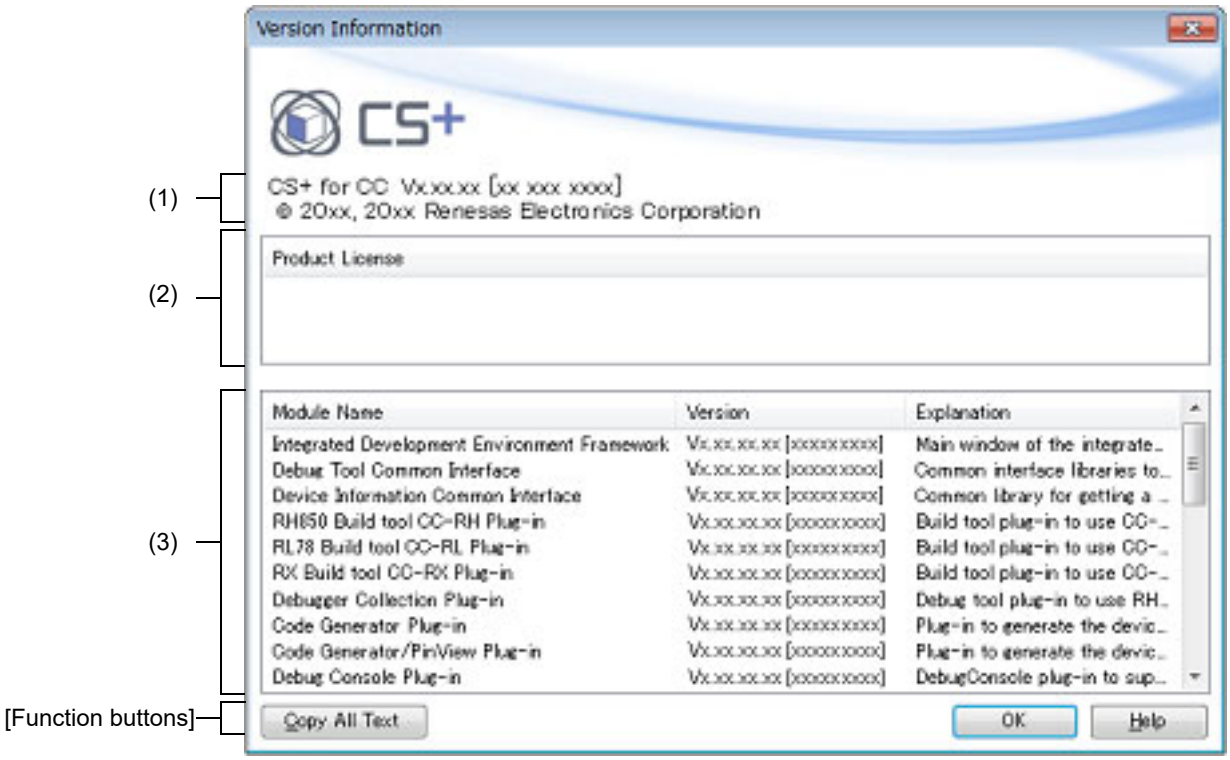
[Function buttons]

Button	Function
Activate	Activates the divide panel selected in the Select divide panel area, and close this dialog box.
Close Window(s)	Closes the divide panel selected in the Select divide panel area, and close this dialog box.
Close	Closes this dialog box.

Version Information dialog box

This dialog box is used to displays versions of CS+ and each plug-in product.

Figure A.66 Version Information Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Help] menu, select [About *Product name*...].

[Description of each area]

(1) Product name area
Shows the current version of CS+.

(2) [Product License] area
This displays license information corresponding to the license key.

(3) Installed product area
List each module name and its version used in CS+.

Module Name	Shows the module name.
Version	Shows the current version of the module.
Explanation	Shows the brief description of the module.

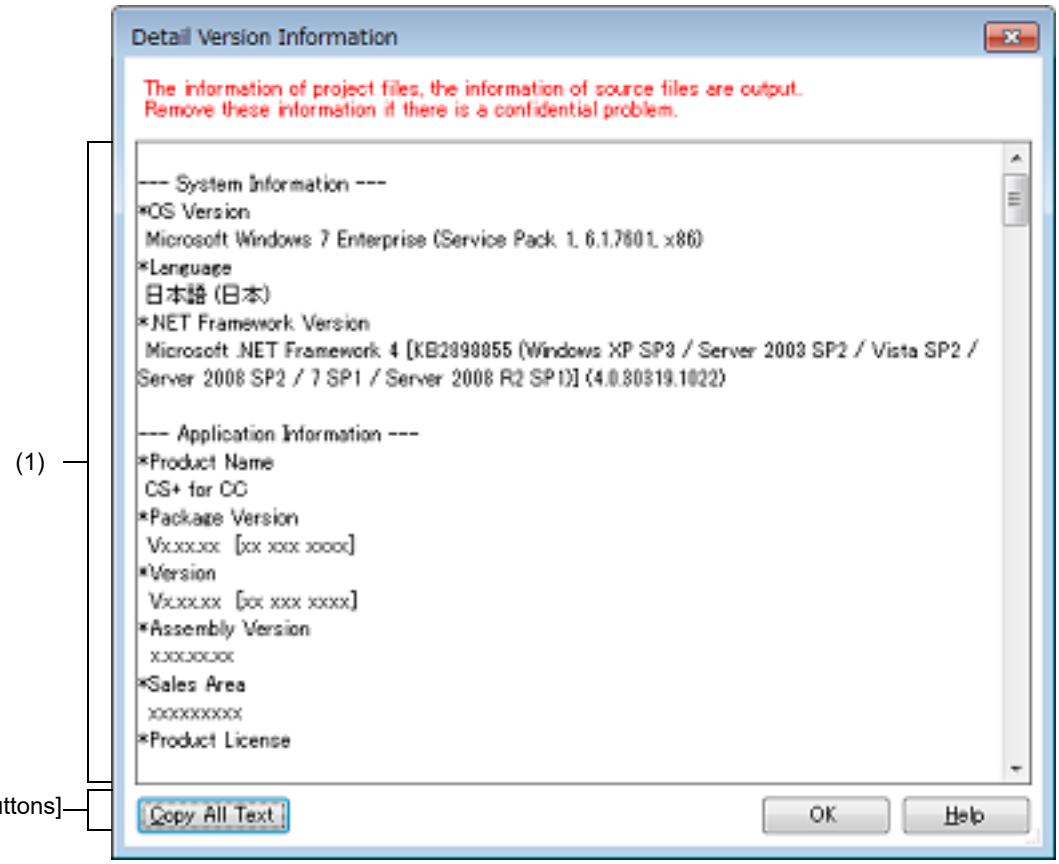
[Function buttons]

Button	Function
Copy All Text	Copies all the characters displayed to the clip board.
OK	Closes this dialog box.
Help	Displays the help of this dialog box.

Detail Version Information dialog box

This dialog box is used to displays detail version information of this product and the present project information.

Figure A.67 Detail Version Information Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [[Edit] menu (Detail Version Information dialog box-dedicated items)]
- [Context menu]
- [Function buttons]

[How to open]

- From the [Help] menu, select [Detail Version Information...].
- Click the [Detail Version Information...] button in the Message dialog box.

[Description of each area]

(1) Information text area
Show the detail version information of this product and the present project information.
The necessary information is as follows.

Information		Contents
System Information	OS Version	Windows information
	Language	
	.NET Framework Version	
Application Information	Product Name	Information of this product
	Package Version	
	Version	
	Assembly Version	
	Sales Area[Note 1]	
	Product License	
	Additional Information[Note 1]	
	Execution Place	
	Memory Usage	
Plug-in Information[Note 2]	Module name	Each plug-in information for this product in use
	Version[Note 3]	
	Assembly Version[Note 3]	
	DLL file name[Note 3]	
	URL[Note 1]	
Present Project Information[Note 4]	Main Project Information (Subproject Information)	This shows the absolute path of the project file (the absolute path including the *.mtpj file name for main projects, and the absolute path including the *.mtsp file name for subprojects).
	Microcontroller Information	The following item to the specified microcontroller information - Device name - Device file name: List of version
	Build Tool Information	The following out of the set build tool plug-in information[Note 5] - Build tool name - Version of the build tool plug-in - Version of the compiler package to use[Note 1]
	Debug Tool Information	The following out of the set debug tool plug-in information (if the debug tool is not set, hide) - Connected debug tool name - Version of the debug tool plug-in - Version of the debug tool control program
The Error Information Which Occurred[Note 6]		Detailed information on the occurred error information

Note 1. This is not shown when the information does not exist.

Note 2. The module name of a plug-in not read in has the suffix "(-)" added to the end.
The module name of a plug-in read in but not functioning has the suffix "(!)" added to the end.

Note 3. For a plug-in not read in, this is shown as "-".

Note 4. This is only shown when projects are opened (when there is subproject, line them up).

Note 5. These are not shown when the project type is a debug-dedicated project.

Note 6. This is only shown when this dialog box is opened by the [Detail Version Information...] button in Message dialog box.

[[Edit] menu (Detail Version Information dialog box-dedicated items)]

Copy	Copies the selected characters in the detail version information area to the clip board.
Select All	Selects all the characters in the detail version information area.

[Context menu]

Copy	Copies the selected characters in the detail version information area to the clip board.
Select All	Selects all the characters in the detail version information area.

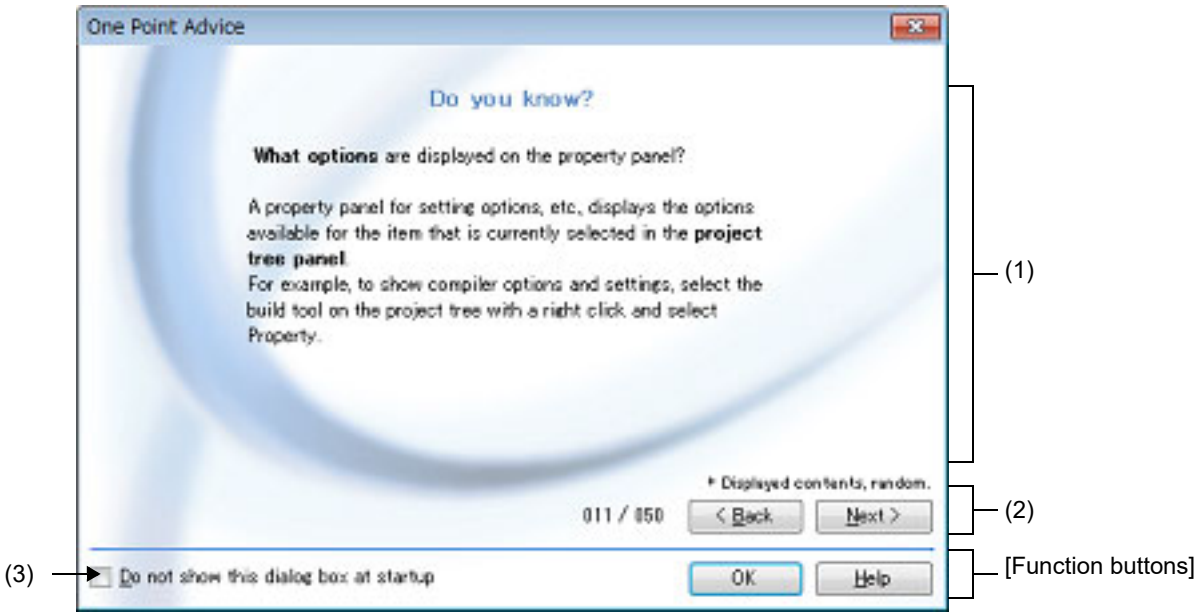
[Function buttons]

Button	Function
Copy All Text	Copies all the characters displayed in the detail version information area to the clip board.
OK	Closes this dialog box.
Help	Displays the help of this dialog box.

One Point Advice dialog box

This dialog box is used to display tips for using CS+.

Figure A.68 One Point Advice Dialog Box



The following items are explained here.

- [How to open]
- [Description of each area]
- [Function buttons]

[How to open]

- From the [Help] menu, select [One Point Advice...].
- Automatically opens at CS+ startup when [Do not show this dialog box at startup] is unchecked.

[Description of each area]

(1) Tips display Area
Tips for using CS+ are randomly shown (edit not allowed).

(2) Page feed area
The current page number in this dialog box and the buttons for page feed are shown.

Button	Function
Back	One previous page is shown. The button is disabled when the first page is shown.
Next	One next page is shown. The button is disabled when the last page is shown.

(3) [Do not show this dialog box at startup]
This configuration is saved as the one for the active user.

☑	Does not open this dialog box automatically at startup.
☐	Opens this dialog box automatically at startup when Main window appears (default).

Remark This property can also be set from the Option dialog box, under the [General - Startup and Exit] category.

[Function buttons]

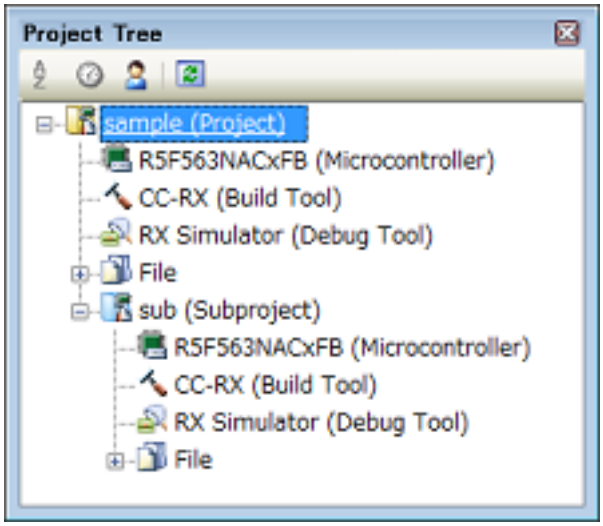
Button	Function
OK	Closes this dialog box.
Help	Displays the help of this dialog box.

B. GLOSSARY

This section defines terms used in the CS+ manual.

(1) Node
This refers to an element representing a branch or leaf on a tree view, connected with lines to show a hierarchy in the Project Tree panel and other views.

Figure B.1 Project Tree Panel



(2) List control
This displays a widget such as Unused in the panel settings areas.
Click ▼ to display a list of available selections.

(3) Context menu
This refers to the menu that appears when you right click in a window, over an icon, or other object on the screen.
The menu displays a list of operations currently available for the object you clicked.

Figure B.2 Sample Context Menu

C. HOW THE MANUALS ARE ORGANIZED

This section describes the manuals of CS+ for CC, the integrated development environment for the microcontrollers (RH850, RX, and RL78).
The manuals are organized as follows.

Remark The help that you can refer will differ depending on which products are installed.

(1) Installer
This manual describes the integrated installer and integrated uninstaller.

Remark This manual is not provided in the help form.

(2) Project Operation (This manual)
This manual describes an outline of CS+.
This manual covers the basic operations of CS+ and the procedure of build using CS+.

(3) Pin Configurator / Code Generator Pin View Operation[Note 1]
This manual describes the design tool (pin assignment).

(4) Code Generator Peripheral Function Operation[Note 1]
This manual describes the design tool (code generation).

(5) Code Generator API Reference[Note 1]
This manual describes the files and API functions output by the Code Generator.

(6) Editor
This manual describes the features of the editor.

(7) Compiler[Note 2]
This manual describes the roles and functions of the commands of the C compiler, assembler, and other tools included with CS+. It provides information necessary for development using the C compiler and assembler, as well as expert knowledge on effective coding techniques.
This manual also covers messages output by commands of the C compiler and assembler.

(8) C Source Converter[Note 2]
This manual describes the roles and conversion specifications of the command of the C source converter included with CS+.
The C source converter converts C source files created in a development environment using a C compiler for RL78 family, 78K0R microcontrollers, or 78K0 microcontrollers into C source files for the CC-RL which is a C compiler for the RL78 family.
This manual also covers messages output by the command of the C source converter.

(9) Build Tool Operation[Note 2]
This manual describes the build tool plug-in.
The build tool component is part of CS+. It enables various types of information to be configured via a GUI tool. This enables you to generate the load module or user library from your source files, according to your objectives.

(10) Debug Tool[Note 1]
This manual describes how to control the connection and execution settings of your debug tool. It also provides information for when you use the connected debug tool to debug your programs.

(11) Analysis Tool
This manual describes the analyze tools. The analysis tool analyzes the source program and information while the program is executing, and provides information about the functions and variables.

(12) Python Console
This manual describes the usage of the Python console and the functions, properties, classes, and events that have been extended for CS+.

(13) License Manager
This manual describes how to manage licenses of the development environments.

(14) Updater
This manual describes how to update tools and help files that have been installed.

(15) Message
This manual describes output messages of CS+ (excluding messages output by commands of the C compiler and assembler).

Note 1. This manual is specific for each microcontroller.

Note 2. This manual is specific for each compiler.

D. INPUT CONVENTIONS

This section describes input conventions.

D.1 Input Conventions

Below are input conventions for configuring information in the panels and dialog boxes provided by CS+.

(1) Character sets
The following character sets are allowed for input.

Table D.1 List of Character Sets

Character Sets	Outline
ASCII	Single-byte numbers, letters, and punctuation
Shift-JIS	Double-byte letters, numbers, punctuation, Hiragana, Katakana, and Kanji, and single-byte Katakana
EUC-JP	Double-byte letters, numbers, punctuation, Hiragana, Katakana, and Kanji, and single-byte Katakana
UTF-8	Double-byte letters, numbers, punctuation, Hiragana, Katakana, and Kanji (including Chinese), and single-byte Katakana

(2) Numbers
Numbers may be input in the following base formats.

Table D.2 List of Number Bases

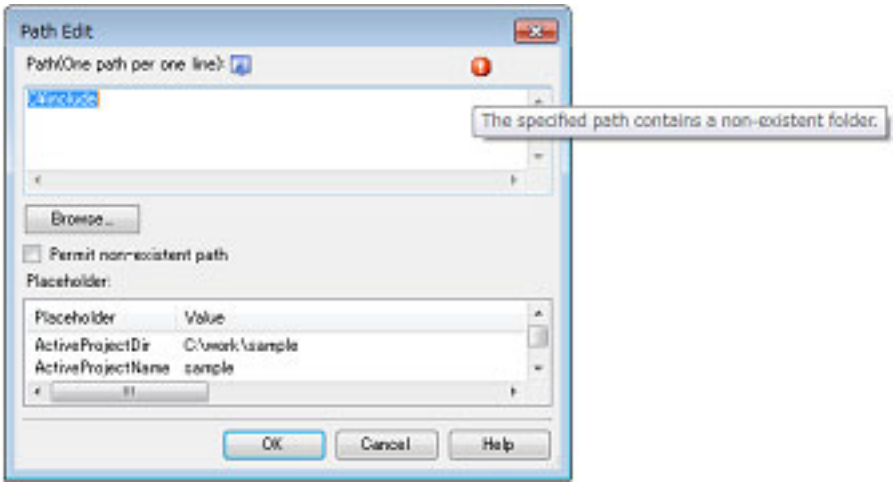
Number Bases	Outline
Decimal number	Starts with 1 to 9, followed by a sequence of the digits 0 to 9, and 0
Hexadecimal number	Starts with 0x, followed by a sequence of the digits 0 to 9 and the letters a to f (As for capital letter/small letter of the alphabet, it is pretermission.)

D.2 Displaying Icons at Locations of Input Errors

In some of the panels and dialog boxes provided by CS+, the icon will appear at a point where incorrect characters are entered or a required item is missing.

Remark Placing the cursor over the icon will pop up the information that indicates the characters to be entered (tips to fix the error).

Figure D.1 Sample Icons Shown at Locations of Input Errors



E. USING AN EXTERNAL BUILD TOOL

This section describes how to create a project when debugging files generated with a build tool other than the one provided by CS+ (CC-RH/CC-RX/CC-RL).

E.1 Overview

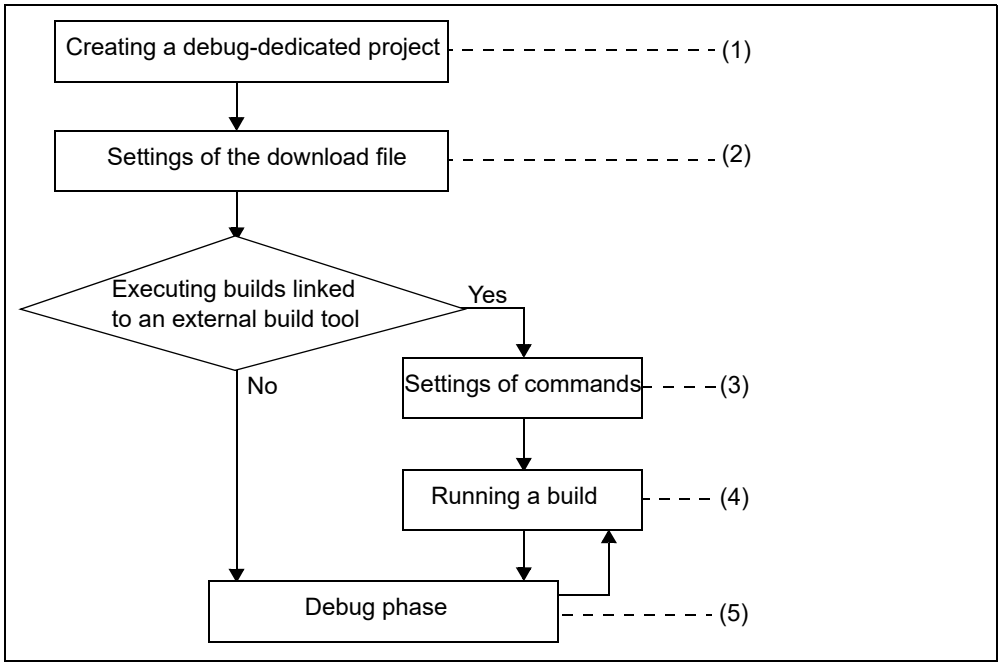
CS+ automatically determines the load module file or hex file output by the build tool provided by CS+ (CC-RH/CC-RX/CC-RL) as the download file for debugging. For this reason, you must create a dedicated project (hereafter referred to as a "debug-dedicated project") in order to debug a load module file or hex file created by an external build tool (e.g. a compiler or assembler other than the build tool provided by CS+) as the download file.

Creating a debug-dedicated project enables you to perform debugging without going through the build tool provided by CS+.

A debug-dedicated project also enables you to configure commands to execute build processes (e.g. "make") suited to your execution environment, and you can perform builds linked to an external build tool by executing these commands from CS+.

The operational sequence for using a debug-dedicated project is described below.

Figure E.1 Operational Sequence for Using a Debug-dedicated Project



(1): See "E.2 Create a Debug-dedicated Project".
(2): See "E.3 Add a File to a Project".
(3): See "E.4 Make Settings for Build Operations".
(4): See "E.5 Run a Build".
(5): See the "CS+ Integrated Development Environment User's Manual: Debug Tool"

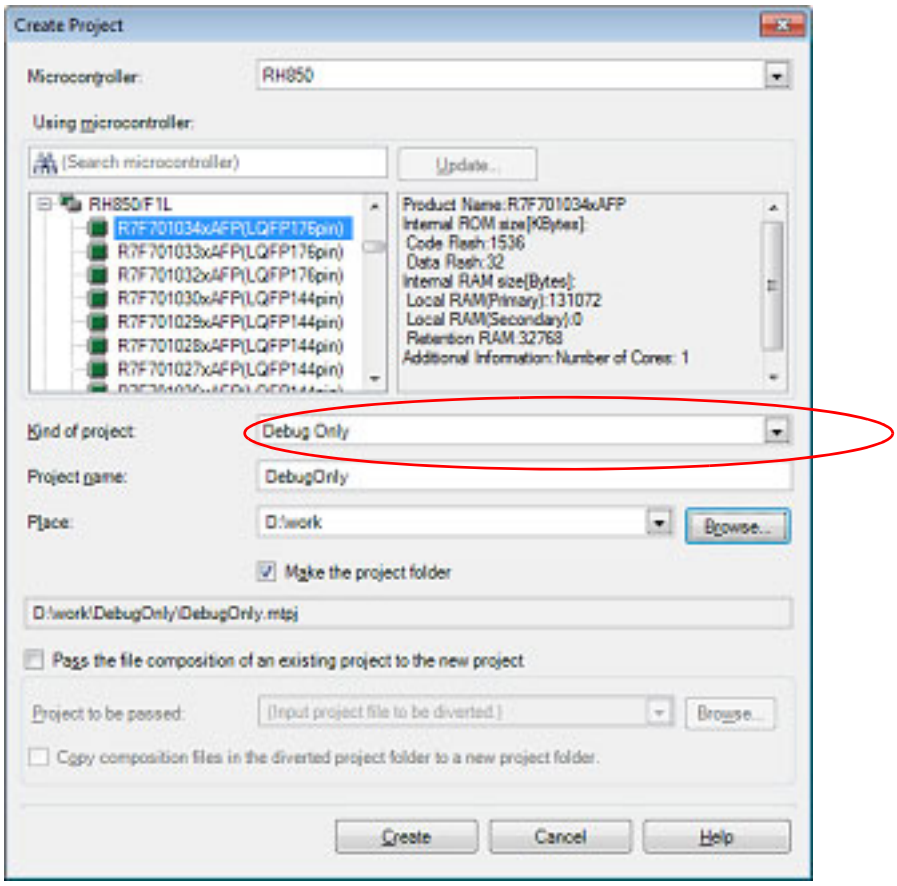
Caution The design tool (code generator) and the analyze tool are not available for a debug-dedicated project.

E.2 Create a Debug-dedicated Project

The creation of a debug-dedicated project is performed with the Create Project dialog box that is opened by selecting [Create New Project...] from the [Project] menu or [Add] >> [Add New Subproject...] from the context menu after selecting the Project node on the project tree, as well as the method of creating a project described in "2.3.2 Create a new project" or "2.3.3 Add a new subproject".

To create a debug-dedicated project, however, specify [Debug Only] with the [Kind of project] item on the Create Project dialog box.

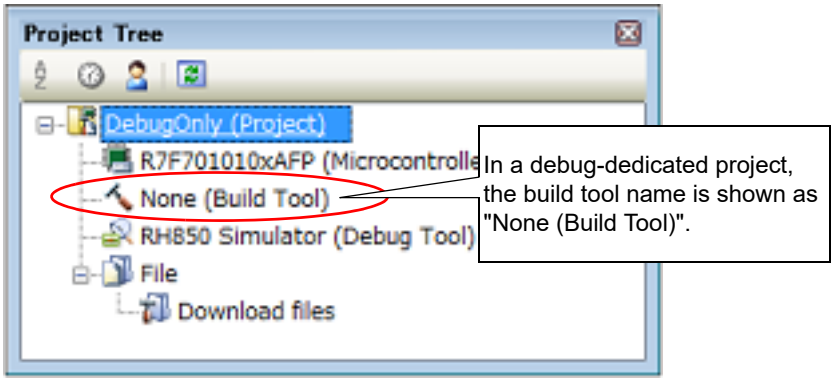
Figure E.2 Create Project Dialog Box (Creating a Debug-dedicated Project)



When you click the [Create] button after configuring all settings[Note], the project file of the debug-dedicated project is created in the location specified in the [Place] item and the structure of the created debug-dedicated project is displayed as a tree in the Project Tree panel.

Note See "2.3.2 Create a new project" or "2.3.3 Add a new subproject", for details on how to configure each item.

Figure E.3 Project Tree Panel (After Creating a Debug-dedicated Project)



E.3 Add a File to a Project

Add a download file to debug to the created debug-dedicated project.
Furthermore, to perform source level debugging, add C source files to be used for creation of the download file to the project.
This section describes how to add these files to the debug-dedicated project.

E.3.1 Add a download file

Add a load module file to the debug-dedicated project as the download file to debug.

Caution To perform source level debugging (step execution in source level units, etc.), a load module file with the symbol information must be added to the debug-dedicated project.

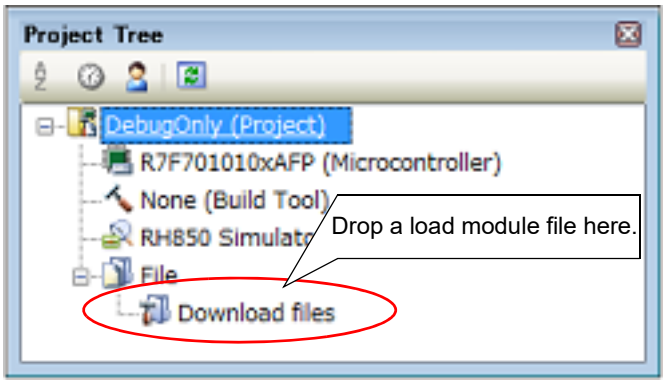
Remark The specified load module file is reflected automatically on the [Download File Settings] tab in the Property panel of the debugging tool.
When the specified load module file is downloaded to the debug tool, the source file is automatically added to the project tree based on the source file information acquired from the download file.
Also use this [Download File Settings] tab to configure the load module file type and download options, add a hex file or binary file to download additionally as well as the load module file added by this method below.
See the "CS+ Integrated Development Environment User's Manual: Debug Tool", for details on the downloading.

A load module file can be added by the following methods.

- Adding an existing file
- Creating and adding an empty file

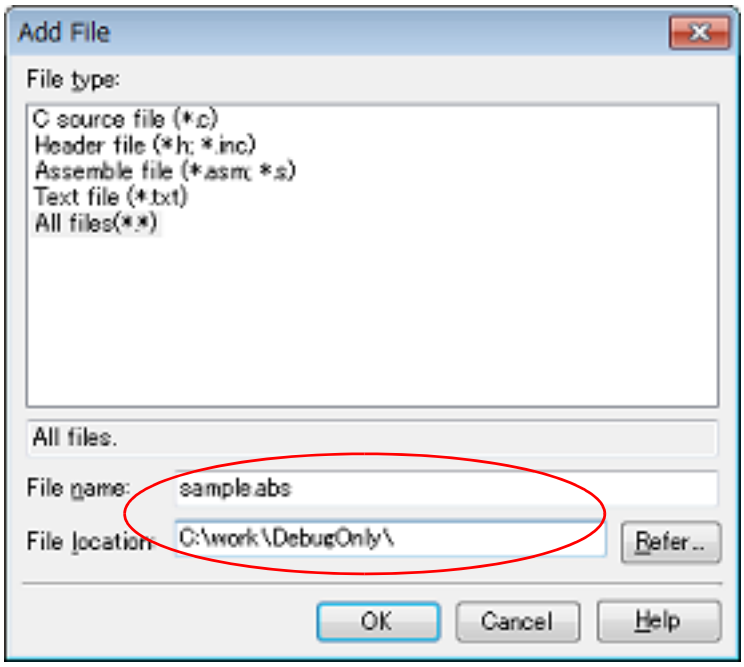
(1) Adding an existing file
Drag a load module file from Explorer or the like, and drop it onto the Download files node on the project tree.

Figure E.4 Project Tree Panel (Adding a Load Module File)



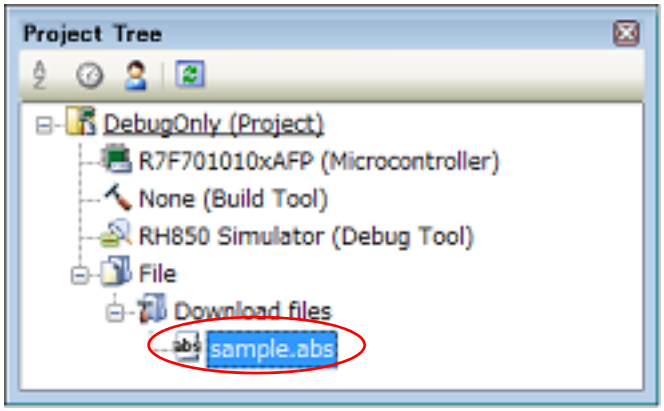
(2) Creating and adding an empty file
Select the Download files node on the project tree, and then select [Add] >> [Add New File...] from the context menu. The Add File dialog box will open.

Figure E.5 Add File Dialog Box (Adding a Load Module File)



In the dialog box, specify the file name to be created newly and the location in which it is created, and then click the [OK] button.
The project tree after adding the load module file will look like the one below.

Figure E.6 Project Tree Panel (After Adding Load Module File "a.out")



E.3.2 Add C source files and other files

Add C source files to be used for creation of the download file to the debug-dedicated project.
By adding the C source file to the project, you can perform source level debugging (step execution in source level units, etc.).
You can also add files other than C source files as necessary.

Caution 1. To perform source level debugging, a load module file with the symbol information must be added as a download file to debug (see "E.3.1 Add a download file").

Caution 2. When a load module file has been added in the [Download File Settings] tab on the Property panel of the debug tool, source files are not added to the project tree.

Caution 3. Whether or not to automatically add source files to the project tree is determined by a setting in the [General - Build] category in the Option dialog box.

Caution 4. When you add load module files to the Download file node of the project tree, and download to the debug tool, based on source file information obtained from the download file, source files are automatically added to the project tree.

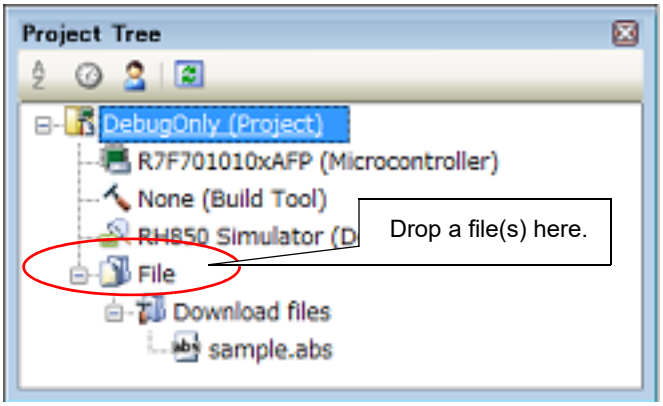
When there are files which cannot be added by the above method, use the following methods to add them.

- Adding an existing file
- Creating and adding an empty file

(1) Adding an existing file

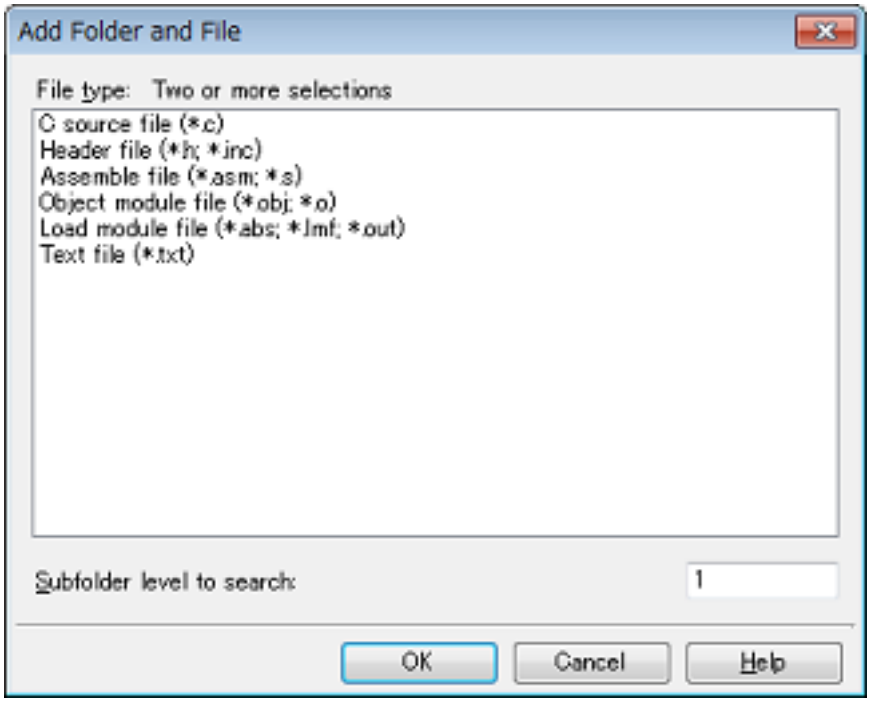
(a) Add an individual files
Drag a file(s) from Explorer or the like, and drop it onto the File node on the project tree.

Figure E.7 Project Tree Panel (Adding a File)



(b) Add a folder
Drag a folder(s) from Explorer or the like, and drop it onto the File node on the project tree. The Add Folder and File dialog box will open.

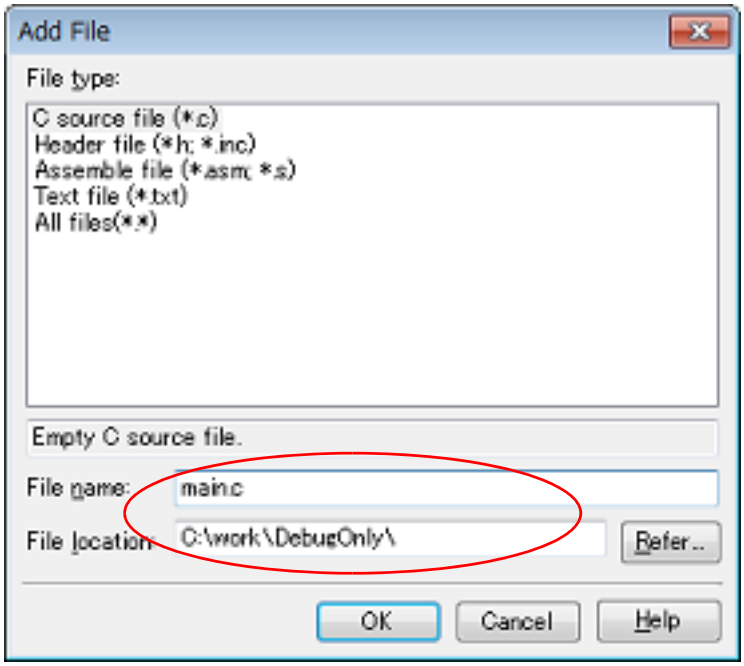
Figure E.8 Add Folder and File Dialog Box



In the dialog box, select the types of the files to be added and specify the number of levels of the subfolder to be added to the debug-dedicated project. At this time, you can select multiple file types by left clicking while holding down the [Ctrl] or [Shift] key. If nothing is selected, it is assumed that all types are selected.
And then click the [OK] button.

(2) Creating and adding an empty file
Select the File node on the project tree, and then select [Add] >> [Add New File...] from the context menu. The Add File dialog box will open.

Figure E.9 Add File Dialog Box (Adding a File)



In the dialog box, specify the file name to be created newly and the location in which it is created, and then click the [OK] button.

The project tree after adding the file and folder will look like the one below.
Note that the location of the file added below the File node depends on the current settings of [Toolbar] in the Project Tree panel.

Figure E.10 Project Tree Panel (After Adding File "main.c")

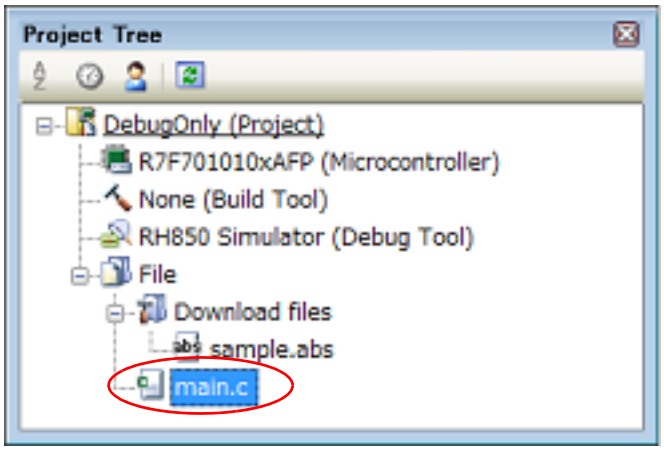
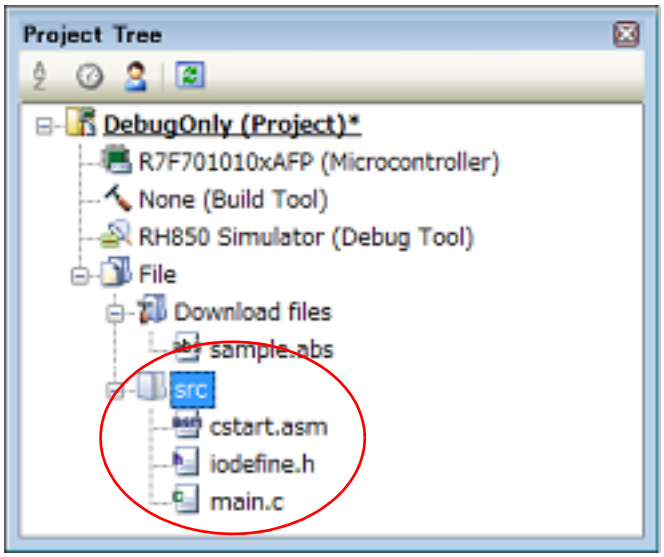


Figure E.11 Project Tree Panel (After Adding Folder "src")



By double-clicking the added file name on the project tree, you can open the Editor panel and edit the contents of the file directly.

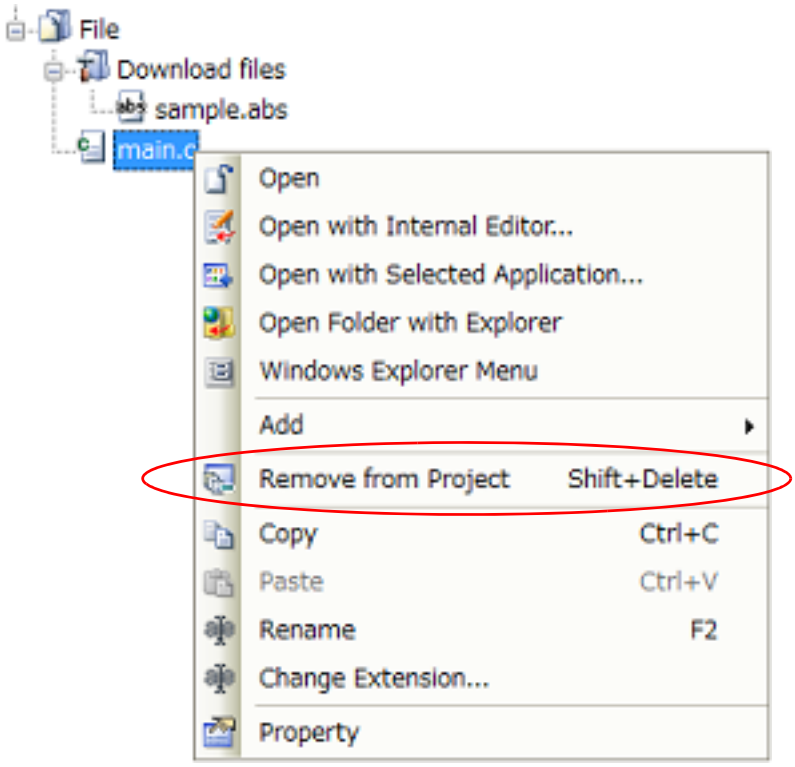
Remark 1. By dragging a file and dropping it onto the Editor panel, you can open the file in the Editor panel.

Remark 2. When the environment is set to use an external text editor on the Option dialog box, the file is opened with the external text editor that has been set.
Other files are opened with the applications associated by the host OS.

E.3.3 Remove an added file from a project

To remove a file(s) that has been added to the debug-dedicated project by using the method above, select the file(s) on the project tree and then select [Remove from Project] from the context menu.

Figure E.12 [Remove from Project] Item



E.4 Make Settings for Build Operations

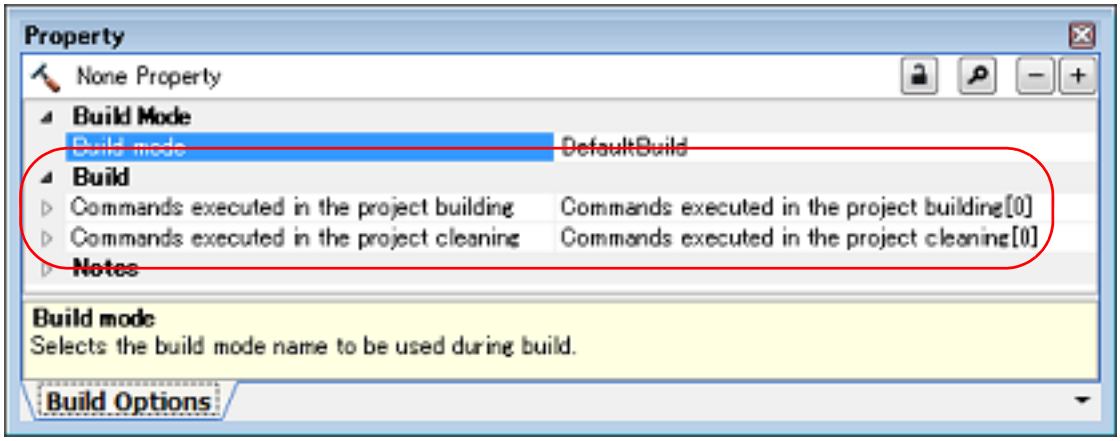
Configure CS+ to execute builds linked to an external build tool (e.g. a compiler/assembler other than the build tool provided by CS+).

E.4.1 Set the commands

You can link to an external build tool by executing the command set here when performing build-related operations (see "E.5 Run a Build") on CS+.

The command settings are made with the [Build] category on the [Build Options] tab in the Property panel after selecting the Build Tool node of the target debug-dedicated project (main project or subproject) on the project tree.

Figure E.13 Property Panel: [Build Options] Tab (Build Category)



Below are how to set the commands.

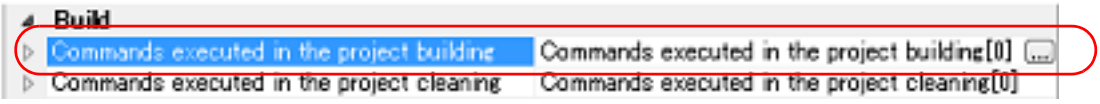
- Setting the command when running a build
- Setting the command when running a clean

(1) Setting the command when running a build

Set the command to be executed when running a build (see "E.5.1 Run a build") in the [Commands executed in the project building] property.

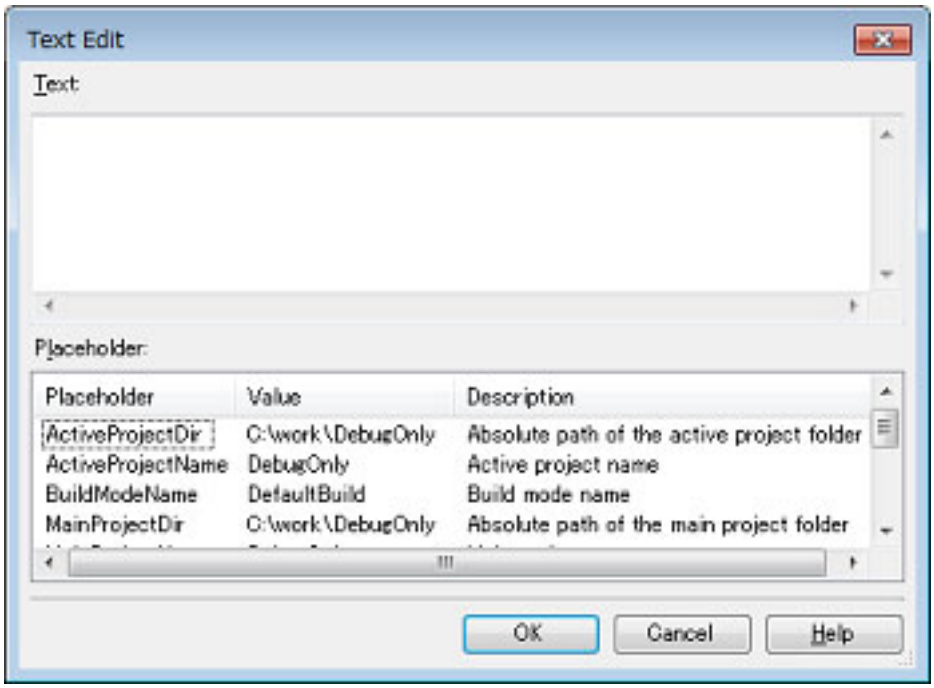
In this property, set the command to execute the required build processing (e.g. "make").

Figure E.14 [Commands executed in the project building] Property



If you click the [...] button, the Text Edit dialog box will open.

Figure E.15 Text Edit Dialog Box



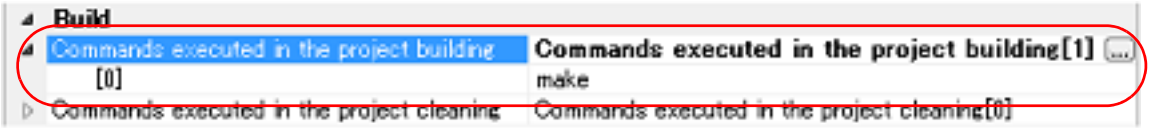
In [Text], enter the command to be executed with one item per line.
The commands can be specified up to 1023 characters per line, up to 64 lines.

Remark 1. This property supports placeholders.
If a line is double clicked in [Placeholder], the placeholder will be reflected in [Text].

Remark 2. When "#!python" is described in the first line, the contents from the second line to the last line are regarded as the script of the Python console, and then executed when running a build.
The placeholders can be described in the script.

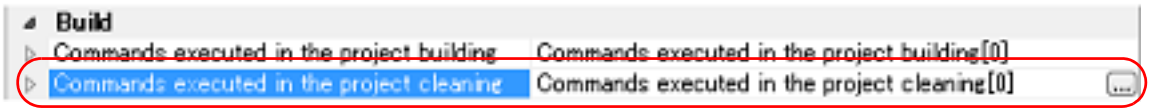
If you click the [OK] button, the entered commands are displayed as subproperties.

Figure E.16 [Commands executed in the project building] Property (After Setting Commands)



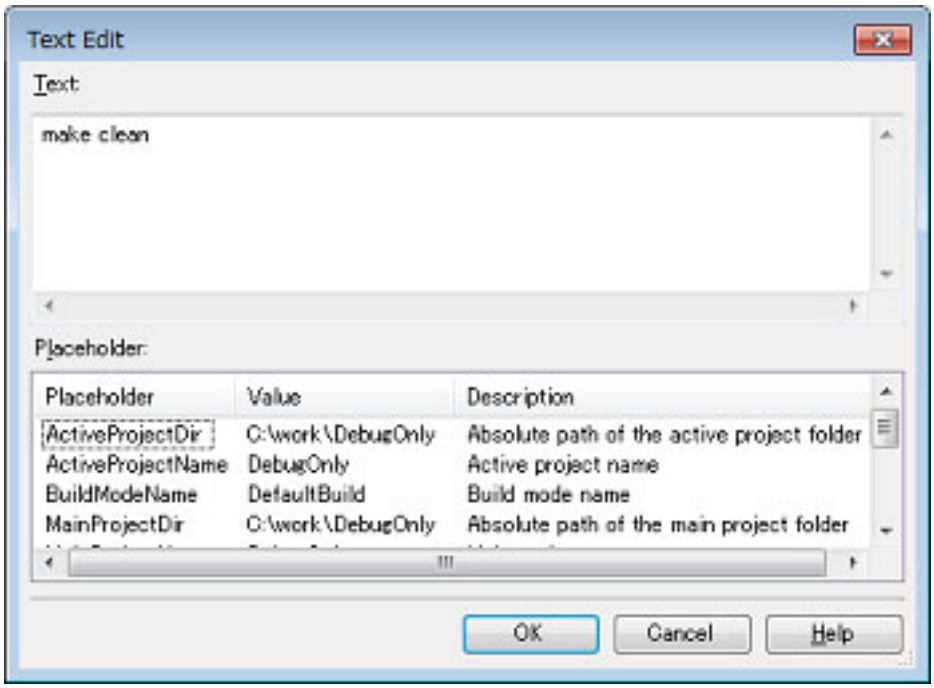
(2) Setting the command when running a clean
Set the command to be executed when running a clean (see "E.5.3 Run a clean") in the [Commands executed in the project cleaning] property.
In this property, set the command to delete intermediate files, generated files, and the like output by the build process.

Figure E.17 [Commands executed in the project cleaning] Property



If you click the [...] button, the Text Edit dialog box will open.

Figure E.18 Text Edit Dialog Box



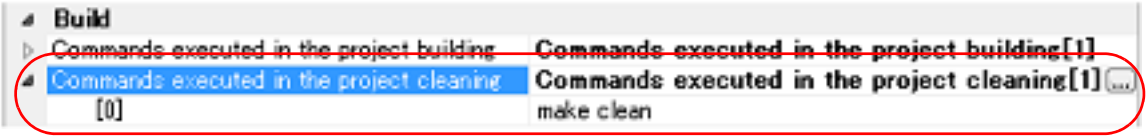
In [Text], enter the command to be executed with one item per line.
The commands can be specified up to 1023 characters per line, up to 64 lines.

Remark 1. This property supports placeholders.
If a line is double clicked in [Placeholder], the placeholder will be reflected in [Text].

Remark 2. When "#!python" is described in the first line, the contents from the second line to the last line are regarded as the script of the Python console, and then executed when running a clean.
The placeholders can be described in the script.

If you click the [OK] button, the entered commands are displayed as subproperties.

Figure E.19 [Commands executed in the project cleaning] Property (After Setting Commands)



To change the specified commands, you can use the [...] button or enter the command directly in the text box of the sub-property.

Caution CS+ does not provide the make command.

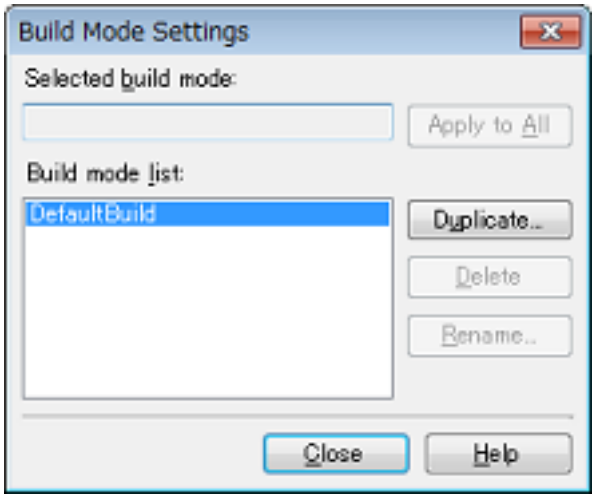
E.4.2 Set the build mode

You can collectively change the settings of the commands executed according to the purpose of the build.
The commands set in "E.4.1 Set the commands" are organized into what is called "build mode", and by changing the build mode, you eliminate the necessity of changing the command settings every time (i.e. the command settings can be made with each build mode).
The build mode prepared by default is only "DefaultBuild". Add a build mode according to the purpose of the build.
The method to add and change a build mode is shown below.

- Create a new build mode
- Change the build mode

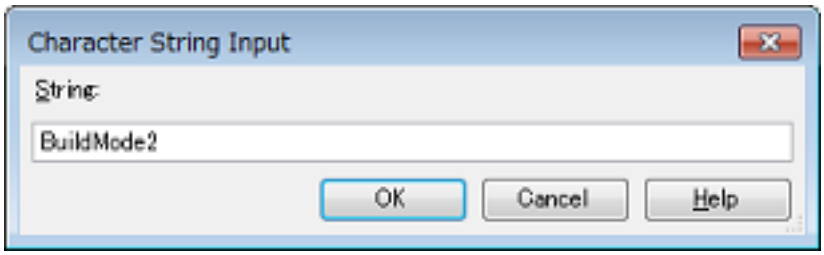
(1) Create a new build mode
Creating a new build mode is performed with duplicating an existing build mode.
Select [Build Mode Settings...] from the [Build] menu. The Build Mode Settings dialog box will open.

Figure E.20 Build Mode Settings Dialog Box



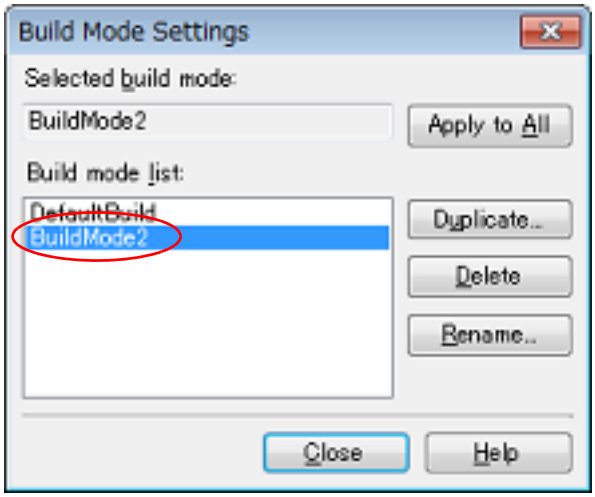
Select the build mode to be duplicated from [Build mode list] and click the [Duplicate...] button. The Character String Input dialog box will open.

Figure E.21 Character String Input Dialog Box



In the dialog box, enter the name of the build mode to be created and then click the [OK] button. The build mode with that name will be duplicated.
The created build mode is added to the build modes of the main project and all the subprojects (including projects other than a debug-dedicated project) which currently belong to the project.

Figure E.22 Build Mode Settings Dialog Box (After Adding Build Mode)



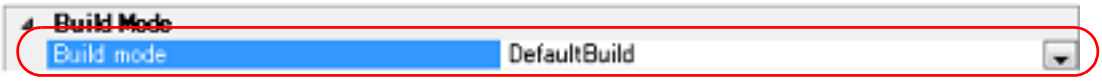
Remark 1. Creating a build mode is regarded a project change.
When closing the project, you will be asked to confirm whether or not to save the build mode.

Remark 2. You can change the name of the build mode by selecting the build mode from the build mode list and clicking the [Rename...] button.
However, you cannot change the name of "DefaultBuild".

(2) Change the build mode
Change the build mode to the newly created build mode.

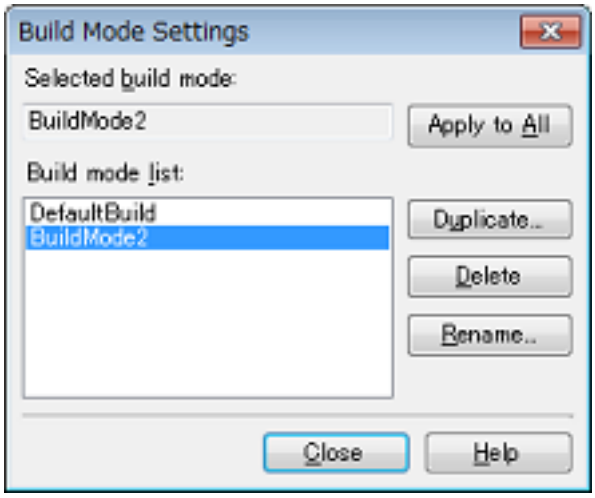
(a) When changing the build mode for the main project or subprojects
Select the Build tool node of the target debug-dedicated project on the project tree and select the build mode to be changed to with the [Build mode] property in the [Build Mode] category on the [Build Options] tab in the Property panel.

Figure E.23 [Build mode] Property



(b) When changing the build mode for the entire project
Select [Build Mode Settings...] from the [Build] menu. The Build Mode Settings dialog box will open.

Figure E.24 Build Mode Settings Dialog Box



Select the build mode to be changed from [Build mode list]. The selected build mode will be displayed in [Selected build mode].
Click the [Apply to All] button. The build mode for the main project and all the subprojects (including projects other than a debug-dedicated project) which belong to the project will be changed to the build mode selected in the dialog box.

Caution For subprojects that the selected build mode does not exist, the build mode of the subproject is duplicated from the contents of its "DefaultBuild", and then the selected build mode is created newly to the subproject (i.e. the selected build mode with the contents of the subproject is added).

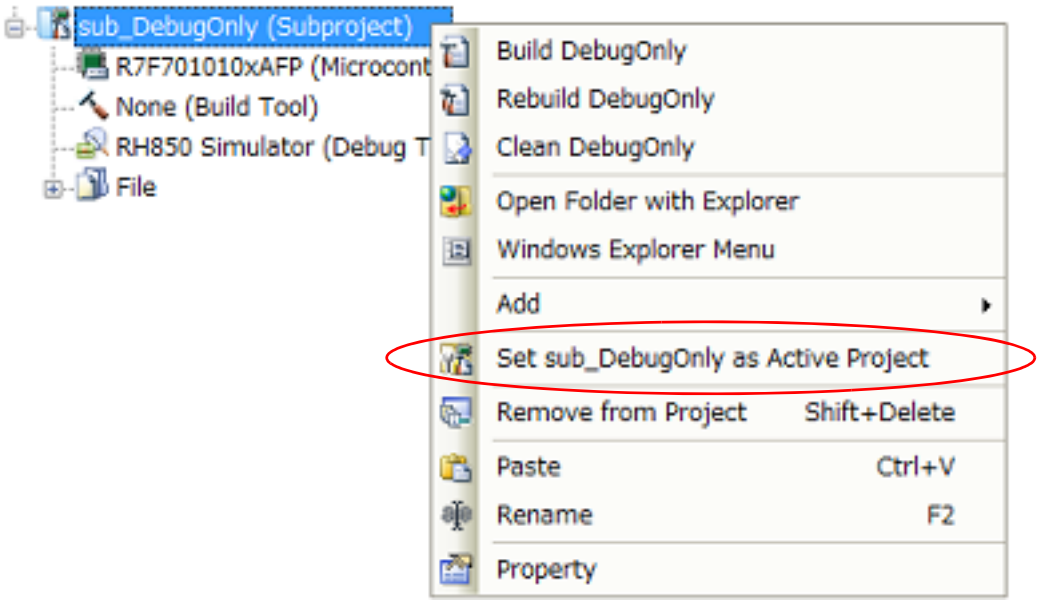
E.4.3 Set the target project for a build

When running a build that targets a specific debug-dedicated project (main project or subproject), you must set that project as the "active project".

Caution The active project is the project subjected to debugging.
It is not possible to set the active project while connected to the debug tool, and therefore you must disconnect the debug tool for active project setting.

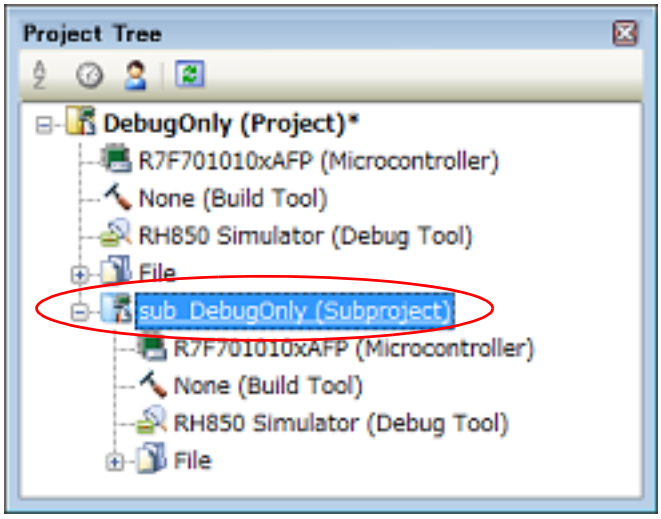
To set the active project, select the Project node to be set as the active project on the project tree and select [Set *selected subproject* as Active Project] from the context menu.

Figure E.25 [Set *selected project* as Active Project] Item



When a project is set as the active project, that Project node is underlined as follows.

Figure E.26 Active Project



Remark 1. Immediately after creating a project newly, the main project is the active project.

Remark 2. When you remove a subproject that set as the active project from a project, the main project will be the active project.

Caution When you run a build using the toolbar button, the build applies to the whole project.
To build only the active project, run the build from the context menu of the active project.

E.5 Run a Build

This section explains operations related to running a build for a debug-dedicated project.

(1) Build types

The types of operations related to builds which can be linked to an external build tool in a debug-dedicated project are as follows.

Table E.1 Build Types

Type	Description
Build	Executes the command specified with the [Commands executed in the project building] property in the [Build] category in the Property panel. "Build" can run a build of only updated files[Note]. -> See "E.5.1 Run a build".
Rebuild	Executes the command specified with the [Commands executed in the project cleaning] property in the [Build] category in the Property panel, and then executes the command specified with the [Commands executed in the project building] property in the category same as above. "Rebuild" can run a build of all build target files[Note]. -> See "E.5.2 Run a rebuild".
Clean	Executes the command specified with the [Commands executed in the project cleaning] property in the [Build] category in the Property panel. "Clean" can delete all the intermediate files and generated files output by running a build-[Note]. -> See "E.5.3 Run a clean".
Rapid build	Runs a build in parallel with the change of the build setting. -> See "E.5.4 Run a rapid build".
Batch build	Runs builds in batch with the build modes that the project has. -> See "E.5.5 Run a batch build".

Note It is assumed that a proper command has been set in the Property panel (see "E.4.1 Set the commands").

(2) Displaying execution results

The execution results of the build (standard output and standard error from the external build tool used) are displayed in each tab on the Output panel.

- Build, rebuild, or batch build: -> [All Messages] tab and [Build Tool] tab
- Rapid build: -> [Rapid Build] tab

Figure E.27 Build Execution Results (Build, Rebuild, or Batch Build)

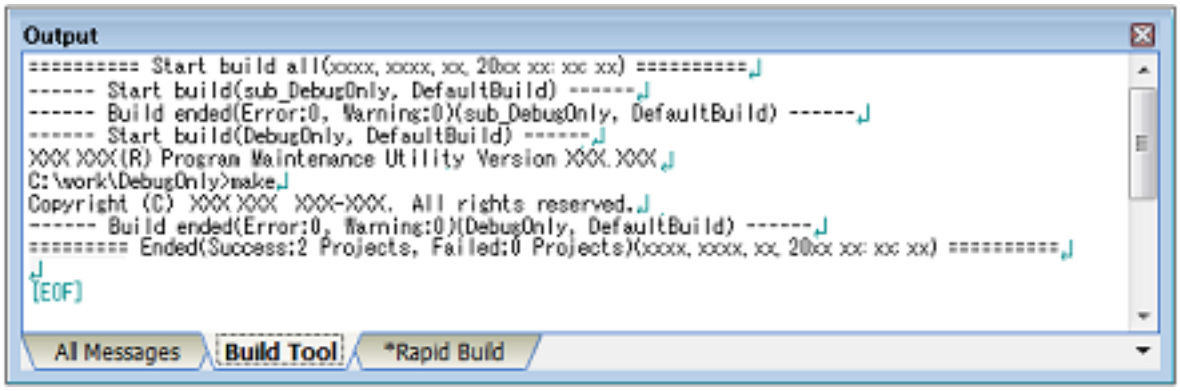
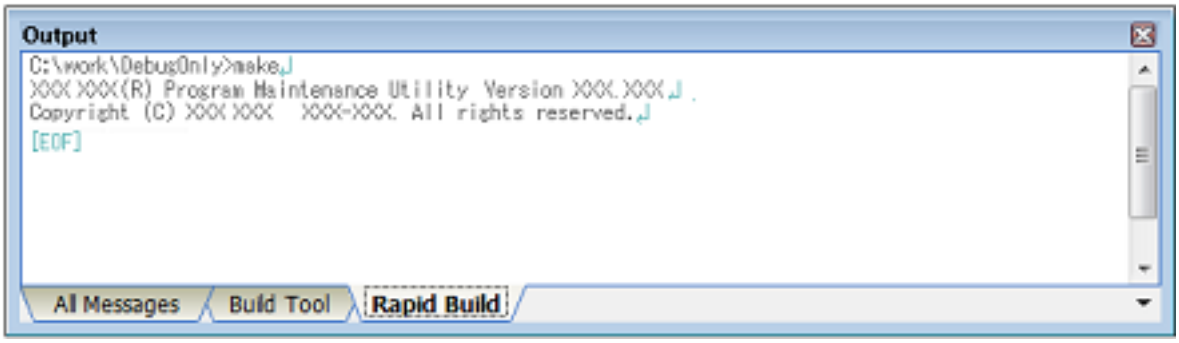


Figure E.28 Build Execution Results (Rapid Build)



Remark The text in the [Rapid Build] tab becomes dimmed.

E.5.1 Run a build

The command specified with the [Commands executed in the project building] property in the [Build] category in the Property panel is executed (see "(1) Setting the command when running a build"). This allows you to run a build of only updated files.

The commands being specified in the entire project (main project and subprojects) or active project (see "E.4.3 Set the target project for a build") can be executed.

Remark If there are files being edited with the Editor panel when running a build, then all these files are saved.

(1) When running a build of the entire project
The commands being specified in all the debug-dedicated projects that belong to the project are executed.
Click the button on the toolbar.

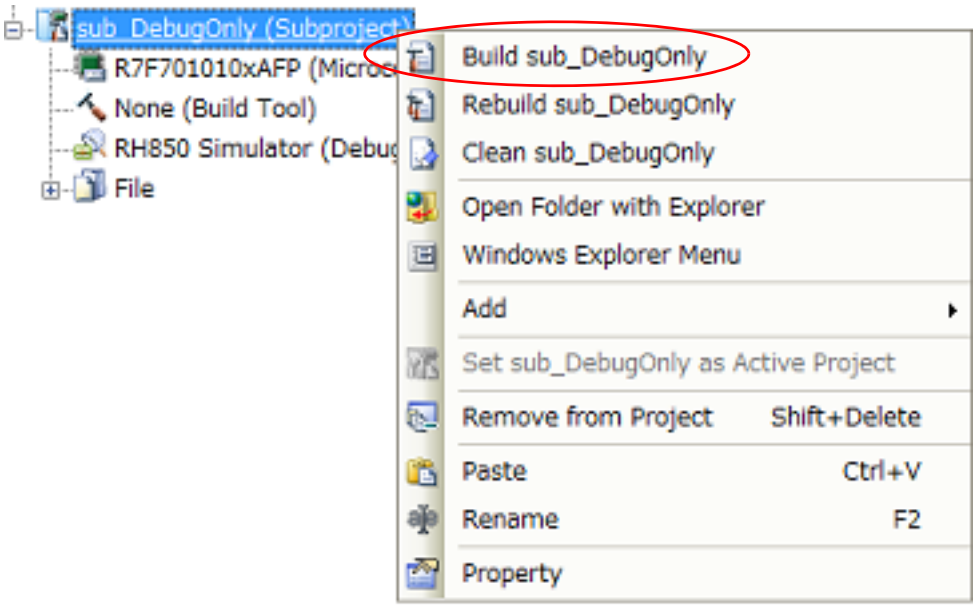
Remark 1. Builds are run in the order of subproject, main project.
Subprojects are built in the order that they are displayed on the project tree. You can change the display order of the subprojects by dragging the subproject to be moved and dropping it on the desired location.

Remark 2. If a project other than a debug-dedicated project is included in your projects, then builds will be run for that project using the build tool provided by CS+ (see the "2.8.1 Run a build of updated files").

(2) When running a build of the active project
Select the debug-dedicated project, and then select [Build *active project*] from the context menu.

Remark When a dependent project is set for the active project, a build of the dependent project is also run.

Figure E.29 [Build *active project*] Item



E.5.2 Run a rebuild

The command specified with the [Commands executed in the project cleaning] property in the [Build] category in the Property panel is executed (see "(2) Setting the command when running a clean"), and then the command specified with the [Commands executed in the project building] property in the category same as above is executed (see "(1) Setting the command when running a build"). This allows you to run a build of all build target files.

The commands being specified in the entire project (main project and subprojects) or active project (see "E.4.3 Set the target project for a build") can be executed.

Remark If there are files being edited with the Editor panel when running a rebuild, then all these files are saved.

(1) When running a rebuild of the entire project
The commands being specified in all the debug-dedicated projects that belong to the project are executed.
Click the button on the toolbar.

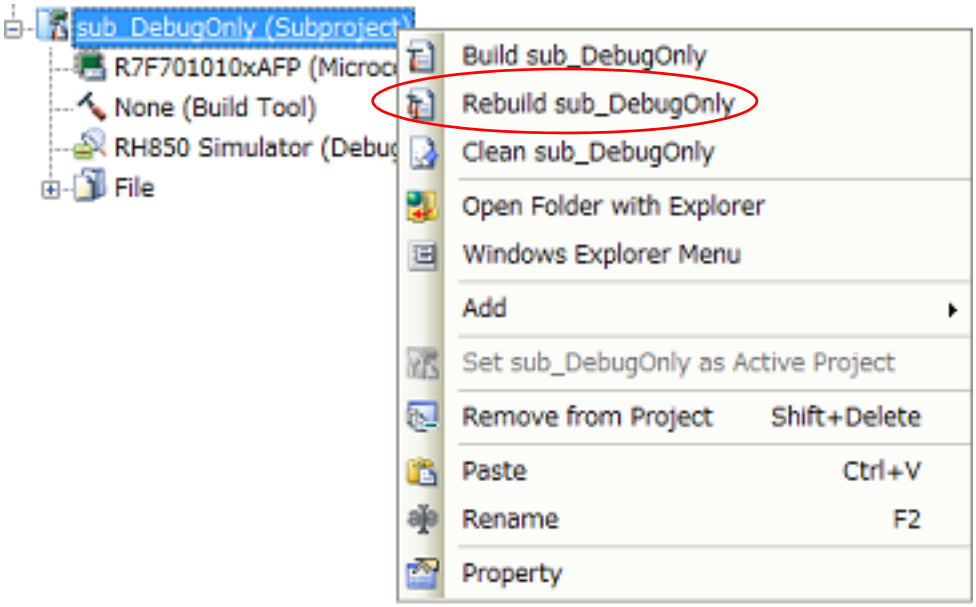
Remark 1. Rebuilds are run in the order of subproject, main project.
Subprojects are rebuilt in the order that they are displayed on the project tree. You can change the display order of the subprojects by dragging the subproject to be moved and dropping it on the desired location.

Remark 2. If a project other than a debug-dedicated project is included in your projects, then rebuilds will be run for that project using the build tool provided by CS+ (see the "2.8.2 Run a build of all files").

(2) When running a rebuild of the active project
Select the debug-dedicated project, and then select [Rebuild *active project*] from the context menu.

Remark When a dependent project is set for the active project, a rebuild of the dependent project is also run.

Figure E.30 [Rebuild *active project*] Item



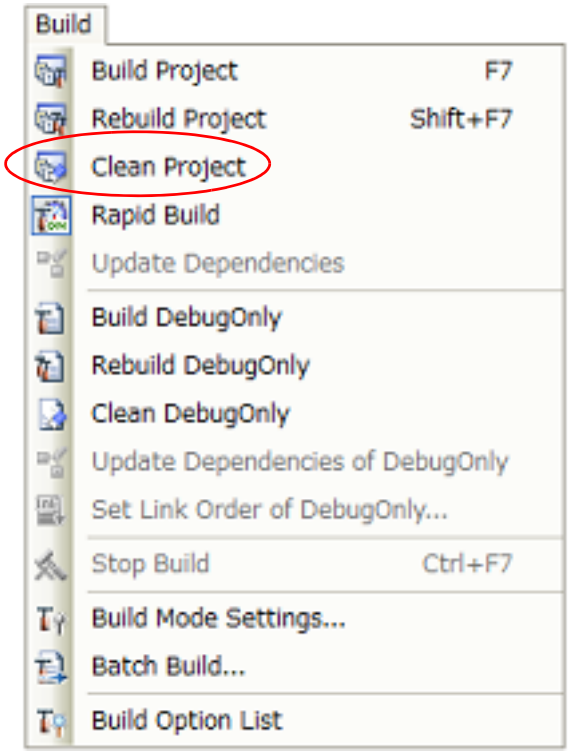
E.5.3 Run a clean

The command specified with the [Commands executed in the project cleaning] property in the [Build] category in the Property panel is executed (see "(2) Setting the command when running a clean"). This allows you to delete all the intermediate files and generated files output by running a build.

The commands being specified in the entire project (main project and subprojects) or active project (see "E.4.3 Set the target project for a build") can be executed.

(1) When running a clean of the entire project
The commands being specified in all the debug-dedicated projects that belong to the project are executed.
Select [Clean Project] from the [Build] menu.

Figure E.31 [Clean Project] Item

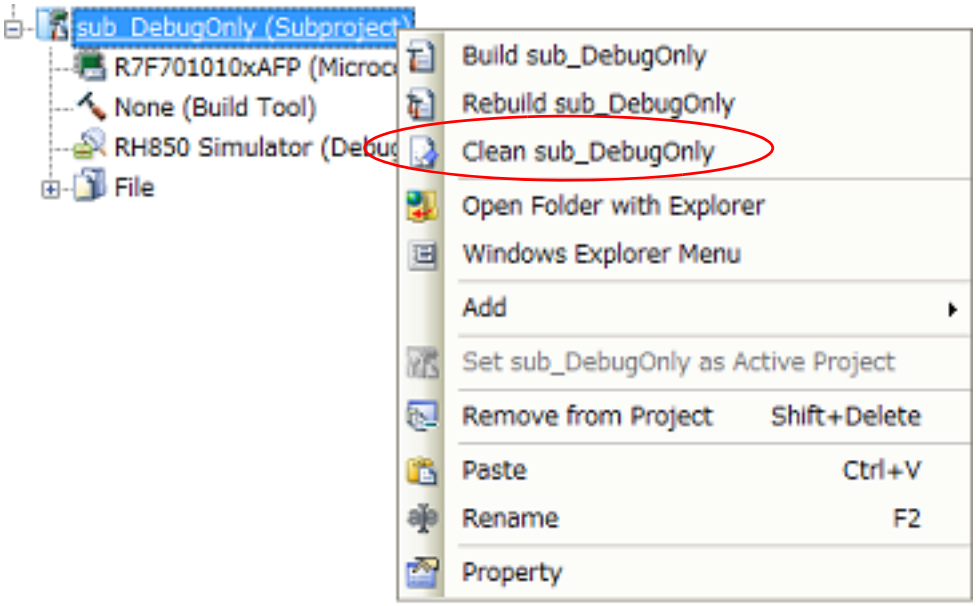


Remark 1. Cleans are run in the order of subproject, main project.
Subprojects are cleaned in the order that they are displayed on the project tree. You can change the display order of the subprojects by dragging the subproject to be moved and dropping it on the desired location.

Remark 2. If a project other than a debug-dedicated project is included in your projects, then cleans will be run for that project using the build tool provided by CS+ (see the "2.8.8 Delete intermediate files and generated files").

(2) When running a clean of the active project
Select the debug-dedicated project, and then select [Clean *active project*] from the context menu.

Figure E.32 [Clean *active project*] Item



E.5.4 Run a rapid build

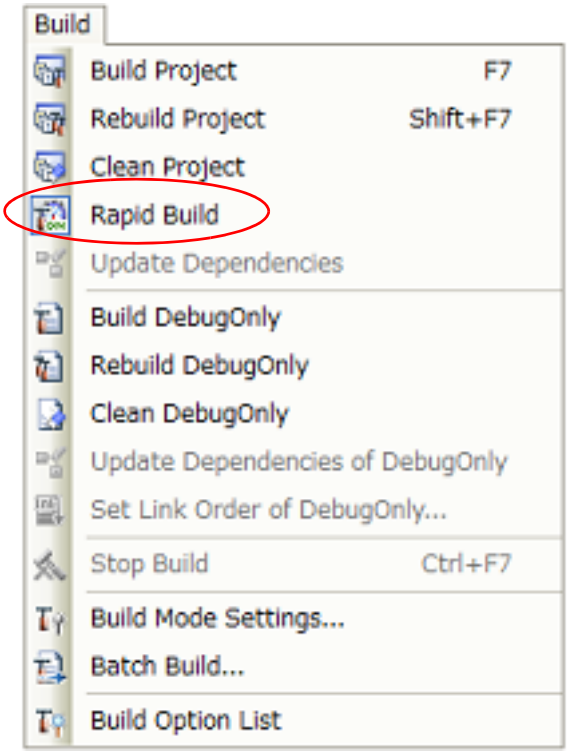
CS+ can automatically start a build (see "E.5.1 Run a build") when one of the following events occurs.

- When any one of the following files that are added to the debug-dedicated project is updated:
  (C source file, assembler source file, header file, jump table file, and symbol address file)
- When the C source file, assembler source file, header file, jump table file, or symbol address file is added to or removed from the debug-dedicated project
- When the property of the build tool in the Property panel of the debug-dedicated project is changed

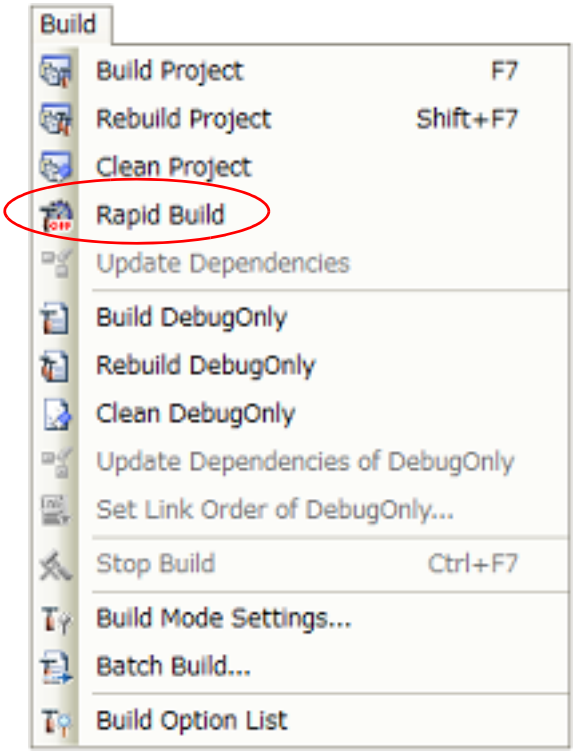
If a rapid build is enabled, it is possible to perform a build in parallel with the above operations.
To enable/disable a rapid build, select [Rapid Build] from the [Build] menu. A rapid build is enabled by default.

Figure E.33 [Rapid Build] Item

[When a rapid build Is valid]



[When a rapid build Is invalid]



Caution This function is valid only when editing source files with the Editor panel.

Remark 1. After editing source files, it is recommend to save frequently by pressing the [Ctrl] + [S] key.

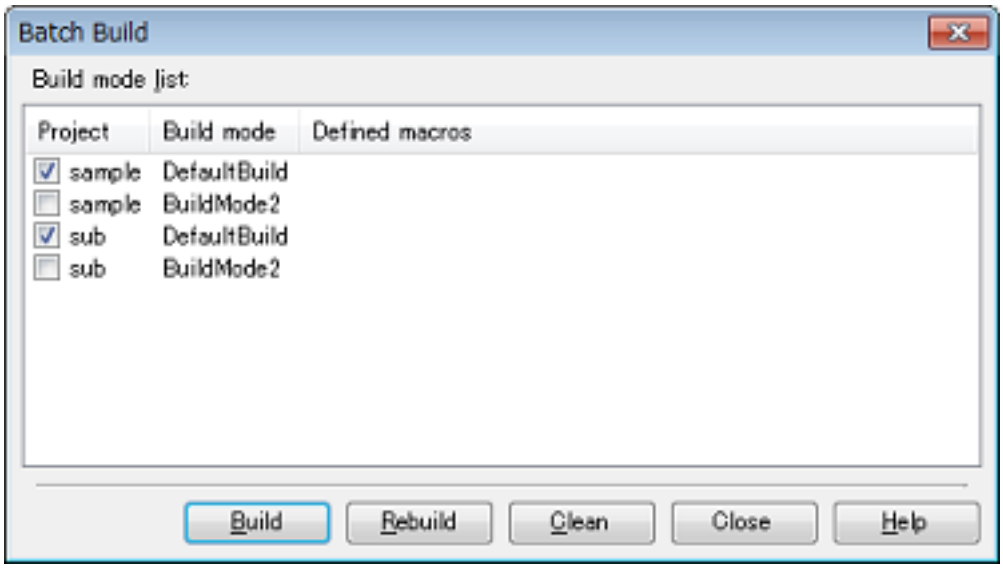
Remark 2. Enable/Disable setting of the rapid build applies to the entire project (main project and subprojects).

Remark 3. If you disable a rapid build while it is running, it will be stopped at that time.

E.5.5 Run a batch build

A batch build is a function that builds, rebuilds and cleans are run in batch with the build modes that the project (main project and subproject) has.
Select [Batch Build] from the [Build] menu. The Batch Build dialog box will open.

Figure E.34 Batch Build Dialog Box



In the dialog box, the list of the combinations of the names of the main project and subprojects in the currently opened project and their build modes and macro definitions ([Defined macros] is invalid when the target project is a debug-dedicated project) is displayed.

Select the check boxes for the combinations of the main project and subprojects and build modes that you wish to run a batch build, and then click the [Build], [Rebuild], or [Clean] button.

Remark 1. See the sections below for a build, rebuild, and clean.

- Build: "E.5.1 Run a build"
- Rebuild: "E.5.2 Run a rebuild"
- Clean: "E.5.3 Run a clean"

Remark 2. The batch build order follows the project build order, the order of the subprojects, main project.
When multiple build modes are selected for a single main project or subproject, after running builds of the subproject with all the selected build modes, the build of the next subproject or main project is run.

Remark 3. If there are files being edited with the Editor panel when running a batch build, then all these files are saved.

Remark 4. If a project other than a debug-dedicated project is included in your projects, then builds/rebuilds/cleans will be run for that project using the build tool provided by CS+ (see the "2.8 Run a Build").

E.5.6 Stop running a build

To stop running a build, rebuild, or batch build, click the button on the toolbar.

Remark See the sections below for a build, rebuild, and batch build.

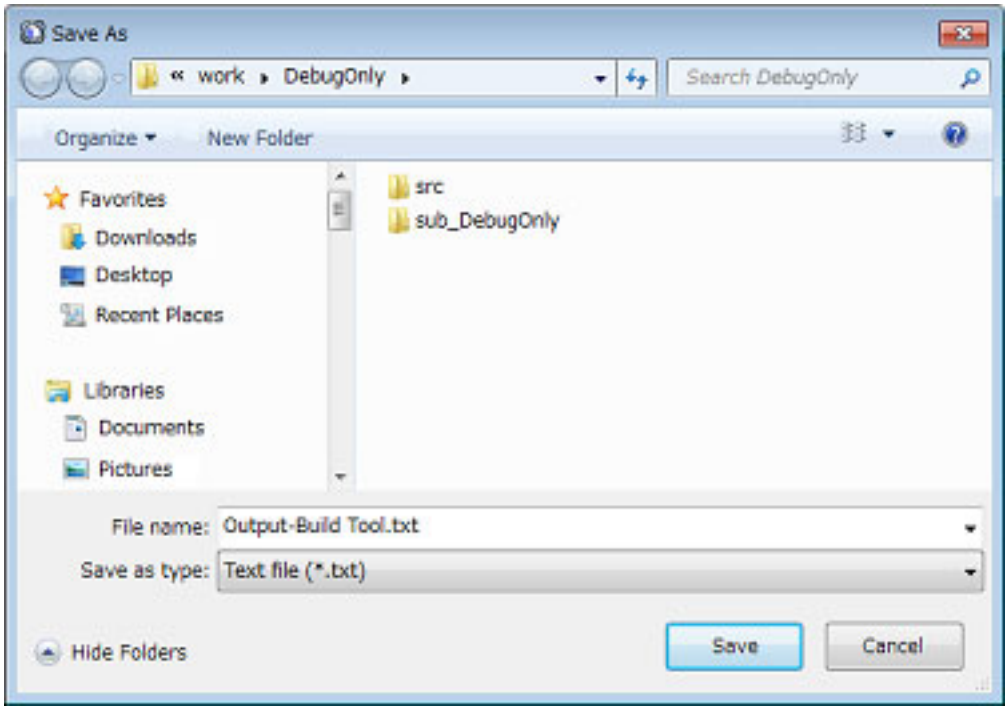
- Build: "E.5.1 Run a build"
- Rebuild: "E.5.2 Run a rebuild"
- Batch build: "E.5.5 Run a batch build"

E.5.7 Save the build results to a file

You can save the execution results of the build (standard output and standard error from the external build tool used) that displayed on the Output panel as a text file.

Select the [Build Tool] tab on the panel, and then select [Save Output - Build Tool As...] from the [File] menu. The Save As dialog box will open.

Figure E.35 Save As Dialog Box



In the dialog box, specify a text file name to be saved and the location in which the file is saved, and then click the [Save] button.

F. SHORTCUT KEYS

This section describes the shortcut keys.

The assignment of shortcut keys to commands provided in CS+ can be changed.
For details on changing the assignment of shortcut keys, refer to Customize Keyboard dialog box.

The following table is a list of the default shortcut keys of CS+.

Table F.1 Shortcut keys

Shortcut Keys	Category	Commands
[F1]	Help	Open Help for <*Object*>
[F2]	Edit	Rename
[F3]	Edit	Find Next
[F4]	Edit	Replace Next
[F5]	Debug	Go[Note 1]
[F6]	Debug	Build & Download
[F7]	Build	Build Project
[F8]	Debug	Ignore Break and Go[Note 1]
[F9]	Event	Set/Delete Break[Note 1]
[F10]	Debug	Step Over[Note 1]
[F11]	Debug	Step In[Note 1]
[F12]	Editor	Jump to Function or Variable
[↑]		Move one line up
[↓]		Move one line down
[→]		Move one character to the right
[←]		Move one character to the left
[Insert]		Switch between insertion and overwriting
[Delete]	Edit	Delete
[Home]		Move to the start of the current line
[End]		Move to the end of the current line
[Page Up]		Move one page up
[Page Down]		Move one pages down
[Esc]		Cancel the current selection
[Shift]+[F2]	Editor	Next Bookmark
[Shift]+[F3]	Edit	Find Previous
[Shift]+[F4]	Edit	Replace Previous
[Shift]+[F5]	Debug	Stop[Note 1]
[Shift]+[F6]	Debug	Disconnect from Debug Tool[Note 1]
[Shift]+[F7]	Build	Rebuild Project

Shortcut Keys	Category	Commands
[Shift]+[F10]		Show the shortcut menu (This is the same operation as the response to right-clicking.)
[Shift]+[F11]	Debug	Return Out[Note 1]
[Shift]+[F12]	Jump	Tag Jump
[Shift]+[↑]		Select up by one line
[Shift]+[↓]		Select down by one line
[Shift]+[→]		Select right by one character
[Shift]+[←]		Select left by one character
[Shift]+[Tab]		Decrease Line Indent
[Shift]+[Delete]	Project Tree	Remove from Project
[Shift]+[Home]		Select up to the start of the line
[Shift]+[End]		Select up to the end of the line
[Shift]+[Page Up]		Select one page up
[Shift]+[Page Down]		Select one page down
[Ctrl]+[F2]	Editor	Toggle Bookmark
[Ctrl]+[F4]		Close the active window on the divided panel
[Ctrl]+[F5]	Debug	CPU Reset[Note 1]
[Ctrl]+[F6]		Show the next window on the divided panel
[Ctrl]+[F7]	Build	Stop Build
[Ctrl]+[F11]	Debug	Rewind debug tool state[Note 1]
[Ctrl]+[↑]		Scroll up by one line
[Ctrl]+[↓]		Scroll down by one line
[Ctrl]+[→]		Move one word to the right
[Ctrl]+[←]		Move one word to the left
[Ctrl]+[Tab]		Show the navigator
[Ctrl]+[Delete]		Delete to the end of the word
[Ctrl]+[Home]		Move to the first line
[Ctrl]+[End]		Move to the last line
[Ctrl]+[-]		Back to Last Cursor Position
[Ctrl]+[+]		Forward to Next Cursor Position
[Ctrl]+[Space]		Smart Edit: Display candidates for function/variable[Note 2]
[Ctrl]+[]]		Jump to the balancing bracket
[Ctrl]+[Back Space]		Delete to the start of the current word
[Ctrl]+[Enter]		Insert one line above
[Ctrl]+[A}	Edit	Select All
[Ctrl]+[C]	Edit	Copy

Shortcut Keys	Category	Commands
[Ctrl]+[D]		Abort
[Ctrl]+[F]	Edit	Find
[Ctrl]+[G]	Edit	Go To
[Ctrl]+[I]	Editor	Incremental Search
[Ctrl]+[L]	View	Show Current PC Location[Note 1]
[Ctrl]+[M]		Save the mixed display of source code
[Ctrl]+[N]	File	Create New File
[Ctrl]+[O]	File	Open File
[Ctrl]+[P]	File	Print
[Ctrl]+[Q]	Edit	Quick Find
[Ctrl]+[R]	Edit	Replace
[Ctrl]+[S]	File	Save <*Object*>
[Ctrl]+[T]		Transpose characters
[Ctrl]+[U]		Make Lowercase
[Ctrl]+[V]	Edit	Paste
[Ctrl]+[X]	Edit	Cut
[Ctrl]+[Y]	Edit	Redo
[Ctrl]+[Z]	Edit	Undo
[Alt]+[F4]		Close
[Alt]+[F10]	View	Full-screen
[Alt]+[↑]	Editor	Line Move Up
[Alt]+[↓]	Editor	Line Move Down
[Alt]+[Enter]		Start the external editor[Note 3]
[Ctrl]+[Shift]+[F2]	Editor	Previous Bookmark
[Ctrl]+[Shift]+[F3]	Editor	Clear All Bookmarks
[Ctrl]+[Shift]+[F4]	Editor	List Bookmarks
[Ctrl]+[Shift]+[F6]		Display the previous window in the divided panel
[Ctrl]+[Shift]+[F11]	Output	Jump to Previous Message
[Ctrl]+[Shift]+[F12]	Output	Jump to Next Message
[Ctrl]+[Shift]+[→]		Extend the selection by one word to the right
[Ctrl]+[Shift]+[←]		Extend the selection by one word to the left
[Ctrl]+[Shift]+[Tab]		Show the navigator
[Ctrl]+[Shift]+[Home]		Select up to the start of the file
[Ctrl]+[Shift]+[End]		Select down to the end of the file
[Ctrl]+[Shift]+[Space]		Smart Edit: Display candidates for arguments of function[Note 2]

Shortcut Keys	Category	Commands
[Ctrl]+[Shift]+[]]		Extend the selection to the balancing bracket
[Ctrl]+[Shift]+[Enter]		Insert one line below
[Ctrl]+[Shift]+[A]	File	Save All
[Ctrl]+[Shift]+[F]	Editor	Find in Files
[Ctrl]+[Shift]+[H]	Smart Manual	Scroll left for the manual
[Ctrl]+[Shift]+[I]	Editor	Backward Incremental Search
[Ctrl]+[Shift]+[J]	Smart Manual	Scroll down for the manual
[Ctrl]+[Shift]+[K]	Smart Manual	Scroll up for the manual
[Ctrl]+[Shift]+[L]	Smart Manual	Scroll right for the manual
[Ctrl]+[Shift]+[R]	Editor	Replace in Files
[Ctrl]+[Shift]+[S]	Project	Save Project
[Ctrl]+[Shift]+[T]		Transpose words
[Ctrl]+[Shift]+[U]		Make Uppercase
[Ctrl]+[Shift]+[W]	Editor	Select Caret Position Word
[Ctrl]+[Shift]+[Z]		Redo
[Shift]+[Alt]+[T]		Transpose lines
[Shift]+[Alt]+[↑]		Block selection up a line
[Shift]+[Alt]+[↓]		Block selection down a line
[Shift]+[Alt]+[←]		Block selection left a character
[Shift]+[Alt]+[→]		Block selection right a character
[Ctrl]+[Shift]+[Alt]+[←]		Block selection to previous word
[Ctrl]+[Shift]+[Alt]+[→]		Block selection to next word

Note 1. This command is only available while the debug tool is connected to CS+.

Note 2. If this command does not work, check the following possibilities.

- [Yes] is selected for the [Output cross reference information] property under the [Output File Type and Path] category on the [Common Options] tabbed page (for CC-RH or CC-RL) or the [Outputs the cross reference information] property under the [Others] category on the [Compile Options] tabbed page (for CC-RX) of the [Property] panel of the build tool. Building proceeds after this is selected.
- [Enable smart editing] is selected for [General] in the [Text Editor - General / Debug] category.

Note 3. For the method of setting an external editor, refer to [General - External Text Editor] category.

Remark Commands with entries in the [Category] column are provided as default settings for that category in CS+.

When the [Measuring Current Consumption] panel has the focus, the following operations take priority in response to the listed shortcut keys.

Table F.2 Shortcut Keys Used in the [Measuring Current Consumption] Panel

Shortcut Keys	Commands
[Ctrl]+[↑]	Zoom in along the Y-axis direction.
[Ctrl]+[↓]	Zoom out along the Y-axis direction.
[Ctrl]+[→]	Zoom in along the X-axis direction.
[Ctrl]+[←]	Zoom out along the X-axis direction.
[Ctrl]+[-]	Zoom out from the graph as a whole (in the directions of both the X and Y axes).
[Ctrl]+[+]	Zoom in to the graph as a whole (in the directions of both the X and Y axes).

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