

RX610

R20AN0274EJ0100

Rev. 1.00

Renesas Starter Kit Sample Code for CubeSuite+

Jan. 17, 2014

Introduction

The Renesas Starter Kit is a low-cost kit of development tools. The kit provides a user-friendly development environment for evaluating microcomputers from Renesas and enables coding and debugging by users with the aid of an accompanying emulator and an integrated development environment.

This document covers the sample code for use with the CubeSuite+ in Renesas Starter Kits for the RX610. Using the sample code requires separately installing CubeSuite+.

Target Device

RX610

Contents

1. Installing CubeSuite+.....	2
2. Starting the CubeSuite+ Project	2
3. Selecting a Sub-Project (When Using the Sample Code).....	2
4. Deleting Sub-Projects that are not to be Used (When Using the Sample Code).....	3
5. Changing the Debug Tool	3
6. Setting Properties of the Debug Tool.....	4
7. Building a Program	4
8. Starting the E1 Emulator	4
9. Executing Programs	5

1. Installing CubeSuite+

If you have not installed CubeSuite+, download the latest version of CubeSuite+ for installation from the link below.

<http://www.renesas.com/cubesuite+ download>

2. Starting the CubeSuite+ Project

Select the file below by double-clicking on its name (shown below) or clicking on the [GO] button in the [Open Existing Project] area in the start panel of CubeSuite+.

<Folder where the sample code was unzipped>\an_r20an0274jj0100_rx610_rsk\610rsk\610RSK\610RSK.mtpj

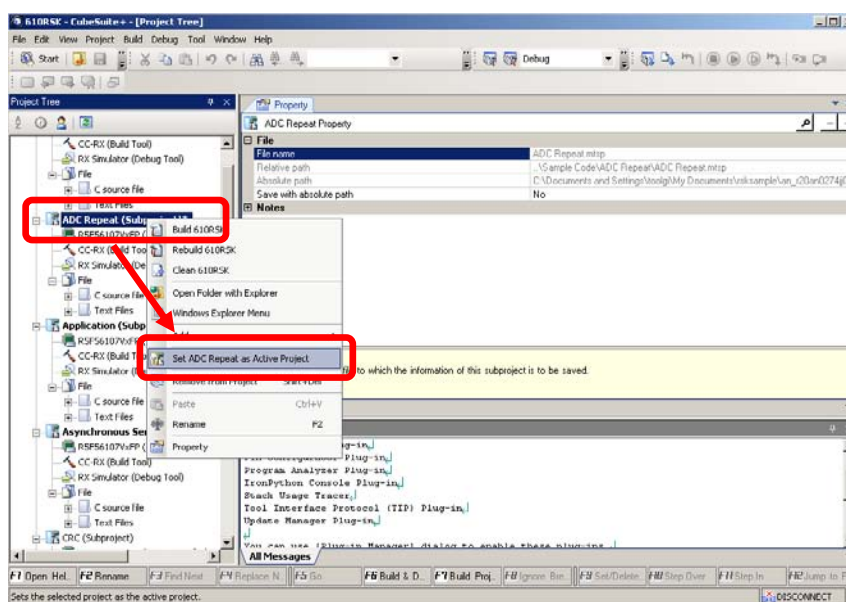
3. Selecting a Sub-Project (When Using the Sample Code)

The sample code is provided in sub-projects for individual tutorials and peripheral functions.

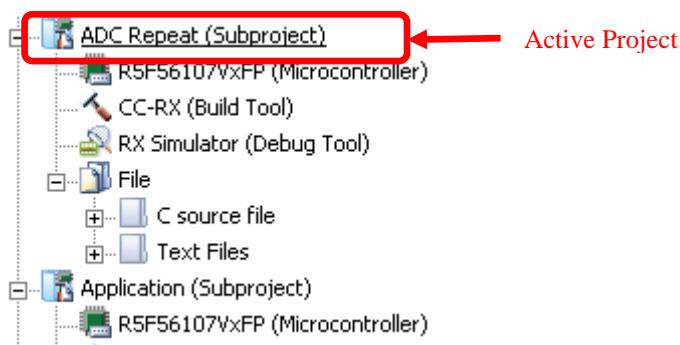
After starting the project, the next step is to make the sub-project for the tutorial or peripheral function you would like to use active in accord with the steps shown below.

3.1 How to Make a Sub-Project Active

Select the sub-project for a tutorial or peripheral function you would like to use from the Project Tree and right-click on it to open the context menu. Then, select [Set sub as Active Project].



The name of the active sub-project is underlined in the Project Tree.



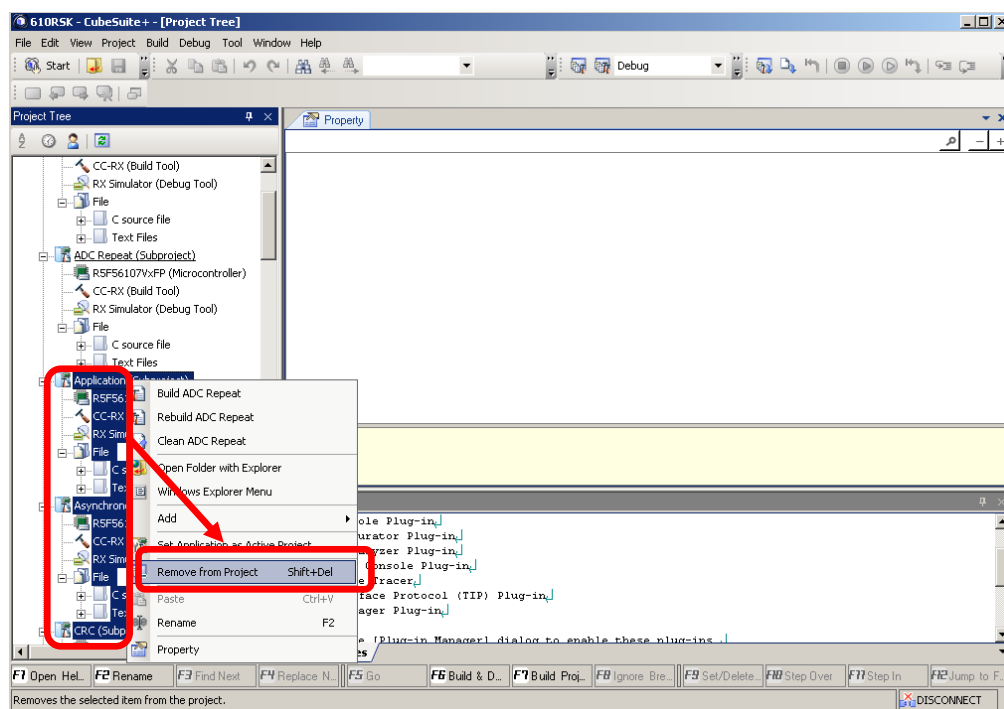
4. Deleting Sub-Projects that are not to be Used (When Using the Sample Code)

The building process builds all projects in the Project Tree, including non-active sub-projects.

Sub-projects that you don't intend to use can be deleted from the Project Tree by the method shown below.

4.1 How to delete sub-projects

Select and right-click on sub-projects for peripheral functions that are not to be used from the Project Tree (selecting multiple sub-projects is possible by also using the [Ctrl] key or [Shift] key). This opens the context menu. Select [Remove from Project].



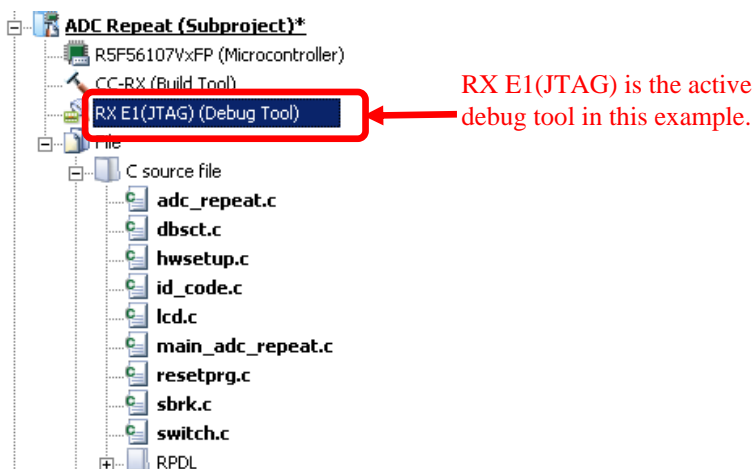
5. Changing the Debug Tool

When the active debug tool is not the E1 emulator [RX E1(JTAG)], you will need to change the debug tool.

Confirm the active debug tool by referring to "debug tool" in the Project Tree.

When the debug tool is not [RX E1(JTAG)], select [Debug] -> [Using Debug Tool] -> [RX E1(JTAG)] from the menu.

When the debug tool is [RX E1(JTAG)], changing the debug tool is not necessary.



6. Setting Properties of the Debug Tool

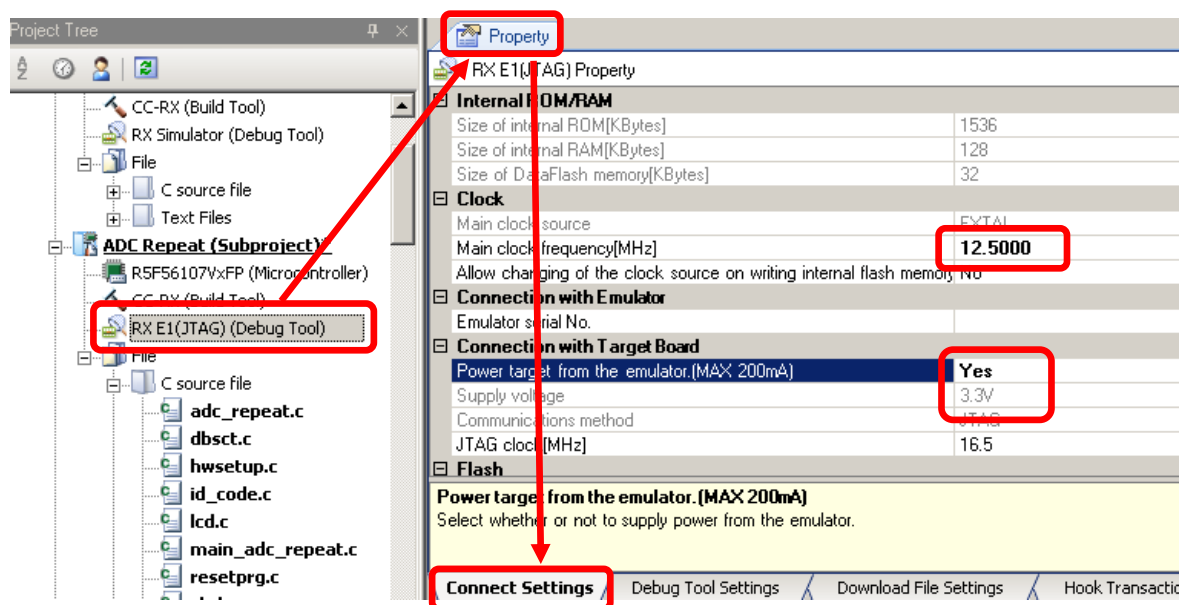
Before connecting the E1 emulator, open the Property panel by double-clicking on RX E1(JTAG) (debug tool) in the Project Tree then set [Main clock frequency] and [Supply voltage] on the [Connect Settings] tabbed page.

In this project, the settings below have already made.

Select [No] for [Power target from the emulator] if an external power supply is to be provided to the target board.

Table Properties Settings of the CubeSuite+ Project for RX610 [RX E1(JTAG)]

Tab	Category	Item	Setting
Connect Settings	Clock	Main clock frequency [MHz]	12.5
	Connection with Target Board	Power target from the emulator (MAX 200 mA)	Yes
		Supply voltage	3.3 V



7. Building a Program

Selecting [Build] -> [Build Project] makes CubeSuite+ build the project. The results obtained by building the project are displayed in the Output panel.

8. Starting the E1 Emulator

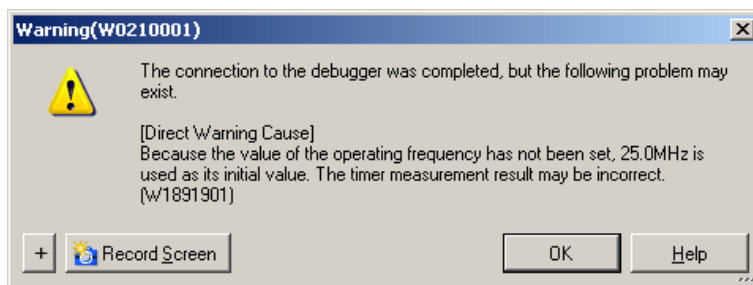
Connect the E1 emulator to the Renesas Starter Kit.

Refer to the documentation accompanying the Renesas Starter Kit for the settings of switches on the board for the kit and connection with the E1 emulator.

Select [Debug] -> [Download] from the menu.

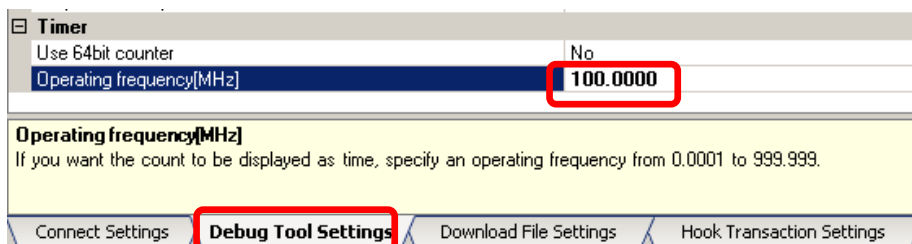
The E1 emulator is started and downloads the program.

There are cases where the warning message shown below is output when the E1 emulator is started.



Ignore the message unless you will be using the timer measurement function.

If you will be using the timer measurement function, double-click on RX E1(JTAG) (debug tool) to open the property panel, select the [Debug Tool Settings] tab, then input 100 against [Operation Frequency [MHz]].



9. Executing Programs

After downloading is complete, selecting [Debug] -> [Go] executes the program.

Website and Support

Renesas Electronics Website

<http://www.renesas.com/>

Inquiries

<http://www.renesas.com/contact/>

All trademarks and registered trademarks are the property of their respective owners.

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Handling of Unused Pins

Handle unused pins in accordance with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable. When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to a product with a different part number, confirm that the change will not lead to problems.

- The characteristics of an MPU or MCU in the same group but having a different part number may differ in terms of the internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.
 2. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.
 3. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.
 4. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from such alteration, modification, copy or otherwise misappropriation of Renesas Electronics product.
 5. Renesas Electronics products are classified according to the following two quality grades: "Standard" and "High Quality". The recommended applications for each Renesas Electronics product depends on the product's quality grade, as indicated below.

"Standard": Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots etc.

"High Quality": Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; and safety equipment etc.

Renesas Electronics products are neither intended nor authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems, surgical implantations etc.), or may cause serious property damages (nuclear reactor control systems, military equipment etc.). You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application for which it is not intended. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for which the product is not intended by Renesas Electronics.
 6. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.
 7. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or systems manufactured by you.
 8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.
 9. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You should not use Renesas Electronics products or technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. When exporting the Renesas Electronics products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.
 10. It is the responsibility of the buyer or distributor of Renesas Electronics products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the contents and conditions set forth in this document, Renesas Electronics assumes no responsibility for any losses incurred by you or third parties as a result of unauthorized use of Renesas Electronics products.
 11. This document may not be reproduced or duplicated in any form, in whole or in part, without prior written consent of Renesas Electronics.
 12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.
- (Note 1) "Renesas Electronics" as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.
- (Note 2) "Renesas Electronics product(s)" means any product developed or manufactured by or for Renesas Electronics.



SALES OFFICES

Renesas Electronics Corporation

<http://www.renesas.com>

Refer to "<http://www.renesas.com/>" for the latest and detailed information.

Renesas Electronics America Inc.

2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited

1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH

Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.

7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.

Unit 301, Tower A, Central Towers, 555 LanGao Rd., Putuo District, Shanghai, China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited

Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852-2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.

13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

Renesas Electronics Singapore Pte. Ltd.

80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.

12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141



CAUTION

If the requirements shown in the "CAUTION" sentences are ignored, the equipment may cause personal injury or damage to the products.

Renesas Tools Website <http://www.renesas.com/tools>
All trademarks and registered trademarks are the property of their respective owners.