RX111

Renesas Starter Kit Sample Code for Cubesuite+

R01AN1790EG0100
Rev.1.00
Nov 26, 2013

Introduction

Renesas Starter Kits (RSK) is supplied as complete development systems for the selected microcontroller. The kit includes an evaluation board, portable On-Chip Debugger and a set of peripheral sample code.

Target Device

RX111

Development environment

IDE: Cubesuite+
Compiler: Renesas RX v1.02.01.000
Hardware: Renesas Starter Kit for RX111

Contents

1. Opening the sample code workspace

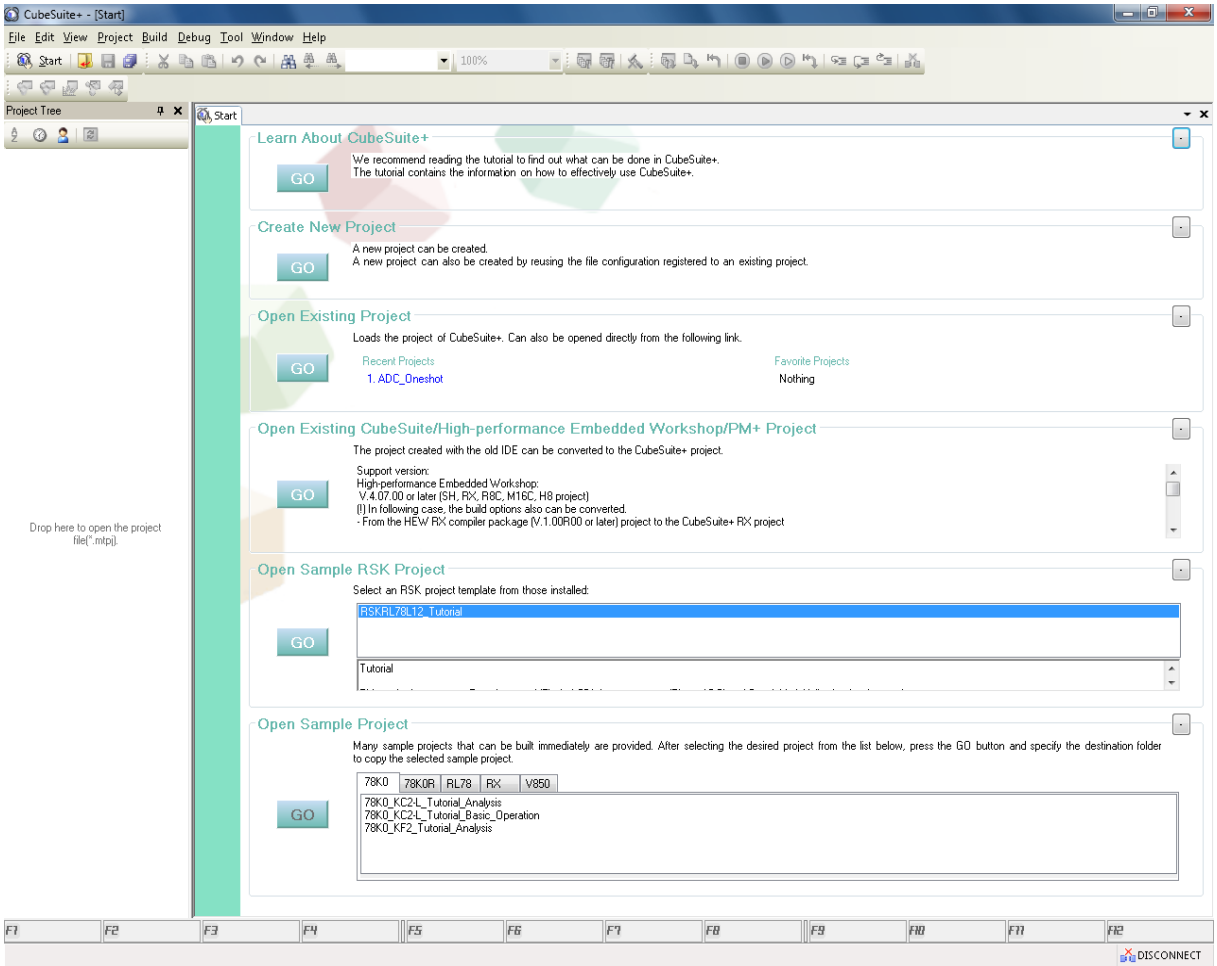
The CubeSuite+ IDE should already be installed on the user's personal computer (PC). The RSK sample code is supplied as a CubeSuite+ sample RSK project with the file 'an_r01an1790eg0100_rx111_rsk.zip'. This workspace should be copied to a suitable folder on your PC and extract the 'an_r01an1790eg0100_rx111_rsk.zip' file.

Once copied to a suitable location the sample RSK project can be opened by double clicking the file "RSKRX111_Tutorial.mtpj" or within CubeSuite from the Project | Open Project… menu item.

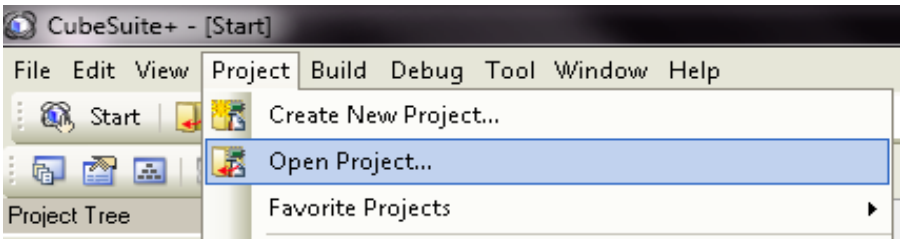
2. Loading the selected sample code project

Within the workspace there are a number of separate projects. Each project contains the source files for the specific peripheral sample code. Open CubeSuite+ IDE by clicking the Windows Start button select All Programs > Renesas Electronics CubeSuite+ > CubeSuite+.

Once the workspace is loaded into CubeSuite+ the required sample project must be loaded before you can be open the source files.

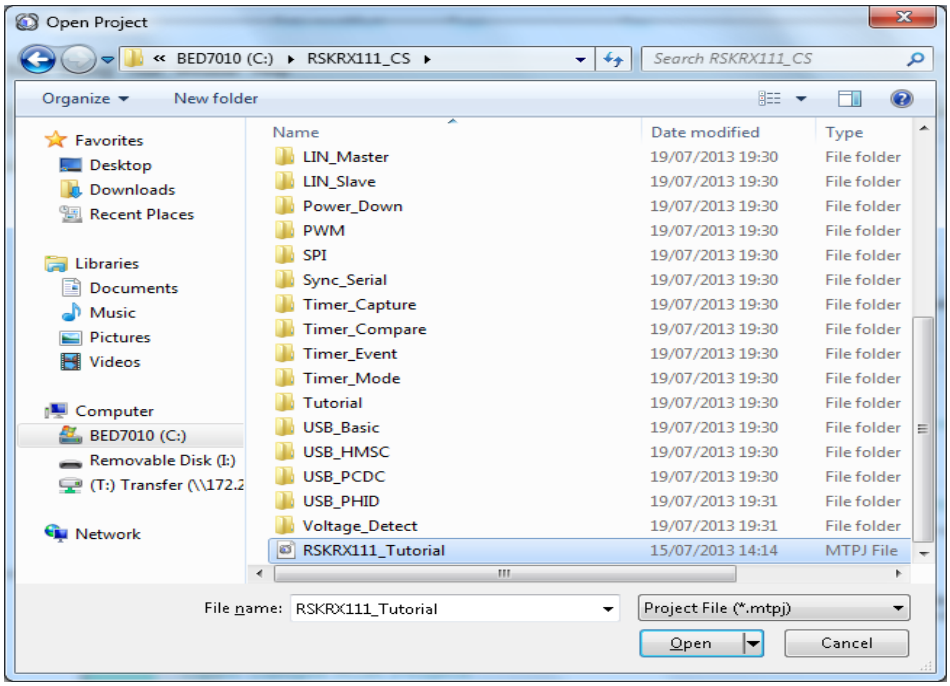


From the menu bar select File > Project > Open Project…

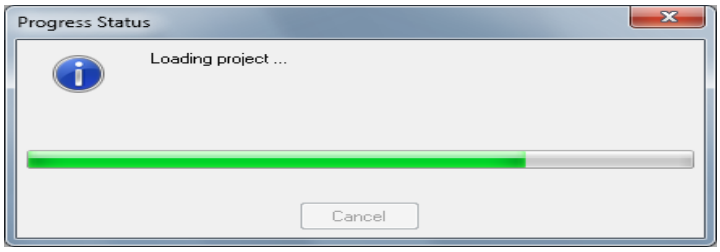


CubeSuite+ will open a dialog.
Navigate to the unzipped Timer_Event folder located in RSKRX111_Samples_CS folder.
Select the RSKRX111_Tutorial.mtpj file.

Click <Open>

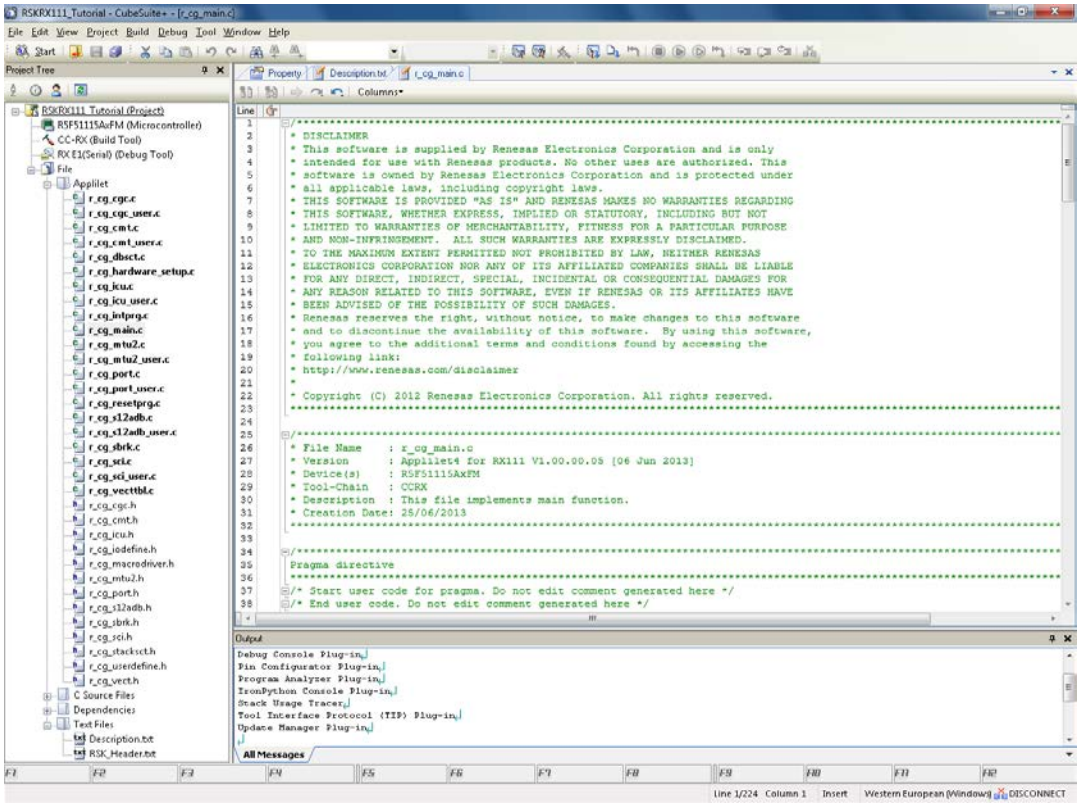


A Progress Status dialog will appear briefly whilst CubeSuite+ loads the project.



3. Opening Sample Code and Source Files

Once the project has been opened, the source code and all dependant files can be opened in the editor by expanding the folders in the Project Tree window and double clicking the files listed. All files have been grouped according to their file type.



Example

Each source file listed in Project Tree window in CubeSuite+ can be expanded to reveal its defendant files; as well as the output files.

From the Project Tree window to select the project, for example, “ADC_OneShot”, select “ADC_OneShot” Project in the Project Tree window. Then select Project |“Set ADC_OneShot as Active project” menu item to make the “ADC_OneShot” project the current project.

4. Source Code Functionality

Each source code project is specifically written to run on the appropriate RSK. However this source code can be useful as an example of peripheral initialization even without the RSK.

Each sample project will contain a C source file that includes “r_main.c” in the name, for example “r_main.c”. This source file includes the C function main(). All source files and dependant files whose filenames are prefixed with ‘r_’ were generated using Code Generator.

5. Appendix

Example of comment block with code functionality

```
/***********************************************************************************
* File Name     : Description.txt
* Device        : R5F51115AxFM
* Tool-Chain    : RX Family C Compiler 1.2.1.0
* H/W Platform  : RSKRX111
* Note          : Application Leading Tool (Applilet) is used to generate code
*               for this sample program.  The name Applilet is used hereafter.
*               The Applilet details and version number are given in the file
*               header for each relevant module.
* Description   : Demonstration of the S12AD ADC module, in single shot mode.
*               The program configures the ADC to perform oneshot AD
*               conversions and display the results on the LCD.
* Operation     :   1. Compile and download the sample code to the target.
*                   Click the 'Go' button to start program execution.
*
*                 2. Observe the LCD display - the R5F51115AxFM CPU will
*                   initially display the ADC reading as
*                    "AD12 Channel One"
*                    " Value = 0xxxxx "
*
*                 3. Adjust the potentiometer, press SW3 to carry out a
*                   12-bit A/D conversion of the ADC channel AN000 and
*                   observe the change in the value being displayed on the
*                   LCD.
*
*                 4. The user may also examine the ADC conversion result in
*                   the global variable g_adc_result.
*                   Repeat Step 3 to carry out further ADC readings.
*
***********************************************************************************/
```

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http://www.renesas.com/

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Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Nov 26, 2013	—	First edition issued

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 accord 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.

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