RX130 Group

Renesas Starter Kit Sample Code (e² studio for CC-RX)

R01AN3123EJ0100
Rev.1.10
Jul. 15. 2020

Introduction

Renesas Starter Kits (RSK) are 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

RX130 Group

Development Environment

IDE: e² studio 2020-04

Compiler: Renesas CC-RX v3.02.00

Hardware: Renesas Starter Kit for RX130

Notes:

If the same version of the toolchain (C compiler) specified in the original project is not in the import destination, the toolchain will not be selected and an error will occur.

Check the selected status of the toolchain on the project configuration dialog.

For the setting method, refer to FAQ 3000404.

FAQ 3000404 :Program ""make"" not found in PATH’ error when attempting to build an imported project (e² studio)"

Contents

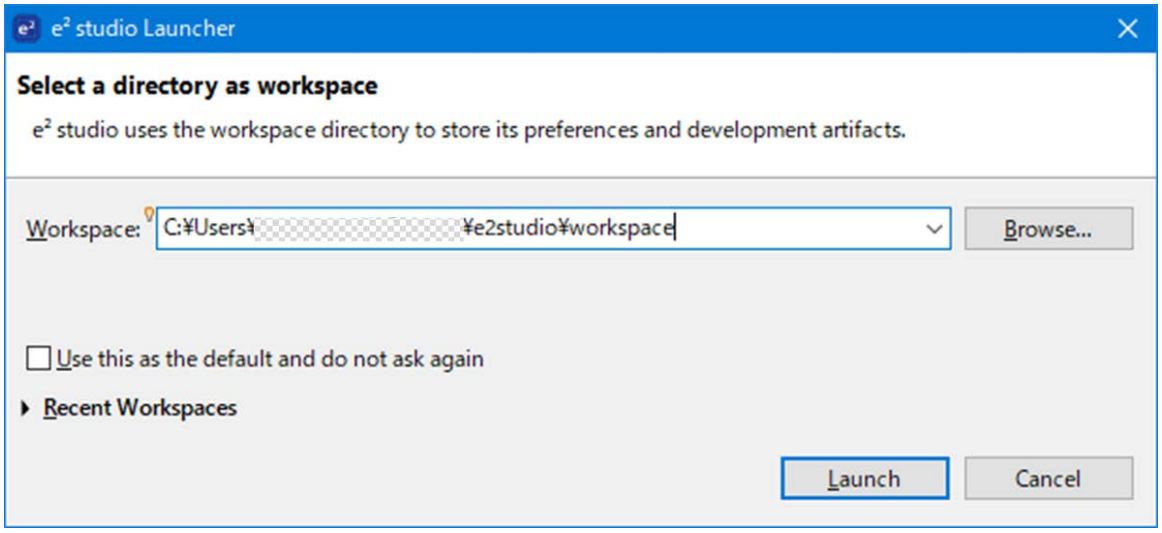
1. Installation

This section assumes that e2 studio and the Renesas RXC toolchain are already installed.

Create a new folder, for example ‘C:\Renesas\Workspace\RSK\RSKRX130’. Copy the application note zip package ‘an_r01an3123ej0110_rx130_rsk.zip’ downloaded from the website to this folder.

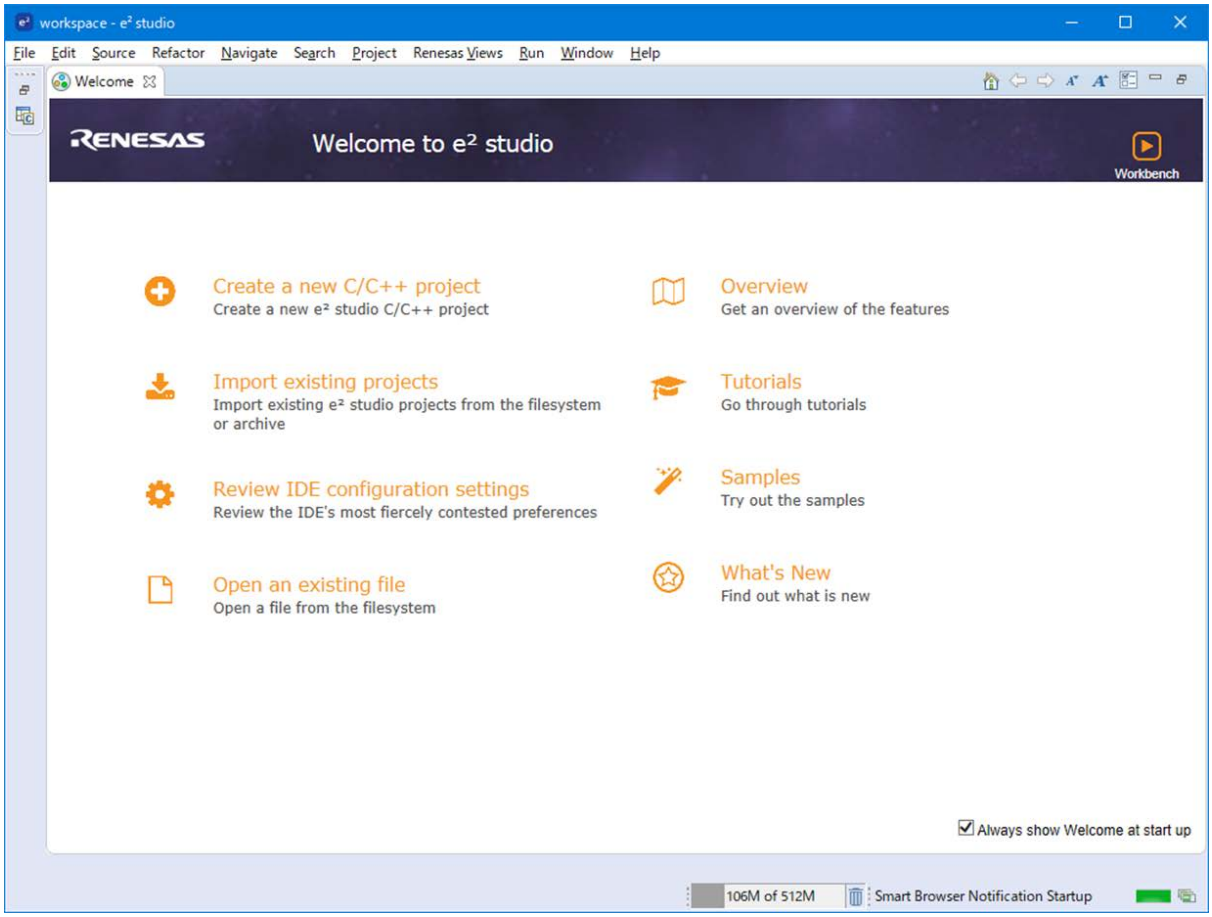
2. Creating the Project Workspace

Open e2 studio by clicking the Windows Start button, select All Programs > Renesas Electronics e2 studio > Renesas e2 studio.

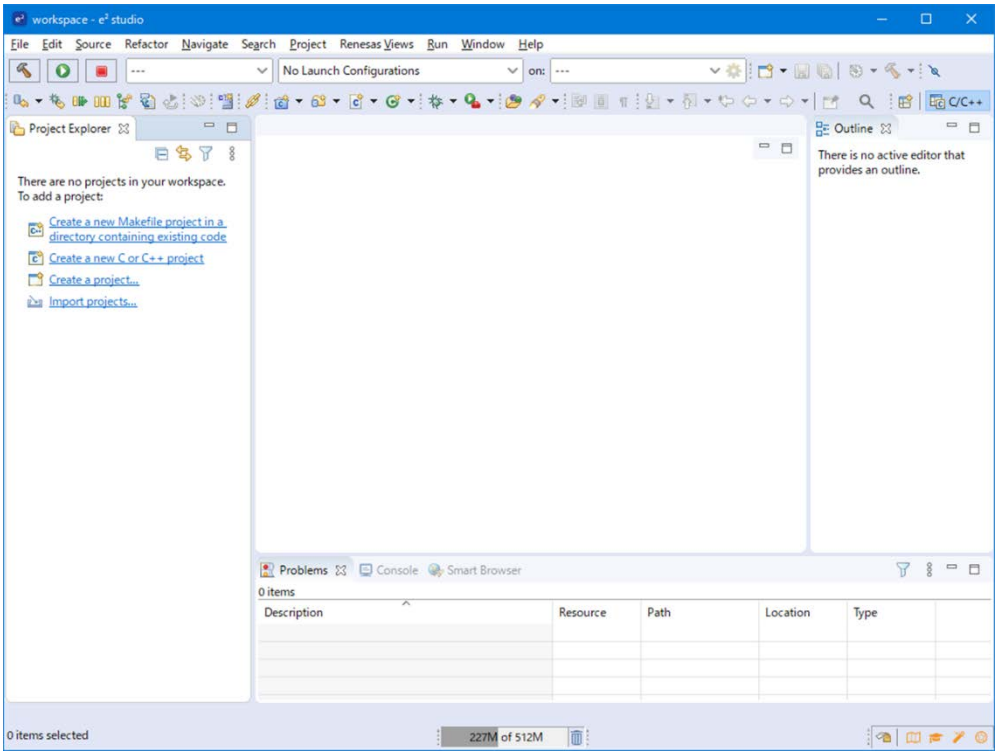


Seleect <Launch>

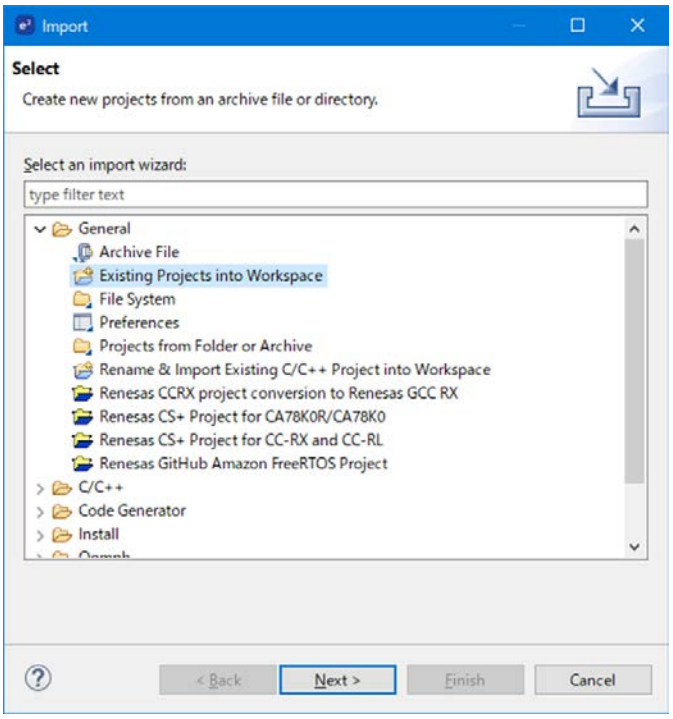
On the ‘Welcome’ screen select the ‘Go to the e2 studio workbench’ icon as shown below.



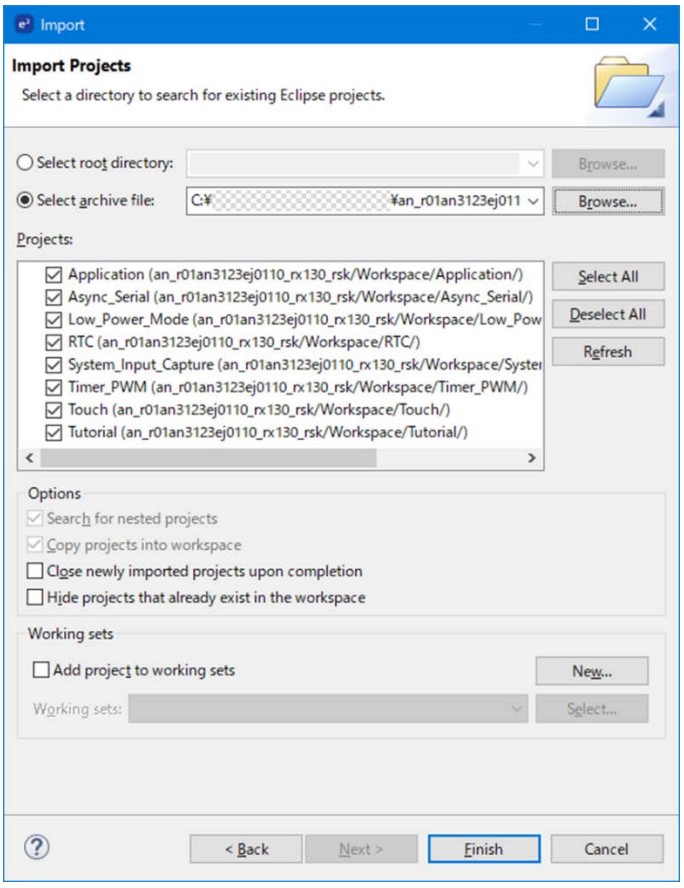
1. Select <Import projects…>.



2. The ‘Import - Select’ dialog will now appear. Expand the “General” folder icon, and select “Existing Projects into Workspace”, then click ‘Next’.



3. The ‘Import - Import Projects’ dialog will now appear. Select ‘Select archive file’, click the <Browse> button and locate the directory: ‘C:\Renesas\Workspace\RSK\RSKRX130\an_r01an3123ej0110_rx130_rsk.zip’. Click <Finish> to import the project.

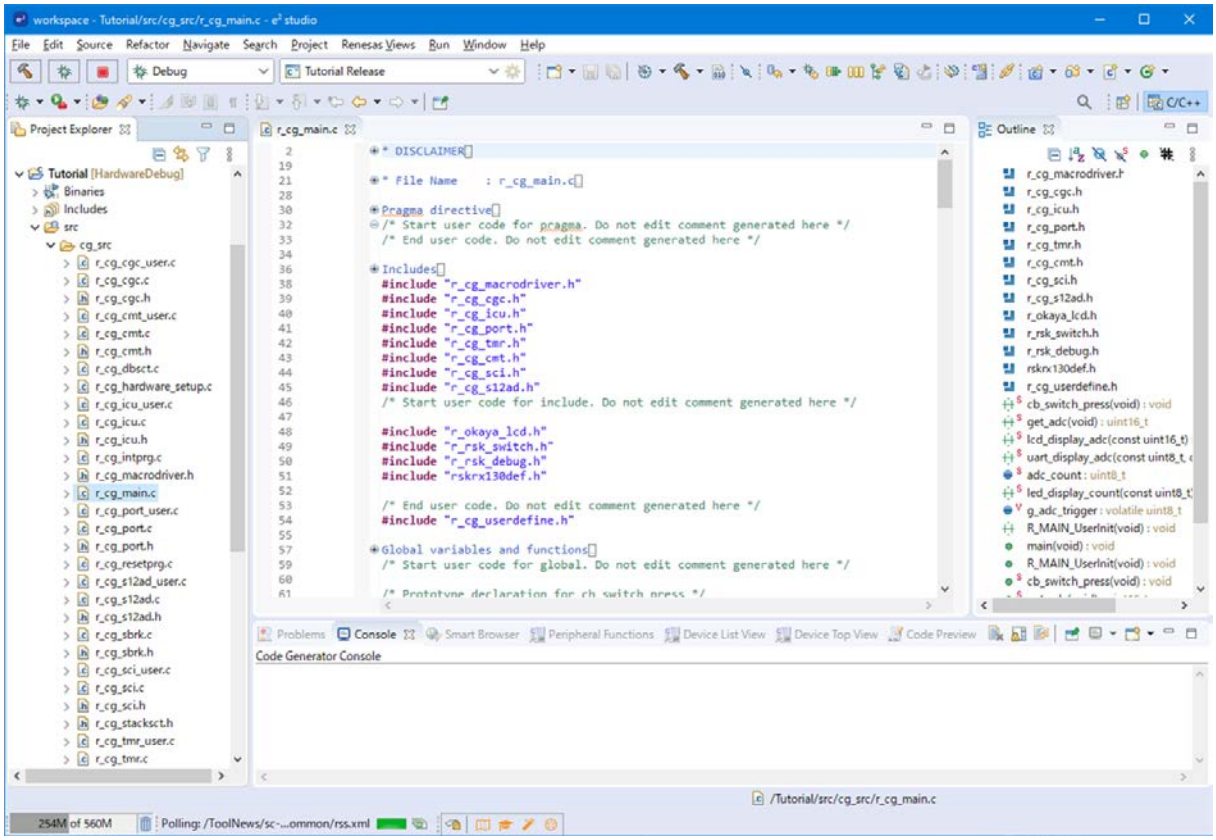


3. Opening the Sample Code and Source Files

Once imported into e² studio select a project from the project list in the “Project Explorer”. Click the arrow next to it to expand the folder contents.

Description.txt in the ‘doc’ folder provides a functional description of the sample.

Clicking the arrow next to the ‘src’ folder and the ‘cg_src’ folder will show the source files.



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 “main” in the name, for example “r_cg_main.c”. This source file will include the C function main().

Website and Support

Renesas Electronics Website
http://www.renesas.com/

Inquiries
http://www.renesas.com/contact/

Product Information
http://www.renesas.com/rskrx130

Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Dec 29, 2015	-	First edition issued
1.10	Jul.15.2020	-	Update the toolchain version

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit 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. Precaution against Electrostatic Discharge (ESD)

   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

   The state of the product is undefined at the time 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 time 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 time 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 time when power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. 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 the 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.

5. Clock signals

   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is 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. Additionally, 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.

6. Voltage application waveform at input pin

   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

   Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

   Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of 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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(Rev.4.0-1 November 2017)

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