RX231 Group

Y-HEAR-IT-RX231 Solution Kit Sample Code for e2 studio

R01AN3568EG0100
Rev.1.00
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Introduction

The Hear-it! Solution Kit demonstrates the application of the DSP signal filtering capabilities of the RX231 to an audio source, which is then made available from the on-board headphone or speaker connections. A total of 4 pre-set filters are available, applicable to either channel and the chosen characteristic is displayed on the PMOD™ display. A second configuration of the sample code demonstrates the streaming of audio from a mass-storage device connected to the USB host interface, where a simple GUI and input controls allow the selection of the wav file to be played. The board includes an embedded E2 Lite programmer/debugger and would be an ideal platform to be used as a basis for further development.

Target Device

RX231

Development environment

IDE: e^2 studio v5.3.1
Compiler: Renesas RXC v2.06.00
Hardware: Y-HEAR-IT-RX231

Contents

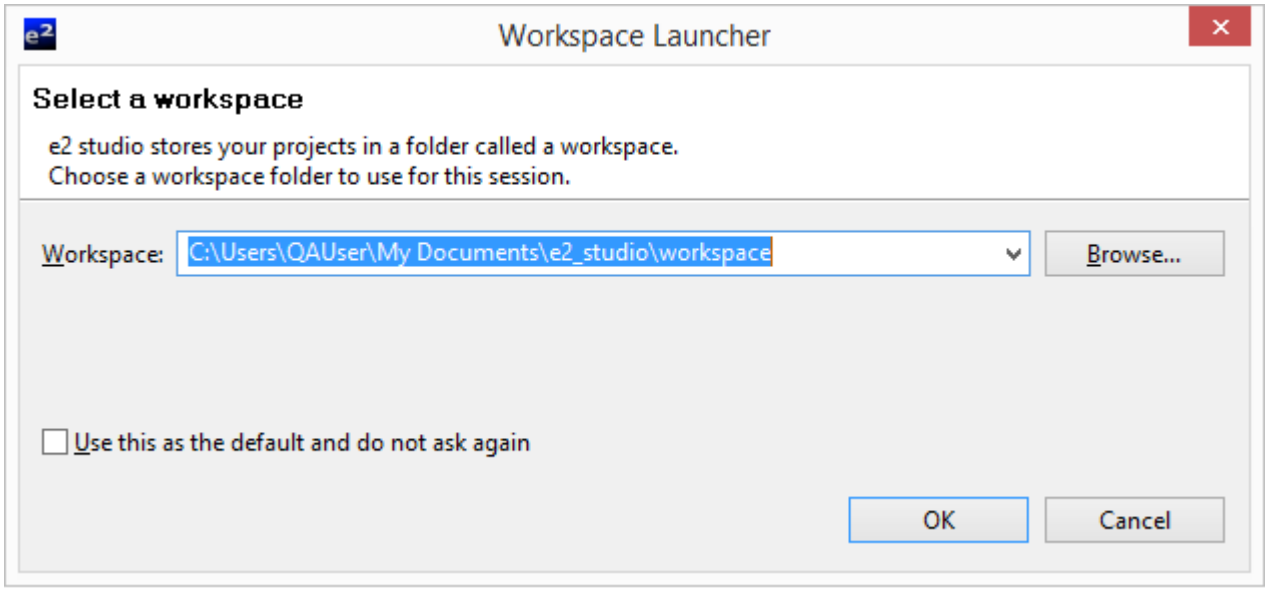
1. Installation

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

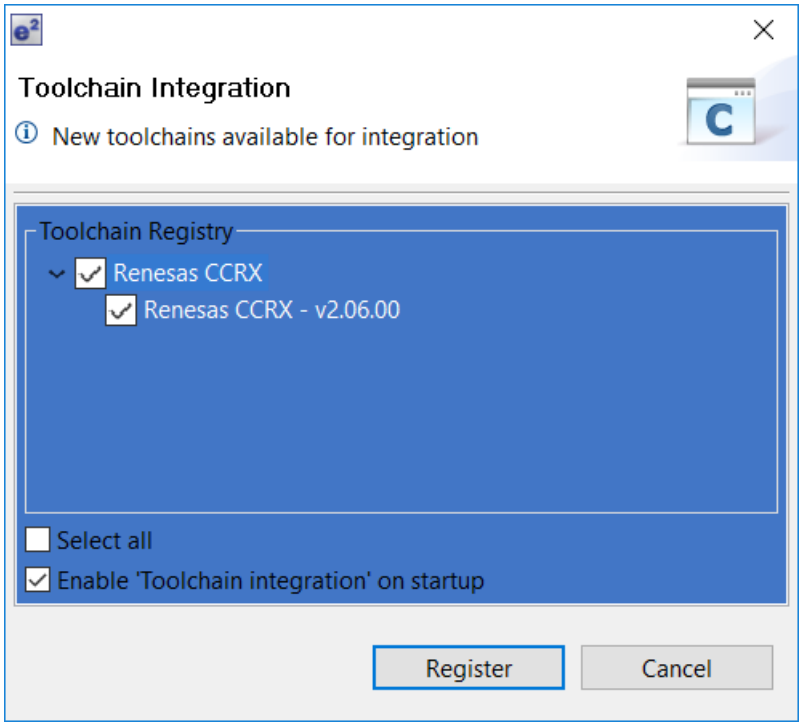
Create a new folder, for example ‘C:\Renesas\Workspace\Y-HEAR-IT-RX231’. Copy the application note zip package ‘an-r01an3568eg0100-rx231.zip’ downloaded from the website to this folder.

2. Creating the Project Workspace

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

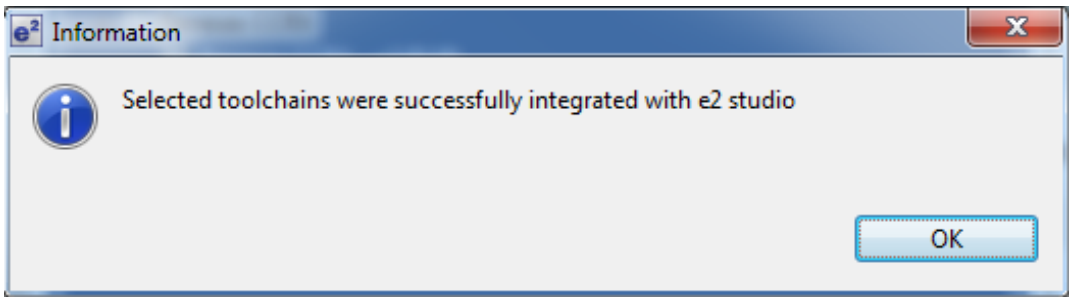


Select <OK>

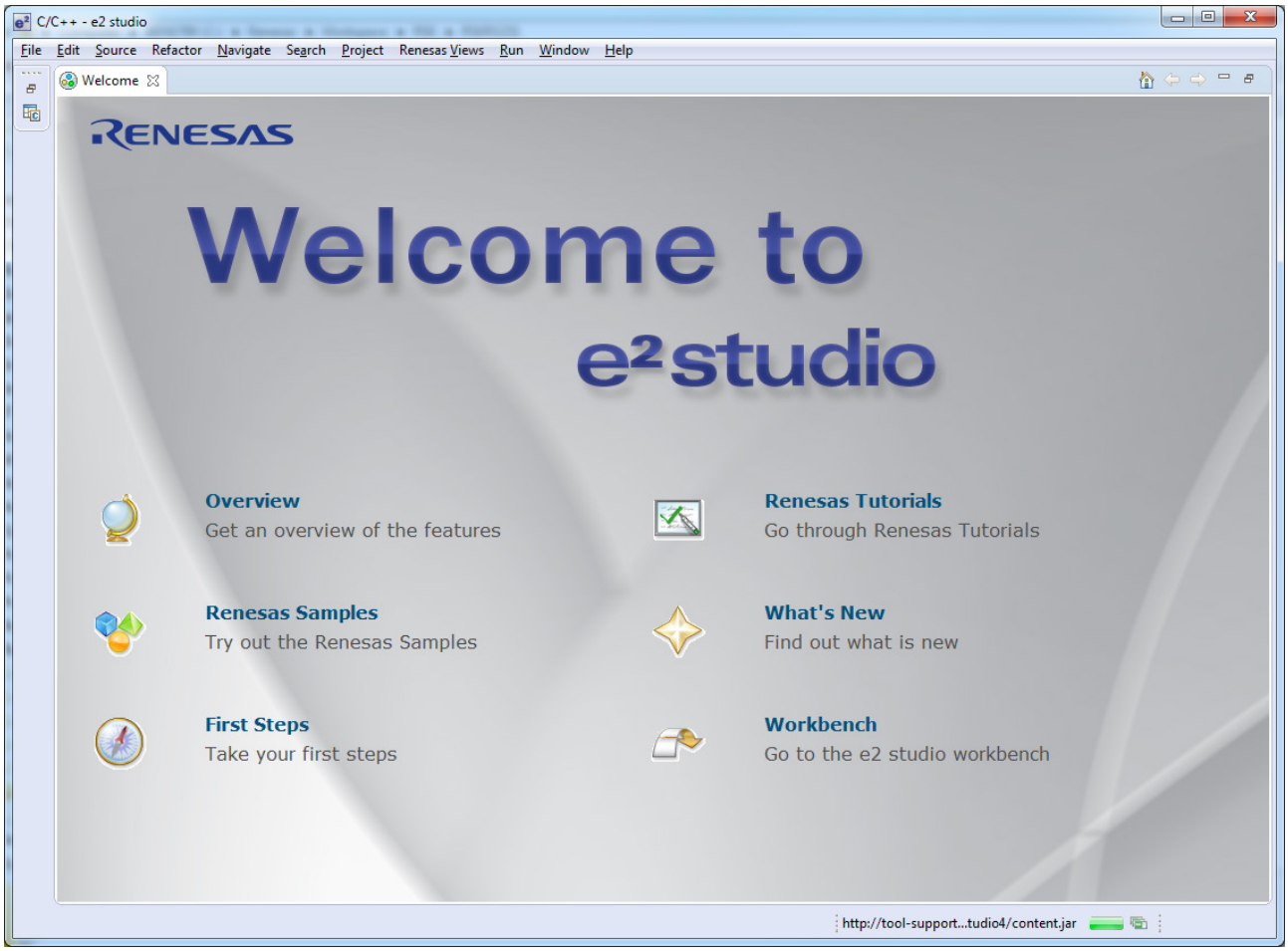


In the ‘Toolchain Registry’ dialog select the ‘Renesas CCRX’ and ‘Renesas CCRX - v2.06.00’ checkboxes. Click <Register>.

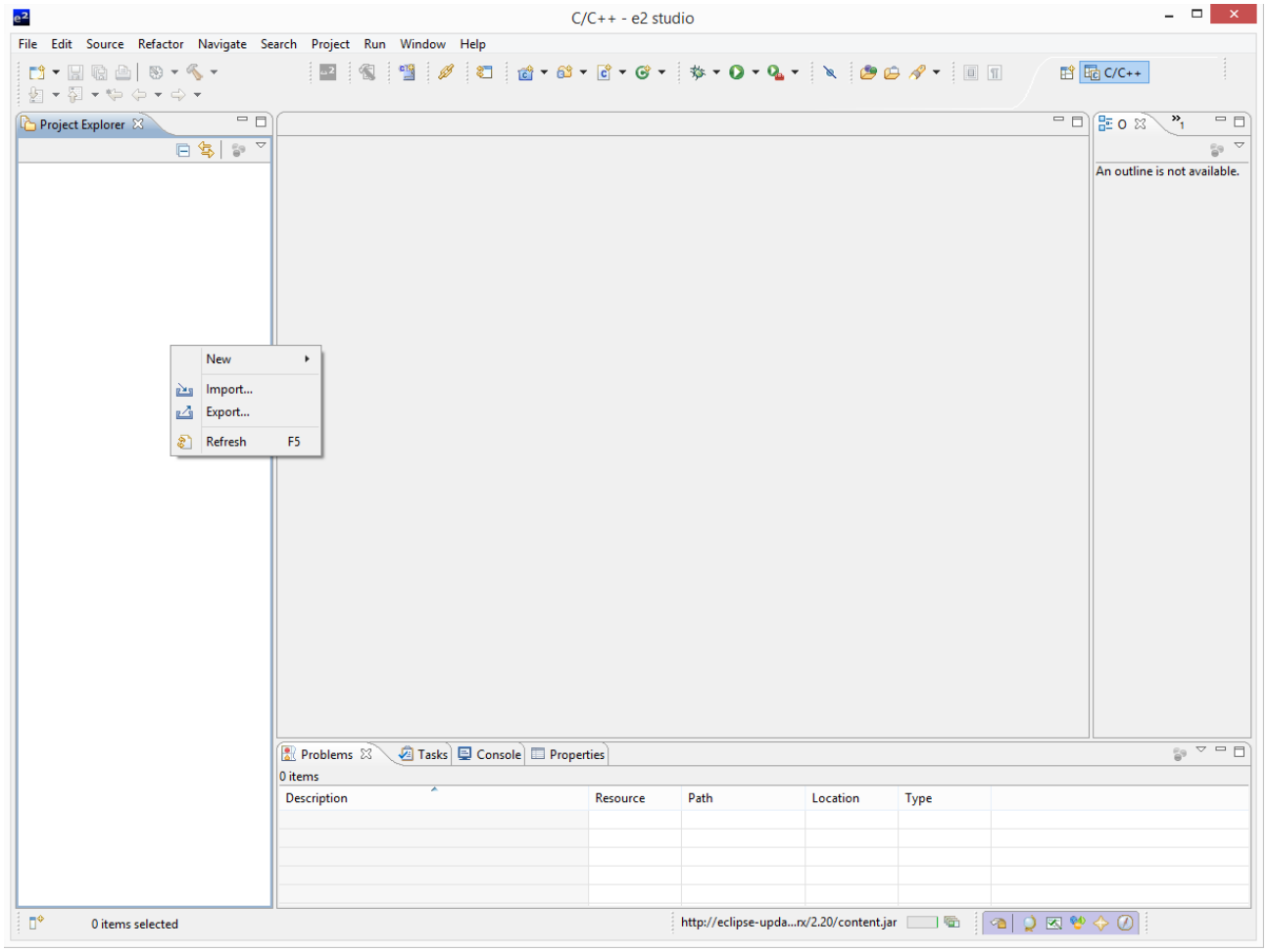
The ‘Information’ dialog below appears. Click <OK>.



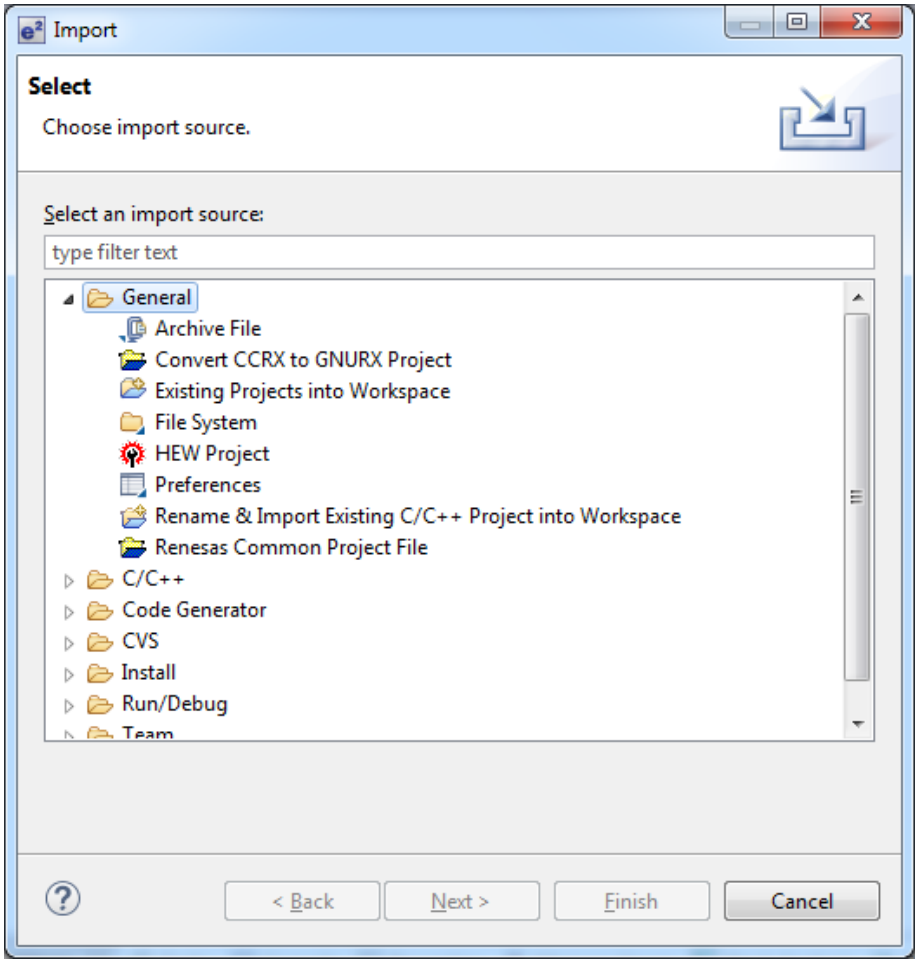
On the ‘Welcome’ screen select the ‘Go to the e2 studio workbench’ icon as shown below.



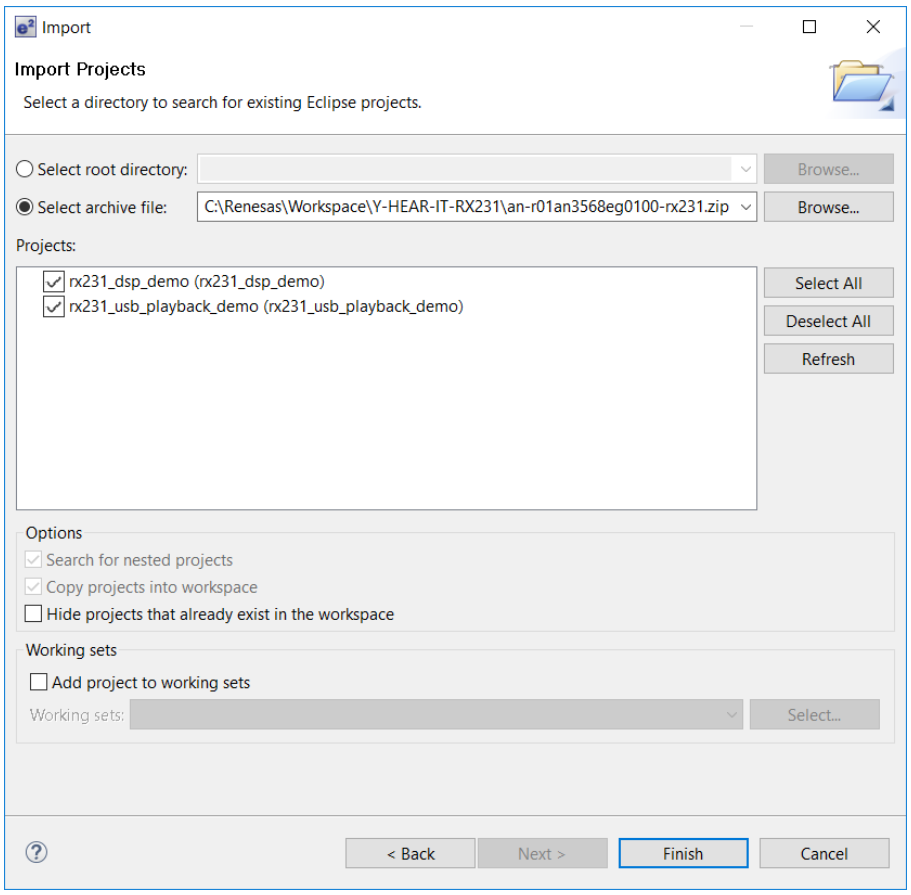
1. Right click in the project explorer window and click <Import…>



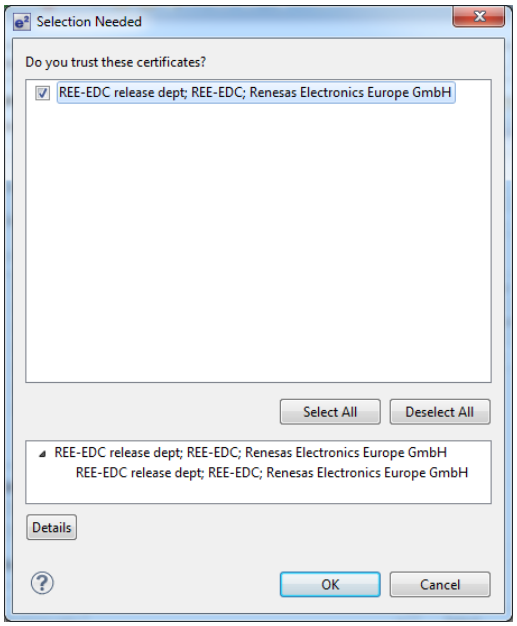
2. The ‘Import - Select’ dialog will now appear. Expand the “General” folder icon, and select “Existing Projects into Workspace”, then click ‘Next’.



3. The ‘Import – Import Projects’ dialog will now appear. Select ‘Select archive file’, click the <Browse> button and locate the folder created earlier ‘C:\Renesas\Workspace\Y-HEAR-IT-RX231’. Click <Finish> to import the projects.

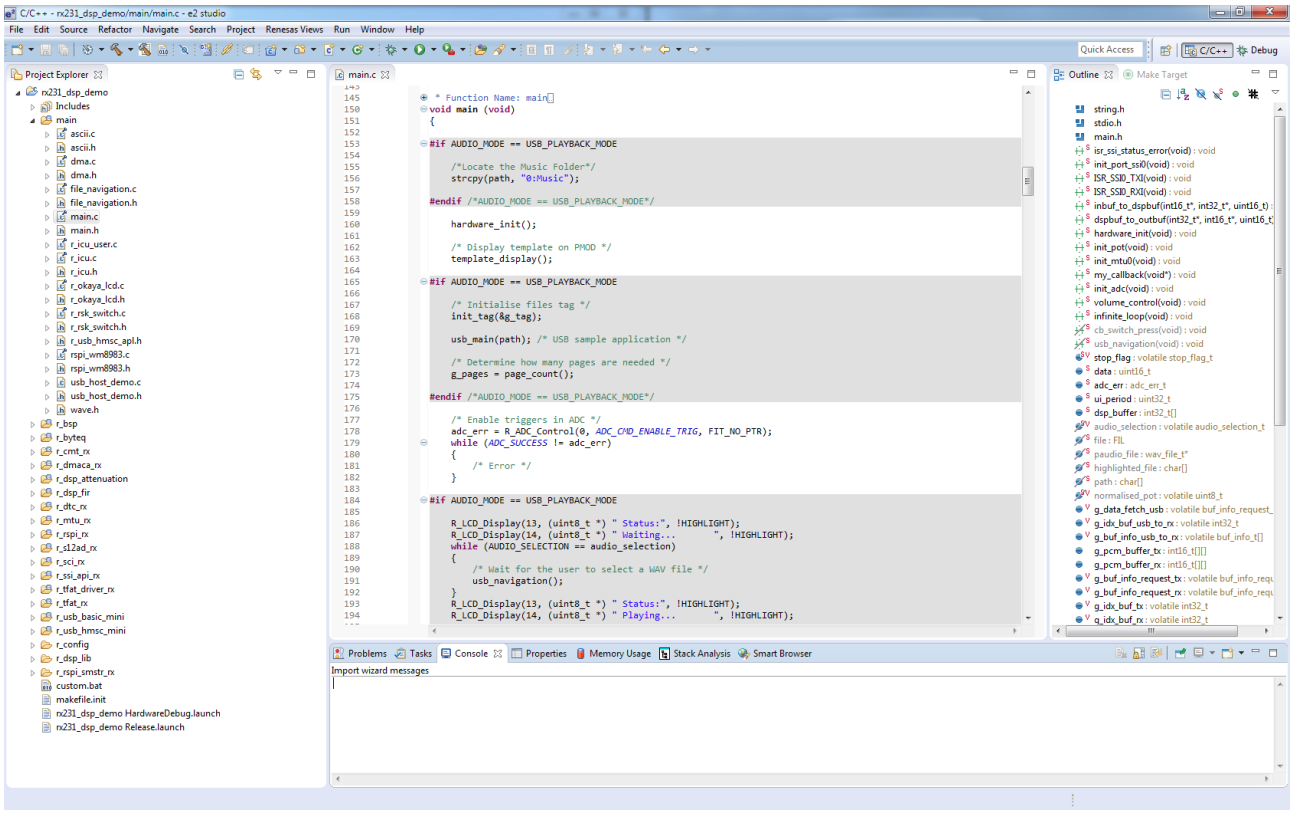


4. If prompted select the checkbox to trust certificates;



3. Opening Sample Code and Source Files

Once imported into e^2 studio select a project from the project list in the “Project Explorer”. Click the arrow next to it to expand the folder contents.



4. Source Code Functionality

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

Each sample project will contain a C source file that includes “main” in the name, for example “main.c”. This source file will include the C function main().

Website and Support

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

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Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.0	May 09, 2017		First edition.

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. 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.

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