

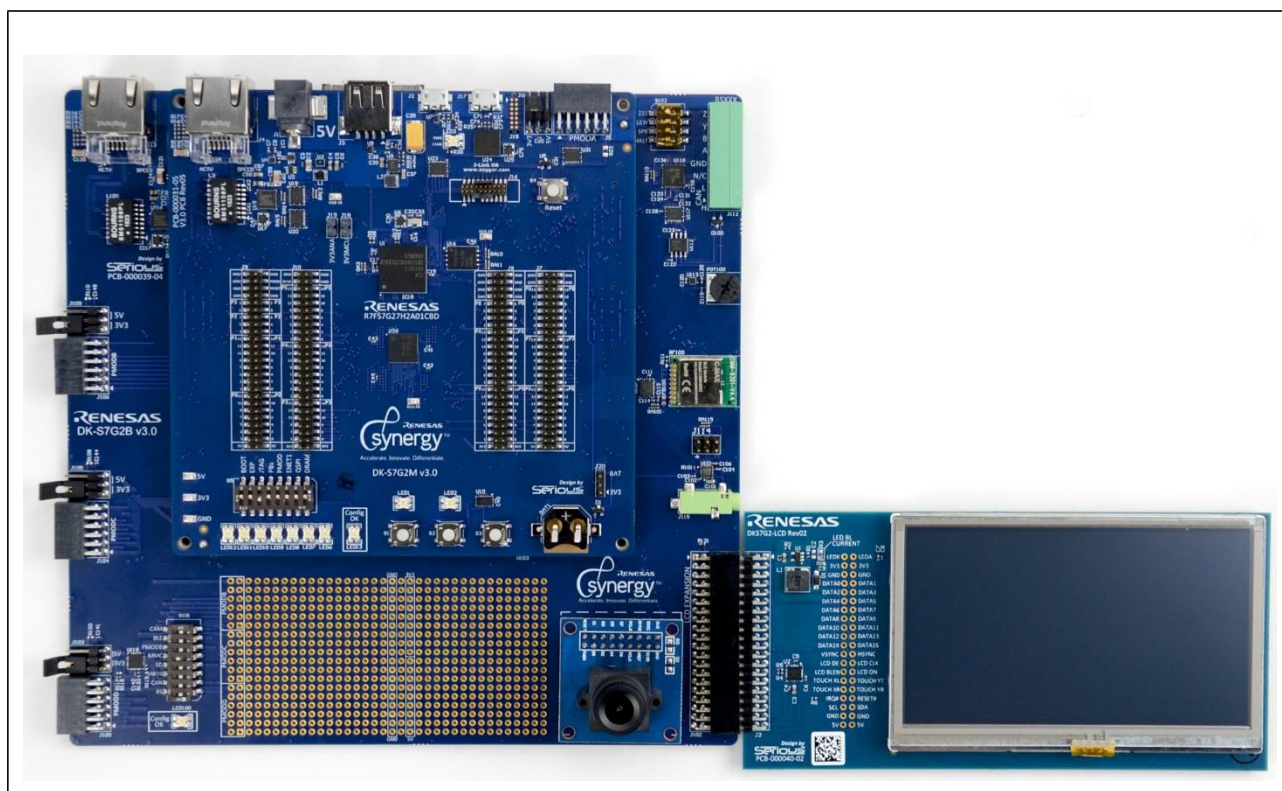
DK-S7G2 v3.0

October 9, 2015

In the box

The following components are included in the DK-S7G2:

- DK-S7G2 Main Board (DK-S7G2M V3.0)
- DK-S7G2 Breakout Board (DK-S7G2B V3.1)
- Detachable 4.3-in. resistive-touch WQVGA TFT LCD panel (DK-S7G2LCD V3.0)
- Detachable CMOS VGA camera module
- One USB Type A to Micro-B cable
- One Ethernet cable
- Multi-region 5V power supply
- Quick Start Guide



Overview

This Kit and the associated development tools provide the user with a platform to develop products with the Renesas Synergy™ S7 microcontrollers. This Quick Start Guide will walk the user through using the Out-of-Box Demo then give step by step directions to develop, configure, generate, build, download and execute the “Blinky” SSP project.

DK-S7G2 Kit

NOTE: This Quick Start Guide covers version 3.0 of the DK-S7G2 Development Kit.

Prerequisites

Required software and tools

- Minimum PC Requirements: Microsoft® Windows® 7 with Intel® Core™ family processor running at 2.0 GHz or higher (or equivalent processor), 8 GB memory, 250 GB hard disk or SSD, USB 2.0, Connection to the Internet
- e² studio Integrated Solution Development Environment (ISDE) from Renesas
- Renesas Synergy™ Software Package (SSP)

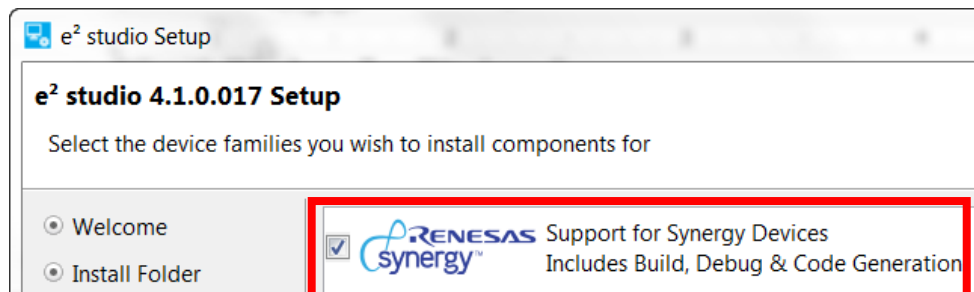
Installation

Tools are available for download at: <https://synergygallery.renesas.com>

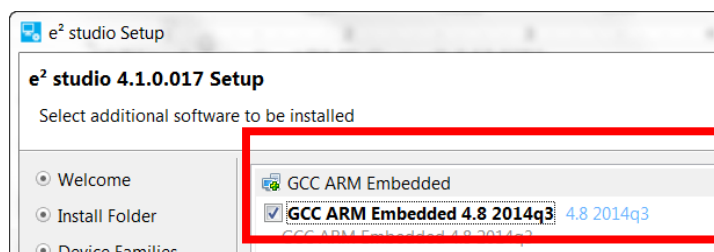
NOTE:

Version numbers of the tools may change. Below we show the versions that were available when this document was developed.

- 1) Download and install the latest revision of the Development Tool - e² studio (ISDE) following the below instructions:
(NOTE: Unless informed otherwise below, use the default options.)
 - a) You must select at least the Renesas Synergy™ Family when the below dialog box appears.



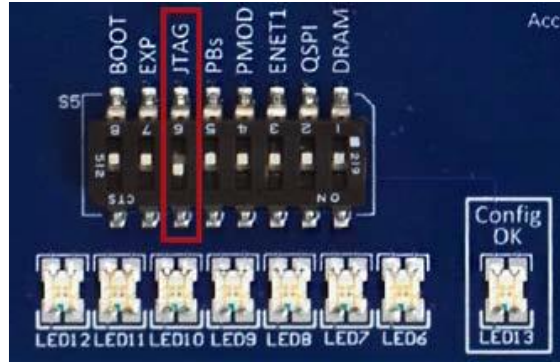
- b) You must select the additional software “GCC ARM Embedded 4.8.2014q3” when the following dialog box appears.



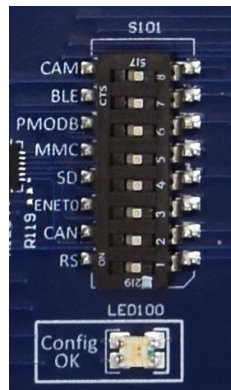
- 2) Download and install the latest revision of the Synergy Software Package using the default options.

Connecting the board components

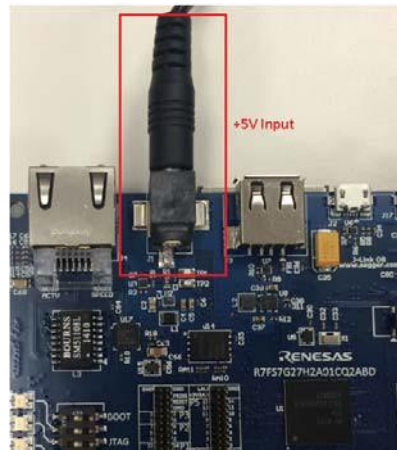
- 1) Set the JTAG DIP switch 6 on S5 to ON (toward the LEDs).



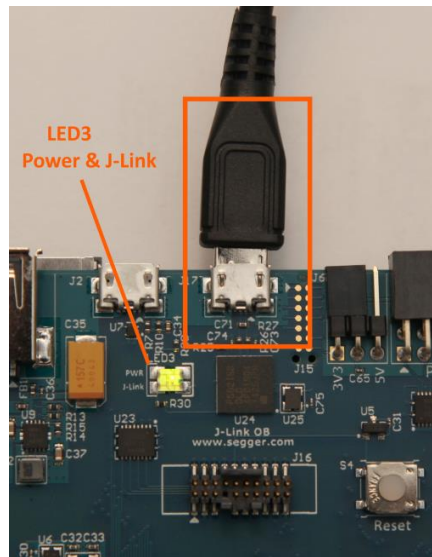
- 2) Verify all of the S101 DIP switches on the Breakout Board are set to OFF.



- 3) Using the power supply provided with the DK-S7G2 kit, apply power through the 5V barrel connector (J1) on the Main Board. LED3 will turn on Green with a flashing-Red below it. The solid-Green/flashing-Red LED3 informs the user that the kit cannot communicate with the PC on the debug port.



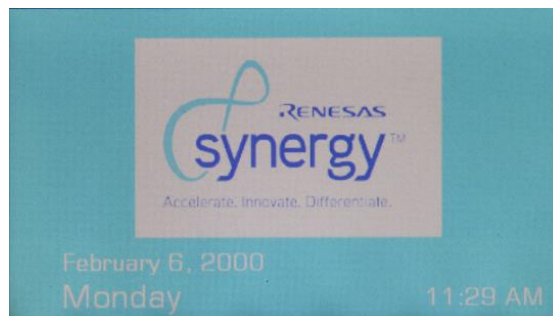
- 4) Connect the USB cable provided with the DK-S7G2 J-Link OB (J17) on the Main Board.



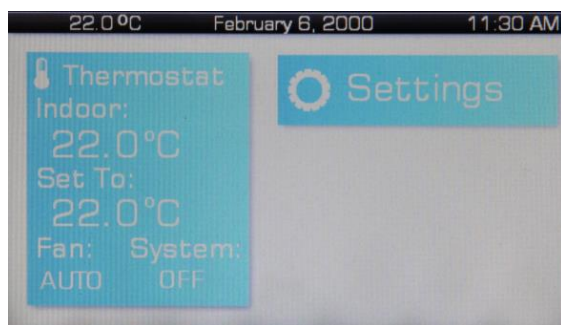
- 5) Connect the other end of the USB cable to a USB port of the PC. Now LED3 will turn solid-Green, indicating a good connection.

Out-of-Box Demo

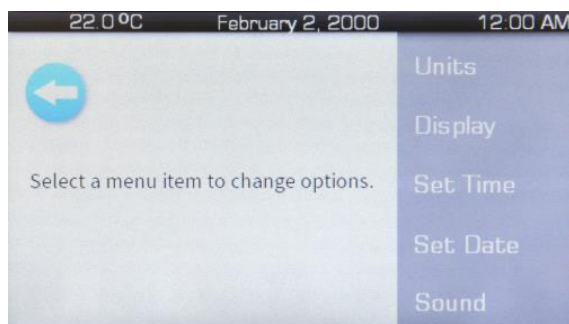
- 1) During initialization, the S7G2 will turn Red and Green the LEDs that it can control and it will turn on and off the Red LEDs inside the Ethernet connectors so you can verify those work. At the end of initialization, LED1 and LED2 are off while the Configuration LEDs, LED6 to LED12 will be green.
- 2) A splash screen will be displayed on the LCD showing a date and time.



- 3) Press anywhere on the splash screen to go into the Thermostat Demo.



- 4) Press <Settings> on the top right.

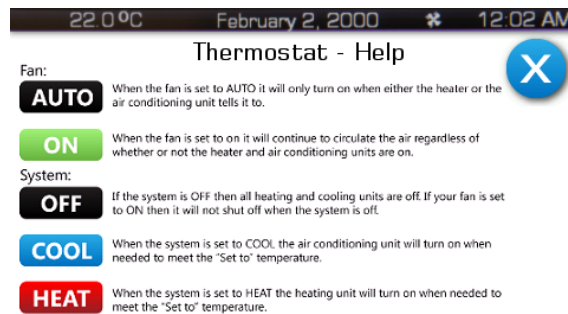


- 5) Go into Units, Display, Set Time, Set Date and Sound to make adjustments to the demo.

- 6) Click on the left side of the Thermostat main screen to enter the Thermostat control menu.



- 7) Within the Control Menu, adjust the System, Fan, and Temperature. Press the Help button to show the detailed Help screen.



Running Blinky

The Blinky Project is included in the SSP. To run the Blinky Project, you must first create a Renesas Synergy Project in the e² studio ISDE; you can then debug and run the project on the DK-S7G2.

Creating the Blinky Project

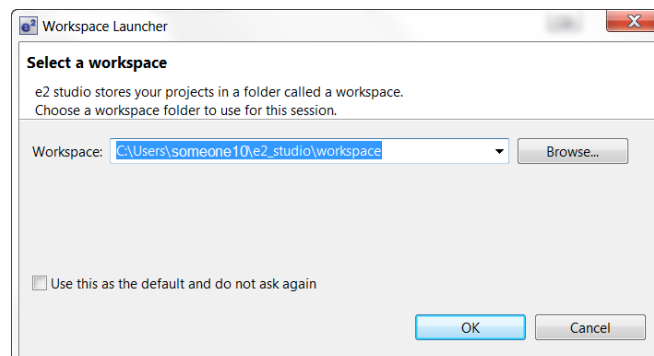
To create a project:

- 1) Start the e² studio ISDE. Click <e2 Studio> under Windows Start Menu -> Renesas Electronics e2studio -> e2 studio

NOTES:

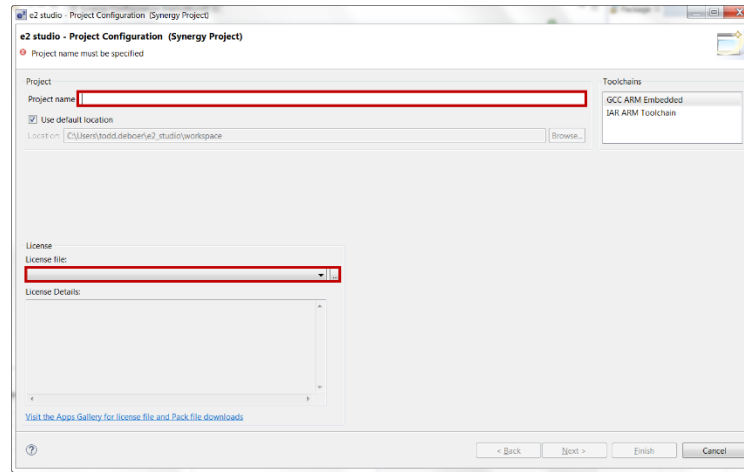
- a) The e² studio ISDE confirms the installed tool chain(s) the first time it is started after installing the toolchains.
 - b) If the e² studio ISDE displays the **Welcome to e² studio** screen, review and click the [X] (it will not be displayed again).
 - c) If you do not have a compatible tool chain installed, see section [Prerequisites](#).
- 2) If the Workspace Launcher Dialog box is displayed, click <OK>.

NOTE: Until you select “Use this as the default (workspace) and do not ask again”, the Workspace Launch window will be displayed when e² studio is started.



- 3) Start a new Synergy Project by clicking on **File > New > Synergy Project**.

The ISDE displays the **Project Configuration (Synergy Project)** dialog box.

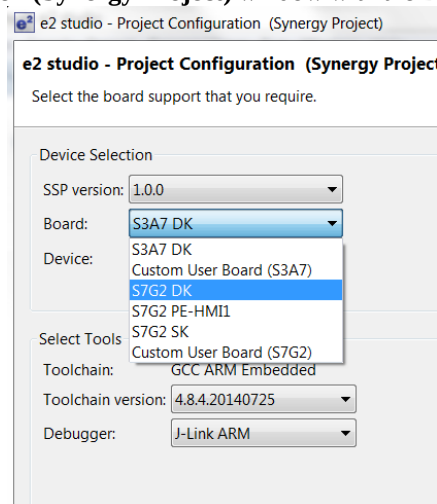


- 4) Enter “Blinky_DK_S7G2” as the Project name.
- 5) The first time you configure a project you need to load a license file. Click on the browse icon of the License File and if needed browse to C:\Renesas\e2_studio\internal\projectgen\arm\Licenses\ (if you installed to the default locations).

NOTE: After you have loaded the license file it will be loaded and displayed in **License** window by default.

- 6) Click **Next**.

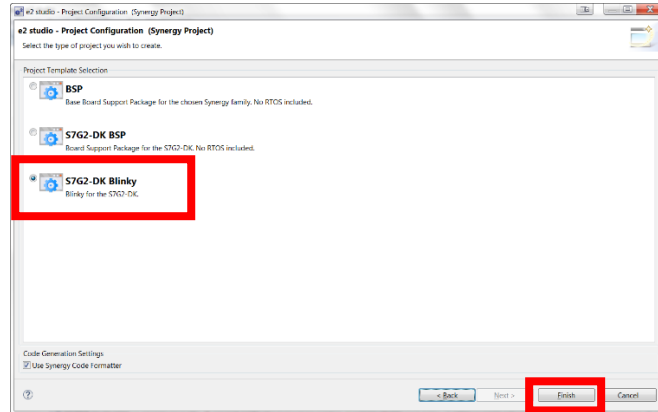
The ISDE displays the **Project Configuration (Synergy Project)** window with the **Device Selection** options.



- 7) Select **S7G2 DK** and leave all other options in this window at their default settings.

- 8) Click <Next>.

The ISDE displays the **Project Configuration (Synergy Project)** window with the **Project Template Selection** options.

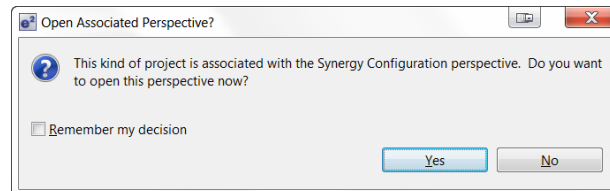


- 9) Select **S7G2-DK Blinky**

- 10) Click <Finish>.

NOTE:

The e² studio ISDE has built in Perspectives. Until you inform the tool to remember your selection, it will ask if it can use the Synergy Configuration Perspective as shown below.



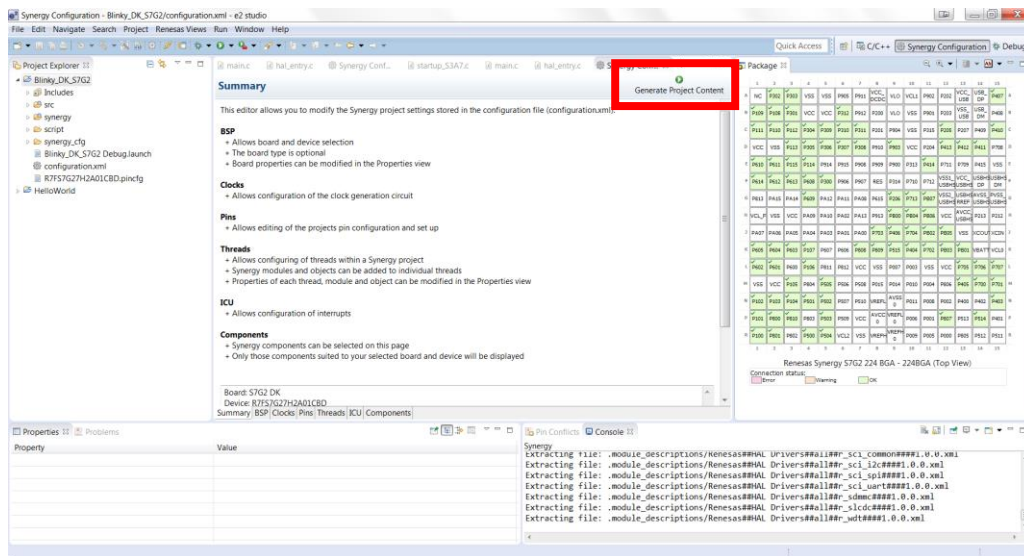
- 11) If the Open Associated Perspective dialog box appears click <Yes>.

- 12) The ISDE automatically configures the SSP to load and generate the necessary configuration files for the microcontroller hardware associated with the selected board.

The ISDE displays the **Synergy Project Editor** where you can see all generated files and configurations by selecting the **Clocks**, **Pins**, **Threads**, **ICU**, and **Components** tabs.

IMPORTANT NOTE:

Don't be afraid to look around and check things out. The most important thing to remember is Edit->Undo will fix most anything you do that you want to take back!



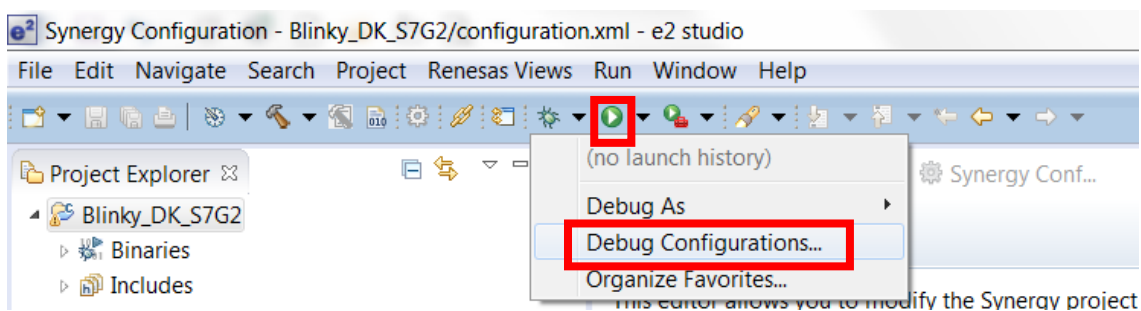
13) Generate the project content by clicking on the < **Generate Project Content** > button.

14) Build the project by selecting Project -> Build Project or clicking on the Build icon . The Blinky Project should build with no errors.

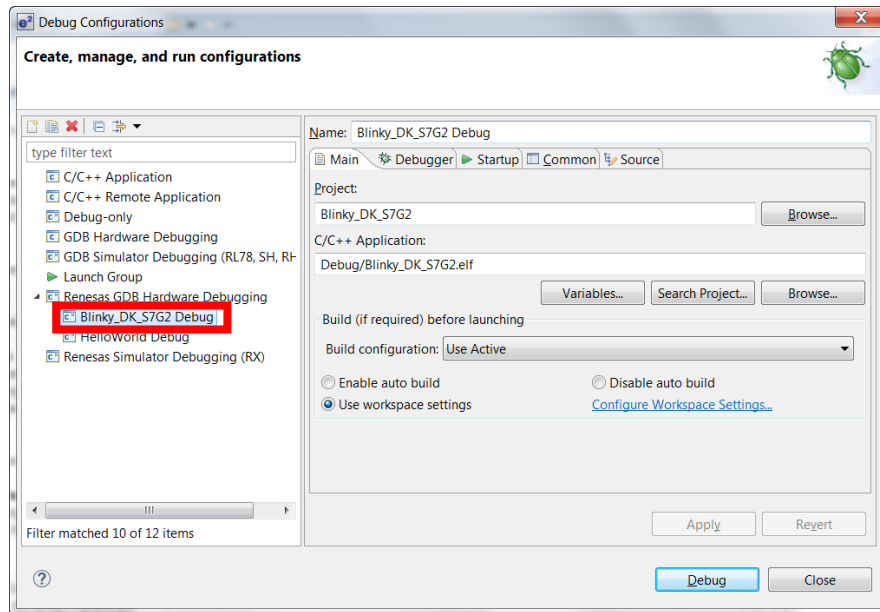
Debugging and running the Blinky Project

To debug and run the project, follow these steps:

- 1) Configure the debugger by selecting the drop-down menu next to the debug icon and select <Debug Configurations...>



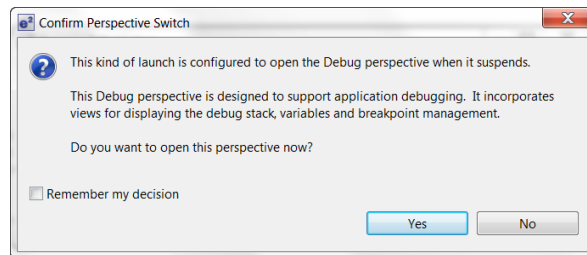
- 2) Select your Blinky Project <Blinky_DK_S7G2 Debug>



- 3) Click **Debug**.

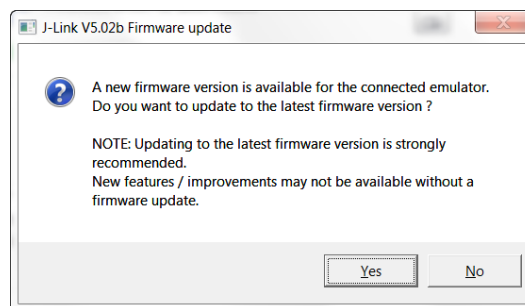
NOTE:

If asked to Confirm Perspective Switch, click <Yes>. (If you click the <Remember my decision> check box before clicking <Yes> you will not see this selection again.)



NOTE:

If the update J-Link firmware dialog box is displayed, we highly recommend that you click <Yes>.

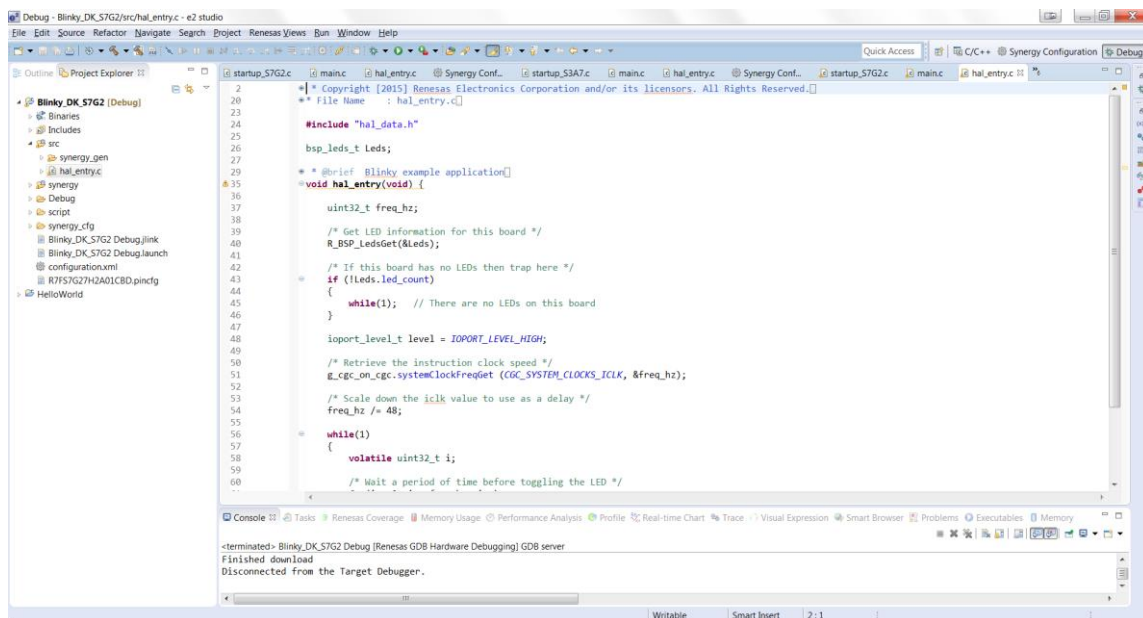


The ISDE downloads the project onto the board.

- 4) Click on the **Resume** icon, , and the software will run till `hal_entry()`.
- 5) Click on the **Resume** icon, , and the software will run turning LED1 on and off at a pretty fast pace

Next steps

You can review the code for the Blinky project in the `src` directory of your project.



Application Notes and Demonstration Applications are available in the Synergy Software Package page → “Demos and Applications” tab of the Renesas Synergy Gallery <https://synergygallery.renesas.com/ssp>. Examples of the categories we are developing are:

- Wired Connectivity (CAN, RS232/485, TCP/IP, Web Server, networking services)
- Bluetooth Connectivity (Bluetooth Classic and Bluetooth Low Energy connection to mobile devices using various profiles)
- WiFi Connectivity (Access Point Enumeration, Access Point connection using secure protocols, TCP/IP, Web Server, networking services)
- Multi-media (webcam, audio playback & record, audio processing, GUIX tutorials)
- MCU Performance & Power Measurement (thread, throughput, and I/O performance, low-power modes & power measurement)
- Security (protected memory and bus access examples, stack security examples, security protocols and services examples)

Reload the Out-of-Box Demo

Should you desire to reload the original Out-Of-Box demonstration application, you can find it and the instructions to reload it, in the Synergy Software Package page → “Demos and Applications” tab of the Renesas Synergy Gallery <https://synergygallery.renesas.com/ssp>. NOTE. The Out-of-Box demo on the Synergy Gallery may be an updated and improved demo. This kit contains version 1.0 of the DK-S7G2 Out-of-Box Demo.

Orderable Part Number

Part Number for this DK-S7G2 Development Kit is YSDKS7G2S30WS2

Support

Support: <https://synergygallery.renesas.com/support>

Technical Contact Details

America: https://renesas.zendesk.com/anonymous_requests/new

Europe: <http://www.renesas.eu/support/index.jsp>

Japan: <https://synergybeta.renesas.com/>

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