BASICS OF THE RENESAS SYNERGY™ PLATFORM

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CHAPTER 7
STARTING THE RENESAS SYNERGY™ PROMOTION KIT PK-S5D9 FOR THE FIRST TIME

CONTENTS

7   STARTING THE RENESAS SYNERGY™ PROMOTION KIT S5D9 FOR THE FIRST TIME

What you will learn in this chapter:

- How to connect the Renesas Synergy™ Promotion Kit to your workstation.
- What a debug configuration is and how to create it.
- How to download and start a program in the development environment.

In this chapter, we will verify that the Synergy Promotion Kit PK-S5D9 is working and communicating with the Windows® workstation and the debugger inside e² studio. For this, we will use the project we generated in chapter 4.2.4. If you didn't do this exercise, don't worry, you can download it from the Website for this book. But in the latter case, you should have already installed and tested the Synergy toolchain as discussed in chapter 4.2.

7.1   Connection and Out-Of-The-Box Demo

If you didn't do that already, it is now time to unpack the PK from its box. Check the contents if everything is there: The PK main board, one USB type A to micro-B cable and the Quick Start Guide. Note that the board contains a SEGGER J-Link® On-Board (OB), providing full debug and programming capabilities, so there is no need for an emulator when using the PK and the USB cable coming with the kit is fully sufficient.

Next, insert the micro-B end of the USB-cable into the connector called *DEBUG_USB* (J-19) and the other end into a free USB port of your workstation. The green LED 4 above the display should light up, indicating that the board has power.

Once the kit is connected, it powers up and performs a self-test, after which a splash-screen will show on its LCD display. Tap on the splash-screen and you will enter the pre-programmed thermostat demonstration. For that demo, the application developed with the Synergy Software Package (SSP) reads the internal temperature sensor of the S5D9 Microcontroller (MCU) through its A/D-converter and displays the information.

Play a little bit around with the demo: Tapping on either one of the fields for the temperatures, fan or system will bring up a screen, where you can modify the state of the air conditioning (on/off, cool, heat) or the fan (auto /on) or the temperature setting. Tapping on the Settings icon, which looks like a gear, gets you to a screen where you can make adjustments to the system including units, time and date. Once you are done with playing around, it is time to move on.
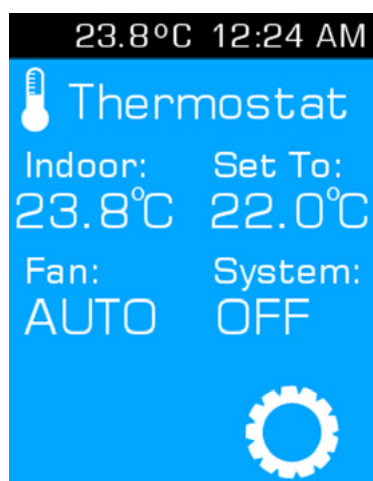

Figure 7-1: Tapping on the different items on the screen will get you to the configuration menus

7.2   Downloading and Testing an Example

With the PK-S5D9 still connected to your Windows® workstation, start the e² studio ISDE from the start menu of the operating system. If prompted for the location of the workspace, use the one you entered during the exercise in chapter 4.2.4 (it should already be listed). If you didn't do the exercise, don't worry, you can download the project from the Website created for this book **(https://www.renesas.com/synergy-book.html**)! Once downloaded, import it into your workspace according to the instructions outlined in chapter 5.1.3. In this case, just use a workspace location of your choice.

Before we can download the program to the kit and run it, you need to create a debug configuration first. Click on the small arrow beside the *Debug* symbol and select *Debug Configurations* from the drop down list.
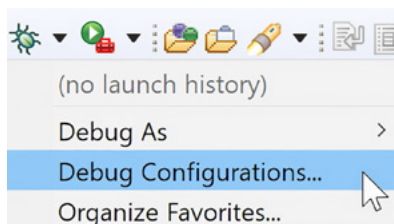

Figure 7-2: To start debugging, select Debug Configurations from the drop-down menu

In the window showing up, highlight *MySynergyProject Debug* under *Renesas GDB Hardware Debugging*. If you used a different name for this project, select the one you used.

Selecting your project will bring up a new screen for the Debug Configuration, showing all the different options for it. No need to change anything in here for our test purpose, just click on *Debug* at the bottom and the debugger will start. If the *Confirm Perspective Switch* dialog displays, click *YES*.

There might be a second dialog named *J-Link® Firmware update* showing up, wanting to install a new firmware version on the on-board debugger. I highly recommend to allow the update by clicking *Yes*.
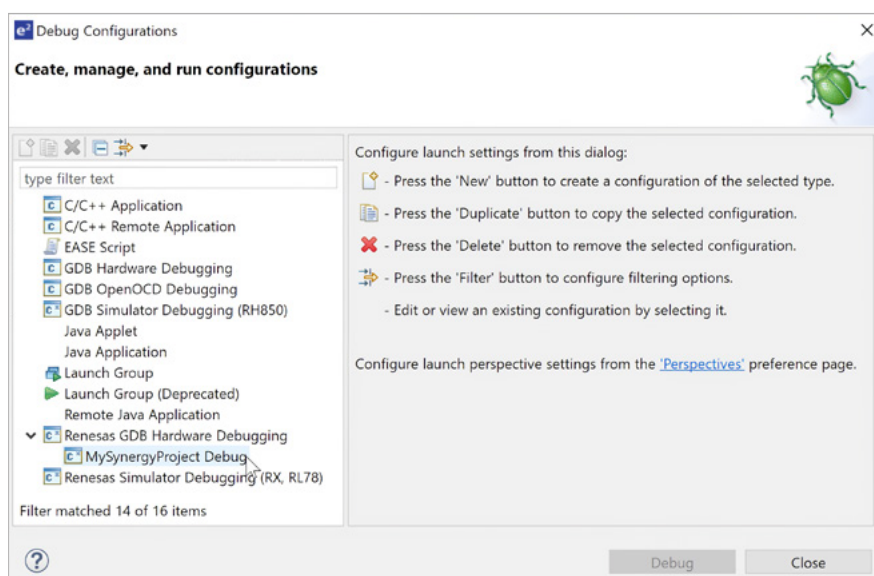

Figure 7-3: Select your project under Renesas GDB Hardware

Depending on the security settings of your Windows® workstation a dialog window displaying a security alert might appear, telling you that the "Windows Defender Firewall has blocked some features of E2 Server GDB on all public and private networks." To continue, allow the E2 Server GDB to communicate on private networks. For this, check the respective check-box and click on *Allow access*.

Once the *Debug* perspective is open, the debugger will set the program counter to the entry point of the program, the reset handler. Click on the *Resume* button ▯▶ and the program will run to the next stop inside the `main()`function, at the line with the call to `hal_entry()`. Click *Resume* again and the program continues to execute, flashing the green, red and orange LEDs (LED 1 through 3) on the Promotion Kit in a one second interval.

The final step is to disconnect the debugger from the board by clicking on the *Disconnect* button 🔌 stopping the execution of the program.

Now that you are sure that your installation of e² studio works together with your PK, it is time to write your first Synergy program. This will be the topic of the next chapter.
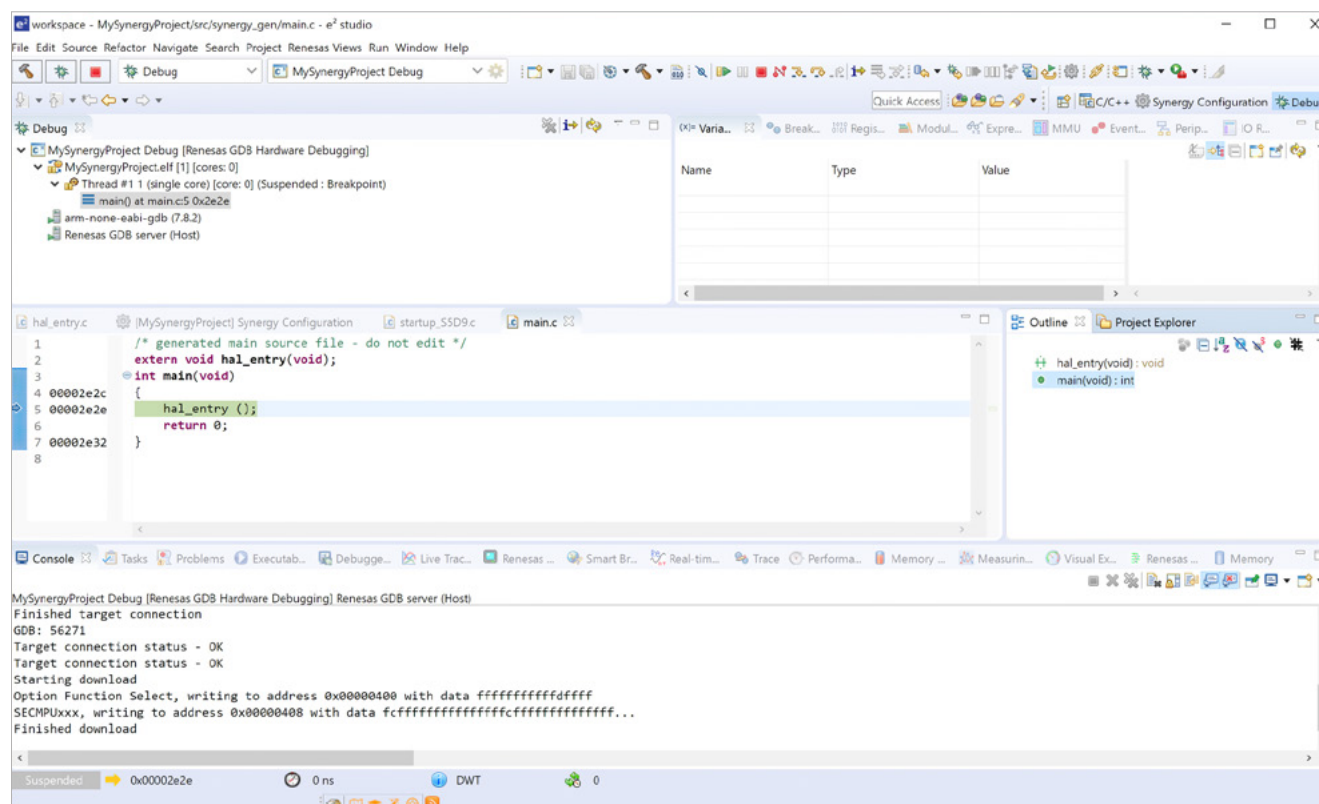

Figure 7-4: The debug perspective of e² studio

Points to take away from this chapter:

- In order to download and debug a program to any hardware, you need to create a debug configuration first.
- Once loaded, the debugger will set the program counter to the entry point. The next stop will be at main().

Disclaimer:

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