Quick Start Guide

Development Kit S7G2 (DK-S7G2)

Quick Start Guide

Renesas Synergy™ Platform
Synergy Tools & Kits
Kits: DK-S7G2

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General Precautions

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.

Renesas Synergy™ Platform

Development Kit S7G2 (DK-S7G2)

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Rev.1.10
Dec 11, 2018

1. Introduction

This document is the Quick Start Guide (QSG) for Renesas Synergy™ Development Kit DK-S7G2.

2. Kit Contents

The following components are included in the DK-S7G2 Kit:

- DK-S7G2 board
- Detachable CMOS VGA camera module
- One USB Type A to Micro-B cable
- One Ethernet cable
- Multi-region 5 V power supply
- Quick Start Guide (QSG, this document)

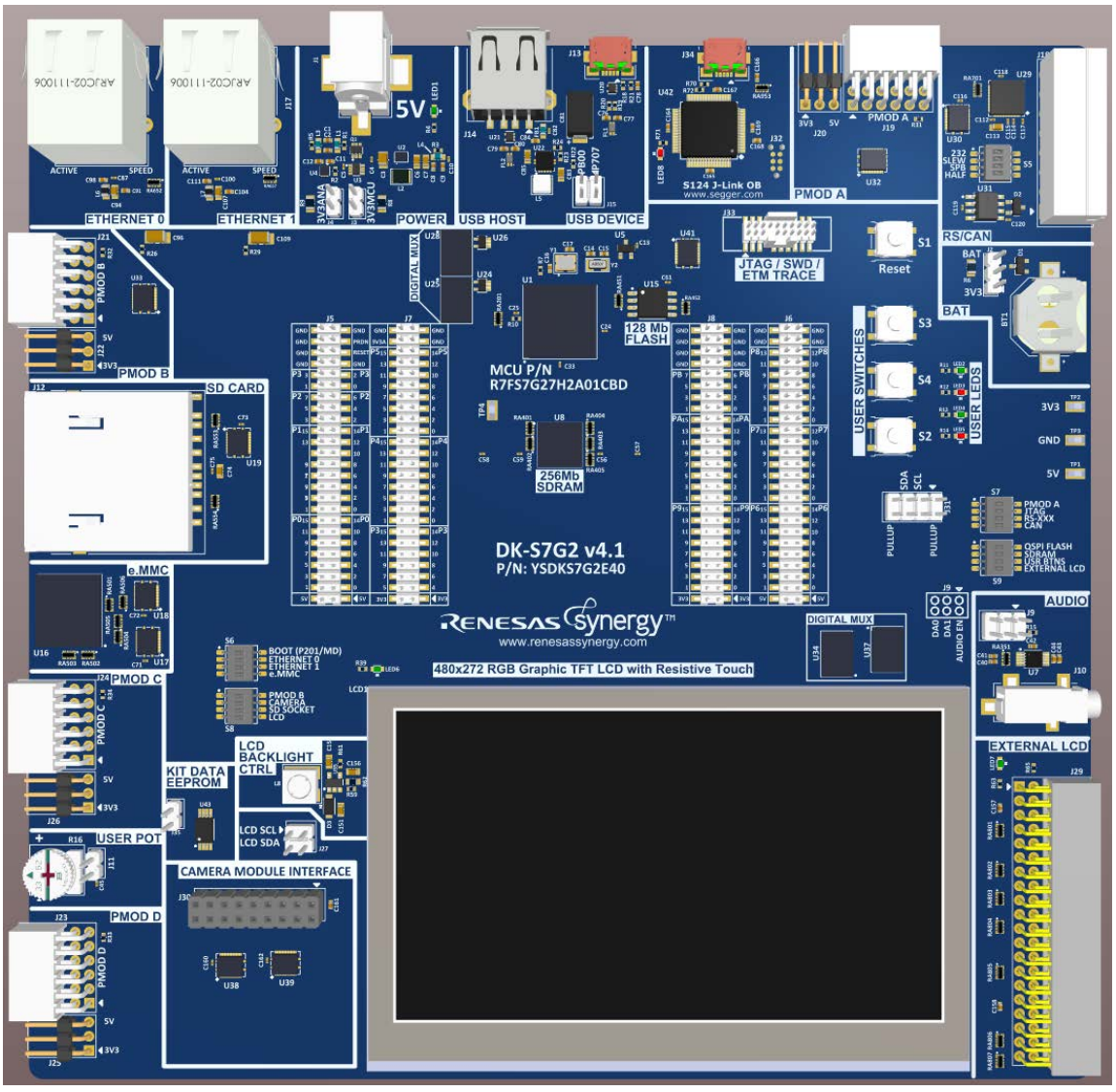

Figure 1 DK-S7G2 Board

3. Overview

The Synergy Development Kit DK-S7G2 along with the associated software and development tools enables users to evaluate most features of the Synergy Platform and specifically develop applications using the Synergy S7 Series Microcontrollers. The Quick Start Guide walks users to setting up the development board and running the Out-of-Box Demo that the development kit comes pre-programmed with.

4. Description of the Out-of-Box Demo Application

The Out-of-Box Demo application shows a simplified HMI to demonstrate the capabilities of the Graphics LCD Controller of the S7G2 MCU Group. The application also utilizes GUIX to display static graphics on the QVGA capacitive touch screen. The graphic elements were developed using the GUIX Studio (www.renesas.com/synergy/guixstudio) tool. The demo application displays static JPEG images and graphical touch widgets on the touch screen. The user can touch the widgets to navigate through the different screens of a simulated thermostat GUI. The user can set up date, time, screen brightness, and so forth.

5. Setting up the DK-S7G2 Board Prior to Running the Out-of-Box Demo Application

Prior to powering on the board, set the jumpers at the positions mentioned as follows.

In DIP switch S7, move switch 2 (JTAG) to ON position. All other switches in this DIP switch should be set to OFF. The OFF position is marked by the white dot. In DIP switches S6, S7, S8 and S9, set all switches to OFF.

Figure 2 DIP Switch Settings

6. Powering the DK-S7G2 and Running the Out-of-Box Demo Application

Connect the power supply provided in the DK-S7G2 kit to the main power outlet. Power the DK-S7G2 by connecting the barrel connector to power socket J1 on the board. The green LED1 next to the power socket will light up.

Note: The red LED8 in the S124 J-Link OB section will flash, indicating that the kit cannot communicate with the host PC on the debug port. It is not necessary to connect the host PC to the DK-S7G2 to run the Out-of-Box Demo Application.

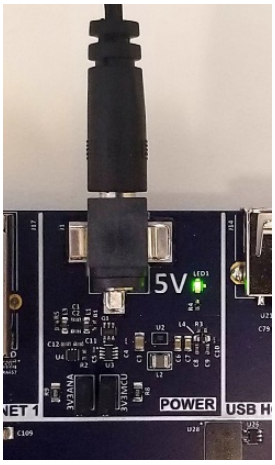

Figure 3 Power Supply Connection

After the kit executes an initialization sequence, the touch screen momentarily shows the Synergy logo splash screen followed by showing simulated temperature and settings button as shown in the following figures. Explore different menus of the GUI by navigating using the touch widgets.

Figure 4 Splash Screen - OOB

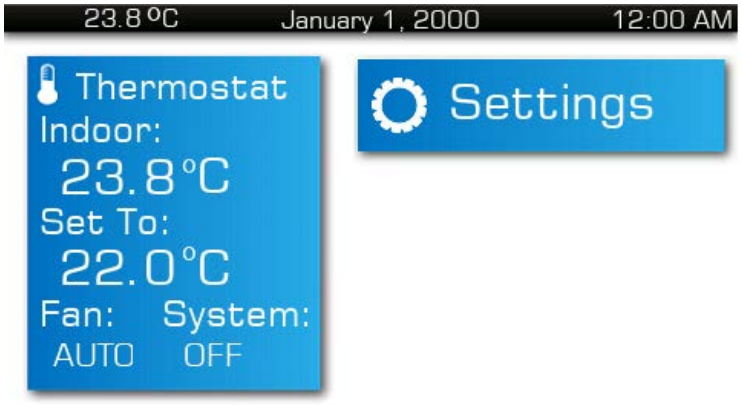

Figure 5 Temperature and Settings Screen - OOB

7. Next Steps

1. **Learn more about DK-D7G2**
   Visit www.renesas.com/synergy/dk-s7g2 to learn more about the DK-S7G2 Development Kit and download kit related documentation, schematics, design files, application projects, and so forth.
2. **Explore more application projects for DK-S7G2**
   Renesas provides several application projects to demonstrate different capabilities of the S7G2 MCU group. These application projects can also serve as a good starting point for some users to develop their custom application. Application projects available for DK-S7G2 are listed at www.renesas.com/synergy/dk-s7g2.
3. **Build and download an application project to DK-S7G2**
   Every application project includes the project files, an application note, and instructions to import the application project. Upon downloading the application project from the website to the computer, the application projects will have to be built using one of the two supported tool chains before they can be downloaded on to the DK-S7G2 board. Since the application projects include the embedded software developed using the Synergy Software Package, it is also necessary to install the Synergy Software Package on the computer. The Synergy Software Package and one of the two supported tool chains are bundled together and available as a single file to be downloaded as follows:
   A. **IAR Platform installer** installs Synergy Software Package and IAR Embedded Workbench® for Renesas Synergy™ IDE with IAR complier and J-Link USB drivers.
   Download from www.renesas.com/synergy/ewsynergy.
   B. **e² studio platform installer** installs Synergy Software Package and e² studio for Synergy IDE with IAR complier and J-Link USB drivers.
   Download from www.renesas.com/synergy/e2studio.
   Run the platform installer to install the necessary components on to your computer. Follow the instructions provided in the documentation included in the application project folder.
4. **Learn more about Synergy Platform**
   Visit the following URLs to learn about the following elements of the Synergy Platform and download different components:
   - Synergy Software: www.renesas.com/synergy/software
   - Synergy Hardware: www.renesas.com/synergy/hardware
   - Synergy Solutions Gallery: www.renesas.com/synergy/solutionsgallery

Orderable Part Number

The part number for the DK-S7G2 is YSDKS7G2E31.

FCC Compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Website and Support

Visit the following vanity URLs to learn about key elements of the Synergy Platform, download components and related documentation, and get support.

Synergy Software	www.renesas.com/synergy/software
Synergy Software Package	www.renesas.com/synergy/ssp
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Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Oct 9, 2015	–	Initial release
1.01	May 2, 2017	All	Fixed terminologies
1.10	Dec 11, 2018	All	Revised for v4.1

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