
Renesas Synergy™ S124

Sensor Demo Kit Quick Start Guide

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Introduction

This quick start guide describes the Renesas Sensor Panel Demo Kit set up. Highlighted components in this solution includes a Sensor Panel board, which is using Renesas Synergy™ S124 Microcontroller Group and Renesas RL78/G1D Bluetooth Low Energy, and Renesas Synergy™ SK-S7G2 starter kit. Using this Demo Kit, developers can easily start to evaluate on Renesas solution for Building Automation application. Contact your nearest Renesas sale offices to request a live demonstration or kit for development.

Target Device

R7FS124773A01CFM

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1. Kit Contents

The following components are included in the kit:

1. Sensor Panel Board (preprogrammed with Sensor Panel firmware)
2. Renesas Synergy™ SK-S7G2 IoT sandbox (preprogrammed with Sensor Panel firmware)
3. Two USB micro cables (Male-A to Male-B)
4. One 18650 type 3.7V Li-ion rechargeable Battery
5. Sensor Panel User Guide
6. Sensor Panel Quick Start Guide (this document)

2. Features

The Sensor Panel board has several functions for interacting with surrounding environment like sensing Temperature, Light intensity, room occupancy, tilt switch and Hall Effect switch for door closing and opening. For user interface, the board includes 5 LED indicators, three pushbutton switches and two open drain output. It has an option for using Li-ion rechargeable battery as power source to the board for portable usage or self-contained unit with no power supply wiring required. It also has onboard Renesas Bluetooth® module for wireless connectivity, yet it can demonstrate Renesas Bluetooth Beacon stack functionality.

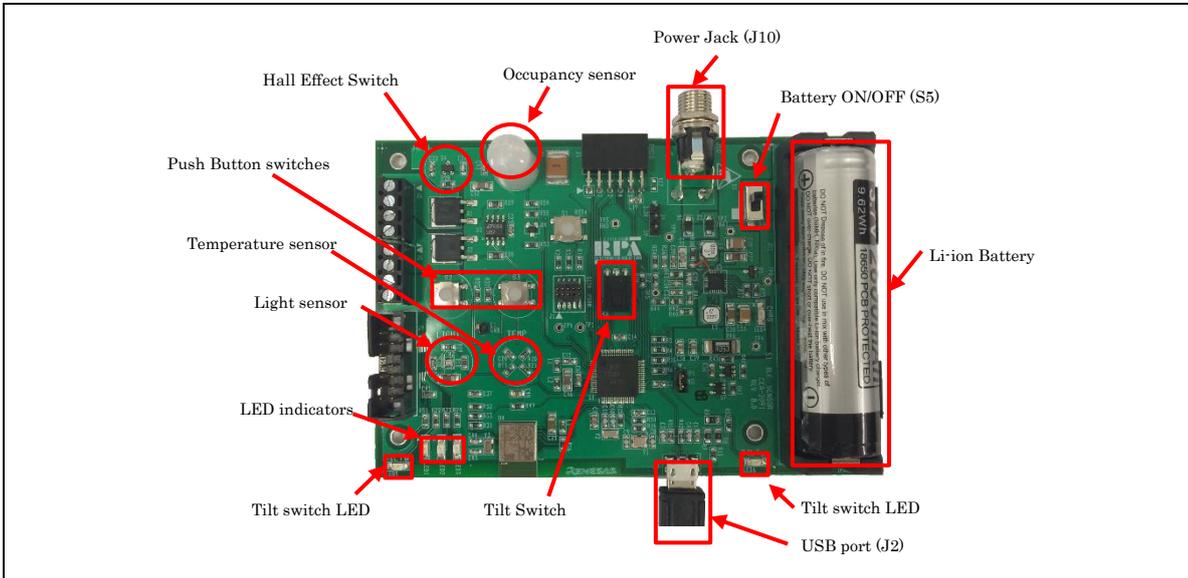


Figure 1 Sensor Panel board

For receiving Beacon data, Renesas Synergy™ SK-S7G2 Starter Kit acts as Bluetooth® scanner and receives sensor data from Sensor Panel board. This IoT Kit has onboard touch screen display that shows all receiving sensor data yet regularly update whenever changes on Sensor Panel board conditions. For development, refer to Sensor Panel User Guide for detail.

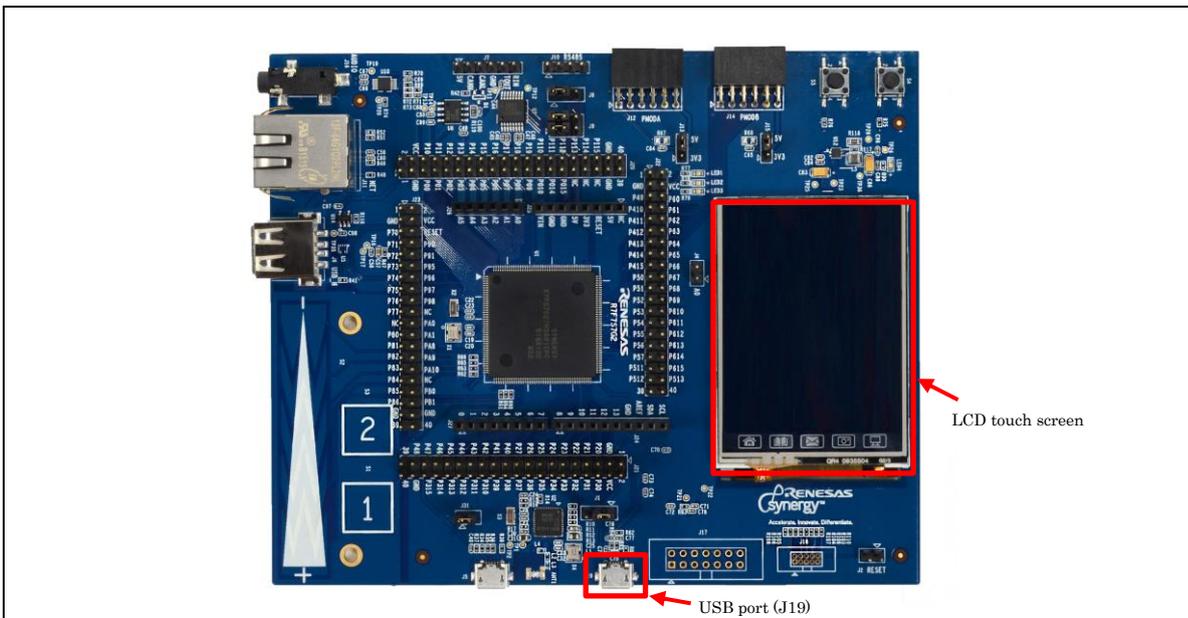


Figure 2 Renesas Synergy™ SK-S7G2 Starter Kit

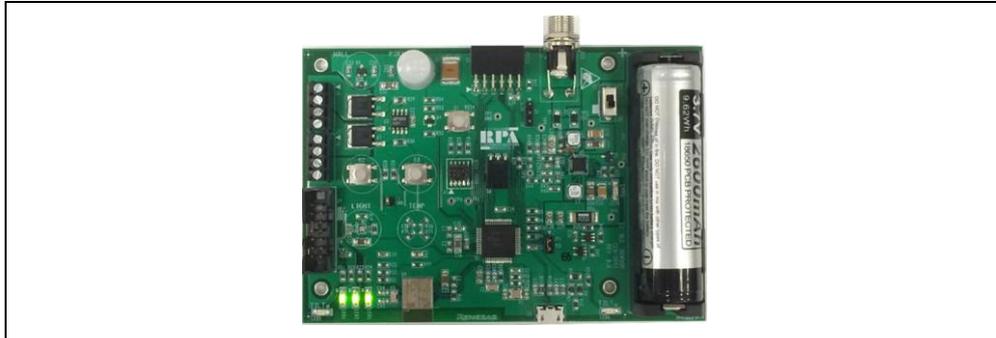
3. Kit Components

<i>Components</i>	<i>Pictures</i>
Renesas Synergy™ SK-S7G2 Starter Kit	
Sensor Panel board	
USB micro A male to B male cable	
Li-ion rechargeable Battery (3.7V, 18650 cell)	

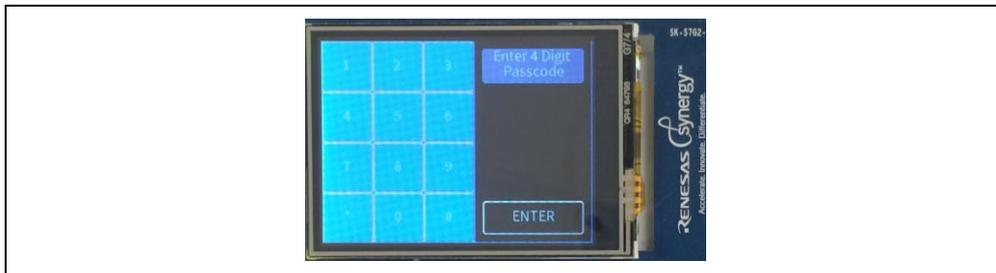
4. Setting up Sensor Panel Demo

To demonstrate this Sensor Panel, you need to power up to both Sensor Panel board and SK-S7G2 Starter Kit.

- Step 1.** The out-of-box Sensor Panel board is preprogrammed. For using on board battery power, turn on the slide switch (S5) to ON position or provide external 5V power via USB port (J2) or power Jack (J10).
- Step 2.** Once Sensor Panel board is ON, the program is running and LED1, LED2, and LED3 are ON.



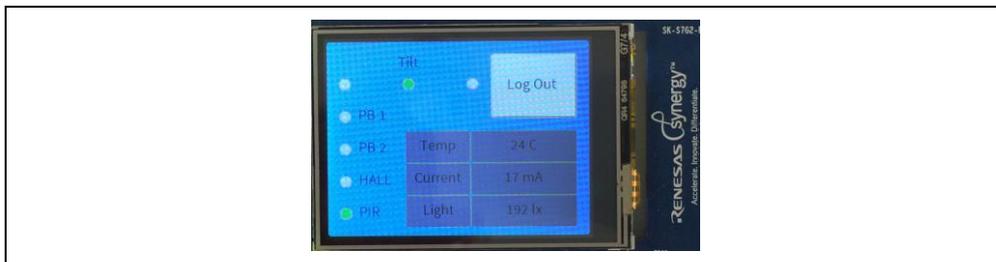
- Step 3.** The out-of-box SK-S7G2 Starter Kit is preprogrammed for Sensor Panel Demo firmware. You can provide external 5V power via USB port (J19).
- Step 4.** After powering up, the Starter Kit shows Login Screen on LCD display.



- Step 5.** The Login Screen has numeric key pad for entering password. Type 1234 using keypad and press ENTER button.



- Step 6.** Show next Data Screen. On the screen, you can read Temperature, Current, and Light Liniment value as well as showing the status of Tilt Switch, Push Button 1 and 2, Hall Switch, and PIR.



- Step 7.** The status changes on Sensor Panel board will be updated on SK-S7G2 Starter Kit in real-time.
- Step 8.** Pressing Logout Button will exit from Data Screen and back to Login Screen.

Website and Support

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<http://www.renesas.com/>

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Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Nov 15, 2017	-	Initial Release

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.

- The characteristics of Microprocessing unit or Microcontroller unit products in the same group but having a different part number may differ in terms of the 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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SALES OFFICES

Renesas Electronics Corporation

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Renesas Electronics America Inc.

2801 Scott Boulevard Santa Clara, CA 95050-2549, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited

9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

Renesas Electronics Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH

Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.

Room 1709, Quantum Plaza, No.27 ZhichunLu Haidian District, Beijing 100191, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.

Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, P. R. China 200333
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited

Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852 2886-9022

Renesas Electronics Taiwan Co., Ltd.

13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.

80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.

Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.

No.777C, 100 Feet Road, HAL II Stage, Indiranagar, Bangalore, India
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.

12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141