

# SK-S7G2

Rev 1.00

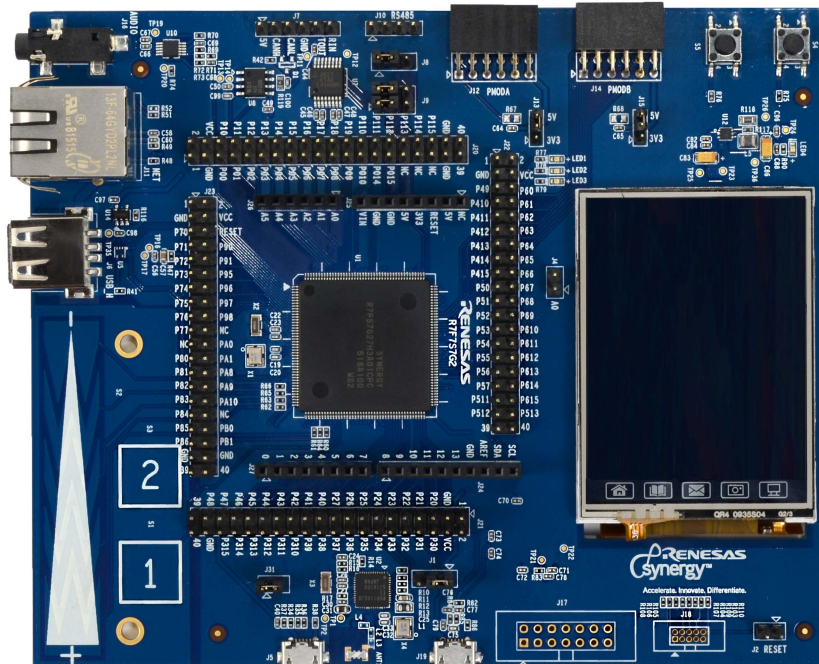
October 12, 2015

## Overview

The SK-S7G2 Starter Kit is an extremely low-cost way to access the entire Synergy Platform, enabling full development using the vast majority of all Synergy Software Package (SSP) functions. You can exercise high-speed connectivity over Ethernet, USB-HS host and USB-FS device, CAN, plus wireless connectivity to mobile Internet devices via BLE 4.0 and tailor them to your needs. Color graphics, audio, and capacitive touch user interface features of SSP are operative. You can use the SSP's Application Framework to balance simultaneous connectivity and user interface activities ,all managed by the ThreadX® RTOS. Within minutes you can experience the capabilities of the Synergy Series S7 MCU from the S7G2 MCU group as well as all the ingredients of the Synergy Platform. Expansion of the SK-S7G2 board is available via Arduino™ and Pmod™ connection points enabling you to add your own functionality to the baseline.

The kit provides access, with no fee, to the e<sup>2</sup> studio Integrated Solution Development Environment (ISDE) for Synergy MCU device and software configuration plus extensive code development and debugging using the SSP. Also included is a GCC C-compiler at no fee.

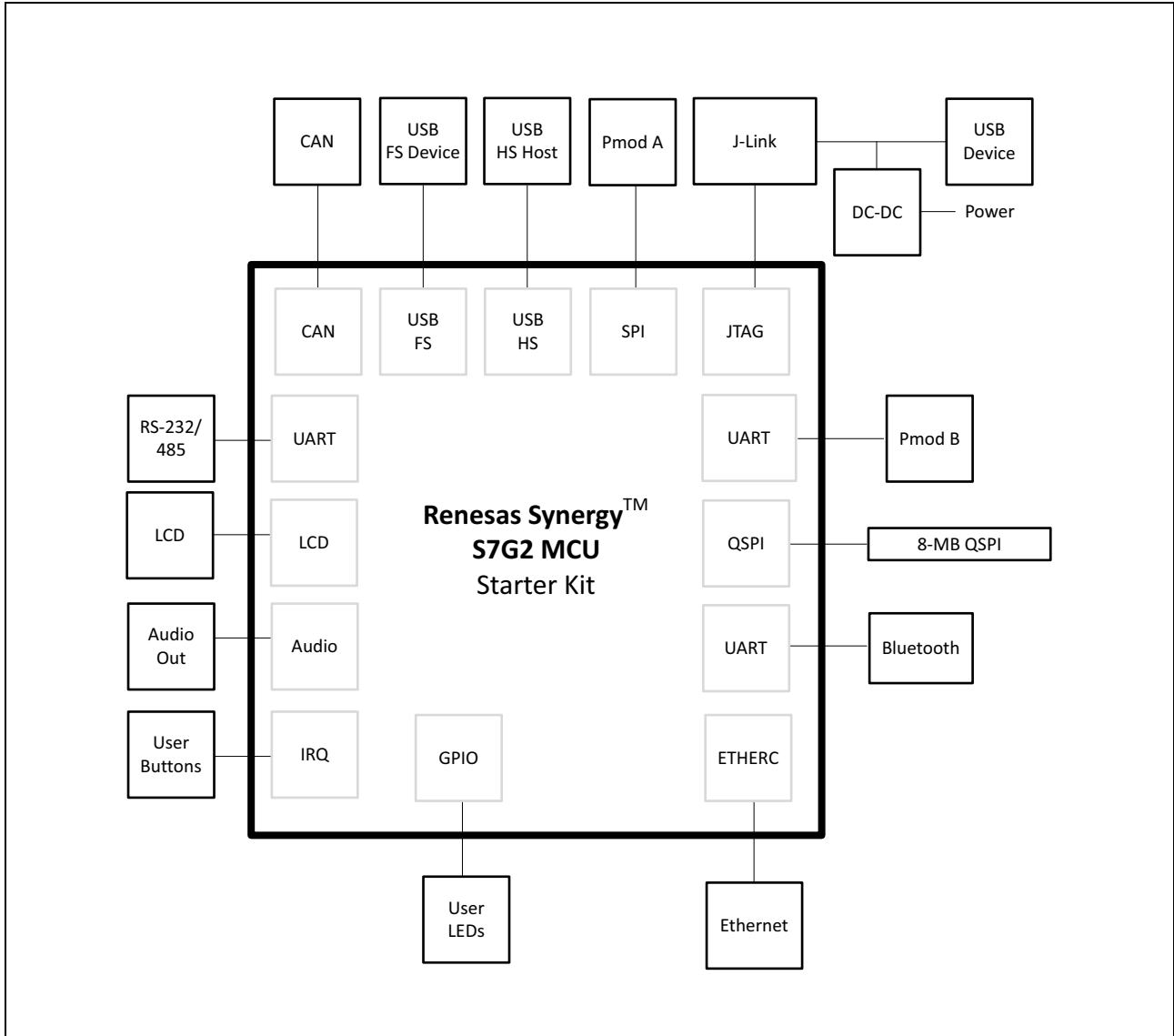
The S7G2 MCU has inherent features to support a Graphical User Interface (GUI), in particular it has a very large 4-MB on-chip flash memory in combination with 640 KB of on-chip SRAM, where the internal SRAM can host graphic frame buffers for the QVGA display panel. No external SRAM is needed for many graphic applications, and this SK-S7G2 kit demonstrates how to take advantage of the internal memory. This kit supports GUI development on the QVGA color display by providing access, with no fee, to the GUIX™ Studio desktop design tool to create UI graphics and flow before compiling to the MCU target.



## Key features

- Renesas Synergy™ S7G2 240-MHz ARM® Cortex®-M4 microcontroller
- Four connectors that provide access to all S7G2 microprocessor signals
- Resistive-touch TFT LCD panel
- Three user LEDs
- Wired connectivity:
  - USB 1x High-Speed Host
  - USB 1x Full-Speed Device
  - Ethernet 10/1000
  - 2x Type 2A Pmod Compatible connectors
- Wireless connectivity through on-board Bluetooth Low Energy (BLE) device
- Support for current measurement through jumpers and precision resistors
- QSPI flash memory (8 MB)
- SEGGER J-Link OB
- Demonstration software

### Block diagram



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## Hardware features

The SK-S7G2 uses the Renesas Synergy S7G2 240-MHz ARM® Cortex®-M4 microcontroller with 4 MB of flash, 640 KB of SRAM, and IEEE 754 single precision Floating Point Unit (FPU).

For a list of S7G2 peripherals and hardware details, see the S7 Series User's Manual: Microcontrollers.

### Starter Kit features

- One High-Speed USB Host interface
- One Full-Speed USB Device interface
- One Micro-B USB connector for debug access
- One Ethernet 10/100 RJ45 socket with support for IEEE 1588 Precision Time Protocol (PTP)
- Two 12-pin Type 2A Pmod™ Compatible connector for SPI, IIC, and UART
- Up to 10 standard serial interfaces such as SPI, UART, and IIC
- Multiple LEDs to indicate power and status
- Four user-programmable LEDs
- Two user-configurable push buttons
- QVGA resistive touch (320x240) TFT LCD panel
- Four 40-pin connectors to S7G2 I/O pins
- 8-MB QSPI flash
- Powered through the debug USB interface
- Debug through SEGGER J-Link OB

### Software features

Demonstration software programs are available as downloads from the Renesas Synergy™ Gallery in the form of a CMSIS-Pack that can be imported into the e<sup>2</sup> studio Integrated System Development Environment (ISDE) to build and run on the kit.

### Application notes

Application notes and demonstration applications are available in the **Demos and Applications** tab of the Renesas Synergy website at <https://synergygallery.renesas.com/spp>. Examples of the categories we are developing are:

- Wired connectivity (CAN, RS-232/485, TCP/IP, web server, networking services)
- Bluetooth connectivity (Bluetooth Classic and Bluetooth Low Energy connection to mobile devices using various profiles)
- Wi-Fi connectivity (access point enumeration, access point connection using secure protocols, TCP/IP, web server, networking services)
- Multi-media (webcam, audio playback and record, audio processing, GUIX tutorials)
- MCU performance and power measurement (thread, throughput, and I/O performance, low-power modes and power measurement)
- Security (protected memory and bus access examples, stack security examples, security protocols and services examples)

## Suggested links

Renesas Synergy Gallery

- <https://synergygallery.renesas.com>

Support

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

Technical Contact Details

- America: [https://renesas.zendesk.com/anonymous\\_requests/new](https://renesas.zendesk.com/anonymous_requests/new)
- Europe: <http://www.renesas.eu/support/index.jsp>
- Japan: <https://synergybeta.renesas.com>

## In the box

The following components are included in the SK-S7G2:

- SK-S7G2 Board
- One USB Type A to Micro-B cable
- Quick Start Guide

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