

Application Example for Wi-Fi Connectivity (AE-Wi-Fi1)

User's Manual

Renesas Synergy™ Platform
Synergy Tools & Kits
Kits: AE-Wi-Fi1

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Precautions

This Renesas Synergy™ Kits is only intended for use in a laboratory environment under ambient temperature and humidity conditions. A safe separation distance should be used between this and any sensitive equipment. Its use outside the laboratory, classroom, study area, or similar such area invalidates conformity with the protection requirements of the Electromagnetic Compatibility Directive and could lead to prosecution.

The product generates, uses, and can radiate radio frequency energy and may cause harmful interference to radio communications. - There is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off or on, you are encouraged to try to correct the interference by one or more of the following measures:

- Ensure attached cables do not lie across the equipment.
- Reorient the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Power down the equipment when not in use.
- Consult the dealer or an experienced radio/TV technician for help.

Note: It is recommended that wherever possible shielded interface cables are used.

The product is potentially susceptible to certain EMC phenomena. To mitigate against them it is recommended that the following measures be undertaken:

- The user is advised that mobile phones should not be used within 10 m of the product when in use.
- The user is advised to take ESD precautions when handling the equipment.

The Renesas Synergy™ Kits does not represent an ideal reference design for an end product and does not fulfill the regulatory standards for an end product.

1. Overview

The PMOD interfaced GT202 Wi-Fi module is an add-on device that will interface with all Renesas Synergy™ Kits for development and programming with our tools for SynergyMCU Group boards. This included Starter Kits (SK), Promotion Kits (PK), Target Board Kits (TB), Development Kits (DK) and in many examples of the Product Examples (PE).

The purpose of this unit is so that users can utilize the Synergy SSP Wi-Fi Framework add-on to add wireless network interface to the development platform, prior to development of their own customized hardware.

The Zephyr Engineering, Inc GT202 module is an intelligent platform for the Internet of Everything. This complete networking platform enables customers to add full-featured Wi-Fi to a wide variety of products with minimal development effort and cost. It supports a network stack along with SSL security, enabling full-featured internet connectivity and reliable information exchange in a small, low-cost system.

The GT202 provides two host interfaces for connecting to local system controllers. A UART based host interface can be used for rapid development and deployment of simple data streams between the local device and the internet cloud. An SPI slave interface is available for applications that require more advanced connectivity to the network.

This *User's Manual* applies to Longsys GT202_Renesas_Adaptor version 1.01 or Zephyr Engineering, Inc GT202-PMODKIT Renesas Adaptor version 1.1. Please ensure to match the hardware version to the correct *User's Manual*.

- The GT202 module contains a Qualcomm® Atheros QCA4002 chip. The QCA4002 is a single chip system on a chip (SoC) 1x1 802.11 b/g/n device optimized for low-power embedded applications with single-stream capability for both TX and RX. It has an integrated network processor with a large set of TCP/IP with IPv4/IPv6-based services. These services can be accessed via a serial SPI link or by a UART link connected to an external host CPU. Board I/O Ports and Pin headers provide access to all MCU GPIO and dedicated interface ports and all power interfaces.
 - Single PMOD connector, allowing use of appropriate PMOD compliant peripheral plug-in modules for interfacing to Renesas development systems.
- Board Operating Voltage
 - 3.3V may be supplied through the PMOD Headers from the development board.

2. What's in the Box

Components included in the kit are:

- Zephyr Engineering, Inc GT202-PMODKIT Renesas Adaptor version 1.1

3. Getting Started

Before you start working with your development board, you need to obtain the latest version of the Synergy5 Software Package, Wi-Fi Framework (with GT202 Drivers) from the SSP Utilities section, as well as the development tools needed to work with it.

If you are new to Synergy development, we encourage you at this point to visit our getting started guide on the web. This guide will provide detailed instructions on how to register an account on the Renesas Synergy5 Gallery to obtain a developer license, and how to download and install the Renesas Synergy5 Software & Tools that are required. Once you have completed these steps, please return to this section for more in-depth information on how to work with your board.

[How to register for an account on the Renesas Synergy Gallery](#)

[How to download & install the necessary development tools](#)

3.1 Jumpers and DIP Switch Settings

3.1.1 GT202 Boot Select

Note: Default is SPI

Boot Strap Function	USB / Hostless	SPI (J2)	SDIO (J3)
HM0	0	0	1
HM1	0	1	1

Table 1 Host mode – truth table

3.1.2 J6 – Power Options

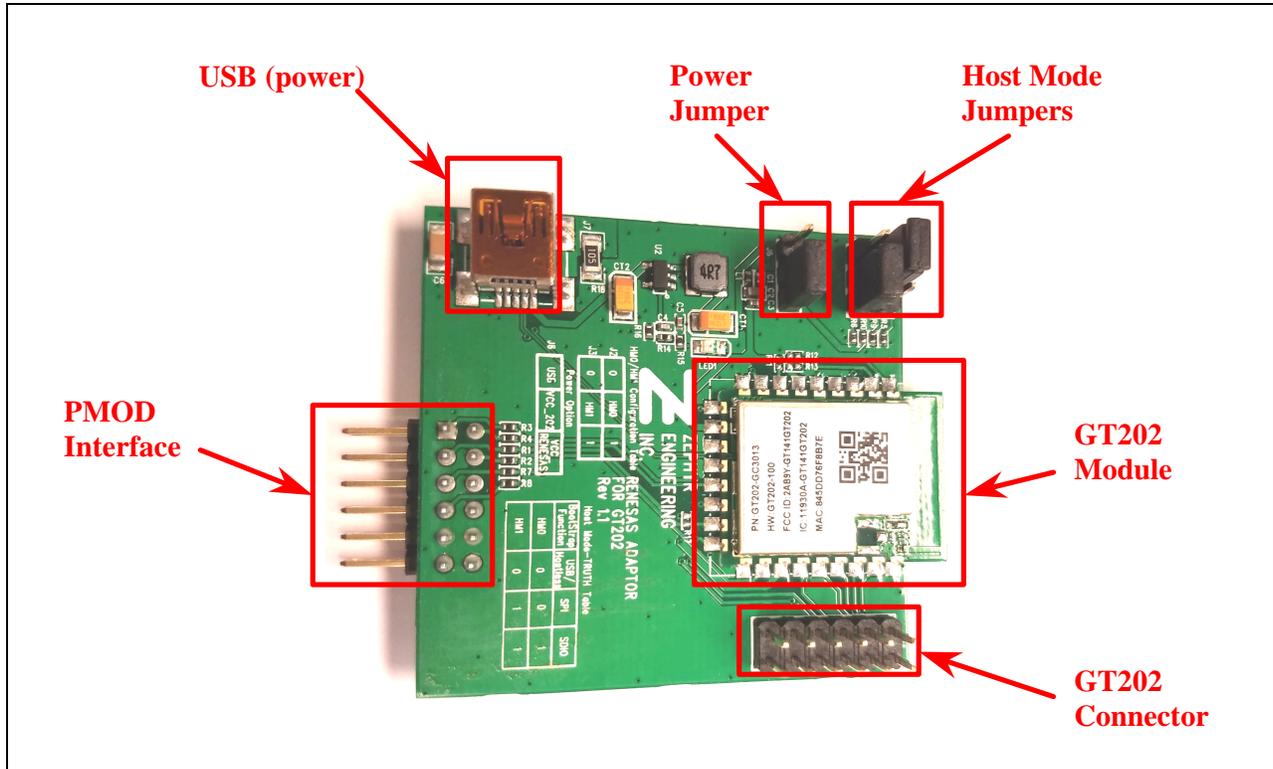
Note: Default is PMOD

Table 2 Vccselect

J6 (Vcc select)	1-2	2-3
	USB	PMOD

4. Hardware Layout

4.1 Hardware Features



4.2 Power Requirements

3.3VDC needs to be supplied by the Synergy development kits through the PMOD interface. Appropriate care should be taken to assure that the development board has been set to 3.3v for the PMOD connector being used. This is done by the configuration jumper on the development board.

6. Certifications

Renesas Synergy certifies this board complies with the following requirements:

- China SJ/T 113642014, 10years environmental protection use period.
- EU RoHS
- EU EMI/EMC compliance

7. Resources and Support

For more information on how to order this kit from Renesas or from a local distributor, please visit the kit page on our website. In addition to ordering information, you will also be able to download schematics, relevant application projects, technical updates and more. The Out of Box demonstration that came with this development board can be also be found on the kit page, should you ever wish to restore your kit to its default configuration.

[AE-Wi-Fi1 web page: renesassynergy.com/ae-wifi](http://renesas.com/ae-wifi)

- To learn more about Renesas Synergy Platform, development tools, MCUs and utilities, visit us on the web at <http://www.renesassynergy.com/>
- For technical support resources, including access to live chat with a Renesas Synergy Platform expert, visit <http://renesassynergy.com/support>
- More information on specific Synergy resources can be found by following the links below.
Synergy Kits - <http://www.renesassynergy.com/kits>
Synergy Microcontrollers - <http://www.renesassynergy.com/microcontrollers>
Synergy Software - <http://www.renesassynergy.com/software>
Synergy Solutions - <http://www.renesassynergy.com/solutions>
- The Renesas Synergy Knowledge Base contains many useful articles for Synergy developers.
[Renesas Synergy Knowledge Base](#)
- Visit our Professor IoT blog for technical articles on the latest additions to the Renesas Synergy Platform:
[Professor IoT Blog](#)

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

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Revision History

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