Quick Start Guide

Wi-Fi Pmod™ Expansion Board

Quick Start Guide

Renesas Microcontrollers

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Wi-Fi Pmod™ Expansion Board

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Precautions

This Wi-Fi Pmod™ Expansion Board 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 Wi-Fi Pmod™ Expansion Board does not represent an ideal reference design for an end product and does not fulfill the regulatory standards for an end product.

Renesas Microcontrollers

Wi-Fi Pmod™ Expansion Board

Contents

1. Introduction

This document provides an overview of the Wi-Fi Pmod™ Expansion Board from Renesas that uses the SX-ULPGN Ultra-Low Power Wi-Fi module.

Figure 1. Wi-Fi Pmod™ Expansion Board

2. Product Overview

Wi-Fi Pmod™ Expansion Board provides a quick and easy way to interface with the Silex SX-ULPGN module.

More information about Silex SX-ULPGN module can be found on the Silex website:

https://www.silextechnology.com/connectivity-solutions/embedded-wireless/sx-ulpgn

3. Pmod™ Interface

3.1 Overview

The Wi-Fi Pmod™ Expansion Board provides an interface using a 12-pin Digilent Pmod™ compatible connector (CN1).

This provides access to:

- A high-speed UART interface (HSUART1)
- A high-speed UART interface (USUART2)
- An external wakeup interrupt pin (GPIO_IOE1)
- A mode reset pin (CHIP_PWD_L)
- VDD and GND connections for module power.

Pmod™ is registered to Digilent Inc. and its specification can be found at the link below:

https://reference.digilentinc.com/reference/pmod/specification?redirect=1

3.2 Pmod™ Pin Diagram

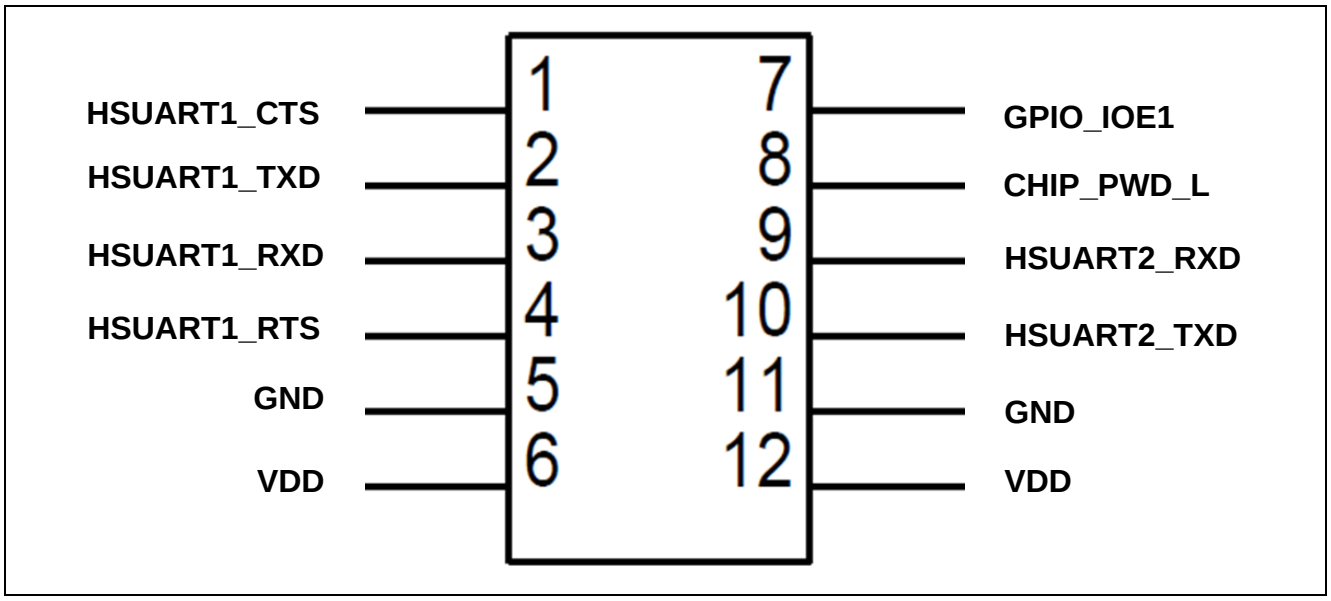

Figure 2. Pmod™ Pin Diagram

3.3 Pin Descriptions and Directions

Pin Name	Description	Direction
HSUART1_TXD	Hi-speed UART1	TXD Input
HSUART1_RXD	Hi-speed UART1	RXD Output
HSUART1_CTS	Hi-speed UART1	CTS Output
HSUART1_RTS	Hi-speed UART1	RTS Input
HSUART2_RXD	Hi-speed UART2	RXD Input
HSUART2_RXD	Hi-speed UART2	TXD Output

3.4 Connector CN1 Pin Assignment

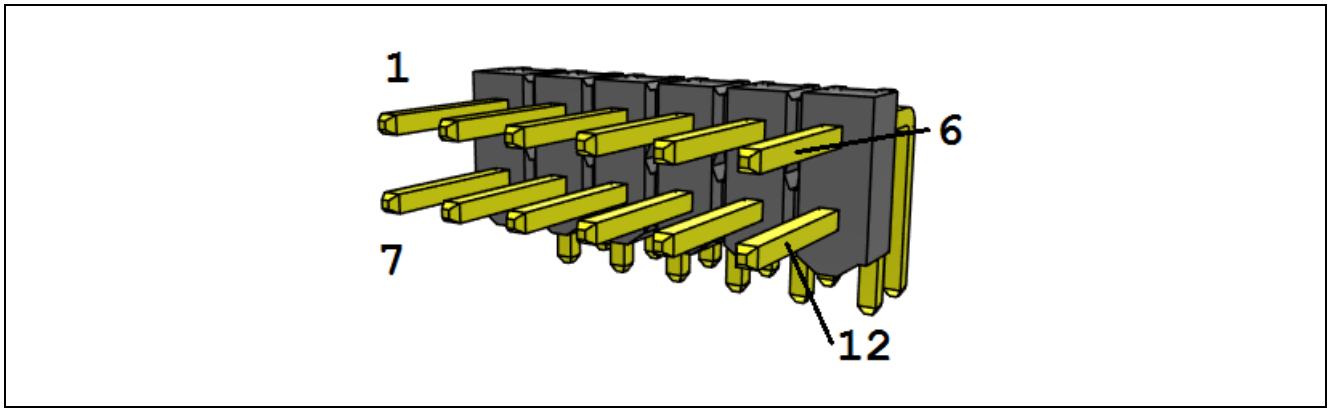

Figure 3. Connector CN1 Pin Assignment

3.5 Electrical Specification

Table 1. Recommended Operating Conditions

Item	Min.	Typ.	Max.
VDD	+2.97 V	+3.3 V	+3.63 V

Please refer to the module data sheet for full electrical specifications.

3.6 Module Control

The high-speed UART interface can be used to communicate with the module using the Silex AT command protocol.

These commands are explained in the following document:

https://www.silextechnology.com/productspecs/silex-at-command-set-for-sx-ulpgn

4. Device Region

4.1 Default Region Setting

The device's region code has been preconfigured at the factory to ensure that it meets the compliance requirements of the region that it is shipped to.

Region Options	Product Order Code
EU (CE)	RTK00WFMX0B00000BE
US (FCC)	RTK00WFMX0B01000BE

4.2 Region Configuration

The device's region can be reconfigured using the Silex AT command protocol.

It is the responsibility of the OEM to ensure compliance with all conditions if using Silex certifications. In particular, the OEM product must ensure if the module is to be configured for US use that the end user cannot change the regulatory setting/the country code.

The specific commands required for changing the module's country code are discussed in a separate Silex application note:

https://www.silextechnology.com/hubfs/Application%20Notes/AppNote-CountryCodeConfigurationforSilexDrivers.pdf

5. Note

Third party links in this document may change at any time and are the responsibility of the third party, not Renesas.

Website and Support

Visit renesas.com/wi-fi-pmod to learn more about using the Wi-Fi Pmod™ Expansion Board with Renesas Synergy, RA, and RX microcontrollers.

Visit renesas.com/support to get technical and sales support.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Apr.29.20	—	First release document
1.10	Aug.18.20	—	Updated section 3.1, Overview and corrected pins 9 and 10 in section 3.2, Pmod™ Pin Diagram.

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