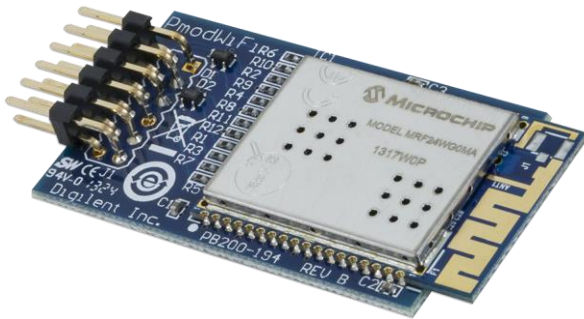# PmodWiFi™ Reference Manual

**Revised May 24, 2016**
**This manual applies to the PmodWiFi rev. B**

## Overview

The PmodWiFi provides Wi-Fi access through the [Microchip® MRF24WG0MA Wi-Fi](#)™ radio transceiver module. Users can communicate with the IEEE 802.11g compliant chip through SPI and achieve data rates up to 54 Mbps.



*The PmodWiFi.*

Features include:

- IEEE 802.11-compliant RF transceiver
- Send data at 1 and 2 Mbps up to 400 m
- Serialized unique MAC address
- Integrated PCB antenna
- Radio regulation certification for the US, Canada, Europe and Japan
- Wi-Fi certified
- Small PCB size for flexible designs 1.7" × 1.0" (4.3 cm × 2.0 cm)
- 12-pin Pmod connector with SPI interface
- Follows [Digilent Pmod Interface Specification](#) Type 2A
- Libraries available in [resource center](#)

## 1  Functional Description

The PmodWiFi provides IEEE 802.11b/g/n support for embedded applications at data rates of 1 and 2Mbps. It is designed for use with Microchip microcontroller families (PIC18, PIC24, dsPIC33, and PIC32) and the Microchip TCP/IP Stack (a free *Microchip Application Libraries* download including example applications and source code). The TCP/IP Stack is available at www.microchip.com/wireless.

### 1.1  Interface

The primary communications interface with the PmodWiFi is an SPI bus. An RST pin provides the host with an active low, asynchronous hardware reset for the PmodWiFi. The PmodWiFi also provides an active low interrupt indicator pin (~INT), which is asserted low by the PmodWifi when data is available for the host device. The ~INT line is de-asserted high after the data transfer is complete. The SPI SCK speed can be up to 25 MHz.

| Connector J1 – SPI Communications | | |
|---|---|---|
| **Pin** | **Signal** | **Description** |
| 1 | ~SS | Slave Select |
| 2 | MOSI | Master out/Slave in Data |
| 3 | MISO | Master in/Slave out Data |
| 4 | SCK | Serial Clock |
| 5 | GND | Power Supply Ground |
| 6 | VCC | Power Supply (3.3V) |
| 7 | ~INT | Interrupt Output |
| 8 | ~RST | Hardware Reset |
| 9 | ~WP | Write Protect |
| 10 | HIB | Hibernate |
| 11 | GND | Power Supply Ground |
| 12 | VCC | Power Supply (3.3V) |

*Interface connector signal description.*

The SPI interface standard uses four signal lines. These are slave select (~SS), master out slave in (MOSI), master in slave out (MISO), and serial clock (SCK). These signals map to the following signals on the MRF24WB0MA: ~SS corresponds to the Chip Select signal (~CS), MOSI corresponds to Serial Data Input (SDI), MISO corresponds to Serial Data Output (SDO), and SCK corresponds to the Serial Clock signal (SCK).

## 1.2   Power Supply

The PmodWiFi is designed to work with Digilent microcontroller boards that have 12-pin header connectors.

The PmodWiFi requires a 2.7V-3.6V supply voltage. A 3.3V power supply voltage is available on all Digilent system boards and is provided as part of the 12-wire Pmod interface standard.

Digilent system boards with Pmod interface connectors allow jumper selection of the power supply voltage being provided to the Pmod. Ensure that the system board is jumpered to provide 3.3V to the module before applying power to the board.

For more information on the MRF24WB0MA, see the MRF24WB0MA datasheet which can be accessed on Microchip's website.