Digi Connect® Wi-EM 9210 Hardware Reference

Part number/version 90000xxx_x
Release date: TBD
www.digiembedded.com

Contents

About This Guide

Scope of Reference Manual

The scope of this guide is to enable developers to integrate the Digi Connect Wi-EM 9210 modules into other devices. Graphics illustrate the placement and dimensions of components for both the modules and the development board.

Related Documentation

See the *NS 9210 Hardware Reference* for information on the NS 9210 chip.

Support Information

To get help with a question or technical problem or make comments and recommendations about Digi products and documentation, use the following contact information.

General	*Customer Service and Support*
Digi International	United States: 1 877-912-3444
11001 Bren Road East	Other Locations: 1 952-912-3444
Minnetonka, MN 55343	www.digiembedded.com/support
U.S.A.	www.digiembedded.com

Support Information

About the Embedded Module

CHAPTER 1

Overview

Digi Connect Wi-EM 9210 Overview

The embedded modules are part of the Digi Connect family of device servers that provide simple, reliable and cost-effective network connections for serial devices. They provide fully transparent serial device connectivity over industry-standard wireless connections and allow both equipment manufacturers and systems integrators to network-enable products at a fraction of the time and cost required to develop a custom solution. It is a highly flexible and compact single component solution with a robust on-board TCP/IP stack and wireless support. Features include the following:

- 32-bit Digi Wi-EM 9210 processor with ARM926EJ-S core
- 4MB Flash and 8MB RAM on board
- 2 High Speed Serial Ports
- SPI Master Mode Interface
- 9 General Purpose Input/Output Port Options
- NetSilicon NET+Works platform for embedded software development

From medical systems to building control and industrial automation, in virtually any application where embedded serial connectivity over WLAN is needed, the embedded module is the ideal choice, delivering high-performance functionality.

Cautions

To guard against damage to the module due to electrostatic discharge (ESD), do not remove it from its protective packaging until you have been properly grounded. To ground yourself, put the wrist strap on (included in the package) and then attach the clip to a metal surface.

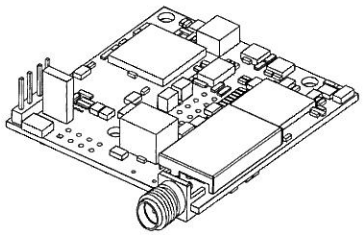
- Input voltage for the module is 3.3 VDC.

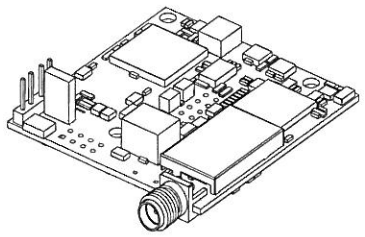
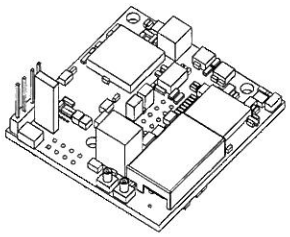
Types of Modules

The following describes the available types of Digi Connect Wi-EM 9210 modules:

Choosing a Module for Your Product

Although any of the embedded modules can be designed into your product, a JTAG header would typically be used only for debugging during the development process. The following shows all available Digi Connect Wi-EM 9210 product options.

Digi Connect Wi-EM Modules		
Model	**Description**	**Figure**
DC-WEM-9210-JT	--- Used for development purposes only --- JTAG interface --- Pin headers LED functionality --- Single RP-SMA Antenna Connector.	

Digi Connect Wi-EM Modules		
Model	**Description**	**Figure**
DC-WEM-9210-IN-1	--- No JTAG interface --- Pin headers LED functionality --- Single RP-SMA Antenna Connector --- Ordered independently of development kit for use in your implementation	
DC-WEM-9210-SB-1	--- No JTAG interface --- No LED array/pin header --- Dual U.FL Antenna Connector --- Ordered independently of either development or integration kit for use in your implementation.	

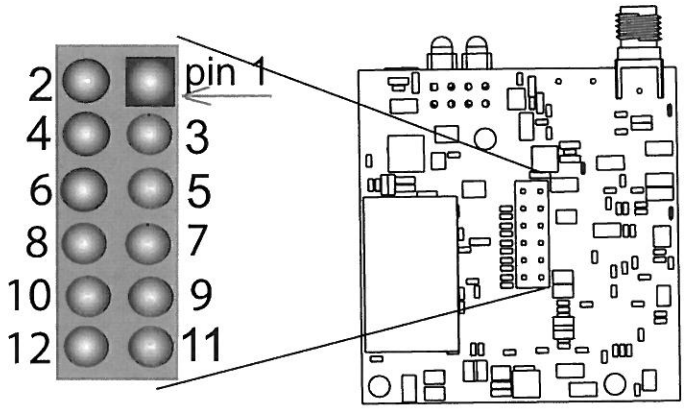
Digi Connect Wi-EM Antennae

The Digi Connect Wi-EM 9210 is available with U.FL dual-diversity or single RP-SMA antenna connectors. In case of dual diversity, the right antenna (P2) is always used for transmit and receive. The left antenna is receive only. The antenna will choose the best signal.

Connectors: Power and Serial Interface

This single 12-pin, serial interface port (P5) supports 2 TTL serial interfaces, data rates up to 921 Kbps and full-modem control (on port 1). See the figure for help locating pins and the table for pin assignments.

Power and Serial Interface



top view

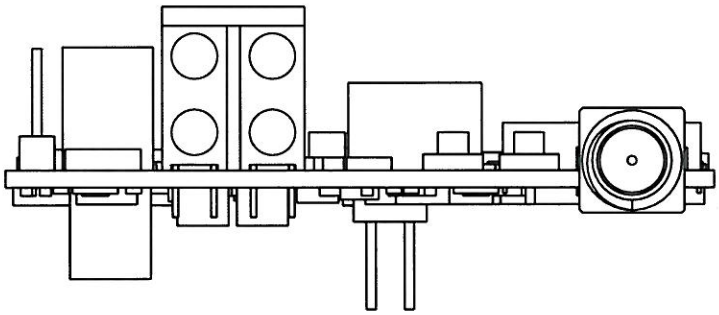
Power and Serial Interface Pin Assignments		
Pin	**Signal Name**	**Description and Notes**
1	VCC	+3.3 VDC (input only)
2	GND	Reference Ground for input power
3	RXD/GPIO-7	Port 1 RXD (input)/GPIO-7
4	TXD/GPIO-6	Port 1 TXD (output)/GPIO-6
5	RTS/GPIO-4/SPI_CLK	Port 1 RTS/GPIO-4/SPI clock
6	DTR/GPIO-5	Port 1 DTR (output)/GPIO-5
7	CTS/GPIO-2	Port 1 CTS (input)/GPIO-2
8	DCD/GPIO-1/SPI_EN	Port 1 DCD (input)/GPIO-1/SPI enable
9	DSR/GPIO-3	Port 1 DSR (input)/GPIO-3
10	/RST	Reset (input)
11	RXD/GPIO-9	Port 2 RXD (input)/GPIO-9
12	TXD/GPIO-8	Port 2 TXD (output)/GPIO-8

Connectors: Antenna

The Digi Connect Wi-EM is available in two antenna configurations: (1) two U.FL antenna connectors for dual-diversity, or (2) a single RP-SMA antenna connector.

Caution: This Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the antennae listed in the Antenna Specification table. Any changes or modification to the product not expressly approved by Digi International could void the user's authority to operate the device.

Wi-EM Antenna Connectors

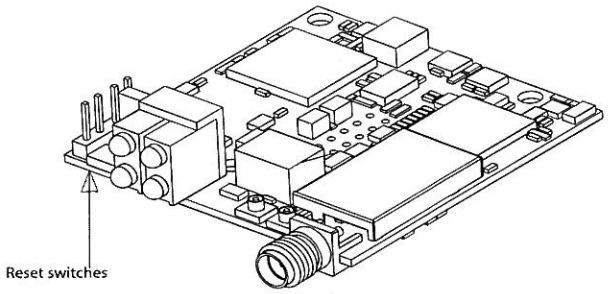


Reset Switch

The behavior of the reset switch is determined by software, which means that it has a predefined behavior in the integration kit. In the development kit, its behavior is determined by your implementation. See the following table for details.

Reset Switch Behavior	
Kit	**Behavior**
Integration	The reset switch does one of the following: ■ If pressed and released immediately, the device is rebooted. ■ If pressed and held down (for about 20 seconds) during power-up, the device is rebooted and restored to the default configuration.
Development	■ The behavior of the switch is user-defined. See "Embedded Module Reset" on page 40 for more information.

Reset Switch Location

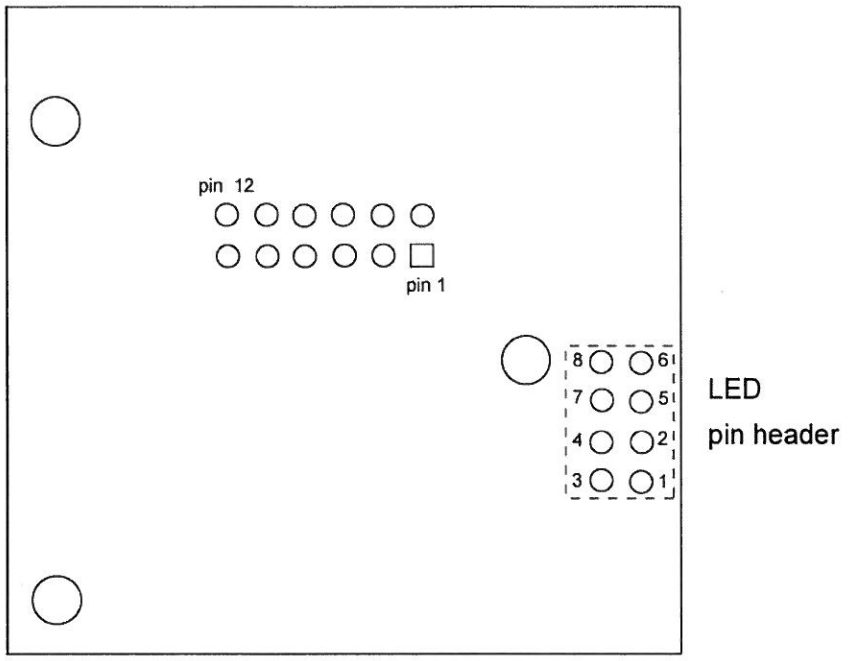


Module LEDs

The modules provide two hardware options for LEDs, with or without on board LED array. The integration kit provides predefined LED behavior. With the development kit, some LED behavior can be determined by your implementation. See the following table for more information..

LED Behaviors				
LED	**Pin** Header EM	**Description**		**Notes**
Top left (green)	1 (+) 3(-)	Serial port activity: Off - the serial channel is idle. Blinking - serial data is transmitted or received.		This LED is software programmable
Top right (green)	5 (+) 7 (-)	Network link status: Off - no link has been detected. On - a link has been detected.	Network link status: On - unit is associated with an access point Blinking slowly - unit is in ad hoc mode Blinking quickly - unit is scanning for a network	Same as Integration Kit (Network link status)
Bottom left (red)	2 (+) 4 (-)	Diagnostics: Blinking 1-1-1 - starting the operating system. Blinking 1-5-1 - configuration has been returned to factory defaults. **Note:** If other blinking patterns occur, contact Digi Technical Support.		This LED is software programmable
Bottom right (yellow)	6 (+) 8 (-)	Blinking - network data is transmitted or received		This LED is software programmable

Digi Connect Wi-EM 9210 Pin Header Locations (Top view)



LED pin header

LED pins and pin header configuration are described in the "LED Behaviors" table on page 15.