Digi Connect® ME 9210/Wi-ME 9210

Digi Connect® ME 9210 with NS 9210 Microprocessor

Digi Connect® Wi-ME 9210

Hardware Reference Manual

Revision history—90001247

Revision	Date	Description
A	May, 2011	Initial release.
B	December, 2011	Updated mA and dBi values. Added FCC 15.105 statement in French for Industrty Canada requirement. Added Digi Connect® ME 9210 content.
C	May, 2012	Update antenna gain.
D	June, 2017	Modified regulatory and certification information as required by RED (Radio Equipment Directive).

Trademarks and copyright

Digi, Digi International, and the Digi logo are trademarks or registered trademarks in the United States and other countries worldwide. All other trademarks mentioned in this document are the property of their respective owners.

© 2017 Digi International. All rights reserved.

Disclaimers

Information in this document is subject to change without notice and does not represent a commitment on the part of Digi International. Digi provides this document “as is,” without warranty of any kind, expressed or implied, including, but not limited to, the implied warranties of fitness or merchantability for a particular purpose. Digi may make improvements and/or changes in this manual or in the product(s) and/or the program(s) described in this manual at any time.

Warranty

To view product warranties online, visit www.digi.com/howtobuy/terms.

Send comments

Documentation feedback: To provide feedback on this document, send your comments to techcomm@digi.com.

Customer support

Digi Technical Support: Digi offers multiple technical support plans and service packages to help our customers get the most out of their Digi product. For information on Technical Support plans and pricing, contact us at +1 952.912.3456 or visit www.digi.com/support.

About This Document

Scope of the Reference Manual

The purpose of this document is to enable developers to integrate the Digi Connect Wi-ME and Digi Connect ME 9210 embedded modules with other devices, enabling these devices to make use of the module's rich networking features.

Note: Unless mentioned specifically by name, the products will be referred to as the embedded modules or modules. Individual naming is used to differentiate product specific features.

Related Documentation

See the *NS9210 Hardware Reference* for information on the NS9210 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.digi.com/support/eservice/eservicelogin.jsp
U.S.A.	

Contents

About This Document 3

Related Documentation 3

Support Information 3

Chapter 1: Contents 4

Chapter 2: About the Embedded Modules 6

Overview 6

Types of Modules 7

Connectors: Power and Device Interface 9

Connectors: Ethernet Interface 11

Connectors: Antenna 13

Module LEDs 14

Chapter 3: About the Development Board 15

Overview 15

Basic Description 16

Port Descriptions 19

Connectors and Blocks 22

Switches and Push Buttons 27

Development Board LEDs 29

Power Jack P15 31

Test Points 32

Chapter 4: Programming Considerations 33

Overview 33

Module Pinout 34

Reset 36

Memory 37

Appendix A: Module Specifications 38

Network Interface 39

Serial Interface 40

Data Rates (bps) 40

DC Characteristics 40

Power Management 42
Thermal Specifications 43
Mechanical 44
Bar Code 45
Dimensions 45
Recommended PCB Layout 50
Antenna Information 52
RF Exposure Statement 54
Safety Statements 54

Appendix B: Regulatory information 55
FCC Part 15 Class B 55
Industry Canada 57
Europe 58
International EMC Standards 60

Appendix C: Sample Application: PoE Power Supply 62

Appendix D: Sample Application: TTL Signals to EIA-232 65

About the Embedded Modules

CHAPTER 1

Overview

The Digi Connect Wi-ME 9210 and Digi Connect ME 9210 b/g/n is a fully customizable and secure 802.11b/g/n wireless embedded module that provides integration flexibility in a variety of connection options. Built on the new Digi NS9210 processor in combination with a 802.11b/g/n Wi-Fi radio, it is pin-compatible with the existing Digi Connect Wi-ME 7520 and Digi Connect ME 7520 802.11b module allowing customers to easily migrate to the next-generation version of the product.

The Digi Connect ME 9210 is an ultra-compact embedded module based on Digi's powerful 75 MHz NS9210 processor. It allows customers to implement the next generation of leading network-enabled products and maintains full form factor and pin-compatibility with the existing Digi Connect ME family.

The NS9210 processor provides a host of features such as an ARM926EJ-S core running at speeds from 75-150MHz, on-chip AES encryption engine, one PIC, a serial port, SPI and I2C interfaces, PWM, and others. Most importantly, it is a "drop-in" replacement for the NS7520, which means that is the ideal upgrade vehicle to deliver a next-generation design.

The integrated FIM on the NS9210 processor offer interface flexibility allowing the modules to provide high performance interface functionality and unique software-driven configuration flexibility by dynamically loading software support for application specific interfaces, e.g. UART, CAN, USB device, 1-Wire, SDIO, and others.

The Digi Connect Wi-ME 9210 and Digi Connect ME 9210 embedded module offers freedom and flexibility of professional embedded software development provided by the easy-to-use, cost-effective and complete Digi JumpStart Kits™.

From medical systems to building control and industrial automation, in virtually any application where embedded device connectivity over a wireless network is needed, embedded modules are the ideal choice, delivering high-performance functionality.

Note: Unless mentioned specifically by name, the products will be referred to as the embedded modules or modules. Individual naming is used to differentiate product specific features.

This chapter provides information about the modules hardware and contains the following topics:

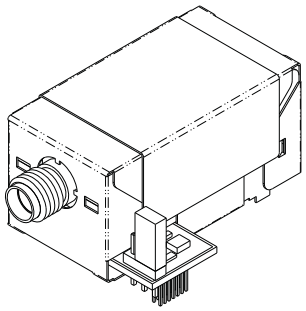
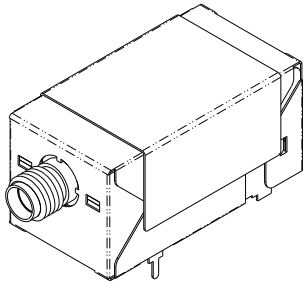
- "Types of Modules" on page 7
- "JTAG Jumper" on page 12
- "Connectors: Antenna" on page 13
- "Module LEDs" on page 14

Types of Modules

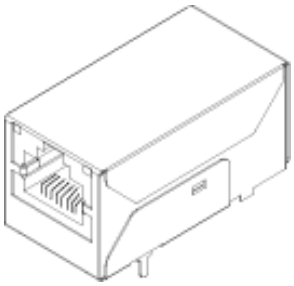
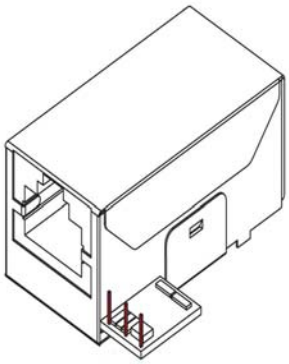
There are two types of modules. One module utilizes Digi Plug-and-Play Firmware, while the second is customizable with the option to develop a firmware application in NET+OS. If you are developing your firmware application in NET+OS, you will be using a module with a JTAG interface.

Note: JTAG is a commonly used term that is also referred to as IEEE 1149.1, an industry standard test protocol. JTAG is an abbreviation for the European Joint Test Action Group, which invented the first versions of the IEEE 1149.1 interface. The JTAG interface, along with the other development tools, enables you to download, run and debug programs on the module.

The following figures show the two types of modules.

Digi Connect Wi-ME 9210 Modules		
Model	**Description**	**Figure**
DC-WME-Y402-JT **DC-WME-Y413-LX-JT**	■ Used for development purposes only ■ JTAG interface	
DC-WME-Y402-C **DC-WME-Y413-S** **DC-WME-Y413-LX**	■ No JTAG interface ■ Ordered independently for use in your implementation.	

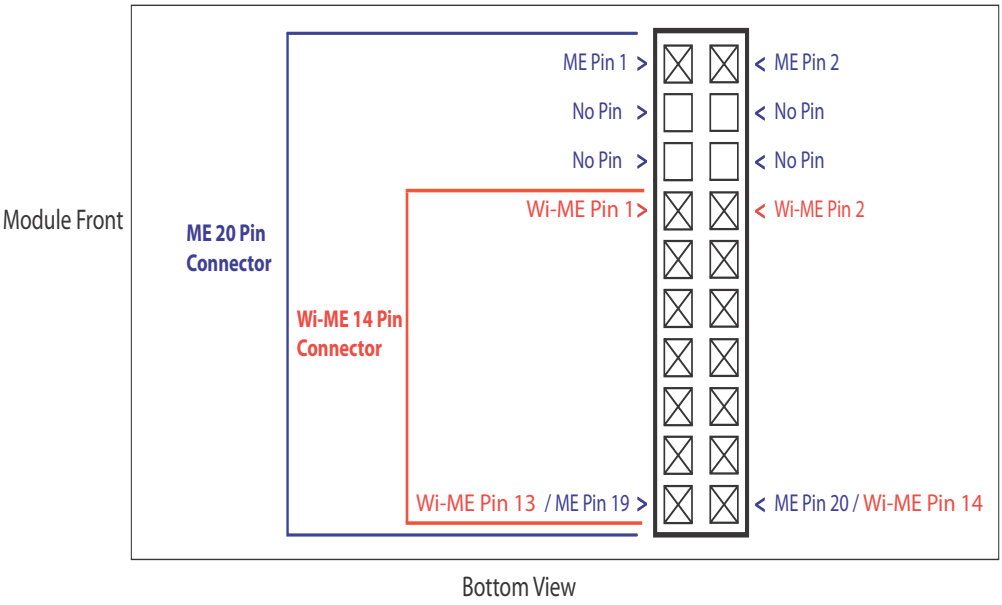
Note: -**S**: No JTAG for use with Digi Plug-and-Play Firmware
-**C**: No JTAG for use with custom NET+OS applications
-**JT**: With JTAG for use with custom firmware development

Digi Connect ME 9210 Modules		
Model	**Description**	**Figure**
JTAG DC-ME-Y401-JT DC-ME-Y402-JT DC-ME-Y402-LX-JT **Non-JTAG** DC-ME-Y401-C DC-ME-Y402-C DC-ME-Y402-LX DC-ME-Y402-S DC-ME-Y413-LX	■ JTAG interface ■ Ordered independently for use in your implementation	 

Connectors: Power and Device Interface

Power and Device Interface Connector

Viewed from bottom of the module:



Power and Device Interface Connector Pin Assignments				
Signal				Description
ME		Wi-ME		
Pin #	Function	Pin #	Function	
1	VETH+		—	ME: Power Pass-Thru+ Wi-ME: Position Removed
2	VETH-		—	ME: Power Pass-Thru- Wi-ME: Position removed
3-6	—		—	Position removed
7	RXD	1	RXD	Receive Data (Input)
8	TXD	2	TXD	Transmit Data (Output)
9	RTS	3	RTS	Request to Send (Output)
10	DTR	4	DTR	Data Terminal Ready (Output)
11	CTS	5	CTS	Clear to Send (Input)
12	DSR	6	DSR	Data Set Ready (Input)

Power and Device Interface Connector Pin Assignments				
Signal				Description
ME		Wi-ME		
Pin #	Function	Pin #	Function	
13	DCD	7	DCD	Data Carrier Detect (Input)
14	/RESET	8	/RESET	Reset
15	+3.3V	9	+3.3V	Power
16	GND	10	GND	Ground
17, 18	—	11, 12	—	Not accessible with Digi Plug-and-Play Firmware. If using a development kit, see "Module Pinout" on page 34 for detailed IO configuration information.
19	—	13	—	Reserved. Do not connect.
20	/INIT	14	/INIT	Software Reset

Note: The development board provides connectors for an optional PoE application kit.

Note: Any pins not used should be left floating.

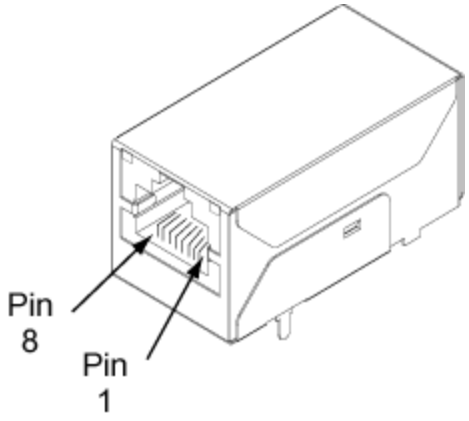
Note: See "Module Pinout" on page 34 for detailed IO configuration information.

Connectors: Ethernet Interface

The Ethernet connector is an 8-wire RJ-45 jack that meets the ISO 8877 requirements for 10/100BASE-T. See the following figure and table for pin orientation and pin assignments.

Note: Pin orientation and assignments are the same for modules with or without a JTAG connector.

Ethernet Interface Pin Orientation



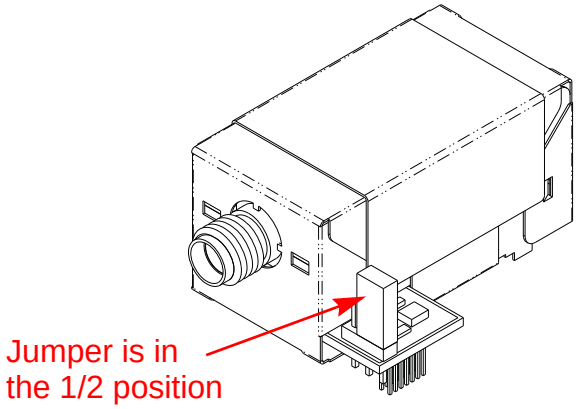
Ethernet Interface Pin Assignments							
Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**
TXD+	TXD-	RXD+	EPWR+	EPWR+	RXD-	EPWR-	EPWR-
Transmit Data +	Transmit Data -	Receive Data +	Power from Switch +	Power from Switch +	Receive Data -	Power from Switch -	Power from Switch -

JTAG Jumper

The J1 controls the way in which the Digi Connect Wi-ME 9210 and Digi Connect ME 9210 JTAG device responds to pin 14 being pulled low.

Jumper	Result
None	No reset
1-2	Hard reset
2-3	Soft reset

Table 1:



Hard Reset

The embedded modules support a hardware reset on pin 8 of the 14-pin header. Pulling pin 8 low with an open drain driver will force the module into a hard reset state. The module will remain in the reset state as long and pin 8 is held low and will leave this reset state ~250mS after pin 8 goes high. Do not actively drive pin 8 high and do not allow the rise time of the pin 14 to be longer than 100uS. When used with the development board, this pin is wired to reset button SW4, which means it acts as a hard reset button.

Connectors: Antenna

The Digi Connect Wi-ME 9210 and Digi Connect ME 9210 is available with 1 RP-SMA connector. The antenna is connected to the module with a reverse polarity SMA connector (sub-miniature size A). The antenna only fits on the module one way to ensure a proper connection.

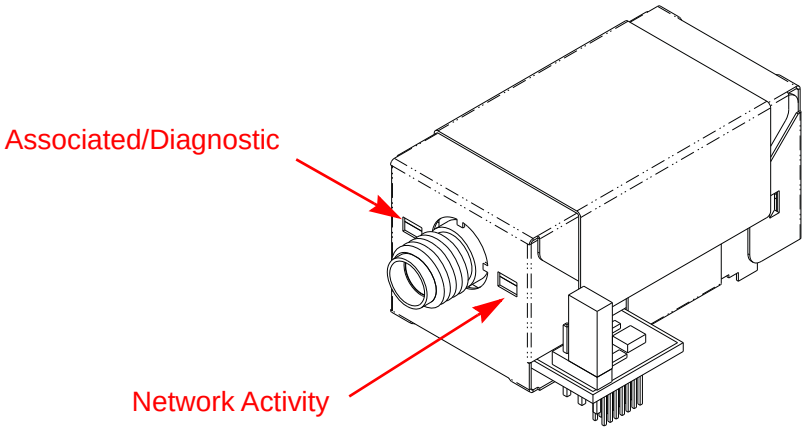
Caution: This Part 15 radio device operates on a non-interference basis with other devices operating at this frequency when using the antennae listed in the Antenna Specification table. Any changes or modification to the product not expressly approved by Digi International could void the user's authority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

Antenna Specifications	
Type	Dipole
Part number	DG-ANT-20DP-BG
Gain	2 dBi

Table 2:

Module LEDs

LED Locations



Note: The LEDs are the same for a module with or without a JTAG connector.

LED Behaviors		
LED	**Digi Plug and Play Firmware Digi Connect Wi-ME 9210 and Digi Connect ME 9210**	**Customizable Modules**
Left	Associated/Diagnostic: 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 Digi Plug-and Play Firmware (Network link status).
Right	Network Activity: Blinking -network data is transmitted or received.	This LED is software programmable.

About the Development Board

CHAPTER 2

Overview

The development board is a hardware platform from which you can determine how to integrate the embedded modules into your design. The board consists of the following main features:

- Socket for connecting the embedded modules
- JTAG connection (for use with the development kit only)
- GPIO switches
- Serial and GPIO ports
- Power input

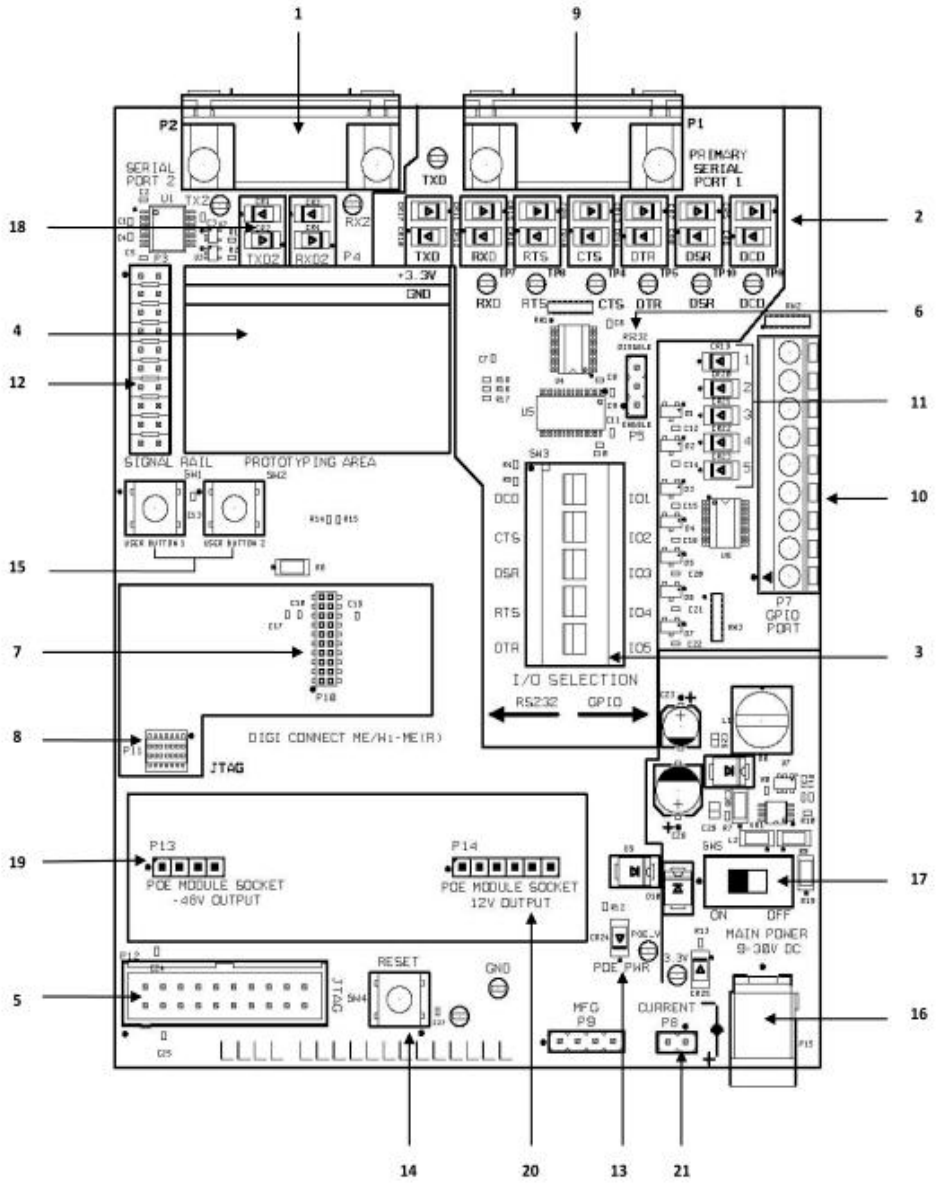
This chapter provides information on development board components and contains the topics listed below. For more detailed information on the development board, see the schematic and mechanical drawings on the CD that accompanies your kit. Once you've installed the software that comes with your kit, you can access the schematic from the Start menu.

- "Basic Description" on page 16
- "Placement of Module" on page 18
- "Connectors and Blocks" on page 22
- "Switches and Push Buttons" on page 27
- "Development Board LEDs" on page 29
- "Power Jack P15" on page 31
- "Test Points" on page 32

Basic Description

The development board contains connectors, switches, and LEDs for use while integrating the embedded module into your design. See the following figure for the location of the connectors, switches, and LEDs. Additionally, the board provides test points (not shown on the figure). For more information about test points, see "Test Points" on page 32.

Board Layout and Connector Locations:



Connectors, Switches and LEDs Board Description Markers 1-5				
1	**2**	**3**	**4**	**5**
Secondary Serial Port, P2	Primary Port LEDs, CR5 - CR18	GPIO Switch Bank, SW3	Prototyping Area, P4	JTAG Header, P12

Connectors, Switches and LEDs Board Description (continued) Markers 6-10				
6	**7**	**8**	**9**	**10**
232 Enable Jumper Block, P5	Embedded Module Connector, P10	JTAG Connector, P11	Primary Serial Port, P1	GPIO Port, P7

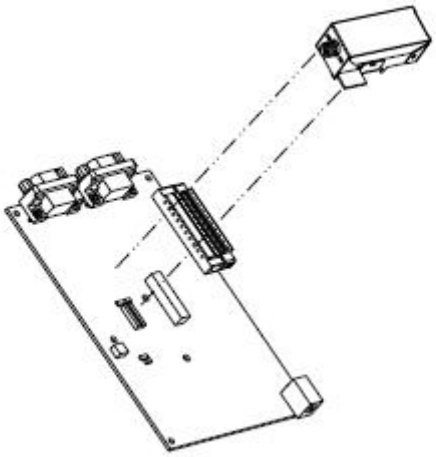
Connectors, Switches and LEDs Board Description (continued) Markers 11-15				
11	**12**	**13**	**14**	**15**
Digital I/O LEDs, CR19 - CR23	Logic Analyzer header, P3	POE Source LED, CR24	Reset Switch, SW4	User Pushbuttons, SW1 & SW2

Connectors, Switches and LEDs Board Description (continued) Markers 16-21					
16	**17**	**18**	**19**	**20**	**21**
Power Jack, P15	On/Off switch, SW5	Secondary Port LEDs CR1-CR4	-48V DC output from module P13	12V output from PoE module P14	Current Measurement Option P8

- "Caution: When handling the development board, wear a grounding wrist strap to avoid ESD damage to the board." on page 18
- "Connectors and Blocks" on page 22
- "Switches and Push Buttons" on page 27
- "Development Board LEDs" on page 29
- "Power Jack P15" on page 31

See the following figure for placement of either module onto the development board.

Placement of Module



Caution: When handling the development board, wear a grounding wrist strap to avoid ESD damage to the board.

Port Descriptions

The development board provides the following ports:

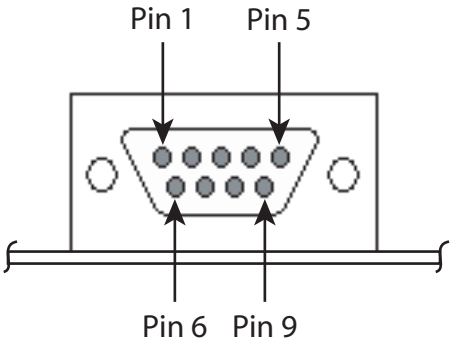
- Primary Serial Port, P1
- Secondary Serial Port, P2
- GPIO Port, P7

See the figure titled "Board Layout and Connector Locations:" on page 16 for the location of the ports. The following sections describe the ports.

Primary Serial Port, P1

The Primary Serial Port is a DB-9 male connector that is labeled as P1 on the development board. See the following figure for pin orientation; see the following table for pin assignments.

Primary Serial Port Pin Orientation

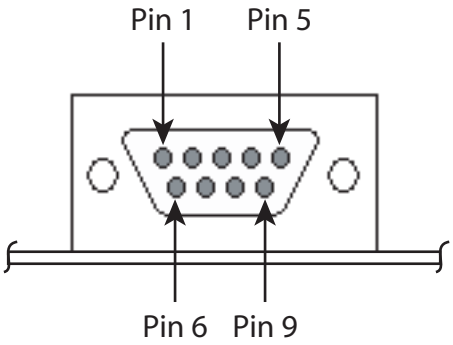


Primary Serial Port Pin Assignments								
Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**	**Pin 9**
DCD	RXD	TXD	DTR	GND	DSR	RTS	CTS	—
Data Carrier Detect	Receive Data	Transmit Data	Data Terminal Ready	Signal/ Chassis Ground	Data Set Ready	Request To Send	Clear To Send	—

Secondary Serial Port, P2

The Secondary Serial Port is a DB-9 male connector that is labeled as P2 on the development board. The port is used only with the Digi Connect ME 9210 modules with JTAG interfaces for debugging purposes. See the following figure for pin orientation; see the following table for pin assignments.

Secondary Serial Port Pin Orientation



Secondary Serial Port Pin Assignments								
Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**	**Pin 9**
—	RXD	TXD	—	GND	—	—	—	—
—	Receive Data	Transmit Data	—	Signal/ Chassis Ground	—	—	—	—

RS232-Enable Pin Header, P5

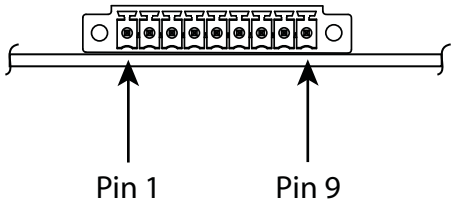
P5 is used to enable or disable serial port RS232s transceiver. Shorting P5 pins 1 and 2 will enable the RS232 transceiver. Shorting P5 pins 2 and 3 will disable the RS232 transceiver.

GPIO Port, P7

The GPIO port is a 9-pin male right-angle connector that is labeled as P7 on the development board. See the following figure for pin orientation; see the following tables for pin assignments. For input and output threshold specifications, see "DC Characteristics" on page 40. Note that each signal has a 220 ohm series resistor between the P7 pin and the module (except GND).

Note: The development board is shipped with a 9-pin screw-flange plug attached to the GPIO port.

GPIO Port Pin Orientation



GPIO Port Pin Assignments									
	Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**	**Pin 9**
Signal	GPIO-1	GND	GPIO-2	GND	GPIO-3	TXD_TTL	GPIO-4	RXD_TTL	GPIO-5

Connectors and Blocks

The development board provides the following connectors and blocks:

- Embedded Module Connector, P10
- The Digi Connect Wi-ME module does not provide pins 1-6. See "Module Pinout" on page 34 for detailed IO configuration information.
- JTAG Debugger Connector, P12.
- -48V DC input to PoE module (Digi Connect ME 9210 must be connected to a Powering Device for this feature.), P13
- 12V DC output from PoE module into Dev Board Power Supply, P14
- Logic Analyzer Header, P3

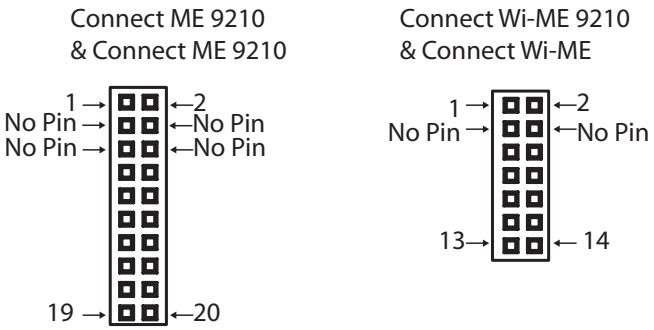
See the figure titled "Board Layout and Connector Locations:" on page 16 for the location of the connectors and blocks. The following sections describe the connectors and blocks.

Embedded Module Connector, P10

The Digi Connect ME embedded module Connector is a 20-pin female vertical header that is labeled P10 on the development board. See the following figure for pin orientation; see the following table for pin assignments.

Note: The figure shows the connector using the same orientation as shown in the figure titled "Board Layout and Connector Locations:" on page 16.

Embedded Module Connector Pin Orientation



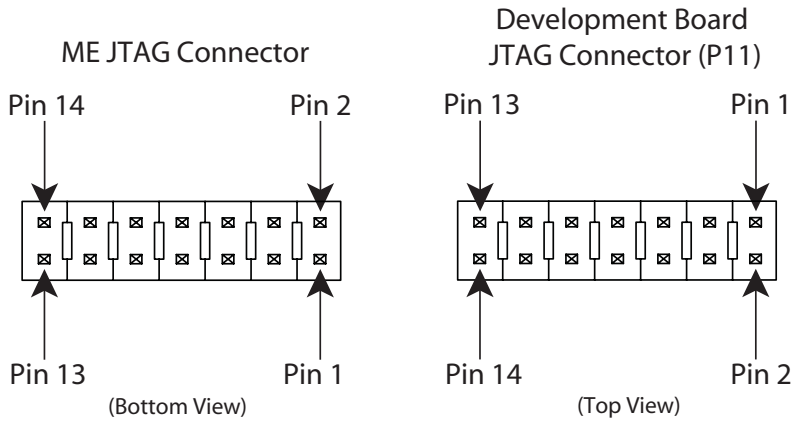
Module Connector Pin Assignments				
Signal				Description
ME		Wi-ME		
Pin #	Function	Pin #	Function	
1	VETH+	—	—	ME: Power Pass-Thru + Wi-ME: Position removed
3-6	Position Removed			
8	TXD	2	TXD	Transmit Data (Output)
10	DTR	4	DTR	Data Terminal Ready (Output)
11	CTS	5	CTS	Clear to Send (Input)
12	DSR	6	DSR	Data Set Ready (Input)
13	DCD	7	DCD	Data Carrier Detect (Input)
14	/RESET	8	/RESET	Reset
15	+3.3V	9	+3.3V	Power
16	GND	10	GND	Ground
17, 18	—	11, 12	—	Not accessible with Digi Plug-and-Play Firmware. If using a development kit, see "Module Pinout" on page 34 for detailed IO configuration information.
19	—	13	—	Reserved
20	/INIT	14	/INIT	Digi Plug-and-Play Firmware Software Reset

Note The Digi Connect Wi-ME module does not provide pins 1-6.
See "Module Pinout" on page 34 for detailed IO configuration information.

Module JTAG Interface Connector, P11

The Module's JTAG Interface Connector is a 14-pin female vertical header that is labeled P11 on the development board. The connector mates with the JTAG connector on the embedded module. The Module's JTAG Connector pins are tied to the debugger connector (see "JTAG Debugger Connector, P12").

Since the modules' JTAG connectors are mounted on the bottom side of the modules, the pin 1 location is mirrored from that of the Development board's mating JTAG connector (P11). The resulting pin mapping is indicated in the Module JTAG Interface Connector Pin Assignments table below.



Bottom side of module (left) and development board from top (right)

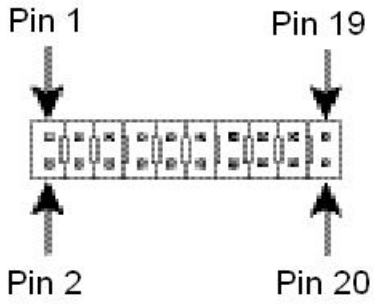
Module JTAG Interface Connector Pin Assignments		
JTAG Signal	**ME JTAG pin #**	**JTAG Connector (P11) pin #**
+3.3V	1	2
GND	2	1
TRST#	3	4
GND	4	3
TDI	5	6
GND	6	5
TMS	7	8
GND	8	7
TCK	9	10
RXD	10	9
TDO	11	12
SRST	12	11
+3.3V	13	14
TXD	14	13

JTAG Debugger Connector, P12

The JTAG debugger connector is a 20-pin male vertical header that is labeled P12 on the development board. The connector mates with a JTAG debugger plug (for example, a Digi JTAG Link). The connector is used with the development kit only. See the following figure for pin orientation. See the following table for pin assignments.

Note: The figure shows the connector using the same orientation as shown in the figure titled "Board Layout and Connector Locations:" on page 16.

JTAG Debugger Connector Pin Orientation



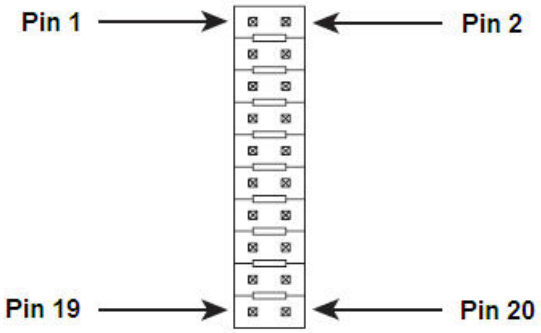
JTAG Debugger Connector Pin Assignments									
Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**	**Pin 9**	**Pin 10**
VCC+	VCC+	/TRST	GND	TDI	GND	TMS	GND	TCK	GND
Pin 11	**Pin 12**	**Pin 13**	**Pin 14**	**Pin 15**	**Pin 16**	**Pin 17**	**Pin 18**	**Pin 19**	**Pin 20**
RTCK	GNO	TDO	GND	/SRST	GNO	N/A	GND	N/A	GND

Logic Analyzer Header, P3

The Logic Analyzer Header is a 20-pin male vertical header that is labeled P3 on the development board. The header is for connecting a digital signal analyzer (for example, a logic analyzer) to the development board. See the following figure for pin orientation; see the following table for pin assignments.

Note: The figure shows the connector using the same orientation as shown in the figure titled "Board Layout and Connector Locations:" on page 16.

Logic Analyzer Header Pin Orientation



Logic Analyzer Header Pin Assignments									
Pin 1	**Pin 2**	**Pin 3**	**Pin 4**	**Pin 5**	**Pin 6**	**Pin 7**	**Pin 8**	**Pin 9**	**Pin 10**
V_Ether+	V_Ether-	Not Connected	Not Connected	Not Connected	Not Connected	RXD	TXD	GPIO-4	GPIO-5
Pin 11	**Pin 12**	**Pin 13**	**Pin 14**	**Pin 15**	**Pin 16**	**Pin 17**	**Pin 18**	**Pin 19**	**Pin 20**
GPIO-2	GPIO-3	GPIO-1	/RST	3.3v	GND	See "Power and Device Interface Connector Pin Assignments" on page 9 for details.		Reserved	/INIT

Switches and Push Buttons

The development board provides the following switches:

- User PB1
- User PB2
- GPIO Switch Bank 1, SW3
- Reset, SW4
- Power On/Off SW5

See the figure titled "Board Layout and Connector Locations:" on page 16 for the location of the switches. The following sections describe the switches.

GPIO Switch Bank 1, SW3

GPIO Switch Bank 1, labeled SW3, is a set of five slide switches that allows the embedded module to use either serial signals or GPIO signals to communicate with a device. With the switch to the left position, the module's signal is connected to the Serial Port1 RS232 transceiver. In the right position, the module signal is connected to the appropriate pin of the GPIO Port P7.

GPIO Switch Bank 1 Settings

Switch Number	Left Position 	Right Position 
1	DCD	GPIO-1
2	CTS	GPIO-2
3	DSR	GPIO-3
4	RTS	GPIO-4
5	DTR	GPIO-5

User Push Button 1, SW1

When switch number 1 is set to GPIO-1, pushing User Push Button 1, SW1, will drive GPIO-1 (Wi-ME pin 7, ME pin 12) low.

User Push Button 2, SW2

Pushing User Push Button 2, SW2, will drive Wi-ME module pin 12 (ME module pin 18) low.

Reset, SW4

The Reset switch is a push button switch labeled SW4 on the development board. Pressing the switch holds the embedded module in reset. When the push button is released, the module reboots.

Power On/Off Switch, SW5

The left position means that power is on. The right position means that power is off.

Development Board LEDs

The development board contains 25 LEDs that are labeled CR1 through CR25. The following table lists and describes the LEDs.

Development Board LED Descriptions

Board Label	Description	State	Indication
CR1	TXD, Secondary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR2	TXD, Secondary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR3	RXD, Secondary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR4	RXD, Secondary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR5	DCD, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR6	DCD, Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR7	DSR, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR8	DSR, Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR9	CTS, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR10	CTS, Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR11	RXD, Primary Serial Port	On	Logic 1 on TTL, mark, -V on line side
CR12	RXD, Primary Serial Port	On	Logic 1 on TTL, mark, -V on line side
CR13	DTR, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR14	DTR, Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR15	RTS, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR16	RTS, Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side
CR17	TXD, Primary Serial Port Yellow	On	Logic 1 on TTL, mark, -V on line side
CR18	TXD Primary Serial Port Green	On	Logic 0 on TTL, space, +V on line side

Development Board LED Descriptions			
Board Label	**Description**	**State**	**Indication**
CR19	GPIO 1 Green	On	Logic 1
		Off	Logic 0
CR20	GPIO 2 Green	On	Logic 1
		Off	Logic 0
CR21	GPIO 3 Green	On	Logic 1
		Off	Logic 0
CR22	GPIO 4 Green	On	Logic 1
		Off	Logic 0
CR23	GPIO 5 Green	On	Logic 1
		Off	Logic 0
CR24	POE Active LED Green	On	+12v present from POE
		Off	No POE present
CR25	3.3v LED Green	On	Power On
		Off	Power Off

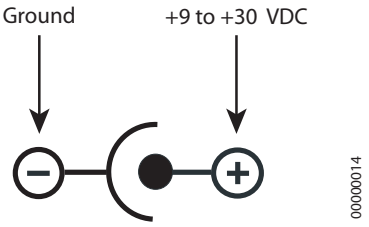
Power Jack P15

The Power Jack P15 is a barrel connector that accepts 9 to 30 VDC. The following table shows the polarity of the power jack.

Power Jack Polarity	
Contact	**Polarity**
Center	+9 to +30 VDC
Outer	Ground

The following figure schematically represents the polarity of the power jack.

Power Jack Polarity, Schematic



Test Points

The development board provides 13 test points that can be identified by a board label. The test point numbers are in the development board schematic drawings. The following table lists the test point number, board label, and a brief description of each test point.

Test Point Descriptions		
Test Point	**Board Label**	**Description**
TP2	TXD	TXD-2, Transmit, Secondary Serial Port
TP3	RXD	RXD-2, Receive, Secondary Serial Port
TP4	CTS	CTS, Primary Serial Port
TP5	DTR	DTR, Primary Serial Port
TP6	TXD	TXD, Primary Serial Port
TP7	RXD	RXD, Primary Serial Port
TP8	RTS	RTS, Primary Serial Port
TP9	DCD	DCD, Primary Serial Port
TP10	DSR	DSR, Primary Serial Port
TP12	Reset	Reset
TP13	POE 12v	POE 12v
TP14	3.3v	3.3v Supply
TP15	GND	Ground

Programming Considerations

C H A P T E R 3

Overview

This chapter provides information programmers may require to make use of some embedded module hardware resources. It provides programming information on the following topics for the Digi Connect ME 9210 and the Digi Connect Wi-ME 9210:

- "Module Pinout" on page 34
- "Reset" on page 36
- "Memory" on page 37
- "SDRAM" on page 37

Module Pinout

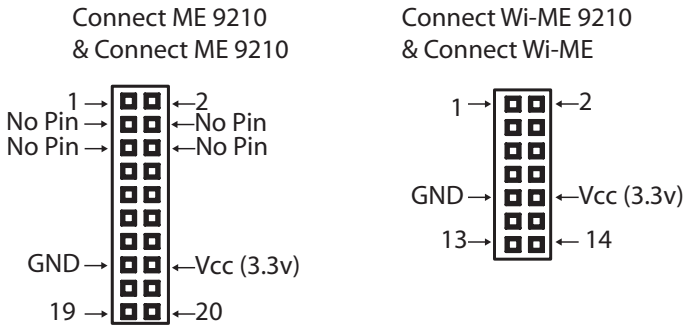
General Information

The NS7520/NS9210 processors support 16 General Purpose I/O (GPIO) lines, some of which are reserved for specific functions and some of which can be customized. For Digi Plug and Play Firmware users, see the *Digi Connect Family Users Guide* for details on what Pin configurations are available to you.

Module Pinout

The following table provides signal header pinout information for the Digi Connect ME 9210, Digi Connect Wi-ME 9210, Digi Connect ME, and Digi Connect Wi-ME modules.

Please refer to the following pinout figure and color-coding key for the table:



Key
Applies to Digi Connect ME / Digi Connect Wi-ME modules
Applies to Digi Connect ME 9210/Wi-ME 9210 modules.
Applies to Digi Connect ME9210/ Wi- ME9210 and Digi Connect ME/ Digi Connect Wi-ME modules.

Pin Number		Pin Function										
Pin [Wi-ME/ Wi-ME 9210]	Pin [ME/ME 9210]	UART [All]	GPIO [ME/ Wi-ME]	GPIO [ME 9210]	Ext IRQ [ME/ Wi-ME]	Ext IRQ [ME 9210/ Wi-ME 9210]	I2C [ME 9210/ Wi-ME 9210]	SPI [ME 9210/ Wi-ME 9210]	FIM [ME 9210/Wi-ME 9210]	CAN BUS [ME 9210/Wi-ME 9210]	Timer [ME 9210/ Wi-ME 9210]	Other [All]
No Pin	1											VETH+
No Pin	2											VETH-
No Pin	3-6	Positions Removed - No Pins										
1	7	RXD	A3	GPIO[3]				DATA IN	PIC_0_GEN_IO[3]			
2	8	TXD	A7	GPIO[7]				DATA OUT			Timer Out 7 Timer In 8	
3	9	RTS	A5	GPIO[5]		3		CLK			Timer Out 6	
4	10	DTR	A6	GPIO[6]						PIC_CAN_TXD	Timer In 7	
5	11	CTS	A1	GPIO[1]		0			PIC_0_GEN_IO[1]			
6	12	DSR	A2	GPIO[2]		1			PIC_0_GEN_IO[2]	PIC_CAN_RXD		
7	13	DCD	A0	GPIO[0]				EN	PIC_0_GEN_IO[0]			
8	14											/RST
9	15											3.3V
10	16											GND
11	17		C4	GPIO[12]			SDA	CLK				RESET_ DONE
12	18		C1	GPIO[9]	1	0	SCL					
13	19	Reserved										
14	20		C5	GPIO [13]				CLK			Timer Out 9	/INIT

Note

- The CAN Bus interface is available on the Digi Connect Wi-ME 9210 variants.
- When using the 8/16 ME 9210/ Wi-ME 9210 CAN Bus, the DTR (9210 signal GPIO 6) line must be tri-stated. When the DTR signal (9210 GPO/I 6) is used, 9210 GPO/I 15 must be tri-stated. These two 9210 signals are wired together on the 9210 modules.
- The Digi Connect Wi-ME 9210 module does not provide pins 1-6.
- When using I2C, make sure to put a 10k pull up on the SDA and SCL lines.

Reset

Hard Reset

The Digi Connect Wi-ME 9210 module supports a hardware reset via pin 8 of the 14-pin header. The unit is forced into a hard reset when pulling the pin to ground, or less than 0.8v, for one microsecond. When plugged into a development board, this pin is wired to the push button at SW4. As a result, this switch acts as a hard reset button.

Reset Characteristics	
Characteristic	**Specification**
Delay	250 milliseconds (typical)
Low ActiveThreshold	0.8 V
High Inactive Threshold	2.4V
Minimum Hold Time	1 microsecond pulse
Rise Time	100 microseconds max

Memory

Flash

Depending on the variant, the Digi Connect Wi-ME 9210 and Digi Connect ME 9210 have 8 or 16MB of flash memory.

The Digi Connect Wi-ME 9210/ARM9 family, the flash memory is controlled by chip select 2 (default=st_cs1) and is located at 0x50000000.

SDRAM

The Digi Connect ME 9210 and Digi Connect Wi-ME 9210's SDRAM is controlled by chip select 1. Depending on the variant, the module will have either 8 or 16MB of SDRAM memory.

The following table illustrates typical power consumptions using these power management mechanisms. These measurements were taken with all Digi NS9210 processor's I/O clocks disabled except UART A, UART C, I/O Hub, and Memory Clock0 using a standard module plugged into a Digi JumpStart Kit development board, with nominal voltage applied:

Mode	Power Consumption[1]
Normal Tx Operational Mode	1.7W (520mA peak)
Normal Receive Operational Mode[2]	1.14W (346mA)
Full Clock Scaling Mode[3]	.613W (186mA)
Sleep Mode[4]	.469/w (146mA)

Note 1: The current measurement was taken from the R6 current sense resistor using a 0.025 ohm shunt on the JumpStart Kit development board. The supply voltage was 3.3V.
Note 2: This is the default power consumption mode when entering applicationStart(), as measured with the napsave sample application. The value of the NS9210 Clock Configuration register (A090017C) is 0001200B hexadecimal.
Note 3: This measurement was produced by selecting the "Clock Scale" menu option in the napsave sample application.
Note 4: This measurement was produced by selecting the "Deep Sleep/Wakeup with an External IRA" menu option in the napsave sample application.

Module Specifications

A P P E N D I X A

Following are the hardware specifications for Digi Connect ME 9210 and Digi Connect Wi-ME 9210 modules.

Network Interface

Digi Connect ME 9210

- Standard: IEEE 802.3
- Physical Layer: 10/100Base-T
- Data Rate: 10/100Mbps (auto-sensing)
- Mode: Half-duplex and full-duplex support (auto-sensing)
- Connector: RJ-45

Digi Connect Wi-ME 9210

- Standard: IEEE 802.11b/g/n
- Frequency: 2.4 GHz
- Data Rate: Up to 65 Mbps with automatic fallback
- Modulation: CCK (11/5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps), OFDM ((6, 9, 12, 18, 24, 36, 48, 54, and 65 Mbps)
- Transmit Power: 13 dBm
- 54/65Mbps 12dBm
- Receive sensitivity:

  1Mbps: -100

  2Mbps: -97

  5.5Mbps: -96

  6Mbps: -84 dBm

  6.5Mbps: -79dBm

  9Mbps: -84 dBm

  11Mbps: -92

  12Mbps: -83 dBm

  13Mbps: -76dBm

  18Mbps: -81 dBm

  19.5Mbps: - 74dBm

  24Mbps: -79 dBm

  26Mbps: -71dBm

  36Mbps: -76 dBm

  39Mbps: -67dBm

  48Mbps: -72 dBm

  52Mbps: -63dBm

  54Mbps: -69 dBm

  58.5Mbps: -62dBm

  65Mbps: -61dBm

- Antenna Connector: 1 x RP-SMA

Caution: The Digi Connect Wi-ME 9210 embedded modules were designed for use in no clean flux wave soldering process. The product is not designed to support draining after a water-wash process, which can lead to water residue inside the enclosure resulting from direct entry or condensation after the wash process.

Serial Interface

One TTL serial interface (CMOS 3.3v) with full modem control signals (DTR, DSR, DCD, RTS, CTS). The Digi Connect Wi-ME 9210 also supports SPI and FIM-based application specific interfaces.

Data Rates (bps)

50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 14400,19200, 28800, 38400, 57600, 115200, 230400, 460800

DC Characteristics

The following tables provide DC characteristics for operating conditions, inputs, and outputs.

Operating Conditions						
Symbol	**Description**	**Min**	**Typ**	**Max**		**Unit**
V_{CC}	Supply Voltage	3.14	3.3	3.45		V
n/a	Power Supply Ripple			40		mVpp
I_{CC}	Supply Current	—	—	Rx mode	360	mA
				Tx mode	520 (peak)	
I_{IL}	16K pull up resistor	-10	—	200		µA
I_{IH}	16K pull up resistor	-10	—	10		µA
I_{OZ}	HighZ Leakage Current	-10	—	10		µA
I_{OD}	Output Drive Strength	—	—	2		mA
C_{IO}	Pin Capacitance (V_O=0)	—	—	4		pF

Warning: The module's +3.3V (pin 15 for Digi Connect ME 9210 Family and pin 9 for Digi Connect Wi-ME 9210 Family) has the equivalent of a 500uF capacitor connected between it and GND. At power on, this equivalent capacitance will cause an input inrush current that is dependent on the voltage rise time of the user supplied +3.3V power source. This user supplied +3.3V power source must be able to supply the needed inrush current during the supply's voltage ramp-up in a way that insures the voltage ramp-up is continuous and monotonic. The input voltage rise time of the +3.3v power supply must be between 700 uS and 140ms. A rise time outside of these limits may cause the device to malfunction and give a 3-1-3 diagnostic error.

Inputs					
Symbol	**Description**	**Min**	**Typ**	**Max**	**Unit**
V_{IH}	Input High Voltage	2	—	V_{CC}+0.3[a]	V
V_{IL}	Input Low Voltage	V_{SS}-0.3	—	.8	V

a.) All I/O are 5v tolerant.

Outputs					
Symbol	**Description**	**Min**	**Typ**	**Max**	**Unit**
V_{OH}	Output High Voltage	Vdd -.6V	—	Vdd[a]	V
V_{OL}	Output Low Voltage	0	—	0.4	V
I_{OH}	Output High Current	2	—	—	mA
I_{OL}	Output Low Current	2	—	—	mA

a.) All I/O are 5v tolerant.

	Digi Connect ME 9210	**Digi Connect Wi-ME 9210**
Storage Temperature	-40°F to 257°F (-40°C to 125°C)	
Relative Humidity	Not to exceed 95% non-condensing (4° C to 45°C), constant absolute humidity above 45°C	
Altitude	12000 feet (3657.60 meters)	

Grounding Recommendation

It is recommended that you connect the tabs on the chassis of the Digi Connect ME 9210/ Digi Connect Wi-ME 9210, and the ground pins directly to the logic ground plane. It is also recommended that you connect the Digi Connect ME 9210/ Digi Connect Wi-ME 9210 to the metal chassis of your enclosure. The idea is to provide the shortest path or a path away from circuitry for ESD to travel to ground.

Power Management

Using the Digi NET+OS development environment, applications on the Digi Connect Wi-ME 9210 and Digi Connect ME 9210 are capable of operating the module in several reduced power consumption modes. These reduced power operating modes utilize the power management mechanisms for the NS9210 processor for CPU clock scaling and sleep.

In the Clock Scaling mode, the system itself continues to execute instructions, but at a different clock rate, which can be changed on-the-fly, using Digi's patented circuitry inside the NS9210 processor. The clock speed is changed programmatically to lower or raise the system clock speed, thus reducing or increasing the module's power footprint, respectively.

Additionally, a Sleep mode is available in which the system stops executing instructions. Based on the application needs, wake-up triggers can be set up programmatically to activate the processor back to wherever it left off. In this mode, a drastic power reduction is realized by reducing the power consumption of the NS9210 processor and the on-module PHY.

For sample power consumption figures for normal (typical) and power management related operation of the Digi Connect Wi-ME 9210, see below:

- 3.3VDC @ 346 mA typical (1.14W)
- UART and Rx activated

Sleep Mode (approximate)

- 3.3VDC @ 142mA

For sample power consumption figures for normal (typical) and power management related operation of the Digi Connect ME 9210, see below:

- 3.3VDC @ 346 mA typical (1.14W)
- UART and Ethernet activated

Low Speed Idle Mode (approximate)

- 3.3VDC @ 186 mA (613 mW)
- /16 clock scaling, Ethernet activated

Sleep Mode (approximate)

- 3.3VDC @ 34 mA (113 mW)
- Wake-up on EIRQ, Ethernet PHY off

Thermal Specifications

The table below shows the standard operating temperature ranges for the entire Digi Connect ME family of embedded modules.

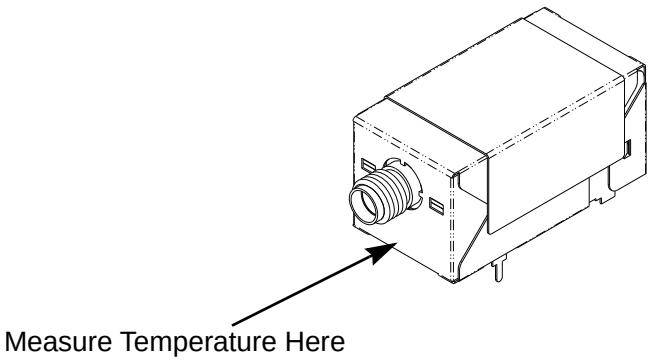
Standard Operating Temperature Ranges	
Product	**Operating Temperature Range**
Digi Connect Wi-ME 9210 and Digi Connect ME 9210	-40C to 75C no external thermal pad -40C to 85C with external thermal pad

The lower standard operating temperature ranges are specified without restrictions, except condensation must not occur.

The upper operating temperature limit depends on the host PCB layout and surrounding environmental conditions. To simplify the customer's design process, a maximum case temperature has been specified.

Maximum Case Temperature	
Product	**Maximum Case Temperature**
Digi Connect Wi-ME and Digi Connect ME 9210	84C no external thermal pad 95C with external thermal pad

The maximum case temperature must remain below the maximum, measured at the location shown in the figure below.



Additional Design Recommendations

The following list provides additional design guidance with respect to thermal management in applications with operating temperatures at the high end or beyond the specified standard ambient temperature range.

- Providing air movement will improve heat dissipation.
- The host PCB plays a large part in dissipating the heat generated by the module. A large copper plane located under the Digi Connect Wi-ME 9210 and soldered to the module's mounting tabs will improve the heat dissipation capabilities of the PCB.
- If the design allows, added buried PCB planes will also improve heat dissipation. The copper planes create a larger surface to spread the heat into the surrounding environment.
- Adding a thermal pad or thermal compound, such as Sil-Pad®, Gap Pad® or Gap Filler products made by the Bergquest Company (www.bergquistcompany.com), between the host PCB and the underside of the module will significantly increase the thermal transfer between the module's enclosure and the host PCB. Limit the fill area to the folded metal portion of the module's underside.

Mechanical

Dimensions	Digi Connect Wi-ME 9210 and Digi Connect ME 9210
Length	1.445 in. (36.703 mm)
Width	0.75 in. (19.05 mm)
Height	0.854 in. (21.69 mm)
Weight	.616oz. 17.463g
Device/serial interface connector	14-pin micro header (7-pin double row) with .05-inch (1.27-mm) pitch.

Bar Code

The 50m PN is code 3 of 9 (39) and the MAC is code 128. All scanners are set up so if they read code 3 of 9 they will automatically read 128. The reason for the two different code types is to maximize the size of the bars within a given space to improved readability.

Dimensions

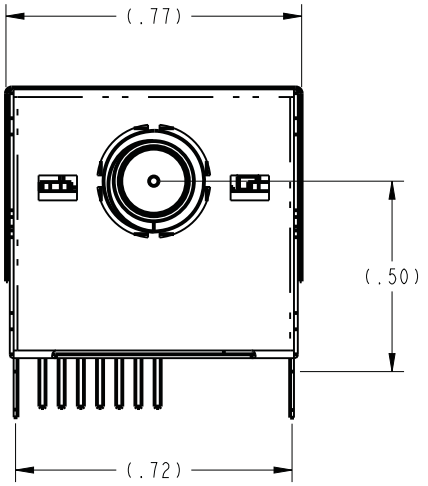
The following figures show the dimensions of Digi Connect Wi-ME and Digi Connect ME 9210 module.

Note: These are the tolerances for the drawings shown on this and the following pages:

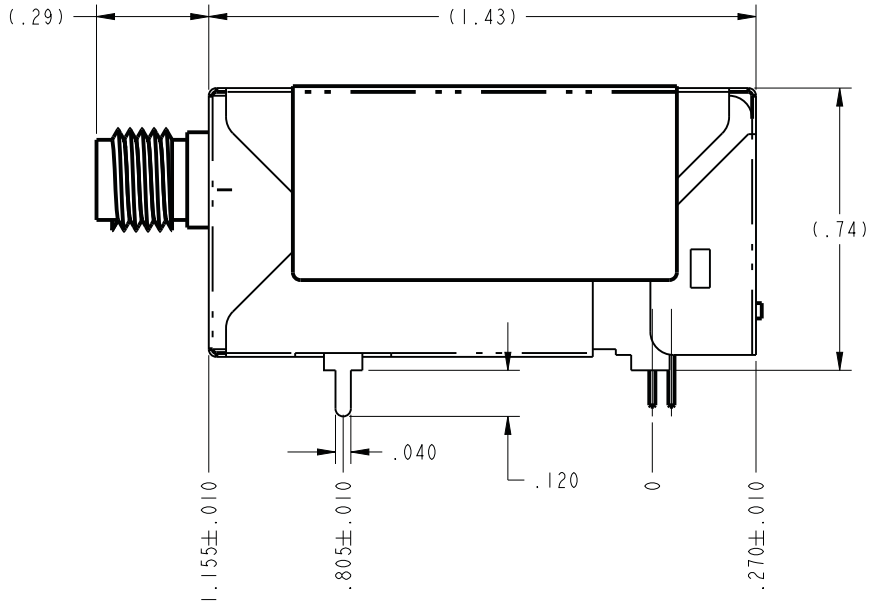
Measure	Tolerance
.XX	± .02
.XXX	± .010
Angles	± 3°

Digi Connect Wi-ME 9210 Module

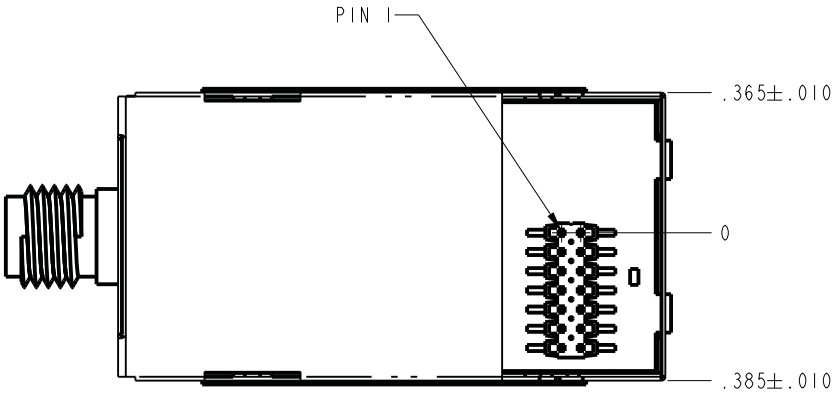
Front View



Side View

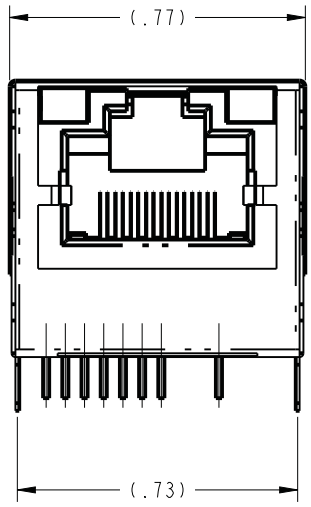


Bottom View

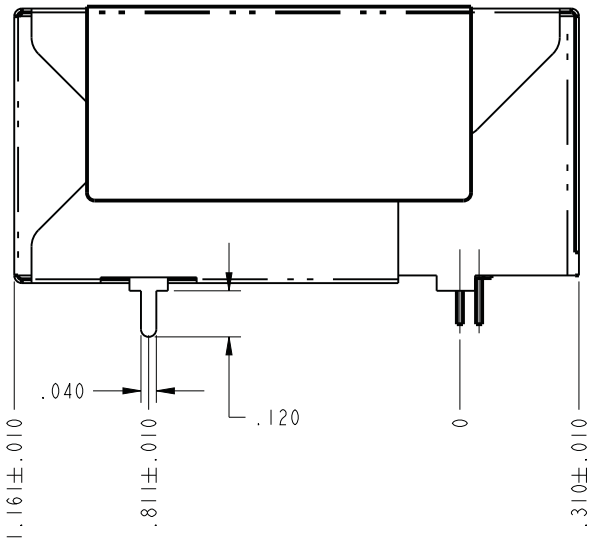


Digi Connect ME 9210 Module - Without JTAG Interface

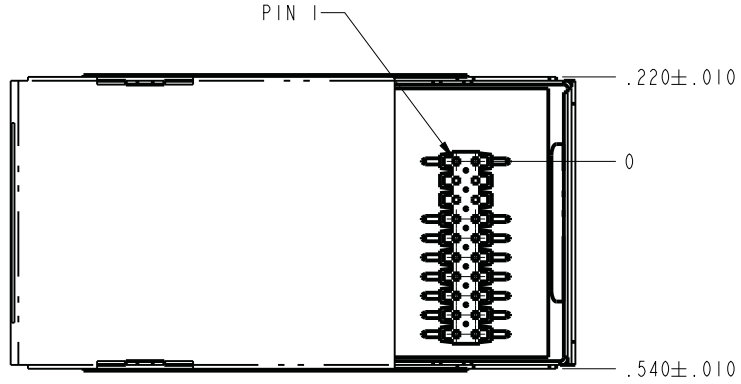
Front View



Side View

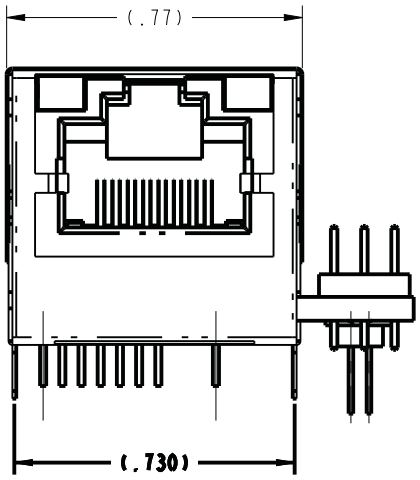


Bottom View

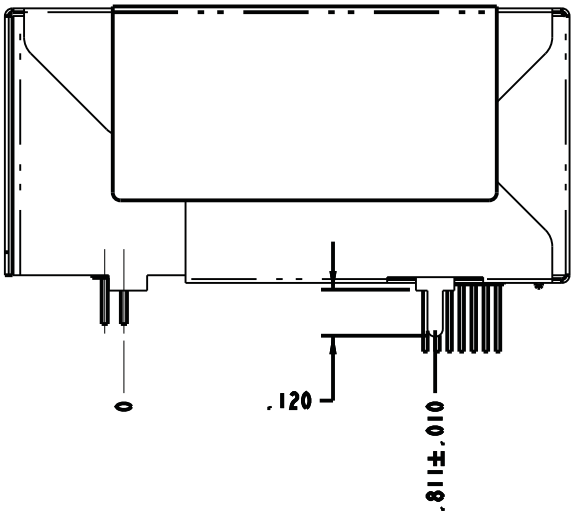


Digi Connect ME 9210 Module - With JTAG Interface

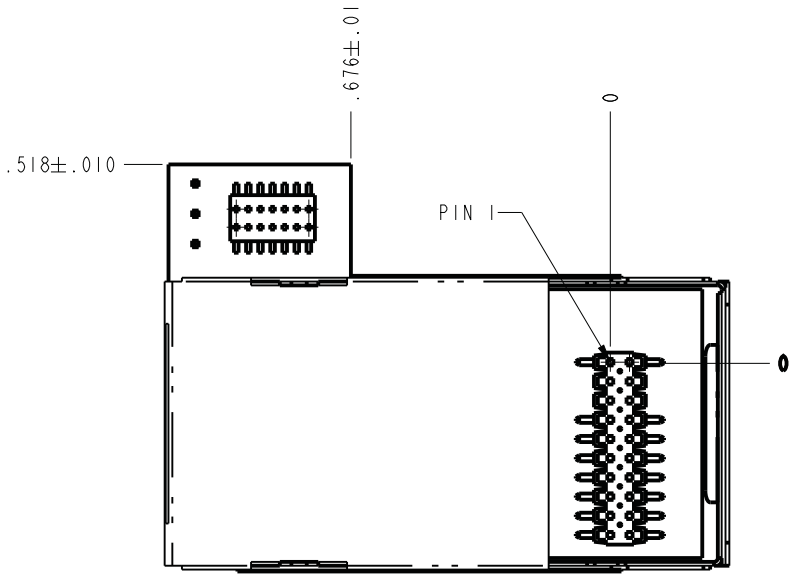
Front View



Side View



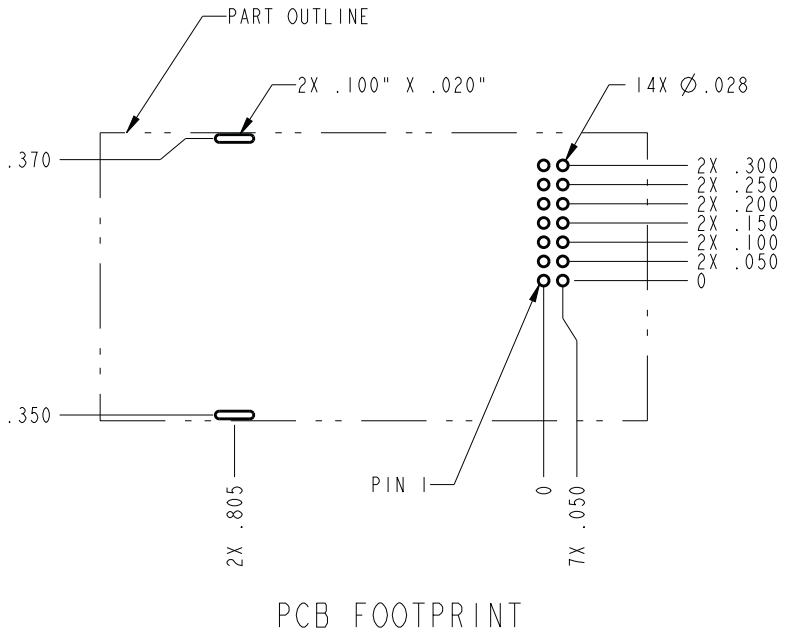
Bottom View



Recommended PCB Layout

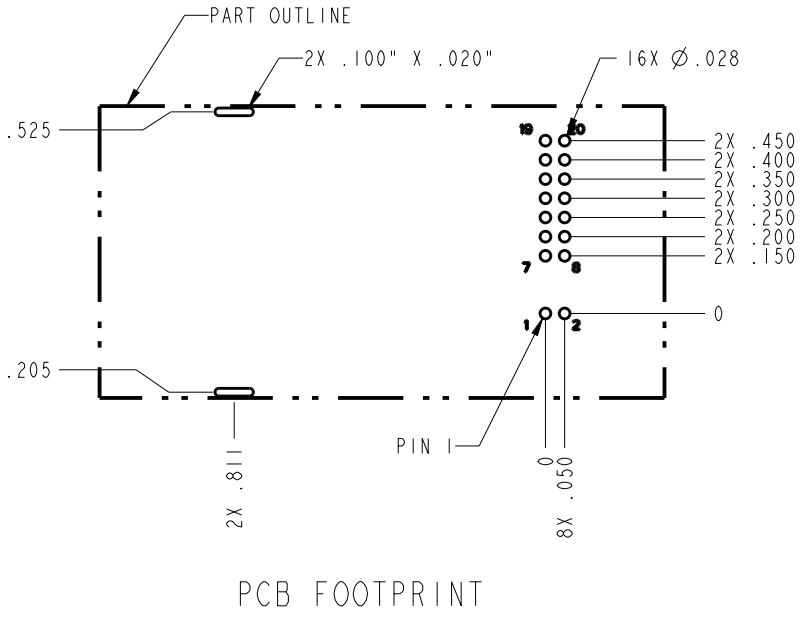
The following figure shows the recommended PCB (printed circuit board) layout of the Digi Connect Wi-ME 9210 and Digi Connect ME 9210.

Digi Connect Wi-ME 9210



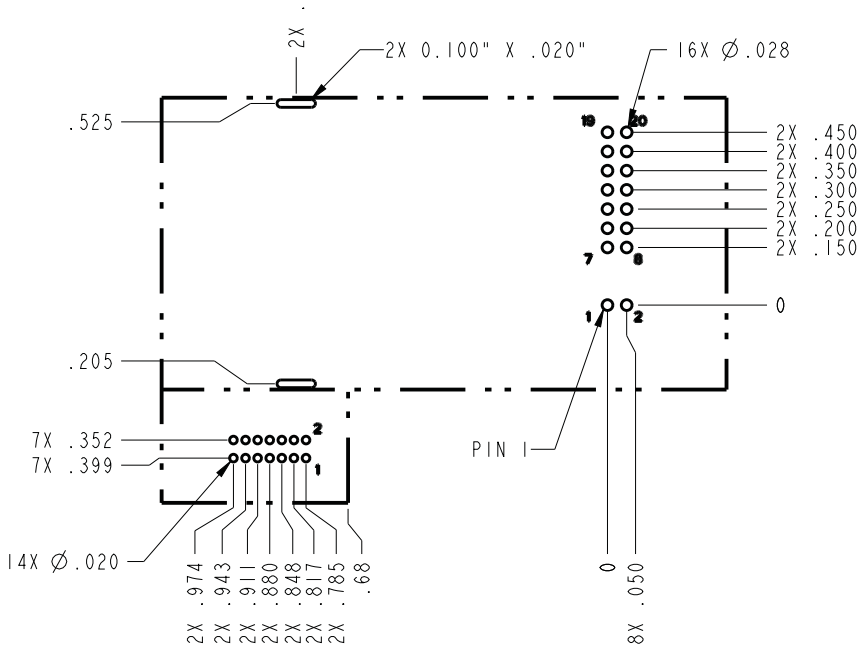
PCB FOOTPRINT

Digi Connect ME 9210 - PCB Top Dimensions without JTAG Interface



PCB FOOTPRINT

Digi Connect ME 9210 - PCB Top Dimensions with JTAG Interface



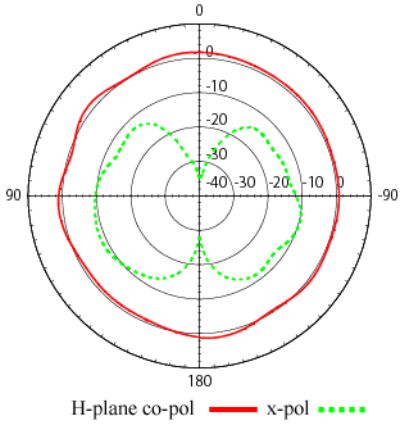
PCB FOOTPRINT

Antenna Information

Antenna Strength

The following diagram demonstrates the strength of the signal received by the whip antenna on both a horizontal and vertical plane. The diagram shows the magnetic field when the antenna is in a vertical position. The outside line represents the horizontal plane and the inside dotted line represents the vertical plane.

Radiation Patterns

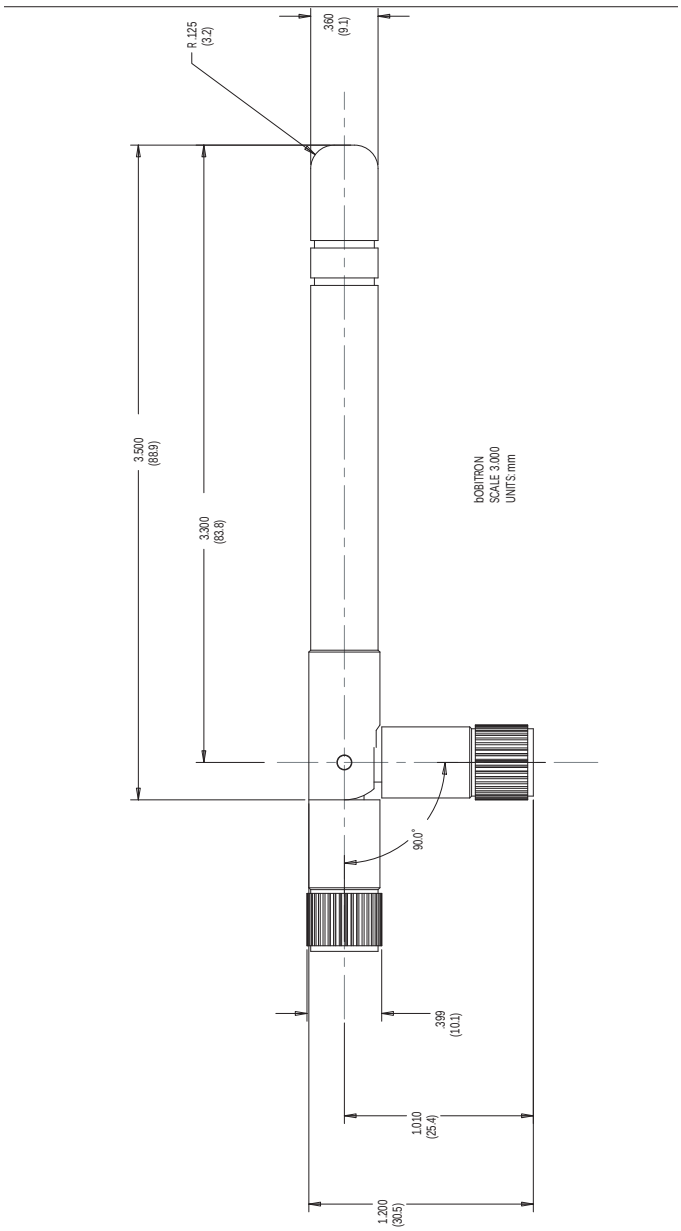


Antenna Specifications

Antenna Description	Dipole
Frequency	2.4~2.5 GHz
Power Output	2 W
DB Gain	1.8 dBi
VSWR	< or = 2.0
Nominal Impedance	50 ohm
Dimension	108.5 x 10.0 mm
Weight	10.5g
Connector	RP-SMA
Part Number	DG-ANT-20DP-BG

Any antenna matching the in-band and out-of-band signal patterns and strengths of the antenna, whose characteristics are given in the Antenna Description table and the Radiation Pattern graphic may be used with the Digi Connect Wi-ME 9210.

Dipole Antenna Dimensions



RF Exposure Statement

The Digi Connect Wi-ME 9210 module complies with the RF exposure limits for humans as called out in RSS-102. It is exempt from RF evaluation based on its operating frequency of 2.4 GHz, and effective radiated power less than the 3 watt requirement for a mobile device (>20 cm separation) operating at 2.4 GHz.

Safety Statements

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install an Ethernet connection in wet locations unless that connector is specifically designed for wet locations.
- Use caution when installing or modifying ethernet lines.
- Use a screwdriver and other tools with insulated handles.
- You and those around you should wear safety glasses or goggles.
- Do not place ethernet wiring or connections in any conduit, outlet or junction box containing electrical wiring.
- Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities.
- Ethernet wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.
- Do not place an ethernet connection where it would allow a person to use an ethernet device while in a bathtub, shower, swimming pool, or similar hazardous location.
- Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer.
- Do not touch un-insulated ethernet wiring if lightning is likely!
- Do not touch or move the antenna(s) while the unit is transmitting or receiving.
- Do not hold any component containing a radio such that the antenna is very close to or touching any exposed parts of the body, especially the face or eyes, while transmitting.
- Do not operate a portable transmitter near unshielded blasting caps or in an explosive environment unless it is a type especially qualified for such use

Any *external* communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

Regulatory information

APPENDIX B

These products comply with the following standards.

FCC Part 15 Class B

Radio Frequency Interference (RFI)(FCC 15.105)

The Digi Connect ME 9210 and Digi Connect Wi-ME 9210 embedded modules have been tested and found to comply with the limits for Class B digital devices pursuant to Part 15 Subpart B, of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Les modules embarqués Digi Connect ME et Digi Connect Wi-ME ont été testés et approuvés dans le cadre des limites fixées par les règles de la FCC pour les dispositifs numériques de la classe B suivant la Partie 15 sous partie B.

Ces limites sont conçues pour assurer la protection raisonnable contre l'interférence nocive dans les environnements résidentiels. Ce dispositif génère, utilise et peut émettre de l'énergie de radiofréquence et s'il n'est pas installé et utilisé selon le manuel d'instruction, peut causer des interférences nocives aux communications par radio.

Cependant, il n'y a aucune garantie pour que l'interférence se ne produise pas dans le cas d'une installation spécifique.

Si l'équipement provoque quand même une interférence dangereuse avec la radio ou le récepteur de télévision, rendu visible en allumant ou éteignant les équipements, l'utilisateur est encouragé à essayer de corriger l'interférence avec une ou plusieurs des méthodes suivantes:

- *Réorienter et changer la place de l'antenne de réception*
- *Augmenter la distance entre les équipements et le récepteur*
- *Brancher les équipements à une prise d'un circuit différent de celui où le récepteur est branché*
- *Consulter le revendeur ou un technicien radio/TV expérimenté pour obtenir une assistance.*

Labeling Requirements (FCC 15.19)

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

If the FCC ID is not visible when installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module FCC ID. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: MCQ-50M1745 / IC: 1846A-50M1745

Ce dispositif est conforme à la partie 15 de règles de FCC. L'exploitation est soumise aux deux conditions suivantes: (1) ce dispositif ne peut pas causer d'interférences nocives et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence pouvant provoquer un fonctionnement non désirée.

Or si l'identification de FCC n'est pas évidente une fois installée à l'intérieur d'un autre dispositif, l'extérieur du dispositif dans lequel le module est installé doit également comporter une étiquette identifiant le FCC incluse dans le module.

Modifications (FCC 15.21)

Changes or modifications to this equipment not expressly approved by Digi may void the user's authority to operate this equipment.

Tout changement ou modification apportés à ce dispositif n'étant pas expressément approuvés par Digi peut priver l'utilisateur de mettre en œuvre cet équipement.

Industry Canada

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Europe

The Digi Connect ME embedded module is certified for use in several European countries. For information, visit www.digi.com/resources/certifications.

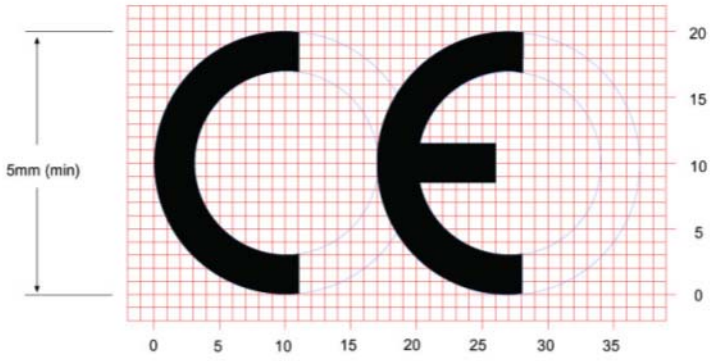
If the Digi Connect ME embedded module is incorporated into a product, the manufacturer must ensure compliance of the final product with articles 3.1a and 3.1b of the RE Directive (Radio Equipment Directive). A Declaration of Conformity must be issued for each of these standards and kept on file as described in the RE Directive (Radio Equipment Directive).

Furthermore, the manufacturer must maintain a copy of the Digi Connect ME embedded module user manual documentation and ensure the final product does not exceed the specified power ratings, antenna specifications, and/or installation requirements as specified in the user manual. If any of these specifications are exceeded in the final product, a submission must be made to a notified body for compliance testing to all required standards.

OEM labeling requirements

The 'CE' marking must be affixed to a visible location on the OEM product.

CE labeling requirements



The CE mark shall consist of the initials “CE” taking the following form:

- If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
- The CE marking must have a height of at least 5mm except where this is not possible on account of the nature of the apparatus.
- The CE marking must be affixed visibly, legibly, and indelibly.

Maximum power and frequency specifications

Note: The following maximum power and frequency specifications are for the Connect Wi-ME 9210 only.

Maximum power	Frequencies
88 mW	13 overlapping channels each 22 MHz wide and spaced at 5 MHz. Centered at 2.412 to 2.472MHz.
28 mW	165 overlapping channels each 22 or 40 MHz wide and spaced at 5 MHz. Centered at 5180 to 5825 MHz.

International EMC Standards

	Digi Connect ME	Digi Connect Wi-ME
Storage Temperature	-40°F to 257°F (-40°C to 125°C)	
Relative Humidity	Not to exceed 95% non-condensing (4° C to 45°C), constant absolute humidity above 45°C	
Altitude	12000 feet (3657.60 meters)	

The Digi Connect ME and Digi Connect Wi-ME embedded modules meet the following standards:

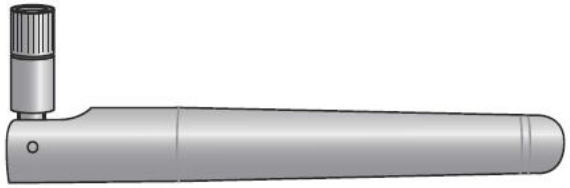
Standards	Digi Connect ME	Digi Connect Wi-ME
Emissions	AS/NZS 3548	AS/NZS 3548 CISPR 22
		FCC Part 15 Subpart C (FCC ID: MCQ-50M1745)
		IC RSS 210 (IC:1846A-501745)
	FCC Part 15 Subpart B ICES-003 EN 55022 EN 61000-4-2 EN 61000-4-3 EN 61000-4-6 EN 301 489-3 EN 300 328	
Immunity	EN 55024	
Safety	UL 60950-1 CSA 22.2 No. 60950--1 EN 60950	

Antenna configurations

This device has been designed to operate with the antenna listed below, and having a maximum gain of [2] dBi. Antennas not included in this list or having a gain greater than [2] dBi are strictly prohibited for use with this device. The required antenna impedance is [50] ohms

The following antenna configuration was tested with the Connect Wi-ME 9210 module.

Digi 29000095, Bobbintron SA-006-1, +2 dBi dipole antenna (NP-SMA)



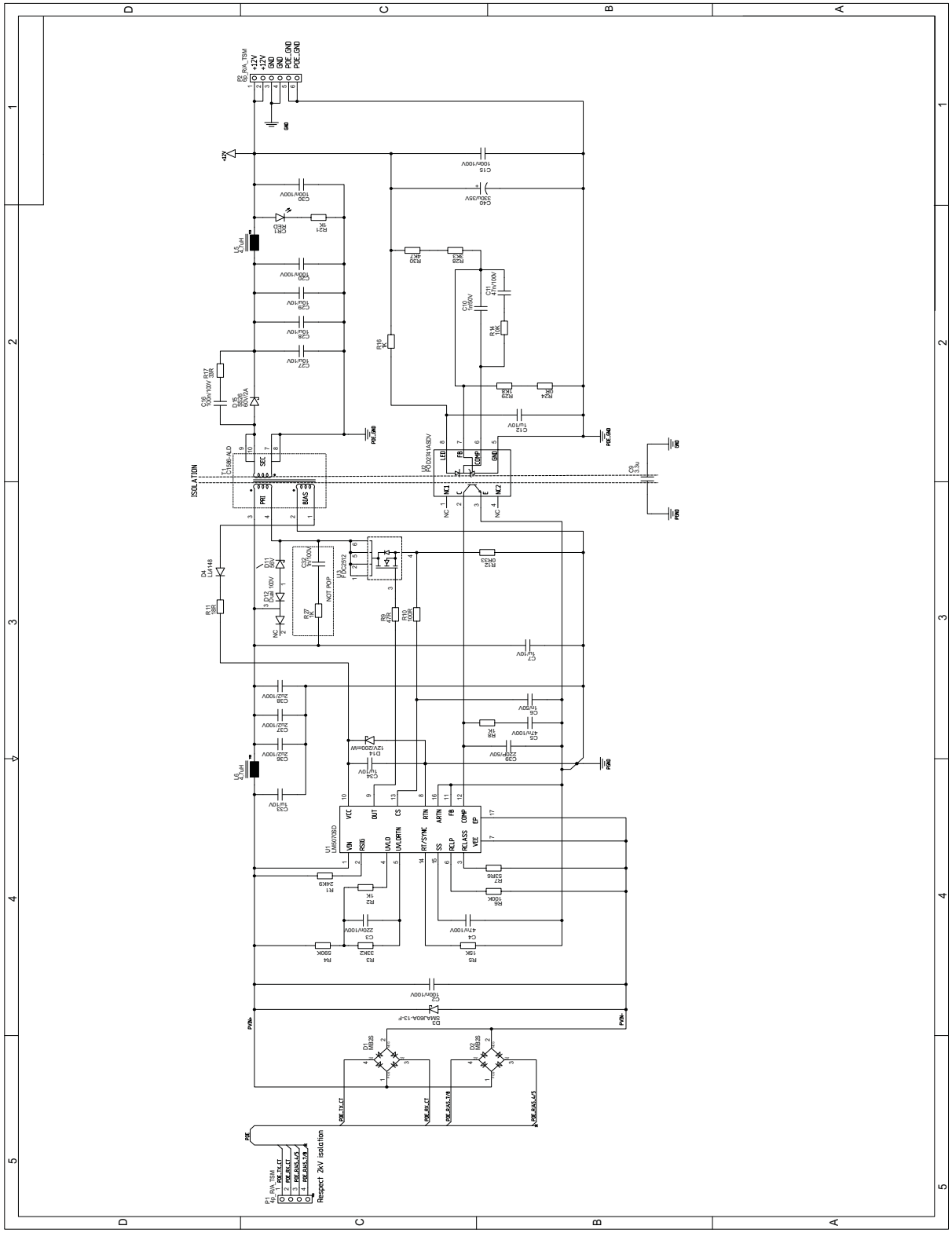
To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

Sample Application: PoE Power Supply

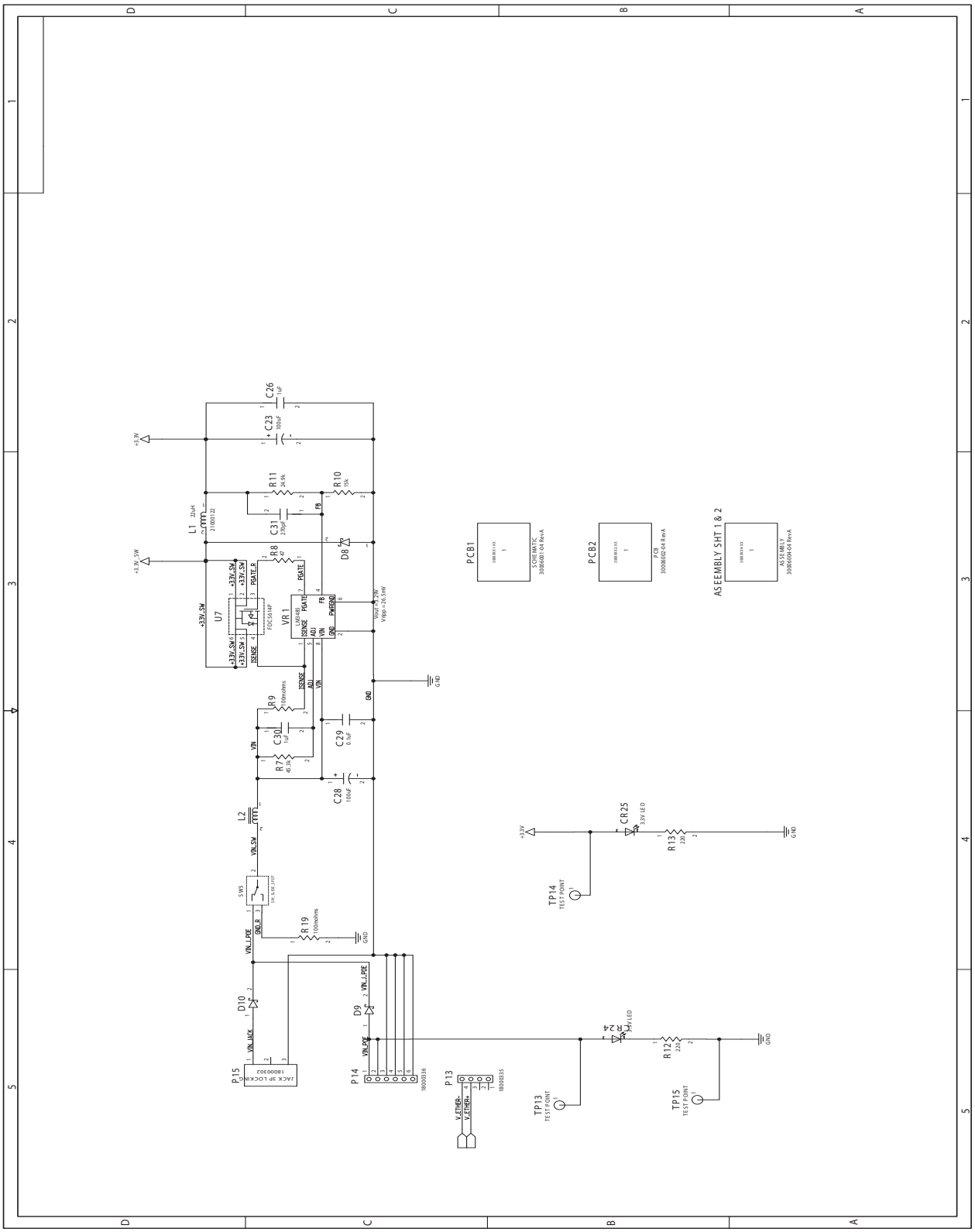
A P P E N D I X C

The following schematics are examples of PoE Power Supplies:

2/8 Digi Connect ME



4/8 Digi Connect ME modules and Digi Connect ME 9210 modules



Sample Application: TTL Signals to EIA-232

A P P E N D I X D

The following schematic is an example of how to convert the modules's TTL signals to EIA-232.

SAMPLE APPLICATION