RFM®

DM1810-916MR-PAV DM1810-916MR-PBV

916.50 MHz Transceiver Modules

- ***Packaged Network Routers for Vertical Mounting***
- ***Compatible with RFM miniMESH™ Network Protocol***
- ***3 V, Very Low Current Operation***
- ***Ready-to-Use OEM Module***

The DM1810-916MR-PAV and DM1810-916MR-PBV are 916.5 MHz packaged router modules designed for indoor vertical mounting. The modules are part of the DM1810 family of RF transceivers. The DM1810 family is designed for adding wireless mesh connectivity to a wide range of monitoring and control systems. These modules are compatible with Cirronet's miniMESH™ network protocol, which provides "plug-and-play" multicast mesh network routing. Radio communications range in an "open field" environment is typically 600 meters/hop. The modules combine RFM's very low current ASH radio technology with low power microcontroller technology to achieve long battery life. The DM1810-916MR-PAV and DM1810-916MR-PBV contain a DM1810-916MR router, which is module certified for operation under FCC 15.247 and Canadian RSS 210 regulations.



Absolute Maximum Ratings

Rating	Value	Units
All Input/Output Pins Except VIN	-0.3 to +3.3	V
Non-Operating Ambient Temperature Range	-40 to +70	°C

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Operating Frequency	f_O		916.30		916.70	MHz
Modulation Type			OOK on BPSK Spreading Code			
RF Encoded Data Transmission Rate				4.8		kb/s
Average Receive Input Current, No External Power Supply Load	I_R			5.5		mA
Receiver Input Signal for 10^{-3} BER, 25 °C				-100		dBm
Average Transmit Input Current, No External Power Supply Load	I_{TA}			15.75		mA
Peak Transmit Input Current, No External Power Supply Load	I_{TP}				32	mA
Peak Transmitter Output Power	P_O			10		mW
Bind Input Logic High			2.4			V
Bind Input Logic Low					0.45	V
Average Sleep Input Current, No External Power Supply Load	I_{SA}			60		µA
Power Supply Input Voltage Range, -40 to +70 °C	VIN		3.1		10	V
Power Supply Input Voltage Range, 0 to +70 °C	VIN		2.6		10	V
Regulated Power Supply Output Voltage, VIN 3.1 to 10 V	VOUT			3.0		Vdc
Regulated Power Supply Voltage Ripple					10	mV_{P-P}
Relative Humidity Range, Non-Condensing	RH		10		90	%

DM1810-916MR-PAV and DM1810-916MR-PBV Block Diagram

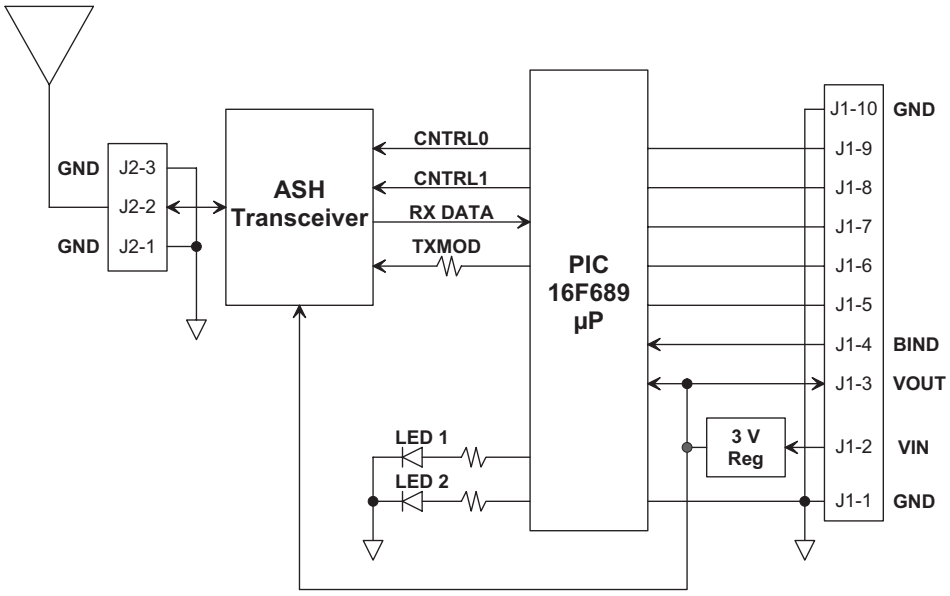


Figure 1

Theory of Operation

The DM1810-916MR-PAV and DM1810-916MR-PBV are packaged versions of the DM1810-916MR router. The major components in these modules include an RFM TR8100 ASH transceiver and a Microchip PIC16F689 microcontroller. The TR8100 operates on a frequency of 916.50 MHz, at a nominal output power of 10 mW. Two LEDs, visible through a view port, indicate the router's operating mode.

The DM1810-916MR-PAV and DM1810-916MR-PBV are compatible with RFM's miniMESH™ network protocol, which provides add-on "plug-and-play" mesh network routing to improve communication range and robustness.

The DM1810-916MR-PAV includes a wall plug transformer power supply.

The DM1810-916MR-PBV includes a battery pack power supply.

FCC Certification

The DM1810-916MR-PAV and DM1810-916MR-PBV hardware have been certified for operation under FCC Part 15 Rules, Section 15.247. *The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.*

FCC Notices and Labels

This device complies with Part 15 of the 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.

A clearly visible label is required on the outside of the user's (OEM) enclosure stating that this product contains a DM1810-916MR-PAV or DM1810-916MR-PBV transceiver assembly, FCC ID: HSW-DM1810A.

WARNING: This device operates under Part 15 of the FCC rules. Any modification to this device, not expressly authorized by Cirronet, Inc., may void the user's authority to operate this device.

Canadian Department of Communications Industry Notice - IC: 4492A-DM1810A

This apparatus complies with Health Canada's Safety Code 6 / IC RSS 210. To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors may be subject to licensing.

ICES-003

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe B prescrites dans le reglement sur le brouillage radioelectrique edicte par Industrie Canada.

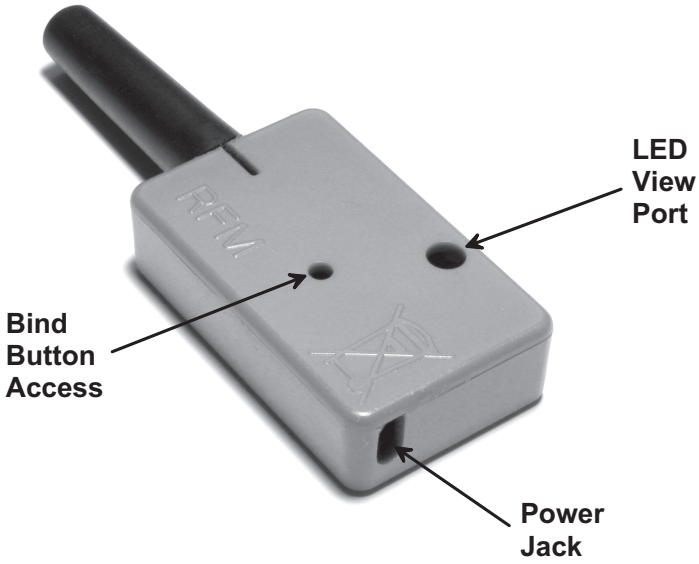
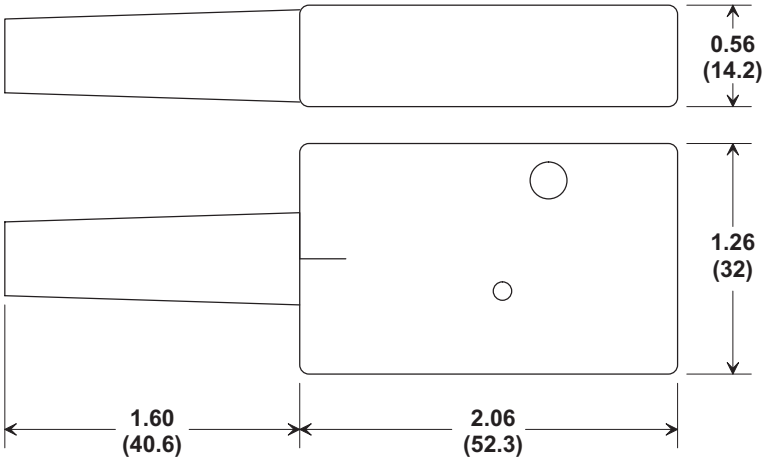


Figure 2

DM1810-916MR-PAV and DM1810-916MR-PBV
Outline Drawing



Dimensions in inches and (mm)

Figure 3

Note: Specifications subject to change without notice.

file: dm1810-916mr-ph06.vp, 2007.06.22 rev