

February 2016

Description

When wires can't be run for practical or economic reasons, the WNM Wireless Network Module provides accurate and reliable point-to-point wireless connectivity between remote field sites.

The WNM is a bi-directional, spread spectrum radio modem that delivers the flexibility and cost-saving advantages of wireless data transmission. It is ideal for use with Moore Industries' NET Concentrator System® (NCS), as well as other SCADA and distributed I/O systems.

Highly Reliable Spread Spectrum Frequency Hopping Technology

The WNM employs Spread Spectrum Frequency Hopping technology, 128-bit AES (Advanced Encryption Standard) encryption, 32-bit CRC (Cyclic Redundancy Check) error detection, and ARQ (Automatic Resend Query) to provide robust and secure communications. The Spectrum Frequency Hopping technique ensures reliable, noise and interference immune, license-free wireless communications.

Accessories

Antennas

Omnidirectional antenna preferred when communicating with remotely located sites in all directions

Yagi directional antenna for narrow RF signal beam and extended communication range

Cable

Coaxial cable with connectors, and custom lengths

Surge protection, enclosures, network integration

Certifications



Underwriters Laboratories: Class I, Division 2, Groups A, B, C, D; $-40^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$ T4



ATEX Directive 94/9/EC Type "n"
II 3G Ex nA IIC T5
 $-40^{\circ}\text{C} \leq \text{Ta} \leq +75^{\circ}\text{C}$



EMC Directive 2004/108/EC EN55022 & EN55024;
RTT&E Directive 1999/5/EC ETSI 300 328-1, -2,
ETSI 301 489-1, -2

Features

- **Save Time and Money.** Use the WNM to overcome rugged, long-distance or normally impassable environments by sending just a few, or thousands of, process signals over a low-cost wireless communication link.
- **Standard Operating Frequencies.** Available models operate at frequency ranges of 902-928MHz or 2.4-2.4835GHz (RF ranges and power factory-configured per country).
- **Long-Distance Data Transmission.** The 902-928MHz units can transmit up to 30 miles (48km); 2.4-2.4835GHz units provide up to 15 miles (24km) transmission range. WNM modules configured as repeaters allow for virtually unlimited transmission range.
- **Supports Ethernet and Serial Communications in One Package.** Available WNM models are ideal for use with data communication networks that use Ethernet and serial (RS-485) communications.
- **"Plug-and-Play" Installation and Operation.** The WNM can be factory-configured by Moore Industries support personnel to user specifications and ready for immediate use. Alternatively, free PC configuration software allows on-site configuration, parameter changes and add WNM modules to a network.
- **No Regulatory License Required.** To use the WNM, you do not need to obtain a regulatory license, and costly RF site surveys are usually unnecessary.



The Wireless Network Module's industrial DIN-rail mount metal enclosure protects in the most demanding process and factory automation applications.

WNNM

Wireless Network Module
Ethernet and Serial Interfaces

Specifications

<p>Operating Frequency 902-928 MHz; 2.4-2.4835 GHz (Frequency bands may vary by country)</p> <p>Transmitter Range Up to 30 miles (48km), line-of-sight using 902-928 units; up to 15 miles (24km) using 2.4-2.4835 units; both sites using highly-directional antennas and direct line-of-sight RF path</p> <p>Output Power: 10mW to 1W; 10-30dbm (programmable levels) Modulation: Spread spectrum, frequency hopping (programmable) NOTE: Transmitter power may vary by country. Communications range is affected by antenna types and installation heights, coax length, RF power, pathway attenuation due to weather, propagation, foliage and terrain; electrical/RF interference and data rates.</p> <p>Channel Data Rates 1.1Mbps or 345kbps</p>	<p>Receiver Sensitivity 1.1Mbps:-97dBm; 345kbps:-104dBm; both at 10⁻⁶ BER</p> <p>RF Data Transfer Error Detection: 32 bit CRC; ARQ (Auto Resend Query) Security: 128 bit AES encryption</p> <p>Protocols Ethernet RJ45 Port: All standard IEEE Ethernet 802.3 protocols Serial Data Ports: Data sent within TCP packets; MODBUS RTU, DF1, ASCII and DNP3</p> <p>Operating Modes Point-to-point; Point-to-multipoint, Smart Switched Ethernet; and Store and Forward Repeater (programmable)</p> <p>Connectors RF: SMA-RP Serial Data Ports: DB9F (RS-232) and 5 pin with mate (RS-485/422) with RS-485 terminator switches; Ethernet: RJ45 for data and configuration</p>	<p>Antenna Flexible SMA-RP-male with flex base (optional external antennas)</p> <p>Indicators LEDs for: Power, RF Transmit, Link/RF Receive, RS-485/232, Signal strength; Ethernet</p> <p>External Voltage: 10-24Vdc Power Power: 12 Watts peak, 5 Watts receive</p> <p>Enclosure Aluminum DIN-style rail-mount housing mounts on 35mm Top Hat (EN50022) rails</p> <p>Ambient Operating and Storage Conditions Range: -40°C to +75°C (-40°F to +167°F) Relative Humidity: 5 to 95%, non-condensing Shock: IEC 60068-2-6 (20G, 3 axis) Vibration: IEC 60068-2-27 (5g, 10-150 Hz)</p> <p>Weight 454g (1 lb.)</p>
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Versatile Application Options

When integrated with a NET Concentrator System (or similar) distributed control and I/O strategy, WNNM modules can be operated in Point-to-Point (Figure 1) and in Point-to-Multipoint (Figure 2) architectures.

Each WNNM network includes a Master WNNM module. The Master can be set to communicate with just one, or multiple, WNNM modules configured as Remote modules.

WNNM modules can also be configured as Repeaters to relay signals when a direct line of sight does not exist between a Master and Remote modules, or to significantly extend the transmission distance allowable within a WNNM network (Figure 2). There can be an unlimited number of WNNM Repeaters per WNNM network.

Figure 1. In a Point-to-Point System, one WNNM is set as a Master, while others in the network are set as Remotes.

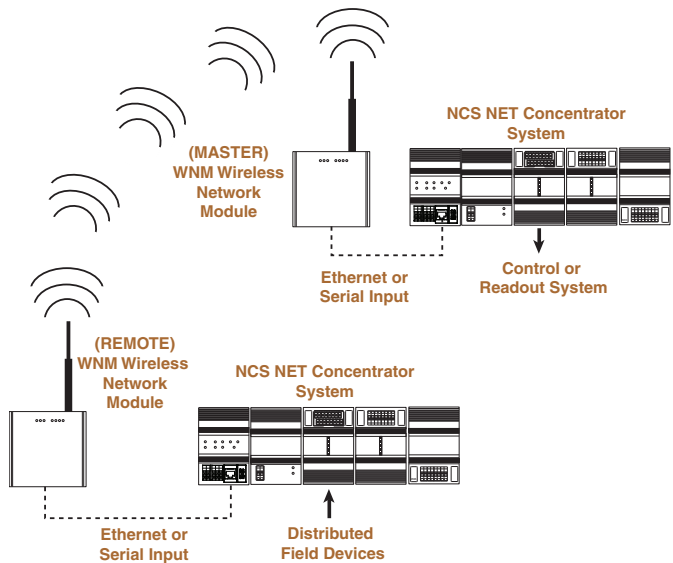
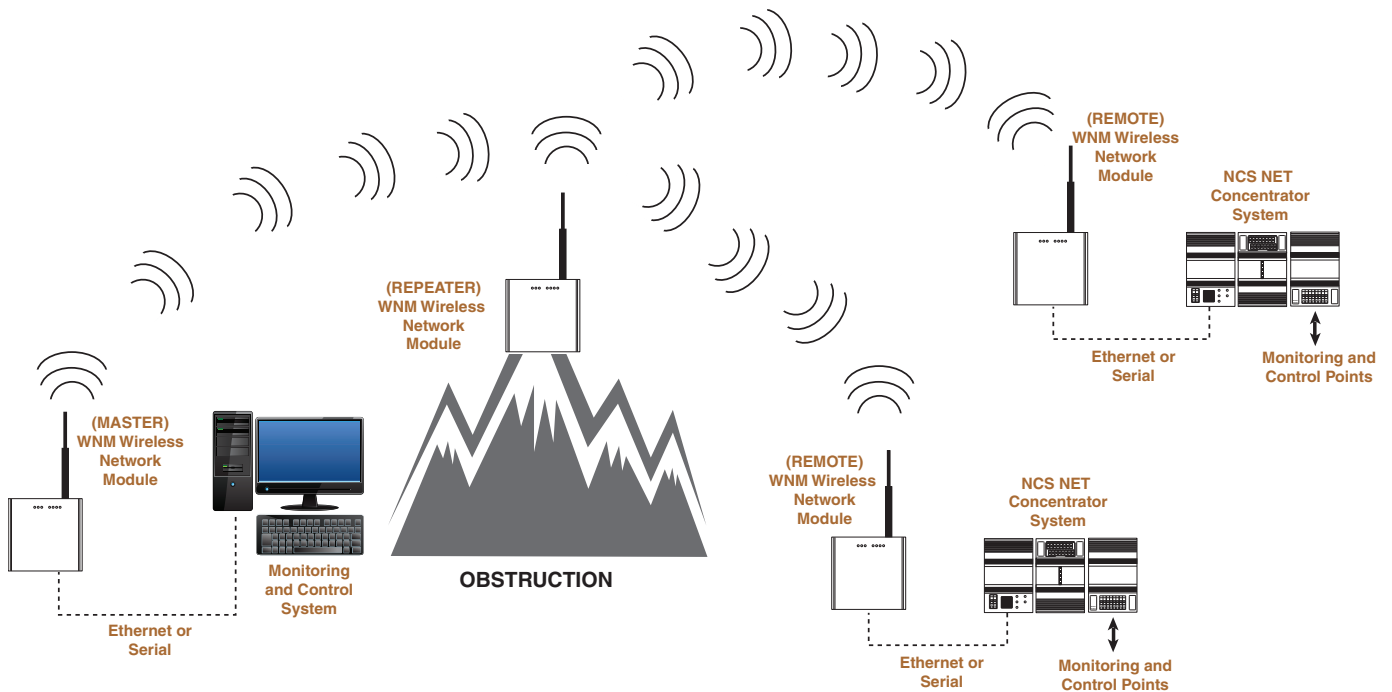


Figure 2. In a Point-to-Multipoint System, one WNNM Master can be used to send wireless data with multiple WNNM Remote units situated in different locations via repeater WNNM units.



Ordering Information

Unit	Communication	Transmission	Power	Frequency	Option	Housing
WNNM Wireless Network Module	ETHERNET Ethernet & Serial	RF Bi-directional spread spectrum radio	10-24DC	-900MHZ 902-928MHz band -2.4GHZ 2.4-2.4835GHz band	-FC Factory configuration to match local country RF bands and power requirements (if -FC is not specified, then radio is factory-configured for U.S.A.)	DIN Aluminum DIN-style rail-mount housing mounts on 35mm Top Hat (EN50022) rails

To Order, Specify: Unit / Communication / Transmission / Power / -Frequency -Factory Configuration (optional) [Housing]

Wireless Network Module Model Number Examples:

Wireless Network Module Example #1 - **WNNM ETHERNET Interface**
WNNM / ETHERNET / RF / 10-24DC / -900MHz [DIN]

Wireless Network Module Example #2 - **WNNM Serial Interface**
WNNM / ETHERNET / RF / 10-24DC / -2.4GHz -FC [DIN]

Factory Configuration

To facilitate radio commissioning, Moore Industries can factory-configure the WNNM with all operating parameters, and configure each radio within a network as Master, Remote or Repeater. Consult your local Moore Industries Interface Solution Center for details.

“Smart Switch” Delivers Robust Peer-to-Peer Ethernet Networks

When set in Smart Switch Ethernet (SSE) mode, the WNNM automatically establishes the most efficient path for data packet transmission. It determines whether to broadcast direct to a single radio, to some radios, or to all radios in the network, on a packet-by-packet basis (any node to any node). The WNNM’s “Smart Switch” capability delivers fast and highly reliable network performance.

WNM

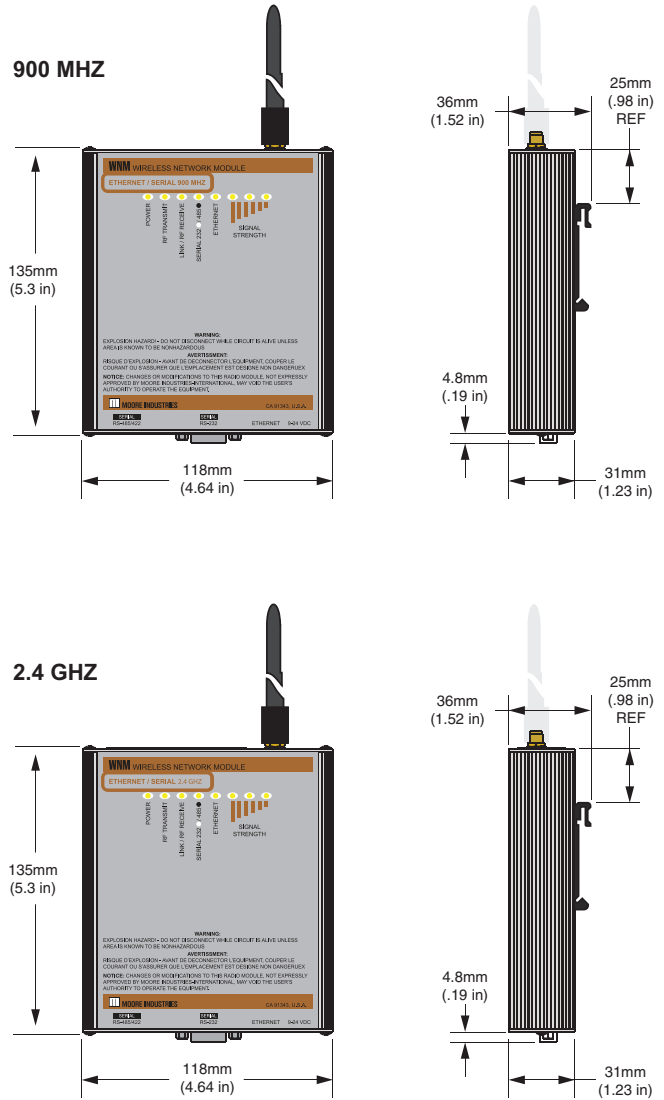
Wireless Network Module Ethernet and Serial Interfaces

Accessory Ordering Information

Surface Mounting Bracket (Attaches to WNM DIN Bracket; No DIN-Rail Required)	207-256-07
Antenna—900MHz Omnidirectional, 5.25dBi Gain, Fiberglass, Type N Female Connector, 23-Inch Height, 1¼-Inch Pipe Clamp Mounting Kit	803-020-45
Antenna—900MHz 4-Element Yagi, 8dBi Gain, Type N Female Connector, 9-Inch Height, 2-Inch Pipe Mounting Kit	803-022-45
Antenna—2.4GHz Omnidirectional, 4dBi Gain, Type N Female Connector, 9-Inch Height, 2-Inch Pipe Mounting Kit	803-006-45
Antenna—2.4GHz 3-Element Yagi, 6dBi Gain, ABS Sealed, Type N Male Connector with 12-Inch RF Coax Cable Extension, 9-Inch Height, 4-Inch Length, 2-Inch Pipe Mounting Kit	803-007-45
Surge Suppressor—900MHz through 2.5GHz Bulkhead Through-Hole Mount, Type N Female-to-Antenna, Type N Female to Equipment, “L” Bracket to Permit Mounting to a Flat Surface*	800-001-38
Type N Female-to-Female Bulkhead Adaptor with Locknut. Used to Pass Coax 40 Through Bulkhead Walls if P/N 800-001-38 is not Used	803-088-26
4.3 Meters (14 Feet) of Coaxial Cable including WNM Adaptor Cable	803-093-26
8.9 Meters (29 Feet) of Coaxial Cable including WNM Adaptor Cable	803-094-26
16.5 Meters (54 Feet) of Coaxial Cable including WNM Adaptor Cable	803-095-26
RS-232 DB9 Cable for Serial DTE-to-DCE Communications	803-831-26
Adaptor Cable, Type SMA-RP to Type N Male, 1.2 Meter Length	803-089-26

* Consult factory if using surge suppression or if cable length is greater than 15 meters (50 feet) in length. Also consult factory for advice when specifying Type N female-female barrel connectors or when adding RF coax cable between the WNM and a surge suppressor.

Figure 3. WNM Installation Dimensions.



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