NEW!

MDS NETio™

Ethernet & Serial Communications Solutions for Analog and Discrete I/O Signals

Features/Benefits

Base module

- 900 MHz or 2.4 GHz
- Serial and/or IP/Ethernet connectivity
- Transmit and regenerate I/O signals between devices
- Directly address I/O using protocols such as MODBUS, MODBUS TCP, DF1, or DNP.3 from a growing protocol library
- Concurrent IP/Ethernet or transparent serial payload communication for a separate RTU, PLC, or other peripheral device
- Optional short range wireless communication to distributed NETio Expansion modules via 802.15.4

Expansion module

- Used to increase I/O capacity of the Base module.
- Can connect directly to the Base module or wirelessly via 802.15.4
- Can be wirelessly distributed up to 3000 feet from the Base module

Applications

- Protocol addressable I/O via serial or IP Ethernet
- Regenerate I/O signals between field devices and machines or controllers
- Payload SCADA communication for an RTU or PLC

MDS...Global wireless solutions. Industrial Wireless Performance.

For nearly two decades, Microwave Data Systems (MDS) has been providing highly secure, industrial strength mission critical wireless communications solutions for a broad spectrum of public and private sector clients worldwide. With an installed base approaching 1,000,000 radios in 110 countries, MDS offers both licensed and license-free solutions with applications in SCADA, automation, telemetry, public safety, telecommunications, and online transaction markets.

Introducing MDS NETio™

MDS NETio is an integrated, scalable family of wireless communication products for analog and discrete I/O signals. NETio allows users to interface I/O signals using standard serial and IP/Ethernet protocols or regenerate I/O signals between PLCs, RTUs and control/monitoring devices. Standard serial or IP/Ethernet payload communications for separate devices is also supported.

NETio Family Overview

NETio provides a simple cost effective, out-of-the-box communications solution. The NETio Base module integrates on-board I/O with a 900 MHz or a 2.4 GHz radio. Optional NETio Expansion modules attach to the Base module to accommodate a users's specific I/O count.

MDS also embeds additional wireless connectivity called WeXP using the 802.15.4 standard. WeXP allows Expansion modules to be located up to 3000 feet from the Base module. Together, the NETio Base and Expansion modules present deployment alternatives that are uniquely scalable to a user's I/O count, distance and location requirements. The NETio Base module is available in three main configurations:

NETio Signal Extender - I/O extension functionality that transmits and regenerates I/O signals between devices.

NETio Protocol Node - Supports direct protocol addressability of connected I/O from a library of protocols such as MODBUS, DF1, MODBUS TCP, DNP.3 or EtherNet/IP.

NETio Complete - Adds concurrent payload communication for an attached RTU, PLC or other peripheral device, along with signal extension and protocol capabilities. Both transparent serial and IP/Ethernet connections are supported. WeXP 802.15.4 connectivity to distributed Expansion modules is also included.

Why use an MDS NETio™ Wireless Network Solution?

Cost Effectively extend serial or network communication to smaller clusters of analog and discrete I/O signals.

Reduce wiring and termination costs between devices, machines and controllers.

Reduce integration, configuration and support costs found with "multi-box" solutions.

Scale and leverage costs to align with your unique distance and I/O requirements.

MDS

INDUSTRIAL WIRELESS PERFORMANCE

MDS NETio™ Specifications

General

- Power: 6-30 VDC
- Current Draw
  - Transmit: less than 600 mA (@13.8V)
  - Receive: less than 100 mA (@13.8V)
- Sleep Mode: 10mA at 12 VDC less than 1mA at 12 VDC in Shutdown Mode
- Temperature: -40 to +70 degrees C

NETio Base module

- NETio-EB:
  - I/O Capacity: 1 AI, 1 AO, 2 DI, 2 DO
    - AI Type: Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
    - AO Type: 4-20mA
  - Supports IP/Ethernet and serial communication
  - Compatible with MDS entraNET AP's and networks
  - Supports I/O Signal Extender functions between Base modules or over WeXP to wireless expansion modules
  - One IP/Ethernet RJ45 connector for separate device
  - One serial RJ45 connector for separate device

NETio Expansion module models

- NETio-XM1 capacity: 1 AI, 1 AO, 2 DI, 2 DO
  - AI Type: Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
  - AO Type: 4-20mA
- NETio-XM2 capacity: 6 DI
- NETio-XM3 capacity: 6 DO
- NETio-XM4 capacity: 2 AI, 4 DI
  - AI Type: Configurable as 4-20mA, 0-5 VDC, 0-10 VDC
- NETio-XM6 capacity: 2 AI, 2 AO, 2 DI, 2 DO
  - AI Type: 0-5 VDC
  - AO Type: 0-5 VDC
- NETio-XM7 capacity: 2 AI, 1 DI, 3 DO
  - AI Type: 4-20mA

Analog Input

- Optionally power 4-20 mA loop.
- Accuracy
  - Current: ± 12.2 µA
  - Voltage: ± 6.1 mV
- A/D Resolution: 22 bit
- Isolation: 1400 V input to power - Inputs on XM6 are not isolated

Digital Inputs

- Type: 5-36 VDC with pulse counting
- Isolation: 3000 V to chassis ground

Analog Outputs

- Accuracy
  - Current: ± 32 µA
- Isolation: 1400 V output to power
- D/A Resolution: 16 bits

Digital Outputs

- Capacity: 36 VDC
- FET Relay
- Load Current: 2A continuous per output
- Isolation: 3700 V to chassis ground

900 MHz Model Radio specifications

- Data Rate: 106 Kbps over-the-air
- Frequency Band: 902-928 MHz ISM band
- Spreading Mode: Frequency Hopping Spread Spectrum
- Range[1]:
  - Typical Fixed Range: 25 miles
  - Maximum Fixed Range: 60 miles
- System Gain: 136 dB
- Carrier Power: 0.1 to 1 watt (20 to 30 dBm)
- Receiver Sensitivity: -106 dBm (1 x 10^{-6} BER) typical

2.4 GHz Model Radio specifications

- Availability: Q2 '07
- Data Rate: 106 Kbps over-the-air
- Frequency Band: 2.4016-2.4778 GHz ISM band
- Spreading Mode: Frequency Hopping Spread Spectrum
- Frequency Channels: Selectable 80 to 128 in increments of 16
- Range[1]:
  - Typical Fixed Range: 6 miles
  - Maximum Fixed Range: 15 miles
- System Gain: 131 dB
- Carrier Power: 0.1 to 0.5 watts (20 to 27 dBm)
- Receiver Sensitivity: -104 dBm (1 x 10^{-6} BER) typical

WeXP radio specifications - 802.15.4

- Frequency Band: 2.4 GHz to 2.4835 GHz
- Modulation: OQPSK
- Range: 2500 Ft.. typical (longer ranges with LOS)
- Carrier Power: 60 mW (18 dBm)
- System Gain: 27 dBm
- Receiver Sensitivity: -100 dBm (1% packet error rate)

Mechanical

- Case: High impact plastic
- DIN Rail Mounting
- Dimensions: 14.6 H x 4.14 W x 11.4 D cm. (5.75 H x 1.63 W x 4.5 D in.)
- Weight: 226 g (.5 lb.)

Agency Approvals

- FCC Part 15.247
- IC - Industry Canada - RSS210
- CSA Class 1 Div. 2 Groups A, B, C and D for hazardous locations (ANSI/UL equivalent)[2]

1 Typical fixed range calculation assumes a 6 dBd gain Omni on a 100 ft. tower at the AP, a 10 dBd gain Yagi on a 25 ft. mast at the remote with output power decreased to yield maximum allowable EIRP (36 dBm), a 10 dB fade margin, and a mix of agricultural and commercial terrain with line of sight.

2 The transceiver is not acceptable as a stand-alone unit for use in the hazardous locations described above. It must either be mounted within another piece of equipment, which is certified for hazardous locations, or installed within guidelines, or conditions of approval, as set forth by the approving agencies.

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