

# GE Digital Energy MDS

## INTRODUCING MDS iNET-II 900™

The MDS iNET-II™ is a long-range, megabit-speed, industrial, wireless IP/Ethernet solution, with advanced cyber-security. It allows the connection of Ethernet and/or serial devices to an IP network. This includes mission-critical, revenue-generating data from fixed assets such as oil and gas wells, compressor stations, pipelines, fluid storage tanks and utility meters. It can also be used in vehicles to provide mobile network access.

MDS iNET-II is a hybrid radio that combines the higher speed capability of DTS (Digital Transmission System) with the robustness of Frequency Hopping. The radio operates in the license-free 902-928 MHz ISM band. It is capable of up to 30 mile range (line-of-sight)<sup>2</sup> and up to 1 Mbps over-the-air data rate communications.

## WHY USE AN MDS iNET-II™ WIRELESS NETWORKING SOLUTION?

**Longest range** industrial product in its class. Providing lowest cost of ownership.

**Secure** wireless operation with multiple layers of protection, including 900 MHz physical layer, RADIUS authentication and optional AES-128 data encryption with automatic key rotation.

**Reliable** - Designed and built for low failure rates and reduced maintenance costs.

**Resilient** - The P21 protected Access Point (a chassis housing two radios in a cold standby configuration) increases the availability of mission-critical point-to-multipoint networks. P21 Remote stations can also be used to form protected point-to-point links.

**Flexible** - The MDS iNET-II supports multiple users connecting multiple applications via multiple protocols on the same MDS iNET-II unit or the same network - simultaneously!

**Future proof** - The MDS iNET-II adheres to open standards, allowing it to interface with a wide range of external devices enabling both new and old technologies to communicate.

**Comprehensive Network Management** - Compatible with MDS NETview MS™ and any standard off-the-shelf SNMP management system.

# MDS iNET-II 900™

## Wireless IP/Ethernet Connectivity



MDS

industrial wireless networks

## FEATURES / BENEFITS

- Long range – up to 30 miles<sup>2</sup>
- High speed – up to 1 Mbps
- Secure – multiple layers of cyber-security including:
  - AES-128 encryption
  - RADIUS authentication
- VLAN capability (802.1Q) allows multiple segregated data flows over single radio
- Ethernet and serial interfaces allow migration of existing serial devices to IP networks
- Industrial grade performance – UL class 1 div 2<sup>1</sup> & extended temperature range for extreme environments
- License free - deploy immediately
- Plug and play connectivity – configuration requires minimal setup for Ethernet bridging

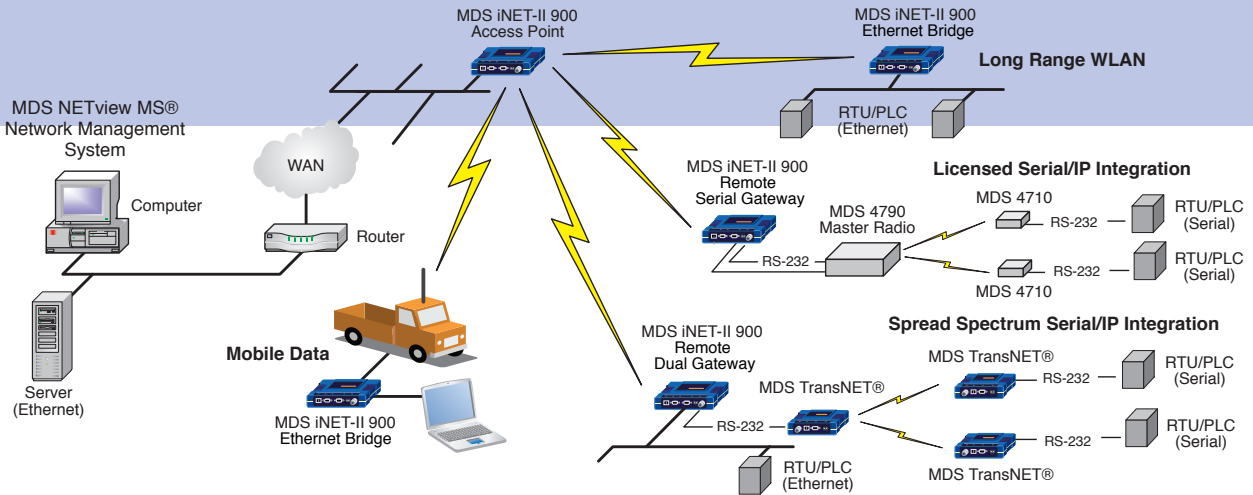
## Applications

- Long range megabit-speed wireless Ethernet
- Gateway for serial/legacy networks and/or devices to IP network
- Video and/or voice-over-IP
- Mobile network access for vehicle based operation

## VLAN Capable

- IEEE 802.1Q
- Trunk or access port
- Native VLAN

# MDS iNET-II 900™ SPECIFICATIONS



## General

- Data Rate: 1 Mbps/512 Kbps user configured air link
- Frequency band: 902-928 MHz ISM band
- Spreading mode: DTS/FHSS
- Range (512 Kbps)<sup>2</sup>:
  - Typical fixed range: 12 miles
  - Maximum fixed range: 30 miles
  - Typical mobile range (parked): 3 miles
  - Typical mobile range (moving): 1 miles
- Range (1 Mbps)<sup>2</sup>:
  - Typical fixed range: 8 miles
  - Maximum fixed range: 15 miles
- Available configurations:
  - Access point/remote dual gateway - serial and ethernet
  - Remote serial gateway - serial only
  - Remote ethernet bridge - ethernet only

## Radio

- System gain: 139 dB @ 512 Kbps; 134 dB @ 1 Mbps
- Carrier power: 100mW to 1W (20 to 30 dBm)
- Output impedance: 50 Ohms
- Occupied bandwidth: 600 kHz
- Modulation: CPFSK (continuous phase FSK)
- Receiver sensitivity:
  - -97 dBm @ 512 Kbps with 10<sup>-6</sup> BER
  - -92 dBm @ 1 Mbps with 10<sup>-6</sup> BER

## Physical Interface

- Ethernet: 10baseT, RJ-45
- Serial: COM1: RS-232/V.24, DB-9F, DCE  
COM2: RS-232/V.24, DB-9M, DTE  
1,200-115,200 bps serial ports
- Antenna: TNC connector (female)
- LEDs: Lan, Com1, Com2, Power, Link

## Protocols

- Wireless: CSMA/CA (collision avoidance)
- Ethernet: IEEE 802.3, ethernet II, IEEE 802.1Q (trunk, access, and native), STP, IGMP
- TCP/IP: DHCP, ICMP, UDP, TCP, ARP, Multicast, SNMP, TFTP
- Serial: PPP, encapsulation over IP (tunneling) for serial async multidrop protocols including Modbus, DNP.3, DF1, BSAP
- Optional: Allen-Bradley EtherNet/IP\* - Modbus/TCP

## MDS Cyber Security Suite, Level 4

- Encryption: AES-128 with automatic key rotation. (optional)
- Authentication: 802.1x, RADIUS, EAP/TLS, PKI, PAP, CHAP
- Traffic segregation: 802.1Q VLAN
- Management: SSL, SSH, HTTPS

## Management

- HTTP, HTTPS, SSH, TELNET, local console
- SNMPv1/v2/v3, MIB II, enterprise MIB
- SYSLOG
- MDS NETview MST™

## Environmental

- Temperature: -30°C to +60°C (-22°F to +140°F)
- Humidity: 95% at 40°C (104°F) non-condensing

## Electrical

- Input power: 10.5-30 Vdc
- Current consumption (nominal):
 

Mode	Power	13.8 Vdc	24 Vdc
Transmit	7 W	510 mA	290 mA
Receive	2.8 W	200 mA	120 mA

## Mechanical

- Case: die cast aluminum
- Dimensions: 3.15 H x 17.2 W x 11.2 D cm. (1.25 H x 6.75 W x 4.5 D in.)
- Weight: 908 g (2 lb.)
- Mounting options: flat surface mount brackets, DIN rail, 19" rack tray
- P21 option:
  - Case: steel (rack mountable 2U)
  - Dimensions: 8.9 H x 48.3 W x 35.6 D cm. (3.5 H x 19 W x 14 D in.)
  - Weight: 7.6 kg, (14.7 lbs) with transceivers

## Agency Approvals

- FCC part 15.247 (DTS)
- UL/CSA class 1 Div. 2<sup>1</sup>
- IC

<sup>1</sup> 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.

<sup>2</sup> Typical fixed range calculation assumes a 6 dBi gain Omni on a 100 ft tower at the AP, a 10 dBi 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.

Typical mobile range calculation assumes a 6 dBi gain Omni on a 100 ft tower at the AP, a 5 dBi gain Omni with 1 watt output power at 6 ft height, a 10 dB fade margin, and 90% reliability with near line-of-sight in a mix of agricultural and commercial terrain. Maximum range achieved with a clear line-of-sight path, and Fresnel zone clearance. Actual performance is dependent on many factors including antenna height, blocked paths and terrain.

\* Allen-Bradley EtherNet/IP is a copyright of Rockwell Automation, Inc.



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