Digital Energy
MDS

entraNET

Extended Range IP/Ethernet and Serial Networking

LAN Extension | Ethernet and Serial

The MDS entraNET™ is an ultra long range, industrial, wireless IP/Ethernet solution, with a high level of cyber-security. It allows the connection of Ethernet and/or serial devices to an IP network. This includes mission-critical, revenue-generating remote devices monitoring and controlling fixed assets such as oil and gas wells, compressor stations, pipelines, fluid storage tanks and utility meters. The entraNET has also been optimized for mobility allowing it to be used in vehicles when applications require mobile network access.

Key Benefits

- Exceptional range of distances up to 30 miles in 900 MHz band and 15 miles in 2.4 GHz band
- Combine IP/Ethernet and transparent serial communication on the same network
- Operate multiple users, multiple applications and multiple protocols on the same network simultaneously
- Sleep and shutdown modes reduce power load for solar and battery powered applications

Application Specific Wireless Solution

Energy

- IP/Ethernet and serial communication between host systems and remote IEDs or controllers
- Intelligent peer-to-peer routing of DNP3 messaging between remote devices

Oil & Gas

- Connect battery or solar powered remote flow meters and RTU devices to host SCADA networks
- Migrate legacy serial devices onto IP networks to consolidate monitoring and enhance visibility of remote assets

Water & Wastewater

- Extend HMI and PLC network communication to remote equipment at lift stations, storage tanks and reservoirs
- Implement field force automation functions and remote dispatch on common network

Heavy Industrial

- Deploy facility wide monitoring and control system networks in process manufacturing, mining, and irrigation applications
- Connect remote I/O and measurement devices to HMIs, and monitoring and alarm systems

imagination at work

Industrially Hardened

- Operation between –40°C to 70°C
- CSA Class 1 Division 2 Groups A,B,C,D approved – ANSI/UL equivalent
- Die-cast aluminum housing

Application Flexibility

- Robust long range communication for coverage up to 30 miles
- Low power modes reduce collateral costs for solar panel and battery equipment
- IP/Ethernet and serial interfaces allow migration of serial devices to IP networks
- Fast – Up to 106 Kbps data rate over the air
- Recognizes DNP3 addressing allowing serial and Ethernet devices to communicate in peer-to-peer mode
- Global unlicensed operation in 900 MHz, 2.4 GHz and 2.4 GHz-ETSI ISM bands

Reliable & Scalable

- Designed and built for low failure rates and reduced maintenance costs
- Protected access point option enhances network availability with redundant radios in a warm-standby configuration

Secure

- AES 128-Bit Encryption with dynamic key rotation
- Approved access point and remote lists
- Password protected access and lockdown
- Compatible with off-the-shelf SNMP network management systems

Specifications

GENERAL	
Power	6-30 VDC
Temperature	-40°C to +70°C
Humidity	95% at 60°C (104°F) non-con densing
Housing	Die-cast Aluminum
Area Approval	Class 1, Division 2, Groups A, B, C, D for hazardous locations – CSA
Spreading Mode	Frequency Hopping Spread Spectrum
Access Point Size	3.15 H x 17.2 W x 11.2 D cm. (1.25 H x 6.75 W x 4.5 D in.)
Remote Size	2.5 H x 12.7 W x 8.9 D cm. (1 H x 5 W x 3.5 D in.)
P22 Option Size	8.9 H x 48.3 W x 35.6 D cm. (3.5 H x 19 W x 14 D in.)
Access Point Weight	635 g (1.4 lb.)
Remote Weight	472 g (1.04 lb.)
P22 Option Weight	7.6 kg (14.7 lbs.) with Transceivers
Power	6-30 VDC
Ethernet Interface	10BaseT, RJ-45
Serial COM 1	RS-232/V.24, RJ-11, DCE, 1200-115,200 bps
Serial COM 2	RS-232/V.24, RJ-45, DCE, 1200- 115,200 bps
Antenna	TNC connector (female)
Mounting	Flat surface mount brackets DIN Rail
LED Indications	ETH, COM1, COM2, Power, Link
900 MHZ MODELS	
Data Rate	106 kbps
Frequency	902-928 MHz ISM band
Range (Fixed)	Up to 30 miles
Range (Mobile)	Up to 10 miles
Gain	136 dB
Carrier Power	0.1 To 1.0 watts (20 to 30 dBm)
Receiver Sensitivity	-106 dBm (1 x 10-6 BER) typical
Output Impedance	50 Ohms
Occupied Bandwidth	200 kHz
Modulation	CPFSK (Continuous Phase FSK)
2.4 GHZ MODELS	
Data Rate	106 kbps
Frequency	2.4016-2.4778 GHz ISM band
Range	Up to 15 miles
Range – ETSI	Up to 1 mile
Mobile Range	Up to 2.5 miles
Gain	131 dB
Carrier Power	0.05 To 0.5 watts (17 to 27 dBm)
Carrier Power-ETSI	0.01 to 0.1 watts (10 to 20 dBm)
Receiver Sensitivity	-104 dBm (1 x 10-6 BER) typical
Output Impedance	50 Ohms
Occupied Bandwidth	200 kHz
Modulation	CPFSK (Continuous Phase FSK)
PROTOCOLS	
Wireless	CSMA/CA (Collision Avoidance)
Ethernet	IEEE 802.3, Ethernet IITCP/IP (DHCP, ICMP, UDP, TCP, ARP)
Serial	Encapsulation over IP (tunneling) for serial async multidrop protocols
Management	HTTP (embedded web server), TELNET, Local Console, SNMPv1/2/3, MIB II, Enterprise MIB, SYSLOG, MDS NETview MS®

APPROVALS	
FCC	Part 15.247
IC – Industry Canada	RSS210
EU	ETSI Approved, CE Mark

POWER CONSUMPTION

900 MHZ ACCESS POINT

Mode	30 Vdc	13.8 Vdc	6 Vdc
Transmit	270 mA	525 mA	1175 mA
Receive	115 mA	220 mA	510 mA

900 MHZ REMOTE

Mode	30 Vdc	13.8 Vdc	6 Vdc
Transmit	240 mA	470 mA	1025 mA
Receive	65 mA	120 mA	260 mA
Sleep	8 mA	15 mA*	130 mA
Shutdown	0.78 mA	0.55 mA*	0.37 mA

2.4 GHZ ACCESS POINT

Mode	30 Vdc	13.8 Vdc	6 Vdc
Transmit	253.3 mA	488.5 mA	1091.7 mA
Receive	119.7 mA	230.1 mA	533.3 mA

2.4 GHZ REMOTE

Mode	30 Vdc	13.8 Vdc	6 Vdc
Transmit	223.3 mA	433.8 mA	941.7 mA
Receive	69.7 mA	130.1 mA	283.3 mA
Sleep	8 mA	15 mA*	130 mA
Shutdown	0.78 mA	0.55 mA*	0.37 mA

** Sleep/shutdown measurements @ 12 Vdc*

Ordering

entraNET

eNETN-MD	*	*	11	*	S	*	
	9						900 MHz Band
	2						2.4 GHz
		A					Access Point
		R					Remote IP/Ethernet and Serial Connections
				F			FCC/Industry Canada Certification
				E			EU/ETSI Certification – Limit 0.1 Watt Transmit Power
							Only available for 2.4 GHz models
						1	Enable Network Management – Diagnostics
						0	Disable Network Management - Diagnostics

Order Code Example

eNETN-MD**9A**11**FS1**

- Access point
- 900 MHz
- FCC/IC certification
- Network management enabled

Accessories for the entraNET

	900 MHz	2.4 MHz
Fixed Remote Kit with Yagi	KRF-N09-D1	KFR-N24-E1
Power Supply (AC Input)	01-3682A02	01-3682A02

View Accessories catalog at www.gemds.com

Visit www.GEMDS.com/entraNET to:

- Buy entraNET through the online store
- Download guideform specifications
- Download user documentation
- Read application notes and white papers