

GE Enterprise Solutions MDS

APPLICATIONS

- Point-to-point transmission applications
- Cost effective thin route applications
- Long haul telecommunication links
- Cellular backhaul
- Last mile links
- Trunked radio
- SCADA

PRODUCT OVERVIEW

The new subrate MDS LEDR™ microwave radio family provides full duplex, scalable bandwidth and capacity from 64 kbps to 768 kbps in a 200 kHz channel. These radios are designed to operate in a point-to-point environment with a wide range of applications. They are especially effective for telecommunications access and transport links, wireless backbones for SCADA systems, and for use as backhauls to extend existing telecommunication channels. The subrate MDS LEDR microwave radio is designed to connect to any industry standard EIA-530, V.35, fractional T1 or E1 source.

MDS LEDR™ Subrate Series

LEDR 400S 330-512 MHz

LEDR 900S 800-960 MHz

LEDR 1400S 1350-1535 MHz

LEDR Protected

LEDR Fractional T1/E1 Interface



LICENSED

Wideband

FEATURES

- Frequency range: 330 MHz to 512 MHz, 800 MHz to 960 MHz, or 1350 MHz to 1535 MHz
- Data rates: scalable from 64 Kbps to 768 Kbps
- Spectrally efficient: selectable 32 QAM, 16 QAM or QPSK
- Excellent sensitivity: better than -102 dBm @ 10^{-6} BER at 64 Kbps (16 QAM)
- Advanced modem features: FEC, interleaver and adaptive equalizer
- Front panel displays for easy maintenance and link monitoring
- Built-in NMS element manager
- SNMP network management for fault, configuration, performance and security management
- Integrated HTML web server allows network wide management via the internet
- Built-in 9600 bps data service channel
- Local loopback and remote loopback
- 8 relay alarm contacts per radio
- DTMF compatible orderwire
- Optional interfaces for direct connection to fractional T1/E1 circuits
- Optional 1+1 hot standby protected configuration
- Optional space diversity configuration

* Consult Factory



MDS LEDR™ FULL RATE SERIES SPECIFICATIONS



General Specifications

- Frequency ranges:
 - LEDR 400S: 330-512 MHz
 - LEDR 900S: 800-960 MHz
 - LEDR 1400S: 1350-1535 MHz
- RF occupied bandwidth: 25, 50, 100, and 200 kHz
- User data rates: 64, 128, 256, 384, 512, 768 Kbps
- Modulation type: 32 QAM, 16 QAM, QPSK
- FEC: Reed Solomon
- Temperature range: -10° to 50° C
- Humidity: < 95% non-condensing
- Voltage range: ±12 Vdc (w/ external power supply) (±20%) ±24 Vdc, or ±48 Vdc (±20%)
- Power consumption: non-protected: < 60 W, protected: < 135 W
- Size: 4.5 (1U) H x 48 W x 30 D cm. (1.75 H x 19 W x 12 D in.)

System Performance

Channel Spacing	25 kHz	50 kHz	100 kHz	200 kHz
Rqw Data	72 Kbps	152 Kbps	360 Kbps	800 Kbps
Raw Data	64 Kbps	128 Kbps	256 Kbps	768 Kbps
Receiver sensitivity (10 ⁻⁶ BER) ¹ (32 QAM)	-101 dBm	-99 dBm	-96 dBm	-91 dBm
System gain (10 ⁻⁶ BER) (32 QAM)	131 dB	127 dB	126 dB	121 dB

Modulation Type	Threshold Differential	Normalized System Gain Differential
QPSK	- 4.5 dB	-5.5 dB
16 QAM	-1.5 dB	-2.5 dB
32 QAM	0 dB	0 dB

1. Receiver sensitivity for 10⁻³ BER are typically 3 dB better

Transmitter

- Power output at antenna port: +30 dBm
- Output control range: 10 steps of up to 10 dB
- Frequency stability: 1.5 ppm
- Spurious outputs: <-60 dBc

Receiver

- Residual BER: <1x10⁻¹⁰
- Dynamic range: >65 dB

Interfaces

- Data: EIA-530 / G.703 (option available)
- Orderwire: DTMF capable
- Data service channel: RS-232, 300-9600 bps
- Ethernet NMS: 10 base-T
- Console port: RS-232, 300 bps to 115.2 Kbps
- Alarms: 4 programmable outputs, 4 programmable inputs
- Antenna: 50 Ohms impedance

Options

- Space diversity
- Hot-standby protected
- Bandwidth upgrade kits (consult factory for details)
- Bandpass duplexers

Network Management

- Local LED Indicators:
 - Front panel LED status indicate: power, active, general alarm, Rx Alarm, Tx alarm, I/O alarm
- Front panel LCD:
 - Display & keypad for management of local & remote radio
- Element management
 - Full management of LEDR network via command line interface

- SNMP management:
 - Full IP-based management of LEDR network and SNMP-enabled peripherals via custom enterprise MIB
- HTML webserver:
 - Full IP-based management of LEDR network and web-enabled peripherals via any web browser (e.g. Netscape™ or Internet Explorer™)

Accessories

- 110/240 Vac, 50/60 Hz power supply
- Orderwire handset
- G.703 120 Ohms to 75 Ohms balun

Protected

- Configuration: 2 x LEDR radios, connected via protected switch box
- Total size: 2 x 1 RU high + 1 x 2 RU high
- Transmit branching loss: 2 dB
- Receive branching loss: 5 dB
- Receive switching: hitless

Agency Approvals

- LEDR 400S:
 - Transmission: FCC part 90, IC RSS-119
 - EMC: ETS 300 385, FCC Part 15
- LEDR 900S:
 - Transmission: FCC Part 101, IC RSS-119
 - EMC: FCC Part 15
- LEDR 1400S:
 - Transmission: ETS 300 630, MPT 1717, class 3 environmental: ETS 300 019, class 3.2
 - EMC: ETS 300 385
 - Safety: CE mark

LEDR Fractional T1/E1 Interface Card

General Specifications

- Line rate: T1 (1.544 Mbps); E1 (2.048 Mbps)
- Channel size: 200 kHz
- Data rate: 768 Kbps (12 x 64 Kbps)
- Framing: SF, ESF (T1); FAS, CAS, CRC (E1)
- Signaling: RBS (T1); Time Slot 16 CAS (E1)
- Line codes: AMI, B8ZS, B7ZS (T1); AMI, HDB3 (E1)
- Interface: RJ48C balanced interface, 100 ohms (T1), 120 ohms (E1)

Physical

- Size: 15.24 cm x 12.7 cm (6 in x 5 in)
- Configuration: option card, fitted internal to LEDR chassis
- Availability:
 - Fractional T1: LEDR 400S, LEDR 900S, LEDR 1400S
 - Fractional E1: LEDR 400S, LEDR 900S, LEDR 1400S

* 75 KHz and 250 KHz for ETSI



GE MDS

175 Science Parkway
Rochester, New York 14620, USA
Phone (585) 242-9600
Fax (585) 242-9620
www.gemds.com

GE MDS products are manufactured under a quality system certified to ISO 9001.

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