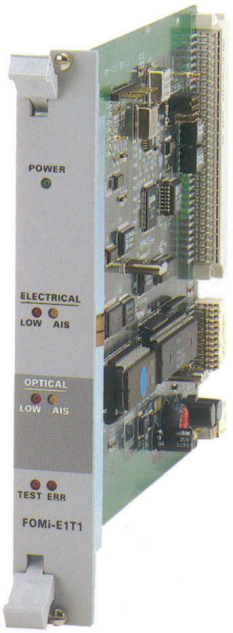
FOMi-E1/T1

E1/T1 Fiber Optic Modem with Remote Management



FEATURES

- Fiber optic modem, extending the range of E1/T1 services over fiber optic cables up to 100 km (62 miles)
- Transparent to E1/T1 framing
- Operates opposite RAD's DXC cross-connect system, Megaplex access multiplexers, and FCD access units
- Provides full management of the local and remote units via the front panel
- Operates over single mode or multimode fibers
- Conforms to all relevant ITU series standards, including V.54 diagnostics loopbacks and V.52 BER testing
- Provides real-time alarm indications for local and remote units, relays minor and major alarm conditions via dry contact alarm port
- Available as a single modem or dual modem card for RAD's LRS-24 modem rack with SNMP management

FOMi-E1/T1

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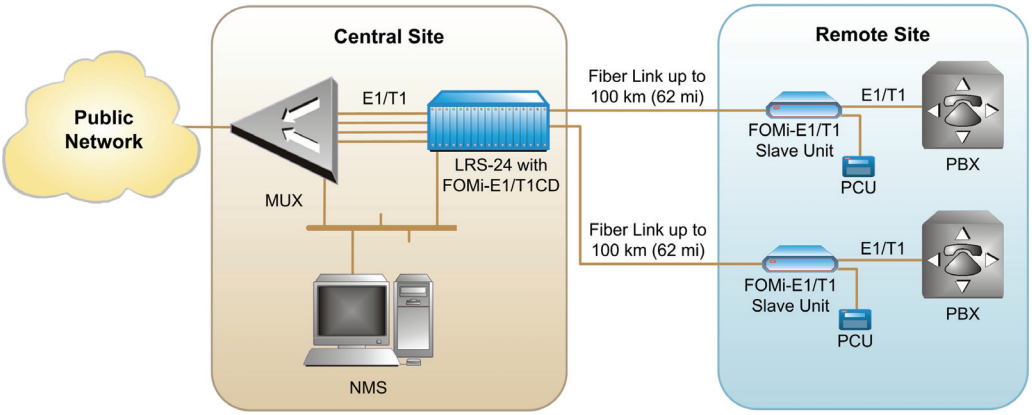
DESCRIPTION

- The FOMi-E1/T1 fiber optic modem converts an E1/T1 electrical signal into an optical signal. After the conversion, the signal is transmitted over fiber optic cable, extending the E1/T1 service range up to 100 km (62 miles).
- The device supports different fiber optic interfaces with VCSEL and laser diode transmitters. The modem operates over several grades of fiber optic cables (see *Table 1*).
- Operation complies with ITU G.703, G.921 and G.956 requirements. The balanced and unbalanced electrical interfaces of the modem are transparent to E1 and T1 framing.
- The unit is available as “master” or “slave” standalone units. The master version includes front panel LCD and control buttons. The slave unit has a blank front panel with a special 20-pin connector for a portable control unit (PCU) connection.
- FOMi-E1/T1 can be ordered as a single or dual modem card for installation into RAD’s LRS-24 modem rack (ETSI or ANSI configuration) with SNMP management.
- The master modem provides full-duplex inband management of the remote unit. Management data is transmitted over the fiber link without interfering with user data. It ensures simultaneous configuration of the local and remote units, activation of real-time alerts on system faults, and initiation of diagnostic tests.
- The device can be managed via front panel buttons and an LCD of the master modem or via a PCU connected to the slave unit. The single or dual modem card installed into the LRS-24 rack can be managed from an ASCII terminal, Telnet host, or network management station running RADview, RAD’s SNMP management application.
- Wide diagnostic capabilities include:
  - V.54 local analog and remote digital loopbacks
  - BER testing as per V.52.
- The system configuration is stored in non-volatile memory, minimizing system downtime in case of power failure.

APPLICATION



E1/T1 Fiber Optic Modem with Remote Management

SPECIFICATIONS

E1/T1 ELECTRICAL INTERFACE

- **Transmission Rate**
  - E1: 2.048 Mbps
  - T1: 1.544 Mbps
- **Zero Suppression**
  - E1: HDB3
  - T1: B8ZS

  Note: When configured in OLD mode, the T1 interface supports AMI and B8ZS zero supression.
- **Impedance**
  - E1: 75Ω unbalanced or 120Ω balanced
  - T1:100Ω balanced
- **Connectors**
  Balanced: RJ-45
  Unbalanced:
  - BNC coax (standalone)
  - mini-BNC (card version)

FIBER OPTIC INTERFACE

- **Specifications and Ranges**
  See *Table 1*
- **Connectors**
  ST, SC, or FC/PC (see *Ordering*)

GENERAL

- **Management**
  - FOMi-E1/T1 master: front panel buttons and LCD
  - FOMi-E1/T1 slave: portable control unit (PCU)
  - FOMi-E1/T1C, FOMi-E1/T1CD: ASCII terminal, Telnet host, or network management station running RADview connected to LRS-24
- **Diagnostics**
  - V.54 local analog and remote digital loopbacks
  - V.52 BER testing
- **Alarm Relay**
  Dry contact via 9-pin, D-type, female connector.
  Operates as normally open and normally closed, using different pins.
- **Indicators**
  PWR (green) – On when the unit is powered up
  OPTICAL AIS (yellow) – On when "all 1s" string is received at fiber optic interface
  OPTICAL LOW (red) – On when bit error rate is 10^{-6} or worse
  ELECTRICAL AIS (yellow) – On when "all 1s" string is received at electrical interface
  ELECTRICAL LOW (red) – On when electrical interface input is below G.703 level
  ERR (red) – On when alarm is initiated
  TEST (red) – On when a loopback or BER test is active
- **Power Supply**
  AC: 115 or 230 VAC (±10%), 47 to 63 Hz, 10 VA
  DC: 24 VDC (±10%) or –48 VDC (–36 to –72 VDC)
- **Physical**
  FOMi-E1/T1:
  Height: 44.0 mm (1.7 in)
  Width: 240 mm (9.6 in)
  Depth: 193 mm (7.6 in)
  Weight 1.4 kg (3.1 lb)

  FOMi-E1/T1C, FOMi-E1/T1CD:
  Fit a single slot of the LRS-24 modem rack
- **Environment**
  Temperature: 0°–50°C (32°–122°F)
  Humidity: Up to 90%, non-condensing

Table 1. FOMi-E1/T1 Fiber Optic Interface Characteristics

Wavelength [nm]	Fiber Type [µm]	Transmitter Type	Typical Output Power [dBm]	Receiver Sensitivity [dBm]	Typical Maximum Range [km]	[mi]
850	62.5/125 multimode	VCSEL	-18	-38	5	3
1310	9/125 single mode	Laser	-12	-40	50	31
1550	9/125 single mode	Laser	-12	-40	100	62

FOMi-E1/T1

E1/T1 Fiber Optic Modem with Remote Management

ORDERING

FOMi-E1/T1/M/~/#
E1/T1 fiber optic modem with remote management, master unit

FOMi-E1/T1/S/~/#
E1/T1 fiber optic modem with remote management, slave unit

FOMi-E1/T1CF/#
Single modem card for the ETSI LRS-24 modem rack

FOMi-E1/T1CB/#
Single modem card for the ANSI LRS-24 modem rack

FOMi-E1/T1CDF/#/$
Dual modem card for the ETSI LRS-24 modem rack

FOMi-E1/T1CDB/#/$
Dual modem card for the ANSI LRS-24 modem rack

~ Specify power supply for standalone unit:
115 for 115 VAC
230 for 230 VAC
24 for 24 VDC
48 for -48 VDC

\# Specify fiber optic interface type
ST85 for 850 nm, multimode VCSEL, ST connector
ST13L for 1310 nm, laser diode, ST connector
ST15L for 1550 nm,laser diode, ST connector
FC85 for 850 nm, multimode VCSEL, FC connector
FC13L for 1310 nm, laser diode, FC connector
FC15L for 1550 nm, laser diode, FC connector
SC85 for 850 nm, multimode VCSEL, SC connector
SC13L for 1310 nm, laser diode, SC connector
SC15L for 1550 nm, laser diode, SC connector

$ Specify E1 line connector for dual modem card:
RJ for RJ-45 balanced
DIN for mini-BNC unbalanced

SUPPLIED ACCESSORIES

AC power cord (when AC power supply is ordered, standalone only)

DC adapter plug (when DC power supply is ordered, standalone only)

OPTIONAL ACCESSORIES

PCU
Portable control unit with protective casing for FOMi-E1/T1 slaves

RM-9
Hardware kit for mounting one or two standalone FOMi-E1/T1 units in a 19-inch rack

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