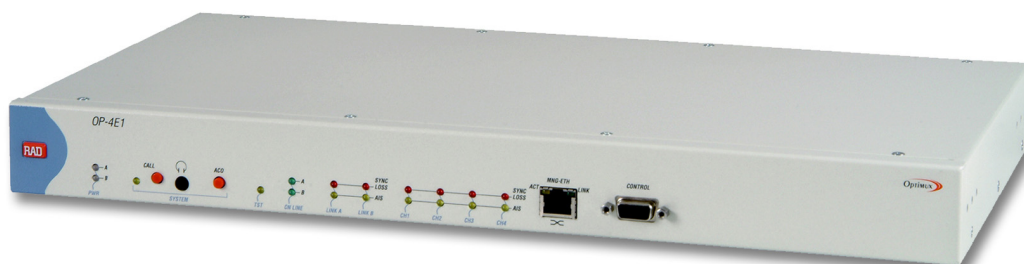


Optimux-4E1, Optimux-4T1



Four E1/T1 Channel Multiplexers



FEATURES

- Optimux-4E1 multiplexes four E1 channels over a single coax E2 link or fiber optic link
- Optimux-4T1 multiplexes four T1 channels over a single fiber optic link
- Operate with various fiber interfaces:
 - Multimode fiber
 - Single mode fiber
 - Single mode over single fiber
- Laser diode option with an extended range of up to 120 km (74.5 miles)
- Optimux-4E1 conforms to ITU G.703, G.742, G.823, G.956
- Optimux-4T1 conforms to ITU G.703, G.823, G.824, G.955
- Optional second main link provides automatic backup
- Optional second power supply for redundancy
- Management via ASCII terminal, dedicated Ethernet port, SNMP management station or ConfiguRAD Web-based remote access terminal
- Remote management using inband channel
- Compact 1U high standalone unit versions
- Card versions for LRS-24, RAD's 19" rack with central SNMP management

Optimux-4E1, Optimux-4T1

Four E1/T1 Channel Multiplexers

DESCRIPTION

- The Optimux-4E1 multiplexer combines up to four E1 channels over a single coax E2 link or a fiber optic link. The Optimux-4T1 multiplexer combines up to four T1 channels over a single fiber optic link.
- A pair of Optimux units provides a simple and low-cost solution for connectivity over distances of up to 120 km (74.5 miles).
- For transmission reliability, an optional second link provides automatic backup upon link failure. An optional second power supply provides power redundancy for failsafe operation.
- Optimux-4E1/Optimux-4T1 transmit each one of the four E1/T1 signals independently, so that each E1/T1 channel can be set to a different clock source.
- The T1 tributary channel interface is 100Ω balanced. The E1 tributary interface can be either 120Ω balanced or 75Ω unbalanced.
- Various optical interfaces are available for Optimux-4E1 and Optimux-4T1 links:
 - 850 nm VCSEL (Vertical Cavity Surface-Emitting Laser) for multimode fiber
 - 1310 and 1550 nm with laser diode transmitter for extended range over single mode fiber
 - Single fiber (SF3 option) using SC/APC (Angled Polished Connector) technology, with a 1310 nm laser diode for single wavelength operation in applications opposite Optimux-4E1L or Optimux-4T1L units with SF3 interface
 - *Standalone versions only:* Single fiber (SF1, SF2 options) using a 1310 and 1550 nm laser diode transmitter with WDM technology, which enables the laser to transmit the signal at a different wavelength than the receive signal.
- Alternatively, Optimux-4E1 and Optimux-4E1C are available with single or redundant electrical E2 coax links.
- To facilitate system diagnostics, Optimux-4E1/Optimux-4T1 feature LED status indicators, AIS alarm generation and recognition, and dry contact closure upon link failure.
- Setup, control and diagnostics are performed via a supervisory port using an ASCII terminal, an Ethernet connection to an SNMP management station, or a dedicated 10BaseT Ethernet port (for the standalone units). An Optimux card in the LRS-24 rack can also be configured, maintained and monitored over Ethernet, via LRS-24's CL-2 card.
- The units can be managed by:
 - RADview-PC/TDM running in a Windows environment
 - RADview-HPOV/TDM for HP OpenView UNIX platforms
 - ConfiguRAD Web-based remote access terminal.
- Optimux units are available as compact 1U high standalone units, for mounting in a 19" rack, and card versions for RAD's LRS-24 19" rack with central SNMP management. This option provides a compact, cost-effective central solution.

APPLICATION

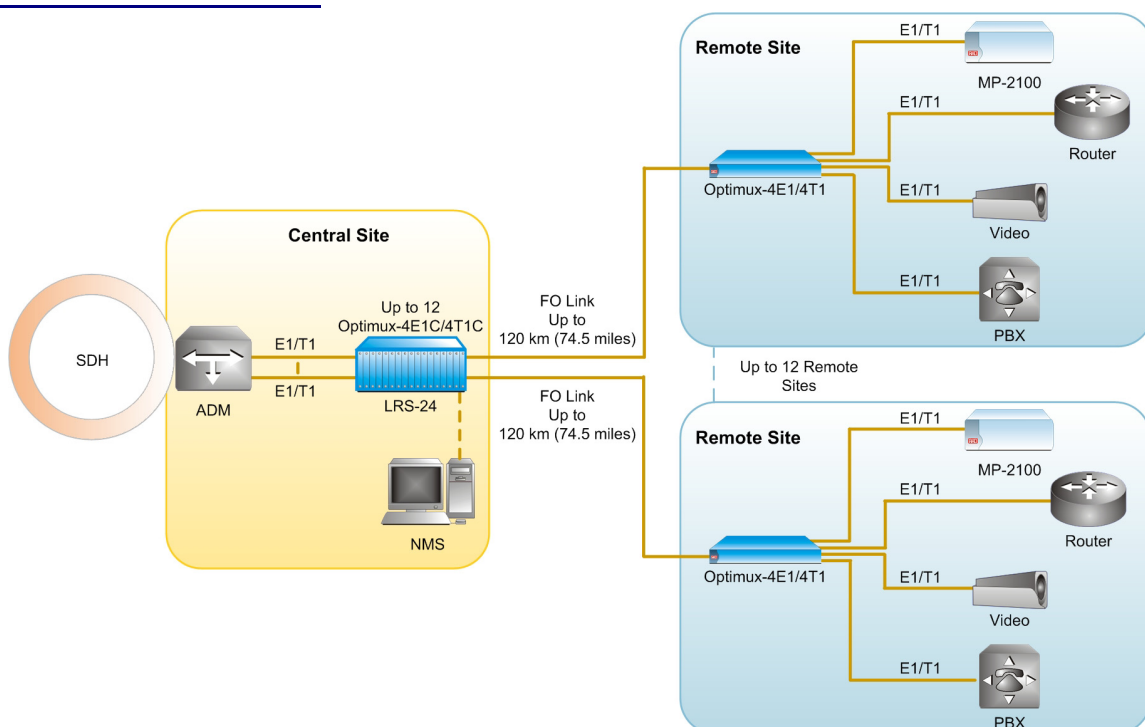


Figure 1. Standalone and Card Versions of Optimux-4E1/Optimux-4T1 in a Point-to-Multipoint Topology

Optimux-4E1, Optimux-4T1

Four E1/T1 Channel Multiplexers

SPECIFICATIONS

FIBER OPTIC MAIN LINK

- **Interface Characteristics**
See Table 1
- **Connectors**
See Table 1

ELECTRICAL MAIN LINK

(Available for Optimux-4E1 and Optimux-4E1C only)

- **Data Rate**
8448 kbps
- **Line Code**
HDB3
- **Impedance**
75Ω, unbalanced
- **Connectors**
Pair of BNC
- **Maximum Range**
Up to 180 meters (590 ft)

TRIBUTARY E1 CHANNELS

- **Number of Channels**
4
- **Data Rate**
2048 kbps

- **Line Code**
 - HDB3
 - AMI (for standalone version only)
- **Impedance**
 - 120Ω, balanced
 - 75Ω, unbalanced
- **Connectors**
 - Optimux-4E1 standalone:
RJ-45, balanced
Two BNC, unbalanced
 - Optimux-4E1 card:
Terminal Block or SCSI, balanced
Two mini-BNC (coax 1.0/2.3 mm), unbalanced

TRIBUTARY T1 CHANNELS

- **Number of Channels**
4
- **Data Rate**
1544 kbps
- **Line Code**
 - B8ZS
 - AMI (for standalone version only)
- **Impedance**
100Ω, balanced
- **Connectors**
 - Optimux-4T1 standalone:
RJ-45
 - Optimux-4T1 card:
Terminal block or SCSI

GENERAL

- **Physical**
 - Standalone Versions**
Height: 44 mm / 1.75 in
Width: 440 mm / 17.5 in
Depth: 240 mm / 9.5 in
Weight: 2.0 kg / 4.4 lb
 - Card Versions**
Fits single slot of LRS-24 hub
Weight: 352g / 0.78 lb
- **Ethernet Port**
10BaseT dedicated Ethernet port for management, with RJ-45 connector
- **Power**
 - Standalone Versions**
 - AC/DC: 100 to 240 VAC
Or
-48 VDC (-40 to -72 VDC)
 - DC: 24 VDC (18 to 36 VDC)
 - Card Versions**
Cards receive power from LRS-24's AC and DC power supplies.
Maximum power consumption of LRS-24: 160W

Table 1. Fiber Optic Interface Characteristics

Wavelength	Fiber Type	Transmitter Type	Typical Power Coupled Into Fiber	Receiver Sensitivity	Typical Maximum Range	Available Connector Type
[nm]	[μm]		[dBm]	[dBm]	[km] [miles]	
850	62.5/125 multimode	Laser (VCSEL)	-15	-34	4.5 2.8	ST, SC, FC/PC
1310	62.5/125 multimode	LED	-18	-32	7 4.3	ST, SC
1310	9/125 single mode	Laser	-12	-34	47 29.2	ST, SC, FC/PC
1550	9/125 single mode	Laser	-12	-34	76 47.2	ST, SC, FC/PC
1310	9/125 single mode	Laser (long haul)	-2	-34	72 44.7	ST, SC, FC/PC
1550	9/125 single mode	Laser (long haul)	-1	-34	120 74.5	ST, SC, FC/PC
Tx: 1310 Rx:1550	9/125 single mode	Laser WDM (SF1)	-12	-34	47 29.2	SC
Tx: 1550 Rx: 1310	9/125 single mode	Laser WDM (SF2)	-12	-34	47 29.2	SC
Tx/Rx: 1310	9/125 single mode	Laser (SF3)	-12	-27	20 12.4	SC/APC

Note: The ranges specified above were calculated according to the following typical attenuation rates (with a 3 dB margin):

- 3.5 dB/km for 850 nm multimode
- 1.5 dB/km for 1310 nm multimode
- 0.4 dB/km for 1310 nm single mode
- 0.25 dB/km for 1550 nm single mode

Optimux-4E1, Optimux-4T1

Four E1/T1 Channel Multiplexers

• Power Consumption

AC/DC: 13.5 VA
-48 VDC: 9.5W
24 VDC: 7.5W

• Environment

Temperature: 0° to 50°C/
32° to 122°F
Humidity: Up to 90%,
non-condensing

ORDERING

OP-4E1/^/*/%/#+/@

Four E1 channel multiplexer
standalone unit

OP-4E1C/&/?/#+/@

Four E1 channel multiplexer card for
LRS-24

OP-4T1/*/%/#+/@

Four T1 channel multiplexer
standalone unit

OP-4T1C/&/?/#+/@

Four T1 channel multiplexer card for
LRS-24

^ Specify E1 connector type for
standalone version:

B for balanced (RJ-45)
U for unbalanced (BNC)

* Specify power supply:

24 for -18 to -36 VDC

Note: The default power supply is a wide-range AC/DC power supply. The unit can be connected to either an AC power source (100 to 240 VAC), or to a DC power source (48 VDC).

% Specify **R** for second redundant power supply (of same type as first power supply). Default is one power supply only.

& Specify LRS-24 rack type:

F for ETSI version
B for ANSI version

? Specify E1/T1 tributary channel connector type on card versions:

TB for terminal block
SC for SCSI (includes SCSI-to-RJ-45 adapter cable)
U for unbalanced mini-BNC (Optimux-4E1C only)

Specify main link interface connector type:

CX for electrical interface with coaxial connectors (Optimux-4E1/4E1C only)
ST for ST type connector
FC for FC/PC type connector
SC for SC type connector

Note: ST and FC connectors are not available for the single fiber options.

+ Specify fiber optic link interface type (not relevant for the CX option):

85 for 850 nm, multimode, VCSEL laser diode
13 for 1310 nm, multimode, LED (standalone versions only)
13L for 1310 nm, single mode, laser diode
15L for 1550 nm, single mode, laser diode
13LH for 1310 nm, single mode, long haul laser diode (standalone versions only)
15LH for 1550 nm, single mode, long haul laser diode (standalone versions only)
SF1 for transmit 1310 nm laser (WDM), receive 1550 nm (standalone versions only)
SF2 for transmit 1550 nm laser (WDM), receive 1310 nm (standalone versions only)
SF3 for transmit and receive at 1310 nm laser diode

Note: For single fiber applications, a device with SF1 interface is always used opposite a device with SF2 interface, and vice versa. An SF3 interface works only opposite another SF3 interface.

@ Specify **D** for second redundant link (of same type as first link). Default is one link only.

SUPPLIED ACCESSORIES

- **AC power cord**
If an AC powered unit is ordered
- **DC power connection kit**
If a DC powered unit is ordered
- **RM-34**
Hardware kit for mounting one unit into a 19" rack

RAD**data communications**www.rad.com

- **International Headquarters**
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: (972) 3-6458181
Fax: (972) 3-6498250, 6474436
Email: market@rad.com
- **U.S. Headquarters**
900 Corporate Drive
Mahwah, NJ 07430
Tel: (201) 529-1100
Toll free: 1-800-444-7234
Fax: (201) 529-5777
Email: market@radusa.com

324-100-07/05