

Optimux-45L



Fiber Optic Multiplexer



FEATURES

- Multiplexes up to 28 T1 or 21 E1 channels into a single T3 data link
- Supports a combination of T1 and E1 channels
- Transmission over coax or fiber optic cable
- Supports single mode fiber, multimode fiber and single fiber (WDM)
- Range of up to 110 km (68 miles)
- Conforms to ITU G.703, G.747, G.823, G.824, ANSI T1.107, T1.404, RFC2495, RFC2496
- Optional second power supply provides redundancy
- Optional second fiber optic or coaxial line provides automatic backup to the T3 link
- Management using ASCII terminal, Telnet or SNMP management station
- Compact 1U high enclosure
- Two Optimux-45L units can be connected over a single fiber link, using either WDM (Wavelength Division Multiplexing) or another bidirectional technology, thus saving on fiber usage.
- Various optical interfaces are available for the fiber T3 link:
 - 850 nm for multimode fiber
 - 1310 nm for multimode fiber
 - 1310 and 1550 nm laser for extended range over single mode fiber
 - 1310 and 1550 nm laser for single fiber WDM operation
 - 1310 nm laser for single fiber/single wavelength operation.
- Critical hardware components can be backed up, if necessary. This ensures that any single point of failure will not disrupt the entire system. An optional hot-swappable second main link provides backup, using automatic switchover upon link failure. An optional second power supply provides power redundancy and fail-safe operation.

DESCRIPTION

- Optimux-45L provides a simple, flexible and cost-effective solution for transporting multiple T1 and E1 signals at distances of up to 110 km (68 miles).
- Optimux-45L integrates up to 28 T1, 21 E1, or any combination of T1 and E1 channels, over a single 45 Mbps data link. This provides an easily configurable solution, flexible enough to meet the specific requirements of a broad range of applications.

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- Optimux-45L is provided with two 64-pin Telco connectors for balanced or unbalanced tributary ports.
- Optimux-45L transmits the clock of each of the E1/T1 channels independently.
- Setup, control and diagnostics can be performed using an ASCII terminal connected via the DB-9 control port. Alternatively, these functions can be performed using a Telnet or a RADview application, connected to the dedicated Ethernet management port.
- Optimux-45L is interoperable with RAD's Optimux-45, FOM-T3 and FOMi-T3 devices.
- RADview, RAD's SNMP management application software provides a user-friendly GUI for Optimux-45L configuration, monitoring and management. RADview applications are available for either Windows or UNIX-based HP OpenView environments.
- To facilitate system diagnostics, Optimux-45L features LED status indicators, AIS alarm generation and recognition, dry contact closure upon link failure and diagnostic loopbacks on the E1/T1 and T3 links.
- Optimux-45L is available as a compact 1U high unit that can be mounted in a 19-inch (ANSI) or ETSI rack.

APPLICATIONS

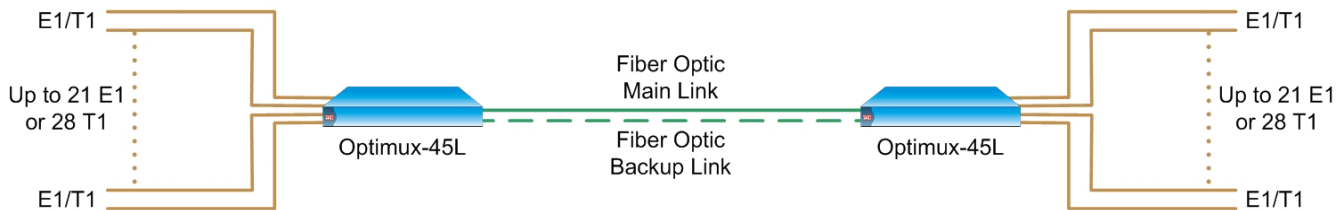


Figure 1. Point-to-Point Application

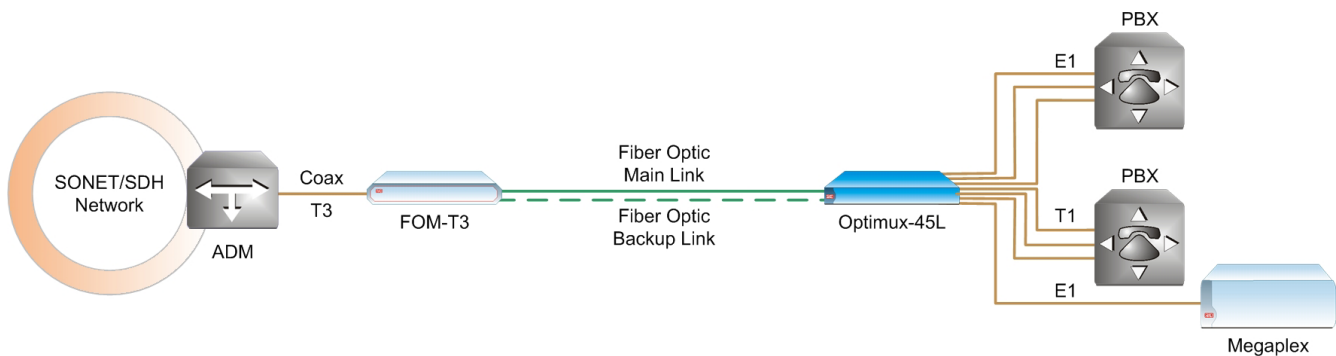


Figure 2. Optimux-45L Operating opposite FOM-T3

SPECIFICATIONS

MAIN AND BACKUP LINK

- **Redundancy**
Optional second link
- **Data Rate (T3)**
44.736 Mbps

OPTICAL INTERFACE

- **Interface Characteristics**
See Table 1
- **Connectors**
ST, SC, or FC/PC

ELECTRICAL INTERFACE

- **Standards**
G.703, G.824
- **Line Code**
B3ZS
- **Impedance**
75Ω, unbalanced
- **Range**
According to ITU-T Rec. G.703
- **Connectors**
Two shielded BNC connectors

TRIBUTARY CHANNELS

- **Number of Channels**
28 T1 or 21 E1
- **Interface Type**
E1: balanced or unbalanced
T1: balanced
- **Connectors**
Two Telco 64-pin for all channels
- **Impedance**
E1: 120Ω, balanced
75Ω, unbalanced
T1: 100Ω, balanced
- **Data Rate**
E1: 2.048 Mbps
T1: 1.544 Mbps
- **Line Code**
E1: HDB3 or AMI
T1: B8ZS or AMI
- **Standards**
G.703, G.823, G.824
- **Range**
According to ITU-T Rec. G.703
- **Jitter**
E1: According to ITU-T G.823
T1: According to ITU-T Rec. G.703

GENERAL

- **Alarm Relay**
Dry contact relays with a DB-9 connector, for major and minor alarms
- **Control Port**
RS-232 control port with a DB-9 connector, for management by supervisory terminal
- **Ethernet Port**
10BaseT dedicated Ethernet port with an RJ-45 connector, for management
- **Station Clock**
Optional external station clock input, using an RJ-45 connector
- **Monitoring**
Built-in monitoring capabilities of each one of the tributary input channels

Table 1. Optical Interface Characteristics

Wavelength	Fiber Type	Transmitter Type	Power Coupled into Fiber	Receiver Sensitivity	Typical Max Range	
[nm]	[μm]		[dBm]	[dBm]	[km]	[miles]
850	62.5/125, multimode	VCSEL	-14 to -20	-26	2.0	1.2
1310	62.5/125, multimode	LED	-14 to -20	-31	5.5	3.4
1310	9/125, single mode	Laser	-8 to -15	-31	38.0	23.6
1550	9/125, single mode	Laser	-8 to -15	-31	25.0	15.5
1310	9/125, single mode	Laser (long haul)	0 to -5	-34	60.0	37.2
1550	9/125, single mode	Laser (long haul)	0 to -5	-34	110.0	68.4
1310/1550	9/125, single mode	Laser WDM (SF1, SF2)	-8 to -15	-29	40.0	24.8
1310	9/125, single mode	Laser (SF3)	-8 to -15	-27	20.0	12.4

Note: The ranges above were calculated according to the typical attenuation rates:

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

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- **Physical**
Height: 4.4 cm (1.7 in)
Width: 44 cm (17 in)
Depth: 24 cm (9.4 in)
Weight: 3.8 kg (8.4 lb)
- **Power**
Number of power supplies:
one or two (power sharing
and redundancy)
 - AC: 100 to 240 VAC;
50/60 Hz; 70 VA
 - DC: -48 VDC (-36 to -72 VDC);
1.2A; 45W
 - DC: 24 VDC (±10%); 2.2A; 45W
- **Maximum Power Consumption**
24W
- **Environment**
 - Temperature:
0–55°C / 32–131°F
 - Humidity:
Up to 90%, non-condensing

ORDERING

OP-45L/&*/!/?/#+/D

Multiple E1 or T1 to T3 Multiplexer

Note: The station clock and the adapter cable are ordered separately (see below).

- & Specify channel interface:
 - B** for balanced E1/T1 interface
 - U** for unbalanced E1 interface
- * Specify power supply:
 - AC** for 100 to 240 VAC
 - 48** for -48 VDC
 - 24** for 24 VDC
- ! Specify **R** for a second (redundant) power supply (identical to the first power supply).
- ? Specify **STC** for optional station clock
- # Specify main link connector type:
 - ST** for ST type fiber
 - SC** for SC type fiber
 - FC** for FC type fiber
 - CX** for electrical interface with coaxial BNC connectors
- + Specify optical wavelength and transmitter type (not relevant with CX option):
 - 85** for 850 nm, multimode VCSEL laser diode
 - 13** for 1310 nm, multimode LED
 - 13L** for 1310 nm, single mode, laser diode
 - 15L** for 1550 nm, single mode, laser diode
 - 13LH** for 1310nm, single mode, long haul laser diode
 - 15LH** for 1550 nm, single mode, long haul laser diode
 - SF1** Single fiber for transmit 1310 nm, receive 1550 nm
 - SF2** Single fiber for transmit 1550 nm, receive 1310 nm
 - SF3** Single fiber for 1310 nm single wavelength laser.

Note: For single-fiber applications, a device with the SF-1 interface should always be used opposite the device with the SF-2 interface, and vice versa. The SF-3 interface can be used on both sides of the link.

- D** Optional second main link (identical to the first main link)

OP-A/ADAPTOR/%

Optional patch panel interface adaptors to convert Telco into channel connectors

- % Specify patch panel interface:
 - 21BNC/T3L** patch panel with 21 BNC unbalanced E1 interfaces, includes one CBL-TELCO-TELCO/UB cable
 - 28RJ** patch panel with 28 RJ-45 balanced E1/T1 interfaces, includes two CBL-TELCO-TELCO/2M cables.

CBL-TELCO-OPEN/2M

Optional adaptor cable Telco 64 pin, open ended, 2m long.

Note: Two Telco-Open cable sets need to be ordered to support all of the tributary channels.

CBL-TELCO-TELCO/2M

Optional extension cable for balanced interface, Telco 64 pin to Telco 64 pin, 2m long

CBL-TELCO-TELCO/UB

Optional extension cable for unbalanced interface, Telco 64 pin to Telco 64 pin, 2m long

RM-34

Hardware for mounting a single Optimux-45L in a 19" (ANSI) rack (one included with each unit)

RM-34/ETSI

Hardware for mounting a single Optimux-45L in a 19" (ETSI) rack



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