

Optimux-4E1

Four-Channel E1 Multiplexer

Any Traffic Over Fiber



- Multiplexes four E1 channels over a fiber optic link with various fiber interfaces: multimode, single-mode (up to 120 km), and single-mode over single fiber
- Automatic link backup with optional hot-swappable second main link
- Power redundancy with optional second power supply
- Management via ASCII terminal, dedicated Ethernet port, SNMP management station, or ConfiguRAD Web-based remote access terminal

The Optimux-4E1 multiplexer combines up to four E1 channels over a fiber optics 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 modular second link provides automatic backup upon link failure. An optional second power supply provides power redundancy for failsafe operation.

Each of the four E1 signals is transmitted independently, so that each E1 channel can be set to a different clock source.



data communications

Innovative Access Solutions

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Various optical interfaces are available:

- 850 nm VCSEL (Vertical Cavity Surface Emitting Laser) for multimode fiber
- 1310 nm LED for multimode fiber
- 1310 nm laser and 1550 nm laser diode or long-haul laser for extended range over single-mode fiber
- Single fiber (SF1, SF2 options) using a 1310 nm 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
- Single fiber (SF3 option) using SC/APC (Angled Polished Connector) technology, with a 1310 nm laser diode for single wavelength operation.

To facilitate system diagnostics, Optimux-4E1 features 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 10/100BaseT Ethernet port.

The units can be managed by:

- RADview-TDM running in a Windows or Unix environment
- ConfiguRAD Web-based remote access terminal.

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

Optimux-4E1 is a compact standalone unit. A rack mount adapter kit enables installation of one or two (side-by-side) units in a 19-inch rack.

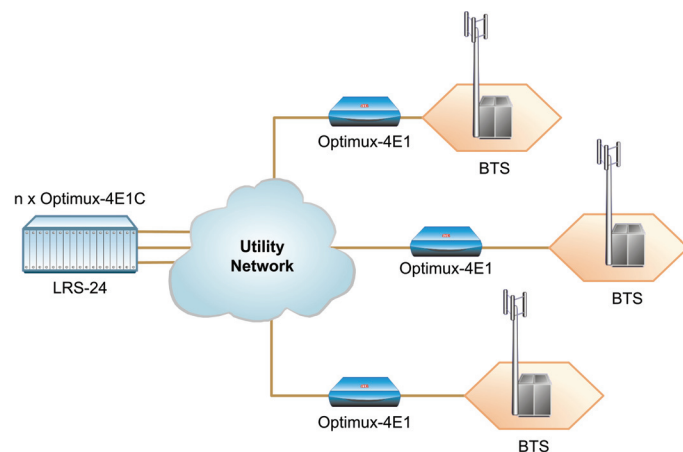


Figure 1. Cellular Backhaul, Aggregating BTS Traffic Over Fiber

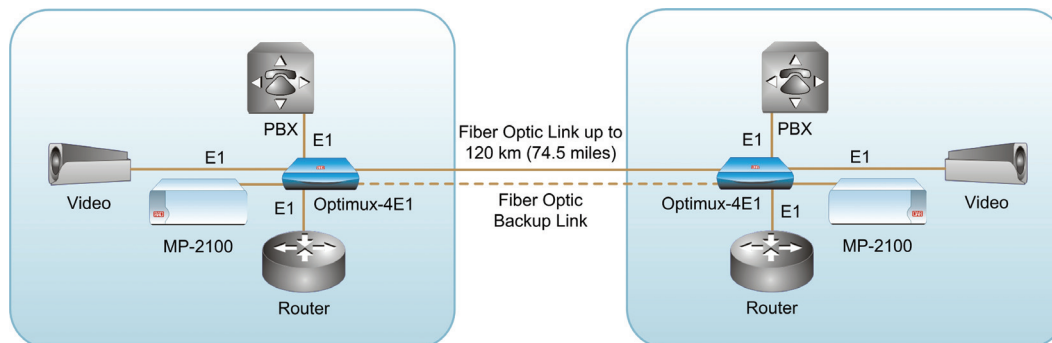


Figure 2. Service Extension Over Fiber

SPECIFICATIONS

MAIN LINK

See *Table 1*

TRIBUTARY E1 CHANNELS

Number of Channels

4

Data Rate

2048 kbps

Line Code

HDB3

Impedance

120Ω, balanced

75Ω, unbalanced

Connectors

RJ-45, balanced

Two BNC, unbalanced

MNG-ETH PORT

Type

10/100BaseT

Connector

Shielded RJ-45

CONTROL PORT

Type

RS-232 DCE asynchronous

Data Rate

9.6, 19.2, 38.4, 57.6, 115.2 kbps

Connector

Shielded RJ-45

ALARM PORT

Type

Dry relay contacts for major and minor alarms

Connector

9-pin D-type female

GENERAL

Supported Standards

G.703, G.742, G.823, G.955, IEEE 802.3

Front Panel Indicators

PWR

On (green): both power supplies OK

On (red): power supply A fault

On (yellow): power supply B fault

Off: power supply fault

LINK A/B

On (red): Sync/Signal Loss on Link A/B

On (yellow): AIS received on channel

Off: normal operation

CH1 to CH4

On (red): Signal Loss on channel

On (yellow): AIS received on channel

Off: normal operation

Rear Panel Indicators

Sig Link A/B (on the fiber optic module)

On (green): signal exists on Link A/B

Off: no signal on Link A/B

LINK/ACT

On (yellow): link is up

Off: link is down

Blinks: frames are transmitted

100

On (green): 100 Mbps mode

Off: 10 Mbps mode

Power

Wide range: 100 to 240 VAC or

-48 VDC (-40 to -72 VDC)

Power Consumption

AC: 22 VA max

DC: 8W max

Physical

Height: 4.37 cm (1.7 in)

Width: 21.7 cm (8.5 in)

Depth: 17.0 cm (6.7 in)

Weight: 0.5 kg (1.1 lb)

Environment

Temperature: 0°–50°C (32°–122°F)

Humidity: Up to 90%, non-condensing

Table 1. Fiber Optic Interface Characteristics

Wavelength	Fiber Type	Transmitter Type	Typical Power Output	Receiver Sensitivity	Typical Max. Range		Connector Type
					[km]	[mi]	
[nm]	[μm]		[dBm]	[dBm]			
850	62.5/125 multimode	Laser (VCSEL)	-7	-34	6	3.7	ST, SC, FC/PC
1310	9/125 single mode	Laser	-12	-34	47	29.2	ST, SC, FC/PC
1310	62.5/125 multimode	LED	-18	-32	7	4.3	ST, SC
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)	-2	-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
- 0.4 dB/km for 1310 nm single mode
- 0.25 dB/km for 1550 nm single mode

Optimux-4E1

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Ordering

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

Four E1 channel multiplexer

Legend

- ^ E1 connector type:
B Balanced (RJ-45)
U Unbalanced (BNC)
- % **R** Second redundant power supply (default is one power supply only)
- # Main link interface connector type:
ST ST type connector
FC FC/PC type connector
SC SC type connector

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

- + Fiber optic link interface type:
85L 850 nm, multimode, VCSEL
13 1310 nm, multimode, LED
Note: Available with ST and SC connectors only
13L 1310 nm, single mode, laser diode
15L 1550 nm, single mode, laser diode
13LH 1310 nm, single mode, long-haul laser diode
15LH 1550 nm, single mode, long-haul laser diode
SF1 Transmit 1310 nm laser (WDM), receive 1550 nm
SF2 Transmit 1550 nm laser (WDM), receive 1310 nm
SF3 Transmit and receive at 1310 nm laser diode
- * **D** Second redundant main link module (of same type as first main link module). Default is one main link module only.

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.

OP-4E1-M/#/+

Additional main link module (specify if the second main link module is different from the first main link module)

Note: For ordering the Optimux-4E1 card version or coax uplink, please contact the Optimux Product Line Manager.

SUPPLIED ACCESSORIES

AC power cord
 DC adapter plug

CBL-RJ45/D9/F/STR

Control port cable

OPTIONAL ACCESSORIES

RM-33-2

Kit for mounting 1 or 2 units in a 19-inch rack

Table 2. Optimux Comparison Chart

Feature	Optimux-4E1/4T1	Optimux-34	Optimux-XLT1	Optimux-45/45L	Optimux-1551	Optimux-1553
Uplink	E1/T1	E3	T1	T3	STM-1/OC-3	STM-1/OC-3
Bandwidth (Mbps)	8/6	34	25	45	155	155
Number of trunks	4 E1 4 T1	16 E1	16 T1	21 E1 28 T1	21/42/63 E1 28/56/84 T1	3 E3 3 T3
Data/Ethernet support	No	Yes	Yes	No	No	No
Special features	Redundant, hot-swappable uplinks	SFP-based uplinks	Modular	Ring support (Optimux-45)	Full redundancy	Full redundancy

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