**Optimux-4E1L**

*Four E1 Channel Multiplexer*

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**FEATURES**

- Multiplexes four E1 channels over a single E2 link
- E2 transmission over coax or fiber optic cable
- Operates with various fiber interfaces:
  - Multimode fiber
  - Single mode fiber
  - Single fiber (WDM)
  - Single fiber/single wavelength
- Range up to 120 km (74 miles)
- Conforms to ITU G.703, G.742, G.823, G.956
- Management via ASCII terminal or SNMP management station
- Remote management using inband channel
- Compact 1U high, half 19-inch size
- Operates opposite Optimux-4E1 (standalone or card version for the LRS-24 19-inch rack)

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**DESCRIPTION**

- Optimux-4E1L is a multiplexer that combines up to four E1 channels over a single coax or fiber optic E2 link. A pair of Optimux-4E1L units offers simple and low-cost connectivity of four E1 channels at distances of up to 120 km/74 miles (see Figure 2).
- Various optical interfaces are available:
  - 850 nm for multimode fiber LED
  - 1310 nm for multi mode fiber LED
  - 1310 and 1550 nm laser for extended range over single mode fiber
  - 1310 and 1550 nm laser for single fiber – WDM (Wavelength Division Multiplexing) operation.
  - 1310 nm laser for single fiber/single wavelength operation
- Optimux-4E1L transmits each of the E1 channels independently, such that the clock of each E1 channel is independent of the clock of any other E1 channel. The E1 interface can be 75Ω unbalanced or 120Ω balanced (see Ordering).
- Optimux-4E1L can operate opposite an Optimux-4E1 standalone unit or an OP-4E1 card for the LRS-24 19-inch rack with central SNMP management. This option provides a compact, cost effective central solution (see Figure 1).
- To facilitate system diagnostics, Optimux-4E1L features LED status indicators, AIS alarm generation, recognition and dry contact closure upon link failure.
- Configuration, monitoring and maintenance can be performed using an ASCII terminal or a SLIP connection to an SNMP management station.
- The SNMP management supports:
  - RADview-PC running on PC/Windows
  - RADview-HPOV running on an HP OpenView UNIX platform.
- Optimux-4E1L is available as a compact 1U high half 19-inch unit, which can be mounted in a 19-inch rack.

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Order OP-4E1L from: Cutter Networks
Ph: 727-398-5252/Fax: 727-397-9610
www.bestdatasource.com
Optimux-4E1L

Four E1 Channel Multiplexer

APPLICATONS

Figure 1. Central to Remote Multi-Site Application

Figure 2. Corporate Point-to-Point Application
**SPECIFICATIONS**

**E1 CHANNELS**
- **Number of Channels**
  4
- **Data Rate**
  2048 kbps
- **Line Code**
  HDB-3 or AMI
- **Impedance**
  120Ω, balanced
  75Ω, unbalanced
- **Connectors**
  Balanced: RJ-45
  Unbalanced: pair of BNC

**ELECTRICAL E2 LINK**
- **Data Rate**
  8448 kbps
- **Line Code**
  HDB-3
- **Impedance**
  75Ω, unbalanced
- **Connectors**
  BNC

**OPTICAL E2 LINK**
- **Connectors**
  ST, FC/PC or SC

**Interface Characteristics**
See Table 1

**GENERAL**
- **Physical**
  Height: 4.4 cm / 1.7 in
  Width: 21.5 cm / 8.5 in
  Depth: 24.3 cm / 9.6 in
  Weight: 1.5 kg / 3.2 lb
- **Power**
  AC: 100–240 VAC, 50–60 Hz, 13.5 VA;
  OR
  DC: -48 VDC (-40 to -72 VDC), 9.5W
- **Environment**
  Temperature: 0–50°C/32–122°F
  Humidity: Up to 90%, non-condensing

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**Table 1. Fiber Optic Interface Characteristics**

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>Fiber Type</th>
<th>Transmitter Type</th>
<th>Typical Power Coupled into Fiber (dBm)</th>
<th>Receiver Sensitivity (dBm)</th>
<th>Typical Maximum Range (km)</th>
<th>Typical Maximum Range (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>850</td>
<td>62.5/125 multimode</td>
<td>VCSEL</td>
<td>-15</td>
<td>-34</td>
<td>4.5</td>
<td>2.8</td>
</tr>
<tr>
<td>1310</td>
<td>62.5/125 multimode</td>
<td>LED</td>
<td>-18</td>
<td>-32</td>
<td>7</td>
<td>4.3</td>
</tr>
<tr>
<td>1310</td>
<td>9/125 single mode</td>
<td>Laser</td>
<td>-12</td>
<td>-34</td>
<td>47</td>
<td>29.2</td>
</tr>
<tr>
<td>1310</td>
<td>9/125 single mode</td>
<td>Laser (long haul)</td>
<td>-2</td>
<td>-34</td>
<td>72</td>
<td>44.7</td>
</tr>
<tr>
<td>1310</td>
<td>9/125 single mode</td>
<td>Single fiber Laser(SF3)</td>
<td>-12</td>
<td>-27</td>
<td>20</td>
<td>12.4</td>
</tr>
<tr>
<td>1310/1550</td>
<td>9/125 single mode</td>
<td>WDM Laser(SF1, SF2)</td>
<td>-12</td>
<td>-34</td>
<td>47</td>
<td>29.2</td>
</tr>
<tr>
<td>1550</td>
<td>9/125 single mode</td>
<td>Laser</td>
<td>-12</td>
<td>-34</td>
<td>76</td>
<td>47.2</td>
</tr>
<tr>
<td>1550</td>
<td>9/125 single mode</td>
<td>Laser (long haul)</td>
<td>-1</td>
<td>-34</td>
<td>120</td>
<td>74.5</td>
</tr>
</tbody>
</table>

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-4E1L

Four E1 Channel Multiplexer

ORDERING

OP-4E1L/^/S/#/+  
Four E1 Channel Multiplexer

^ Specify E1 connector:  
B for balanced  
U for unbalanced

* Specify power supply  
24 for -24 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 S for optional service channel

# Specify link interface connector type:  
CX for electrical interface with coaxial connectors  
ST for ST type connector (not available with SF1, SF2 or SF3 options)  
FC for FC/PC type connector (not available with SF1, SF2 or SF3 options)  
SC for SC type connector

+ Specify link interface optical wavelength:  
85 for 850 nm multimode LED  
13 for 1310 nm multimode LED  
13L for 1310 nm single mode laser diode  
13LH for 1310 nm single mode, long haul laser diode  
15L for 1550 nm, single mode, laser diode  
15LH for 1550 nm single mode, long haul laser diode  
SF1 for transmit 1310 nm (WDM laser), receive 1550 nm  
SF2 for transmit 1550 nm (WDM laser), receive 1310 nm  
SF3 for transmit and receive at 1310 nm laser diode

Note: For single fiber connection (WDM) when one of the units is ordered with SF1, the other should be ordered with SF2.

RM-28  
Special hardware for mounting one or two Optimux-4E1L units in a 19-inch rack.

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