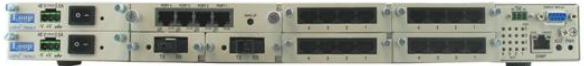




ANSI Unit Front View



ETSI Unit Front View

## Features :

- 1U height, full front access(ETSI unit), or front and back access(ANSI unit)
- Rack mount, wall mount, and stand-alone
- WAN Ports
  - Two hot-swappable optical cards. One optical interface each card
  - Optical interface 1+1 protection switching (max. 50 ms)
- Tributary ports
  - TDM Interface
    - 4 slots, each slot can be 4 E1, 4 T1, or 2 V.35 hot pluggable card
    - Up to 16 E1
    - Up to 16 T1
    - Up to 8 V.35
    - Up to 4 10/100Mbps Ethernet bridge hot-swappable card
- Power Modules
  - Hot-swappable DC plug-in modules (-48 Vdc: -36 to -75 Vdc), dual for redundancy
  - Hot-swappable AC plug-in module (100 to 240 Vac), dual for redundancy
- Auto laser shutdown function is user configurable.
- Loopbacks for optical link, each E1 and T1
- Office alarm contacts
- Firmware download to local unit and remote unit
- Management port and interface
  - Multicolor LED indicators
  - One LCD and keypad on ANSI panel (optional)
  - Console port, VT100 menu-driven
  - SNMP port
  - Telnet via SNMP port
  - LoopView GUI EMS

# Loop-O9330 Fiber Optical Mux

## Description

Loop Telecom's Loop-O Fiber Optical Mux product family provides ideal solutions for building fiber-based E1/T1 networks. As one of this family, the Loop-O9330 can transparently carry up to 16 channels E1/T1 or 8 channels V.35 DTE, and 100 Mbps Ethernet signals over a single fiber.

All services are transported point-to-point in a real static TDM manner, which includes a) 16 E1, 16 T1, or 8 V.35 b) 100M bps Ethernet, and c) management channel. The bandwidth is guaranteed for full configuration of the mentioned speeds for each channel/service.

To select protection level, users can choose either single pair or dual pair fiber. Either a single power supply or dual power supplies can be chosen.






Loop-O9330 offers management through console port, Ethernet port, Telnet, and SNMP agents. It supports local control and diagnostics using a 2-line by 16-character LCD display and keypads or console port. The unit also supports local and remote monitoring and diagnostics. Contacts for office alarms are available.

Applications for Loop-O include interconnections for LAN, WAN, SONET/SDH, ATM, and DLC.

## Ordering Information

To specify options, choose from the list below.

**Note:** RoHS compliant units are identified by the letter **G** appearing immediately at the end of the ordering code.

Model	Description	Note
<b>Main Unit</b>		
Loop-O9330-S-CA-opt1-opt2-s1-s2-s3-s4-s7-pp1-pp2-add- <b>G</b>	1U height ANSI (rear & front access) unit. Operating range : 0~50C	For allowed pp1, pp2 combinations, refer to <b>NOTE 1</b>
Loop-O9330-S-CE-opt1-opt2-s1-s2-s3-s4-s7- pp1-pp2- <b>G</b>	1U height ETSI unit (fully front access) unit. Operating range: 0~50C	
<b>Accessories</b>		
<b>Power Cord-</b> Order a power cord if you select the SA (100 to 240 Vac) power option.		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for UK	
Loop-ACC-PC-AUS	AC power cord for Australia	
Loop-ACC-PC-CH	AC power cord for China	
<b>Cable (All Cables are RoHS compliant.)</b>		
Loop-ACC-CAB-DB25M-100-8BNM	DB 25pin Male to BNC Male Extension Cable Length : 100 cm	
Loop-ACC-CAB-DB25M-300-8BNM	DB 25pin Male to BNC Male Extension Cable Length : 300 cm	
Loop-ACC-CAB-SCSIM-100-2M34M	SCSI 68pin Male to two M34 Male Extension Cable Length : 100 cm	
<b>Hot Pluggable Modules</b>		
Loop-O9330-S-EUR- <b>G</b>	Quad E1, unframed RJ48C	
Loop-O9330-S-EUM- <b>G</b>	Quad E1, unframed mini-BNC	Conversion cable is not included, order conversion cable separately from accessory
Loop-O9330-S-EUD- <b>G</b>	Quad E1, unframed DB25	
Loop-O9330-S-TUR- <b>G</b>	Quad T1, unframed RJ48	
Loop-O9330-S-VS- <b>G</b>	Dual V.35, SCSI68	Conversion cable is not included, order conversion cable separately from accessory
Loop-O9330-S-BR- <b>G</b>	Quad 10/100M Ethernet with bridge	
<b>User's Manual</b>		
Loop-O9330-UM	User's Manual (optional paper copy). A CD version of the manual is supplied as standard equipment.	

■ Where **opt1** and **opt 2** are used to select optical module types for Slots 5 and 6.

**Note:** If only one is needed, skip **opt2** in the ordering code and proceed to **s**.

opt =	Description	Note
<b>SAA</b>	Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB)	• Use 2 fibers
<b>SBB</b>	Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km reach (30dB)	
<b>SCC</b>	Single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km reach (20dB)	
<b>SDD</b>	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km reach (12dB)	
<b>SEE</b>	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km reach (40dB)	
<b>SSM</b>	Single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km reach (20dB)	• 1310 nm from master to slave • Order <b>SSM</b> to use with <b>SSS</b> • Use 1 fiber
<b>SSS</b>	Single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km reach (20dB)	• 1550 nm from slave to master • Order <b>SSS</b> to use with <b>SSM</b> • Use 1 fiber
<b>SFPC</b>	SFP (mini-GBIC) optical housing plug-in card without SFP optical module	• Order SFP modules separately from SFP table below.

**SFP Optical Module Plug-in Tables**

<b>155M bps</b>	MHBTW	Multi mode (mini GBIC) SFP, 155M, 1310 nm commercial (0 to +70°C), 2Km, LC optical connector	Use 2 fibers for all SFP optical modules
	PHB3W	Single mode (mini GBIC) SFP 155M, 1310 nm commercial (0 to +70°C), 30Km, LC optical connector	
	PHB5W	Single mode (mini GBIC) SFP 155M, 1310 nm commercial (0 to +70°C), 50Km, LC optical connector	
	PHCUW	Single mode (mini GBIC) SFP 155M, 1550 nm commercial (0 to +70°C), 100Km, LC optical connector	
	PHCXW	Single mode (mini GBIC) SFP 155M, 1550 nm commercial (0 to +70°C), 120Km, LC optical connector	
	PHB3D	Single mode (mini GBIC) SFP 155M, 1310 nm commercial (0 to +70°C), 30Km, LC optical connector with digital diagnostic monitoring	
	PHB5D	Single mode (mini GBIC) SFP 155M, 1310 nm commercial (0 to +70°C), 50Km, LC optical connector with digital diagnostic monitoring	
	PHCUD	Single mode (mini GBIC) SFP 155M, 1550 nm commercial (0 to +70°C), 100Km, LC optical connector with digital diagnostic monitoring	
	PHCXD	Single mode (mini GBIC) SFP 155M, 1550 nm commercial (0 to +70°C), 120Km, LC optical connector with digital diagnostic monitoring	

■ Where **s1, s2, s3, s4** are used to select plug-in modules for Slots 1- 4:

**Note:** If none are needed, skip **s1-4** in the ordering code and proceed to **s7**.

<b>s=</b>	<b>Description</b>	<b>Note</b>
<b>EUR</b>	Quad E1, unframed RJ48C	
<b>EUM</b>	Quad E1, unframed mini-BNC	Conversion cable is not included, order conversion cable separately from accessory
<b>EUD</b>	Quad E1, unframed DB25	
<b>TUR</b>	Quad T1, unframed RJ48C	
<b>VS</b>	Dual V.35, SCS168	Conversion cable is not included, order conversion cable separately from accessory

■ Where **s7** is used to select a plug-in module for Slot 7:

**Note:** If none is needed, skip **s7** in the ordering code and proceed to **pp1**.

<b>s=</b>	<b>Description</b>	<b>Note</b>
<b>BR</b>	Quad Ethernet with bridge. (10/100m bridge)	

■ Where **pp1** is used to select 1st power supply:

<b>pp1 =</b>	<b>Description</b>	<b>Note</b>
<b>SA</b>	Single AC power supply(100 to 240 Vac)	<ul style="list-style-type: none"> <li>• For redundancy purposes, ordering a second plug-in module will provide dual power.</li> <li>• All plug-in power modules are interchangeable. If a unit is one day moved to a site with a different power source, the plug-in module(s) can be changed.</li> <li>• For AC, choose an appropriate power cord</li> <li>• <b>NOTE 1</b></li> </ul>
<b>SD48</b>	Single -48 Vdc DC power supply (-36 to -75 Vdc)	

■ Where **pp2** is used to select 2nd power supply.

pp2 =	Description	Note
SA	Single AC power supply (100 to 240 Vac) for ANSI only	• For AC, choose an appropriate power cord.
SD48	Single -48 Vdc DC power supply (-36 to -75 Vdc)	• <b>NOTE 1</b>

**NOTE 1:** The combinations of pp1 and pp2 power modules:

For ANSI unit:

- **pp1=SA** (Single AC power plug-in in front or at rear)
- **pp1=SD48** (Single DC power plug-in at rear)
- **pp1=SD48, pp2=SD48** (Dual hot-swappable DC, both rear plug-in)
- **pp1=SA, pp2=SA** (Dual hot-swappable AC, one front and one rear plug-in)
- **pp1=SA, pp2=SD48** (Hot-swappable AC front and DC rear plug-in)

**Note:** For ANSI unit, DC power is available in rear panel only

For ETSI unit (all power modules in front):

- **pp1=SA** (Single AC power plug-in)
- **pp1=SD48** (Single DC power plug-in)
- **pp1=SD48, pp2=SD48** (Dual hot-swappable DC power plug-in)

■ Where **add** is used to select LCD option.

add =	Description	Note
LCD	LCD display	LCD is supported for ANSI unit only

## **Loop-O9330 Fiber Optical Mux Product Specifications**

### **Optical Fiber Interface**

Source	MLM Laser	System Gain	30 dB
Wavelength	1310 ± 50 nm, 1550 ± 40 nm	Line Code	Scrambled NRZ
Power	-26 or -8 dBm	Detector Type	PIN-FET
Receiver Sensitivity	-38 dBm at BER < 10 <sup>-10</sup>	Fiber Type	Single mode
Optical Line Rate	155.52M bps	Protection	Optional 1+1 APS
50 Km reach			

**NOTE:** Longer or shorter, 15 to 120 km, on special order.

### **Optical Fiber Interface Characteristics**

Optical Module	Fiber Direction	Wavelength (nm)	Connector	Distance (km)	Power (dB)
SAA	Dual uni-directional	1310	SC (Subscriber Connector)	30	20
SBB	Dual uni-directional	1310	SC (Subscriber Connector)	50	30
SCC	Dual uni-directional	1310	FC (Fiber Connector)	30	20
SDD	Dual uni-directional	1550	SC (Subscriber Connector)	20	12
SEE	Dual uni-directional	1550	SC (Subscriber Connector)	100	40
SSM	Single bi-directional (master)	1310/1550	SC (Subscriber Connector)	30	20
SSS	Single bi-directional (slave)	1550/1310	SC (Subscriber Connector)	30	20

### **E1 Line Interface**

Number of E1 lines	Up to 16
Line Rate	2.048M bps ± 50 ppm
Line Code	HDB3
Line Impedance	120Ω twisted pair, 75Ω for mini-BNC
Output Signal	ITU G.703
Clock	Transparent
Connector	120Ω RJ48C, 75Ω DB25 (female, future option), 75Ω MiniBNC

### **T1 Line Interface**

Line Rate	1.544M bps ± 50 bps
Line Code	AMI or B8ZS
Input Signal	ABAM cable length up to 655 feet
Output Signal	DSX1
Clock	Transparent
Connector	RJ48C

### **V.35 Interface**

Data Port	2 ports per card, DCE
Data Rate	n X 64K bps, n= 1 to 32
Clock Mode	External, Internal, Received (Selectable)
Connector	SCSI 68, optional SCSI 68 Male to M34 Male (DCE) Conversion Cable

### **Bridge**

10/ 100M bps half/ full duplex Ethernet bridging and 100M bps operation on the HDLC port  
ANSI/ IEEE Std. 802.1D MAC Bridging capabilities (without spanning tree algorithm)  
Automatic MAC table learning and aging  
Support VLAN and extended Ethernet frame support

### **SNMP Port**

Protocol	Telnet
Connector	RJ45

### **Console**

Electrical	RS232 interface
Protocol	Menu driven VT-100 terminal
Baud Rate	9600, 19200, 38400, 57600, 115200 bps asynchronous
Connector	DB9, female, DCE

### **Switches and Contacts**

Power, Alarm Cut-Off, and ENTER for command execute.  
Major and Minor alarm contact closures, DB9F connector.

### **Diagnostics Test**

Optical Fiber	Local and remote loopbacks
E1/T1 Lines	Local and remote loopbacks

### **Power**

AC Power	100-240 Vac, 50/ 60 Hz
DC Power	-48 Vdc: -36 to -75 Vdc
Power Consumption	< 20 Watts

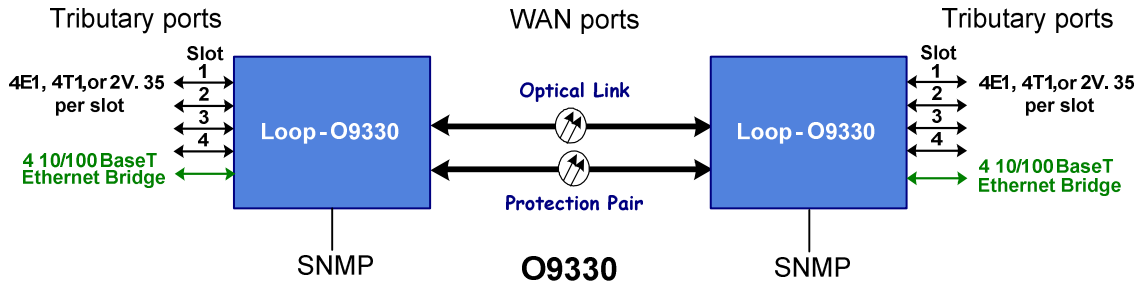
### **Physical and Environment**

Dimensions for 1U	432 x 44 x 226 mm (W x H x D)
Mounting	Stand-alone, 19 or 23 inch rack mount, wall mount
Temperature Range	0°C to 55°C
Humidity	5% - 90% RH (non-condensing)

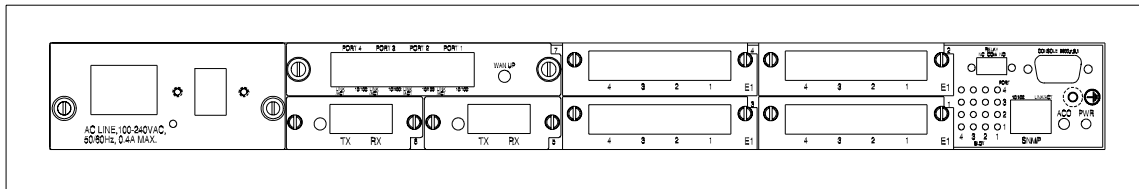
### **Compliance**

EMI/EMC	EN50082-1, EN55022, EN55024
ITU	G.703, G.706, G.732, G.823
Safety	IEC60950

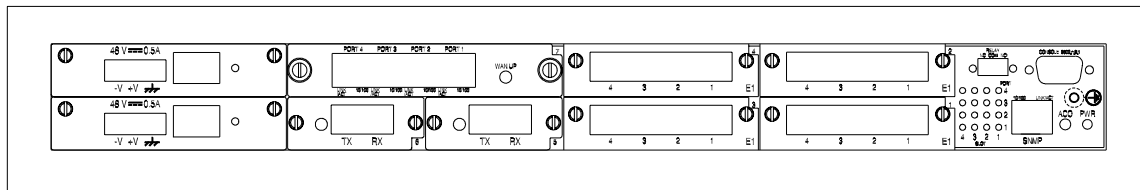
## Application Illustration



## ANSI Unit Rear Panel Views and ETSI Unit Front Panel Views



O9330 with AC Power



O9330 with DC Power

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