

Loop-O9330 Fiber Optical Mux



Features :

- Up to 16 E1 links and one 100Mbps ethernet link on one fiber
- Auto Laser Shutdown function is user configurable
- Supports 10/100M Ethernet Bridge plug-in card (Optional)
- Hot-swappable optical card
- Optical interface 1+1 protection switching (max. 50ms.)
- Hot swappable dual AC or DC mixed power supply
- Performance indicators
- Loopbacks for optical link and each E1 link
- Management through Console port, Ethernet port, Telnet and SNMP agents.
- Office alarm contacts
- LCD display (Optional)
- Multicolor LED indicators
- Four slots for E1 plug-in cards
- Four E1 ports per E1 plug-in card.

Description

Loop Telecom's Loop-O Fiber Optical Mux product family provides ideal solutions for building fiber-based E1 networks. As one of this family, the Loop-O9330 can transparently carry 16 channel E1 and 100 Mbps Ethernet signals over a single fiber.

All services are transported point-to-point in a real static TDM manner (16 E1 + 100 Mbps Ethernet + 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 2-line by 16-character LCD display (optional) and keypads or DB9S console port. The unit also supports local and remote monitoring and diagnostics through the use of front panel switches and LED indicators. Contacts for office alarms are available.

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

**CERTIFIED
ISO-9001**

Ordering Information

To specify options, choose from list below:

| Model | Description | Note |
|---|--|---------------|
| Main Unit | | |
| Loop-O9330-CA-OPT1-OPT2-S1-S2-S3-S4-S7-pp1-pp2-Add | 1U height ANSI (rear & front access) shelf. Operating range : 0~50C. | |
| Loop-O9330-IA-OPT1-OPT2-S1-S2-S3-S4-S7- pp1-pp2-Add | 1U height ANSI (rear & front access) shelf. Operating range: -20 ~ +70C. | Future option |
| Loop-O9330-CE-OPT1-OPT2-S1-S2-S3-S4-S7- pp1-pp2 | 1U height ETSI (fully front access) shelf. Operating range: 0~50C.) | |
| Loop-O9330-IE-OPT1-OPT2-S1-S2-S3-S4-S7- pp1-pp2 | 1U height ETSI (fully front access) shelf. Operating range: 20 ~ +70C. | Future option |

Accessories

| | | |
|----------------------|--|---|
| User's Manual | | |
| Loop-O9330-UM | User's Manual (optional paper copy). A CD version of the manual is supplied as standard equipment. | |
| Power Cord | | |
| Loop-ACC-PC-USA | AC power cord for Taiwan/America | Order a power cord if you select the SA (90~264Vac) power option. |
| 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 | |

- 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 |
|------------|--|--|
| SAA | Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB) - S1.1 physical layer* | <ul style="list-style-type: none"> • Use 2 fibers • * ITU-T Rec G.957 application code |
| SBB | Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km reach (30dB) - L1.1 physical layer* | |
| SCC | Single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km reach (20dB) - S1.1 physical layer* | |
| SDD | Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km reach (12dB) - S1.2 physical layer* | |
| SEE | Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km reach (40dB) - L1.2 physical layer* | |
| SSM | Single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km reach (20dB) - S1.1/ S1.2 physical layer* | <ul style="list-style-type: none"> • 1310 nm from master to slave • Order SSM to use with SSS • Use 1 fiber • * ITU-T Rec G.957 application code |
| SSS | Single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km reach (20dB) - S1.1/ S1.2 physical layer* | <ul style="list-style-type: none"> • 1550 nm from slave to master • Order SSS to use with SSM • Use 1 fiber • * ITU-T Rec G.957 application code |

For other optical modules:

| | | |
|--------------|---|--|
| MDWDO | Other special optical modules for special order | |
|--------------|---|--|

■ 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**.

| S= | Description | Note |
|------------|---------------------------|-------------|
| EUR | Quad E1, unframed RJ48 | |
| EUM | Quad E1 unframed mini-BNC | |

■ 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**.

| S= | Description | Note |
|-----------|---|-------------|
| BR | Quad ethernet with bridge. (10/100m bridge) | |

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

| pp1 = | Description | Note |
|--------------|---|---|
| SA | Single AC power supply(90~264 Vac) | <ul style="list-style-type: none"> • For redundancy purposes, ordering a second plug-in module will provide dual power. • 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. • For AC choose an appropriate power cord |
| SD24 | Single DC power supply (24Vdc 18-36 Vdc) | |
| SD48 | Single DC power supply (48Vdc: 36-72 Vdc) | |

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

| pp2 = | Description | Note |
|--------------|---|--|
| SA | Single AC power supply (90~264 Vac) | <ul style="list-style-type: none"> • For AC choose an appropriate power cord. |
| SD24 | Single DC power supply (24Vdc: 18-36 Vdc) | |
| SD48 | Single DC power supply (48Vdc: 36-72 Vdc) | |

■ where **Add** is used to select LCD option.:

| Add = | Description | Note |
|--------------|--------------------|--|
| LCD | LCD display | <ul style="list-style-type: none"> • LCD is supported for ANSI shelf 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 ⁻¹⁰ | Fiber Type | Single mode |
| Optical Line Rate | 155.52Mbps | Protection | Optional 1+1 APS |
| 50 Km reach | | | |

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

Optical Fiber Interface Characteristics

| Optical Module | Fiber Direction | Wavelength (nm) | Connector | Distance (km) | Power (dB) |
|----------------|------------------------------|-----------------|---------------------------|---------------|------------|
| Single | Dual uni-direction | 1310 | SC (Subscriber Connector) | 30 | 20 |
| | | 1310 | SC (Subscriber Connector) | 50 | 30 |
| | | 1310 | FC (Fiber Connector) | 30 | 20 |
| | | 1550 | SC (Subscriber Connector) | 20 | 12 |
| | | 1550 | SC (Subscriber Connector) | 100 | 40 |
| Dual | Dual uni-direction | 1310 | SC (Subscriber Connector) | 30 | 20 |
| | | 1310 | SC (Subscriber Connector) | 50 | 30 |
| | | 1310 | FC (Fiber Connector) | 30 | 20 |
| | | 1550 | SC (Subscriber Connector) | 20 | 12 |
| | | 1550 | SC (Subscriber Connector) | 100 | 40 |
| Single | Single bi-direction (master) | 1310/1550 | SC (Subscriber Connector) | 30 | 20 |
| | Single bi-direction (slave) | 1310/1550 | SC (Subscriber Connector) | 30 | 20 |
| Dual | Single bi-direction (master) | 1310/1550 | SC (Subscriber Connector) | 30 | 20 |
| | Single bi-direction (slave) | 1310/1550 | SC (Subscriber Connector) | 30 | 20 |

 **For discussion on whether to choose uni-directional or bi-directional fiber option, see white paper with that title.**

E1 Line Interface

| | | | |
|--------------------|--------------------|----------------|-------------------------------------|
| Number of E1 lines | Up to 16 | Line Impedance | 120Ω twisted pair, 75Ω for mini-BNC |
| Line Rate | 2.048 Mbps ±50 ppm | Connector | RJ48C, DB75 |
| Line Code | HDB3 | Output Signal | ITU G.703 |

NOTE: Other Impedance, 100Ω and 110Ω, on special order.

DS1 Interface

| | | | |
|--------------|----------------------------------|---------------|-------|
| Line Rate | 1.544 Mbps ± 50 bps | Output Signal | DSX1 |
| Line Code | AMI or B8ZS | Connector | RJ48C |
| Input Signal | ABAM cable length up to 655 feet | | |

Bridge

- 10/ 100 Mbps half/ full duplex ethernet bridging and 100 Mbps 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

| | |
|-----------|--------------------|
| Connector | RJ45 at rear panel |
| Protocol | Telnet |

Console

| | |
|------------|-----------------------------------|
| Connector | DB9 at front panel |
| Electrical | RS232 interface |
| Protocol | Menu driven VT-100 terminal |
| Baud Rate | 9600, 19200, 38400, 57600, 115200 |

Switches and Contacts

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

Indicators

- Power, Major & Minor Alarms, System Fail, Abnormal Operation, Electrical Failure.
- Receive signal indications for all E1s.
- Local optical signal receive indication, working and protection.
- Remote optical signal receive indication, working and protection.
- Laser operation, working and protection.
- Command execution complete.

Physical/Electrical

| | |
|-------------------|---------------------------------------|
| Dimensions for 1U | 432 x 44 x 226 mm (W x H x D) |
| Mounting | Stand-alone, 19 or 23 inch rack mount |
| Power Source (AC) | 95-260VAC, 50/ 60 Hz |
| Power Source (DC) | 48Vdc: 36-72 Vdc |
| Power Consumption | < 20 W |
| Temperature Range | 0°C to 55°C |
| Humidity | 5% - 90% RH (non-condensing) |

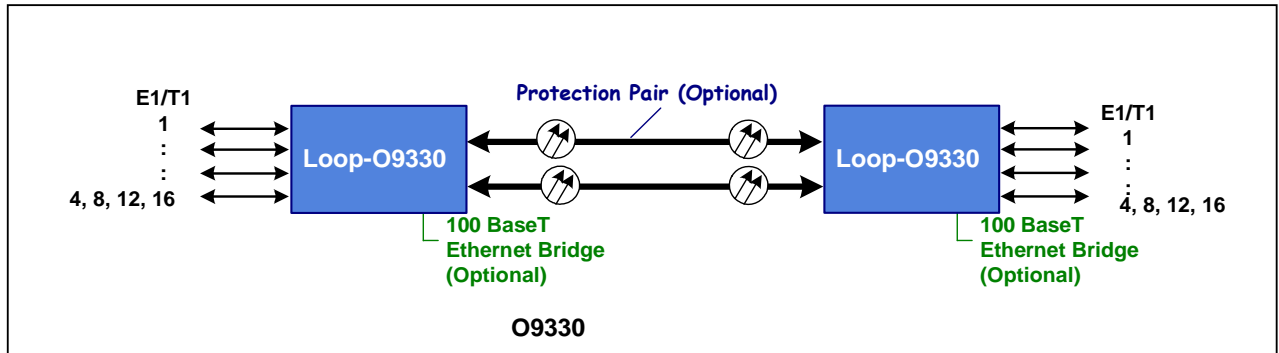
Diagnostics Test

| | |
|---------------|----------------------------|
| Optical Fiber | Local and remote loopbacks |
| E1 Lines | Local and remote loopbacks |

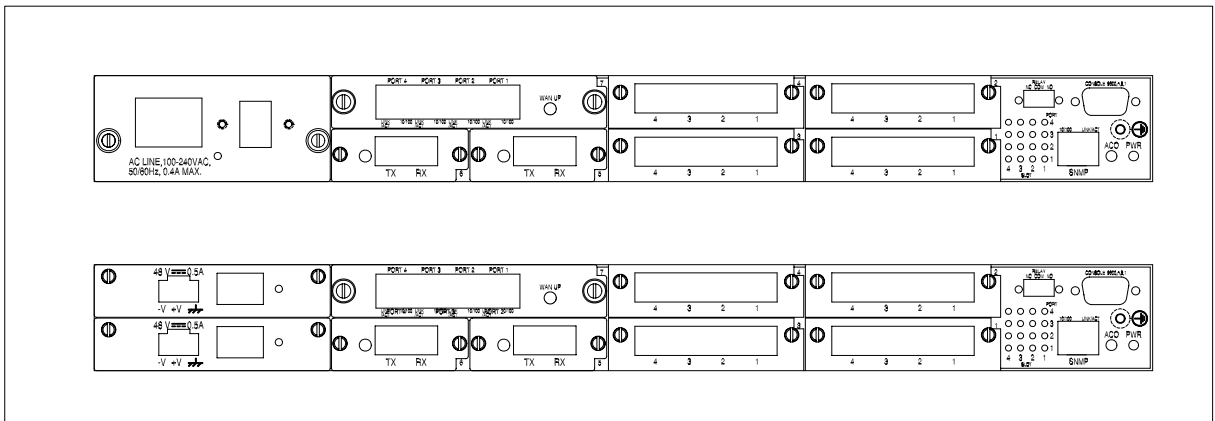
Compliance

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

Application Illustration



Rear Panel Views



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