



# Loop-O9310 4E1 or 4T1 Fiber Optical Mux



CPU Version



Non-CPU Version

## Features

- Up to 4 E1 or 4 T1 links on one fiber
- Optical 1+1 protection
- 10/100 BaseT Ethernet: Bridge mode, maximum transmission bandwidth 22Mbps (optional)
- One V.35, X.21, RS449/V.36, RS232/V.28, EIA530, or EIA530(A) interface
- Console and Ethernet port for SNMP management
- Management through SNMP and LoopView
- Remote slave unit can be managed through Embedded Operation Channel (EOC)
- Non-manageable model configurable via DIP switches
- LED indicators
- Alarm relay and alarm cut off
- BNC or RJ45 connectors for 4 E1s (manufacturing option)
- RJ45 connectors for 4 T1s (manufacturing option)
- Multiple optical fiber transmission distances
- Single mode and multi-mode fiber modules

## Description

Loop Telecom's Loop-O Fiber Optical Mux product family provides ideal solutions for building fiber-based E1 or T1 networks. The Loop-O9310 can multiplex up to 4 E1 or 4 T1 signals for transmission over an optical fiber, resulting in longer reach without repeaters and superior performance compared to copper media.

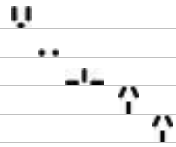
The E1 model supports an optional 1+1 protection, an optional 10/100 BaseT Ethernet port, an optional V.35, X.21, RS449/V.36, RS232/V.28, or EIA530 or EIA530(A) with DTE/DCE selection. It is available in two versions: (1) SNMP manageable and (2) non-manageable. The SNMP manageable model has a master unit with CPU for managing a slave unit, and a slave unit without CPU that is managed by the master unit through EOC. A basic non-manageable model without CPU provides system setup and loopback by DIP switches setting. Applications include interconnections for LAN, WAN, SONET/SDH, ATM, and DLC.

The T1 model is a basic non-manageable model without CPU. DIP switches are used for system setup and loopback settings. Applications include interconnections for 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 (RoHS compliant)	Model (non RoHS compliant)	Description
<b>Main Unit without SNMP management</b>		
Loop-O9310-cc-opt1-opt2-pp-add1-add2- <b>G</b>	Loop-O9310-cc-opt1-opt2-pp-add1-add2	Fiber Optical MUX w/o CPU
<b>Main Unit with SNMP management</b>		
Loop-O9310-CPU-cc-opt1-opt2-pp-add1-add2- <b>G</b>	Loop-O9310-CPU-cc-opt1-opt2-pp-add1-add2	Fiber Optical MUX w/ CPU
Loop-O9310-CPU-3E120V35-opt1-pp-add1- <b>G</b>	Loop-O9310-CPU-3E120V35-opt1-pp-add1	<b>Note:</b> This option offers 3E1 ports and the V.35 DTE port. The V.35 DTE is utilized one E1 bandwidth and the 4 <sup>th</sup> E1 port will not function.
<b>Accessories</b>		
<b>Power Cord (All power cord are RoHS compliant.)</b>		
Loop-ACC-PC-USA	AC power cord for Taiwan/USA	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for the 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-30-1M34F	DSUB-25pin/Male to M34/Female V.35 Conversion cable Length: 30 cm	
Loop-ACC-CAB-DB25M-30-1DB15F	DSUB-25pin/Male to DSUB-15/Female X.21 Conversion cable Length:30 cm	
Loop-ACC-CAB-DB25M-30-1DB37F	DSUB-25pin/Male to DSUB-37/Female RS449 Conversion cable Length: 30 cm	
<b>Tray</b>		
61.000015.A00- <b>G</b>	61.000015.A00	19" Tray (One tray for two base units)
81.TRAY23.000- <b>G</b>	81.TRAY23.000	23" Tray (One tray for two base units)
<b>User's Manual</b>		
Loop-O9310-UM	User's Manual (paper, hard copy-optional). A CD version of the manual is already included as standard equipment.	
<b>Firmware Upgrade</b>		
Loop-O9310-FWUPGR	Firmware Upgrade. Customers who desire to have a firmware upgrade after their warranty has expired can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of software repair and patches on existing functionality as necessary.	

■ Where **cc** =

**Note:** 4T is for O9310-non CPU version only.

**4E120** for RJ48C connector (120 ohm)

**4E75** for BNC connector (75 ohm)

**4T** for RJ48C connector (100 ohm)

■ Where **opt1**= one of the following module types: **(must select one)**

**Note:** All optical modules are RoHS compliant.

opt1=	Description	Note
<b>SAA</b>	single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km	• Use 2 fibers
<b>SBB</b>	single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km	
<b>SCC</b>	single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km)	
<b>SDD</b>	single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km	

<b>SEE</b>	single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km	
<b>SSM</b>	single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km	<ul style="list-style-type: none"> <li>• 1310 nm from master to slave</li> <li>• Order <b>SSM</b> to use with <b>SSS</b></li> <li>• Use 1 fiber</li> </ul>
<b>SSS</b>	single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km	<ul style="list-style-type: none"> <li>• 1550 nm from slave to master</li> <li>• Order <b>SSS</b> to use with <b>SSM</b></li> <li>• Use 1 fiber</li> </ul>

**NOTE:** For other special optical modules, please contact your nearest Loop sales representative.

■ Where **opt2** = one of the following module types (**optional**).

<b>opt2=</b>	<b>Description</b>	<b>Note</b>
<b>SAA</b>	Same as in opt1 table above.	1. Not available if you selected cc=4T (T1) version. 2. If this option is not required, omit the opt2 field in the ordering code. Eg. Loop-O9310-CPU-cc-opt1-pp-add1-add2
<b>SBB</b>	Same as in opt1 table above.	
<b>SCC</b>	Same as in opt1 table above.	
<b>SDD</b>	Same as in opt1 table above.	
<b>SEE</b>	Same as in opt1 table above.	
<b>SSM</b>	Same as in opt1 table above.	
<b>SSS</b>	Same as in opt1 table above.	

**NOTE:** For other special optical modules, please contact your nearest Loop sales representative.

■ Where **pp** is used to select power supply:

<b>pp =</b>	<b>Description</b>	<b>Note</b>
<b>SA</b>	Single AC power supply (100 to 240 Vac)	For AC, choose an appropriate power cord.
<b>SD48</b>	Single DC power supply (-48 Vdc: -36 to -72 Vdc)	
<b>P9</b>	Combination of AC and DC (100 to 240 Vac ; -48 Vdc: -36 to -72 Vdc dual-feed)	

■ Where **add1** is used to select one additional option. If this option is not required, omit the **add1** field in the ordering code.

**Note:** LCD is RoHS compliant.

<b>add1 =</b>	<b>Description</b>	<b>Note</b>
<b>LCD</b>	LCD front panel	For O9310-CPU version only

■ Where **add2** is used to select one of the following additional options. If this option is not required, omit the **add2** field in the ordering code.

<b>add2 =</b>	<b>non ROHS Compliant</b>	<b>ROHS Compliant</b>	<b>Description</b>	<b>Note</b>
<b>DTE</b>	Available	Available	Software-selectable DTE or DCE interface port with DB25 connector that supports V.35, X.21, RS449/V.36, RS232/V.28, EIA530 and EIA530A protocols.	1. For O9310-CPU version only 2. Not available if you selected an opt2 option. 3. Conversion Cable <ul style="list-style-type: none"> <li>● DSUB-25pin/Male to M34/Female V.35 Conversion cable Length: 30 cm</li> <li>● DSUB-25pin/Male to DSUB-15/Female X.21 Conversion cable Length:30 cm</li> <li>● DSUB-25pin/Male to DSUB-37/Female RS449 Conversion cable Length: 30 cm</li> </ul> <b>Note:</b> Conversion cable is not included, order conversion cable separately from accessory.
<b>BR</b>	Available	Available	10/100M Bridge	1. For O9310-CPU version only
<b>BRDTE</b>	Available	Available	Bridge and DTE Card	1. For O9310-CPU version only 2. Not available if you selected an opt2 option. 3. Conversion Cable <ul style="list-style-type: none"> <li>● DSUB-25pin/Male to M34/Female V.35 Conversion</li> </ul>

				cable Length: 30 cm ● DSUB-25pin/Male to DSUB-15/Female X.21 Conversion cable Length:30 cm ● DSUB-25pin/Male to DSUB-37/Female RS449 Conversion cable Length: 30 cm <b>Note:</b> Conversion cable is not included, order conversion cable separately from accessory.
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**Loop-O9310-CPU-4E120-SAA-SD48-LCD-BRDTE**

Loop-O9310 4E1 RJ48C connector (120 ohm) Fiber Optical MUX with CPU, single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB), no opt2 required, single DC (48Vdc) power supply, LCD display, Bridge, and DTE card.

## Loop-O9310 4E1 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

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)
Single	Dual uni-direction	1310	SC (Subscriber Connector)	30
Single	Dual uni-direction	1310	SC (Subscriber Connector)	50
Single	Dual uni-direction	1310	FC (Fiber Connector)	30
Single	Dual uni-direction	1550	SC (Subscriber Connector)	20
Single	Dual uni-direction	1550	SC (Subscriber Connector)	100
Single	Single bi-direction (master)	1310/1550	SC (Subscriber Connector)	30
	Single bi-direction (slave)	1310/1550	SC (Subscriber Connector)	30



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

### E1 Line Interface

Number of E1 lines	4
Line Impedance	120Ω twisted pair, 75Ω for BNC
Line Rate	2.048 Mbps ±50 ppm
Line Code	HDB3
Output Signal	ITU G.703
Clock	Transparent
Connector	RJ48C, BNC

### T1 Line Interface

Number of T1 lines	4
Line Impedance	100Ω twisted pair
Line Rate	1.544 Mbps ±50 ppm
Line Code	B8ZS
Output Signal	ITU G.824
Clock	Transparent
Connector	RJ48C

**Physical/Electrical**

Dimensions	216 x 55 x 285 mm. (W x H x D)
Mounting	Stand-alone
Power Source (AC)	100 to 240 Vac, 50/ 60 Hz
Power Source (DC)	48Vdc : 36-72 Vdc
Power Consumption	≤ 10W
Temperature Range	0°C to 50°C
Humidity	0% - 95% RH (non-condensing)

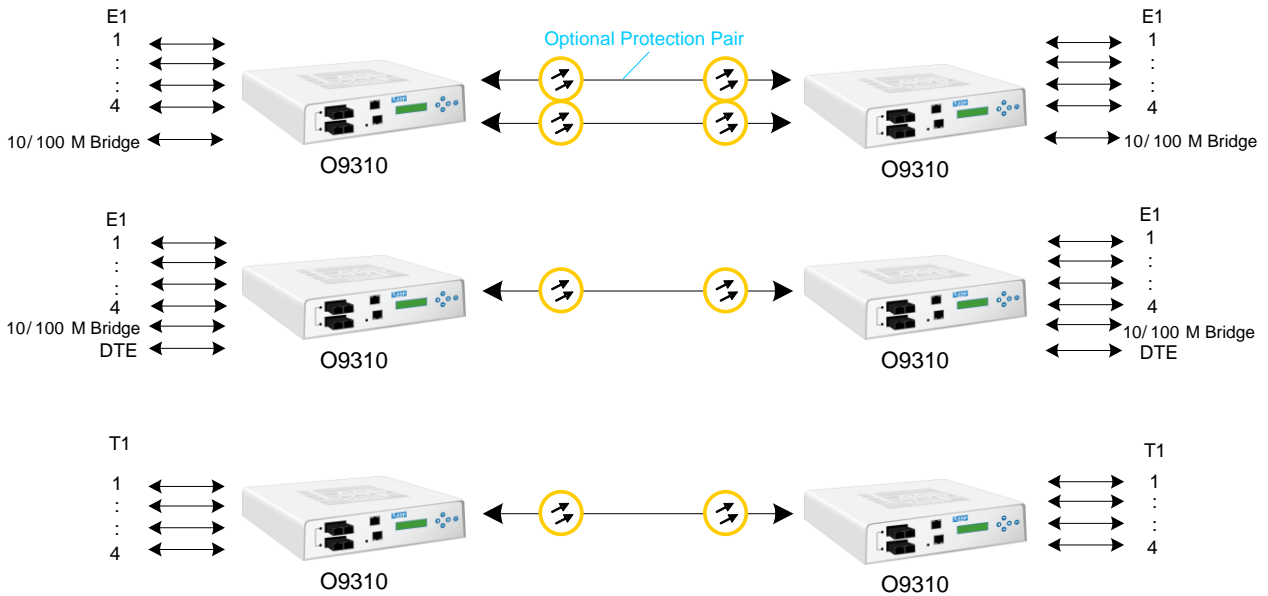
**Diagnostics Test**

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

**Compliance**

EMI/EMC	FCC 15, EN55022, EN55024
Safety	IEC60950

**Application Illustration**



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