



Loop-O9300 Fiber Optical Mux



1U height unit



2U height unit



3U height unit

Features :

- Up to 16 E1/T1 links on one fiber
- Support async Quad RS232 (64Kbps over sampling) (Optional)
- Support synchronous Quad V.35, Quad X.21, Quad RS449/V.36, Quad RS232/V.28, or Quad EIA530 or EIA530(A) (Optional) or Quad V.24 with DTE/DCE selection.
- Support 10/100M Ethernet Bridge (Optional)
- Support optical 1+1 line protection (Optional)
- Support power supply options:
 - Single fixed AC power supply
 - Hot swappable dual AC or DC power supply
- Local and remote performance indicators
- Local and remote 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 indicator

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, model Loop-O9300 can multiplex up to 16 E1/T1 signals for transmission over an optical fiber, resulting in longer reach without repeaters and superior performance compared to copper media.

The Loop-O9300 also supports an optional 10 /100 BaseT port, an optional Quad RS232 async ports to 64Kbps, Quad V.35, Quad X.21, Quad RS449/V.36, Quad RS232/V.28, Quad EIA530 or EIA530(A), or Quad V.24 with DTE/DCE selection.

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 a single pair or dual pair fiber, either a single power supply or dual supplies.

Loop-O9300 offer management through Console port, Ethernet port, Telnet and SNMP agents, so Loop-O9300 support local control and diagnostics using 2-line by 16-character LCD display (optional) and keypads or DB9S console port. The unit also support 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 order specify:

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

Model (non RoHS compliant)	Model (RoHS compliant)	Description	Note
Main Unit			
Loop-O9300-1UAR-n-OPT-pp1-pp2-Add	Loop-O9300-1UAR-n-OPT-pp1- pp2-Add-G	1U height ANSI (rear & front access) shelf w/ RJ48C connector	• where n , OPT , pp1 , pp2 , and Add are defined in below tables
Loop-O9300-ET-1UAR-n-OPT-pp1- pp2-Add	Loop-O9300-ET-1UAR-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-1UAD-n-OPT-pp1-pp2-Add	Loop-O9300-1UAD-n-OPT-pp1- pp2-Add-G	1U height ANSI (rear & front access) shelf w/ DB37 connector	
Loop-O9300-ET-1UAD-n-OPT-pp1- pp2-Add	Loop-O9300-ET-1UAD-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UAB-n-OPT-pp1-pp2-Add	Loop-O9300-2UAB-n-OPT-pp1-pp2-Add-G	2U height ANSI (rear & front access) shelf w/ BNC connector (75 ohm)	
Loop-O9300-ET-2UAB-n-OPT-pp1- pp2-Add	Loop-O9300-ET-2UAB-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UAX-n-OPT-pp1-pp2-Add	Loop-O9300-2UAX-n-OPT-pp1-pp2-Add-G	2U height ANSI (rear & front access) shelf w/ RF-coaxial connector (75 ohm)	• where n , OPT , pp1 , pp2 , and Add are defined in below tables • For Q11, Q22, Q33, Q44, Q66, Q28, Q3A option only)
Loop-O9300-ET-2UAX-n-OPT-pp1- pp2-Add	Loop-O9300-ET-2UAX-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UAR-n-OPT-pp1-pp2-Add	Loop-O9300-2UAR-n-OPT-pp1- pp2-Add-G	2U height ANSI (rear & front access) shelf w/ RJ48C connector	
Loop-O9300-ET-2UAR-n-OPT-pp1- pp2-Add	Loop-O9300-ET-2UAR-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UAD-n-OPT-pp1-pp2-Add	Loop-O9300-2UAD-n-OPT-pp1- pp2-Add-G	2U height ANSI (rear & front access) shelf w/ DB37 connector	
Loop-O9300-ET-2UAD-n-OPT-pp1- pp2-Add	Loop-O9300-ET-2UAD-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-3UAB-n-OPT-pp1-pp2-Add	Loop-O9300-3UAB-n-OPT-pp1-pp2-Add-G	3U height ANSI (rear & front access) shelf w/ BNC connector (75 ohm)	• where n , OPT , pp1 , and Add are defined in below tables
Loop-O9300-ET-3UAB-n-OPT-pp1- pp2-Add	Loop-O9300-ET-3UAB-n-OPT-pp1- pp2-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-1UER-n-OPT-pp1-Add	Loop-O9300-1UER-n-OPT-pp1- Add-G	1U height ETSI (fully front access) shelf w/ RJ48C connector	
Loop-O9300-ET-1UER-n-OPT-pp1- Add	Loop-O9300-ET-1UER-n-OPT-pp1- Add-G	Extended temperature range version. Operates up to 65°C.	• where n , OPT , pp1 , and Add are defined in below tables
Loop-O9300-1UED-n-OPT-pp1-Add	Loop-O9300-1UED-n-OPT-pp1- Add-G	1U height ETSI (fully front access) shelf w/ DB37 connector	
Loop-O9300-ET-1UED-n-OPT-pp1- Add	Loop-O9300-ET-1UED-n-OPT-pp1- Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UEB-n-OPT-pp1-Add	Loop-O9300-2UEB-n-OPT-pp1- Add-G	2U height ETSI (fully front access) shelf w/ BNC connector (75 ohm)	

Loop-O9300-ET-2UEB-n- OPT-pp1- Add	Loop-O9300-ET-2UEB-n- OPT-pp1- Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UEX-n- OPT-pp1- Add	Loop-O9300-2UEX-n- OPT-pp1- Add-G	2U height ETSI (fully front access) shelf w/ RF-coaxial connector (75 ohm)	
Loop-O9300-ET-2UEX-n- OPT-pp1- Add	Loop-O9300-ET2UEX-n- OPT-pp1- Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UER-n- OPT-pp1- Add	Loop-O9300-2UER-n- OPT-pp1-Add-G	2U height ETSI (full front access) shelf w/ RJ48C connector	<ul style="list-style-type: none"> • where n, OPT, pp1, and Add are defined in below tables • For Q11, Q22, Q33, Q44, Q66, Q28, Q3A option only)
Loop-O9300-ET-2UER-n- OPT-pp1-Add	Loop-O9300-ET-2UER-n- OPT-pp1-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-2UED-n- OPT-pp1- Add	Loop-O9300-2UED-n- OPT-pp1-Add-G	2U height ETSI (full front access) shelf w/ DB37 connector	
Loop-O9300-ET-2UED-n- OPT-pp1-Add	Loop-O9300-ET-2UED-n- OPT-pp1-Add-G	Extended temperature range version. Operates up to 65°C.	
Loop-O9300-3UEB-n- OPT-pp1- Add	Loop-O9300-3UEB-n- OPT-pp1- Add-G	3U height ETSI (fully front access) shelf w/ BNC connector (75 ohm)	
Loop-O9300-ET-3UEB-n- OPT-pp1- Add	Loop-O9300-ET-3UEB-n- OPT-pp1- Add-G	Extended temperature range version. Operates up to 65°C.	

Plug-in Power Module

Loop-O9300-SA	Loop-O9300-SA- G	Single AC power supply (90~264Vac)	<ul style="list-style-type: none"> • For AC choose an appropriate power cord.
Loop-O9300-SD24	Loop-O9300-SD24- G	Single DC power supply (24Vdc 18-36 Vdc)	
Loop-O9300-SD48	Loop-O9300-SD48- G	Single DC power supply (48Vdc: 36-72 Vdc)	

Accessories

User's Manual (All User's Manuals are RoHS compliant)

Loop-O9300-UM	Loop-O9300-UM	User's Manual (paper hard copy-optional). A CD version of the manual is already included as standard equipment.	
---------------	---------------	---	--

Power Cord (All power cords are RoHS compliant)

Loop-ACC-PC-USA	Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	Loop-ACC-PC-UK	AC power cord for UK	
Loop-ACC-PC-AUS	Loop-ACC-PC-AUS	AC power cord for Australia	
Loop-ACC-PC-CH	Loop-ACC-PC-CH	AC power cord for China	

■ where **n** is used to select on-board E1 type:

n =	Description	Note
4E	4 E1 lines	
8E	8 E1 lines	
12E	12 E1 lines	
16E	16 E1 lines	
4T	4 T1 lines	
8T	8 T1 lines	
12T	12 T1 lines	
16T	16 T1 lines	

■ where **OPT** is used to select optical module type:

Note: All optical modules are RoHS compliant

OPT =	Description	Note
SAA	single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB)	• Use 2 fibers
SBB	single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km reach (30dB)	
SCC	single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km reach (20dB)	
SDD	single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km reach (12dB)	
SEE	single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km reach (40dB)	
DAA	dual optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB)	• Use 4 fibers
DBB	dual optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km reach (30dB)	
DCC	dual optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km reach (20dB)	
DDD	dual optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km reach (20dB)	
DEE	dual optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km reach (12dB)	
SSM	single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km reach (20dB)	<ul style="list-style-type: none"> • 1310 nm from master to slave • Order SSM to use with SSS • Use 1 fiber
SSS	single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km reach (20dB)	<ul style="list-style-type: none"> • 1550 nm from slave to master • Order SSS to use with SSM • Use 1 fiber
DSM	dual optical modules with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km reach (20dB)	<ul style="list-style-type: none"> • 1310 nm from master to slave • Order DSM to use with DSS • Use 2 fibers
DSS	dual optical modules with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km reach (20dB)	<ul style="list-style-type: none"> • 1550 nm from slave to master • Order DSS to use with DSM • Use 2 fibers

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

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

pp1 =

	non RoHS compliant	RoHS compliant	Description	Note
AC	Available	Available	Fixed AC power supply(90~264 Vac)	<ul style="list-style-type: none"> Units delivered with the fixed AC option have a built-in power supply module. These units will not accept plug-in power supply modules. For AC choose an appropriate power cord
SA	Available	Available	Single AC power supply(90~264 Vac)	
SD24	Available	Available	Single DC power supply (24Vdc 18-36 Vdc)	
SD48	Available	Available	Single DC power supply (48Vdc: 36-72 Vdc)	<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

■ where **pp2** is used to select 2nd power supply for **ANSI shelf** only:

pp2 =

	non RoHS compliant	RoHS compliant	Description	Note
SA	Available	Available	Single AC power supply (90~264 Vac)	<ul style="list-style-type: none"> No power redundancy is available in ETSI shelf. For AC choose an appropriate power cord.
SD24	Available	Available	Single DC power supply (24Vdc: 18-36 Vdc)	
SD48	Available	Available	Single DC power supply (48Vdc: 36-72 Vdc)	

■ where **Add** is used to select other additional options (**Multiple option choices are available**) :

Add =

	non RoHS compliant)	(RoHS compliant)	Description	Note	
BR	Available	Available	10/100M Bridge	<ul style="list-style-type: none"> BR is only supported in 1U and 2U height shelf BR cannot be selected when any of these options (Q11, Q22, Q44, Q66, Q28, Q33, and Q3A) are also selected. 	
55	Available	Available	4-RS232		
LCD	Available	Available	LCD front panel	<ul style="list-style-type: none"> LCD is supported for ANSI shelf only All LCD are RoHS compliant 	
Q11	Available	Available	Quad V.35 with M34 connectors	<ul style="list-style-type: none"> Cannot be selected when BR is selected Only available for below shelves: <ul style="list-style-type: none"> Loop-O9300-2UAR Loop-O9300-2UAD Loop-O9300-3UAB Loop-O9300-2UER Loop-O9300-2UED Loop-O9300-3UEB 	
Q22	Available	Available	Quad V.35 with DB25 connectors		via DB25P to M34S (1-foot) conversion cable
Q44	Available	Available	Quad X.21interface		via DB25P to DB15S (1-foot) conversion cable
Q66	Available	Available	Quad RS449/ V.36		via DB25P to DB37S (1-foot) conversion cable
Q28	Available	Available	Quad RS232/ V.28		DTE/DCE software programmable
Q33	Available	Available	Quad EIA530		

Q3A	Available	Available	Quad EIA530A		
-----	-----------	-----------	--------------	--	--

Example :

■ Loop-O9300-1UAR-8E-DAA-SD48-BR-55-LCD =

Loop-O9300 in 1U height ANSI shelf with RJ48C connector (120 ohm), 8 E1 lines, dual optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km reach (20dB), single plug-in DC (48Vdc) power supply, 10/100M Bridge, 4-RS232, and LCD display.

■ Loop-O9300-SD48 = single DC (48Vdc) power supply. (Redundant power for above example)

Loop-O9300 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 BNC
Line Rate	2.048 Mbps ±50 ppm	Connector	RJ48C, BNC, RF-coaxial, DB37
Line Code	HDB3	Output Signal	ITU G.703
Clock	Transparent		

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

T1 Line Interface

Line Rate	1.544 Mbps ± 50 bps	Output Signal	DSX1
Line Code	AMI or B8ZS	Framing	D4/ESF (selectable)
Input Signal	ABAM cable length up to 655 feet	Connector	RJ48C
Clock	Transparent		

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

4-RS232

Connector DB25
 Data Rate Up to 64Kbps async

Quad V.35

Port Number 4 ports
 Data Rate Nx64kbps (N=1~32)

Quad X.21

- Quad X.21 interface (via DB25P to DB15S (1-foot) conversion cable)

Quad V.36

- Quad RS449/ V.36 (via DB25P to DB37S (1-foot) conversion cable)

Quad V.28

- Quad RS232/ V.28 (DTE/DCE software programmable)

Quad RS530

- Quad RS530 (DTE/DCE software programmable)

Quad RS530A

- Quad RS530A (DTE/DCE software programmable)

Console

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

SNMP Port

Connector RJ45 at rear panel
 Protocol Telnet

Connector M34S, DB25S
 Clock Mode External, Internal, Received (Selectable)

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 255 mm (W x H x D)
 Dimensions for 2U 432 x 88 x 255 mm (W x H x D)
 Dimensions for 3U 432 x 132 x 255 mm (W x H x D)
 Mounting Stand-alone, 19 or 23 inch rack mount
 Power Source (AC) 100 to 240 Vac, 50/ 60 Hz
 Power Source (DC) 24Vdc 18-36 Vdc
 48Vdc: 36-72 Vdc
 Power Protection Optional 1+1 APS
 Power Consumption < 30 W
 Temperature Range Standard Range: 0°C to 50°C
 Extended Range (optional): 0°C to 65°C
 Humidity 0% - 95% RH (non-condensing)

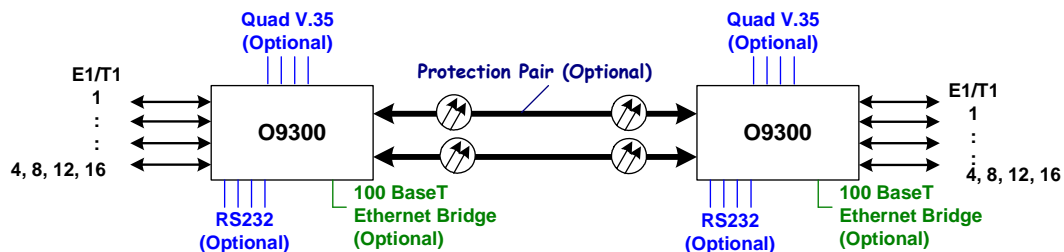
Diagnostics Test

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

Compliance

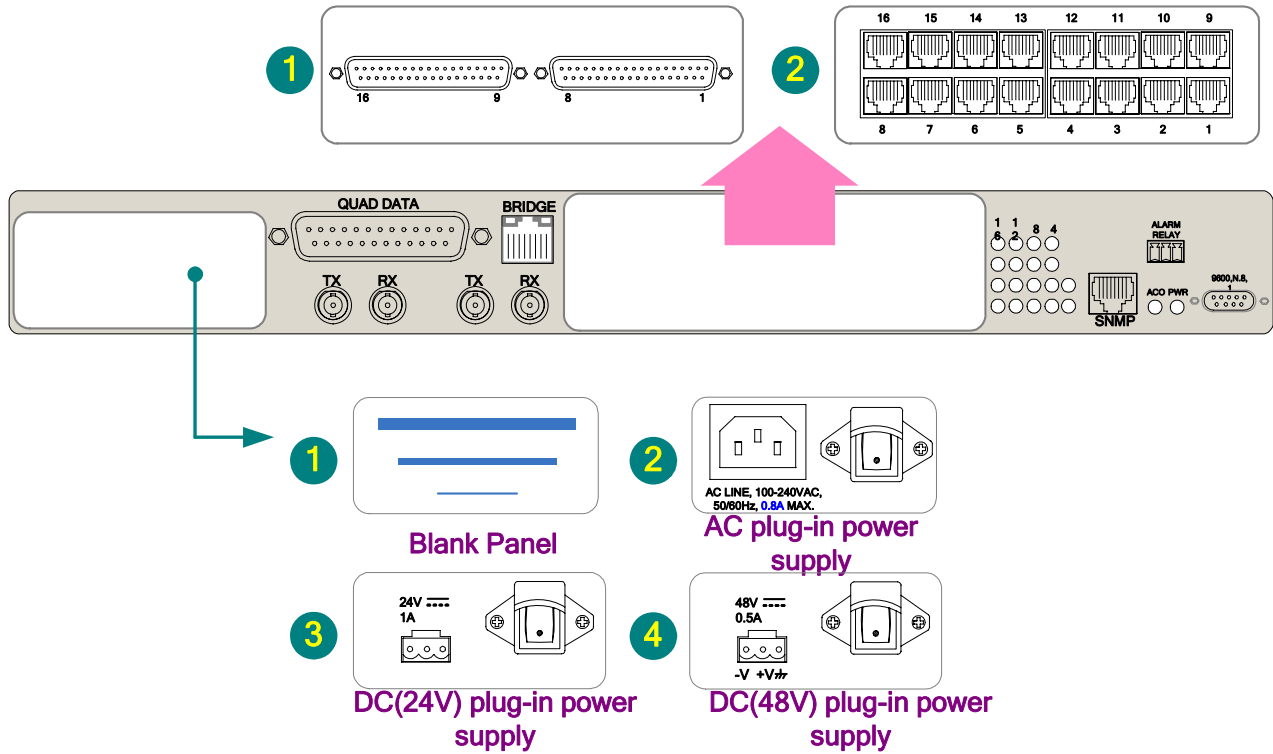
EMI/EMC EN50082-1, EN55022, EN55024
 ITU G.703, G.706, G.732, G.823
 Safety IEC60950

Application Illustrations

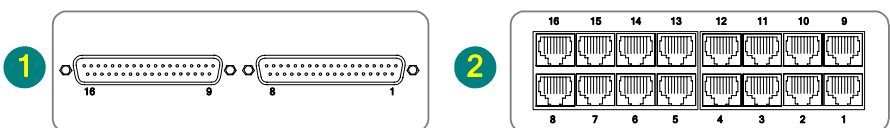
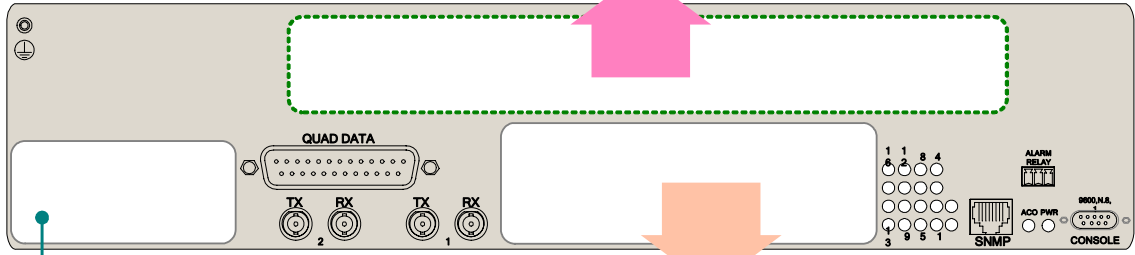
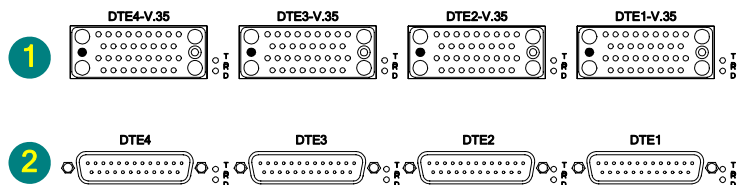


ANSI Rear Panel Views /ETSI Frant Panel Views

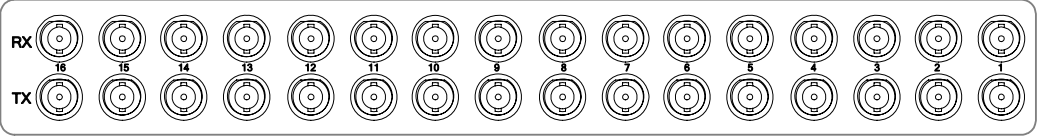
1U Height Chassis ANSI Rear Panels/ ETSI Front Panels



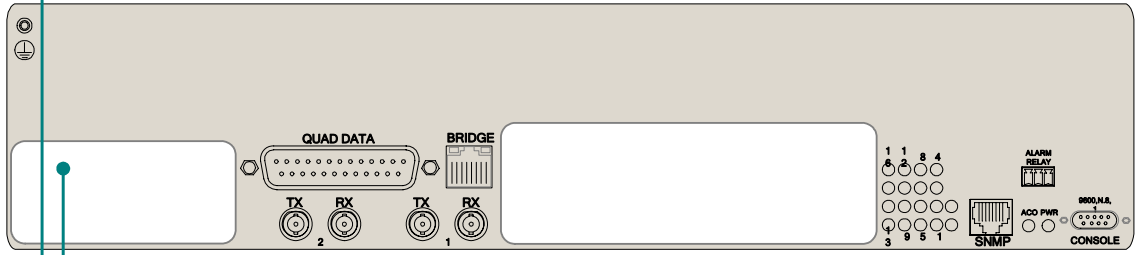
2U Height Chassis ANSI Rear Panels/ ETSI Front Panels



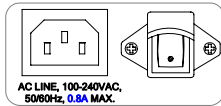
1 BNC connector



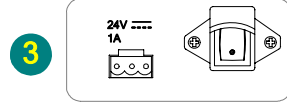
2 RF coaxial connector



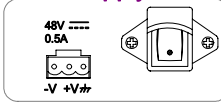
1 Blank Panel



2 AC plug-in power supply

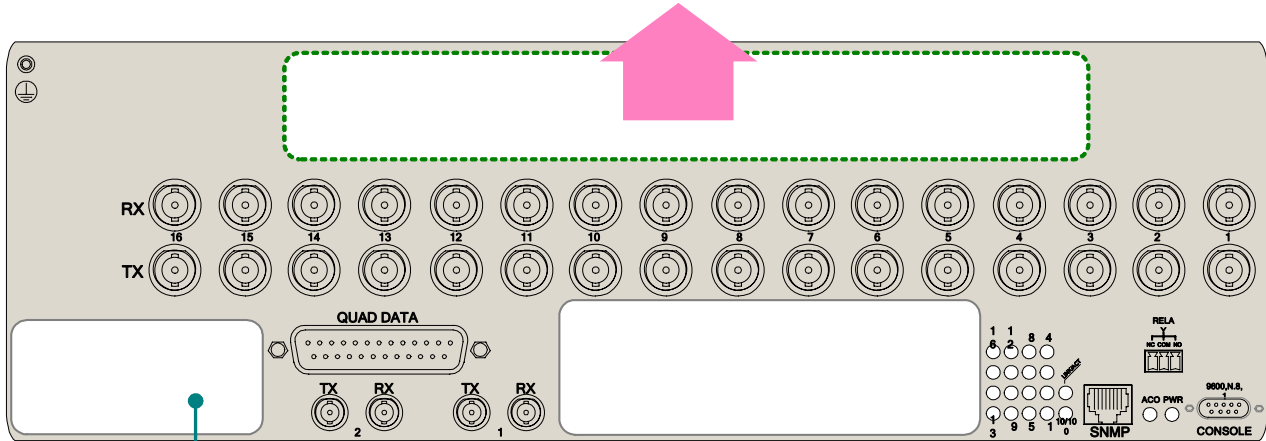
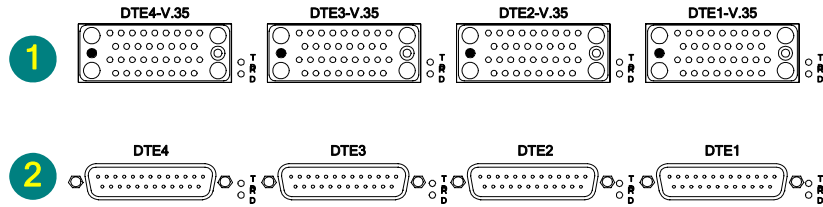



3 DC(24V) plug-in power supply

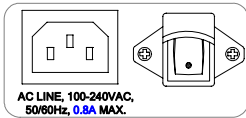


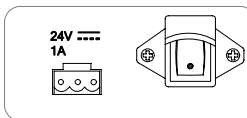
4 DC(48V) plug-in power supply

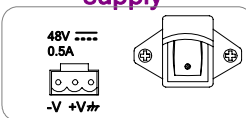
3U Height Chassis ANSI Rear Panels/ ETSI Front Panels



- 1


Blank Panel
- 2


AC plug-in power supply
AC LINE, 100-240VAC, 50/60Hz, 0.8A MAX.
- 3


DC(24V) plug-in power supply
- 4


DC(48V) plug-in power supply



LOOP TELECOMMUNICATION INTERNATIONAL, INC.

Worldwide

8F, No. 8, Hsin Ann Road,
Science-Based Industrial Park
Hsinchu, Taiwan 300
Tel:+886-3-578-7696
Fax:+886-3-564-6272
www.LoopTelecom.com
sales@loop.com.tw

Taipei, Taiwan

6F, No. 36, Alley 38, Lane 358,
Rueiguang Road,
Neihui, Taiwan 11492
Tel:+886-2-2659-0399
Fax:+886-2-2659-2325
michael_tzeng@loop.com

North America

8 Carrick Road
Palm Beach Gardens
Florida 33418, U.S.A.
Tel:+1-561-627-7947
Fax:+1-561-627-6615
jimber561@aol.com

Suzhou China

Tel:+86-512-6252-0456
Fax:+86-512-6252-7641
Sales@looptech.com.cn

Tianjin China

Tel:+86-22-8789-2753
Fax:+86-22-8789-0344
Loop@loop-tj.com