



Loop-O9500 SDH/SONET IMAP



Features

- 6U height, full front access (ETSI) shelf
- TM, ADM and DCS (full cross-connect) at DS0, VC11, VC12, VC3, VC4
- Dual STM-1/4 (OC-3/12) Optical Ring Uplinks
- Hot-swappable cross-connect modules, tributary modules and power modules.
- Tributary Modules (See Table 1 below)
 - High-Speed (aka High Density) access tributary modules (HS)
 - Low-Speed access tributary modules (LS)
- Power Modules
 - DC Module (-48Vdc)
 - Dual Power (1+1) Protection
- Protection Scheme
 - Tributary protection
 - E1/T1: card, port, line
 - E3/T3: line
 - B155/622: MSP, SNCP/UPSR
 - Ethernet
 - 7 FOM: line
 - Cross-connect Unit (XCU) protection
 - MSP
 - SNCP/UPSR
- External/Internal/Line timing source with SSM
- Ethernet supports GFP, LAPS, VCAT, LCAS and non-LCAS
- Full switched Ethernet capability on EoS with built-in L2 switch card
- Ethernet Order Wire (EOW) using VoIP technology
- Alarm suppression, masking and reports
- Management
 - Console port, VT100 menu-driven
 - SNMP Port
 - Telnet
 - Centralized management with Loop's EMS/iNMS over DCC channel
 - LoopView GUI EMS
 - TMN management(Loop-iNMS) with full FCAPS and end-to-end circuit management
 - SSH
- RoHS compliant

Description

The Loop-O9500 SDH/SONET IMAP (Integrated Multi-Services Access Platform) is an economical STM-1/4 (OC-3/12) access multiplexer designed to provide integrated access to STM-1/4 (OC-3/12) optical lines. Access is provided through either a non-blocking VC11/VC12/VC3/VC4 cross-connect with HS modules or through an additional non-blocking DS0 cross-connect fabric with LS modules.

The 6U shelf supports:

- 4 HS tributary module slots
- 6 LS tributary module slots

With up to 10 optical STM-1 (OC-3) or 5 optical STM-4 (OC-12) or 10 electrical STM-1 (OC-3) line interfaces, the Loop-O9500 SDH/SONET IMAP offers service providers a versatile protection schemes including SNCP(UPSR) and MSP(1+1) protection for both ring and linear network topologies. The O9500 can work with the Loop-O9100 and Loop-O9400 in the same topology.

The non-blocking VC11/VC12/VC3/VC4 cross-connect capability on High Speed (HS) is up to 20 VC4. The HS tributary modules include optical STM-1/4 (OC-3/12), E3/T3, E1/T1 interfaces and Fast Ethernet over STM-1/4 (OC-3/12). Fast Ethernet signals are mapped onto STM payload through standard techniques GFP, LAPS, VCAT, LCAS, and non-LCAS. These HS modules are identical to those used in the rack version of the Loop-O9400.

The uplink non-blocking DS0 cross-connect to HS is up to 21 E1 or 28 T1. The non-blocking DS0 cross-connect capability on Low Speed (LS) is up to 768 DS0. Through a full non-blocking DS0 cross-connect and together can act as a mini DACS. The modules include variety of TDM, IP, and voice interfaces detailed on next page. All LS modules are identical to those used in rack version of the Loop-AM3440.

All interfaces are fully compliant with the relevant ETSI standards and ITU recommendations. The O9500 SDH/SONET IMAP provides full Operation, Administration, Maintenance and Provisioning (OAM&P) functionality.

Users can easily operate the O9500 locally or remotely for centralized management with LoopView (EMS) and Loop-iNMS (integrated NMS).

Table 1 Loop-O9500 Tributary Modules:

Tributary Type	Plug-in Interface Cards	Maximum Capacity
High-Speed or High Density Access Tributary Modules (HS)	STM-4 (OC-12) tributaries	1 MSP 1 + 1
	STM-1 (OC-3) tributaries	4 MSP 1 + 1 or 3 Sub-ring SNCP or 6 STM-1 without protection
	63 port E1/T1 tributaries	252 E1/T1 without protection, or 126 E1/T1 with 1+1 card protection
	32 port E1/T1 tributaries	
	16 port E1/T1 tributaries	12 E3/T3 without protection, or 6 E3/T3 with 1+1 card protection
	3 port E3/T3 tributaries	
	EoS (8FE+1GbE) Ethernet card with built-in L2 switch	4 GbE + 32 FE
	EoS (8FE or 1GbE) Ethernet card without L2 switch	4 GbE or 32 FE
7 port FOM tributaries	28 FOM without protection, or 14 FOM with protection	
Low-Speed Access Tributary Modules (LS)	Low Speed Single-Slot Cards	
	8-port Bridge/Router	48-port Bridge/Router
	4-channel E1/T1	24/24-channel E1/T1
	3-channel E1*	18-channel E1*
	2-channel G.SHDSL (2 pairs) without line power	12 channel G.SHDSL (2 pairs) without line power
	4-channel G.SHDSL (1 pairs) without line power	24 channel G.SHDSL (1 pairs) without line power
	8-channel G.703 card at 64 Kbps data rate	48-channel G.703 card at 64 Kbps data rate
	1 or 4 channel C37.94 (low speed optical)	6 or 24 channel C37.94 (low speed optical)
	8-channel RS232/V.24	48-channel RS232/V.24
	8-channel Dry Contact I/O	48-channel Dry Contact I/O
	8-channel Dry Contact I/O type B	48-channel Dry Contact I/O type B
	8-channel 2W/4W E&M	48 channel 2W/4W E&M
	12-channel FXS	72 channel FXS
	12-channel FXO	72 channel FXO
	Conference card *	Conference card *
	12-channel Magneto	72-channel Magneto
	TDMoE	TDMoE
	Low Speed Dual-Slot Cards	
	6-channel V.35	18-channel V.35
	6-channel V.36	18-channel V.36
	6-channel X.21/V.11	18-channel X.21/V.11
	6-channel EIA530/RS449	18-channel EIA530/RS449
	24-channel FXS	72-channel FXS
	24-channel FXO	72-channel FXO

Note: * Future Option

Single-Slot Cards plug into singles slots; Dual-Slot Cards plug into two adjacent single slots

Table 2: Maximum number of channel/port on each plug-in card

Plug-in Card		Slot	TRIB 1	TRIB 2	TRIB 3	TRIB 4	XCU 1	XCU 2	11~16 slot/ per card	Total
E1/T1	For HS slots		63	63	63	63	X	X	X	252 E1/T1
	For LS slots		X	X	X	X	X	X	4E1 4T1	21E1 24T1
Ethernet	FE		8	8	8	8	X	X	X	32
	GbE		1	1	1	1	X	X	X	4
Optical (SFP)	STM-1		2	2	2	2(B)	2	2	X	8
	STM-4		1	1(B)	X	X	2	2	X	4
E3/T3			3	3	3	3	X	X	X	12
7 FOM			7	7	7	7	X	X	X	28
Bridge/Router			X	X	X	X	X	X	8	48
G.SHDSL			X	X	X	X	X	X	2/4	12/24
3 E1*			X	X	X	X	X	X	3	18
G.703			X	X	X	X	X	X	8	48
C37.94			X	X	X	X	X	X	1/4	4/24
Dry Contact			X	X	X	X	X	X	8	48
Dry Contact type B			X	X	X	X	X	X	8	48
RS232/V.24			X	X	X	X	X	X	8	48
Conference* (Note 1)			X	X	X	X	X	X	6	36
12 FXS/FXO			X	X	X	X	X	X	12	72
12 Magneto			X	X	X	X	X	X	12	72
E&M			X	X	X	X	X	X	8	48
V.35/V.36/X.21			X	X	X	X	X	X	6	18
EIA530/RS449			X	X	X	X	X	X	6	18
24 FXS/FXO			X	X	X	X	X	X	24	72
TDMoE			X	X	X	X	X	X	4	24

* Future Option

X: not applicable

(B) Backup

Note 1: A conference plug-in card contains two RS232 data ports, two FXS ports and two E&M ports.

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	Description	Note
Main Unit		
Loop-O9500-R-CHA-G	6U height Rack chassis for O9500 w/o CPU and power	
Plug-in modules		
Loop-O9500-R-CC4-G	CPU card with cross-connect unit and two STM-1/4 (OC-3/12) interfaces without SFP (mini-GBIC) optical modules	One required for each chassis. Order two for redundancy.
Loop-O9500-R-CBA-G	Connector Board	One required for each chassis.
Loop-O9500-R-CBB-G	Connector Board with EoW using VoIP technology	One required for each chassis.
Loop-O9500-R-FANA-G	Fan Board	One required for each chassis.
High Speed or High Density Tributary Modules		
Loop-O9500-R-16TE-G	16 E1 (120 ohm) or 16 T1 software programmable plug-in card	This card can also be used in the Loop-O9400R.
Loop-O9500-R-32TE-G	32 E1 (120 ohm) or 32 T1 software programmable plug-in card	This card can also be used in the Loop-O9400R.
Loop-O9500-R-63TE-G	63 E1 (120 ohm) or 63 T1 software programmable plug-in card	This card can also be used in the Loop-O9400R.
Loop-O9500-R-16E75-G	16 E1(75 ohm) plug-in card	Order two for redundancy. This card can also be used in the Loop-O9400R.
Loop-O9500-R-32E75-G	32 E1(75 ohm) plug-in card	Order two for redundancy. This card can also be used in the Loop-O9400R.
Loop-O9500-R-63E75-G	63 E1(75 ohm) plug-in card	Order two for redundancy. This card can also be used in the Loop-O9400R.
Loop-O9500-R-B16-G	STM-1/4 (OC-3/12) software configurable plug-in card without SFP (mini-GBIC) optical modules	This card can also be used in the Loop-O9400R.
Loop-O9500-R-9EoS4NSW-G	1 GbE or 8FE software programmable plug-in card without L2 switch	This card can also be used in the Loop-O9400R.
Loop-O9500-R-9EoS4SW-G	1GbE and 8FE plug-in card with L2 switch	This card can also be used in the Loop-O9400R.
Loop-O9500-R-3TE3-G	3 T3 or 3 E3 software programmable interface plug-in card	This card can also be used in the Loop-O9400R.
Loop-O9500-R-7FOM-G	7-port Fiber Optical Interface with 7 SFP housings (SFP not included)	
Software		
Loop-O9500-R-3M13	A software key to activate the 3TE3 module to have M13/Mx3 function for T3 interface only	

Low Speed Tributary Modules (Single Slot)

Loop-O9500-R-4E1-cc- G	4-channel E1 plug-in card.	This card can also be used in the Loop-AM3440-A /B/C. For cc option, please refer to the table below for detail information
Loop-O9500-R-4T1- G	4-channel T1 plug-in card	This card can also be used in the Loop-AM3440-A /B/C.
Loop- O9500-R-3E1-cc- G	3-channel E1 plug-in card with DS0 (64K bps) SNCP protection	(future option) For cc option, please refer to the table below for detail information
Loop-O9500-R-2GH- G	2-channel G.SHDSL plug-in card (2 pair)	This card can also be used in the Loop-AM3440-A/B/C.
Loop-O9500-R-4GH- G	4-channel G.SHDSL plug-in card (1 pair)	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-8DC- G	8-channel dry contact plug-in card with maximum voltage 100 Vdc or 250 Vac	This card can also be used in the Loop-AM3440-A /B/C.
Loop- O9500-R-8DCB- G	8-channel dry contact type B plug-in card with maximum voltage 220 Vdc or 250 Vac	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-8CD- G	8-channel G.703 plug-in card at 64 Kbps data rate	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-1C37- G	1- channel C37.94 plug-in card	This card can also be used in the Loop-AM3440-A /B/C
Loop-O9500-R-4C37- G	4- channel C37.94 plug-in card	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-8RS232-RJ- G	8-port RS232 plug-in card with X.50 subrate multiplexing scheme and X.54 encoding, with 8 RJ48 connectors for 8 RS232 Async ports	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-8RS232-DB- G	8-port RS232 plug-in card with X.50 subrate multiplexing scheme and X.54 encoding, with 2 RJ48 connectors and 2 DB44 connectors for Async and Sync ports	Two conversion cables are included. (Each cable has one DB44 connector to one DB9 and two DB25 connectors). This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-RTB- G	8-LAN port/64 WAN ports router/bridge plug-in card	This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-Conf- G	Conference plug-in card with two RS232 data ports, two FXS ports and two E&M ports	(Future option) This card can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R-8EM-x- G	8-channel 2W/4W E&M plug-in card with 8 RJ45	"8EM" card with H/W ver. F (and later versions), F/W V4.01.01 (and later versions) can also be used in the Loop-AM3440-A /B/C. For x option, please refer to the table below.
Loop-O9500-R-12MAG-1G-x- G	12-channel Magneto plug-in module w/ L1. GND	12MAG-1G2 includes all function of MAG cards. For x option, please refer to the table below for detail information.
Loop-O9500-R-12MAG-12-x- G	12-channel Magneto plug-in module w/ L1,L2	
Loop-O9500-R-12MAG-1G2-x- G	12-channel Magneto plug-in module w/ L1,L2 and L1. GND	
Loop- O9500-R-12MAG-A-1G-x- G	12-channel Magneto ring-one-time plug-in module w/ L1. GND	12MAG-A-1G2 includes all function of 12MAG-A cards.
Loop- O9500-R-12MAG-A-12-x- G	12-channel Magneto ring-one-time plug-in module w/ L1, L2	
Loop- O9500-R-12MAG-A-1G2-x- G	12-channel Magneto ring-one-time plug-in module w/ L1, L2, and L1. GND	

Loop-O9500-R-12FXS- sn-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR, without Ground Start and Metering Pulse. Used with 12 RJ11.	12FXS-GMP includes all FXS Card functions. “12FXS-x” cards with H/W ver. L and F/W V.3.01.01 or newer versions. It can also be used in the Loop-AM3440-A /B/C For sn option, please refer to the table below for detail information. pt= power type For pt option, please refer to the table below for detail information
Loop-O9500-R-12FXS-P-sn-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR, without Ground Start and Metering Pulse PLAR bit programmable function. Used with 12 RJ11.	
Loop-O9500-R-12FXS-M-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR, [Metering Pulse]. Used with 12 RJ11.	
Loop-O9500-R-12FXS-MPP-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR and PLAR bit programmable function, [Metering Pulse]. Used with 12 RJ11.	
Loop-O9500-R-12FXS-GS-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR, [Ground Start] . Used with 12 RJ11.	
Loop-O9500-R-12FXS-GM-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR, [Ground Start, and Metering Pulse]. Used with 12 RJ11.	
Loop-O9500-R-12FXS-GMP-pt-G	12-channel FXS plug-in card with 600/ 900 Impedance, Battery Reverse, PLAR and PLAR bit programmable function, [Ground Start, and Metering Pulse]. Used with 12 RJ11.	
Loop-O9500-R-12FXO-G	12-channel FXO plug-in card with 600/ 900 Impedance, Battery Reverse, without Ground Start and Metering Pulse. Used with 12 RJ11.	12FXO-GM includes all FXO Card functions.
Loop-O9500-R-12FXO-M-G	12-channel FXO plug-in card with 600/ 900 Impedance, Battery Reverse, [Metering Pulse] Used with 12 RJ11.	“12FXO-x” cards with H/W ver. G and F/W V2.01.01 or newer versions. It can also be used in the AM3440-A /B/C
Loop-O9500-R-12FXO-GS-G	12-channel FXO plug-in card with 600/ 900 Impedance, Battery Reverse, [Ground Start] Used with 12 RJ11.	
Loop-O9500-R-12FXO-GM-G	12-channel FXO plug-in card with 600/ 900 Impedance, Battery Reverse, [Ground Start, and Metering Pulse] Used with 12 RJ11.	
Loop-O9500-R-TDMoE-PPM-G	TDMoE card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Traffic	

Low Speed Tributary Modules (Dual Slots)

Loop-O9500-R-6X21A-G	6-channel X.21/V.11 card with DB15 connector	These cards will occupy two slots. These cards can also be used in the Loop-AM3440-A /B/C.
Loop-O9500-R -6V35A-G	6-channel V.35 plug-in card with DB25S connector, for M34. (2Mbits per channel) Please order conversion cable connector below.	
Loop-O9500-R -6V36A-G	6-channel V.36 card with DB25 connector via conversion cable to DB37	
Loop-O9500-R-6E530A-G	6-channel EIA530 plug-in card with DB25 connector	
Loop-O9500-R-6RS449A-G	6-channel EIA530/RS449 plug-in card with DB25 connector via conversion cable to DB37	
Loop-O9500-R-24FXS-sn-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and PLAR Without Ground Start and Metering Pulse	24FXS-GMP includes all FXS card functions.
Loop-O9500-R-24FXS-P-sn-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [PLAR bit programmable]. Without Ground Start and Metering Pulse	These cards will occupy two slots. These cards can also be used in the Loop-AM3440-A /B/C

Loop-O9500-R-24FXS-M-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Metering Pulse].	For sn option, please refer to the table below for detail information pt =power type For pt option, please refer to the table below for detail information
Loop-O9500-R-24FXS-MPP-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable] and [Metering Pulse].	
Loop-O9500-R-24FXS-GS-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Ground Start].	
Loop-O9500-R-24FXS-GM-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [Ground Start] and [Metering Pulse].	
Loop-O9500-R-24FXS-GMP-pt-G	24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable], [Ground Start] and [Metering Pulse].	
Loop-O9500-R-24FXO-G	24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse and Loop Start. Without Ground Start and Metering Pulse	24FXO-GM includes all FXO card functions. These cards will occupy two slots. These cards can also be used in the Loop-AM3440-A /B/C
Loop-O9500-R-24FXO-M-G	24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Metering Pulse].	
Loop-O9500-R-24FXO-GS-G	24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Ground Start].	
Loop-O9500-R-24FXO-GM-G	24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, [Ground Start] and [Metering Pulse].	

Accessories

SFP Optical Modules

Please place your order using the 5-digit alphanumeric codes listed in the separate SFP Optical Module Brochure.

User's Manual

Loop-O9500-R-UMA Optional, paper copy of User Manual. A CD version of the manual is already included as standard package.

Power Modules

Loop-O9500-R-SD48-G -48Vdc For redundancy purposes, ordering a second plug-in module will provide dual power.

Power Adaptor(All power adaptor are RoHS compliant)

Loop-ACC-APA-240-G 240 Watt, AC (100 to 120 Vac, 5.0A/200 to 240 Vac, 2.5A auto sensing) to DC (-48 Vdc, 5A) adaptor for USA



Loop-ACC-APE-240-G 240 Watt, AC (100 to 120 Vac, 5.0A/200 to 240 Vac, 2.5A auto sensing) to DC (-48 Vdc, 5A) adaptor for Europe



Loop-ACC-APU-240-G 240 Watt, AC (100 to 120 Vac, 5.0A/200 to 240 Vac, 2.5A auto sensing) to DC (-48 Vdc, 5A) adaptor for UK



FXO BOX

Loop-ACC-FXOBOX Support FXO Interface Feed

Order wire phone

Loop-O9500-R-OW-USA-G Ethernet Order Wire phone (using VoIP technology) with America power plug



Loop-O9500-R-OW-EU-G Ethernet Order Wire phone (using VoIP technology) with Europe power plug



SIP Proxy Server

Loop-O9500-R-SIP SIP Proxy Server Basic Software

Note: One SIP Proxy Server License supports up to 25 phone lines. Multiple licenses must be purchased if the number of phone lines exceeds 25.

Customer must provide a MAC address so that a license key can be generated to operate the software at that address.

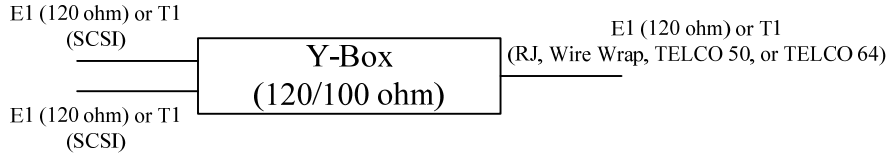
Mounting Ear

19"/23" ear mounts A pair of 19"/23" ear mounts is supplied as part of standard package.
Note: For other sizes, please contact your nearest Loop sales representative.

Conversion Panels

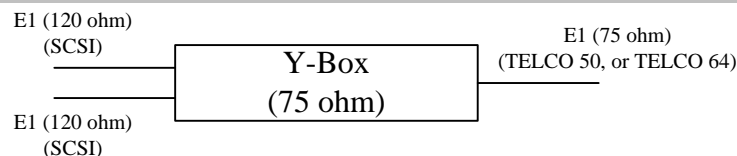
Loop-ACC-P-1SCSI-16RJ-G	1u panel for one SCSI to 16 RJ connectors without cable 432x44x23mm (WxHxD)	Used for: -16TE, -32TE, -63TE This panel can also be used in the Loop-O9400R.
Loop-ACC-P-1SCSI-16WW-G	1u panel for one SCSI to 16 Wire Wrap without cable 432x44x40mm (WxHxD)	Used for: -16TE, -32TE, -63TE, -16E75,-32E75,-63E75 This panel can also be used in the Loop-O9400R.
Loop-ACC-P-1SCSI-16BNC-G	1.5u panel for one SCSI to 16 BNC connectors without cable 432x66x53mm (WxHxD)	Used for: -16E75,-32E75,-63E75 This panel can also be used in the Loop-O9400R.

Y-box Panels for 120/100 ohm



Loop-ACC-Y-2SCSI-16RJ-G	1u Y-box 16-port panel for two SCSI (E1(120 ohm) or T1) to 16 RJ (E1(120 ohm) or T1) connectors without cable	Using with Loop-O9500-R-16TE-G,
Loop-ACC-Y-2SCSI- 16WW-G	1u Y-box 16-port panel for two SCSI (E1(120 ohm) or T1) to 16 Wire Wrap (E1(120 ohm) or T1) without cable	Using with Loop-O9500-R-16TE-G,
Loop-ACC-Y-2SCSI-2T50P8-16TE-G	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to two TELCO 50 (E1(120 ohm) or T1) connectors (8 ports per TELCO connector) without cable	Using with Loop-O9500-R-16TE-G,
Loop-ACC-Y-2SCSI-2T50P12-16TE-G	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to two TELCO 50 (E1(120 ohm) or T1) connectors (12 ports to the first TELCO connector, 4 ports to the second TELCO connector) without cable	Using with Loop-O9500-R-16TE-G,
Loop-ACC-Y-2SCSI-1T64P16-16TE-G	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to one TELCO 64 (E1(120 ohm) or T1) connectors (16 ports per TELCO connector) without cable	Using with Loop-O9500-R-16TE-G,
Loop-ACC-Y-4SCSI-4T50P8-32TE-G	1u 32-port Y-box panel in (E1(120 ohm) or T1) for four SCSI to four TELCO 50 (E1(120 ohm) or T1) connectors (8 ports per TELCO connector) without cable	Using with Loop-O9500-R-32TE-G, Loop-O9400-R-63TE-G
Loop-ACC-Y-4SCSI-3T50P12-32TE-G	1u 32-port Y-box panel in (E1(120 ohm) or T1) for four SCSI to three TELCO 50 (E1(120 ohm) or T1) connectors (12 ports to the first TELCO connector, 12 ports to the second TELCO connector and 8 ports to the third TELCO connector) without cable	Using with Loop-O9500-R-32TE-G, Loop-O9400-R-63TE-G
Loop-ACC-Y-4SCSI-2T64P16-32TE-G	1u 32-port Y-box panel in E1 120 ohm or T1 for four SCSI to two TELCO 64 (E1(120 ohm) or T1) connectors (16 ports per TELCO connector) without cable	Using with Loop-O9500-R-32TE-G, Loop-O9400-R-63TE-G

Y-box Panels for 75 ohm



Loop-ACC-Y-2SCSI-2T50P8-16E75-G	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to two TELCO 50 (E1(75 ohm)) connectors (8 ports per TELCO connector) without cable	Using with Loop-O9500-R-16TE-G
Loop-ACC-Y-2SCSI-2T50P12-16E75-G	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to two TELCO 50 (E1(75 ohm))connectors (12 ports to the first TELCO connector, 4 ports to the second TELCO) straight without cable	Using with Loop-O9500-R-32TE-G, Loop-O9500-R-63TE-G
Loop-ACC-Y-2SCSI-1T64P16-16E75-G	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to one TELCO 64 (E1(75 ohm))connectors (16 ports per TELCO connector) straight without cable	Using with Loop-O9500-R-16TE-G
Loop-ACC-Y-4SCSI-4T50P8-32E75-G	1u 32-port Y-box panel for four SCSI (E1(120 ohm)) to four TELCO 50 (E1(75 ohm))connectors (8 ports per TELCO connector) without cable	Using with Loop-O9500-R-16TE-G
Loop-ACC-Y-4SCSI-3T50P12-32E75-G	1u 32-port Y-box panel for four SCSI (E1(120 ohm)) to three TELCO 50 (E1(75 ohm))connectors (12 ports to the first TELCO connector, 12 ports to the second TELCO connector and 8 ports to the third TELCO connector) without cable	Using for Loop-O9500-R-32TE-G, Loop-O9500-R-63TE-G
Loop-ACC-Y-4SCSI-2T64P16-32E75-G	1u 32-port Y-box panel for four SCSI(E1(120 ohm)) to two TELCO 64 (E1(75 ohm))connectors (16 ports per TELCO connector) without cable	Using with Loop-O9500-R-32TE-G, Loop-O9500-R-63TE-G

Y-Box(All Y-Box are RoHS compliant)

Loop-VV-B-G	1 for 1 protection Y-Box with BNC connectors (4-E1)	Used with 4E1
Loop-VV-R-G	1 for 1 protection Y-Box with RJ48C connectors (16-E1)	Used with 4E1
Loop-VV-T-G	1 for 1 protection Y-Box with RJ48C connectors (16-T1)	Used with 4T1

Conversion Cables(All conversion cables are RoHS compliant)

Loop-ACC-CAB-SCSI68M-200-1SCSI68M-G	SCSI 68 pin/Male to SCSI 68 pin/Male Extension Cable Length:200cm	Used in Loop-O9500-R Y-box panels and conversion panels
Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB	DSUB-44 pin/Male to two DSUB-25 pin/Female-one DSBU-9 pin/Female Length 100cm	Used in Loop-O9500-R-8RS232-DB-G plug-in card
Loop-ACC-CAB-DB25M-30-1M34F	DSUB-25pin/Male to M34/Female V.35 Conversion cable Length: 30 cm	Used in Loop-O9500-R-6V35A-G plug-in card
Loop-ACC-CAB-DB25M-30-1DB37F	DSUB-25pin/Male to DSUB-37/Female RS449 Conversion cable Length: 30 cm	Used in Loop-O9500-R-6V36A-G and Loop-O9500-R-6R449A-G plug-in cards

Blank Panels

30.001397.A00LF	Blank panel for CPU slot	
30.001076.A00LF	Blank panel for power supply slots	Same as that used on O9400R.
30.001077.A00LF	Blank panel for High-speed slots (Slots 1~4)	Same as that used on O9400R.
30.001027.A00LF	Blank Panel for Low-speed slots (Slots 11~16)	Same as that used on AM-3440-CHA.

For 4E1 card

■ Where **cc** is used to select connector:

cc =	Description	Note
RJ	RJ48C connector	
BNC	BNC connector	

For 12/24-channel FXS card:

■ Where **sn** is used to select special function. If this option is not required, omit the **sn** field in the ordering code.

sn =	Description	Note
S1	FXS Loop Feed = -48 Vdc with 35 mA current limit	
S4	Remove alarm tone	
S5	Double ring tone transmit	

Note: For **sn** (special function), please contact your nearest Loop sales representative.

■ Where **pt** is used to select the following functions.

pt=	Description	Note
PWR	complied with -48 Vdc (SD48) power modules	
PWRIE1613	complied with IEEE1613 standard, and with -48 Vdc (SD48) power modules	

For 8E&M Card:

■ Where **x** is used to select all of voice card signaling bits:

8EM	x =	Description	Note
	E	Follows ETSI signaling bits	Jumper selectable for all channels
	A	Follows ANSI signaling bits	
	R	Reverse for ON-HOOK and OFF-HOOK signaling bits exchange	
	AR	Follows ANSI signaling bits and reverse bit	
	S	Follows customer's special bit or function assignment	
	S4	Disable the function of the test button	
	S5	Forcing all ports to be OFF-HOOK when an alarm occurs	
	S6	Forcing all ports to be ON-HOOK when an alarm occurs	

Note: For S (customer's special bit), please refer to SFP brochure or contact your nearest Loop sales representative.

For Magneto Card

■ Where **x** is used to select version type:

x=	Description	Note
16	16 Hz ring generator	20 Hz is the general setting for all MAG cards. For special settings (16,25,50), please specify your need by filling in the x option.
20	20 Hz ring generator	
25	25 Hz ring generator	
50	50 Hz ring generator	

For Example:

Loop-O9500-R-CHA-G, Loop-O9500-R-CBA-G, Loop-O9500-R-FANA-G, Loop-O9500-R-CC4-G, Loop-O9500-R-63TE-G, Loop-O9500-4E1-RJ, Loop-O9500-R-4GH, Loop-O9500-R-SD48:

For model O9500 6U height Rack chassis with one CPU card, one connect board, and one Fan board, one 63E1 software programmable interface plug-in card, one 4-channel E1 interface with RJ48C connectors, one 4-channel G.SHDSL plug-in card (1-pair), and a single -48 Vdc power module.

Loop-O9500 SDH/SONET IMAP PRODUCT SPECIFICATION

High Speed or High Density Tributary Modules

Max. Number of Aggregate Lines

4 STM-1/4 (OC-3/12) aggregate optical lines or
4 STM-1 (OC-3) aggregate electrical lines

Max. Number of Tributary Lines

4 STM-4 (OC-12) tributaries without protection
8 STM-1 (OC3) tributaries without protection
12 E3/T3 tributaries without protection
252 E1/T1 tributaries without protection
4 GbE +32 FE EoS with build in L2 switch tributaries without protection
4 GbE or 32 FE EoS without build in L2 switch tributaries without protection
28 FOM tributaries without protection

T1 Interface

Line Rate	1.544 Mbps \pm 32 ppm	Jitter	ITU G.824
Line Code	AMI/B8ZS	Framing	Unframed with a framing monitor on receiving side
Input Signal	ITU G.703 DSX-1 0dB to -6dB	Impedance	100 ohm twisted pair
Output Signal	ITU G.703 DSX-1 w/short (0-110, 110-220, 220-330, 330-440, 440-550, 550-660 (feet))	Connector	SCSI-II 68-pin One connector for 16 ports Two connectors for 32 ports Four connectors for 63 ports
Output Mask	Bellcore GR-499-core		

E1 Interface

Line Rate	2.048 Mbps \pm 50 ppm	Jitter	ITU G.823
Line Code	AMI/HDB3	Framing	Unframed with a framing monitor on receiving side
Input Signal	ITU G.703	Impedance	75 ohm coax/120 Ω twisted pair
Output Signal	ITU G.703	Connector	SCSI-II 68-pin One connector for 16 ports Two connectors for 32 ports Four connectors for 63 ports
Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703		

E3 Interface

Line Rate	34.368 Mbps \pm 20ppm	Jitter	ITU G.823
Line Code	HDB3	Framing	Unframed, G.751
Input Signal	ITU G.703	Impedance	75 ohm coax
Output Signal	ITU G.703	Connector	BNC connector
Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703		

T3 interface

Line Rate	44.736 Mbps \pm 20ppm	Jitter	ITU G.824
Line Code	B3ZS	Framing	Unframed, M13/Mx3 (unframed E1/T1), G.747
Input Signal	ITU G.703	Impedance	75 Ω coax
Output Signal	ITU G.703	Connector	BNC connector
Output Mask	Bellcore GR-499-core		

Fast Ethernet interface

Line Rate	10/100M bps	Mapping	n x VC12, n x VC3, or n x VC4
Layer2 Protocol	RSTP (802.1W), VLAN (802.1Q, 802.1P) Flow Control (802.3X) MSTP (802.1S) IGMP Snooping QoS	Connector	RJ45
Process Protocol	VCAT, GFP(G.7041), LAPS, LCAS(G.7042), and non-LCAS		

Gigabit Ethernet interface

Line Rate	10/100/1000Mbps	Mapping	n x VC12, n x VC3, or n x VC4
Layer2 Protocol	RSTP (802.1W), VLAN (802.1Q, 802.1P) Flow Control (802.3X) MSTP (802.1S) IGMP Snooping	Connector	RJ45

Process Protocol QoS
 VCAT, GFP(G.7041), LAPS,
 LCAS(G.7042), and non-LCAS

7 FOM

Fiber Optical Interface

Port number	7	
Source	Laser	Line Code Scrambled NRZ
Wavelength	1310 ± 50 nm, 1550 ± 40 nm	
Optical Line Rate	38.84Mbps	
Connector	SFP housing with LC type	
Reach	2~240 Km	Protection 1+1 Line Protection

(For more detail, please refer to the SFP table below)

Diagnostics Test

Optical Fiber	Local and remote loopbacks
E1 Link	Local and remote loopback, send test pattern

Low Speed Tributary Modules

Network Line Interface – 4E1

Line Rate	2.048 Mbps ± 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703	Electrical	75 ohm Coax/120 ohm twisted pair
Output Signal	ITU G.703	Jitter	ITU G.823

Network Line Interface - 4T1

Line Rate	1.544 Mbps ± 32 ppm	Output Signal	DSX1w/0, -7.5, -15 dB LBO
Line Code	AMI or B8ZS	Framing	D4/ESF (selectable)
Input Signal	DSX-1 0 dB to -30 dB w/ALBO	Connector	RJ48C

Network Line Interface - 3E1*

Line Rate	2.048 Mbps ± 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703	Electrical	75 ohm Coax/120 ohm twisted pair
Output Signal	ITU G.703	Jitter	ITU G.823
Function	Support DS0-SNCP		

G.shdsl Line Interface (2GH/4GH)

Number of ports	2 or 4
Line Rate for 4-channel G.shdsl	n x 64Kbps (n= 3 to 31)
Line Rate for 2-channel G.shdsl	n x 64Kbps (n= 3 to 15)
Line Code	16-TCPAM, full duplex with adaptive echo cancellation
Connector	RJ45
Electrical	Unconditioned 19-26 AWG twisted pair
Sealing current	Max. 20 MA source current
Clock Source	From System, Line
Diagnostic Test	G.SHDSL Loopback: To-LINE, To-bus BERT: QRSS

DTE(X.21/V.11) Interface (6X21A)

Data Port	Up to six 6-port DTE X.21 card; 1-port DTE X.21 card
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	DB15

DTE (V.35/ V.36) Interface (6V35A/6V36A)

Data Port	Up to six 6-port DTE V.35/ V.36 cards
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	For V.35 card: DB25S (optional conversion cable DB25S to M34 connector) For V.36 card::DB25S (optional conversion cable DB25S to DB37 connector)

DTE (EIA530/RS449) Interface (6 EIA530A/6RS449A)

Data Port	Up to six 6-port EIA530 DTE card
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	DB25S (optional conversion cable DB25S male to DB37 female connector for RS449)

C37.94 Interface (1/4C37)

Source	LED
Wavelength	820nm 2Km reach
Connector	ST

Optical Budget 50 Mircon core/9.6 db
 62.5 Mircon core/ 15db

Dry Contact I/O card (8DC)

Inputs -		Outputs -	
8-channel	2-port per card, 4-pair per port	8-channel	8-pair per card
Connector	RJ45	Connector	Screw type
Internal Resistance	1 K	Initial Insulation Resistance	Min. 100M ohm (at 500 Vdc)
Activation Current	3 ma	Max. Current	5A
Deactivation Current	1.5 ma	Max. Voltage	100 Vdc, 250 Vac
Allowable Current	4 ma		

Dry Contact Type B Interface

Inputs -		Outputs -	
8-channel	2-port per card, 4-pair per port	8-channel	8-pair per card
Connector	RJ45	Connector	Screw type
Internal Resistance	100 K	Initial Insulation Resistance	Min. 1000M ohm (at 500 Vdc)
Activation Current	3 ma	Max. Current	2A
Deactivation Current	1.5 ma	Max. Voltage	220 Vdc, 250 Vac
Allowable Current	4 ma		

Co-directional (G.703) card

Interface ITU G.703 64 Kbps co-directional interface
 Connector 120ohm, RJ48
 Line Distance Up to 500 meters
 Loopback DTE Payload Loopback, Local Loopback

Router-B Interface (RTB)

Number of ports 8 LAN ports, Max. 64 WAN ports. Each WAN port has data rate $n \times 64K$ bps, $1 \leq n \leq 32$
 ($\leq 8Mbps$ for total of all 64 WAN ports)
 Physical Interface 10/100 BaseT x 8
 Connector RJ45
 Routing protocol RIP-I, RIP-II, OSPF, Static
 Supporting Protocols PPP (IPCP/BCP), MLPPP, HDLC, Frame Relay, and Cisco compatible HDLC, NAT/NAPT, DHCP
 Diagnostic Ping, Trace route
 QoS Rate limit

DTE(RS232-X.50 mux. 8-port) Interface (RS232/V.24)

Data Port Up to twelve 8-port RS232 cards
 MUX Maximum 5 subrate port per 64K bps
 Data Rate Asynchronous Mux mode 0.6K, 1.2K, 2.4K, 4.8K, 9.6K
 Independent mode 0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K
 Synchronous Mux mode 0.6K, 1.2K, 2.4K, 4.8K, 9.6K
 Independent mode 0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 48K, 64K

	Port Number							
Card Type	1	2	3	4	5	6	7	8
Eight RJ48	Async	Async	Async	Async	Async	Async	Async	Async
Two DB44 + Two RJ48	Async/Sync	Async/Sync	Async	Async/Sync	Async/Sync	Async	Async	Async

Connector Eight RJ48 (port 1 to port 8)
 Conversion Cable DB44 (port1,port2,port3), DB44 (port4,port5,port6), RJ48 (port7) and RJ48(port8)
 Electrical A three-into-one conversion cable adapts the DB44 connector to 3 connectors (one DB9S and two DB25S)
 RS232 Interface, DCE

Voice Card- E&M

Connector Eight RJ45
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law, user selectable together for all
 Impedance Balanced 600 or 900 ohms
 Longitudinal Conversion Loss > 46dB
 Longitudinal Balance > 63dB
 Gain Adjustment (Per-port setting) -10 to +7 dB / 0.1dB step for transmit (D/A) gain
 -10 to +14 dB / 0.1dB step for receive (A/D) gain
 I/O voice power range A/D digital input level: -66 dBm (0.00039 Vrms) ~ + 3 dBm (1.09 Vrms)
 D/A analog output level: -66 dBm (0.00039 Vrms) ~ + 7 dBm (1.74 Vrms)
 Signal/Distortion > 25dB with 1004 Hz, 0dBm input
 Frequency Response - 0.25 to -1 dB from 300 to 3400 Hz
 Carrier connection Side A (exchange side) and Side B (carrier side) setup by side switch
 Idle Channel Noise Max. -65 dBm0p
 wire mode 2 wire and 4 wire (programmable)

Signaling Type 1, Type 2, Type 3, Type 4, and Type 5, Transmit only (programmable)
 Modems Full compatibility with V.90 modems
 All in-band signaling tones are carried transparently by the digitizing process.
 Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch.

Voice Card 12 MAG (Magneto)

Connector Twelve RJ11
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law, user selectable together for all
 Impedance Balanced 600 or magneto telephone impedance match
 Longitudinal Conversion Loss > 46dB
 Gain Adjustment -21 to +10 dB / 0.1dB step transmit & receive
 Signal/ Distortion > 25dB with 1004 Hz, 0dBm input
 Frequency Response - 0.25 to -1 dB from 300 to 3400 Hz, coincide with ITU-T G.712
 Idle Channel Noise Max. -65 dBm0p
 Min Detectable Ringing Voltage 16 Vrms
 Ringing Detectable Across L1 and L2 (Tip and Ring), L1 and GND (Tip and GND)
 Ringing Generation Voltage: 76 Vrms (sine wave)
 Frequency: 20Hz (with optional choices of 16, 25, 50 Hz)
 Cadence:
 1. Normal:
 Ring after crank
 2. PLAR ON:
 -Single Ring Type: ring for 2 sec. and stop, or ring for 4 sec. and stop
 -Continuous Ring Type: 1 sec on 2 sec off, or 2 sec on 4 sec off
 Ringing Send Across L1 and L2 (Tip and Ring), L1 and GND (Tip and GND)
 Signaling Magneto MRD(Ringing across Tip and Ring or Tip and Ground)
 Signaling Bit A,B,C,D Programable
 Signaling is carried transparently by the digitizing process.
 Use Magneto card default setting for communications between magneto telephones
 Use Magneto card PLAR mode setting for communications between a magneto telephone and a regular telephone

Voice Card (12FXS, 12FXO, 24FXS, 24FXO)

Connector 12 FXS:Twelve RJ11 or 24 FXS: One RJ21X
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law, user selectable together for all
 AC Impedance Balanced 600 or 900 ohms (selectable together for all)
 Longitudinal Conversion Loss > 46dB
 Cross talk measure Max -70dBm0
 Gain Adjustment -21 to +10 dB / 0.1dB step transmit & receive
 Signal/ Distortion > 25dB with 1004 Hz, 0dBm input
 Frequency Response - 0.25 to -1 dB from 300 to 3400 Hz, coincide with ITU-T G.712
 Idle Channel Noise Max. -65 dBm0p
 Variation of Gain ± 0.5 dB
 FXO Ringing REN 0.5B (AC)
 Detectable Ringing 25 Vrms
 Loop Resistance $\leq 1800 \Omega$
 DC Impedance (ON-HOOK) > 1M Ω
 DC Impedance (OFF-HOOK) 235 Ω @ 25 mA feed
 90 Ω @ 100 mA feed
 FXS Loop Feed -48Vdc with 25mA current limit per port
 Jumper Selectable: 25mA, 30mA, 35mA
 FXS signalling Normal / Automatic Ring down
 FXS Ringing 1 REN at 5K meters per port
 16.7Hz, 20Hz, 25Hz, 50Hz, user selectable for all ports
 38 to 85 Vrms (sine wave), 76 Vrms for default Ring Voltage
 2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR
 Signaling Loop Start, DTMF, pulse, PLAR, Battery Reverse
 Optional Signaling (for special Ground Start, Metering pulse (12 KHz, 16 KHz), and P(in PLAR mode, PLAR signalling bits are programmable.
 order)
 Signaling Bit A,B,C,D Programable bit
 • All in-band signaling tones are carried transparently by the digitizing process.
 • Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch.

Conference Card*

<u>RS232 Interface</u>	
Data Port	2-ports per card
ASync Data Rate	300, 600, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K
Sync	not supported
Connector	Two DB9, DCE, female
<u>FXS Voice Interface</u>	
Connector	Two RJ11
Encoding	G.723
Longitudinal Conversion Loss	> 46dB
Cross Talk Measure	Max -70dBm0
Gain Adjustment	transmit (D/A) gain 0, +6dB receive (A/D) gain +6, 0, -6dB
Signal/ Distortion	> 25dB with 1004 Hz, 0dBm input
Idle Channel Noise	Max. -65 dBm0p
Loop Resistance	Max 1800 ohm
FXS Loop Feed	-48 Vdc with 25mA current limit
FXS Ringing	2 REN 20Hz 76 Vrms 2 sec on / 4 sec off for 1 min, or 1 sec on / 2 sec off for 30 sec (programmable)
Signaling	Loop Start, DTMF
<u>E&M Voice Interface</u>	
Connector	Two RJ45
Encoding	G.723
Impedance	Balanced 600 ohms
Longitudinal Conversion Loss	> 46dB
Gain Adjustment	transmit (D/A) gain 0, +6dB receive (A/D) gain +6, 0, -6dB
Signal/Distortion	> 25dB with 1004 Hz, 0dBm input
Idle Channel Noise	Max. -65 dBm0p
Carrier Connection	Side A = exchange side, Side B = carrier side (Jumper selectable)
Phone line power+12V	Type P (Jumper enable)
Operation mode	Master, standard (Jumper selectable)
Wire Mode	4 wire
Signaling Type	Type 1, Type 4, and Type 5 (Jumper selectable)
EM Ringing	Single rainging for 5 sec only 2 sec on / 4 sec off for 1 min, or 1 sec on / 2 sec off for 30 sec (programmable)

TDMoE

Combo Gigabit Ethernet(GbE) Interface

Number of Ports	2
Speed	10/100/1000M bps
Connector	RJ45 for twisted pair GbE, LC for optical GbE, auto detection

Gigabit Ethernet(GbE) Interface

Number of Port	2
Speed	10/100/1000 BaseT
Connector	RJ45

Ethernet Function

Basic Features	MDI/MDIX for 10/100/1000M BaseT auto-sensing Ping function contained ARP Per port, programmable MAC hardware address learn limiting (max. MAC table 8192 (8k) entry) Packet Delay Variation: <ul style="list-style-type: none">- Unframed T1: Up to 340 ms- Framed T1: Up to 256 ms- E1: up to 256 ms- Framed T1 with CAS: Up to 192 ms
Packet Transparency	Packet transparency support for all types of packet types including IEEE 802.1q VLAN and 802.1ad (Q-in-Q)
QoS	User configurable 802.1p CoS, ToS in out going IP frame
Traffic Control	Ingress packet Rate limiting buckets per port for ethernet port Supporting Rate-based and Priority-based rate limiting for LAN port Granularity: <ul style="list-style-type: none">a. From 64 Kbps to 1 Mbps in increments of 64 Kbpsb. From 1 Mbps to 100 Mbps in increments of 1 Mbpsc. From 100 Mbps to 1000 Mbps in increments of 10Mbps Pause frame issued when the traffic exceeding the limited rate before packet dropped following IEEE802.3X
Link Aggregation	WAN support link aggregation

Jitter & Wander

PPM: per G.823 Traffic

Standard Compliance

IETF	TDMoIP (RFC5087), SAToP (RFC4553), CESoPSN (RFC5086)
IEEE	802.1q, 802.1p, 802.1d, 802.3, 802.3u, 802.3x, 802.3z, 802.1s, 802.1w, 802.1AX

EoW with VoIP Technology

Data Networking

Router or Bridge Mode of Operation

Voice Gateway

SIPv2 Session Initiation Protocol Version 2 (RFC3261, 3262, 3263, 3264)
Voice Algorithms G.711 (A-law and mu-law)
Attenuation Gain Adjustments

Physical Interfaces

Two RJ-45 Port Ethernet 100BaseT Interface (IEEE 802.3)
Two RJ-11 FXS Port For Analog Circuit Telephone Device (Tip/Ring)

Subscriber Line Interface Circuit(SLIC)

Ring Voltage 40 – 55 V_{RMS} Configurable
Ring Frequency 10Hz – 40Hz
Ring Waveform Trapezoidal and Sinusoidal
Max. Ringer Load 3 REN
On-hook/off-hook Characteristics
 On-hook voltage (tip/ring) : -50 V_{NOMINAL}
 Off-hook current : 20 mA min
 Terminating Impedance : 600 ohms

Regulatory Compliance

FCC Part 15 Class B
CE Mark
ICES-003
ESD level Class B
 Air: ± 8Kv
 Contact: ± 4Kv

Power Supply

DC Input Voltage: +5 VDC at 2.0 A Max.
Power Consumption 5 Watts

Indicator Lights

Indicator Lights/LED Power

Storage Temperature

Storage Temperature -13°F to 185°F (-25°C to 85°C)

Unit Dimensions

W x H x D 122.5mm x 43.7mm x 92.8mm

System Clock

Clock Source Internal clock
 4 aggregate lines clocks (STM-1/4 (OC-3/12))
 External clocks: 2.048MHz or 2.048Mbps for STM-1/4, 1.544M bps for OC-3/12

Management Interface

LED Multi colors
Console Electrical: RS232
 Connector: DB9S (DCE)
 Protocol: Menu driven VT-100
SNMP SNMPv1, v3 (RFC1213, RFC2863, RFC1493)
OSS interface 10/100BaseT FE (IEEE 802.3u)
NE/NE interface DCC/HDLC/Ethernet type II

Alarm Input/Output

Inputs

Channel 4
Connector RJ45
Internal Resistance 1K
Activation Current 3 ma
Deactivation Current 1.5 ma
Allowable Current 4 ma

Outputs

Channel 4
Connector RJ45
Initial Insulation Resistance Min. 100M ohm (at 500Vdc)
Maximum switching voltage 110 V DC, 125 V AC

Diagnostics

XCU card

Loopback Test Local loopback, payload loopback, line loopback
BERT Test Optical interface Direction: to optical lines

B155/622 card

Loopback Test Local loopback, payload loopback, line loopback:
BERT Test Optical interface Direction: to optical lines

E1/T1 card

Loopback Test Local loopback, line loopback:
BERT Test E1/T1 interface Direction: to optical lines, to tributary lines

Performance Monitor

Performance Reports Performance Parameters: Error Block (EB), Background Block Error (BBE), Error Second(ES), Burst Error Second (BES), Severe Error Second (SES), Unavailable Second(UAS)

Alarm History System Alarm Alarm Cut Off, Power Loss/Uneqp, Fan Fail, Fan Module Uneqp, Overheat, TS Sync Loss, Logon and Logout, Optical Port Uneqp, Card In, Card Out, Card Type Mismatch, Card Port Number Mismatch, Card Fail, Card Registration, SNCP Switch, MSP Switch, Trib Protection Sync, Standby XCU Takeover, Standby Trib Takeover, XCU Sync, SFP Tx Fail, SFP Rx Fail, SFP Temperature, LS Protection, LS ID Mismatch

SDH/SONET Line Alarm	SDH	Line	PI-LOS RS-LOF RS-TIM MS-SD MS-SF MS-AIS MS-RDI MS-REI B1-BIP B2-BIP
		Ho-Path	AU-LOP AU-AIS HP-SD HP-SF HP-UNEQ HP-PLM HP-TIM HP-RED-P HP-RDI-S HP-RDI-C HP-LOM HP-REI
		Lo-Path	TU-LOP TU-AIS LP-SD LP-SF LP-UNEQ LP-PLM LP-TIM LP-RDI-P LP-RDI-S LP-RDI-C LP-REI LP-BIP

SONET	Line	LOS-PI, LOF-S, TIM-S, SD-L, SF-L, AIS-L, RDI-L, REI-L UAS, B1-BIP, B2-BIP
-------	------	---

Alarm History STS-Path LOP-P, AIS-P, SD-P, SF-P, UNEQ-P, PLM-P, TIM-P, RDI-P-P, RDI-S-P, RDI-C-P, RDI-P-P, LOM-P, REI-P, B3-BIP-P

VT-Path LOP-V, AIS-V, SD-V, SF-V, UNEQ-V, PLM-V, TIM-V, RDI-P-V, RDI-S-V, RDI-C-V, REI-V, BIP-V

Alarm Queue Contains up to 300 alarm records of latest alarm types, alarm severity, date, and time.

Electrical

DC Power -48Vdc (-36 to -72 Vdc)
Power consumption 240 Watts

Physical and Environmental

Dimensions for 6U 433mm x264mm x 223.5mm (W/H/D)
Temperature 0 to 50°C
Humidity 0-95%RH (non-condensing)
Mounting Desk-top stackable, 19/23 inch rack mountable, and wall mountable

Certifications

EMI/EMC EN55022 Class A, EN55024
FCC Part 15 Class A,
Safety IEC60950-1, IEC 61850-3, IEEE 1613

Note for IEC 61850-3 and IEEE1613:

- (1) The certification only applies to O9500-R with 48Vdc/150W power module
- (2) The magento card does not support IEC 61850-3 and IEEE 1613
- (3) Use shielding cable with the following modules:

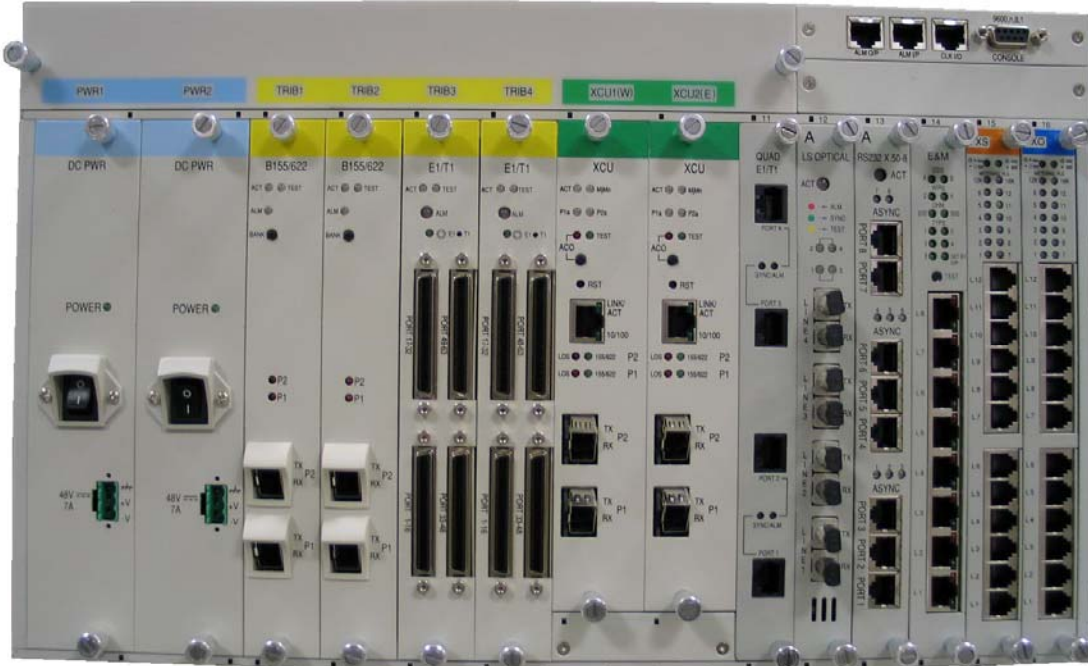
- RS232-X.50 module
- DTE of Conference module
- Input Port of Dry Contact module
- RS232 X.50-8 module
- V.35 module
- V.36/RS449/EIA530 module
- Input Port of Dry Contact B module
- X.21 module
- SNMP of XCU
- Console port of XCU

Standards Compliance

ITU-T G.707, G.7041, G.7042, G.775, G.783, G.806, G.823, G.747, X.86, G.664,
 ANSI T1.105, T1.107
 IEEE 802.1q (VLAN), 802.1w (RSTP), 802.1s(MSTP), 802.1ad (stack VLAN),
 802.3x (flow control), 802.1p (QoS), 802.1AX

* Future Option

Front Panel View of O9500R



O9500R Hardware Configuration Chart on High Speed Slot and CPU

Figure 1: High speed tributary cards without protection

Slot	Plug-in Card	E1/T1	E3	7FOM	Ethernet		Optical (SFP)	
					FE	GbE	STM-1/OC-3	STM-4/OC12
HS	TRIB 1	63/32/16	3	7	8	1	2	1 ^{Note 2}
	TRIB 2	63/32/16	3	7	8	1	2	
	TRIB 3	63/32/16	3	7	8	1	1	X
	TRIB 4	63/32/16	3	7	8	8	1	1
	XCU 1	X	X	X	X	X	2	2
	XCU 2	X	X	X	X	X	2	2
Maximum Port of Each Interface		252	12	28	32	4	10	5

Figure 2: High speed tributary cards with protection

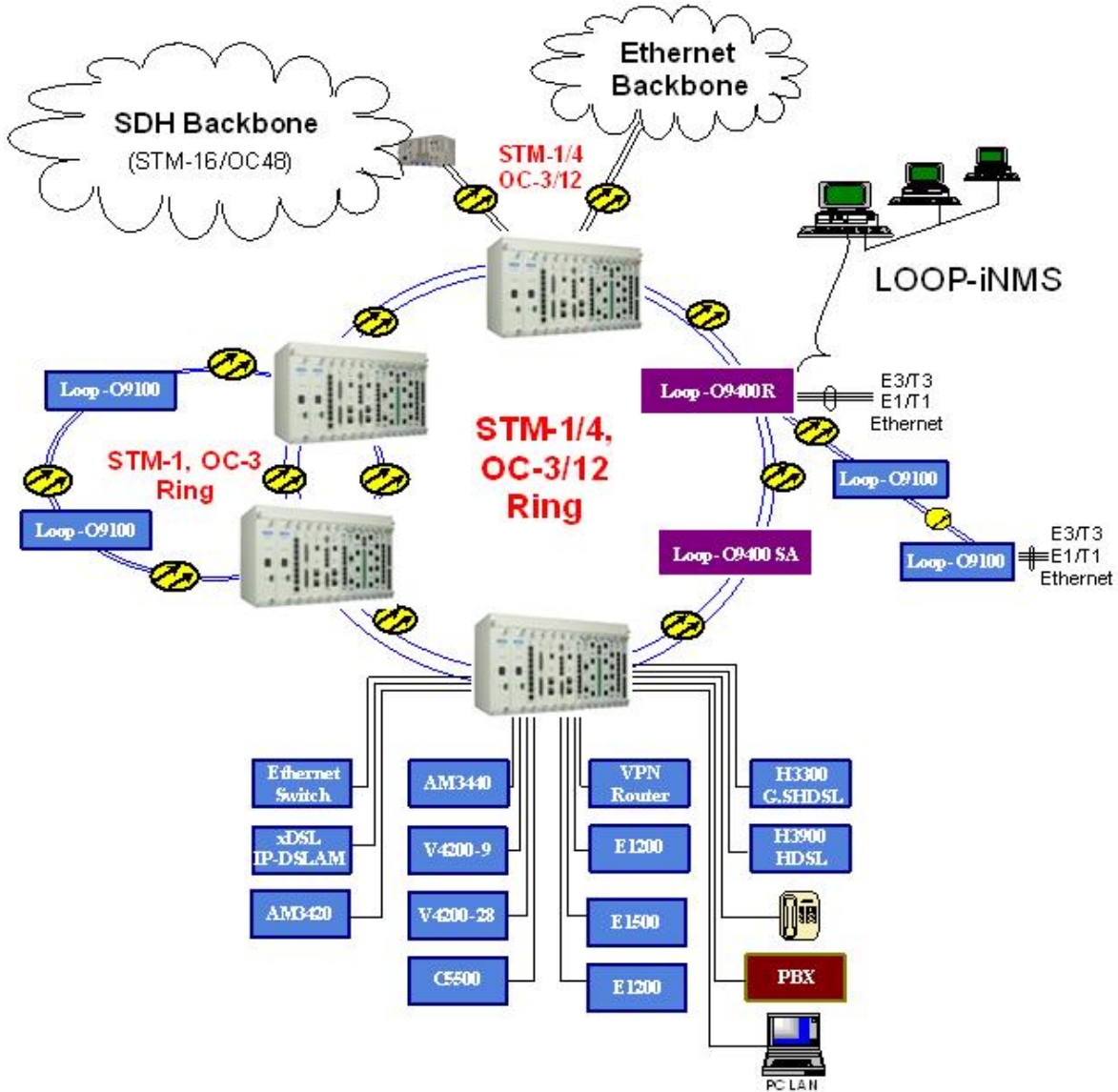
Slot	Plug-in Card	E1/T1	E3	7FOM	Ethernet		Optical (SFP)	
					FE	GbE	STM-1/OC-3	STM-4/OC12
HS	TRIB 1	63/32/16	3	7	8	1	2	1
	TRIB 2	63/32/16 (B)	3(B)	7 (B)	8 (B)	1 (B)	2 (B)	1 (B)
	TRIB 3	63/32/16	3	7	8	1	2	X
	TRIB 4	63/32/16 (B)	3(B)	7 (B)	8 (B)	1 (B)	2 (B)	X
	XCU 1	X	X	X	X	X	2	2
	XCU 2	X	X	X	X	X	2 (B)	2 (B)
Maximum Port of Each Interface		126	6	14	16	2	6	3

(B) backup/protection

Note 2: To set up STM-4/OC12 without protection, put only one optical-module-with-protection in either TRIB 1 or TRIB2 slot.

Application Illustration

O9500 can be configured as either a Terminal Multiplexer (TM), a Linear Add/Drop Multiplexer (ADM), or as a cross-connect (DACS) with the same enclosure. With UPSR/SNCP, and MSP(1+1) protection, the Loop-O9500 can easily provide a well-protected transmission path and integrated access in various applications as shown below.



LOOP TELECOMMUNICATION INTERNATIONAL, INC. ISO 9001/ISO 14001

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,
 Neihu, Taiwan 11492
 Tel:+886-2-2659-0399
 Fax:+886-2-2659-2325
 michael_tzeng@loop.com.tw

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

Tianjin China
 No. 240 Baidi Road
 Nankai District
 Tianjin 300192 China
 Tel:+86-22-8789-4027
 Fax:+86-22-8789-0344
 wym@loop-tj.com