Loop-O9340S
Multi-Services Gigabit FOM

Description

The Loop-O9340S Multi-Services Gigabit FOM is a flexible, cost-effective fiber optical modulator (standalone) which provides an ideal solution for 2G/3G BTS and buildings with fiber-based E1/T1 and Ethernet networks. With a hot-pluggable platform, it allows service providers to carry up to 16 E1/T1, 32 E1, 8 Combo Gigabit Ethernet (GbE) or a mix with both interface signals over a proprietary Gigabit optical pipe.

To select the protection level, users can choose dual pair fiber for the line (1+1) in the point-to-point application and dual power supplies for power protection.

The Loop-O9340S can be managed through a console port, Ethernet port, Telnet, and SNMP agents. It supports local control and diagnostics using console port. The unit also supports local and remote monitoring and diagnostics. Contacts for office alarms are available.

Applications for Loop-O9340S include interconnections for LAN, WAN, SONET/SDH, ATM and DLC.

* Future option

Features

- 1U height, ETSI shelf (full frontal access) or ANSI shelf (front and rear access)
- Rack mount, wall mount, and standalone
- Aggregate ports
  - 2 Gigabit Optical Interface with SFP housing
  - Protection
    - Aggregate line (1+1) protection
  - Switch
    - Switching time within 50 ms
    - Manual switch, automatic switch
- Proprietary Optical Aggregate throughput: at least 860 Mbps
- Tributary ports:
  - 4 general purpose hot-swappable slots supporting any of the following cards:
    - E1/T1 card
      - 4 E1/T1 ports per card (manufacturing option)
      - 8 E1 ports per card
      - Up to 16 E1/T1 ports per system
      - E1/T1 per card is software configurable
    - GbE card
      - 2 Combo Gigabit Ethernet (GbE) port (2 RJ45 and 2 SFP housing) per card
      - Up to 8 Combo Gigabit Ethernet (GbE) ports per system
      - Supports Diagnostics (Loopback and BERT)
      - Functions:
        - Packet Transparency: BPDU packet transparency; IEEE 802.1q VLAN, 802.1ad (Q-in-Q)
        - QoS: 4 priority queues for packet classification; 256K bytes of packet buffer per priority queue, IEEE 802.1p CoS
        - Traffic Rate Control: Rate limited with 256K bps granularity; pause frame according to IEEE 802.3X standard.
- Power modules (hot swappable)
  - DC -48V (-36 to -75 Vdc), dual for redundancy
  - AC 100 to 240 Vac dual for redundancy
- Alarm relay
- Firmware download to the local unit and remote unit
- Configuration upload and download
- Management port and interface
  - LCD with keypad on ANSI-shelf option
  - Console port (RS232, DB9), VT100 menu-driven
  - SNMP port
  - SNMP v1, v2c
  - Telnet via SNMP port
  - LoopView/LoopView Plus GUI EMS*
  - In-band management in traffic bandwidth
- RoHS compliant

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	Notes
Main Unit		
Loop-O9340-CSA-s1-s2-s3-s4-pp1-pp2-add-**G**	Stand alone unit with 1U height ANSI shelf (front & rear access). Aggregate throughput is 860Mbps at least.	▪ Where **s1, s2, s3, s4**, **pp1, pp2,** and **add** are defined in tables below ▪ For allowed pp1 and pp2 combinations, please see **NOTE 1** ▪ 2 aggregate ports (GbE optical interface with SFP housing), please order separately for SFP optical modules ▪ CS: Commercial Series, Temperature range: 0 to 50°C ▪ IS Industrial Series, Temperature hardening optional range -20C to 70C
Loop-O9340-CSE-s1-s2-s3-s4-pp1-pp2-**G**	Stand alone unit with 1U height ETSI shelf (front access). Aggregate throughput is 860Mbps at least.	
Loop-O9340-ISA-s1-s2-s3-s4-pp1-pp2-**G**	Stand alone unit with 1U height ANSI shelf (front & rear access). Aggregate throughput is 860Mbps at least.	
Loop-O9340-ISE-s1-s2-s3-s4-pp1-pp2-**G**	Stand alone unit with 1U height ETSI shelf (front access). Aggregate throughput is 860Mbps at least.	
Hot-swappable Plug-in Modules		
Loop-O9340-S-4ETDB37-**G**	Four E1/T1 with DB37 connector (E1-120 ohms/E1-75 ohms /T1 software selectable)	▪ No conversion adaptor is included ▪ Temperature range 0 to 50°C ▪ For two combo GbE Ethernet, please order separately for SEP optical modules for SFP optical ports.
Loop-O9340-S-2CGbEC-**G**	Two Combo GbE Ethernet with 2 RJ45 and 2 SFP housing	
Loop-O9340-S-8EDB37-**G**	Eight E1 with DB37 connector (E1-120 ohms/E1-75 ohms)	
Loop-O9340-S-8ERF75-**G**	Eight E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
Loop-O9340-S-4ERF75-**G**	Four E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
Loop-O9340-S-4ETIDB37-**G**	Four E1/T1 with DB37 connector (E1-120 ohms/E1-75 ohms /T1 software selectable)	▪ No conversion adaptor is included ▪ Temperature range -20 to 70°C ▪ For two combo GbE Ethernet, please order separately for SEP optical modules for SFP optical ports.
Loop-O9340-S-8EIDB37-**G**	Eight E1 with DB37 connector (E1-120 ohms/E1-75 ohms)	
Loop-O9340-S-2CGbECI-**G**	Two Combo GbE Ethernet with 2 RJ45 and 2 SFP housing	
Loop-O9340-S-8EIRF75-**G**	Eight E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
Loop-O9340-S-4EIRF75-**G**	Four E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
Plug-in Power Modules		
Loop-O9340-S-ISA-**G**	Single AC power plug-in module (100 to 240 Vac)	▪ For power redundancy, order a second power module ▪ Temperature hardening optional range –20°C to 70°C ▪ For AC, choose an appropriate power cord
Loop-O9340-S-ISD48-**G**	Single -48 Vdc power plug-in module (-36 to -75 Vdc)	
Accessories		
Power Cord		
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	

Conversion Cable (All conversion cables are RoHS compliant)	
Loop-ACC-COV-DB37M-WW-04	DB37 male to 4 ports wire-wrap conversion adaptor
Loop-ACC-COV-DB37M-WW-08	DB37 male to 8 ports wire-wrap conversion adaptor
Loop-ACC-CAB-DB37M-100-4RJ48F-**GND**	DB37 male to 4RJ48 female ground conversion cable. Length: 100 cm
Loop-ACC-CAB-DB37M-100-8RJ48F-**GND**	DB37 male to 8RJ48 female ground conversion cable. Length: 100 cm
Loop-ACC-CAB-DB37M-100-8BNCM-**GND**	DB37 male to 8BNC (4 ports) male ground conversion cable. Length:100 cm
Loop-ACC-CAB-DB37M-100-8BNCF-**GND**	DB37 male to 8BNC (4 ports) female ground conversion cable. Length:100 cm
Loop-ACC-CAB-DB37M-100-16BNCM-**GND**	DB37 male to 16BNC (8 ports) male ground conversion cable. Length: 100 cm
Loop-ACC-CAB-DB37M-100-16BNCF-**GND**	DB37 male to 16BNC (8 ports) female ground conversion cable. Length: 100 cm
Loop-ACC-CAB-BNCM-100-RF75M	BNC Male to 1.0/2.3 RF connector (75 ohm impedance) male ground conversion cable (Length: 100 cm) (future option)
Blank Panel	
30.001479.A00LF-**G**	Blank panel for Slot 1~4
30.001455.A00LF-**G**	Blank panel for single DC power slot
30.001454.A00LF-**G**	Blank panel for single AC power slot
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-O9340-UM	User's Manual (paper copy). **Note:** A CD version of the manual is already included as standard package.
Firmware Upgrade	
Loop-O9340S-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.
Ear Mounts	
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.

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

s=	Description	Note
4ETDB37	Four E1/T1 with DB37 connector (E1-120 ohms/E1-75 ohms /T1 software selectable)	▪ No conversion adaptor is included. ▪ Temperature range 0 to 50°C ▪ For two combo GbE Ethernet, please order separately for SEP optical modules for SFP optical ports.
2CGbEC	Two Combo GbE Ethernet with 2 RJ 45 and 2 SFP housing	
8EDB37	Eight E1 with DB37 connector (E1-120 ohms/E1-75 ohms)	
8ERF75	Eight E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
4ERF75	Four E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
4ETIDB37	Four E1/T1 with DB37 connector (E1-120 ohms/E1-75 ohms)	▪ No conversion adaptor is included. ▪ Temperature hardening optional range –20°C to 70°C ▪ For two combo GbE Ethernet, please order separately for SEP optical modules for SFP optical ports.
8EIDB37	Eight E1 with DB37 connector (E1-120 ohms/E1-75 ohms)	
2CGbECI	Two Combo GbE Ethernet with 2 RJ 45 and 2 SFP housing	
8EIRF75	Eight E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	
4EIRF75	Four E1 with 1.0/2.3 RF connector (75 ohm impedance) (future option)	

■ Where **pp1** is used to select the 1st power module (temperature hardening optional range: –20°C to 70°C).

pp1 =	Description	Note
ISA	Single AC power plug-in module (100 to 240 Vac)	▪ All plug-in power modules are

ISD48	Single -48 Vdc power plug-in module(-36 to -75 Vdc)	interchangeable. ▪ For AC choose an appropriate power cord

■Where **pp2** is used to select the 2nd power module (temperature hardening optional range: –20°C to 70°C). If pp2 is not required, leave this field blank.

pp2 =	Description	Note
ISA	Single AC power plug-in module (100 to 240 Vac) for ANSI only	▪ For redundancy purposes, ordering a second plug-in module will provide dual power. ▪ You cannot order a second SA for ETSI unit. ▪ For AC, choose an appropriate power cord ▪ **NOTE 1**
ISD48	Single -48 Vdc power plug-in module (-36 to -75 Vdc)	

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

add =	Description	Note
LCD	LCD front panel display	▪ LCD is supported for ANSI shelf only ▪ LCD only supports the temperature range of 0 to 50°C

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)
- **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)

Loop-O9340 GbE FOM Product Specifications

SFP Optical Module Characteristics (Please refer to SFP optical module brochure for more details)

Aggregate – Gigabit Optical Interface

Number of Ports	2
Speed	1000M bps
Connector	SFP housing with LC

Tributary - E1 Interface

Line Rate	2.048M bps ± 50 ppm
Line Code	AMI/ HDB3
Framing	ITU G.704 framing monitoring only (framing transparency)
Output Signal	ITU G.703
Input Signal	ITU G.703
Connector	DB37 (DB37 to wire-wrap adapter and DB37 to RJ48 conversion cable are available) 1.0/2.3 RF connector (75 ohm impedance) with optional conversion cable(future option)
Jitter	ITU G.823
Surge Protection	IEC 61000-4-5 class 3

Tributary –T1 Interface

Line Rate	1.544M bps ± 32 ppm

Line Code	AMI / B8ZS (selectable)
Framing	D4 / ESF (selectable) framing monitoring only (framing transparency)
Output Signal	DS1 with 0, -7.5, -15 dB LBO
Input Signal	DS1 with 0 dB to -26 dB ALBO
Connector	DB37 (DB37 to wire-wrap adapter and DB37 to RJ48 conversion cable are available)
Pulse Template	Per AT&T TR 62411
Surge Protection	IEC 61000-4-5 class 3

Tributary-Combo Gigabit Ethernet (GbE) Interface

Speed	RJ45: 10/100/1000M bps SFP: 1000M bps
Functions	Auto-negotiation (for twisted pair GbE only) Full or half duplex
Connector	RJ45 for twisted pair GbE, LC for optical GbE, auto detection
Surge Protection	IEC 61000-4-5 class 3

Ethernet Functionality

Basic Features	MDI/MDIX for 10/100/1000M BaseT auto-sensing Ethernet leased line transmission with hard-segmentation among Ethernet ports Support packet length up to 2000 bytes Link Fault Propagation (LFP)
Packet Transparency	Packet transparency support for all types of packet types including IEEE 802.1q VLAN and 802.1ad (Q-in-Q) BPDU packet transparency Pause frame transparency
QoS	Packet classification based on the 802.1p CoS 4 priority queues for packet classification Support Strictly Priority or WRR Scheduling of the 4 priority queues CoS is set on individual tributary GbE ports and not aggregate WAN port
Traffic Control	Ingress packet rate limiting with granularity of 256kbps Pause frame issued when the traffic exceeding the limited rate before packet dropped following IEEE802.3X 256Kbytes of packet buffer per priority queue
Aggregate throughput	At least 860 Mbps

SNMP Ethernet

Ethernet Functions	10/100 BaseT, IEEE802.3 Auto-negotiation (10/100M) Auto MDI/MDIX Full or half duplex
Connector	RJ45

Alarm Relay

Alarm Relay	Fuse alarm and performance alarm

System Clock

Clock Source	Internal clock Aggregate line clock

Management

ACO	Alarm cut-off button
RST	System reset button (Does not affect traffic)
Console Port	Electrical: RS232, DCE Protocol: Menu driven VT-100 Connector: DB9S, female
Telnet	Access via SNMP Ethernet port
SNMP	SNMP v1, v2c; Up to 5 Trap IPs
Inband Management	Inband management in traffic bandwidth

Aggregate Diagnostics

Aggregate Loopbacks	Aggregate Local Loopback, Aggregate Remote Loopback
Bert	Off/PRBS $2^{\wedge 15}$-1

Tributary Diagnostics

E1/T1 Loopbacks	Local Loopback, Remote Loopback
E1/T1 Bert	Off/PRBS $2^{\wedge 15}$-1 (to aggregate)
GbE Loopbacks	Local Loopback, Remote Loopback

GbE Bert	Off/PRBS $2^{\wedge 15}$-1 (to aggregate)

Performance Monitor

Alarm History	Alarm Type (i.e. RAI, AIS, LOS, BPV, ES, UAS)
Alarm Queue	Maximum 500 alarm records which record the latest alarm type, location, and date & time
Alarm Threshold	BPV, ES, UAS

Aggregate Performance

Performance Store	Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour intervals.
Performance Reports	Date & Time, Errored Second, Severe Errored Second count, Unavailable Second.

E1/T1 Performance

Performance Store	Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour summary line, user
Performance Reports	Date & Time, Errored Second, Unavailable Second, Bursty Errored Second, Severe Errored Second count.

GbE Performance

Performance Store	Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour intervals.
Performance Reports	Date & Time, Errored Second, Severe Errored Second count, Unavailable Second.

Power

AC Module	100 to 240 Vac
-48 Vdc Module	-36 to -75 Vdc
Power Consumption	Max. 20W

Physical and /Environmental

Dimensions	438 mm x 44 mm x 226 mm (WxHxD)
Temperature	0 -50°C (operation) or -20 -70°C (Industrial)
Humidity	0-95% RH(non condensing)
Mounting	Desk-top stackable, wall mount, rack mount

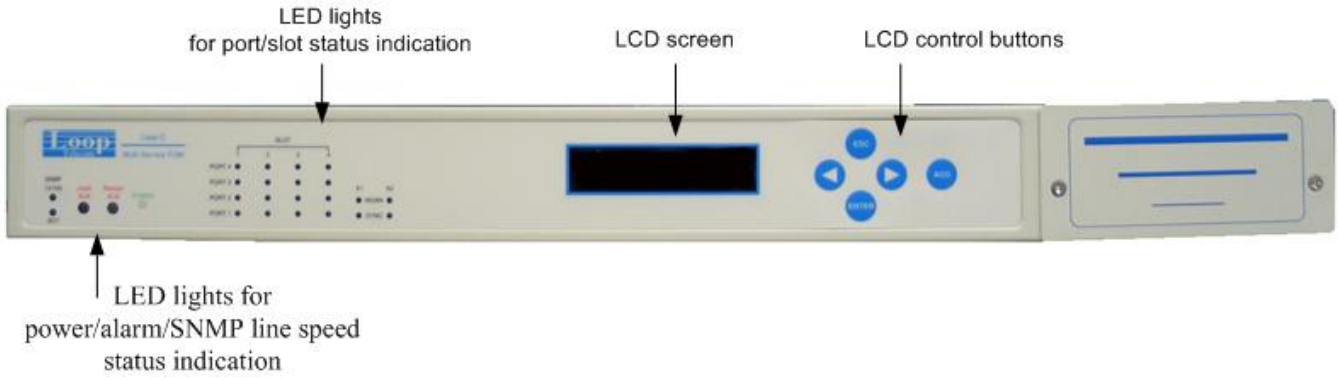
Certification

EMC	EN55022 Class A, EN55024, FCC Part 15 Class A
Safety	EN60950-1, IEC60950-1

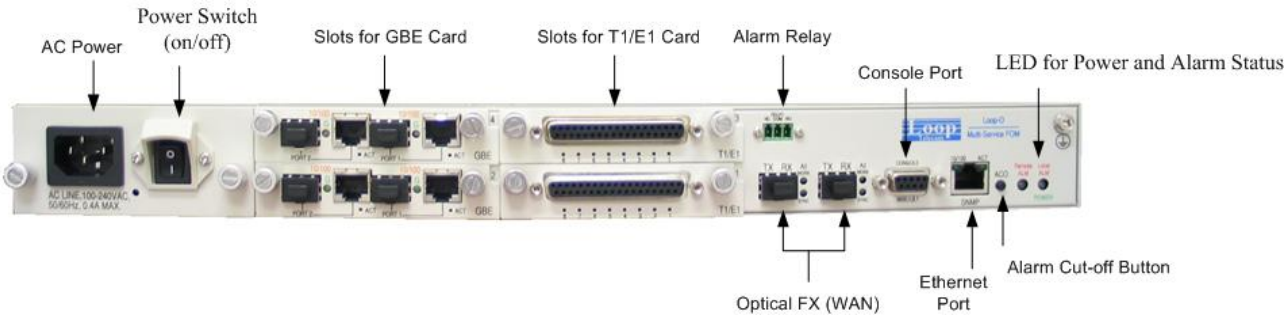
Standards Compliance

ITU-T	G.703, G.704, G.823
IEC	61000-4-5 class 3
IEEE	802.3, 802.3u, 802.3z, 802.3X, 802.1q, 802.1ad

O9340 Front Panel View

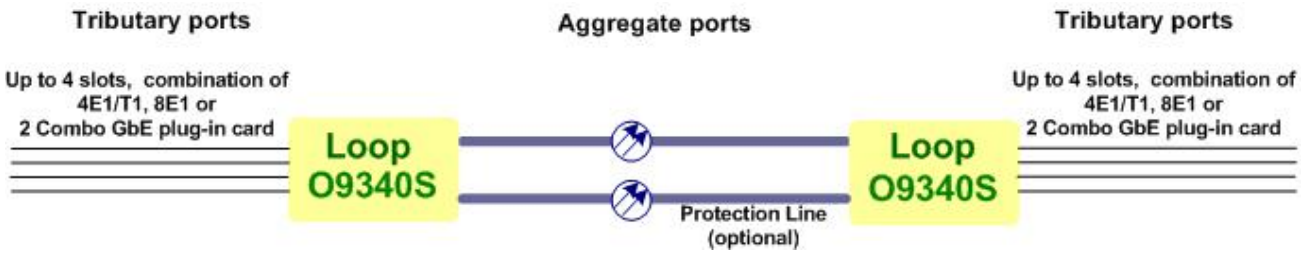


O9340 Rear Panel View



Application Illustration

Point-to-point application



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