

AM3440-A



AM3440-B



AM3440-C

Description

The Loop-AM3440-A/B/C is an access DCS-MUX that can combine various digital access interfaces into E1 or T1 lines for convenient transport and switching. The Loop-AM3440 Access DCS-MUX provides access for a variety of interfaces, including mini Quad E1, Quad E1/T1, ATM/FR, 32 WAN port Router, 64 WAN port Router-A, Router-B, FOM, Terminal Server Card, G.SHDSL, G.703, U type, X.21, V.35, V36, EIA530/RS449, RS232, 8RS232, QEM, QFXO, QFXS, 8EM, 12FXS, 12FXO, 24FXS, 24FXO, and Magneto. These interfaces are compatible with other Loop products such as the Loop-H 3900 (MDSL), LoopH3300 and the Loop-U3500 (U). Using these products, a DTE interface can be extended over copper wire pairs. For as many Quad E1/T1 plug-in cards, each card can have as many as 124/96 time slots for the G.SHDSL, U, RS232, X.21, V.35, V.36 and EIA530/RS449 interfaces are then multiplexed to fill 4 E1/T1 line, with full flexibility of time slot interchange for all incoming lines. AM3440 also supports fiber optical plug-in module, which can be used to aggregate up to 4 E1 channels to single fiber optical interface to connect with other AM3440 or O9310.

AM3440-A has capacity for 12 single slots and 4 mini plug-in slots. AM3440-B has capacity for 3 single slots and 4 mini plug-in slots. AM3440-C has capacity for 5 single slots and 4 mini plug-in slots. All interface cards and controller cards can be used in AM3440-A/B/C, except for the G.SHDSL line power card, which is for the AM3440-A only and mini-slot QEM/QFXS/QFXO interface cards, which are for the AM3440-B and AM3440-C only.

This unit is a full cross-connect and can act as a mini DACS. This means that one or more of the WAN ports can be used as a Drop & Insert function with fractional E1/T1 lines, which can be muxed into a full E1/T1 line.

Redundancy is available in dual CPU controller and power supply options, making it an excellent fit for critical applications. Although the chassis does not contain and has no need for fan cooling, an external fan tray is available.

The Loop-AM3440 supports local control and diagnostics by using an external 2-line by 40-character LCD display and keypads, or by using a VT-100 terminal connected to the console port. The Loop-AM3440 also supports Ethernet, SLIP, Telnet, and SNMP, so that it can be controlled and diagnosed from remote locations as well. An in-band management channel with GUI is available. In addition to the LCD display, there are LED indications for all plug-in cards.

Features

- Support of DS0 DACS (Digital Access Cross-Connect System) with full DS-0 level cross-connect
- Dual controller, dual power (-48 Vdc) with load sharing
- 1 for 1 protection, Y-BOX
- 1 for 1 protection, E1, T1, FOM
- PDH ring protection, QE1, QT1, FOM, Mini QE1
- Console, Telnet, SLIP, SNMP, and Inband management support
- Craft interface port for connection to external LCD display
- Compatible with SNMP based GUI network management systems and supported by LoopView and Loop iNMS
- Three types of chassis: AM3440-A/AM3440-B/AM3440-C

Item	AM3440-A	AM3440-B	AM3440-C
Chassis (height)	5U	2.5U	3U
Number of Mini-slots	4	4	4
Number of Single-slots	12	3	5
Max T1 Channels	52	16	24
Cross-Connect Backplane Capacity	128 Mbps	56 Mbps	72 Mbps

Loop-AM3440 cards:

	Plug-in cards	AM3440-A	AM3440-B	AM3440-C
Mini-Slot	1-channel E1	√	√	√
	1-channel T1	√	√	√
	Mini Quad E1	√	√	√
	1-channel E1 ATM/Frame Relay	√	√	√
	1-channel T1 ATM/Frame Relay	√	√	√
	32 WAN port Router	√	√	√
	64 WAN port Router-A	√	√	√
	Fiber optical interface	√	√	√
	3-channel Terminal Server	√	√	√
	Quad 2W/4W E&M	x	√	√
	QFXS/QFXO	x	√	√
Single-Slot	3-channel E1 (future option)	√	√	√
	4-channel E1	√	√	√
	4-channel T1	√	√	√
	6-channel U	√	√	√
	10-channel U	√	√	√
	8-channel OCU-DP	√	√	√
	2-channel G.SHDSL (2 pairs) w/o line power	√	√	√
	4-channel G.SHDSL (1 pair) w/o line power	√	√	√
	8-channel G.703 card at 64 Kbps data rate	√	√	√
	8-channel Dry Contact I/O	√	√	√
	8-channel Dry Contact I/O type B (future option)	√	√	√
	8-channel 2W/4W E&M	√	√	√
	12-channel FXS	√	√	√
	12-channel FXO	√	√	√
	12-channel Magneto	√	√	√
	1-channel low speed optical (C37.94)	√	√	√
	4-channel low speed optical (C37.94)	√	√	√
	8-channel RS232 with X.50 substrate	√	√	√
	8-LAN-port/ 64-WAN-port Router-B	√	√	√
	Conference card (future option)	√	√	√
Dual-Slot	6-channel X.21/V.11	√	√	√
	6-channel V.35	√	√	√
	6-channel V.36	√	√	√
	6-channel EIA530/RS449 card	√	√	√
	5-channel RS232 with X.50 substrate	√	√	√
	24-channel FXS	√	√	√
	24-channel FXO	√	√	√
	2-channel G. SHDSL (2 pairs) with line power	√	x	x
	4-channel G. SHDSL (1 pair) with line power	√	x	x

Note: √ = Supported
 x = Not supported

LOOP-AM3440 Access DCS-MUX Product Specifications

Network Line Interface - T1

Line Rate	1.544 Mbps \pm 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

Network Line Interface - E1

Line Rate	2.048 Mbps \pm 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703 to -10dB	Electrical	75 ohm Coax/120 ohm twisted pair
Output Signal	ITU G.703	Jitter	ITU G.823

Network Line Interface - Mini 4E1

Line Rate	2.048 Mbps \pm 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	DB25S
Input Signal	ITU G.703 to -10dB	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 \pm 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

Network Line Interface - 3E1

Line Rate	2.048 Mbps \pm 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703 to -10dB	Electrical	75 ohm Coax/120 ohm twisted pair
Output Signal	ITU G.703	Jitter	ITU G.823

Network Line Interface - 4E1

Line Rate	2.048 Mbps \pm 50 ppm	Framing	ITU G.704
Line Code	AMI or HDB3	Connector	BNC/RJ48C
Input Signal	ITU G.703 to -10dB	Electrical	75 ohm Coax/120 ohm twisted pair
Output Signal	ITU G.703	Jitter	ITU G.823

ATM Frame Relay Network Line Interface

Supporting Network Interworking (FRF.5) and service interworking (FRF.8).

Network Interface:

- T1 *T1 ATM UNI*
Module:
FR (n x 64 Kbps, n=1 to 31)
- E1 *E1 ATM UNI*
Module:
FR (n x 64 Kbps, n= 1 to 31)

Up to 31 logical FR channels can be concentrated/ de-concentrated to FR or ATM.

Service Ports:

- T1/FT1 interface: *n x 64 Kbps, n=1 to 24*
- E1/FE1 interface: *n x 64 Kbps, n= 1 to 31*

Supports HDLC to FR

Supports HDLC to ATM

Supporting FR to FR multiplexing.

Supports up to 128 DLCLs for total of 31 FR interfaces.

Supports up to 128 VCs.

Peak cell rate on DLCL basis.

Manufacturing disable/enable ATM scrambling for internal testing (E1 ATM only).

AAL0 and AAL5 are supported in the ATM adaptation layer.

Supports VBR service.

ITU FR management protocols are supported.

AM3440-A/B/C Access Mux

Flash memory software download through RS485.
Only the PVC type of ATM/FR service is supported.

Router Interface

Number of ports 2 LAN ports, Max. 32 WAN ports
Physical Interface 10 BaseT x 1, 10/100 BaseT x 1
Connector RJ45
Routing protocol RIP-I, RIP-II
Data Rates Channelized N x 64 Kbps up to T1/E1 capacity
Supporting Protocols TCP/IP, PPP, HDLC
Management VT-100, SNMP

Router-A Interface

Number of ports 2 LAN ports, Max. 64 WAN ports
Physical Interface 10/100 BaseT x 2
Connector RJ45
Routing protocol RIP-I, RIP-II
Data Rates Channelized N x 64 Kbps up to 2 T1/E1 capacity
Supporting Protocols PPP, HDLC, Frame Relay, and Cisco compatible HDLC

Router-B Interface

Up to 64 WAN ports
Each WAN port has data rate n x 64K bps, 1 ≤ n ≤ 32
The total bandwidth of all 64 WAN ports is up to 8Mbps
Layer-two protocol: HDLC, PPP (IPCP/BCP), Frame Relay, Cisco compatible HDLC, MLPPP (future)
Eight 10/100BaseT interfaces
Routing protocol: RIP-I, RIP-II, OSPF
QoS based on rate limit

Terminal Server

Connector One DB-44 conversion cable to one DB-9 and two DB-25 connectors
Ports One Async RS232 port, two Async/Sync RS232 ports.
 The two Async/Sync ports can be configured independently as Asynchronous or Synchronous.
Data Rate Async: 1.2kbps, 2.4kbps, 4.8kbps, 9.6kbps, 19.2kbps, 38.4kbps
 Sync: 64 kbps
Layer 2 Protocol of RS232 Async SLIP or raw data
Layer 2 Protocol of RS232 Sync PPP
Terminal Server Function Supports Telnet
Router Function RIP-I, RIP-II, Static Route

Optical Fiber Interface Characteristics

Optical Module	Fiber Direction	Wavelength (nm)	Connector	Distance (km)	Power (dB)
SAA	Dual uni-directional	1310	SC (Subscriber Connector)	30	20
SBB	Dual uni-directional	1310	SC (Subscriber Connector)	50	30
SCC	Dual uni-directional	1310	FC (Fiber Connector)	30	20
SDD	Dual uni-directional	1550	SC (Subscriber Connector)	20	12
SEE	Dual uni-directional	1550	SC (Subscriber Connector)	100	40
SSM	Single bi-directional (master)	1310/1550	SC (Subscriber Connector)	30	20
SSS	Single bi-directional (slave)	1550/1310	SC (Subscriber Connector)	30	20

NOTE: Other fiber optical options available on special order

AM3440-A/B/C

Access Mux

U Interface

Data Port Up to twelve 10-port or 6-port DTU cards
 Type Full duplex with echo cancellation
 Line Type twisted pair 19-26 AWG
 Line Rate 56, 64, 112 or 128 Kbps
 Line Coding 2B1Q
 Connector RJ48C

G.SHDSL Line Interface

Number of port: 4 or 2
 Line code: 16-TCPAM, full duplex with adaptive echo cancellation
 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)
 Electrical: Unconditioned 19-26 AWG twisted pair
 Connector: RJ45
 Sealing current: Max. 20 MA source current

Clock

Source: From System, Line

Diagnostics Test

G.SHDSL Loopback: To-LINE, To-bus
 BERT: QRSS

DTE Interface (X.21)

Data Port Up to six 6-port DTE X.21 card
 Data Rate 56 or 64 Kbps *n (n=1 - 24/31)
 Connector DB15

DTE Interface (V.35)

Data Port Up to six 6-port DTE V.35 card
 Data Rate n x 64 Kbps, n = 1 to 32
 Connector DB25S (optional conversion cable DB25S to M34 connector)

DTE Interface (V.36)

Data Port Up to six 6-port DTE V.36 card
 Data Rate n x 64 Kbps, n = 1 to 32
 Connector DB25S (optional conversion cable DB25S to DB37 connector)

DTE Interface (EIA530/RS449)

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

DTE Interface (RS232-X.50 mux. 5-port)

Data Port Up to six 5-port RS232 cards with X.50 plug-in, subrate, with subrate mux
 MUX (a) 5 independent RS232, or (b) 5 subrate RS232 (X.50) muxed to 64K
 Data Rate Mode (a) 5 independent RS232 : 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 48K , 64K SYNC
 1.2K, 2.4K, 4.8K, 9.6K, 19.2K ASYNC
 Mode (b) 5 mux together : 1.2K, 2.4K, 4.8K, 9.6K SYNC
 1.2K, 2.4K, 4.8K, 9.6K ASYNC

NOTE Mode (a) and mode (b) cannot be mixed.

Connector DB25S

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

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
 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

AM3440-A/B/C Access Mux

	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							

Co-directional Interface Card

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

C37.94 Interface Card

Source	LED
Wavelength	820nm 1.7Km reach
Connector	ST
Optical Budget	50 Mircon core/9.6 db 62.5 Mircon core/ 15db

Dry Contact Interface Card

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	Short-circuit Current	5A

Dry Contact Type B Interface Card

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		

Voice Card (Q2EM, Q4EM)

Connector	DB44 connector with external DB44 to 4 RJ45 connector cable
Alarm Conditioning	CGA busy after 2.5 seconds of LOS, LOF
Encoding	A-law or μ -law, user selectable per card
Impedance	Balanced 600 Ω or 900 Ω
Longitudinal Rejection	55 dB
Longitudinal Max	2.5 volts peak AC
Longitudinal Balance	> 63dB
Gain Adjustment	Normal mode 0, -3, -6 or +7 dB for transmit (D/A) gain 0, -3, -6 or +10 dB for receive (A/D) gain
(all port settings)	
Signal/Distortion	> 46dB with 1004 Hz, 0dBm input
Frequency Response	-0.25 to -1 dB from 300 to 3400 Hz
Idle Channel Noise	< 20 dB _{BrnC0}
Signaling	Type I, II, III, IV, V and TO (Transmit Only) signaling options Side: A or B (manufacture option) Wire: 2 wire or 4 wire (manufacture option)
In-band signaling tones	transparent
Modems	Full compatibility with V.90 modems

AM3440-A/B/C

Access Mux

Operational Temp. 0°C to +55°C
Relative Humidity 0% to 95%

Voice Card (8EM)

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
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
wire mode 2 wire and 4 wire (programmable)
Signaling Type 1, Type 2, Type 3, Type 4, and Type 5, Transmit only (programmable)
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.

OCUDP Interface Card

Ports Eight Ports for each card
Line Status Indicator Per Port 1 dual color LED; Red for LOS, Green for SYNC
Network Connector RJ48S
Electrical network connection Tip/Ring and Tip1/Ring1
Transmit Source Impedance 135 Ohms +/- 20%
Receive Input Impedance 135 Ohms +/- 20%
Receiver Sensitivity/ Dynamic Range 0 to 43 dB loop loss at 72K & 56K
0 to 34 all other rates Automatic line equalization

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
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, 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
Cadence: 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 Programmable
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

Conference Card

RS232 Interface

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

FXS Voice Interface

Connector Two RJ11
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law
 AC Impedance Balanced 600 ohms
 Longitudinal Conversion Loss > 46dB
 Cross Talk Measure Max -70dBm0
 Gain Adjustment transmit (O/A) gain 0, +6dB
 receive (A/D) gain +6, 0, -6dB
 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
 Loop Resistance Max 1800 ohm
 Variation of Gain ± 0.5 dB
 FXS Loop Feed Normal -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)
 Loop Start, DTMF

Signaling

E&M Voice Interface

Connector Two RJ45
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law
 Impedance Balanced 600 ohms
 Longitudinal Conversion Loss > 46dB
 Gain Adjustment transmit (O/A) gain 0, +6dB
 receive (A/D) gain +6, 0, -6dB
 Signal/Distortion > 25dB with 1004 Hz, 0dBm input
 Frequency Response - 0.25 to -1 dB from 300 to 3400 Hz
 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, slave (Jumper selectable)
 Wire Mode 4 wire (pin 4 and 5 = TX, pin 3 and 6 = RX)
 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)

Voice Card (QFXS, QFXO)

Connector	Four RJ11
Alarm Conditioning	CGA busy after 2.5 seconds of LOS, LOF
Encoding	A-law or μ -law, user selectable per card
AC impedance	Balanced 600 or 900 ohms, user selectable per card
Longitudinal Rejection	55 dB
Loss Adjustment	0, 3, 6, or 9 dB transmit & receive, user selectable per card
Signal/ Distortion	> 46dB with 1004 Hz, 0dBm input
Frequency Response	- 0.25 to -1 dB from 300 to 3400 Hz
FXS Loop Feed	Nominal -48 Vdc with 25mA current limit per port
FXS Ringing	1 REN at 5000 meters per port 20 Hz, other frequencies (manufacture option): 16.7 Hz, 25 Hz, 50 Hz 82 Vrms (sine wave) User selectable ring cadence per card for PLAR function: 2 sec on 4 sec off, or 1 sec on 2 sec off
FXO Ringing REN	Ringing REN 0.5B (AC) Detectable Ringing 25 Vrms Loop Resistance \square 1800 \square DC impedance (ON-HOOK) > 1M \square DC impedance (OFF-HOOK) 235 \square @ 25mA feed 90 \square @ 100mA feed
Metering Pulse	12 KHz/16 KHz <ul style="list-style-type: none"> Power: 10dBm Sensitivity: -18dBm to -45dBm (manufacture option)
Signaling	Loop Start, GND-Start, Metering Pulse (12 KHz, 16 KHz), DTMF, Dialing Pulse, PLAR, Battery Reverse (support Line Reverse Signaling for Billing)
In-band signaling tones	transparent
Operational Temp.	0°C to +55°C
Relative Humidity	0% to 95%

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

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
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	\pm 0.5dB
FXO	Ringing REN 0.5B (AC) Detectable Ringing 25 Vrms Loop Resistance \leq 1800 Ω DC Impedance (ON-HOOK) > 1M Ω DC Impedance (OFF-HOOK) 235 Ω @ 25 mA feed 90 Ω @ 100 mA feed
FXS Loop Feed	Normal -48 Vdc with 25mA current limit
FXS signalling	Normal / Automatic Ringdown
FXS Ringing	1 REN at 5K meters per port 16.5Hz, 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 order)	Ground Start, Metering pulse (12 KHz, 16 KHz), and P(in PLAR mode, PLAR signalling bits are programmable.
Signaling Bit A,B,C,D	Programable bit
	<ul style="list-style-type: none"> 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.

Clock Source

Internal, E1/T1 Line, External (E1/T1/2048 KHz)

Alarm Relay

Alarm Relay, Fuse alarm, and performance alarm

System Configuration Parameters

Active Configuration, Stored Configuration, and Default Configuration (Stored in Non-volatile Memory)

Supervisor

RS232, VT100 - front panel	10 Base-T, Ethernet, SNMP - front panel
CONSOLE/SLIP - front panel	In-band 64 Kbps

Performance Monitor

Performance Registers	Last 24 hours performance in 15 minute intervals and last 7 days in 24 hour summaries
Separate Registers	Network, user, and remote site
Performance Reports	Reports include E1 Bursty Errored Second, Severe Errored Second, Degraded Minutes, and Controlled Slip Second. Also available in Statistics (%)
Alarm Queue	Containing 40 alarm records which record the latest alarm type, location, and date & time
Threshold	Bursty Seconds, Severely Errored Second, Degraded Minutes

Diagnostics Test Line

Loopback	E1/T1 interface (Line Loopback, Payload Loopback, Local Loopback) U interface (Local Loopback, Payload Loopback)
Test Pattern	E1/T1 interface (215-1 PRBS, 3-in-24, 1-in-8, 2-in-8, 1:1 patterns) U/DTE interface (211-1 BERT)

Front Panel

LED 1 per U/V.35-interface, ACO, Power, SYNC/TEST, LOF, BPV, RAI/AIS

Physical /Electrical

	AM3440-A	AM3440-B	AM3440-C
Dimensions	432.4 x 220 x 223.5 mm (WxHxD)	438 x 110 x 224 mm (WxHxD)	438 x 132 x 224 mm (WxHxD)
Power	Single/ Dual -48 Vdc: -36 to -75 Vdc, 100 Watts max. Single/ Dual -48 Vdc: -36 to -75 Vdc, 150 Watts max. Single/ Dual -24 Vdc: -18 to -36 Vdc, 150 Watts max Single/ Dual -125 Vdc: -40 to -150 Vdc, 100 Watts max	Single/ Dual -48 Vdc: -36 to -75 Vdc, 100 Watts max. Single AC: 100 to 240 Vac, 50/60 Hz	Single/ Dual -48 Vdc: -36 to -75 Vdc, 100 Watts max. Single AC: 100 to 240 Vac, 50/60 Hz
Temperature	0-50°C	0-50°C	0-50°C
Humidity	0-95%RH (non-condensing)	0-95%RH (non-condensing)	0-95%RH (non-condensing)
Mounting	Desk-top stackable, 19" /23" rack mountable	Desk-top stackable, 19" /23" rack mountable	Desk-top stackable, 19" /23" rack mountable
Line Power Supply	Available only with DC power for G.SHDSL card only	N/A	N/A
Power Consumption	Max 110 Watts	Max 45 Watts	Max 57 Watts

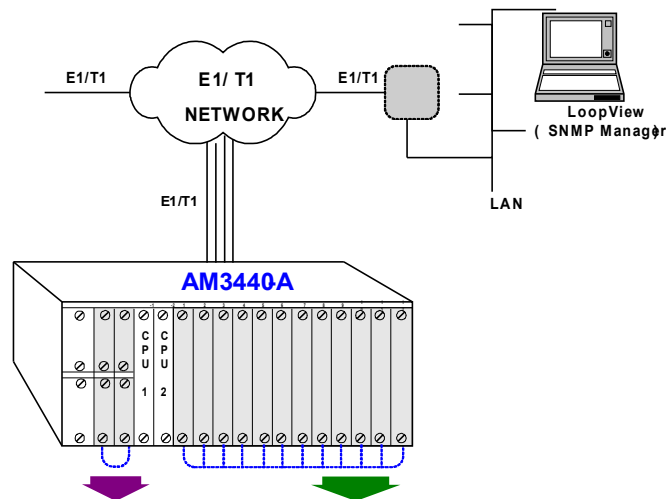
Certification

AM3440-A	AM3440-B	AM3440-C
EN55022 Class A, EN50024, FCC Part 15 Class A, FCC Part 68, CS-03, IEC60950, UL60950	EN55022 Class A, EN50024, EN300 386, FCC Part 15 Class A, FCC Part 68, CS-03, IEC60950-1, EN60950-1	EN55022 Class A, EN50024, EN300 386, FCC Part 15 Class A, IEC60950-1, EN60950-1

Compliance

ITU G.703, G.704, G.706, G.732, G.736, G.823, G.826, G.711, G.775, O.151, V.11, V.28, V.54

Application Illustration:



Mini-Slot plug - in Cards

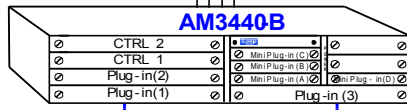
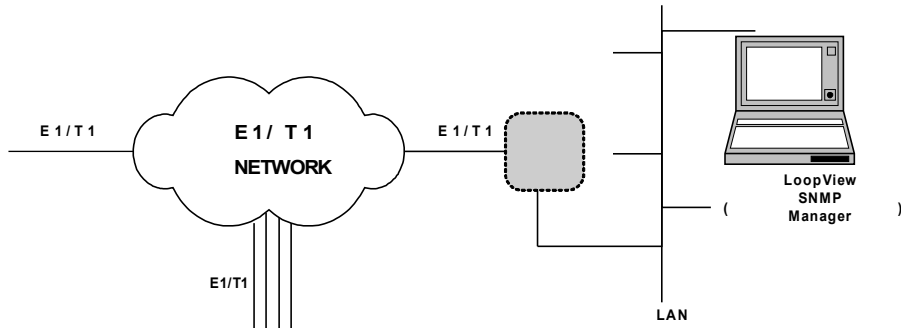
- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- 1 - channel E1 ATM Frame Relay
- 1 - channel T1 ATM Frame Relay
- 32 WAN port Router
- 64 WAN port Router
- Fiber Optical Interface
- 3 - channel Terminal Server

Single - Slot plug - in Cards

- 3 - channel E1(future option)
- 4 - channel E1
- 4 - channel T1
- 6 - channel U
- 10 - channel U
- 8 - channel OCU -DP
- 2 - channel G.SHDSL w/o line power
- 4 - channel G.SHDSL w/o line power
- 8 - channel G 703 64Kbps
- 8 - channel Dry Contact IO
- 8 - channel Dry Contact IO type B (future option)
- 8 - channel 2 W/4 W E & M
- 12 - channel FXS
- 12 - channel FXO
- 12 - channel Magneto
- 1 - channel C37.94
- 4 - channel C37.94
- 8 - channel RS232 with X.50 subrate
- 8 - LAN - port /64 - WAN - port Router -B
- 8 - Conference card(future option)

Dual-slot plug - in cards:

- 6 - channel X21/V.11
- 6 - channel V.35
- 6 - channel V.36
- 6 - channel EIA530/RS449
- 5 - channel RS232 with X.50 subrate
- 24 - channel FXS
- 24 - channel FXO
- 2 - channel G.SHDSL w/line power
- 4 - channel G.SHDSL w/ line power



Mini-Slot plug-in Cards

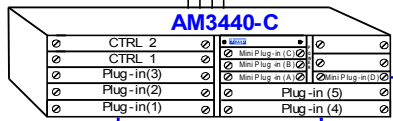
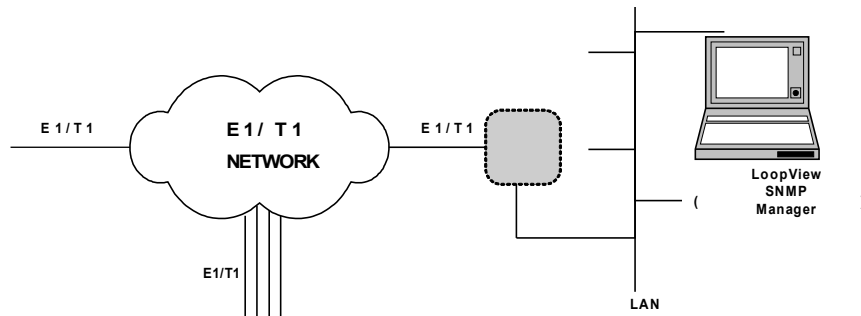
- ➔ 1 - channel E1
- ➔ 1 - channel T1
- ➔ Mini Quad E1
- ➔ 1 - channel E1 ATM Frame Relay
- ➔ 1 - channel T1 ATM Frame Relay
- ➔ 32 WAN port Router
- ➔ 64 WAN port Router
- ➔ Fiber Optical Interface
- ➔ 3 - channel Terminal Server
- ➔ Quad 2 W/4W E&M
- ➔ QFXS/QFXO

Single - Slot plug -in Cads :

- ➔ 3 - channel E1 (future option)
- ➔ 4 - channel E1
- ➔ 4 - channel T1
- ➔ 6 - channel U
- ➔ 10 - channel U
- ➔ 8 - channel OCU - DP
- ➔ 2 - channel G.SHDSL w/o line power
- ➔ 4 - channel G.SHDSL w/o line power
- ➔ 8 - channel G.703 64 Kbps
- ➔ 8 - channel Dry Contact I/O
- ➔ 8 - channel Dry Contact I/O type B (future option)
- ➔ 8 - channel 2 W/4W E&M
- ➔ 12 - channel FXS
- ➔ 12 - channel FXO
- ➔ 12 - channel Magneto
- ➔ 1 - channel C37 . 94
- ➔ 4 - channel C37 . 94
- ➔ 8 - channel RS232 with X.50 substrate
- ➔ 8 - LAN - port/ 64 - WAN - port Router-B
- ➔ Conference card (future option)

Dual - slot plug -in cards :

- ➔ 6 - channel X.21/V.11
- ➔ 6 - channel V.35
- ➔ 6 - channel V.36
- ➔ 6 - channel EIA530/RS449
- ➔ 5 - channel RS232 with X.50 substrate
- ➔ 24 - channel FXS
- ➔ 24 - channel FXO



Mini-Slot plug-in Cards

- ➔ 1 - channel E1
- ➔ 1 - channel T1
- ➔ Mini Quad E1
- ➔ 1 - channel E1 ATM Frame Relay
- ➔ 1 - channel T1 ATM Frame Relay
- ➔ 32 WAN port Router
- ➔ 64 WAN port Router
- ➔ Fiber Optical Interface
- ➔ 3 - channel Terminal Server
- ➔ Quad 2 W/4W E&M
- ➔ QFXS / QFXO

Single - Slot plug -in Cads :

- ➔ 3 - channel E1 (future option)
- ➔ 4 - channel E1
- ➔ 4 - channel T1
- ➔ 6 - channel U
- ➔ 10 - channel U
- ➔ 8 - channel OCU - DP
- ➔ 2 - channel G.SHDSL w/o line power
- ➔ 4 - channel G.SHDSL w/o line power
- ➔ 8 - channel G.703 64 Kbps
- ➔ 8 - channel Dry Contact I/O
- ➔ 8 - channel Dry Contact I/O type B (future option)
- ➔ 8 - channel 2 W/4W E&M
- ➔ 12 - channel FXS
- ➔ 12 - channel FXO
- ➔ 12 - channel Magneto
- ➔ 1 - channel C37 . 94
- ➔ 4 - channel C37 . 94
- ➔ 8 - channel RS232 with X.50 substrate
- ➔ 8 - LAN - port/ 64 - WAN - port Router -B
- ➔ Conference card (future option)

Dual - slot plug -in cards:

- ➔ 6 - channel X.21/V.11
- ➔ 6 - channel V.35
- ➔ 6 - channel V.36
- ➔ 6 - channel EIA530/RS449
- ➔ 5 - channel RS232 with X.50 substrate
- ➔ 24 - channel FXS
- ➔ 24 - channel FXO