



Loop-AM3440D Access DCS-Mux



Description

The Loop-AM3440-D is the latest product of the Loop Access DCS-MUX series that can combine various digital access interfaces into E1 or T1 lines for convenient transport and switching. With 9 hot-pluggable mini size slots design, the Loop-AM3440-D provides access for a variety of TDM, IP, and voice interfaces detailed on next page. These interfaces are compatible with other Loop products. Using these products, a DTE interface can be extended over copper wire pairs or any E1/T1 transport facility. For each mini Quad E1 plug-in card, each card can have as many as DS0 124/96 time slots from G.SHDSL, RS232, X.21, V.35, and EIA530 interfaces, which can be multiplexed to fill 4 E1/T1 lines. AM3440 also supports fiber optical plug-in card, which can be used to aggregate up to 4 E1 channels onto a single fiber optical interface to connect with other AM3440 or O9310 device.

AM3440-D has 9 mini size plug in slots as shown in table at left. The plug-in cards are compatibility with all mini size of AM3440-B/C series detailed on next page.

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-D 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, 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 is LED indication for all plug-in cards.

Finally, the Loop-AM3440-D consists of a rugged reinforced aluminum chassis, giving this equipment a more durable structure and a longer physical life.

Features

- 2U height, Full front access (ETSI) Shelf
- Support of DS0 DACS (Digital Access Cross-Connect System) with full cross-connect
- Dual controller, dual DC power with load sharing
- 1 for 1 protection, Y-BOX
- 1 for 1 protection, E1, T1, FOM
- PDH ring protection, FOM, Mini QE1
- Console, Telnet, SNMP, and Inband management support
- Craft interface port for connection to external LCD display
- Compatible to a SNMP based GUI network management system and supported by LoopView and Loop iNMS
- All the plug-in cards are hot-pluggable

Item	AM3440-D
Chassis	2U
# of Mini-slots	9
Max. E1 Channels	36
Max. T1 Channels	9
Cross-Connect Backplane Capacity	72 Mbps

Comparison List for AM3440-D and V4200 Plug-in Cards

	Plug-in cards for AM3440-D	AM3440-D	V4200-9	V4200-28	External LCD for AM3440-D
Mini-Slot	1-channel E1 (Single E1 interface)	√	√	√	√
	Mini Quad E1 (Four E1 interfaces)	√	×	×	
	1-channel E1 ATM/Frame Relay	√	√	√	
	1-channel T1 ATM/Frame Relay	√	√	√	
	2-LAN port/32 WAN port Router	√	√	√	
	2-LAN port/64 WAN port Router-A	√	×	×	
	Fiber optical interface	*√	√	√	
	3-channel Terminal Server	*√	√	√	
	1-channel X.21	*√	√	√	
	1-channel V.35	*√	√	√	
	1-channel EIA530	*√	√	√	
	1-channel RS232	*√	√	√	
	Quad 2W/4W E&M (Four E&M voice interfaces)	√	√	√	
	QFXS/QFXO (Four FXS/FXO voice interfaces)	√	√	√	









Note: √ = Supported
 × = Not available

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 ordering code.

Model (non RoHS compliant)	Model (RoHS compliant)	Description	Note
Main Unit			
Loop-AM3440-CHD	Loop-AM3440-CHD-G	Wideband Main Unit without CPU, power and plug-in cards	AM3440-D type Chassis
CPU Module			
Loop-AM3440-CCA-T	Loop-AM3440-CCA-T-G	CPU card with T1 External Clock (order two for redundancy)	
Loop-AM3440-CCA-E	Loop-AM3440-CCA-E-G	CPU card with E1 External Clock (order two for redundancy)	
Mini Plug-in Module (Select 1 to 4 cards from list below)			
Loop-AM3440-D-E75	Loop-AM3440-D-E75-G	1-channel of E1 plug-in card w/ 75 ohm	
Loop-AM3440-D-E120	Loop-AM3440-D-E120-G	1-channel of E1 plug-in card w/ 120 ohm	
Loop-AM3440-D-T1	Loop-AM3440-D-T1-G	1-channel T1 plug-in card	
Loop-AM3440-D-M4E75	Loop-AM3440-D-M4E75-G	Mini Quad E1 plug-in card with 75 ohm	Includes a three meter conversion cable (Loop-ACC-CAB-DB25M-300-8BNM)
Loop-AM3440-D-M4E120	Loop-AM3440-D-M4E120-G	Mini Quad E1 plug-in card with 120 ohm	Includes a three meter conversion cable (Loop-ACC-CAB-DB25M-300-4RJ48M)
Loop-AM3440-D-AFRE	Loop-AM3440-D-AFRE-G	E1 Frame Relay to ATM inter-working or Frame Relay to Frame Relay concentration plug-in card	
Loop-AM3440-D-AFRT	Loop-AM3440-D-AFRT-G	T1 Frame Relay to ATM inter-working or Frame Relay to Frame Relay concentration plug-in card	
Loop-AM3440-D-RT	Loop-AM3440-D-RT-G	2-LAN ports/32 WAN port Router/Bridge plug-in card	
Loop-AM3440-D-RTA	Loop-AM3440-D-RTA-G	2-LAN ports/64 WAN port router/bridge plug-in card	
Loop-AM3440-D-FOM-opt	Loop-AM3440-D-FOM-opt-G	Fiber Optical plug-in card	For opt option, please refer to the table below for detail information
Loop-AM3440-D-TS	Loop-AM3440-D-TS-G	3-channel Terminal Server plug-in card	Includes a one meter conversion cable (Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS)
Loop-AM3440-D-1V35	Loop-AM3440-D-1V35-G	1-channel V.35 plug-in card	
Loop-AM3440-D-1E530	Loop-AM3440-D-1E530-G	1-channel EIA530 plug-in card	
Loop-AM3440-D-1X21	Loop-AM3440-D-1X21-G	1-channel X.21 plug-in card	
Loop-AM3440-D-1RS232	Loop-AM3440-D-1RS232-G	1-channel RS232 plug-in card	
Loop-AM3440-D-Q2EM-m-Tn-x	Loop-AM3440-D-Q2EM-m-Tn-x-G	Quad 2 Wire E&M voice plug-in card	Where m = B for normal E&M or TO (transmission only) = A for tandem operation n = 1 to 5 E&M Signaling Type = O for TO (transmission only)
Loop-AM3440-D-Q4EM-m-Tn-x	Loop-AM3440-D-Q4EM-m-Tn-x-G	Quad 4 Wire E&M voice plug-in card	For -48 Vdc and AC (100 to 240 Vac) power supply only. For m , n and x option, please refer to the table below for detail information
Loop-AM3440-D-QFXS-x	Loop-AM3440-D-QFXS-x-G	Quad FXS voice plug-in card used with 4 RJ11	GS = Ground Start
Loop-AM3440-D-QFXS-M-x	Loop-AM3440-D-QFXS-M-x-G	Quad FXS with MP 16 KHz voice plug-in card used with 4 RJ11	MP = Metering Pulse Transmit 12/16 KHz
Loop-AM3440-D-QFXS-M12-x	Loop-AM3440-D-QFXS-M12-x-G	Quad FXS with MP 12 KHz voice plug-in card used with 4 RJ11	For -48 Vdc and AC (100 to 240 Vac) power supply only.
Loop-AM3440-D-QFXS-GS-x	Loop-AM3440-D-QFXS-GS-x-G	Quad FXS with GS plug-in card	

Loop-AM3440-D-QFXS-GM-x	Loop-AM3440-D-QFXS-GM-x-G	Quad FXS with GS and MP 16 KHz voice plug-in card used with 4 RJ11	For x option, please refer to the table below for detail information	
Loop-AM3440-D-QFXS-WW-x	Loop-AM3440-QFXS-WW-x-G	Quad FXS voice plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXS-WW-M-x	Loop-AM3440-QFXS-WW-M-x-G	Quad FXS with MP 16 KHz voice plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXS-WW-M12-x	Loop-AM3440-QFXS-WW-M12-x-G	Quad FXS with MP 12 KHz voice plug-in card with 8 pins wire-wrap pins		
Loop-AM3440-D-QFXS-WW-GS-x	Loop-AM3440-QFXS-WW-GS-x-G	Quad FXS with GS plug-in card with 8 pins wire-wrap pins		
Loop-AM3440-D-QFXS-WW-GM-x	Loop-AM3440-QFXS-WW-GM-x-G	Quad FXS with GS and MP 16 KHz voice plug-in card with 8 pins wire-wrap pins		
Loop-AM3440-D-QFXO-x	Loop-AM3440-D-QFXO-x-G	Quad FXO voice plug-in card used with 4 RJ11	GS = Ground Start MP = Metering Pulse Receive 12/16 KHz For -48 Vdc and AC (100 to 240 Vac) power supply only. For x option, please refer to the table below for detail information	
Loop-AM3440-D-QFXO-M-x	Loop-AM3440-D-QFXO-M-x-G	Quad FXO with MP 16 KHz voice plug-in card used with 4 RJ11		
Loop-AM3440-D-QFXO-M12-x	Loop-AM3440-D-QFXO-M12-x-G	Quad FXO with MP 12 KHz voice plug-in card used with 4 RJ11		
Loop-AM3440-D-QFXO-GS-x	Loop-AM3440-D-QFXO-GS-x-G	Quad FXO with GS plug-in card used with 4 RJ11		
Loop-AM3440-D-QFXO-GM-x	Loop-AM3440-D-QFXO-GM-x-G	Quad FXO with GS and MP 16 KHz voice plug-in card used with 4 RJ11		
Loop-AM3440-D-QFXO-WW-x	Loop-AM3440-QFXO-WW-x-G	Quad FXO voice plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXO-WW-M-x	Loop-AM3440-QFXO-WW-M-x-G	Quad FXO with MP 16 KHz voice plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXO-WW-M12-x	Loop-AM3440-QFXO-WW-M12-x-G	Quad FXO with MP 12 KHz voice plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXO-WW-GS-x	Loop-AM3440-QFXO-WW-GS-x-G	Quad FXO with GS plug-in card with 8 pins wire-wrap		
Loop-AM3440-D-QFXO-WW-GM-x	Loop-AM3440-QFXO-WW-GM-x-G	Quad FXO with GS and MP 16 KHz voice plug-in card with 8 pins wire-wrap		
Accessories				
Power Module				
Loop-AM3440-D-SDB	Loop-AM3440-D-SDB-G	Single -48 Vdc (-36 to -75 Vdc) Power Module (100W)	Order 2 single DC for redundancy	
Loop-AM3440-D-SAB	Loop-AM3440-D-SAB-G	Single AC plug-in power supply (100 to 240 Vac, 50/60 Hz)	For AC choose an appropriate power cord	
User's Manual				
Loop-AM3440-UMD	User's Manual (paper, hard copy-optional). A CD version of the manual is already included as standard equipment.		For AM3440-CHD only	
Power Cord(All power cord are RoHS compliant)				
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			
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-AM3440-FXO BOX	Support FXO Interface Battery Feed			
External LCD				

Loop-AM3440-LCD	Loop-AM3440-LCD- G	External LCD and Keypad	
Software			
Loop-AM3440-ERING	ULSR-PDH Ring software		Used with 4E1, M4E75, M4E120 and FOM
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 Cables(All conversion cables are RoHS compliant)			
Loop-ACC-CAB-DB25M-100-8BNCM	DB25/Male to eight BNC/Male cable; Length: 100 cm		Used in Loop-AM3440-D-M4E75 plug-in card
Loop-ACC-CAB-DB25M-300-8BNCM	DB25/Male to eight BNC/Male cable; Length: 300 cm		Used in Loop-AM3440-M4E75 plug-in card
Loop-ACC-CAB-DB25M-100-4RJ48M	DB25/Male to four RJ48C/Male cable; Length: 100 cm		Used in Loop-AM3440-D-M4E120 plug-in card
Loop-ACC-CAB-DB25M-300-4RJ48M	DB25/Male to eight BNC/Male cable; Length: 300 cm		Used in Loop-AM3440-M4E75 plug-in card
Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS	DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSBU-9 pin/Female (8P8C) plug, L:100cm		Used in Loop-AM3440-D-TS 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-AM3440-D-1V35- G plug-in cards
Blank Panels(All blank panels are RoHS compliant)			
30.001257.A00- G	Blank Panel for Power Supply Slot (flat)		
30.000349.A00- G	Blank Panel for Controller Slot (flat)		For use in any AM3440 chassis
30.000112.A00- G	Blank Panel for mini Slot 1-9 (flat)		For use in any AM3440 chassis
30.001029.A00- G	Blank Panel for Controller (u-shape)		For use in any AM3440 chassis
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

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

cc =	Description	Note
RJ	RJ48C connector	
BNC	BNC connector	

■ Where **opt** is used to select optical module type (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 (19dB) - S1.1	Use dual fiber Units delivered ITU-T G.957 application code
SBB	Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km reach (30dB) - L1.1	
SCC	Single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km reach (20dB) - S1.1	
SDD	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km reach (12dB) - S1.2	
SEE	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km reach (30dB) - L1.2	
SSM	Single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km reach (20dB) - S1.1/S1.2	1310 nm from master to slave Order SSM to use with SSS Use 1 fiber ITU-T G.957 application code
SSS	Single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km reach (20dB) - S1.1/S1.2	1550 nm from slave to master Order SSS to use with SSM Use 1 fiber ITU-T G.957 application code

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

For Quad 2W/4W E&M card:

■ Where **m** is used to select QEM card signaling side (must select one):

m =	Description	Note
B	B (carrier side) connects to A side.	
A	A (exchange side) connects to B side. A side M lead to B side M lead, A side E lead to B side E lead.	

■ Where **n** is used to select QEM card signaling type (must select one):

n =	Description	Note
0	For voice transmission only.	Circuit Type doesn't matter.
1	Type I (Original) E&M Signaling Circuit	M lead provides discharge for the A side.
2	Type II Circuit. This design attempts to reduce ground noise by adding two leads: SB (Signal to Battery) and SG (Signal to Ground)	Reduced ground noise. Ground current is eliminated at the cost of two more wires per circuit.
3	Type III Circuit. The SG lead serves as a discharge for the M lead. Reduces delay caused by combination of (a) low current electronic detectors, and (b) long runs of the E and M leads.	Type III is rare because ground currents on the E return would cause noise
4	Type IV Circuit. Based on the Type 2 circuit. This E&M circuit provides symmetry.	
5	Type V Circuit. For applications where ground noise is not an issue. Based on the Type 2 circuit.	

For voice card(QFXS/QFXO):

■ Where **x** is used to select all of voice card signaling bits. If this option is not required, omit the **x** field in the ordering code.

QEM	E	Follows ETSI signaling bits	
	A	Follows ANSI signaling bits	
	S	Follows customer's special bits assignment	
QFXS/QFXO	A	Follows ANSI signaling bits	■ A and S are for QFXS/QFXO
	S	Follows customer's special bits assignment	
	T	Trunk condition OFF-HOOK	■ T , AT , ST are for QFXO only
	AT	Follows ANSI signaling bits w/ trunk condition OFF-HOOK	
	ST	Follows customer's special bits assignment w/ trunk condition OFF-HOOK	

Note:

1. For S (customer's special bit), please contact your nearest Loop sales representative.
2. If **x** is not selected from table above, the default setting for signaling bits is ETSI and for trunk condition is ON-HOOK.

Examples:

Loop-AM3440-CHD, Loop-AM3440-CCD-E, Loop-AM3440-SD, Loop-AM3440-D-M4E75, Loop-AM3440-D-TS:

For 3440-D type chassis with a CPU card (E1 external clock), a single -48 Vdc power module, one Mini Quad E1 interface with 75 ohm and one 3-channel Terminal Server interface.

LOOP-AM3440-D Access DCS-MUX Product Specifications

Network Line Interface - T1

Line Rate	1.544 Mbps \pm 32ppm	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 - 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	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	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 Module: *T1 ATM UNI*
FR (n x 64 Kbps, n=1 to 24)

-E1 Module: *E1 ATM UNI*
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*

Support HDLC to FR

Support HDLC to ATM

Supporting FR to FR multiplexing.

Support up to 128 DLCIs for total of 31 FR interfaces.

Support up to 128 VCs.

Peak cell rate on DLCI basis.

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

AAL0 and AAL5 are supported in the ATM adaptation layer.

Support VBR service.

ANSI and ITU FR management protocols are supported.

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

Router-A Interface

Number of ports	2 LAN ports, Max. 64 WAN ports, Each WAN port has data rate n x 64K bps, $1 \leq n \leq 32$ (≤ 4 Mbps for total of all 64 WAN ports)
Physical Interface	10/100 BaseT x 2
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

Terminal Server Interface

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	19
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	30
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

DTE Interface (X.21)

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

DTE Interface (V.35)

Data Port	Up to nine 1-port DTE V.35 card
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	DB25S (optional conversion cable DB25S to M34 connector)

DTE Interface (EIA530)

Data Port	Up to nine 1-port EIA530 DTE card
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	DB25S

DTE Interface (RS232)

Data Port	1-port RE232 card
Data Rate	56 or 64 Kbps *n, n=1 - 2
Mapping	Any sequential time slots

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 ohm or 900ohm
Longitudinal Conversion Loss	> 46dB
Longitudinal Balance	> 63dB
Gain Adjustment (all port settings)	Normal mode 0, -3, -6 or +7 dB for transmit (D/A) gain 0, -3, -6 or +10 dB for receive (A/D) gain
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
Signaling	Type I, II, III, IV, V and TO (Transmit Only) signaling options (manufacture option) 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

Voice Card (QFXS, QFXO)

Connector	Four RJ11 or eight pins wire-wrap
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 Conversion Loss	> 46dB
Loss Adjustment	0, 3, 6, or 9 dB transmit & receive, user selectable per card
Signal/ Distortion	> 25dB 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 76 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 $\leq 1800 \Omega$ DC impedance (ON-HOOK) > 1M Ω DC impedance (OFF-HOOK) 235 Ω @ 25mA feed 90 Ω @ 100mA feed
Metering Pulse	12 KHz/16 KHz • 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

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 Console Port (VT100)	10 Base-T, Ethernet, SNMP In-band 64 Kbps supports HDLC/PPP, SSH
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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	To 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), DTE Loopback (DTE-to-DTE, DTE to Line)
Test Pattern	For Controller: 2 ²¹ -1, 2 ¹⁵ -1, 2 ¹¹ -1, 2 ⁹ -1, and 4-byte user define pattern

Front Panel

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

Dimensions	438 x88 x 224 mm (W×H×D)
Power	Single/ Dual -48 Vdc: -36 to -75 Vdc, 100 Watts max. Single AC: 100 to 240 Vac, 50/60 Hz
Temperature	0-55°C
Humidity	0-95%RH (non-condensing)
Mounting	Desk-top stackable, 19" /23" rack mountable
Line Power Supply	N/A
Power Consumption	Max 45 Watts

Certification

AM3440-D

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

Compliance

ITU G.703, G.704, G.706, G.732, G.736, G.823, G.826, G.711, G.712, G.775, O.151, V.11, V.28, V.54



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