Loop-AM3440 Access DCS-MUX

AM3440-A

AM3440-C

Features

- Full frontal access (ETSI) Shelf
- DACS (Digital Access Cross-Connect System) with full non-blocking nx64K (DS0) cross-connect support Dual controller, dual power with load sharing
- E1/T1/TDMoEA 1+1 protection, switching time <50ms
- DS0 Level Nx64K circuit protection
- PDH ring protection, QE1/QT1, FOM, Mini QE1/QT1
- Console, Telnet, and Inband management support SNMP v.1 and v.3
- Craft interface port for connection to external Intelligent Front Panel
- Compatible to a SNMP based GUI network management system and supported by Loop iNET and Loop iNMS
- Two chassis types available: AM3440-A, AM3440-C
- Support SAToP(CCPA T1 SAToP*), CESoPSN, and MEF8 for emulation of TDM circuits
- Support GbE uplinks with CCPA controller installed

* Future Option

All the plug-in cards are hot-pluggable

Item	AM3440-A	AM3440-C
Chassis	5U	3U
# of Mini-slots	4	4
# of Single slots	12	5
Maximum E1/T1 Channels	64	36
Cross-Connect Backplane Capacity	128 Mbps	72 Mbps

Description

The Loop-AM3440-A/C series products are Access DCS-MUXs which support multiplexing of 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 TDM, packet, and voice interfaces and transports over GbE or E1/T1 uplinks. These interfaces are compatible with other Loop products. The AM3440 can act as a mini DACS: 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. Furthermore, the AM3440 also supports TDM circuit emulation protocols. TDM data and voice services can be encapsulated as Pseudowires and transported over ETH/IP/MPLS packet switch networks.

The AM3440 controller module provides full non-blocking Nx64K cross-connect matrix up to 2048 DS0. System redundancy is available in dual controller and power modules, making it an excellent fit for critical applications.

While 1+1 link protection is available for E1, T1, and TDMoEA modules, path protection for end-to-end Nx64K circuit protection is available for 3E1/T1.

The AM3440 supports local control and diagnostics by using a VT-100 terminal connected to the console port. It supports Ethernet, Telnet, and SNMP, so that it can be controlled and diagnosed from remote ends. An in-band management channel with GUI is available as well.

Each of the 3 models of AM3440-A, B, and C has a number of plug-in slots in regular size and mini size. (Card size to slot compatibility is detailed on the next page.) Most of the plug-in cards have LED indications.

The AM3440 consists of a rugged reinforced aluminum chassis, giving this equipment a durable structure and a long-lasting physical life.

Loop-AM3440 plug-in cards:

The mini-slot cards plug into the mini-slots of the AM3440. The single-slot cards plug into single slots. The dual-slot cards plug into two adjacent single slots.

	Controller	CCB	CCPA	CCB	CCPA
Tributary Modules	**Plug-in cards** / **Chassis**	**AM3440-A**		**AM3440-C**	
Single-Slot	3-channel E1	#	√	#	√
	3-channel T1	#	√	#	√
	4-channel E1	√	√	√	√
	4-channel T1	√	√	√	√
	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 Type	√	√	√	√
	8-channel Dry Contact I/O Type B	√	√	√	√
	8-channel 2W/4W E&M (8E&M)	D	√*	D	√*
	8-channel 2W/4W E&M (8E&MA)	√	√	√	√
	12-channel FXS	D	√*	D	√*
	12-channel FXSA	√	√	√	√
	12-channel FXOA	√	√	√	√
	12-channel Magneto	√	√*	√	√*
	1-channel low speed optical (C37.94)	D	D	D	D
	4-channel low speed optical (C37.94)	√	√	√	√
	8-channel RS232 with X.50 subrate	√	√	√	√
	6-port RS232 card (6RS232A) with V.110 encoding	√	√*	√	√*
	8-LAN-port/ 64-WAN-port Router-B	√	√	√	√
	4-channel TDMoEA	√	√	√	√
	8-channel Data Bridge	√	×	√	×
	1FOMA	√	×	√	×
	6-channel UDTEA	√	√	√	√
	8-channel UDTEA	√	√	√	√
	8-channel OCU-DP	√	×	×	×
	6-channel Co-Directional card (6CDA)	√	×	√	×
	VOIPGA interface card	√	√*	√	√*
Dual-Slot	Transfer Trip card (TTA)	√	×	√	×

Mini-Slot	1-channel E1 (Single E1 interface) with 75ohm	√	√	√	√
	1-channel E1 (Single E1 interface) with 120ohm	√	√	√	√
	1-channel T1 (Single T1 interface)	√	√	√	√
	Mini Quad E1 (Four E1 interfaces) with 75ohm	√	√	√	√
	Mini Quad E1 (Four E1 interfaces) with 120ohm	√	√	√	√
	Mini Quad T1 (Four T1 interfaces)	√	√	√	√
	Fiber Optical Interface	√	√	√	√
	LS Optical M1C37 Card	√	√	√	√
	1-channel X.21	√	√	√	√
	1-channel V.35	√	√	√	√
	1-channel RS232	√	√	√	√
	1-channel OCU-DP	×	×	√	×
	Quad E&M (QEMA)	##	##	√	√
	QFXSA (Four FXS voice interface)	##	##	√	√
	QFXO (Four FXO voice interfaces)	##	##	√	√
	QMAGA (Four magneto voice interfaces)	##	##*	√	√*
	2-LAN port/64 WAN port Router-A	√	√	√	√
	Echo Canceller card	√	√	√	√
	Analog Bridge card	√	√	√	√

Note: √ = Supported
× = Not Supported
= Supported by Chassis CHAJ, CHAK and CHCJ only
= Supported by Chassis CHAK only
D =Discontinued
* = Future Option

Controller and Function:

Function \ Controller	CCB	CCPA
LCD[Note]	√	×
DB9 console[Note]	√	×
Micro USB console	√	√
iXC tool	√	√*

Note: Loop-ACC-CAB-HDB15M-25-DB09F-**G** is included for Console/LCD Interface connection.

Ordering Information

To specify options, choose from the list below:

Notes:

1. RoHS compliant units are identified by the letter **G** appearing at the end of ordering code.
2. AM3440 chassis types:

   AM3440-A: 5U chassis with 128 Mb/s cross-connect capacity backplane.

   AM3440-C: 3U chassis with 72 Mb/s cross-connect capacity backplane.

   AM3440-D: 2U chassis with 72 Mb/s cross-connect capacity backplane. Support Mini Plug-in Modules only. Please refer to separate AM3440-D brochure.

Model	Description	Note
Main Unit		
Loop-AM3440-CHAJ-**G**	AM3440-A type Chassis. Wideband Main Unit without CPU, power and plug-in cards	19”/23” ear mount included. Loop-AM3440-CHAJ-**G** is applicable to use with 3E1/3T1 card for DS0-SNCP circuit level protection.
Loop-AM3440-CHAK-**G**	AM3440-A type Chassis. Wideband Main Unit without CPU, power and plug-in cards	19”/23” ear mount included. Loop-AM3440-CHAK-**G** is applicable to use with mini voice cards and with 3E1/T1 for DS0-SNCP circuit level protection.
Loop-AM3440-CHCJ-**G**	AM3440-C type Chassis. Wideband Main Unit without CPU, power and plug-in cards	Loop-AM3440-CHCJ-**G** is applicable to use with 3E1/3T1 card for DS0-SNCP circuit level protection.
CPU Module		
Loop-AM3440-CCB-**mgmt**-**G**	CPU card with E1 External Clock and management software	Default is E1 External Clock; for T1 selection, please change manually. (order two for redundancy) For **mgmt** option, please refer to the following table for detailed information. Loop-ACC-CAB-HDB15M-25-DB09F-**G** is included for Console/LCD Interface connection.
Loop-AM3440-CCPA-**mgmt**-**G**	Packet controller module, supports cross-connect function and two physical Combo GbE (SFP/RJ45) interfaces for TDMoE uplink. One Micro USB console port and one RJ45 SNMP port on board. - Supports SAToP (CCPA T1 SAToP*), CESoPSN, and MEF-8 - Up to 64 Pseudowires - Supports SyncE	Loop-ACC-CAB-HDB15M-100-RJ48M-**G** is applicable to use with Clock interface connection. Please order conversion cable separately. Please specify the **mgmt**. option listed in the tables below
Loop-AM3440-CCPA-NPW-**mgmt**-**G***	Packet controller module, supports cross-connect function. One Micro USB console port and one RJ45 SNMP port on board.	Loop-ACC-CAB-HDB15M-100-RJ48M-**G** is applicable to use with Clock interface connection. Please order conversion cable separately. Please specify the **mgmt** option listed in the tables below

* Future Option

■ Where **mgmt** is used to select the following functions. Please replace **mgmt** with your selection, or leave it blank for nothing.

mgmt=	**Description**	**Note**
LCT	Loop-AM3440-LCT activation license	Used with Loop-LCT Graphical Configuration Software for TDM application
iXC	Loop-AM3440-iXC activation license	Used with Loop-iXC3440 cross-connect mapping tool for management (Controller CCA and CCB supported).
[blank]	No configuration tool for management	If LCT is required in the future, it can be activated by an activation license.

Feature Activation License		
Loop-AM3440-ERINGLIC	Feature Activation License for AM3440 CPU card to support framed E1 PDH-Ring function	Used with 4E1, M4E75, M4E120 and FOM.
Loop-AM3440-TRINGLIC	Feature Activation License for AM3440 CPU card to support framed T1 PDH-Ring function	Used with 4T1 and M4T1.
Loop-AM3440-LCTLIC	Feature Activation License for AM3440 CPU card to support LCT Graphical Configuration Software for TDM application	Used with Loop-LCT Software.
Loop-AM3440-iXCLIC	Feature Activation License for AM3440 CPU card to support iXC3440 Craft GUI Mapping Tool	Used with Loop-AM3440-CCA and AM3440-CCB controller.
Loop-AM3440-CCPA-PW LIC*	Feature Activation License for AM3440 CCPA controller to support TDMoE uplink.	Used with AM3440-CCPA-NPW controller.

Mini Plug-in Module (Select 1 to 4 cards from list below)

Model	**Description**	**Note**
Loop-AM3440-E75-**G**	1-channel of E1plug-in card w/ 75 ohm	
Loop-AM3440-E120-**G**	1-channel of E1 plug-in card w/ 120 ohm	
Loop-AM3440-T1-**G**	1-channel T1 plug-in card	
Loop-AM3440-M4T1-**G**	Mini Quad T1 plug-in card	Includes a three meter conversion cable (Loop-ACC-CAB-DB25M-300-4RJ48M)
Loop-AM3440-M4E75-**G**	Mini Quad E1 plug-in card with 75 ohm	Includes a three meter conversion cable (Loop-ACC-CAB-DB25M-300-8BNCM)
Loop-AM3440-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-RTA-**G**	2-LAN ports/64 WAN port router/bridge plug-in card	
Loop-AM3440-FOM-opt-**G**	Fiber Optical plug-in card	For **opt** option, please refer to the table below for detail information
Loop-AM3440-1ODP	1 port OCU-DP Interface card	For AM3440-CHAK and CHC only Only non-RoHS compliant model available **Limited Quantity**
Loop-AM3440-1X21-**G**	1-channel X.21 plug-in card	
Loop-AM3440-1RS232-**G**	1-channel RS232 plug-in card	
Loop-AM3440-1V35-**G**	1-channel V.35 plug-in card	
Loop-AM3440-QEMA-**wr**-**m**-T**n**-**x**-**G**	Jumper selectable: 2/4 WIRE; A/B side Quad E&M voice card, complied with IEEE1613 standard.	For -48Vdc power supply only. For **wr**, **m**, **n**, **x** option, please refer to the table below for detail information Includes a 0.6 meter conversion cable (Loop-ACC-CAB-DB44M-60-4RJ45M-**G**) For AM3440-CHAK/CHC/CHCJ only
Loop-AM3440-QMAGA- **G**	Quad channel magneto plug-in module with ring across L1&GND and L1&L2. Software programmable.	For AM3440-CHAK, CHC and CHCJ only. Please use with 100-240Vac or ±48Vdc powered main units.
Loop-AM3440-QFXO-**x**-**G**	Quad FXO voice plug-in card	For AM3440-CHAK, CHC and CHCJ only
Loop-AM3440-QFXO-M-**x**-**G**	Quad FXO with MP 16 KHz voice plug-in	

Model	Description	Note
	card	**GS** = Ground Start **MP** = Metering Pulse Receive 12/16 KHz For **x** option, please refer to the table below for detail information QFXO-GM includes all QFXO card functions
Loop-AM3440-QFXO-M12-**x**-**G**	Quad FXO with MP 12 KHz voice plug-in card	
Loop-AM3440-QFXO-GS-**x**-**G**	Quad FXO with GS plug-in card	
Loop-AM3440-QFXO-GM-**x**-**G**	Quad FXO with GS and MP 16 KHz voice plug-in card	
Loop-AM3440-QFXO-GM12-**x**-**G**	Quad FXO with GS and MP 12 KHz voice plug-in card used with 4 RJ11	
Loop-AM3440-QFXSA-**x**-**pt**-**G**	Quad FXSA voice card	For AM3440-CHAK, CHC and CHCJ only Jumper setting options: Loop Start, Ground Start (GS), Metering Pulse Transmit 12/16 KHz (MP) For **x** and **pt** options, please refer to the table below for detail information Work with controller firmware v8.38.01 or up for software programmable signaling bits.
Loop-AM3440-QFXSA-M-**x**-**pt**-**G**	Quad FXSA with MP 16KHz voice card	
Loop-AM3440-QFXSA-M12-**x**-**pt**-**G**	Quad FXSA with MP 12KHz voice card	
Loop-AM3440-QFXSA-GS-**x**-**pt**-**G**	Quad FXSA with GS	
Loop-AM3440-QFXSA-GM-**x**-**pt**-**G**	Quad FXSA with GS and MP 16KHz voice card	
Loop-AM3440-ECA-**G**	Echo canceller plug-in card	For AM3440-CHAK, CHC and CHCJ only
Loop-AM3440-ABRA-**G**	Analog voice bridging plug-in card	For AM3440-CHAK, CHC and CHCJ only
Loop-AM3440-M1C37-**LSFOM**-**G**	1- channel C37.94 plug-in mini card	For AM3440-CHAJ, CHAK, CHC and CHCJ only For **LSFOM** option, please refer to the table below for detail information

Single Slot Plug-in Module

Model	Description	Note
Loop-AM3440-8UDTEA-**opm**-**G**	8-port universal data interface card that supports RS232/RS422/RS485 full-duplex DCE interface which is software configurable Available option mode: Terminal Server, Omnibus, and Clock Pass Through	For **opm** option, please refer to the table below for detail information.
Loop-AM3440-3E1-**cc**-**G**	3-channel E1 plug-in card with DS0 (64K bps) SNCP circuit level protection Note: DS0 SNCP circuit level protection only support E1 frame mode	Order with L**oop-AM3440-CHAJ**-**G** or **Loop-AM3440-CHCJ**-**G** ONLY For **cc** option, please refer to the table below for detail information For controller hardware version **J** and software version **8.02.01** or newer versions.
Loop-AM3440-3T1-**G**	3-channel T1 Interface	Order with **Loop-AM3440-CHAJ** or **Loop-AM3440-CHCJ** ONLY For controller hardware version **J** and software version **8.38.01** or newer versions.
Loop-AM3440-TDMoEA-PPM-**G**	TDMoEA card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Traffic SFP optical module is not included.	For AM3440-CHA, and AM3440-CHC only Please order separately for SFP optical modules from SFP optical brochure.

Loop-AM3440-4E1-**cc**-**G**	4-channel E1 plug-in card	For **cc** option, please refer to the table below for detail information
Loop-AM3440-4T1-**G**	4-channel T1 plug-in card	
Loop-AM3440-2GH-**G**	2-channel G.SHDSL plug-in card (2 pair)	This card can be used in AM3440-A/C only.
Loop-AM3440-4GH-**G**	4-channel G.SHDSL plug-in card (1 pair)	
Loop-AM3440-8CD-**G**	8-channel G.703 plug-in card at 64 Kbps data rate	
Loop-AM3440-8DC-**G**	8-channel dry contact type A plug-in card with maximum voltage 100 Vdc or 250 Vac	
Loop-AM3440-8DCB-**G**	8-channel dry contact type B plug-in card with maximum voltage 220 Vdc or 250 Vac	
Loop-AM3440-4C37-**LSFOM** –**G**	4- channel C37.94 plug-in card	For **LSFOM** option, please refer to the table below for detail information
Loop-AM3440-ODP-**typ**	8-channel OCU-DP plug-in card	For AM3440-CHA only. Only **non-RoHS** compliant model available **Limited Quantity**
Loop-AM3440-8RS232-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	
Loop-AM3440-8RS232-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 (DB44 connector to two DB25 and one DB9 connector; (Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB).
Loop-AM3440-6RS232A-RJ-**G**	6-port RS232 card with V.110 encoding, with 6 RJ48 connectors for 6 RS232 Async ports	This card can be used in AM3440-A/C only.
Loop-AM3440-6RS232A-DB-**G**	6-port RS232 card with V.110 encoding, with 2 DB44 connectors for Async and Sync ports	This card can be used in AM3440-A/C only. Two conversion cables are included, DB44 connector to two DB25 and one DB9 connectors. (Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB)
Loop-AM3440-8DBRA-RJ-**G**	8-channel data bridge plug-in card, with 8 RJ48 connectors for 8 data bridge Async ports	
Loop-AM3440-8DBRA-DB-**G**	8-channel data bridge plug-in card, with 2 RJ48 connectors and 2DB44 connectors for 8 data bridge Async ports	Two conversion cables are included (DB44 connector to two DB25 and one DB9 connector; (Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB).
Loop-AM3440-1FOMA-**opt**-**G**	1FOMA Fiber Optical Interface with 1x9 optical port	For **opt** option, please refer to the table below for detail information For controller hardware version **F** and software version **V8.15.01** or newer versions.
Loop-AM3440-RTB-**G**	8-LAN ports/64 WAN ports router/bridge plug-in card	For controller hardware version **F** and software version **6.05.02** or newer versions.
Loop-AM3440-8EMA-**x-pt-typ-G**	8-channel 2W/4W E&MA plug-in card	**pt** = power type For **x, pt** and **typ** options, please refer to the table below for detail information
Loop-AM3440-12FXSA-**sn-pta-typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and PLAR. Without Ground Start and Metering Pulse. Used with 12 RJ11.	12FXSA-GMP includes all FXS card functions For **sn** option, please refer to the table below for detail information

Loop-AM3440-12FXSA-P-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [PLAR bit programmable]. Without Ground Start and Metering Pulse. Used with 12 RJ11.	**pta**= power type. For **pta** option, please refer to the table below for detail information The IEEE1613 standard applies to AM3440-A/C only Please use with 100-240Vac or ±48Vdc powered main units.
Loop-AM3440-12FXSA-M-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12FXSA-MPP-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable] and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12FXSA-GS-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Ground Start]. Used with 12 RJ11.	12FXSA-GMP includes all FXS card functions **pta**= power type. For **sn, pt, and typ** options, please refer to the table below for detail information. The IEEE1613 standard applies to AM3440-A/C only Please use with 100-240Vac or ±48Vdc powered main units.
Loop-AM3440-12FXSA-GM-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [Ground Start] and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12FXSA-GMP-**sn**-**pta**-**typ**-**G**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable], [Ground Start] and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12FXOA-**typ**-**G**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse and Loop Start. Without Ground Start and Metering Pulse. Used with 12 RJ11.	12FXOA-GM includes all FXO card functions For **typ** option, please refer to the table below for detail information. Please use with 100-240Vac or ±48Vdc powered main units.
Loop-AM3440-12FXOA-M-**typ**-**G**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12FXOA-GS-**typ**-**G**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Ground Start]. Used with 12 RJ11.	
Loop-AM3440-12FXOA-GM-**typ**-**G**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, [Ground Start] and [Metering Pulse]. Used with 12 RJ11.	
Loop-AM3440-12MAGA-**typ**-**G**	12-channel Magneto plug-in module with ring across L1&GND and L1&L2. Software programmable.	Please use with 100-240Vac or ±48Vdc powered main units. For **typ** option, please refer to the table below for detail information
Loop-AM3440-VoIPGA-**pt**-**G**	VoIP Gateway card with 1 WAN and 2 LAN 10/100Base-T interfaces. Supports up to 60 voice channels. Support G.711 a/mμ-law, G.726-32K, G.729 and G.723.1 voice compression formats SIP compliant.	For AM3440-A/C, supported by CCB controller only. For the **pt** option, please refer to the table below for details

Loop-AM3440-6UDTEA-**G**	6-port universal data interface card that supports three software configurable modes: Port 1 to 4: two DB44 connectors Port 5 to 6: two RJ48 connectors Mode 1: Port 1 to 4: RS232/RS422/X.21, Async/Sync 64kbps and subrate with V.110 encoding Port 5 to 6: RS232 for ASYNC only Mode 2: Port 1 to 4: X.21/RS422 SYNC N*64k (N=1~32) Port 5 to 6: Disabled Mode 3: Port 1 to 3: X.21/RS422 SYNC N*64k, (N=1~32). Port 4: X.21/RS422 SYNC, N*64k, (N=1~20). Port 5 to 6: RS232 N*64k (N=1~6) oversampling for ASYNC data. Mode 4: Port 1 to 4: RS232/RS422/X.21/V.35/V.36/EIA530 SYNC 38.4K and subrate Port 5 to 6: Disabled Mode 5: Port 1 to 4: X.21/RS449/RS422/RS232/V.35/V.36/EIA530 SYNC N*64k (N=1~32) Port 5 to 6: Disabled	No conversion cable is included. Please order conversion cable separately from below table. Six conversion cable types are available: - Loop-ACC-CAB-DB44M-100-2DB25F-VB - Loop-ACC-CAB-DB44M-100-2DB15F-VB - Loop-ACC-CAB-DB44M-100-1DB15F-1DB25F-VB - Loop-ACC-CAB-DB44M-100-2M34F-VB - Loop-ACC-CAB-DB44M-100-2DB37F-VB - Loop-ACC-CAB-DB44M-100-1DB37F-1M34F-VB
Loop-AM3440-6CDA-cdm-**G**	6-channel G.703 Interface at 64 Kbps data rate. Per port configurable for Co-directional or Contra-directional interfaces.	For **cdm** option, please refer to the table below for detail information.

Dual Slot Plug-in Module

Model	Description	Note
Loop-AM3440-TTA-**pwr**-**G**	Dual slot transfer trip plug-in module for AM3440-A/C. Four ports for DTT input and output.	Used in Loop-AM3440-A/C Chassis For **pwr** option, please refer to the table below for detail information.

Accessories

Model	Description	Note
Power Module		
Loop-AM3440-SD125-**G**	Single -125 Vdc (-40 to -150 Vdc) Power Module (100W) for AM3440-A only	For AM3440-CHA only For shared redundancy, order 2 single DC If the user orders 100W power module, the maximum number of cards allowed in slot 1 to 12 is: • Four 12-channel FXSA • Nine 12-channel Magneto • Eleven 8-channel 2W/4W E&M • Six 8-channel OCU-DP • Two 24-channel FXSA There are no limitations for other plug-in cards in slot 1 to 12. There are no limitations for any plug-in cards in slot A to D.
Loop-AM3440-SDA-**G**	Single -24Vdc/-48Vdc (-18 to –75 Vdc) power module (150W) for AM3440-A only	For AM3440-CHA only
Loop-AM3440-SDB-**G**	Single -48 Vdc (-36 to -75 Vdc) Power Module (100W) for AM3440-C	For AM3440-CHC/CHCJ For shared redundancy, order 2 single DC.
Loop-AM3440-SAB-**G**	Single AC plug-in power supply (100 to 240 Vac, 50/60 Hz) for AM3440-C	For AC, no redundancy Choose an appropriate power cord
Mounting Ear		
19”/23” ear mounts	A pair of 19”/23” ear mounts is supplied as part of standard package.	For other sizes, please contact your nearest Loop sales representative.
User’s Manual		
Loop-AM3440-UM	User’s Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.	For AM3440-A CCB controller.
Loop-AM3440-UMC	User’s Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.	For AM3440-C CCB controller.
Loop-AM3440-UMP	User’s Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.	For AM3440-A/C/D CCPA controller.
Power Cord		
Loop-ACC-PC-USA-**G**	AC power cord for Taiwan/America	
Loop-ACC-PC-EU-**G**	AC power cord for Europe	
Loop-ACC-PC-UK-**G**	AC power cord for UK	
Loop-ACC-PC-AUS-**G**	AC power cord for Australia	
Loop-ACC-PC-CH-**G**	AC power cord for China	
Power Adaptor		
Loop-ACC-APA-240-**G**	240 Watt, AC (3.6A, auto sensing) to DC (+48 Vdc, 5A) adaptor for USA	
Loop-ACC-APE-240-**G**	240 Watt, AC (3.6A , auto sensing) to DC (+48 Vdc, 5A) adaptor for Europe	
Loop-ACC-APU-240-**G**	240 Watt, AC (3.6A, auto sensing) to DC (+48 Vdc, 5A) adaptor for UK	
Loop-ACC-APA-320-**G***	320 Watt, AC (88~264VAC or 124~370VDC to DC (+48Vdc, 6.7A) Working temperature: -30~+70˚C	
Loop-ACC-APE-320-**G***	320Watt, AC (88~264VAC or 124~370VDC to DC (+48Vdc, 6.7A) Working temperature: -30~+70˚C	

Loop-ACC-APU-320-G*	320Watt, AC (88~264VAC or 124~370VDC) to DC (+48Vdc, 6.7A) adapter for UK Working temperature: -30~+70°C	
Fan Tray		
Loop-AM3440-FAN-G	Fan tray	For AM3440-A only Power supplied from rear of chassis.
Air Flow Guide Rack & Cable Management		
Loop-AM3440-CMA-G	Cable Management for AM3440, 1U (44mm) with 10cm ring	For AM3440-CHA, CHC, CHCJ, CHD
External LCD		
Loop-AM3440-LCDB-G	External LCD and Keypad. Works with a CCB CPU Card.	Only cover selected plug-in cards, contact your nearest Loop sales representative for details. (For CCB controller only).
FXO Box		
Loop-AM3440-FXO BOX	Support FXO Interface Battery Feed	Non-RoHS compliant
Conversion Cables (All conversion cables are RoHS compliant)		
Model	**Description**	**Note**
Loop-ACC-CAB-HDB15M-25-DB09F-G	DB15/Male to DB9/Female cable; Length: 25 cm	For CCB controller Console/LCD interface connection.
Loop-ACC-CAB-HDB15M-100-RJ48M-G	DB15/Male to RJ48/Male cable; Length: 100 cm	For CCPA controller Clock interface connection, including external clock, PPS*, and ToD*
Loop-ACC-CAB-DB25M-100-8BNCM-G	DB25/Male to eight BNC/Male cable; Length: 100 cm	Used in Loop-AM3440-M4E75-G plug-in card
Loop-ACC-CAB-DB25M-100-8BNCF-G	DB25/Male to eight BNC/Female cable; Length: 100 cm	Used in Loop-AM3440-M4E75-G plug-in card
Loop-ACC-CAB-DB25M-300-8BNCM-G	DB25/Male to eight BNC/Male cable; Length: 300 cm	Used in Loop-AM3440-M4E75-G plug-in card
Loop-ACC-CAB-DB25M-300-8BNCF-G	DB25/Male to eight BNC/Female cable; Length: 300 cm	Used in Loop-AM3440-M4E75-G plug-in card
Loop-ACC-CAB-DB25M-100-4RJ48M-G	DB25/Male to four RJ48C/Male cable; Length: 100 cm	Used in Loop-AM3440-M4E120-G plug-in card
Loop-ACC-CAB-DB25M-300-4RJ48M-G	DB25/Male to four RJ48C/Male cable; Length: 300 cm	Used in Loop-AM3440-M4E120-G plug-in card and Loop-AM3440-M4T1-G plug-in card
Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB-G	DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSBU-9 pin/Female (8P8C) plug, Length:100cm	Used in Loop-AM3440-8RS232-DB-G, Loop-AM3440-8DBRA-DB-G, and Loop-AM3440-6RS232A-DB-G plug-in card
Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS-G	DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSBU-9 pin/Female (8P8C) plug, Length:100cm	Used in Loop-AM3440-TS-G plug-in card
Loop-ACC-CAB-DB25M-30-1M34F-G	DSUB-25pin/Male to M34/Female V.35 Conversion cable Length: 30 cm	Used in Loop-AM3440-1V35-G plug-in card
Loop-ACC-CAB-DB44M-100-2DB25F-VB-G	DSUB-44 pin/Male to two DSUB-25 pin/Female plug, Length:100cm	Used in V.35 and RS232 interfaces.
Loop-ACC-CAB-DB44M-100-2DB15F-VB-G	DSUB-44 pin/Male to two DSUB-15 pin/Female plug, Length:100cm	Used in X.21 interface.
Loop-ACC-CAB-DB44M-100-1DB15F-1DB25F-VB-G	DSUB-44 pin/Male to one DSUB-15 pin/Female plug + one DSUB-25 pin/Female plug, Length:100cm	Used in RS232, V.35 and X.21 interfaces.
Loop-ACC-CAB-DB44M-100-2M34F-VB-G	DSUB-44 pin/Male to two M34 pin/Female plug, Length:100cm	Used in V.35 interface.
Loop-ACC-CAB-DB44M-100-2DB37F-VB-G	DSUB-44 pin/Male to two DSUB-37 pin/Female plug, Length:100cm	Used in EIA530/RS449 and RS422 interfaces.
Loop-ACC-CAB-DB44M-100-1DB37F-1M34F-VB-G	DSUB-44 pin/Male to one DSUB-37 pin/Female plug + one M34 pin/Female plug, Length:100cm	Used in V.35, EIA530/RS449 and RS422 interfaces.
Loop-ACC-CAB-DB44M-60-4RJ45M-G	DSUB-44pin/Male to four RJ45 Male (8P8C) conversion cable. Length: 60 cm	Used with QEMA plug-in card.

Loop-ACC-CAB-1SCM-200-1LCF-**G**	One SC/Male to one LC/Female fiber optic adaptor cable. Length: 200 cm	Used with Loop-AM3440-4C37-**T**-**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
Blank Panels(All blank panels are RoHS compliant)		
30.000333.A00-**G**	Blank Panel for Power Supply Slot (flat)	For AM3440-A only
30.001257.A00-**G**	Blank Panel for Power Supply Slot (flat)	For use in AM3440-C
30.000349.A00-**G**	Blank Panel for Controller Slot (flat)	For use in AM3440-A/C chassis
30.000335.A00-**G**	Blank Panel for mini Slot A-D (flat)	For use in AM3440-A/C chassis
30.000331.A00-**G**	Blank Panel for Slot 1-12 (flat)	For use in AM3440-A/C chassis
30.001028.A00-**G**	Blank Panel for Power Slot (u-shape)	For AM3440-A only
30.001029.A00-**G**	Blank Panel for Controller (u-shape)	For use in AM3440-A/C chassis
30.001030.A00-**G**	Blank Panel for mini Slot A-D (u-shape)	For use in AM3440-A/C chassis
30.001027.A00-**G**	Blank Panel for Slot 1-12 (u-shape)	For use in AM3440-A/C chassis

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

Loop-iXC3440 software covers most of AM3440 plug-in cards. Below is the list of cards currently supported by Loop-iXC3440.

Mini Plug-in Module	Description	Note
E1	1-channel E1 plug-in card	
T1	1-channel T1 plug-in card	
sDTE	1-channel DTE plug-in card	
MQE1	Mini Quad E1plug-in card	
MQT1	Mini Quad T1plug-in card	
AFR-E1	E1 ATM/ Frame Relay Interface Card	
AFR-T1	T1 ATM/ Frame Relay Interface Card	
RT	2-LAN ports/32 WAN port Router/Bridge plug-in card	
RTA	2-LAN ports/64 WAN port Router/Bridge plug-in card	
FOM	Mini Fiber Optical plug-in card	
TS	3-channel Terminal Server plug-in card	
Q2EM	Quad 2 wire E&M voice plug-in card	
Q4EM	Quad 4 wire E&M voice plug-in card	
QFXO	Quad FXO voice plug-in card	
QFXS	Quad FXS voice plug-in card	
1OCUDP	1-channel OCU-DP plug-in card	
ECA	Echo Cancellation plug-in card	
ABRA	Analog Bridge plug-in card	
M1C37	Mini 1-channel C37.94 plug-in card	
Single Slot Plug-in Module	**Description**	**Note**
8UDTEA	8-port universal data interface plug-in card	
6UDTEA	6-port universal data interface plug-in card	
3E1	3-channel E1 plug-in card	
3T1	3-channel T1 plug-in card	
TDMoE/TDMoEA	TDMoE plug-in module	
QE1	4-channel E1 plug-in card	
QT1	4-channel T1 plug-in card	
2GH	2-channel G.SHDSL plug-in card	
4GH	4-channel G.SHDSL plug-in card	
8CD	8-channel G.703 plug-in card	
8DC	8-channel dry contact plug-in card	
1C37	1-channel C37.94 plug-in card	

4C37	4-channel C37.94 plug-in card	
OCUDP	8-channel OCU-DP plug-in card	
1FOM	Fiber Optical plug-in card	
8RS232	8-port RS232 with X.50 sub-rate plug-in card	
6RS232A	6-port RS232 with V.110 encoding plug-in card	
8DBRA	8-channel data bridge plug-in card	
RTB	8-LAN ports/64 WAN ports router/bridge plug-in card	
CONF	Conference plug-in card	
8EM/8EMA	8-channel 2W/4W E&M plug-in card	
12FXS/12FXSA	12-channel FXS plug-in card	
12FXO/12FXOA	12-channel FXO plug-in card	
12MAG/12MAGA	12-channel magneto plug-in card	
VOIP	VoIP Gateway plug-in card	
Dual Slot Plug-in Module	**Description**	**Note**
6X21A	6-channel X.21/V.11 plug-in card	
6V36A	6-channel V.36 plug-in card	
6E530A	6-channel EIA530 plug-in card	
5RS232	5-channel RS232 with X.50 subrate plug-in module	
TTA	Transfer trip plug-in module	

For 4E1 and 3E1 cards

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

cc =	**Description**	**Note**
RJ	RJ48C connector	
BNC	BNC connector	

For FOM and 1FOMA card

- Where **opt** is used to select optical module type (All optical modules are RoHS compliant):

opt =	**Description**	**Note**
NHB3S (was SAA)	Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 30 km ***- S1.1***	• Use dual fiber • Units delivered ITU-T G.957 application code
NHB5S (was SBB)	Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km ***– L1.1***	• Use dual fiber • Units delivered ITU-T G.957 application code
NHB3F (was SCC)	Single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km ***– S1.1***	• Use dual fiber • Units delivered ITU-T G.957 application code
***NHC2S (was SDD)**	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km ***– S1.2***	• Use dual fiber • Units delivered ITU-T G.957 application code * For the orders of the listed optical modules, please contact your Loop sales representative.
NHCUS (was SEE)	Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km ***– L1.2***	• Use dual fiber • Units delivered ITU-T G.957 application code
WHD2S (was SSM)	Single optical module with single bi-directional fiber (master), 1310 nm transmit and 1550 receive, SC optical connector, 30 km ***– S1.1/ S1.2***	• 1310 nm from master to slave • Order **WHD2S** to use with **WHE2S** • Use 1 fiber • ITU-T G.957 application code

WHE2S (was SSS)	Single optical module with single bi-directional fiber (slave), 1310 nm receive and 1550 transmit, SC optical connector, 30 km **– *S1.1/ S1.2***	• 1550 nm from slave to master • Order **WHE2S** to use with **WHD2S** • Use 1 fiber • ITU-T G.957 application code

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

For 8UDTEA card

■ Where **opm** is to select 8UDTEA functions:

opm	**Description**
DCE	Support RS232/RS422/RS485 DCE interface which is software configurable
TS	Support Terminal Server Function and DCE
OMNI	Support Omnibus Function and DCE
CPT	Support Clock Pass Through function and DCE
TSOMNI	Support Terminal Server, Omnibus Function and DCE
HD	Support RS232/RS422/RS485 DCE interface with Full- and Half-Duplex modes
TSHD	Support Terminal Server Function and DCE with Full- and Half-Duplex modes
OMNIHD	Support Omnibus Function and DCE with Full- and Half-Duplex modes
TSOMNIHD	Support Terminal Server, Omnibus Function and DCE with Full- and Half-Duplex modes
FULL	Support Terminal Server, Omnibus Function, Clock Pass Through and DCE with Full- and Half-Duplex modes
Feature Activation License	**Description**
Loop-AM3440-8UDTEA-TSLIC	Feature Activation License for AM3440 8UDTE card to support Terminal Server function
Loop-AM3440-8UDTEA-OMNILIC	Feature Activation License for AM3440 8UDTE card to support Omnibus function
Loop-AM3440-8UDTEA-CPTLIC	Feature Activation License for AM3440 8UDTE card to support Clock Pass Through function
Loop-AM3440-8UDTEA-TSOMNILIC	Feature Activation License for AM3440 8UDTE card to support Terminal Server function and Omnibus function
Loop-AM3440-8UDTEA-HDLIC	Feature Activation License for AM3440 8UDTE card to support Full- and Half-Duplex modes
Loop-AM3440-8UDTEA-TSHDLIC	Feature Activation License for AM3440 8UDTE card to support Terminal Server function with Full- and Half-Duplex modes
Loop-AM3440-8UDTEA-OMNIHDLIC	Feature Activation License for AM3440 8UDTE card to support Omnibus function with Full- and Half-Duplex modes
Loop-AM3440-8UDTEA-TSOMNIHDLIC	Feature Activation License for AM3440 8UDTE card to support Terminal Server function and Omnibus function with Full- and Half-Duplex modes
Loop-AM3440-8UDTEA-FULLLIC	Feature Activation License for AM3440 8UDTE card to support Terminal Server, Omnibus and Clock Pass Through functions with Full- and Half-Duplex modes

For Quad E&M A card:

■ Where **wr** is used to select wire type:

wr =	**Description**	**Note**
2w	2 wire	
4w	4 wire	

■ 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**
O	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 (8EMA, QFXO, QEMA, and QFXSA):

■ 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.

	x =	**Description**	**Note**
8EMA	**E**	Follows ETSI signaling bits	
	A	Follows ANSI signaling bits	Jumper selectable for all channels
	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	
QFXO	**x** =	**Description**	**Note**
	A	Follows ANSI signaling bits	
	E	Follows ETSI signaling bits	
	S	Follows customer's special bits assignment	
	T	Trunk condition OFF-HOOK	
	AT	Follows ANSI signaling bits w/ trunk condition OFF-HOOK	
	ST	Follows customer's special bits assignment w/ trunk condition OFF-HOOK	
QEMA	**x =**	**Description**	**Note**
	A	Follows ANSI signaling bits	Jumper selectable for all channels.
	E	Follows ETSI signaling bits	
	S	Follows customer's special bits assignments	
QFXSA	**x =**	**Description**	**Note**
	A	Follows ANSI signaling bits	- This option applies to controller version v8.36.XX and before.
	E	Follows ETSI signaling bits	
	S	Follows customer's special bits assignment	- If this option is not required, omit the **x** field in the ordering code.

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.

For 8EMA card:

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

pt=	Description	Note
24	For AM3440-A type chassis using SDA power module with ±24Vdc input power	
PWR	For AM3440-A type chassis using SDA power module with ±48Vdc input power, or AM3440-A type chassis using SD125 power module with ±125Vdc input power or AM3440-C type chassis using SDB power module with ±48Vdc input power, or AM3440-C type chassis using SAB power module with 100 to 240Vac input power.	
PWRIE1613	For AM3440-A type chassis using SDA power module with ±48Vdc input power, compiled with IEEE1613 standard For AM3440-C type chassis using SDA power module with ±48Vdc input power, compiled with IEEE1613 standard	

■ Where **typ** is used to select the connector type:

typ=	Description	Note
RJ	8 x RJ45	
TELCO	1 x Telco 64	

For 12-channel FXSA 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
sn = omit	FXS Loop Feed = -48 Vdc with 25 mA current limit; alarm tone enable; normal ring	
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 **pta** is used to select the following functions.

pta=	Description	Note
24	For AM3440-A type chassis using SDA power module with ±24Vdc input power	
PWR	For AM3440-A with ±48Vdc (SD, SDA, or SD125) For AM3440-C with ±48Vdc (SDB) and AC (SAB) power modules	
PWRIE1613	For AM3440-A with ±48Vdc (SDA) power complied with IEEE1613 standard For AM3440-C with ±48Vdc (SDB) power complied with IEEE1613 standard	

■ Where **typ** is used to select the connector type:

typ=	Description	Note
RJ	12 x RJ11	
TELCO	1 x Telco 64	

For 12FXOA/12MAGA

■ Where **typ** is used to select the connector type:

typ=	Description	Note
RJ	12 x RJ11	
TELCO	1 x Telco 64	

For ODP

■ Where **typ** is used to select the connector type:

typ=	Description	Note
RJ	8 x RJ48S	
TELCO	1 x Telco 64	

For QFXSA card:

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

pt=	Description	Note
24	For AM3440-A type chassis using SDA power module with ±24Vdc input power	For AM3440-CHAK /CHC/CHCJ only
PWR	For AM3440-A with ±48Vdc (SD, SDA, or SD125) For AM3440-C with ±48Vdc (SDB) and AC (SAB) power modules	
PWRIE1613	For AM3440-A with ±48Vdc (SDA) power complied with IEEE1613 standard For AM3440-C with ±48Vdc (SDB) power complied with IEEE1613 standard	
24IE1613	For AM3440-A with ±24Vdc (SDA) power complied with IEEE1613 standard.	

For C37.94 Card:

■ Where **LSFOM** is to select **LS**-**F**iber **O**ptical **M**odule option, please replace **LSFOM** with your selection.

LSFOM Code	Description										Notes
	Mode		Data Rate		Wave Length		Distance		Connector		
	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	
ZRATT	Z	1 x 8 Multi-mode	R	2 M	A	820nm	T	2km	T	ST connector	1 x 8 Separate transceiver & receiver
QRATT	Q	1 * 9 Multi-mode	R	2 M	A	850nm	T	2km	T	ST connector	1 x 9
***NFB3T**	N	1 x 9 Single mode	F	125 M	B	1310nm	3	30km	T	ST connector	
***QFBTT**	Q	1 x 9 Multi-mode	F	125 M	B	1310nm	T	2km	T	ST connector	
***NHC2S**	N	1 x 9 Single mode	H	155 M	C	1550nm	2	20km	S	SC connector	
T	Single mode, 1310nm, Tx_min -13dBm, Rx_max -30dBm, SC type connector. Works with Toshiba teleprotection device										Must use 3 x DS0
S	Single mode,1310nm, Tx_min -14dBm, Rx_max -36dBm, ST type connector Works with SEL teleprotection device										Must use 8 x DS0

** For the orders of the listed optical modules, please contact your Loop sales representative.*

For mini C37.94 Card:

■ Where **LSFOM** is to select **LS**-**F**iber **O**ptical **M**odule option, please replace **LSFOM** with your selection.

LSFOM Code	Description										Notes
	Mode		Data Rate		Wave Length		Distance		Connector		
	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	
ZRATT	Z	1 * 8 Multi-mode	R	2 M	A	820nm	T	2km	T	ST connector	1 * 8 Separate transceiver & receiver
QRATT	Q	1 * 9 Multi-mode	R	2 M	A	850nm	T	2km	T	ST connector	1 * 9

***NFB3T**	N	1 x 9 Single mode	F	125 M	B	1310nm	3	30km	T	ST connector	
***QFBTT**	Q	1 x 9 Multi-mode	F	125 M	B	1310nm	T	2km	T	ST connector	
***NHC2S**	N	1 x 9 Single mode	H	155 M	C	1550nm	2	20km	S	SC connector	

** For the orders of the listed optical modules, please contact your Loop sales representative.*

For Transfer Trip (TTA) Card:

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

pwr=	Description	Note
24*	Complied with 24/48V voltage	
48	Complied with 48/125V voltage	
125*	Complied with 125/250V voltage	

*Future option

For 6CDA Card:

■ Where **cdm** is used for co-directional/contra-directional mode selection. Must select one from table below.

cdm=	Description	Note
cc	Supports G.703 Contra-directional controlling (DCE) and Co-directional interface configuration	
cs	Supports G.703 Contra-directional subordinate (DTE) and Co-directional interface configuration	
mixed	Supports G.703 Contra-directional controlling (DCE), Contra-directional subordinate (DTE) and Co-directional interface configuration	

For TDMoEA:

SFP Optical/Electrical Module Plug-in option, please go to SFP Optical Module Brochure for detail.

For VOIPGA

■ Where **pt** is used to select the power type:

pt=	Description	Note
PWR	For AM3440-A with -48Vdc (SDA) power module For AM3440-C with -48Vdc (SDB) power module	For AM3440-CHAK/CHC/CHCJ

Ordering Examples

Example 1:

Loop-AM3440-CHAK, Loop-AM3440-CCB, Loop-AM3440-SDA, Loop-AM3440-4E1-RJ, Loop-AM3440-8RS232:

For AM3440-A type chassis with a CPU card (E1 external clock), a single -48 Vdc 150W power module, 4-channel E1 interface with RJ48C connectors, one 8RS232 plug-in module and fan tray.

Example 2:

Loop-AM3440-CHCJ, Loop-AM3440-CCB, Loop-AM3440-SDB, Loop-AM3440-M4E120, Loop-AM3440-2GH:

For AM3440-C type chassis with a CPU card (E1 external clock), a single -48 Vdc 100W power module, one Mini Quad E1 interface with 120 ohm and one 2-channel G.SHDSL plug-in module (2 pair).

Loop-AM3440 Access DCS-MUX Product Specifications

CCPA Controller on-board Combo Gigabit Ethernet (GbE) Interface for TDMoE Services

Number of Ports	2
Speed	10/100/1000M bps
Connector	RJ45 for twisted pair GbE, LC for optical GbE, auto detection
Ethernet Function	
Basic Features	MDI/MDIX for 10/100/1000M BaseT auto-sensing Ping function contained ARP
Pseudowire	
Concurrent PW	Up to 64
Encapsulation Format	SAToP (T1 SAToP*), CESoPSN, MEF-8 (CESoETH)
QoS	User configurable 802.1p CoS, ToS in out-going IP frame
Clock Source	Internal, Line Interface, 1 External Clock In (2.048Mbps E1 / 1.544Mbps T1 / 2048 KHz), 1 External Clock Out (2.048Mbps E1 / 1.544Mbps T1 / 2048 KHz), Adaptive Clock Recovery for Pseudowires, SyncE
Alarm Relay	Max. Current: 1A for 24VDC, 0.625A for 48VDC Four Alarms (1 x Fuse alarm, 1 x Critical alarm, 1 x Major alarm, 1 x Minor alarm)
Management	
Console	Micro USB Connector User Interface: Menu driven VT-100
Ethernet	2 Combo GE port, Connector: RJ45 & SFP SNMPv1/v3, Telnet/SSH, support Radius client function
Inband Management	Inband 64 Kbps, support HDLC/PPP
System Configuration Parameters	Active Configuration, Stored Configuration, and Default Configuration (Stored in Non-volatile Memory)
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. Also available in Statistics (%)
Alarm Queue	To record the latest alarm type, location, date and time
Threshold	Bursty Seconds, Severely Errored Second, Degraded Minutes
Diagnostics	
Loopback	E1/T1 interface (Line Loopback, Payload Loopback, Local Loopback), DTE Loopback (DTE-to-DTE, DTE to Line)
Test Pattern	For Controller: 2^{20}-1, 2^{15}-1, 2^{11}-1, 2^{9}-1, and 4-byte user define pattern
Front Panel	
Controller LED Indicators	Power, ACTIVE, ALARM

* Future Option

CCB Controller

Clock Source	Internal, Line Interface, External (E1/T1/2048 KHz), Adaptive Clock Recovery for Pseudowires (with TDMoEA module), SyncE
Alarm Relay	Max. Current: 1A for 24VDC, 0.625A for 48VDC Fuse alarm, performance alarm
Management	
Console	Electrical: RS232; Connector: HB15, female (with HB15-to-DB9 adaptor) Micro USB User Interface: Menu driven VT-100
Ethernet	1 Combo GE port, Connector: RJ45 & SFP SNMPv1/v3, Telnet/SSH
Inband Management	Inband 64 Kbps, support HDLC/PPP
System Configuration Parameters	Active Configuration, Stored Configuration, and Default Configuration (Stored in Non-volatile Memory)
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. Also available in Statistics (%)
Alarm Queue	To record the latest alarm type, location, date and time
Threshold	Bursty Seconds, Severely Errored Second, Degraded Minutes
Diagnostics	
Loopback	E1/T1 interface (Line Loopback, Payload Loopback, Local Loopback), DTE Loopback (DTE-to-DTE, DTE to Line)
Test Pattern	For Controller: 2^{20}-1, 2^{15}-1, 2^{11}-1, 2^{9}-1, and 4-byte user define pattern
Front Panel	
Controller LED Indicators	Power, ACTIVE, ALARM A, B, C, D slots: Multi-Color LED indication

Physical /Electrical

Model	AM3440-A		AM3440-C	
Dimensions	432.4 x 220 x 223.5 mm (W×H×D)		438 x 132 x 224 mm (W×H×D)	
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	
Temperature	Operating	Storage	Operating	Storage
	-20 to 65°C	-30 to 70°C	-20 to 65°C	-30 to 70°C
Weight	Net Weight	Max. Weight	Net Weight	Max. Weight
	6.0 Kg (13.23lbs)	16 Kg (35.28lbs)	5.0Kg (11.02lbs)	10.0 Kg (22.05lbs)
Humidity	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	
Line Power Supply	Available only with DC power for G.SHDSL card only		N/A	
Power Consumption	Max 110 Watts		Max 57 Watts	
MTBF	421.91 years		213.68 years	

Certification

AM3440-A	AM3440-C
EN55022 Class A, EN50024, EN300 386, FCC Part 15 Class A, FCC Part 68, CS-03, IEC60950, UL60950, IEC 61850-3, IEEE 1613	EN55022 Class A, EN50024, EN300 386, FCC Part 15 Class A, FCC Part 68, IEC60950-1, CS-03, EN60950-1, IEC 61850-3, IEEE 1613

Compliance

ITU G.703, G.704, G.706, G.732, G.736, G.823, G.826, G.711, G.712, G.775, O.151, Q552, Q553, V.11, V.28, V.54
IETF SNMP v.3 (RFC2571~2575), ITU-T Rec.G.821, ITU-T Rec.G.827

Loop-VV Y-BOX

LINE

Connector	BNC or RJ48C
Port Number	For Y-BOX with BNC connectors: 4 line ports For Y-BOX with RJ48C connectors: 16 line ports
Protection	For Y-BOX with BNC connectors: support 2 Quad E1 plug-in card, 4 active E1, 4 standby E1 For Y-BOX with RJ48C connectors: support 8 Quad E1 plug-in cards, 16 active E1, 16 standby E1 For Y-BOX with RJ48C connectors: support 8 Quad T1 plug-in cards, 16 active T1, 16 standby T1

Mechanical

Height	44.5 mm/ 1.75 in
Width	432 mm/ 17 in
Depth	100 mm/ 3.9 in

Transportation Cards

Network Line Interface - T1

Line Rate	1.544 Mbps ± 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 ± 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 ± 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

Network Line Interface - Mini 4T1

Line Rate	1.544 Mbps ± 32 ppm	Framing	D4/ESF
Line Code	AMI/B8ZS	Connector	DB25S
Input Signal	ITU G.703 DSX-1 0dB to -30dB w/ALBO	Output Signal	ITU G.703 DSX-1 w/o, -7.5, -15dB LBO ITU G.703 DSX-1 w/short (0-110, 110-220, 220-330, 330-440, 440-550, 550~660 feet)
Jitter	AT&T TR 62411	Pulse Template	AT&T TR 62411
Data Rate	n * (64) Kbps (n=1-24)		

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 circuit level protection		

Network Line Interface - 3T1

Line Rate	1.544 Mbps ± 32 ppm	Framing	D4/ESF

		Output Signal	DSX-1 w/0, -7.5, -15dB LBO
Line Code	AMI/B8ZS	Connector	RJ48C
Input Signal	DSX-1 0dB to -30dB w/ALBO	Pulse Template	AT&T TR 62411
Jitter	AT&T TR 62411	Surge Protection	FCC Part 68 Sub Part D
Data Rate	N * (64) Kbps (n = 1 to 24)		

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

Fiber Optical Interface (FOM, 1FOM-A)

Source	MLM Laser	Line Code	Scrambled NRZ
Wavelength	1310 ± 50 nm, 1550 ± 40 nm	Detector Type	PIN-FET
50 Km reach		Protection	Optional 1+1 APS

NOTE: Longer or shorter, 15 to 120Km, on special order.

Optical Module	Fiber Direction	Wavelength (nm)	Connector	Distance (km)
NHB3S (was SAA)	Dual uni-directional	1310	SC (Subscriber Connector)	30
NHB5S (was SBB)	Dual uni-directional	1310	SC (Subscriber Connector)	50
NHB3F (was SCC)	Dual uni-directional	1310	FC (Fiber Connector)	30
*NHC2S (was SDD)	Dual uni-directional	1550	SC (Subscriber Connector)	20
SEE	Dual uni-directional	1550	SC (Subscriber Connector)	100
WHD2S (was SSM)	Single bi-directional (master)	1310/1550	SC (Subscriber Connector)	30
WHE2S (was SSS)	Single bi-directional (slave)	1550/1310	SC (Subscriber Connector)	30

NOTE: Other fiber optical options available on special order

* For the orders of the listed optical module, please contact your Loop sales representative.

G.SHDSL Line Interface

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

TDMoEA

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
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: a. From 64 Kbps to 1 Mbps in increments of 64 Kbps b. From 1 Mbps to 100 Mbps in increments of 1 Mbps c. 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 supports Link Aggregation

Jitter & Wander

PPM: per G.823 Traffic

Standards Compliance

IEEE		IETF	
802.1d	MAC Table Learning and STP	RFC2236	IGMP Snooping v2*
802.1p	Priority Code Point		
802.1q	VLAN	RFC2495	E1/T1 OAM
802.1s	MSTP*		
802.1w	RSTP		
802.1ad	Tag Stacking (Q-in-Q)	RFC 4553	SAToP
802.3ad	Link Aggregation	RFC 5086	CESoPSN
		ITU	
MEF		G.823/G.824	Traffic Interface
8	CESoETH		

Certifications

EMC	EN55022 Class A, EN50024, FCC Part 15 Subpart B Class A
Safety	EN60950-1(CE)

* Future option

VOIPGA

Physical Interfaces

- WAN: 1 x 10/100 Mbps, 1G
- LAN: 2 x 10/100 Mbps, 1G

Voice Features

- G.711 a/μ, G.726(32K), G.729, G.723.1
- Silence Suppression and Detection
- Echo Cancellation (G.168)
- Adjustable jitter buffer
- Adjustable packet time (by Codec type)
- Programmable Gain Control[Note]
- Adjustable call progress tone volume[Note]

Telephony Specifications

- In-Band DTMF, Out-of-Band DTMF Relay (RFC2833 or SIP INFO)
- Caller ID[Note]
- T.30 FAX passthrough, T.38 Real Time FAX Relay[Note]

SIP Call Features

- Peer to Peer Call
- Call Forward - unconditional, busy[Note]
- Do Not Disturb[Note]
- Hot Line and Warm Line

SIP Account Management

- By channel registration
- Invite with Challenge
- Support RFC3986 SIP URI format
- Phone Book Function (point-to-point call, and cross-area call without SIP Server)

Note: Configurable only through WEB management.

Serial and Digital Access

DTE Interface (X.21)

Data Port	1-port DTE X.21 card
Data Rate	56 or 64 Kbps, n = 1 to 32
Connector	DB15S

DTE Interface (V.35)

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

DTE Interface (RS232/V.24)

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

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, 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					
Card Type	Port Number							
	1	2	3	4	5	6	7	8
Eight RJ48	Async/ Sync Note 1	Async/ Sync Note 1	Async	Async/ Sync Note 1	Async/ Sync Note 1	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) DB44 (port1,port2,port3), DB44 (port4,port5,port6), RJ48 (port7) and RJ48(port8)							
Conversion Cable	A three-into-one conversion cable adapts the DB44 connector to 3 connecters (one DB9S and two DB25S)							
Electrical	RS232 Interface, DCE							

Note 1: Sync- with rate up to 19.2 Kbps achieved by oversampling at 64 Kbps

DTE Interface (RS232 with V.110 encoding, 6-port)

Data Port	Up to 6 port						
MUX	Maximum 6 subrate port / 64Kbps						
Protocol	Supports V.110						
Data Rate	Asynchronous	Mux mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K				
		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, 19.2K,				
		Independent mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 48K, 64K				
Card Type	Port Number						
	1	2	3	4	5	6	
RJ48	Async	Async	Async	Async	Async	Async	
DB44	Sync/Async	Sync/Async	Async	Sync/Async	Sync/Async	Async	
Connector	DB44 (port1,port2,port3) DB44 (port4,port5,port6) or RJ48 (port 1 to Port 6 are 6RJ48)						
Alarm	Remote Alarm RTS Loss						
Loopback	To-DTE To-DS1 (To Line)						
Electrical	RS232 Interface, DCE						

DTE Interface (Data Bridge Card)

Data Port	Up to twelve 8-port data bridge card (each card supports up to 120 DS0 for data bridge)	
Feature	20 end points per multi-drop circuit to into a logical ended 56K or 64K channel Per port supports bridge function to N remote Trib. Site (N=1~20)	
Data Rate	Asynchronous	Support to receive 1200 to 19200 bps asynchronous data via oversampling channel
Bridge function	one port with one DS-0 to many (Maximum is 20 for remote Tributary data box)	

20 drops for each DS0 to remote Tributary data box and 8 ports RS232 shared the 128 channels.

6UDTEA Card

Mode 1: Sub-Rate mode

DTE Interface (RS232)

Data Port	Up to 2		
MUX	Maximum 6 subrate port / 64Kbps		
Data Rate	Asynchronous	Mux mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K
		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, 19.2K,
		Independent mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 48K, 64K
Connector	RJ48-ASYNC (Port5, Port6)		
Alarm	Remote Alarm		
	RTS Loss		
Loopback	To-DTE		
	To-DS1 (To Line)		
Electrical	DCE		
Protocol	V.110		

DTE Interface (X.21/RS232/RS422)

Data Port	Up to 4		
MUX	Maximum 4 subrate port / 64Kbps		
Data Rate	Asynchronous	Mux mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K
		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, 19.2K,
		Independent mode	0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 48K, 64K
Connector	DB44 (Port1, Port2), DB44 (Port3, Port4)		
Alarm	Remote Alarm		
	RTS Loss		
Loopback	To-DTE		
	To-DS1 (To Line)		
Electrical	DCE		
Protocol	V.110		

Mode 2: N*64K Mode

DTE Interface (X.21/RS232/V.35/V.36/EIA530/RS449)

Data Port	Up to 4 (Port 1 to 4)
Data Rate	Synchronous N*64kbps, N = 1 to 32
	Asynchronous mode is not supported.
Connector	DB44 (Port 1, Port 2), DB44 (Port 3, Port 4)
Alarm	RTS Loss
Loopback	To-DTE
	To-DS1 (To Line)
Electrical	DCE

Note: When oversampling is enabled in MODE2, port 5 ~ 6 will be disabled.

Mode 3: Hybrid Mode

DTE Interface (X.21/RS232/V.35/V.36/EIA530/RS449)

Data Port	Up to 4 (Port 1 to 4)
Data Rate	Synchronous N*64kbps, N = 1 to 32 for port 1 ~ 3 ; N = 1 to 20 for port 4
	Asynchronous mode is not supported.
Connector	DB44 (Port 1, Port 2), DB44 (Port 3, Port 4)
Alarm	RTS Loss
Loopback	To-DTE
	To-DS1 (To Line)
Electrical	DCE

DTE Interface (RS232)

Data Port	Up to 2 (Port 5 and Port 6)
MUX	Maximum 2 oversampling port
Data Rate	No Synchronous mode supported
	Asynchronous 200, 300, 0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K, 57.6K, 115.2K, 128K

Connector	RJ48 (Port 5, Port 6)
Alarm	Remote Alarm
	RTS Loss
Loopback	To-DTE
	To-DS1 (To Line)
Electrical	DCE

Mode 4: Clock Pass Through

DTE Interface (X.21/RS449/RS422/RS232/V.35/V.36/EIA530)

Data Port	Up to 4 (Port 1 to 4)
Data Rate	Synchronous 0.6K, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K, 38.4K
	Tx and Rx byte count
Connector	DB44
Alarm	LOLC, LOCH, CRE
Loopback	To-DTE, To-DS1 (To Line)
Electrical	DCE

Note: Port 5~6 are disabled in Mode 4.

Mode 5: N x 64K with Local and Remote Loopback

DTE Interface (X.21/RS449/RS422/RS232/V.35/V.36/EIA530)

Data Port	Up to 4 (Port 1 to 4)
Data Rate	Synchronous N*64kbps, N = 1~32
Connector	DB44
Protection	DTE signal duplicated via Y-box and transported by working and protection cards
Alarm	RTS Loss, FPGA fail
Diagnostics	DTE Loopback: To-DTE, To-DS1 (To Line)
	Local and Remote Loopback (except for X.21 interface)
	V.54 standard
	BERT
Electrical	DCE

Note: Port 5~6 are disabled in Mode 5.

8 Port OCU-DP Interface Card

Ports	8 Ports for each card
Connector	Eight RJ45 or one Telco 64
Line Status Indicator	Per Port 1 dual color LED; Red for LOS, Green for SYNC
Network Connector	RJ48S or Telco64
Electrical Network Connection	Tip/Ring and Tip1/Ring1
Transmit Source Impedance	135 Ohms +/-20%
Receive Input Imdednace	135 Ohms +/-20%
Receiver Sensitivity	0 to 43 dB loop loss at 72K & 56K
Dynamic Range	0 to 34 all other rates Automatic line equalization
Pulse Amplitude	+/- 1.5V (+/-10%) peak, all rates except 9.6K
	+/-0.75 (+/-10%) peak at 9.6K
	Bipolar Return to zero, 50 duty cycle
Sealing Current	Typically 16mA DC
Operating Modes	4-wire DDS
	Switched 56 support is optional
Circuit Rates	SYNC: 2.4, 4.8, 9.6, 19.2, 56, 72 kbps (64k) clear channel
	Conforms with AT&T Pub 41458
Encoding and decoding rules	Use bipolar violation to indicate control information: Idle, out of service, Zero Subsitution using unframed loops
Maintenance control	DSU Non-latching loop-back code (for 2.4, 4.8, 9.6, 19.2, 56k circuit rate)
	DSU Latching loop-back (TIP, LSC, LBE, FEV) code (for 72k circuit rate)
	Machine maintenance OCU/DP card operation:
	Payload loopback
	OCU loopback
	Local loopback
	Bi-directional loopback
	V.54 remote loopback code
	Custom defined remote loopback code
	BERT test support all ones, all zeros, 2047,511,63 pattern.
Fault and Performance	LOS, OOS, ES, SES and UAS alarm.
	Current, last 96 registry and 7 days performance storage.
Enviroment	Operating: 0-50°C

	Storage: -25-75°C Humidity: Up to 90% RH non-condensing
Specification Standard	ANSI T1.410; AT&T Pub 62319, AT&T Pub 62310, ITU-T V.54

Co-directional Interface

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

Voice and Analog Access

Voice Card (QEMA)

Connector	One 44-pin connector, adaptor cable included for 4 RJ45 connectors.
Power	110-220Vac, ±48Vdc
Alarm Conditioning	CGA busy after 2.5 seconds of LOS, LOF
Encoding	A-law or μ-law, user selectable as a group
Impedance	Balanced 600 or 900ohms
Gain Adjustment (Per-port setting)	-10 to +7 dB / 0.1dB step for transmit (D/A) gain
Gain Variation	± 0.5 dB at 0 dBm0 input
Frequency Response	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
I/O Power Range	A/D Analog input level: -66 dBm (0.00039 Vrms) ~ + 3 dBm (1.09 Vrms) D/A Analog output level: -66 dBm (0.00039 Vrms) ~ + 4 dBm (1.22 Vrms)
Longitudinal Balance	> 63dB
Longitudinal Conversion Loss	＞ 46dB
Total Distortion	＞ 35 dB at 0 dBm0 input
Idle Channel Noise	＜ -65 dBm0p
Wire Mode	2 wire and 4 wire
Signaling	Type I, Type II, Type III, Type IV, Type V, and TO (Transmission Only)
M Lead Output Current	18 mA (maximum)
E Lead Sensor Current	0.3 mA (minimum)
EM Type Setting	Jump Selectable
Relative Humidity	0% to 95%
Carrier Connection	Side A and side B setup by Jump

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 (8EMA)

Connector	Eight RJ45 or one Telco 64
Power	±48 Vdc for 8EMA
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
Gain Adjustment (Per-port setting)	-16 to +7 dB / 0.1dB step for transmit (D/A) gain -16 to +14 dB / 0.1dB step for receive (A/D) gain
I/O Power Range	A/D Analog input level: -66 dBm (0.00039 Vrms) ~ + 3 dBm (1.09 Vrms) D/A Analog output level: -66 dBm (0.00039 Vrms) ~ + 4 dBm (1.22 Vrms)
Gain Variation	±0.5 dB at 0 dBm0 input
Frequency Response	±0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
Longitudinal Conversion Loss	> 46dB
Total Distortion	＞ 35 dB at 0 dBm0 input
Idle Noise	＜ -65 dBm0p
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.

QMAGA (old crank-handle hot-line telephones), MRD (Manual Ring Down) Voice Card

Connector	RJ11 x 4
Power	110-220 Vac or ±48 Vdc
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 (for magneto telephone impedance)
Longitudinal Conversion Loss	> 46dB
Gain Adjustment	-16 to +7 dB / 0.1dB step transmit gain (D-A) -16 to +13 dB/0.1dB step receive gain (A-D)
Signal/ Distortion	> 25dB with 1004 Hz, 0dBm input
Frequency Response	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
Idle Channel Noise	Max. –65 dBm0p
Signaling	
Minimum Detectable Ringing Voltage	16 Vrms
Crank Detectable Across	L1 & L2 Mode (Tip and Ring), L1 & GND Mode(Tip and GND)
Crank Detected time	Valid crank: more than 250 ms Invalid crank: less than 160 ms
Ringing Generation	Voltage: 76 Vrms (sine wave) Frequency: 25Hz
Ring duration	Software configurable options: ***1. PLAR OFF*** **Continuous** Ring duration depends on cranking time **One Time** Crank the phone for one time, and the ring duration of the far-end phone could be 0.7, 1.0, 1.5 or 2.0 sec ***2. PLAR ON*** when FXS phone off-hooked, the ring duration of the far-end magneto phone could be 0.7, 1.0, 1.5 or 2.0 sec
Ringing Send Across	L1 & L2 Mode (Tip and Ring), L1 & GND Mode(Tip and GND)
Signaling	Turn Magneto Phone crank (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 (PLAR OFF) for communications between magneto telephones
- Use Magneto card PLAR ON mode setting for communications between a magneto telephone and a regular telephone
- PLAR stands for *Private Line Auto Ring down.*

12 MAGA (old crank-handle hot-line telephones), MRD (Manual Ring Down) Voice Card

Connector	Twelve RJ11 or one Telco 64
Power	110-220 Vac or ±48 Vdc
Alarm Conditioning	CGA busy after 2.5 seconds of LOS, LOF
Encoding	A-law or μ-law, user selectable per card configurable
Impedance	Balanced 600 or 900 ohms (for magneto telephone impedance)
Longitudinal Conversion Loss	> 46dB
Gain Adjustment	-21 to +7 dB / 0.1dB step transmit gain (D-A) -21 to +13 dB/0.1dB step receive gain (A-D)
Signal/ Distortion	> 25dB with 1004 Hz, 0dBm input
Frequency Response	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
Idle Channel Noise	Max. –65 dBm0p
Signaling	
Minimum Detectable Ringing Voltage	16 Vrms
Crank Detectable Across	L1 & L2 Mode (Tip and Ring), L1 & GND Mode(Tip and GND) per port software programmable
Crank Detected time	Valid carnk: more than 250 ms Invalid crank: less than 160 ms
Ringing Generation	Voltage: 76 Vrms (sine wave) Frequency: 25Hz
Ring duration	Software configurable options: 1. PLAR OFF (Continuous Mode) Ring duration depends on cranking time 2. PLAR OFF (One-time) Mode Crank the phone for one time, and the ring duration of the far-end phone

could be 0.7, 1.0, 1.5 or 2.0 sec

3. PLAR ON
When FXS phone off-hooked, the ring duration of the far-end magneto phone could be 0.7, 1.0, 1.5 or 2.0 sec

Ringing Send Across	L1 & L2 Mode (Tip and Ring), L1 & GND Mode(Tip and GND)
Signaling	Turn Magneto Phone crank (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 (QFXO)

Quad FXO voice card (4 FXO per plug-in)

Connector	1, 2, 3, or 4 FXO per RJ11 connector	
Power for QFXO	110-220Vac, -24Vdc, and –48Vdc	
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 Rejection	55 dB	
Loss Adjustment	0, 3, 6, or 9 dB transmit & receive	
Signal/ Distortion	1.	> 46dB with 1004 Hz, 0dBm input
Frequency Response	2.	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
FXS Loop Feed	-48Vdc with 25mA current limit per port Jumper Selectable: 25mA, 30mA, 35mA	
FXO	Ringing REN	0.5B (AC)
	Detectable Ringing	25 Vrms
	Loop Resistance	≤ 1800 Ω
	DC impedance (ON-HOOK)	> 1M Ω
	DC impedance(OFF-HOOK)	235 Ω @ 25mA feed 90 Ω @ 100mA feed
FXS Ringing	Support 2 REN per port (1 REN = 6930Ω + 8 μF) 20 Hz, other frequencies: 16.7Hz, 25 Hz, 50Hz (Jump selectable) 78 Vrms (sine wave) (45 Vrms to 86 Vrms wide range by Resistor selectable) 2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR	
Metering Pulse	12KHz/ 16KHz • Power: 10dBm • Sensitivity: -27dBm (-21dBm to -45dBm by Resistor selectable)	
Signaling	Loop Start, GND-Start, Metering Pulse (12KHz, 16KHz), DTMF, Dialing Pulse, PLAR, Battery Reverse (supports Line Reverse Signaling for Billing)	

- 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.
- -24Vdc power is for FXS PCB version C and up

Voice Card (QFXSA)

Quad FXSA voice card (4 FXS per plug-in)

Connector	1, 2, 3, or 4 FXS per RJ11 connector
Power	±48Vdc
Alarm Conditioning	CGA busy after 2.5 seconds of LOS, LOF
Encoding	A-law or μ-law, user selectable
AC impedance	Balanced 600 or 900 ohms (user selectable)
Longitudinal Rejection	55 dB
Gain Adjustment	-21 to +3 dB / 0.1 dB step for transmit (D/A) & receive (A/D) gain
Signal/ Distortion	> 46dB with 1004 Hz, 0dBm input
Frequency Response	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712
Loop Feed	±48Vdc with 25mA current limit per port Jumper Selectable: 25mA, 30mA, 35mA
Ringing	Support 2 REN per port (1 REN = 6930Ω + 8 μF) 16.7Hz, 20Hz, 25 Hz, 50Hz (user programmable) Default 78 Vrms (sine wave) (64 Vrms by Jumper setting) 2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR (user programmable)

Metering Pulse	12KHz/ 16KHz (2.4Vrm/1Vrm user programmable)
Signaling	Loop Start (Metering Pulse, DTMF, Dialing Pulse, PLAR), GND-Start (Tip Open, Ring GND), OOS Alarm, Battery Reverse

- 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 (12FXSA, 12FXOA)

Connector	Twelve RJ11 or one Telco64	
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	FXSA: -21 to +3 dB / 0.1dB step transmit & receive FXOA: -21 to +10 dB / 0.1dB step transmit & receive	
Signal/ Distortion	> 25dB with 1004 Hz, 0dBm input	
Frequency Response	± 0.5 dB from 300 to 3400 Hz, coincide with ITU-T G.712	
Idle Channel Noise	Max. –65 dBm0p	
Variation of Gain	±0.5dB	
12FXOA	Ringing REN	0.5B (AC)
	Detectable Ringing	25 Vrms
	Loop Resistance	≤ 1800 Ω
	DC Impedance (ON-HOOK)	> 1M Ω
	DC Impedance (OFF-HOOK)	235 Ω @ 25mA feed ; 90 Ω @ 100mA feed
12FXSA Loop Feed	-48Vdc with 25mA current limit per port Jumper Selectable: 25mA(default=25mA), 30mA, or 35mA(sn=S1)	
12FXSA Signalling	Normal / PLAR: Private Line Auto Ring down	
12FXSA Ringing	1 REN at 5K meters per port 16.7Hz, 20Hz, 25Hz, 50Hz, user selectable for all ports Jumper selectable: 64, 76, and 85 Vrms (triangle wave), (default= 76 Vrms for Ring Voltage) 2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR ON	
12FXSA Tone	Alarm Tone: 480Hz/620Hz/-24dBm Ring Back Tone: 440Hz/480Hz/-19dBm	
12FXSA functions	Basic functions: Bettary Reverse, Loop Star, PLAR Optional functions: PLAR ON/PLAR bit programmable, Ground Start, and/or Metering Pulse.	
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.
- FXSA specification shown above support FXSA hardware version N and up.

Data Processing

Dry Contact Type A 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	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
Input port	Provide 3.3V output		

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		

Echo Canceller Card

Echo Cancellation	64ms uni-directional, 64ms bi-directional and 128ms uni-directional
Channel	Up to 64 channels
Functions	- one way or bi-direction cancellation from PCM bus to ECA card - E1/T1 multichannel echo cancellation
PCM encoder/decoder	Compatible with ITU-T G.711 A-law/Mu-law coding.
LED Indicator	Multi-color indication
Compliant	ITU-T G.165 and ITU-T G.168-2000 and 2002

ABRA Card

Group	Up to 8 groups per card, 16 members per group
Analogue Bridge Mode	Master/Slave Architecture Downstream : 2 to many Upstream : many to 2
Voice Conference Mode with CAS Signalling	Any-to-any conference bridge Up to 16 members in one conference group Silence detection/suppression
RS232 Data Bridge Mode	Master/Slave Architecture Downstream : 2 to many (up to 14 Slave units) Upstream : many to 2
Voice Protection Mode	One Master to two Slaves for 1+1 protection Analog signals only 42 protection groups
OCU-DP Data Bridge Mode	Master/Slave Architecture Downstream: 1 to many (up to 14 Slave units) Upstream: many to 1
PCM encoder/decoder	Compatible with ITU-T G.711 A-law/Mu-law coding.
LED Indicator	Multi-color indication

Packet Access

Router-A Interface

Number of ports	2 LAN ports, Max. 64 WAN ports, Each WAN port has data rate n x 64K bps, 1≤ n ≤32 (≤ 4Mbps 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

Router-B Interface

Number of ports	8 LAN ports, Max. 64 WAN ports. Each WAN port has data rate n x 64K bps, 1≤ n ≤32 (≤ 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, Policy based Diffserv/DSCP
VLAN Q-in-Q	IEEE 802.1ad

Teleprotection Access

C37.94 Interface

820nm

Ordering Code
ZRATT
Mode
1*8 Multi-Mode
Data Rate (Mb/s)
2.048Mbps
Wavelength (nm)
820
Distance (km)
2
Connector
ST

TX Power (dBm Peak)				RX Power (dBm Peak)				Note
MIN.	TYP.	MAX.	Wavelength	MIN.	TYP.	MAX.	Wavelength	
-19.8	---	-12.8	792/820/865	---	---	---	---	50/125 μm Fiber Cable
-16	---	-9		---	---	---		62.5/125 μm Fiber Cable
---	---	---	---	-25.4	---	-9.2	792/820/865	Peak Optical Input Power Logic Level LOW

850nm

Ordering Code
QRATT
Mode
1*9 Multi-Mode
Data Rate (Mb/s)
2.048Mbps
Wavelength (nm)
850
Distance (km)
2
Connector
ST

TX Power (dBm Peak)				RX Power (dBm Peak)				Note
MIN.	TYP.	MAX.	Wavelength	MIN.	TYP.	MAX.	Wavelength	
-23	---	-11	790/---/870	-32	---	-11	790/---/870	50/125 μm Fiber Cable
-19	---	-11		-32	---	-11		62.5/125 μm Fiber Cable

1310nm

Ordering Code
NFB3T
Mode
1*9 Single-Mode
Data Rate (Mb/s)
125Mbps
Wavelength (nm)
1310
Distance (km)
30
Connector
ST

TX Power (dBm)				RX Power (dBm)			
MIN.	TYP.	MAX.	Wavelength	MIN.	TYP.	MAX.	Wavelength
-15	---	-8	1261/1310/1360	-34	---	0	1260/---/1610

1310nm

Ordering Code
QFBTT
Mode
1*9 Multi-Mode
Data Rate (Mb/s)
125M
Wavelength (nm)
1310
Distance (km)
2
Connector
ST

TX Power (dBm)				RX Power (dBm)				Note
MIN.	TYP.	MAX.	Wavelength	MIN.	TYP.	MAX.	Wavelength	
-20	---	-14	1270/1310/1380	-32	---	8	1260/---/1610	Output Optical Power 62.5/125 μm fiber
-23.5								Output Optical Power 50/125 μm fiber

1550nm

Ordering Code
NHC2S
Mode
1*9 Snigle-Mode
Data Rate (Mb/s)
155Mbps
Wavelength (nm)
1550
Distance (km)
20
Connector
SC

TX Power (dBm)				RX Power (dBm)			
MIN.	TYP.	MAX.	Wavelength	MIN.	TYP.	MAX.	Wavelength
-15	---	-18	1480/1530/1576	-34	---	0	1260/---/1610

Transfer Trip Card

Input

Number of channels	4-channel : 4 pairs per card
Input Connector	Screw type
Voltage Range	48/125V type

Output

Number of Channels	4-Channel: 4 pairs per card
Output Connector	Screw type
Max Current	30A (200ms per C37.90)
Max Voltage	280 Vdc
Operation time	3ms

Alarm Relay

Maximum continuous current	1A (inductive)
Maximum breaking current	1A (resistive)
Maximum open circuit voltage	280 Vdc
Maximum operation time	15ms

Environmental

Operating temperature	-20°C to +60°C
Humidity	5 - 95% non-condensing

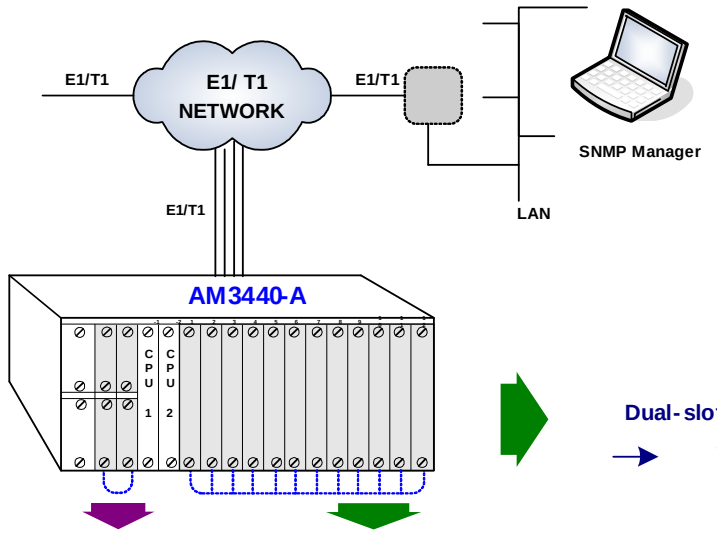
Isolation

ANSI	ANSI C37.90.1 SWC

EMI/RFI

ANSI	ANSI C37.90.2

Application Illustrations



Dual-slot plug-in cards:

- Transfer Trip card

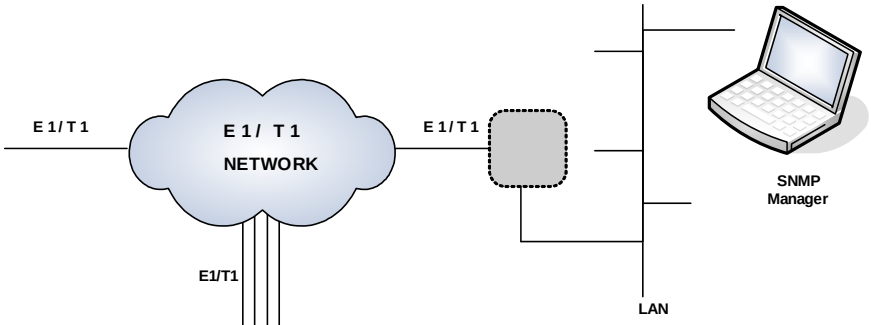
Mini-Slot plug-in Cards

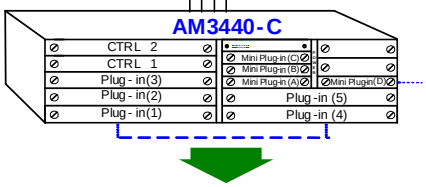
- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- Mini Quad T1
- 32 WAN port Router
- 64 WAN port Router
- Fiber Optical Interface
- 3 - channel Terminal Server
- 1 - channel DTE (1X.21, 1V.35, 1RS232)
- ECA
- ABRA
- QMAGA*
- QFXO*
- QFXSA*
- QEMA*
- 1- channel OCU-DP*

Single-Slot plug-in Cards :

- 3 - channel E1 Note
- 4 - channel E1
- 4 - channel T1
- 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
- 8 - channel 2W/4W E&MA
- 12 - channel FXSA
- 12 - channel FXOA
- 12 - channel Magneto
- 4 - channel C37.94
- 8 - channel RS232 with X.50 subrate
- 6 - channel V.110
- 8 - LAN - port /64 - WAN - port Router - B
- VOIPGA
- TDMoEA
- 8- Data Bridge
- 1FOM-A
- 8UDTEA
- 6UDTEA

Note : Only CHAJ Unit applicable to DS0 SNCP function
(D) = Discontinued
*For Chassis AK only





Mini- Slot plug-in Cards

- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- Mini Quad T1
- 32 WAN port Router
- 64 WAN port Router
- Fiber Optical Interface
- QFXO
- QMAGA
- QFXSA
- 1 - channel DTE (1X.21, 1V.35, 1RS232)
- 1 - channel OCU-DP
- ECA
- ABRA
- QEMA

Dual- slot plug-in cards:

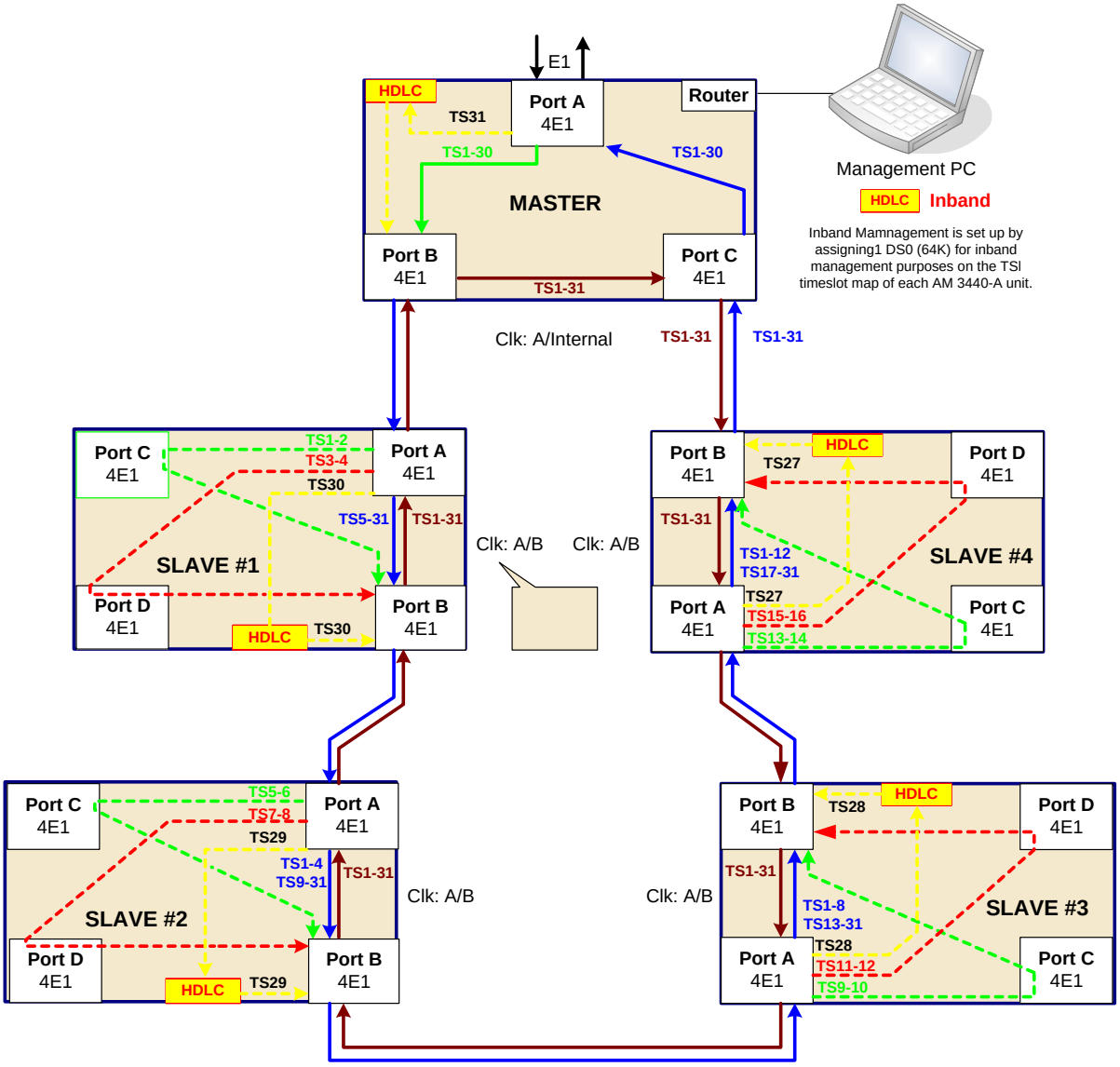
- Transfer Trip card

Single-Slot plug-in Cads:

- 3 - channel E1 Note
- 3 - channel T1
- 4 - channel E1
- 4 -channel T1
- 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 type B
- 8 - channel Dry Contact I/O
- 8 - channel 2W/4W E&MA
- 12 - channel FXSA
- 12 - channel FXOA
- 12 - channel Magneto
- 4 - channel C37.94
- 8 - channel RS232 with X.50 subrate
- 6 - channel V.110
- 8 - LAN- port / 64 - WAN - port Router -B
- VOIPGA
- TDMoEA
- 8- Data Bridge
- 1FOMA
- 8UDTEA
- 6UDTEA

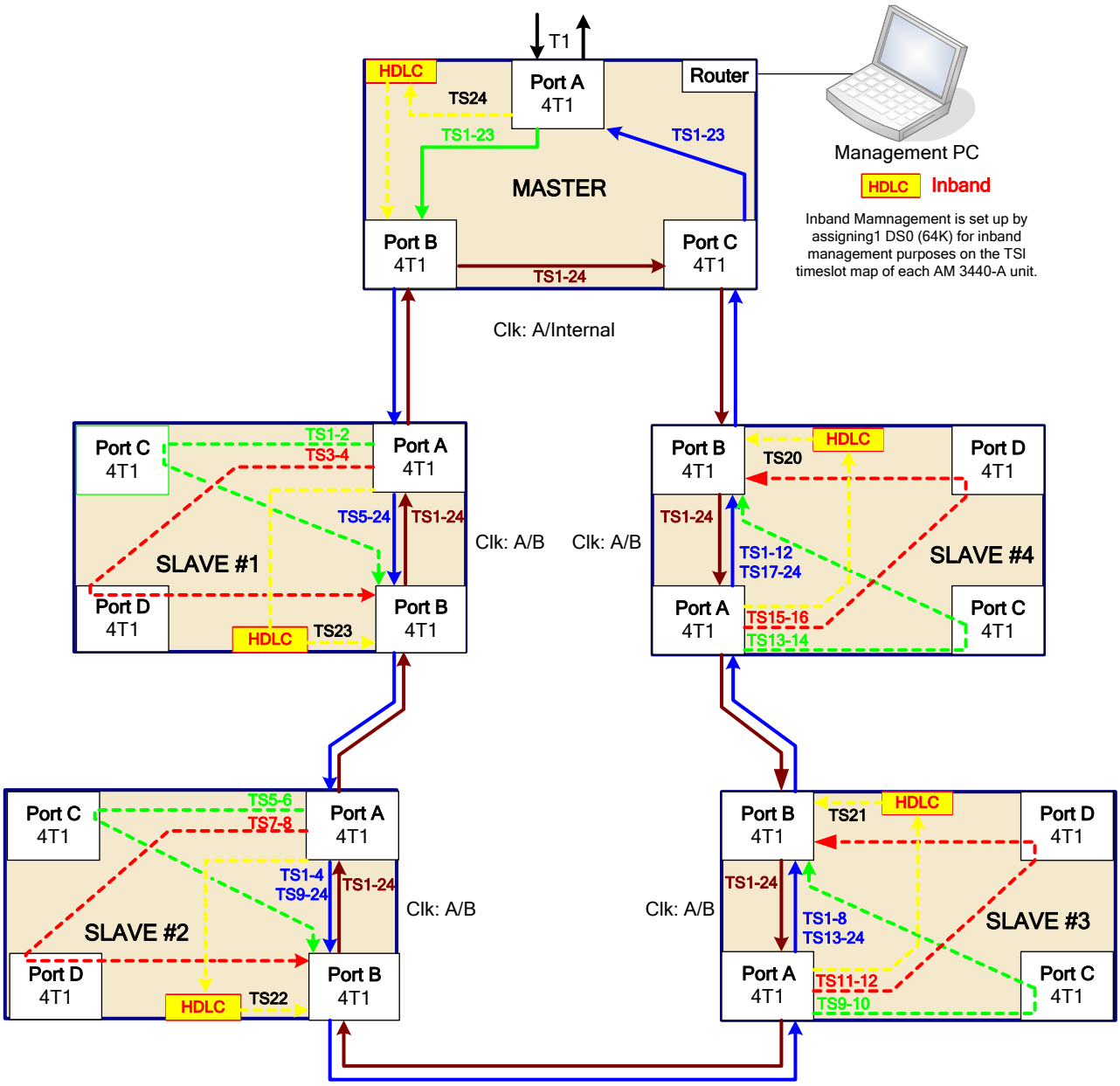
Note : Only CHCJ Unit applicable to DS0 SNCP function
(D) = Discontinued

ULSR Ring Application (E1)

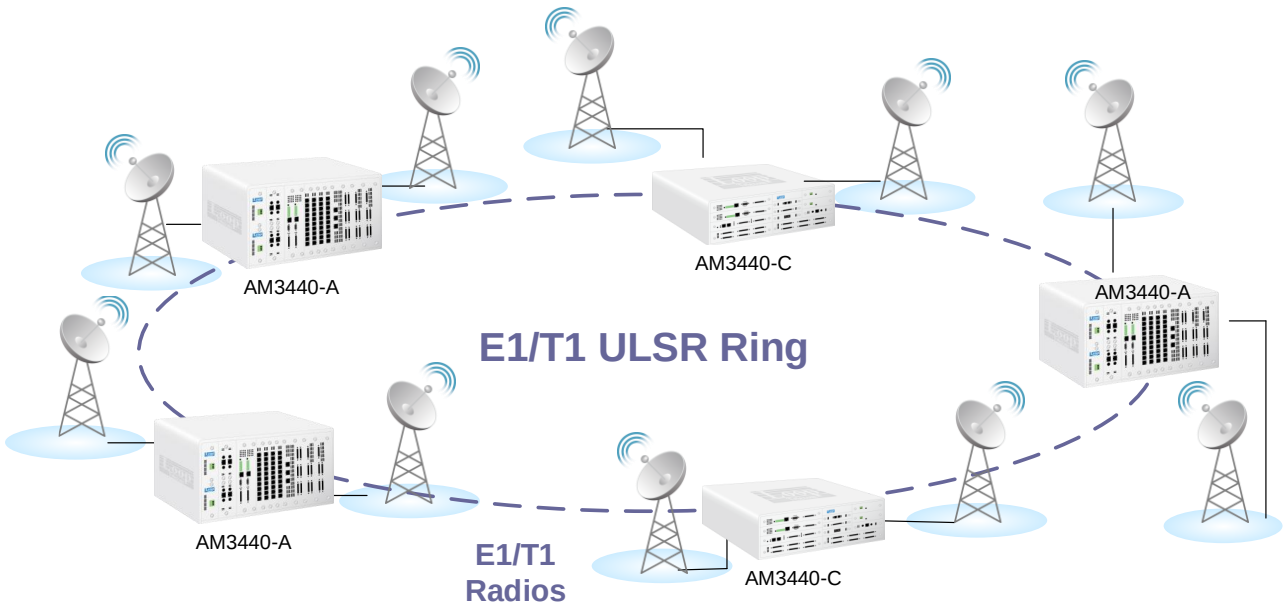


Note: ULSR ring does not suport E1 unframed mode. Users must use E1 framed mode to set up a ULSR ring.

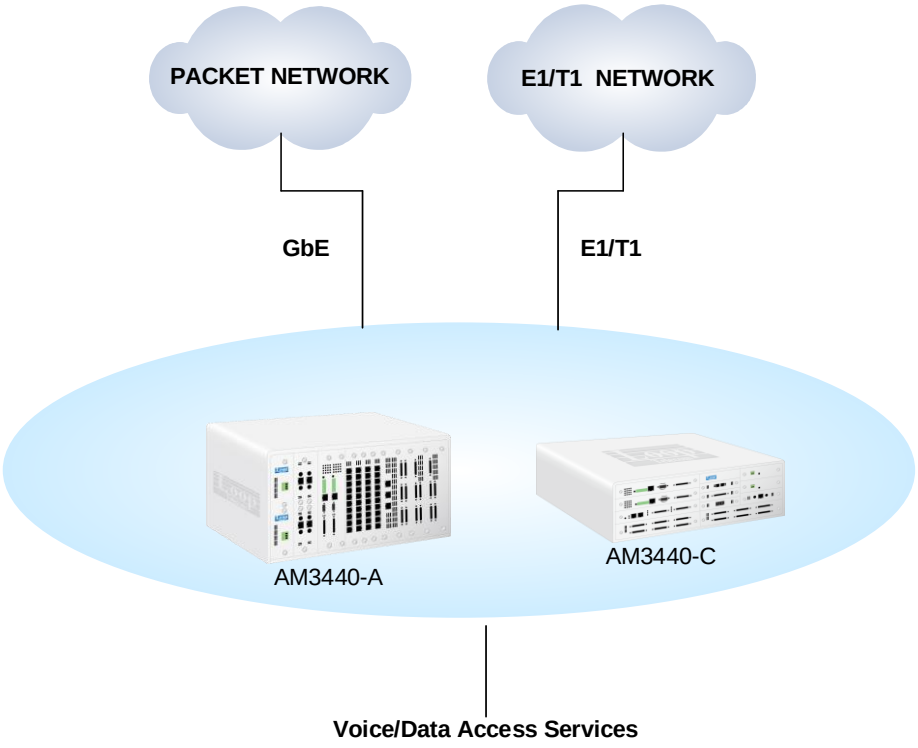
ULSR Ring Application (T1)



AM3440 ULSR Ring Application through E1/T1 Radio



AM3440 GE Uplink (with CCPA controller installed)



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