



Loop-AM3440 Access DCS-MUX

AM3440-A



AM3440-B



AM3440-C



Description

The Loop-AM3440-A/B/C series are Access DCS-MUXs that combine various digital access interfaces into E1 or T1 lines for convenient transport and switching. The Loop-AM3440 Access DCS-MUX provides access for a variety of TDM, IP, and voice interfaces detailed on the 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. Each Quad E1/T1 plug-in card can have as many as DS0 124/96 time slots from G.SHDSL, RS232, X.21, V.35, V.36 and EIA530 / RS449 interfaces, which can be multiplexed to fill 4 E1/T1 lines. The AM3440 also supports fiber optical plug-in cards, which can be used to aggregate up to 4 E1 channels onto a single fiber optical interface to connect with other AM3440 devices or with the O9310-E1.

Each of the 3 models of AM3440, the A, the B, and the C, has a number of plug-in slots in single slot size and mini size. Card size to slot compatibility is detailed on the next page.

Features

- Full front access (ETSI) Shelf
- Support of DS0 DACS (Digital Access Cross-Connect System) with full cross-connect
- Dual controller, dual power with load sharing
- 1 for 1 protection via Y-BOX
- 1 for 1 protection, E1, T1, FOM
- PDH ring protection, QE1, QT1, FOM, Mini QE1
- 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 LoopView and Loop iNMS
- Three types of chassis available: AM3440-A, AM3440-B, AM3440-C
- All the plug-in cards are hot-pluggable

| Item | AM3440-A | AM3440-B | AM3440-C |
|----------------------------------|----------|----------|----------|
| Chassis | 5U | 2.5U | 3U |
| # of Mini-slots | 4 | 4 | 4 |
| # of Single slots | 12 | 3 | 5 |
| Maximum E1 Channels | 64 | 28 | 36 |
| Maximum T1 Channels | 52 | 16 | 24 |
| Cross-Connect Backplane Capacity | 128 Mbps | 56 Mbps | 72 Mbps |

This unit is a full cross-connect and 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.

Redundancy is available in dual CPU controller and power supply options, making it an excellent fit for critical applications. The chassis does not need fan cooling, and thus does not have a fan, though an external fan tray is available.

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

The AM3440 consists of a rugged reinforced aluminum chassis, giving this equipment a more durable structure and a longer physical life.

Loop-AM3440 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.

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

Note: √ = Supported

x = Not supported

* = Future Option

D= Discontinued

Ordering Information

To specify options, choose from the list below:

Note:

1. RoHS compliant units are identified by the letter **G** appearing immediately at the end of ordering code.
2. AM3440 chassis types:
 - AM3440-CHA:** 5U chassis with 128 Mb/s cross-connect capacity backplane
 - AM3440-CHB:** 2.5U chassis with 56 Mb/s cross-connect capacity backplane
 - AM3440-CHC:** 3U chassis with 72 Mb/s cross-connect capacity backplane

| Model (non RoHS compliant) | Model (RoHS compliant) | Description | Note |
|--|-------------------------------|--|---|
| Main Unit | | | |
| Loop-AM3440-CHA | Loop-AM3440-CHA- G | Wideband Main Unit without CPU, power and plug-in cards | AM3440-A, B, C type Chassis. 19"/23" ear mount included. Note: For other ear mount requests, please contact your nearest Loop sales representative. |
| Loop-AM3440-CHB | Loop-AM3440-CHB- G | Wideband Main Unit without CPU, power and plug-in cards | |
| Loop-AM3440-CHC | Loop-AM3440-CHC- G | Wideband Main Unit without CPU, power and plug-in cards | |
| Main Unit for DS0 SNCP function | | | |
| Loop-AM3440-CHAJ | Loop-AM3440-CHAJ- G | Wideband Main Unit without CPU, power and plug-in cards, applicable to use with 3E1 card | Must order AM3440-CHAJ for DS0 SNCP function |
| Loop-AM3440-CHCJ | Loop-AM3440-CHCJ- G | Wideband Main Unit without CPU, power and plug-in cards, applicable to use with 3E1 card | Must order AM3440-CHCJ for DS0 SNCP function |
| 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-E75 | Loop-AM3440-E75- G | 1-channel of E1 plug-in card w/ 75 ohm | |
| Loop-AM3440-E120 | Loop-AM3440-E120- G | 1-channel of E1 plug-in card w/ 120 ohm | |
| Loop-AM3440-T1 | Loop-AM3440-T1- G | 1-channel T1 plug-in card | |
| Loop-AM3440-M4E75 | Loop-AM3440-M4E75- G | Mini Quad E1 plug-in card with 75 ohm | Includes a three meter conversion cable, please make a note on which cable you need. (Loop-ACC-CAB-DB25M-300-8BNM or Loop-ACC-CAB-DB25M-300-8BNCF) |
| Loop-AM3440-M4E120 | 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-AFRE | Loop-AM3440-AFRE- G | E1 Frame Relay to ATM inter-working or Frame Relay to Frame Relay concentration plug-in card | Discontinued |
| Loop-AM3440-AFRT | Loop-AM3440-AFRT- G | T1 Frame Relay to ATM inter-working or Frame Relay to Frame Relay concentration plug-in card | |
| Loop-AM3440-RT | Loop-AM3440-RT- G | 2-LAN ports/32 WAN port Router/Bridge plug-in card | |
| Loop-AM3440-RTA | Loop-AM3440-RTA- G | 2-LAN ports/64 WAN port router/bridge plug-in card | |
| Loop-AM3440-FOM-opt | Loop-AM3440-FOM-opt- G | Fiber Optical plug-in card | For opt option, please refer to the table below for detail information |
| Loop-AM3440-TS | Loop-AM3440-TS- G | 3-channel Terminal Server plug-in card | Includes a one meter conversion cable (Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS) |
| Loop-AM3440-1X21 | Loop-AM3440-1X21- G | 1-channel X.21 plug-in card | |
| Loop-AM3440-1RS232 | Loop-AM3440-1RS232- G | 1-channel RS232 plug-in card | |









| | | | |
|-----------------------------------|-------------------------------------|--|---|
| Loop-AM3440-1V35 | Loop-AM3440-1V35- G | 1-channel V.35 plug-in card | |
| Loop-AM3440-1E530 | Loop-AM3440-1E530- G | 1-channel EIA530 plug-in card | |
| Loop-AM3440-1ODP | Not available | 1 port OCU-DP Interface card | AM3440-CHB and AM3440-CHC only Limited Quantity |
| Loop-AM3440-Q2EM-m-Tn-x | Loop-AM3440-Q2EM-m-Tn-x- G | Quad 2 Wire E&M voice plug-in card | AM3440-CHB and AM3440-CHC only 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) For m, n and x option, please refer to the table below for detail information |
| Loop-AM3440-Q4EM-m-Tn-x | Loop-AM3440-Q4EM-m-Tn-x- G | Quad 4 Wire E&M voice plug-in card | |
| Loop-AM3440-QFXS-x-pt | Loop-AM3440-QFXS-x-pt- G | Quad FXS voice plug-in card | AM3440-CHB and AM3440-CHC only |
| Loop-AM3440-QFXS-M-x-pt | Loop-AM3440-QFXS-M-x-pt- G | Quad FXS with MP 16 KHz voice plug-in card | GS = Ground Start |
| Loop-AM3440-QFXS-M12-x-pt | Loop-AM3440-QFXS-M12-x-pt- G | Quad FXS with MP 12 KHz voice plug-in card | MP = Metering Pulse Transmit 12/16 KHz |
| Loop-AM3440-QFXS-GS-x-pt | Loop-AM3440-QFXS-GS-x-pt- G | Quad FXS with GS plug-in card | pt=power type |
| Loop-AM3440-QFXS-GM-x-pt | Loop-AM3440-QFXS-GM-x-pt- G | Quad FXS with GS and MP 16 KHz voice plug-in card | For x option, please refer to the table below for detail information For pt option, please refer to the table below fro detail information QFXS-GM includes all QFXS card functions |
| Loop-AM3440-QFXO-x | Loop-AM3440-QFXO-x- G | Quad FXO voice plug-in card | AM3440-CHB and AM3440-CHC only |
| Loop-AM3440-QFXO-M-x | Loop-AM3440-QFXO-M-x- G | Quad FXO with MP 16 KHz voice plug-in card | |
| Loop-AM3440-QFXO-M12-x | Loop-AM3440-QFXO-M12-x- G | Quad FXO with MP 12 KHz voice plug-in card | GS = Ground Start |
| Loop-AM3440-QFXO-GS-x | Loop-AM3440-QFXO-GS-x- G | Quad FXO with GS plug-in card | MP = Metering Pulse Receive 12/16 KHz |
| Loop-AM3440-QFXO-GM-x | Loop-AM3440-QFXO-GM-x- G | Quad FXO with GS and MP 16 KHz voice plug-in card | For x option, please refer to the table below for detail information QFXO-GM includes all QFXO card functions |
| Loop-AM3440-PLM(A) | Not available | Phone Line Monitor (A) Line plug-in card with phone line monitor | Need to order in pair |
| Loop-AM3440-PLM(B) | Not available | Phone Line Monitor (B) Monitor plug-in card | Available in AM3440-B/C only |
| Single Slot Plug-in Module | | | |
| Not available | Loop-AM3440-8UDTEA- G | 8-port universal data interface card that supports RS232/RS422/RS485 DCE interface via software configurable | |

| | | | |
|--|--|--|---|
| Not available | Loop-AM3440-3E1-cc- G | 3-channel E1 plug-in card with DS0 (64K bps) SNCP protection Note: DS0 SNCP protection only support E1 frame mode | Order with Loop-AM3440-CHAJ or Loop-AM3440-CHCJ 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. |
| Not available | Loop-AM3440-TDMoE-PPM- G | TDMoE card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Traffic | |
| Not available | Loop-AM3440-TDMoE-PPB- G | TDMoE card with 2 GbE combo interfaces and 2 Ethernet interfaces (10/100/1000BaseT) plug-in module Support G.823 Synchronization | |
| Loop-AM3440-4E1-cc Loop-AM3440-4T1 Loop-AM3440-2GH | Loop-AM3440-4E1-cc- G Loop-AM3440-4T1- G Loop-AM3440-2GH- G | 4-channel E1 plug-in card 4-channel T1 plug-in card 2-channel G.SHDSL plug-in card (2 pair) | For cc option, please refer to the table below for detail information |
| Loop-AM3440-4GH | Loop-AM3440-4GH- G | 4-channel G.SHDSL plug-in card (1 pair) | |
| Loop-AM3440-8CD | Loop-AM3440-8CD- G | 8-channel G.703 plug-in card at 64 Kbps data rate | |
| Loop-AM3440-8DC | Loop-AM3440-8DC- G | 8-channel dry contact plug-in card with maximum voltage 100 Vdc or 250 Vac | |
| Not available | Loop-AM3440-8DCB- G | 8-channel dry contact type B plug-in card with maximum voltage 220 Vdc or 250 Vac | |
| Loop-AM3440-1C37 | Loop-AM3440-1C37- G | 1- channel C37.94 plug-in card | |
| Loop-AM3440-4C37 | Loop-AM3440-4C37- G | 4- channel C37.94 plug-in card | |
| Loop-AM3440-ODP | Not available | 8-channel OCU-DP plug-in card | For AM3440-CHA only. Limited Quantity |
| Loop-AM3440-8RS232-RJ | 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 | 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). |
| Not available | Loop-AM3440-8DBRA-RJ- G | 8-channel data bridge plug-in card, with 8 RJ48 connectors for 8 data bridge Async ports | |
| Not available | 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-RTB | 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. |
| Not available | 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. |

| | | | |
|-------------------------------------|---------------------------------------|--|--|
| Not available | Loop-AM3440-CONF- G | Conference plug-in card with two RS232 data ports, two FXS ports and two E&M ports | For controller hardware version F and software version 7.05.01 or newer versions. |
| Loop-AM3440-8EM-x | Loop-AM3440-8EM-x- G | 8-channel 2W/4W E&M plug-in card with 8 RJ45 | For x option, please refer to the table below for detail information |
| Loop-AM3440-12FXS- sn-pt | Loop-AM3440-12FXS- sn-pt-G | 12-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and PLAR. Without Ground Start and Metering Pulse. Used with 12 RJ11. | <p>12FXS-GMP includes all FXS card functions</p> <p>For sn option, please refer to the table below for detail information</p> <p>pt= power type.</p> <p>For pt option, please refer to the table below for detail information</p> <p>The IEEE1613 standard applies to AM3440-CHA only</p> |
| Loop-AM3440-12FXS-P- sn-pt | Loop-AM3440-12FXS-P- sn-pt-G | 12-channel FXS 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. | |
| Loop-AM3440-12FXS-M- sn-pt | Loop-AM3440-12FXS-M- sn-pt-G | 12-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Metering Pulse]. Used with 12 RJ11. | |
| Loop-AM3440-12FXS-MPP- sn-pt | Loop-AM3440-12FXS-MPP- sn-pt-G | 12-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable] and [Metering Pulse]. Used with 12 RJ11. | |
| Loop-AM3440-12FXS-GS- sn-pt | Loop-AM3440-12FXS-GS- sn-pt-G | 12-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Ground Start]. Used with 12 RJ11. | |
| Loop-AM3440-12FXS-GM- sn-pt | Loop-AM3440-12FXS-GM- sn-pt-G | 12-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [Ground Start] and [Metering Pulse]. Used with 12 RJ11. | |
| Loop-AM3440-12FXS-GMP- sn-pt | Loop-AM3440-12FXS-GMP- sn-pt-G | 12-channel FXS 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-AM3440-12FXO | Loop-AM3440-12FXO- G | 12-channel FXO plug-in card with 600/900 Impedance, Battery Reverse and Loop Start. Without Ground Start and Metering Pulse. Used with 12 RJ11. | |
| Loop-AM3440-12FXO-M | Loop-AM3440-12FXO-M- G | 12-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Metering Pulse]. Used with 12 RJ11. | |
| Loop-AM3440-12FXO-GS | Loop-AM3440-12FXO-GS- G | 12-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Ground Start]. Used with 12 RJ11. | |
| Loop-AM3440-12FXO-GM | Loop-AM3440-12FXO-GM- G | 12-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, [Ground Start] and [Metering Pulse]. Used with 12 RJ11. | |

| | | | |
|---------------------------------|--|--|---|
| Loop-AM3440-12MAG-A-1G-x | Loop-AM3440-12MAG-A-1G-x -G | 12-channel Magneto ring-one-time plug-in module w/ L1. GND | This card can be used in AM3440-A/B/C only. |
| Loop-AM3440-12MAG-A-12-x | Loop-AM3440-12MAG-A-12-x -G | 12-channel Magneto ring-one-time plug-in module w/ L1, L2 | 12MAG-A-1G2 includes all function of 12MAG-A cards. |
| Loop-AM3440-12MAG-A-1G2-x | Loop-AM3440-12MAG-A-1G2-x -G | 12-channel Magneto ring-one-time plug-in module w/ L1, L2, and L1. GND | |
| Loop-AM3440-12MAG-1G-x | Loop-AM3440-12MAG-1G-x -G | 12-channel Magneto plug-in module w/ L1. GND | This card can be used in AM3440-A/B/C only. |
| Loop-AM3440-12MAG-12-x | Loop-AM3440-12MAG-12-x -G | 12-channel Magneto plug-in module w/ L1, L2 | 12MAG-1G2 includes all function of MAG cards. |
| Loop-AM3440-12MAG-1G2-x | Loop-AM3440-12MAG-1G2-x -G | 12-channel Magneto plug-in module w/ L1, L2, and L1. GND | |
| Dual Slot Plug-in Module | | | |
| Loop-AM3440-6X21A | Loop-AM3440-6X21A -G | 6-channel X.21/V.11 plug-in card with DB15S connector | |
| Loop-AM3440-6V35A | Loop-AM3440-6V35A -G | 6-channel V.35 plug-in card with DB25S connector via conversion cable to M34 (2M bits per channel) | |
| Loop-AM3440-6V36A | Loop-AM3440-6V36A -G | 6-channel V.36 plug-in card with DB25 connector via conversion cable to DB37 | |
| Loop-AM3440-6E530A | Loop-AM3440-6E530A -G | 6-channel EIA530 plug-in card with DB25 connector | |
| Loop-AM3440-6RS449A | Loop-AM3440-6RS449A -G | 6-channel EIA530/RS449 plug-in card with DB25 connector via conversion cable to DB37 | Includes a 30 cm conversion cable (Loop-ACC-CAB-DB25M-30-1DB37 F) |
| Loop-AM3440-2GHL | Not available | 2-channel G.SHDSL plug-in card with line power source (140 Vdc, 110mA), (2 pair) | For AM3440-CHA only Factory installed option available with -48 Vdc, -125Vdc powered chassis only. With line power, takes 2 DTE slots per card. Fan tray required. |
| Loop-AM3440-4GHL | Not available | 4-channel G.SHDSL plug-in card with line power source (190 Vdc, 60mA), (1 pair) | For AM3440-CHA only Factory installed option available with -48 Vdc,-125Vdc powered chassis only. With line power, takes 2 DTE slots per card. Fan tray required. |
| Loop-AM3440-24FXS-sn-pt | Loop-AM3440-24FXS-sn-pt -G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and PLAR. Without Ground Start and Metering Pulse | 24FXS-GMP includes all FXS card functions. pt= power type |
| Loop-AM3440-24FXS-P-sn-pt | Loop-AM3440-24FXS-P-sn-pt -G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [PLAR bit programmable]. Without Ground Start and Metering Pulse | For sn option, please refer to the table below for detail information For pt option, please refer to the table below for detail information |

| | | | |
|-------------------------------------|---------------------------------------|--|--|
| Loop-AM3440-24FXS-M- sn-pt | Loop-AM3440-24FXS-M- sn-pt-G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Metering Pulse]. | The IEEE1613 standard applies to AM3440-CHA only |
| Loop-AM3440-24FXS-MPP- sn-pt | Loop-AM3440-24FXS-MPP- sn-pt-G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable] and [Metering Pulse]. | |
| Loop-AM3440-24FXS-GS- sn-pt | Loop-AM3440-24FXS-GS- sn-pt-G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Ground Start]. | |
| Loop-AM3440-24FXS-GM- sn-pt | Loop-AM3440-24FXS-GM- sn-pt-G | 24-channel FXS plug-in card e with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [Ground Start] and [Metering Pulse]. | |
| Loop-AM3440-24FXS-GMP- sn-pt | Loop-AM3440-24FXS-GMP- sn-pt-G | 24-channel FXS plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [PLAR bit programmable], [Ground Start] and [Metering Pulse]. | |
| Loop-AM3440-24FXO | Loop-AM3440-24FXO- G | 24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse and Loop Start. Without Ground Start and [Metering Pulse]. | 24FXO-GM includes all FXO card functions. |
| Loop-AM3440-24FXO-M | Loop-AM3440-24FXO-M- G | 24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Metering Pulse]. | |
| Loop-AM3440-24FXO-GS | Loop-AM3440-24FXO-GS- G | 24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Ground Start]. | |
| Loop-AM3440-24FXO-GM | Loop-AM3440-24FXO-GM- G | 24-channel FXO plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, [Ground Start] and [Metering Pulse]. | |

| Accessories | | | |
|---|--|---|--|
| Power Module | | | |
| Loop-AM3440-SD | Loop-AM3440-SD- G | Single -48 Vdc (-36 to -75 Vdc) Power Module (100W) | For AM3440-CHA only |
| Loop-AM3440-S5 | Loop-AM3440-S5- G | Single -48 Vdc (-36 to -75 Vdc) Power Module (150W) | For shared redundancy, order 2 single DC. |
| Loop-AM3440-SD125 | Loop-AM3440-SD125- G | Single -125 Vdc (-40 to -150 Vdc) Power Module (100W) | For AM3440-CHA only For shared redundancy, order 2 single DC If the user orders -125 Vdc power module, the maximum number of cards allowed in slot 1 to 12 is: <ul style="list-style-type: none"> • Four 12-channel FXS • Nine 12-channel Magneto • Eleven 8-channel 2W/4W E&M • Six 8-channel OCU-DP • Two 4-channel G. SHDSL (1 pair) with line power • Three 2-channel G. SHDSL (2 pairs) with line power • Two 24-channel FXS 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. For power consumption details, please refer to AM3440-A User's Manual. |
| Loop-AM3440-S524 | Loop-AM3440-S524- G | Single -24 Vdc (-18 to -36 Vdc) Power Module (150W) | For AM3440-CHA only Cannot be used with MAG card. |
| Loop-AM3440-SDB | Loop-AM3440-SDB- G | Single -48 Vdc (-36 to -75 Vdc) Power Module (100W) | For AM3440-CHB/CHC For shared redundancy, order 2 single DC. |
| Loop-AM3440-SAB | Loop-AM3440-SAB- G | Single AC plug-in power supply (100 to 240 Vac, 50/60 Hz) | For AM3440-CHB/CHC 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. Note: 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-CHA only |
| Loop-AM3440-UMB | User's Manual (optional, paper copy). A CD version of the manual is already included as standard equipment. | | For AM3440-CHB only |
| Loop-AM3440-UMC | User's Manual (optional, paper copy). A CD version of the manual is already included as standard equipment. | | For AM3440-CHC 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 (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 |  | |
| Fan Tray | | | |

| | | | |
|--|---|-------------------------|---|
| Loop-AM3440-FAN | Loop-AM3440-FAN-G | Fan tray | For AM3440-CHA only Power supplied from rear of chassis. If total power consumption of device and cards is more than 60 Watts, an additional fan tray is required. For power consumption and fan tray plan, please refer to AM3440-A User's Manual. |
| FXO Box | | | |
| Loop-AM3440-FXO BOX | Support FXO Interface Battery Feed | | |
| External LCD | | | |
| Loop-AM3440-LCD | Loop-AM3440-LCD-G | External LCD and Keypad | only cover selected plug-in cards only, contact your nearest Loop sales representative for detail |
| Software | | | |
| Loop-AM3440-ERING | ULSR-PDH Ring software Note: ULSR ring only support E1 framed mode. | | Used with 4E1, M4E75, M4E120 and FOM |
| Loop-AM3440-TRING | ULSR-PDH Ring software Note: ULSR ring only support T1 framed mode. | | Used with 4T1 |
| Conversion Cables(All conversion cables are RoHS compliant) | | | |
| Loop-ACC-CAB-DB25M-100-8BNM | DB25/Male to eight BNC/Male cable; Length: 100 cm | | Used in Loop-AM3440-M4E75 plug-in card |
| Loop-ACC-CAB-DB25M-100-8BNCF | DB25/Male to eight BNC/Female cable; Length: 100 cm | | Used in Loop-AM3440-M4E75 plug-in card |
| Loop-ACC-CAB-DB25M-300-8BNM | DB25/Male to eight BNC/Male cable; Length: 300 cm | | Used in Loop-AM3440-M4E75 plug-in card |
| Loop-ACC-CAB-DB25M-300-8BNCF | DB25/Male to eight BNC/Female 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-M4E120 plug-in card |
| Loop-ACC-CAB-DB25M-300-4RJ48M | DB25/Male to four RJ48C/Male cable; Length: 300 cm | | Used in Loop-AM3440-M4E120 plug-in card |
| Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB | DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSUB-9 pin/Female (8P8C) plug, Length:100cm | | Used in Loop-AM3440-8RS232-DB, Loop-AM3440-8DBRA-DB plug-in card |
| Loop-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS | DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSUB-9 pin/Female (8P8C) plug, Length:100cm | | Used in Loop-AM3440-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-AM3440-6V35A and Loop-AM3440-1V35 plug-in cards |
| Loop-ACC-CAB-DB25M-30-1DB37F | DSUB-25pin/Male to DSUB-37/Female RS449 Conversion cable Length: 30 cm | | Used in Loop-AM3440-6V36A and Loop-AM3440-6R449A plug-in cards |
| 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-CHA only |
| 30.001257.A00-G | Blank Panel for Power Supply Slot (flat) | | For use in AM3440-CHB/CHC |
| 30.000349.A00-G | Blank Panel for Controller Slot (flat) | | For use in any AM3440 chassis |
| 30.000335.A00-G | Blank Panel for mini Slot A-D (flat) | | For use in AM3440-CHA/CHB/CHC |
| 30.000331.A00-G | Blank Panel for Slot 1-12 (flat) | | For use in AM3440-CHA/CHB/CHC |
| 30.001028.A00-G | Blank Panel for Power Slot (u-shape) | | For AM3440-CHA only |
| 30.001029.A00-G | Blank Panel for Controller (u-shape) | | For use in any AM3440 chassis |
| 30.001030.A00-G | Blank Panel for mini Slot A-D (u-shape) | | For use in AM3440-CHA/CHB/CHC |
| 30.001027.A00-G | Blank Panel for Slot 1-12 (u-shape) | | For use in AM3440-CHA/CHB/CHC |
| SFP Optical Modules | | | |
| Please place your order using the 5-digit alphanumeric codes listed in the separate SFP Optical Module Brochure. | | | |

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 |
|--------------|--|--|
| 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 |
| SBB | Single optical module with dual uni-directional fiber, 1310 nm, SC optical connector, 50 km - L1.1 | |
| SCC | Single optical module with dual uni-directional fiber, 1310 nm, FC optical connector, 30 km - S1.1 | |
| SDD | Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 20 km - S1.2 | |
| SEE | Single optical module with dual uni-directional fiber, 1550 nm, SC optical connector, 100 km - L1.2 | |
| 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 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 - 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 |
|------------|--|---|
| 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(8-channel 2W/4W E&M, Quad 2W/4W E&M and 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.

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

For 12/24-channel FXS card:

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

| sn = | Description | Note |
|------------------|---|-------------|
| sn = omit | FXS Loop Feed = -48 Vdc with 25 mA current limit; enable alarm tone; ring generator to automatic (power saver) mode | |
| S1 | FXS Loop Feed = -48 Vdc with 35 mA current limit | |
| S4 | Remove alarm tone | |
| S5 | Double ring tone transmit | |

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

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

| pt= | Description | Note |
|------------------|---|---------------------|
| PWR | complied with -48 Vdc(SD, S5, SDB), -125Vdc(SD125) and AC (SAB) power modules | |
| PWRIE1613 | complied with IEEE1613 standard, and with -48 Vdc(S5) power module | For AM3440-CHA only |
| 24 | complied used with -24 Vdc(S524) power module | |

For QFXS card:

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

| pt= | Description | Note |
|------------|---|-------------|
| PWR | complied with -48 Vdc(SDB) and AC (SAB) power modules | |

For Magneto Card:

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

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

For TDMoE:

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

| Firmware Upgrade | | |
|-------------------------|---|---|
| Loop-AM3440-card-FWUPGR | Firmware Upgrade and Warranty Renewal. The Customer whose warranty has lapsed or desire to have a firmware upgrade can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of support. | For available card types, please refer to the table below for detail information. |

For Firmware Upgrade:

■ Where card is used to select card type:

| card= | Description | Note |
|----------------|--|------|
| CCA | CPU card | |
| M4E | Mini quad E1 card | |
| 4E1 | Quad E1 card Available for software version 3.02.01 or newer versions. | |
| 4T1 | Quad T1 card Available for software version 3.02.01 or newer versions. | |
| RTA | RTA card Available for software version 2.05.01 or newer versions. | |
| RTB | RTB card Available for software version 1.04.01 or newer versions. | |
| 3E1 | 3-port E1 card Available for CHJ only and software version 1.02.01 or newer versions. | |
| 2GH | 2-port G.SHDSL card Available for software version 1.08.01 or newer versions. | |
| 4GH | 4-port G.SHDSL card Available for hardware version G and software version 4.01.01 or newer versions. | |
| TDMoE | TDMoE card | |
| 12/24FXS | 12/24 FXS card Available for hardware version L and software version 3.01.01 or newer versions. | |
| 12/24FXO | 12/24 FXO card Available for hardware version G and software version 2.01.01 or newer versions. | |
| 8E&M | 8-port E&M card Available for software version 1.03.01 or newer versions. | |
| 8RS232 | 8 RS232 card Available for software version 3.02.01 or newer versions. | |
| 8DBRA | 8 Data Bridge A card | |
| Conference | Conference card Available for hardware version C and software version 1.02.01 or newer versions. | |
| 6V.36A | 6-port V.36 card Available for hardware version B and software version 2.03.01 or newer versions. | |
| 6V.35A | 6-port V.35 card Available for hardware version E and software version 2.03.01 or newer versions. | |
| X.21/V.11 | 6-port X.21 card Available for hardware version B and software version 2.03.01 or newer versions. | |
| 6EIA530/6RS449 | 6-port EIA530/RS449 card Available for hardware version B and software version 2.03.01 or newer versions. | |

The list shown below is the discontinued chassis and plug in cards. For detail info, please contact your nearest Loop sales representative.

| Model | Description | Note |
|--------------------|---|--|
| Loop-AM3440-CH | 32 Mb/s cross-connect capacity backplane t without CPU, power and plug-in cards | AM3440-CH type Chassis |
| Loop-AM3440-6U | 6-channel IDSL plug-in card | |
| Loop-AM3440-10U | 10-channel IDSL plug-in card | |
| Loop-AM3440-3H | 3-channel MDSL plug-in card (2Mb for 3-channel) | |
| Loop-AM3440-3HA | 3-channel MDSL plug-in card for | AM3440-A/B/C only |
| Loop-AM3440-3HAL | 3-channel 6Mbits MDSL plug-in module with line power source | AM3440-A only Factory installed option available with -48 Vdc powered chassis only. |
| Loop-AM3440-5RS232 | 5-channel RS232 plug-in card with X.50 subrate plug-in module | |

Example 1:

Loop-AM3440-CHA, Loop-AM3440-CCA-E, Loop-AM3440-S5, Loop-AM3440-4E1-RJ, Loop-AM3440-8RS232

Loop-AM3440-FAN:

For 3440-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-CHB, Loop-AM3440-CCA-E, Loop-AM3440-SDB, Loop-AM3440-M4E75, Loop-AM3440-8CD:

For 3440-B type chassis with a CPU card(E1 external clock), a single -48 Vdc 100W power module, one Mini Quad E1 interface with 75 ohm and one 8-channel G.703 interface at 64 Kbps data rate.

Example 3:

Loop-AM3440-CHC, Loop-AM3440-CCA-E, Loop-AM3440-SDB, Loop-AM3440-M4E120, Loop-AM3440-2GH:

For 3440-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

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 |

Network Line Interface - 3E1

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

Network Line Interface - 4E1

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

Network Line Interface - 4T1

| | | | |
|--------------|-----------------------------|---------------|---------------------------|
| Line Rate | 1.544 Mbps \pm 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 |

ATM Frame Relay Network Line Interface (Discontinued)

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 ≤ 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 |

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 | raw data |
| Layer 2 Protocol of RS232 Sync | PPP |
| Terminal Server Function | Supports Telnet |
| Router Function | RIP-I, RIP-II, Static Route |

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) |
|----------------|--------------------------------|-----------------|---------------------------|---------------|
| SAA | Dual uni-directional | 1310 | SC (Subscriber Connector) | 30 |
| SBB | Dual uni-directional | 1310 | SC (Subscriber Connector) | 50 |
| SCC | Dual uni-directional | 1310 | FC (Fiber Connector) | 30 |
| SDD | Dual uni-directional | 1550 | SC (Subscriber Connector) | 20 |
| SEE | Dual uni-directional | 1550 | SC (Subscriber Connector) | 100 |
| SSM | Single bi-directional (master) | 1310/1550 | SC (Subscriber Connector) | 30 |
| SSS | Single bi-directional (slave) | 1550/1310 | SC (Subscriber Connector) | 30 |

NOTE: Other fiber optical options available on special order

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 |

DTE Interface (X.21)

Data Port Up to six 6-port DTE X.21 card; 1-port DTE X.21 card
Data Rate 56 or 64 Kbps, n = 1 to 32
Connector DB15S

DTE Interface (V.35)

Data Port Up to six 6-port DTE V.35 card; ; 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 (V.36)

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

DTE Interface (EIA530/RS449)

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

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 Connector | Async/Sync | Async/Sync | Async | Async/Sync | Async/Sync | Async | Async | Async |
| Conversion Cable | DB44 (port1,port2,port3), DB44 (port4,port5,port6), RJ48 (port7) and RJ48(port8) A three-into-one conversion cable adapts the DB44 connector to 3 connectors (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 (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.

8UDTEA (RS232/RS422/RS485) universal data Interface

| | |
|---------------------------|---|
| Data Port | 8 port UDTE card |
| ASYNC Data Rate | 200,300, 600, 1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K, 128K bps by oversampling |
| Connector | RJ48C |
| Interface | DCE only |
| Flow Control (RS232 only) | Hardware (RTS and DTR), none |
| Loopback function | DTE to DTE loopback DTE to Line loopback |

1 Port OCU-DP Interface Card

| | |
|-------------------------------------|---|
| Ports | 1 Ports card |
| Operating Modes | 4-wire DDS or switched 56 |
| Dedicated Rates | SYNC: 2.4, 4.8, 9.6, 19.2, 56 and 64k clear channel Conforms with AT&T Pub 41458 |
| OCU DP Operation | Conforms with AT&T 62310 and ANSI T1.410 |
| Local Loop Signal | Bipolar Return to zero, 50% duty cycle |
| Transmit Amplitude | +/- 1.5 V (+/- 10%) peak, all rates except 9.6k +/- 0.75 V (+/- 10%) peak at 9.6k |
| Transmit Source Impedance | 135 Ohms +/- 20% |
| Receive Input Impedance | 135 Ohms +/- 20% |
| Receiver Sensitivity/ Dynamic Range | 0 to 43 dB loop loss at 72K & 56K 0 to 34 all other rates |
| Physical Interface | 4-wire loop interface RJ45 modular connector |
| Network to Loop Test Codes | Zero code suppression, Idle, out of service, UMC, MOS, TC, ABS, channel loopback, OCU and DSU loop-back, latch loop-back (TIP, LSC, LBE, FEV) |
| Loop to Network Test Codes | Zero code suppression, Idle |

8 Port OCU-DP Interface Card

| | |
|-------------------------------|---|
| Ports | 8 Ports for each card |
| Line Status Indicator | Per Port 1 dual color LED; Red for LOS, Green for SYNC |
| Network Connector | RJ48S |
| Electrical Network Connection | Tip/Ring and Tip1/Ring1 |
| Transmit Source Impedance | 135 Ohms +/-20% |
| Receive Input Impedance | 135 Ohms +/-20% |
| Receiver Sensitivity | 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 Substitution 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 |
| Fault and Performance | BERT test support all ones, all zeros, 2047,511,63 pattern. LOS, OOS, ES, SES and UAS alarm. Current, last 96 registry and 7 days performance storage. |
| Environment | 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 |
| Loopack | DTE Payload Loopback, Local Loopback |

C37.94 Interface

| | |
|----------------|---|
| Source | LED |
| Wavelength | 820nm 2Km reach |
| Connector | ST |
| Optical Budget | 50 Mircon core/9.6 db 62.5 Mircon core/ 15db |

Dry Contact 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 | | |

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. 100M ohm (at 500 Vdc) |
| Activation Current | 3 ma | Max. Current | 2A |
| Deactivation Current | 1.5 ma | Max. Voltage | 220 Vdc, 250 Vac |
| Allowable Current | 4 ma | | |

Voice Card (Q2EM, Q4EM)

| | |
|------------------------|---|
| Connector | One 44-pin connector, adapter cable included for 4 RJ45 connectors. |
| Power | 110-220Vac, -24Vdc, -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 Ω or 900 Ω |
| Longitudinal Rejection | 55 dB |
| Longitudinal Max | 2.5 volts peak AC |
| Longitudinal Balance | > 63dB |
| Gain Adjustment | 0, -3, -6 or +7 dB for transmit (D/A) gain |
| (all port settings) | 0, -3, -6 or +10 dB for receive (A/D) gain |

| | |
|-----------------------|---|
| Signal/Distortion | > 46dB with 1004 Hz, 0dBm input |
| Frequency Response | +0.5 to -0.9 dB from 300 to 3400 Hz |
| Idle Channel Noise | < 20 dBmC0 |
| Signaling | Type 1, Type 2, Type 3, Type 4, Type 5, and also TO (Transmit Only) |
| Modems | Full compatibility with V.90 modems |
| E Lead Sensor Current | 0.25 mA (minimum) |
| Signaling Bit Setting | Jump Selectable |
| Operational Temp. | 0°C to +50°C |
| Relative Humidity | 0% to 95% |

- 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 (8EM)

| | |
|------------------------------------|---|
| Connector | Eight RJ45 |
| Alarm Conditioning | CGA busy after 2.5 seconds of LOS, LOF |
| Encoding | A-law or μ -law, user selectable together for all |
| Impedance | Balanced 600 or 900 ohms |
| 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 | \pm 0.5 dB at 0 dBm0 input |
| Frequency Response | \pm 0.5 dB at 0 dBm0 input |
| 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 |
| | <ul style="list-style-type: none">• All in-band signaling tones are carried transparently by the digitizing process.• Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch. |

Voice Card 12 MAG (Magneto)

| | |
|------------------------------|--|
| Connector | RJ11 x 12 |
| 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 | -21 to +10 dB / 0.1dB step transmit & receive |
| Signal/ Distortion | > 25dB with 1004 Hz, 0dBm input |
| Frequency Response | - 0.25 to -1 dB from 300 to 3400 Hz, coincide with ITU-T G.712 |
| Idle Channel Noise | Max. -65 dBm0p |

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: 20Hz (with optional choices of 16, 25, 50 Hz) Two optional modules are available for your choice: 1. 12MAG Normal operation: Ring duration depends on cranking time PLAR ON operation: when FXS phone off-hooked, the ring duration of the far-end magneto phone could be 0.5, 1.0, 2.0 or 4.0 sec 2. 12MAG-A Normal operation: Crank the phone for one time, and the ring duration of the far-end phone could be 0.7, 1.5 or 2.0 sec PLAR ON operation: when FXS phone off-hooked, the ring duration of the far-end magneto phone could be 0.7, 1.5 or 3.0 sec |
| Ring duration | |
| 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 |
| | <ul style="list-style-type: none">• Signaling is carried transparently by the digitizing process.• Use Magneto card default setting for communications between magneto telephones• Use Magneto card PLAR mode setting for communications between a magneto telephone and a regular telephone |

Conference Card

RS232 Interface

| | |
|-----------------|---|
| Data Port | 2-ports per card |
| ASYNC Data Rate | 300, 600, 1.2K, 2.4K, 4.8K, 9.6K, 19.2K |
| SYNC | not supported |
| Connector | Two DB9, DCE, female |

FXS Voice Interface

| | |
|------------------------------|---|
| Connector | Two RJ11 |
| Encoding | G.723 |
| Longitudinal Conversion Loss | > 46dB |
| Cross Talk Measure | Max -70dBm0 |
| Gain Adjustment | transmit (D/A) gain 0, +6dB receive (A/D) gain +6, 0, -6dB |
| Signal/ Distortion | > 25dB with 1004 Hz, 0dBm input |
| Idle Channel Noise | Max. -65 dBm0p |
| Loop Resistance | Max 1800 ohm |
| FXS Loop Feed | -48 Vdc with 25mA current limit per port |
| FXS Ringing | 2 REN 20Hz 76 Vrms 2 sec on / 4 sec off for 1 min, or 1 sec on / 2 sec off for 30 sec (programmable) |
| Signaling | Loop Start, DTMF |

E&M Voice Interface

| | |
|------------------------------|---|
| Connector | Two RJ45 |
| Encoding | G.723 |
| Impedance | Balanced 600 ohms |
| Longitudinal Conversion Loss | > 46dB |
| Gain Adjustment | transmit (D/A) gain 0, +6dB receive (A/D) gain +6, 0, -6dB |
| Signal/Distortion | > 25dB with 1004 Hz, 0dBm input |
| Idle Channel Noise | Max. -65 dBm0p |
| Carrier Connection | Side A = exchange side, Side B = carrier side (Jumper selectable) |
| Phone line power+12V | Type P (Jumper enable) |
| Operation mode | Master, standard (Jumper selectable) |
| Wire Mode | 4 wire |
| Signaling Type | Type 1, Type 4, and Type 5 (Jumper selectable) |
| EM Ringing | Single rainging for 5 sec only 2 sec on / 4 sec off for 1 min, or 1 sec on / 2 sec off for 30 sec (programmable) |

Voice Card (QFXS, QFXO)

| | |
|---|--|
| Quad FXS voice card (4 FXS per plug-in) | |
| Quad FXO voice card (4 FXO per plug-in) | |
| Connector | QFXS: 1, 2, 3, or 4 FXS per RJ11 connector, QFXO: 1, 2, 3, or 4 FXO per RJ11 connector |
| Power for QFXS | 110-220Vac, -24Vdc or -48Vdc |
| 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 | > 46dB with 1004 Hz, 0dBm input |
| Frequency Response | - 0.25 to -1 dB from 300 to 3400 Hz |
| FXS Loop Feed | -48Vdc or -24Vdc with 25mA current limit per port Jumper Selectable: 25mA, 30mA, 35mA |
| FXO | Ringing REN 0.5B (AC) Detectable Ringing 25 Vrms Loop Resistance $\leq 1800 \Omega$ DC impedance (ON-HOOK) $> 1M \Omega$ DC impedance(OFF-HOOK) 235 Ω @ 25mA feed 90 Ω @ 100mA feed |
| FXS Ringing | Support 2 REN per port (1 REN = 6930 Ω + 8 μ F) 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 <ul style="list-style-type: none">• 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) |
| | <ul style="list-style-type: none">• All in-band signaling tones are carried transparently by the digitizing process.• Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch.• -24Vdc power is for FXS PCB version C and up |

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

| | |
|--|--|
| 12 FXS/FXO Connector | Twelve RJ11 |
| 24 FXS/FXO Connector | One RJ21X Female |
| Alarm Conditioning | CGA busy after 2.5 seconds of LOS, LOF |
| Encoding | A-law or μ -law, user selectable together for all |
| AC Impedance | Balanced 600 or 900 ohms (selectable together for all) |
| Longitudinal Conversion Loss | > 46dB |
| Cross talk measure | Max -70dBm0 |
| Gain Adjustment | -21 to +10 dB / 0.1dB step transmit & receive |
| Signal/ Distortion | > 25dB with 1004 Hz, 0dBm input |
| Frequency Response | - 0.25 to -1 dB from 300 to 3400 Hz, coincide with ITU-T G.712 |
| Idle Channel Noise | Max. -65 dBm0p |
| Variation of Gain | ± 0.5 dB |
| FXO | Ringing REN 0.5B (AC) Detectable Ringing 25 Vrms Loop Resistance $\leq 1800 \Omega$ DC Impedance (ON-HOOK) $> 1M \Omega$ DC Impedance (OFF-HOOK) 235 Ω @ 25mA feed 90 Ω @ 100mA feed |
| FXS Loop Feed | -48Vdc or -24Vdc with 25mA current limit per port Jumper Selectable: 25mA, 30mA, 35mA |
| FXS signalling | Normal / Automatic Ring down |
| FXS Ringing | 1 REN at 5K meters per port 16.7Hz, 20Hz, 25Hz, 50Hz, user selectable for all ports 38 to 85 Vrms (sine wave), 76 Vrms for default Ring Voltage 2 sec on 4 sec off, or 1 sec on 2 sec off optional for PLAR |
| Signaling | Loop Start, DTMF, pulse, PLAR, Battery Reverse |
| Optional Signaling (for special order) | Ground Start, Metering pulse (12 KHz, 16 KHz), and P(in PLAR mode, PLAR signalling bits are programmable. |
| Signaling Bit A,B,C,D | Programable bit |
| | <ul style="list-style-type: none">• All in-band signaling tones are carried transparently by the digitizing process.• Customer is responsible for in-band signaling compatibility between a telephone and a switch, or between a PBX and a switch.• -24Vdc power is for FXS PCB version L and up |

Phone Line Monitor Card

Connector Four RJ11 connectors
 Alarm Conditioning CGA busy after 2.5 seconds of LOS, LOF
 Encoding A-law or μ -law, user selectable as a group
 Impedance Balanced 15K Ohm
 Total Distortion > 35dB with 1004 Hz, 0dBm input
 Frequency Response 0 ~ -0.5 dB from 300 to 2000 Hz
 -0.5 dB ~ -2 dB from 2000 to 3300 Hz
 Idle Channel Noise > -60 dBm0
 Gain Adjustment 0, -3, -6 or +7 dB for PLM (B) transmit gain (D/A)
 (All Port Setting) 0, -3, -6 or +3dB for PLM (A) receive gain (A/D)
 Off-Hook Detect Level < -6V Line to GND
 Operational Temp. 0°C to 50°C
 Relative Humidity 0% to 95%
 Power 110 ~ 220 VAC, -48 Vdc
 All in-band signaling tones are carried transparently by the digitizing process.

Signaling Bits

| Status | | Normal | | | | | | | | AB Bit Invert | | | | | | | |
|--------------------|----------------|--------|---|---|---|----|---|---|---|---------------|---|---|---|----|---|---|---|
| | | Tx | | | | Rx | | | | Tx | | | | Rx | | | |
| | | A | B | C | D | A | B | C | D | A | B | C | D | A | B | C | D |
| PLM (A) to Line | Line On Hook | 1 | 1 | 0 | 1 | | | | | 0 | 1 | 0 | 1 | | | | |
| | Line Off Hook | 0 | 1 | 0 | 1 | | | | | 1 | 1 | 0 | 1 | | | | |
| PLM (B) to Monitor | Battery (-48V) | | | | | 1 | 1 | 0 | 1 | | | | | 0 | 1 | 0 | 1 |
| | Battery (-6V) | | | | | 0 | 1 | 0 | 1 | | | | | 1 | 1 | 0 | 1 |

TDMoE

Combo Gigabit Ethernet(GbE) Interface

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

Gigabit Ethernet(GbE) Interface

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

Ethernet Function

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

Jitter & Wander

| |
|----------------------------|
| PPM: per G.823 Traffic |
| PPB: per G.823 Synchronous |

Standard Compliance

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

Clock Source

Internal, E1/T1 Line, External

Alarm Relay

Max. Current: 1A for 24VDC, 0.625A for 48VDC
Fuse alarm, performance alarm

System Configuration Parameters

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

Management

| | |
|-------------------|---|
| Console | Electrical: RS232; Connector: DB9, female User Interface: Menu driven VT-100 |
| Ethernet | 1 port, Connector: RJ45 10/100 Base T, SNMPv1, v3/Telnet/SSH |
| Inband Management | Inband 64 Kbps, support HDLC/PPP |
| Ethernet LCD | Optional |

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, and date & 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-bye user define pattern |

Front Panel

Controller LED Indicators

Power, ACTIVE, ALARM

A, B, C, D slots: SYNC/TEST, LOF, BPV, RAI/AIS

Physical /Electrical

| | AM3440-A | AM3440-B | AM3440-C |
|-------------------|--|---|---|
| Dimensions | 432.4 x 220 x 223.5 mm (W×H×D) | 438 x 110 x 224 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 | Single/ Dual -48 Vdc: -36 to -75 Vdc, 100 Watts max. Single AC: 100 to 240 Vac, 50/60 Hz |
| Temperature | 0-55°C | 0-55°C | 0-55°C |
| Humidity | 0-95%RH (non-condensing) | 0-95%RH (non-condensing) | 0-95%RH (non-condensing) |
| Mounting | Desk-top stackable, 19" /23" rack mountable | Desk-top stackable, 19" /23" rack mountable | Desk-top stackable, 19" /23" rack mountable |
| Line Power Supply | Available only with DC power for G.SHDSL card only | N/A | N/A |
| Power Consumption | Max 110 Watts | Max 45 Watts | Max 57 Watts |

Certification

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

Note for IEC 61850-3 and IEEE1613:

- (1) The certification only applies to AM3440-A, -48Vdc(150W) power module
- (2) The magneto card does not support IEC 61850-3 and IEEE 1613
- (3) Use shielding cable with the following modules:

| | | | |
|---------------------------|-----------------------------|-----------------|-------------------|
| Console port of CCA | SNMP of CCA | Single RS232 | Single X.21 |
| Single EIA530 | Single V.35 | Terminal Server | Router |
| Router-A | ATM/FR E1/T1 | RS232-X.50 | DTE of Conference |
| Input Port of Dry Contact | Input Port of Dry Contact B | RS232 X.50-8 | V.35 |
| V.36/RS449/EIA530 | X.21 | | |

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
IETF SNMP v.3 (RFC2571~2575)

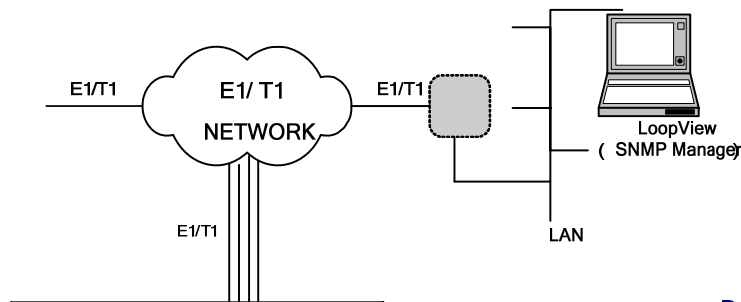
Specifications for Loop-VV Y-BOX**LINE**

| | |
|-------------|--|
| 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 |

Application Illustration:



Dual- slot plug - in cards :

- 6- channel X.21/V.11
- 6- channel V.35
- 6- channel V.36
- 6- channel EIA530/RS449
- 24- channel FXS
- 24- channel FXO
- 2 - channel G.SHDSL w/line power
- 4 - channel G.SHDSL w/line power

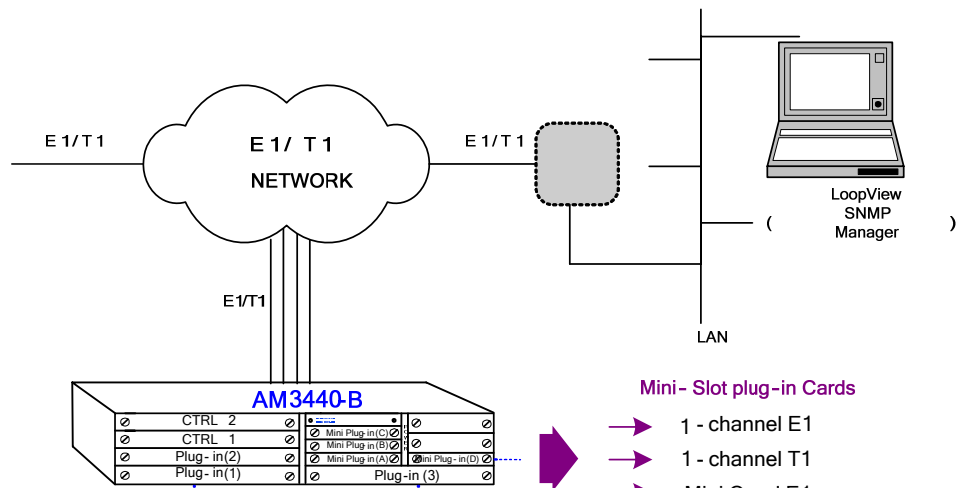
Mini- Slot plug - in Cards

- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- 1 - channel E1 ATM Frame Relay (D)
- 1 - channel T1 ATM Frame Relay (D)
- 32 WAN port Router
- 64 WAN port Router
- Fiber Optical Interface
- 3- channel Terminal Server
- 1- channel DTE (1X.21, 1V.35, 1RS232, or 1EIA530)

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 2 W/4 W E & M
- 12- channel FXS
- 12- channel FXO
- 12- channel Magneto
- 1 - channel C37.94
- 4 - channel C37.94
- 8 - channel RS232 with X.50 subrate
- 8 - LAN -port /64-WAN -port Router -B
- Conference card
- TDMoE
- 8- Data Bridge
- 1FOM-A
- 8UDTEA

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



Dual- slot plug-in cards :

- 6- channel X.21/V.11
- 6- channel V.35
- 6- channel V.36
- 6- channel EIA530/RS449
- 24- channel FXS
- 24- channel FXO

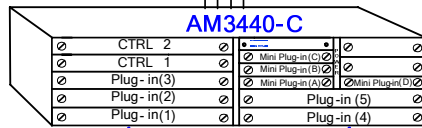
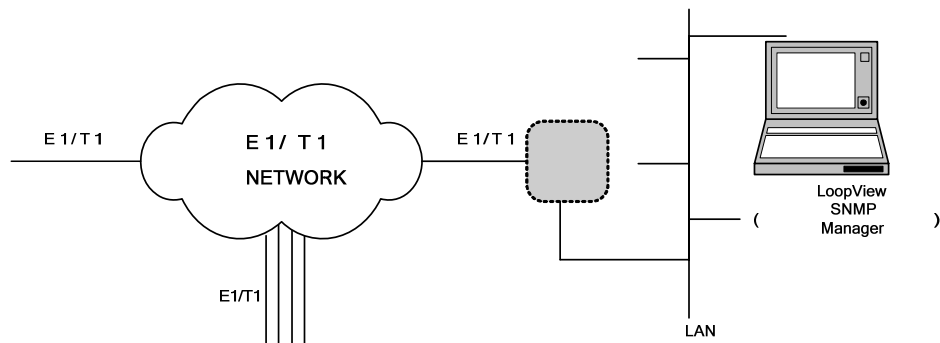
Single- Slot plug-in Cads:

- 3 - channel E1 ^{Note}
- 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
- 8 - channel Dry Contact I/O Type B
- 8 - channel 2W/4W E&M
- 12- channel FXS
- 12- channel FXO
- 12- channel Magneto
- 1 - channel C37.94
- 4 - channel C37.94
- 8 - channel RS232 with X.50 subrate
- 8 - LAN-port / 64 - WAN - port Router -B
- Conference card
- TDMoE
- 8- Data Bridge
- 1FOMA
- 8UDTEA

Mini- Slot plug-in Cards

- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- 1 - channel E1 ATM Frame Relay (D)
- 1 - channel T1 ATM Frame Relay (D)
- 32 WAN port Router
- 64 WAN port Router
- Fiber Optical Interface
- 3 - channel Terminal Server
- Quad 2 W/4W E&M
- QFXS/QFXO
- 1 - channel DTE (1X.21, 1V.35, 1RS232, or 1EIA530)
- 1 - channel OCU-DP
- Phone Line Moitor Card

Note: Not Applicable to DS0 SNCP function
(D) = Discontinued



Mini- Slot plug-in Cards

- ➔ 1 - channel E1
- ➔ 1 - channel T1
- ➔ Mini Quad E1
- ➔ 1 - channel E1 ATM Frame Relay (D)
- ➔ 1 - channel T1 ATM Frame Relay (D)
- ➔ 32 WAN port Router
- ➔ 64 WAN port Router
- ➔ Fiber Optical Interface
- ➔ 3 - channel Terminal Server
- ➔ Quad 2 W/4 W E&M
- ➔ QFXS / QFXO
- ➔ 1 - channel DTE (1X.21, 1V.35, 1RS232, or 1EIA530)
- ➔ 1 - channel OCU-DP
- ➔ Phone Line Monitor Card

Dual- slot plug-in cards :

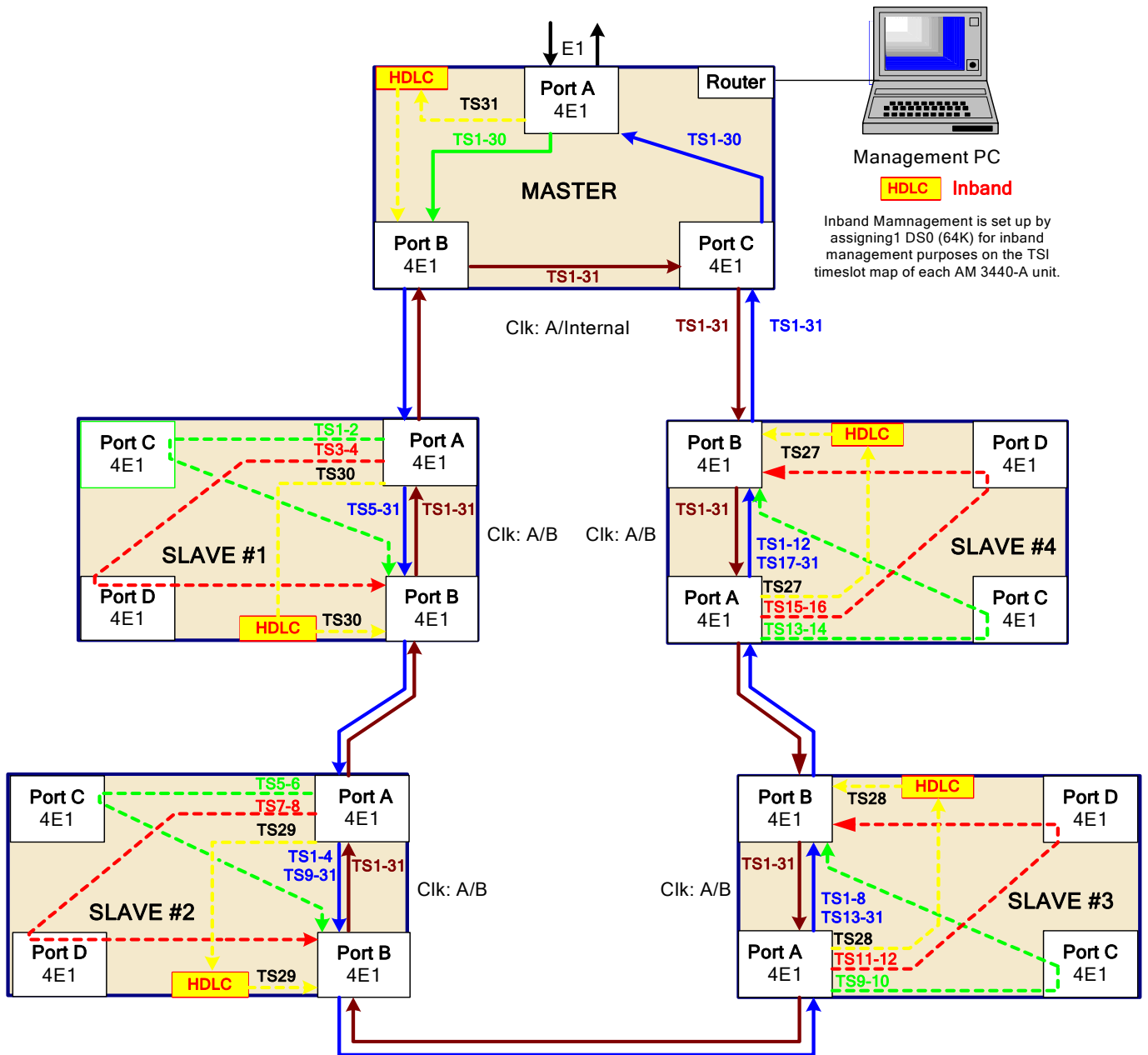
- ➔ 6 - channel X.21/V.11
- ➔ 6 - channel V.35
- ➔ 6 - channel V.36
- ➔ 6 - channel EIA530/RS449
- ➔ 24 - channel FXS
- ➔ 24 - channel FXO

Single- Slot plug-in Cards :

- ➔ 3 - channel E1 ^{Note}
- ➔ 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
- ➔ 8 - channel Dry Contact I/O type B
- ➔ 8 - channel 2W/4W E&M
- ➔ 12 - channel FXS
- ➔ 12 - channel FXO
- ➔ 12 - channel Magneto
- ➔ 1 - channel C37.94
- ➔ 4 - channel C37.94
- ➔ 8 - channel RS232 with X.50 substrate
- ➔ 8 - LAN-port / 64 - WAN - port Router -B
- ➔ Conference card
- ➔ TDMoE
- ➔ 8 - Data Bridge
- ➔ 1FOMA
- ➔ 8UDTEA

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

ULSR Ring Application



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


LOOP TELECOMMUNICATION INTERNATIONAL, INC.
ISO 9001/ISO 14001

Worldwide
 8F, No. 8, Hsin Ann Road,
 Science-Based Industrial Park
 Hsinchu, Taiwan 30078
 Tel: +886-3-578-7696
 Fax: +886-3-564-6272
 www.LoopTelecom.com
 sales@loop.com.tw

Taipei, Taiwan
 6F, No. 36, Alley 38, Lane 358,
 Rueiguang Road,
 Neihu, Taiwan 11492
 Tel: +886-2-2659-0399
 Fax: +886-2-2659-2325
 michael_tzeng@loop.com.tw

North America
 8 Carrick Road
 Palm Beach Gardens
 Florida 33418, U.S.A.
 Tel: +1-561-627-7947
 Fax: +1-561-627-6615
 jimber561@aol.com

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