CXR QX3440-CHPA

V1.5

ACCESS DCS-MUX

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 CXR iNET and CXR iNMS
- Support SAToP(CCPB T1 SAToP*), CESoPSN, and MEF8 for emulation of TDM circuits

All the plug-in cards are hot-pluggable

Item	QX3440-CHPA
Chassis	5U
# of Mini-slots	4
# of Large slots	10+2(high speed)
Maximum E1/T1 Channels	64
Cross-Connect Backplane Capacity	256Mbps with CCPB/CCPSWA

* Future Option

Description

The CXR QX3440-CHPA product is Access DCS-MUXs which supports multiplexing of various digital access interfaces into E1 or T1 lines for convenient transport and switching. The CXR QX3440 Access DCS-MUX provides access for a variety of TDM, packet, and voice interfaces detailed on the next page. These interfaces are compatible with other CXR products. The QX3440 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 QX3440 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 QX3440 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 QX3440 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.

CXR QX3440-PA 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 QX3440 consists of a rugged reinforced aluminum chassis, giving this equipment a durable structure and a long-lasting physical life.

CXR Networks

CXR QX3440-PA plug-in cards:

The mini-slot cards plug into the mini-slots of the QX3440-PA. The single-slot cards plug into single slots.

	Controller	QX3440-CCPSWa
Low-Speed Tributary Modules	**Plug-in cards** \ **Chassis**	**QX3440-CHPA**
Single-Slot	**Transportation**	
	3-channel E1	√
	3-channel T1	√
	4-channel E1	√
	4-channel T1	√
	4-channel TDMoEA	√
	VOIPGA interface card	√
	Serial and Digital Access	
	8-channel G.703 card at 64 Kbps	√
	6-channel UDTEA	√
	8-channel UDTEA	√
	6-port RS232 card (6RS232A) with V.110	√
	8-channel RS232 with X.50 subrate	√
	Voice and Analog Access	
	8-channel 2W/4W E&M (8E&MA)	√
	12-channel FXSA	√
	12-channel FXOA	√
	12-channel Magneto	√
	Data Processing	
	8-channel Dry Contact I/O Type	√
	8-channel Dry Contact I/O Type B	√
	Packet Access	
	8-LAN-port/ 64-WAN-port Router-B	√
	Teleprotection Access	
	1-channel low speed optical (C37.94)	√
	4-channel low speed optical (C37.94)	√
Mini-Slot	**Transportation**	
	1-channel E1 (Single E1) with 75ohm	√
	1-channel E1 (Single E1 with 120ohm	√
	1-channel T1 (Single T1 interface)	√
	Mini Quad E1 (Four E1) with 75ohm	√

	Mini Quad E1 (Four E1) with 120ohm	√
	Mini Quad T1 (Four T1 interfaces)	√
	Fiber Optical Interface	√
	Serial and Digital Access	
	1-channel X.21	√
	1-channel V.35	√
	1-channel RS232	√
	1-channel EIA530	√
	3-port RS232 card*	
	Voice and Analog Access	
	Quad E&M (QEMA)	√
	QFXSA (Four FXS voice interface)	√
	QFXO (Four FXO voice interfaces)	√
	QMAGA (Four magneto voice interfaces)	√
	Data Processing	
	Echo Canceller card	√
	Analog Bridge card	√
	2-LAN port/64 WAN port Router-A	√
	Teleprotection Access	
	LS Optical M1C37 Card	√

	Controller	**CCPSWa**
High -Speed Tributary Modules	**Chassis** / **Plug-in cards**	**QX3440-CHPA**
Single-Slot	**Packet Access**	
	8 GbE Interface card*	√

Note: √ = Supported
* = Future Option

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. QX3440-CHPA: 5U chassis with 128 Mb/s cross-connect capacity backplane.

Model	Description	Note

Model	Description	Note
Main Unit		
CXR QX3440-CHPA	QX3440-CHPAa type Chassis. Wideband Main Unit without CPU, power and plug-in cards	
CPU Module		
CXR QX3440-CCPSWa	Packet controller module, support cross-connect function, 4 x GbE SFP and 4 x FE/GbE SFP interfaces with built-in L2 switch and one RJ45 SNMP • Supports SAToP, CESoPSN, and MEF-8 formats for TDMoE uplink, up to 64 pseudowires. • Supports SyncE	
CXR QX3440-CCPB	Packet controller module, support cross-connect function, 2 x GbE Combo SFP and FE/GbE SFP interfaces with built-in L2 switch and one RJ45 SNMP • Supports SAToP, CESoPSN, and MEF-8 formats for TDMoE uplink, up to 64 pseudowires. • Supports SyncE	

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

Licence	Description	Note
LCT	QX3440-LCT activation license	Used with CXR-LCT Graphical Configuration Software for management
E1-RING	QX3440-E1-RING activation license	Used with E-RING ULSR licence.
WEBLIC	QX3440-WEBLIC activation license	Used with QX3440-E and QX3440-CCPB for WEB GUI management

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

Model	Description	Note
Transportation		
CXR QX3440-E75	1-channel of E1plug-in card w/ 75 ohm	
CXR QX3440-E120	1-channel of E1 plug-in card w/ 120 ohm	
CXR QX3440-T1	1-channel T1 plug-in card	
CXR QX3440-M4T1	Mini Quad T1 plug-in card	Includes a three meter conversion cable (CXR-ACC-CAB-DB25M-300-4RJ48M)
CXR QX3440-M4E75	Mini Quad E1 plug-in card with 75 ohm	Includes a three meter conversion cable (CXR-ACC-CAB-DB25M-300-8BNCM)
CXR QX3440-M4E120	Mini Quad E1 plug-in card with 120 ohm	Includes a three meter conversion cable (CXR-ACC-CAB-DB25M-300-4RJ48M)
CXR QX3440-FOM-opt	Fiber Optical plug-in card	For **opt** option, please refer to the table below for detail information
Serial and Digital Access		
CXR QX3440-1X21	1-channel X.21 plug-in card	
CXR QX3440-1RS232	1-channel RS232 plug-in card	
CXR QX3440-1V35	1-channel V.35 plug-in card	
CXR QX3440-1E530	1-channel EIA530 plug-in card	
CXR QX3440-3RS232-DB	3-port RS232 card with V.110/i463 encoding, 1 DB44 connector for Async (up to 38.4kbps) and Sync ports. DTE/DCE. 1 slot size.	One conversion cable is included (DB44 connector to two DB25 and one DB9 connector; (CXR-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB).
CXR QX3440-TS	3-chanel Terminal Server plug-in card	Includes a one meter conversion cable (CXR-ACC-CAB-DB44M-100-2DB25F-1DB09F-TS)

Voice and Analog Access		
CXR QX3440-QEMA-**wr**-**m**-T**n**-**x**	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 three meter conversion cable (CXR-ACC-CAB-DB44M-60-4RJ45M)
CXR QX3440-QFXO-**x**	Quad FXO voice plug-in card	**GS** = Ground Start **MP** = Metering Pulse Receive 12/16 KHz For **x** option, please refer to the table below for detail information QFXOM includes all QFXO card functions
CXR QX3440-QFXO-M-**x**	Quad FXO with MP 16 KHz voice plug-in card	
CXR QX3440-QFXO-M12-**x**	Quad FXO with MP 12 KHz voice plug-in card	
CXR QX3440-QFXOS-**x**	Quad FXO with GS plug-in card	
CXR QX3440-QFXOM-**x**	Quad FXO with GS and MP 16 KHz voice plug-in card	
CXR QX3440-QFXOM12-**x**	Quad FXO with GS and MP 12 KHz voice plug-in card used with 4 RJ11	
CXR QX3440-QFXSA-**x**-**pt**	Quad FXSA voice card	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.
CXR QX3440-QFXSA-M-**x**-**pt**	Quad FXSA with MP 16KHz voice card	
CXR QX3440-QFXSA-M12-**x**-**pt**	Quad FXSA with MP 12KHz voice card	
CXR QX3440-QFXSAS-**x**-**pt**	Quad FXSA with GS	
CXR QX3440-QFXSAM-**x**-**pt**	Quad FXSA with GS and MP 16KHz voice card	
CXR QX3440-QMAGA	Quad channel magneto plug-in module with ring across L1&GND and L1&L2. Software programmable.	
Data Processing		
CXR QX3440-ECA	Echo canceller plug-in card	
CXR QX3440-ABRA	Analog voice bridging plug-in card	
Packet Access		
CXR QX3440-RTA	2-LAN ports/64 WAN port router/bridge plug-in card	
Teleprotection Access		
CXR QX3440-M1C37-**LSFOM-G**	1- channel C37.94 plug-in mini card	
Common Module		
CXR QX3440-CLKa	-2 x Clock in x2, 1x clock out -1x Alarm out, 1x Fuse, 1x System alarm	

Low-Speed Single Slot Plug-in Module

Model	Description	Note
Transportation		
CXR QX3440-3E1-**cc**	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	For **cc** option, please refer to the table below for detail information
CXR QX3440-3T1	3-channel T1 Interface	
CXR QX3440-4E1-**cc**	4-channel E1 plug-in card	For **cc** option, please refer to the table below for detail information
CXR QX3440-4T1	4-channel T1 plug-in card	
CXR QX3440-TDMoEA-PPM	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.	Please order separately for SFP optical modules from SFP optical brochure.

CXR QX3440-VoIPGA-**pt**	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 the **pt** option, please refer to the table below for details
Serial and Digital Access		
CXR QX3440-8CD	8-channel G.703 plug-in card at 64 Kbps data rate	
CXR QX3440-6UDTEA	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: - CXR-ACC-CAB-DB44M-100-2DB25F-VB - CXR-ACC-CAB-DB44M-100-2DB15F-VB - CXR-ACC-CAB-DB44M-100-1DB15F-1DB25F-VB - CXR-ACC-CAB-DB44M-100-2M34F-VB - CXR-ACC-CAB-DB44M-100-2DB37F-VB - CXR-ACC-CAB-DB44M-100-1DB37F-1M34F-VB
CXR QX3440-8UDTEA-**opm**	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.
CXR QX3440-6RS232A-RJ	6-port RS232 card with V.110 encoding, with 6 RJ48 connectors for 6 RS232 Async ports	

CXR QX3440-6RS232A-DB	6-port RS232 card with V.110 encoding, with 2 DB44 connectors for Async and Sync ports	Two conversion cables are included, DB44 connector to two DB25 and one DB9 connectors. (CXR-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB)
CXR QX3440-8RS232-RJ	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	
CXR QX3440-8RS232-DB	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; (CXR-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB).
Voice and Analog Access		
CXR QX3440-8EMA-**x-pt- typ**	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
CXR QX3440-12FXSA-**sn-pta-typ**	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.	12FXSAMP includes all FXS card functions For **sn** option, please refer to the table below for detail information **pta**= power type. For **pta** option, please refer to the table below for detail information Please use with 100-240Vac or ±48Vdc powered main units.
CXR QX3440-12FXSA-P**-sn-pta-typ**	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.	
CXR QX3440-12FXSA-M-**sn-pta-typ**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Metering Pulse]. Used with 12 RJ11.	
CXR QX3440-12FXSA-MPP-**sn-pta-typ**	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.	
CXR QX3440-12FXSAS-**sn-pta-typ**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR and [Ground Start]. Used with 12 RJ11.	12FXSAMP includes all FXS card functions **pta**= power type. For **sn, pt, and typ** options, please refer to the table below for detail information. Please use with 100-240Vac or ±48Vdc powered main units.
CXR QX3440-12FXSAM-**sn-pta-typ**	12-channel FXSA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, PLAR, [Ground Start] and [Metering Pulse]. Used with 12 RJ11.	
CXR QX3440-12FXSAMP-**sn-pta-typ**	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.	
CXR QX3440-12FXOA-**typ**	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.	12FXOAM 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.
CXR QX3440-12FXOA-M-**typ**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Metering Pulse]. Used with 12 RJ11.	

CXR QX3440-12FXOAS-**typ**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start and [Ground Start]. Used with 12 RJ11.	
CXR QX3440-12FXOAM-**typ**	12-channel FXOA plug-in card with 600/900 Impedance, Battery Reverse, Loop Start, [Ground Start] and [Metering Pulse]. Used with 12 RJ11.	
CXR QX3440-12MAGA-**typ**	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
Data Processing		
CXR QX3440-8DC	8-channel dry contact type A plug-in card with maximum voltage 100 Vdc or 250 Vac	
CXR QX3440-8DCB	8-channel dry contact type B plug-in card with maximum voltage 220 Vdc or 250 Vac	
Packet Access		
CXR QX3440-RTB	8-LAN ports/64 WAN ports router/bridge plug-in card	
Teleprotection Access		
CXR QX3440-1C37- **LSFOM**	1- channel C37.94 plug-in card	For **LSFOM** option, please refer to the table below for detail information
CXR QX3440-4C37- **LSFOM**	4- channel C37.94 plug-in card	

High-Speed Single Slot Plug-in Module

Model	Description	Note
Packet Access		
CXR QX3440-8GES4W-typ*	High-Speed Plug-in Module 8 GbE interface plug-in module with 10/100/1000BaseT RJ45 or SFP housing.	Applicable to Slot 1~2 of **QX3440-PA** chassis. SFP optical module is not included. Please order separately for SFP optical modules from SFP optical brochure.

Power supply

Model	Description	Note
Power Module		
QX3440-PW18-75-500	Single -24Vdc/-48Vdc (-18 to –75 Vdc) power module (576W) (48V – 12A)	QX3440-SDPAa

Accessories

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 CXR sales representative.
User’s Manual		
CXR QX3440-UMS	User’s Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.	
Fan Tray		
CXR QX3440-FAN	Fan tray	Power supplied from rear of chassis.
Air Flow Guide Rack & Cable Management		
CXR QX3440-CMA	Cable Management for QX3440, 1U (44mm) with 10cm ring	
FXO Box		
CXR QX3440-FXO BOX	Support FXO Interface Battery Feed	Non-RoHS compliant

Conversion Cables (All conversion cables are RoHS compliant)

Model	Description	Note
CXR-ACC-CAB-DB25M-100-8BNCM	DB25/Male to eight BNC/Male cable; Length: 100 cm	Used in CXR QX3440-M4E75 plug-in card
CXR-ACC-CAB-DB25M-100-8BNCF	DB25/Male to eight BNC/Female cable; Length: 100 cm	Used in CXR QX3440-M4E75 plug-in card
CXR-ACC-CAB-DB25M-300-8BNCM	DB25/Male to eight BNC/Male cable; Length: 300 cm	Used in CXR QX3440-M4E75 plug-in card
CXR-ACC-CAB-DB25M-300-8BNCF	DB25/Male to eight BNC/Female cable; Length: 300 cm	Used in CXR QX3440-M4E75 plug-in card
CXR-ACC-CAB-DB25M-100-4RJ48M	DB25/Male to four RJ48C/Male cable; Length: 100 cm	Used in CXR QX3440-M4E120 plug-in card
CXR-ACC-CAB-DB25M-300-4RJ48M	DB25/Male to four RJ48C/Male cable; Length: 300 cm	Used in CXR QX3440-M4E120 plug-in card and CXR QX3440-M4T1 plug-in card
CXR-ACC-CAB-DB44M-100-2DB25F-1DB09F-DB	DSUB-44 pin/Male to two DSUB-25 pin/Female- one DSBU-9 pin/Female (8P8C) plug, Length:100cm	Used in CXR QX3440-8RS232-DB, and CXR QX3440-6RS232A-DB plug-in card
CXR-ACC-CAB-DB25M-30-1M34F	DSUB-25pin/Male to M34/Female V.35 Conversion cable Length: 30 cm	Used in CXR QX3440-1V35 plug-in card
CXR-ACC-CAB-DB44M-100-2DB25F-VB	DSUB-44 pin/Male to two DSUB-25 pin/Female plug, Length:100cm	Used in V.35 and RS232 interfaces.
CXR-ACC-CAB-DB44M-100-2DB15F-VB	DSUB-44 pin/Male to two DSUB-15 pin/Female plug, Length:100cm	Used in X.21 interface.
CXR-ACC-CAB-DB44M-100-1DB15F-1DB25F-VB	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.
CXR-ACC-CAB-DB44M-100-2M34F-VB	DSUB-44 pin/Male to two M34 pin/Female plug, Length:100cm	Used in V.35 interface.
CXR-ACC-CAB-DB44M-100-2DB37F-VB	DSUB-44 pin/Male to two DSUB-37 pin/Female plug, Length:100cm	Used in EIA530/RS449 and RS422 interfaces.
CXR-ACC-CAB-DB44M-100-1DB37F-1M34F-VB	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.
CXR-ACC-CAB-DB44M-60-4RJ45M	DSUB-44pin/Male to four RJ45 Male (8P8C) conversion cable. Length: 60 cm	Used with QEMA plug-in card.
CXR-ACC-CAB-1SCM-200-1LCF	One SC/Male to one LC/Female fiber optic adaptor cable. Length: 200 cm	Used with CXR QX3440-4C37-**T** and CXR QX3440-1C37-**T**

Y-Box (All Y-Box are RoHS compliant)		
CXR-VV-B	1 for 1 protection Y-Box with BNC connectors (4-E1)	Used with 4E1
CXR-VV-R	1 for 1 protection Y-Box with RJ48C connectors (16-E1)	Used with 4E1
CXR-VV-T	1 for 1 protection Y-Box with RJ48C connectors (16-T1)	Used with 4T1

Feature Activation License		
CXR QX3440-ERING	Feature Activation License for QX3440 CPU card to support framed E1 PDH-Ring function	Used with 4E1, M4E75, M4E120 and FOM
CXR QX3440-TRING	Feature Activation License for QX3440 CPU card to support framed T1 PDH-Ring function	Used with 4T1
CXR QX3440-LCT	Feature Activation License for QX3440 CPU card to support LCT Graphical Configuration Software	Used with CXR-LCT Software

For 4E1 and 3E1 cards

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

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

For FOM 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 CXR 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**
CXR QX3440-8UDTEA-UPGR-TS	Feature Activation License for QX3440 8UDTE card to support Terminal Server function
CXR QX3440-8UDTEA-UPGR- OMNI	Feature Activation License for QX3440 8UDTE card to support Omnibus function
CXR QX3440-8UDTEA-UPGR-CPT	Feature Activation License for QX3440 8UDTE card to support Clock Pass Through function
CXR QX3440-8UDTEA-UPGR-TSOMNI	Feature Activation License for QX3440 8UDTE card to support Terminal Server function and Omnibus function
CXR QX3440-8UDTEA-UPGR-HD	Feature Activation License for QX3440 8UDTE card to support Full- and Half-Duplex modes
CXR QX3440-8UDTEA-UPGR-TSHD	Feature Activation License for QX3440 8UDTE card to support Terminal Server function with Full- and Half-Duplex modes
CXR QX3440-8UDTEA-UPGR-OMNIHD	Feature Activation License for QX3440 8UDTE card to support Omnibus function with Full- and Half-Duplex modes
CXR QX3440-8UDTEA-UPGR-TSOMNIHD	Feature Activation License for QX3440 8UDTE card to support Terminal Server function and Omnibus function with Full- and Half-Duplex modes
CXR QX3440-8UDTEA-UPGR-FULL	Feature Activation License for QX3440 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 CXR 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 QX3440-PA type chassis using SDA power module with ±24Vdc input power	
PWR	For QX3440-PA type chassis using SDA power module with ±48Vdc input power	
PWRIE1613	For QX3440-PA 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 Connector	

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 CXR sales representative.

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

pta=	Description	Note
24	For QX3440-PA type chassis using SDA power module with ±24Vdc input power	
PWR	For QX3440-PA with ±48Vdc (SDA)	
PWRIE1613	For QX3440-PA with ±48Vdc (SDA) power complied with IEEE1613 standard	

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

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

For 12FXOA/12MAGA

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

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

For ODP

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

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

For QFXSA card:

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

pt=	Description	Note
24	For QX3440-A type chassis using SDA power module with ±24Vdc input power	
PWR	For QX3440-A with ±48Vdc (SD, SDA, or SD125) For QX3440-B/C with ±48Vdc (SDB) and AC (SAB) power modules	
PWRIE1613	For QX3440-A with ±48Vdc (SDA) power complied with IEEE1613 standard For QX3440-C with ±48Vdc (SDB) power complied with IEEE1613 standard	
24IE1613	For QX3440-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										Note
	Mode		Data Rate		Wave Length		Distance		Connector		
	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	
ZHHTT	Z	Multi-mode	H	155 M	H	820nm	T	2km	T	ST connector	1 * 8 Separate transceiver & receiver
QHATT	Q	Multi-mode	H	155 M	A	850nm	T	2km	T	ST connector	1 * 9
NFB3T	N	Single mode	F	125 M	B	1310nm	3	30km	T	ST connector	
QFBTT	Q	Multi-mode	F	125 M	B	1310nm	T	2km	T	ST connector	
NHC2S	N	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*DS0
S	Single mode,1310nm, Tx_min -14dBm, Rx_max -36dBm, ST type connector Works with SEL teleprotection device										Must use 8*DS0

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										Note
	Mode		Data Rate		Wave Length		Distance		Connector		
	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	
ZHHTT	Z	Multi-mode	H	155 M	H	820nm	T	2km	T	ST connector	1 * 8 Separate transceiver & receiver
QHATT	Q	Multi-mode	H	155 M	A	850nm	T	2km	T	ST connector	1 * 9
NFB3T	N	Single mode	F	125 M	B	1310nm	3	30km	T	ST connector	
QFBTT	Q	Multi-mode	F	125 M	B	1310nm	T	2km	T	ST connector	
NHC2S	N	Single mode	H	155 M	C	1550nm	2	20km	S	SC connector	

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 QX3440-PA with -48Vdc (SDA) power module	

CXR QX3440 Access DCS-MUX Product Specifications

CCPSWa Controller

Number of GE Ports	8 SFP
Speed	4 ports 1000Mbps and 4 ports 100/1000Mbps
Ethernet Function	
Basic Features	Dual rate SFP with autodetection Ping function contained ARP
Pseudowire	
Concurrent PW	Up to 64
Encapsulation Format	SAToP (CCPB T1 SAToP*), CESoPSN, MEF-8 (CESoETH)
QoS	User configurable 802.1p CoS, ToS in outoing IP frame Fuse alarm, performance alarm
Management	
Console	Micro USB Connector User Interface: Menu driven VT-100
Ethernet	GE port, Connector: RJ45 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

Physical /Electrical

Model	QX3440-PA	
Dimensions	432.4 x 220 x 223.5 mm (W×H×D)	
Power	Single/ Dual -48 Vdc: -36 to -75 Vdc, 200 Watts max.	
Temperature	Operating	Storage
	-20 to 65°C	-30 to 70°C
Weight	Net Weight	Max. Weight
	6.0 Kg (13.23lbs)	16 Kg (35.28lbs)
Humidity	0-95%RH (non-condensing)	
Mounting	Desk-top stackable, 19” /23” rack mountable	
Line Power Supply	Available only with DC power for G.SHDSL card only	
Power Consumption	Max 110 Watts	

Certification

EN55022 Class A, EN50024, EN300 386, FCC Part 15 Class A, FCC Part 68, CS-03, IEC60950, UL60950, 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

CXR-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

M4TE Cards

The M4TE card supports DB37 to 4RJ48 connector, DB37 to 8BNC connector, and wire-wrap connector. E1/T1 per card is software configurable.

Network Line Interface - T1

Line Rate	1.544 Mbps ± 32 ppm	Framing	D4/ESF
Line Code	AMI/B8ZS	Connector	RJ48F, BNC, T1
Input Signal	DSX-1 0dB to –30dB w/ALBO	Output Signal	DSX-1 w/0, -7.5, -15 dB LBO
Jitter	AT&T TR 62411	Pulse Template	AT&T TR 62411
Data Rate	n * (64) Kbps (n=1 - 24)	Surge Protection	FCC Part 68 Sub Part D

Network Line Interface - E1

Line Rate	2.048 Mbps ± 50 ppm	Framing	ITU G.704
Line Code	AMI/HDB3	Connector	RJ48F or BNC
Input Signal	ITU G.703	Output Signal	ITU G.703
Jitter	ITU G.823	Electrical	75Ω coax/120Ω twisted pair
Data Rate	n * (64) Kbps (n = 1 - 32)		

Fiber Optical Interface (FOM)

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

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 outoing 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

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

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 (EIA530/RS449)

Data Port	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	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 Specifications

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.

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

Data Processing

Dry Contact Type A Interface

Inputs -

8-channel	2-port per card, 4-pair per port
Connector	RJ45
Internal Resistance	1 K
Activation Current	3 ma
Deactivation Current	1.5 ma
Allowable Current	4 ma
Input port	Provide 3.3V output

Outputs -

8-channel	8-pair per card
Connector	Screw type
Initial Insulation Resistance	Min. 100M ohm (at 500 Vdc)
Max. Current	5A
Max. Voltage	100 Vdc, 250 Vac
Short-circuit Current	5A

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
Analog 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

Teleprotection Access

C37.94 Interface

820nm

Source	LED	Optical Line Rate	2.048Mbps
Wavelength	820nm	Line Code	NRZ
Connector	ST	Fiber Type	Multi-mode
Optical Power	-12dBm		

850nm

Source	VCSEL	Optical Line Rate	2.048Mbps
Wavelength	850nm	Line Code	NRZ
Connector	ST Duplex Plastic Connector	Fiver Type	Multi-mode
Optical Power	-5.5dBm		

1310nm

Source	LED	Optical Line Rate	2.048Mbps
Wavelength	1310nm	Line Code	NRZ
Connector	ST	Fiber Type	Single & Multiple
Optical Power	-14dBm		

1550nm

Source	LED	Optical Line Rate	2.048Mbps
Wavelength	1550nm	Line Code	NRZ
Connector	SC	Fiber Type	Single & Multiple
Optical Power	-14dBm		

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 900□
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
Power	100-240Vac or ±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	RJ11 x 12
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	> 46dB with 1004 Hz, 0dBm input
Frequency Response	± 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
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	
FXOA	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
FXSA Loop Feed	-48Vdc with 25mA current limit per port Jumper Selectable: 25mA(default=25mA), 30mA, or 35mA(sn=S1)	
FXSA Signalling	Normal / PLAR: Private Line Auto Ring down	
FXSA 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	
FXSA Tone	Alarm Tone: 480Hz/620Hz/-24dBm Ring Back Tone: 440Hz/480Hz/-19dBm	
FXSA 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.

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

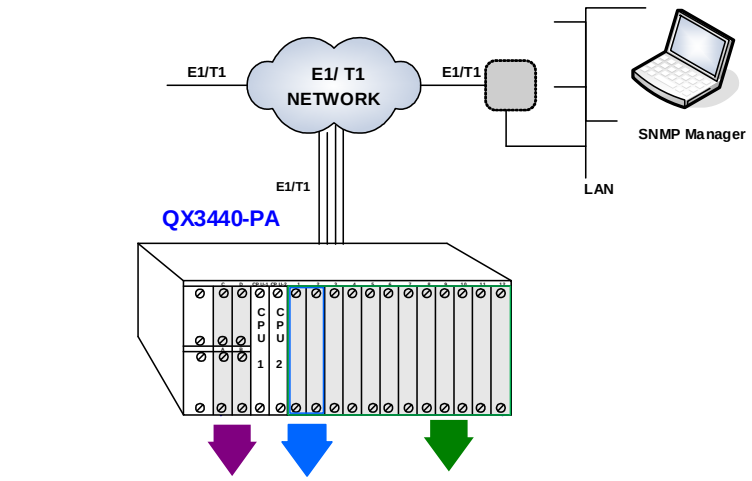
• Peer to Peer Call
• Call Forward - unconditional, busy**Note**
• Do Not Disturb**Note**
• Hot Line and Warm Line

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.

Application Illustrations



Mini-Slot plug-in Cards

- 1 - channel E1
- 1 - channel T1
- Mini Quad E1
- Mini Quad T1
- 64 WAN port Router
- Fiber Optical Interface
- 3 - channel Terminal Server
- 1 - channel DTE (1X.21, 1V.35, 1RS232, or 1EIA530)
- 3 - channel RS232*
- ECA
- ABRA
- QMAGA
- QFXO
- QFXSA
- QEMA

High-Speed Single-Slot plug-in Cards

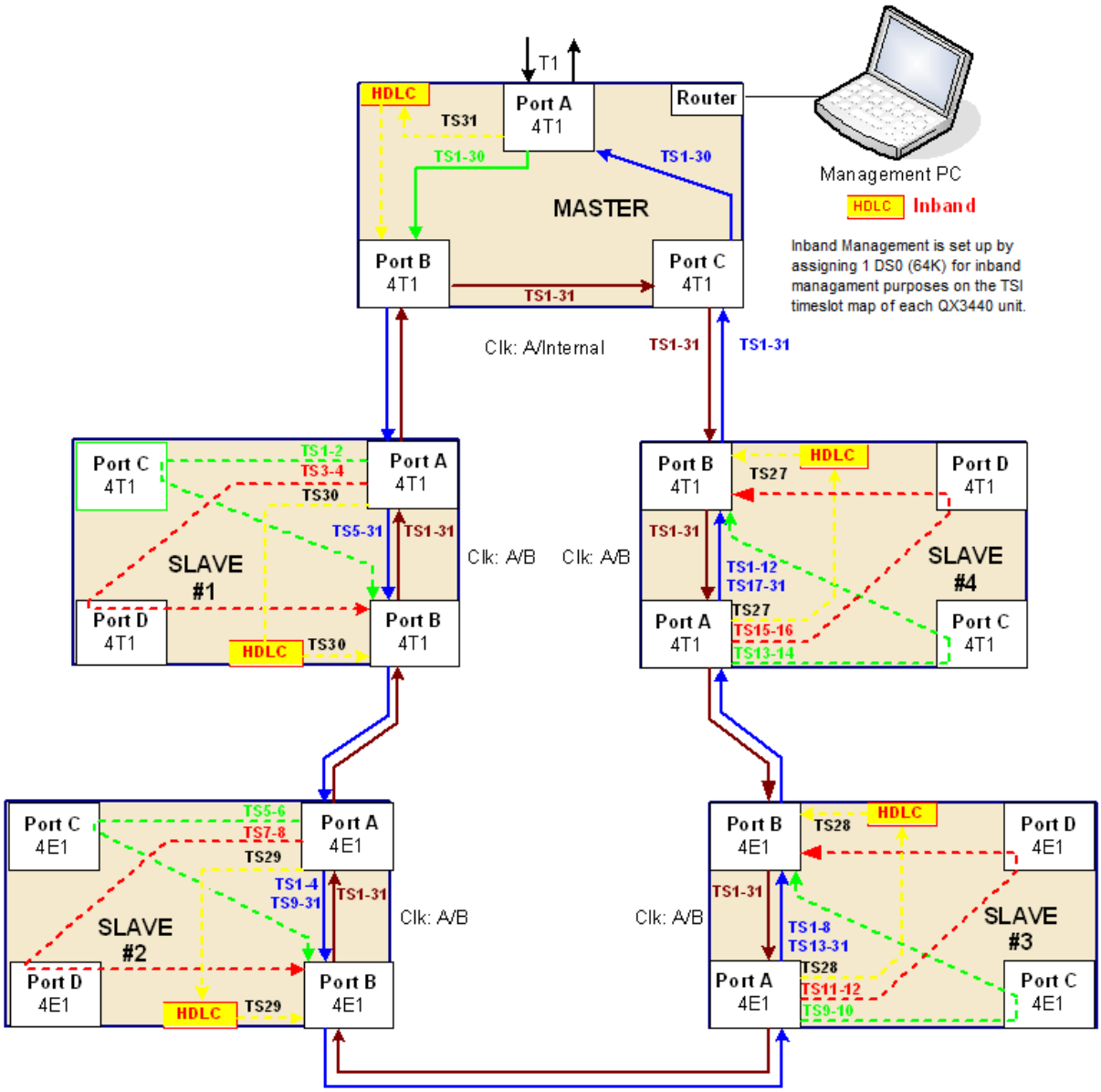
- 8 GbE interface plug-in module*

Low-Speed Single-Slot plug-in Cards

- 3 - channel E1
- 4 - channel E1
- 4 - channel T1
- 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 Magneto
- 12 - channel C37.94
- 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
- 8UDTEA
- 6UDTEA

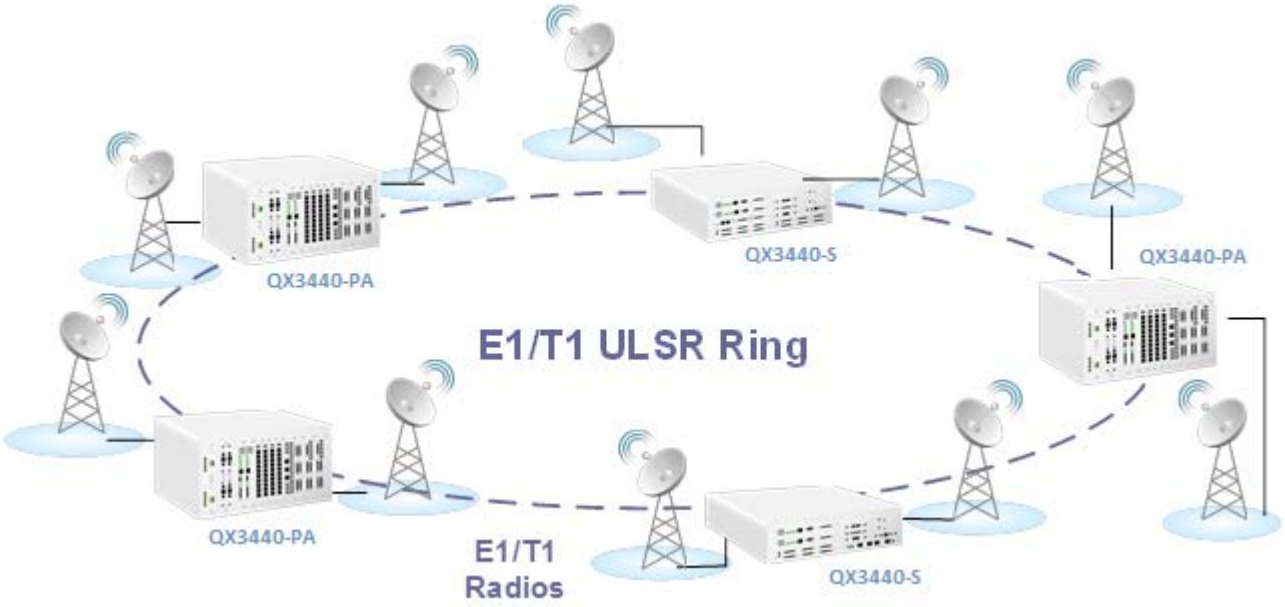
*Future option

ULSR Ring Application



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

QX3440 ULSR Ring Application through E1/T1 Radio



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