ORION TELECOM NETWORKS INC.

VCL-MX™ Version 3-STD (Standard Version) E1, 2 Mbps 30 Channel Drop-Insert Voice and Data Multiplexer

Product Brochure & Data Sheet

Headquarters: Phoenix, Arizona

Orion Telecom Networks Inc.

20100, N 51st Ave, Suite B240,
Glendale AZ 85308
Phone: +1 480-816-8672
Fax: +1 480-816-0115
E-mail: sales@oriontelecom.com
Website: http://www.oriontelecom.com

Regional Office: Miami, Florida

Orion Telecom Networks Inc.

4000 Ponce de Leon Blvd. Suite 470,
Coral Gables, FL 33146 U.S.A.
Phone: 1-305-777-0419,
Fax: 1-305-777-0201
E-mail: sales@oriontelecom.com
Website: http://www.oriontelecom.com

Product Overview

The VCL-MX Version 3-STD (Standard Version), 2Mbps ~ 30 Channel E1 Voice and Data, Drop-Insert Multiplexer provides full range of POTS (voice) and digital data services to subscribers located at different locations, requiring to interconnect and establish a voice and data network over an E1 link. The VCL-MX is a simple, yet powerful E1 Channel Bank for connecting and integrating analog communication equipment with digital E1 services.

The VCL-MX Version 3-STD (Standard Version), E1, Drop-Insert Multiplexer provides voice telephony and digital data services which may include:

The Multiplexer may be used in Terminal or Drop-Insert configuration to provide:

- Toll Quality Voice Services
- Interconnect LAN (Campus Network)
- Interconnect Computer Terminals
- Provide LAN-WAN Interconnectivity
- Provide Leased Lines on DSL for SOHO Applications

Voice Interfaces

- FXO
- FXS
- E&M (2-wire and 4-wire)
- Hot-Line (FXS-FXS)
- Ring Generator (75V RMS)
- Magneto (GEN-GEN)

Data Interfaces

- RS232 asynchronous data
- RS485 asynchronous data
- G.703 @ 64 Kbps, co-directional synchronous data
- iDSL @ 128 Kbps
- V.35, n X 64 Kbps
- V.36, n X 64 Kbps
- X.21, n X 64 Kbps
- RS530, n X 64 Kbps
- 10BaseT Bridge Interface Card
- Fractional E1 (FE1)
- Universal Data Interface Card (User Configurable Data Interface)

VCL-MX, E1, Drop-Insert Voice and Data Multiplexer

VCL-MX Version # 3

The VCL-MX E1 Interface operates at a primary rate of 2 Mbps and provides a host of features including, channel drop and insert facility over a network of VCL-MX E1 Multiplexers, for voice and data applications.

The VCL-MX has an effective, CLI (text) and GUI (Graphical User Interface) based "Network Management System", which may be used for configuring the system, subsequent remote monitoring and management of the inter-connected systems in the network. Both Inband and Out-of-Band configuration and monitoring options are available. An extensive set of alarms, for easy maintenance are provided in the system

Management and Control Interfaces

- Serial RS232 Management Port
- 10/100BaseT Telnet over a TCP/IP Network

System Access and Management

- Windows XP and Windows 7 compatible GUI
- Telnet - CLI (Command Line Interface) Out-of-Band Management Interface
- In-band Management of Remote Units over the E1 links

Features

- Voice and Digital Data services
- Any combination ("mix-n-match") of Voice and Digital Data services deployed from a single VCL-MX "Smart Shelf"
- Drop and Insert applications
- Digital Data option may be used for internet access or video conferencing application
- Wireless applications including Cellular Networks
- Digital Microwave Radio
- SCADA applications
- Frame Relay circuit termination
- Powerful Network Management System for monitoring and network control
- Compliance with all relevant ITU-T (CCITT) recommendations
- 3U high, compact construction

Highlights

- Field upgradable to provide voice, data or both services
- Flexibility on use of transmission medium-copper, fiber or wireless
- Choice of Interfaces for Data Applications
- RS-232, PC Interface "Network Control and Management Software"
- In-band system configuration and management interface
- Out-of-band system configuration and management interface through 10BaseT Terminal (Optional)
- Channel assignment independent of slot position in the sub-rack
- Extensive set of alarms
- User Selectable Internal or Loop-timed clock options

Transmission Mediums

The VCL-MX Version 3-STD (Standard Version) offers an excellent flexibility on the choice of transmission medium over which it may be deployed. The transmission medium can be either of the following:

- Copper
- Optical Fiber
- Wireless

Applications of VCL-MX Version 3-STD (Standard Version)

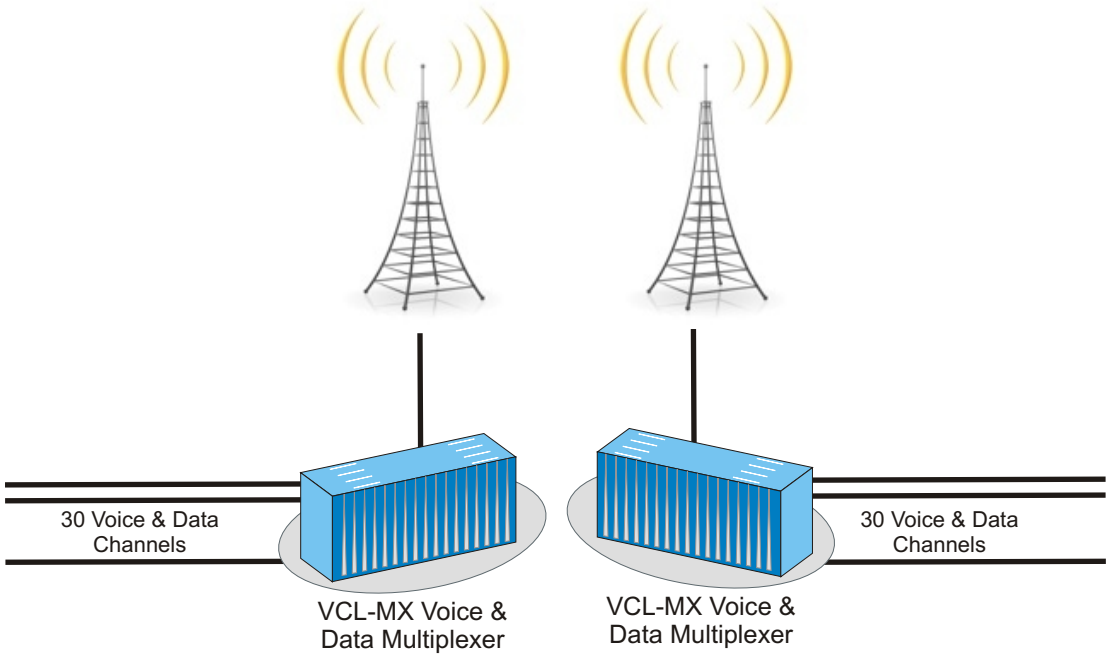
POTS (voice), digital data or real-time video conferencing services (V.35, V.36, X.21, RS530, 10BaseT Ethernet Bridge) high-speed digital data interface options allows point-to-point network solutions for providing a video conferencing channel of up to 1984 Kbps).

- Junction Mux - for digital interconnection of analog exchanges
- Drop & Insert applications
- Wireless network applications
- High-speed data ports for digital communication links providing Leased Lines access to Internet Service Providers (ISPs) with speeds ranging from 64Kbps up to 1984 Kbps digital data interface options
- Micro-Cellular infrastructure applications for providing cell-switch connectivity
- Wide area networking
- Internet access over POTS lines - All POTS interfaces operate @ 64Kbps and support V.34 (33.6Kbps) dial-up modems

Applications

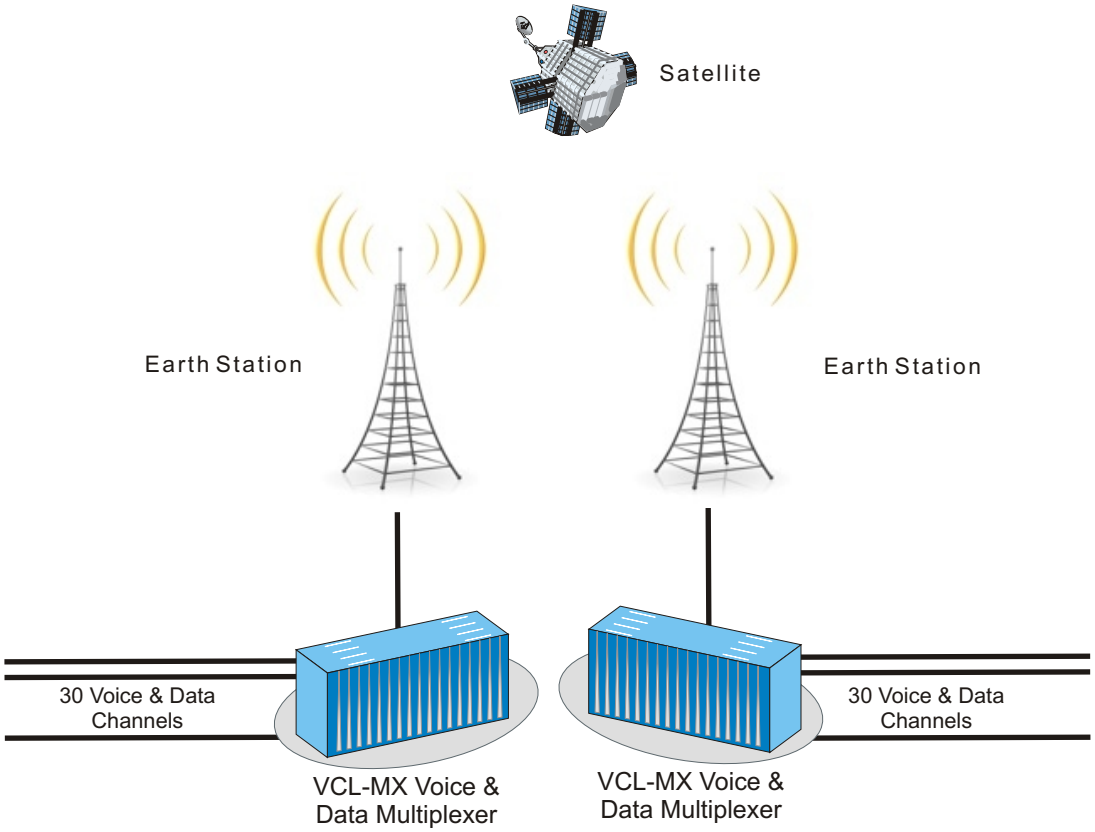
Applications # 01

VCL-MX E1, 2Mbps Voice & Data Multiplexers
Connecting over Digital Microwave Radio Links



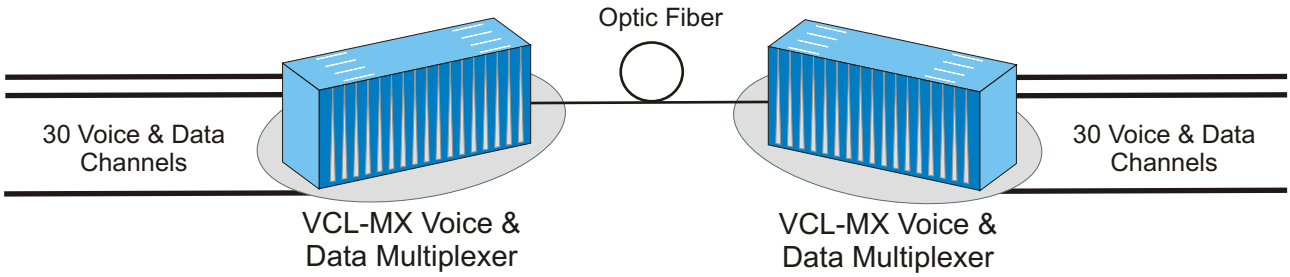
Applications # 02

VCL-MX E1, 2Mbps Voice & Data Multiplexer
Connecting over Digital Satellite Circuits



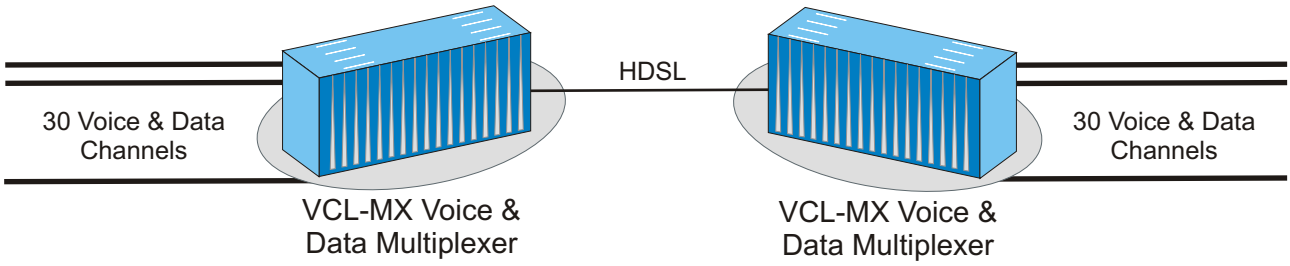
Applications # 03

VCL-MX E1, 2Mbps Voice & Data Multiplexers
Connecting over Optical Fiber Links



Applications # 04

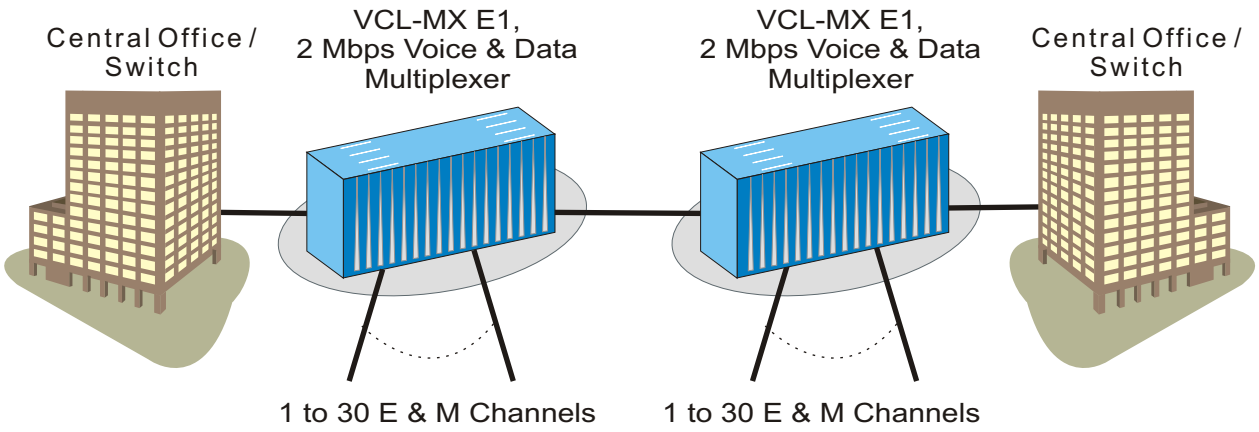
VCL-MX E1, 2Mbps Voice & Data Multiplexer
Connecting over HDSL Links



Applications # 05

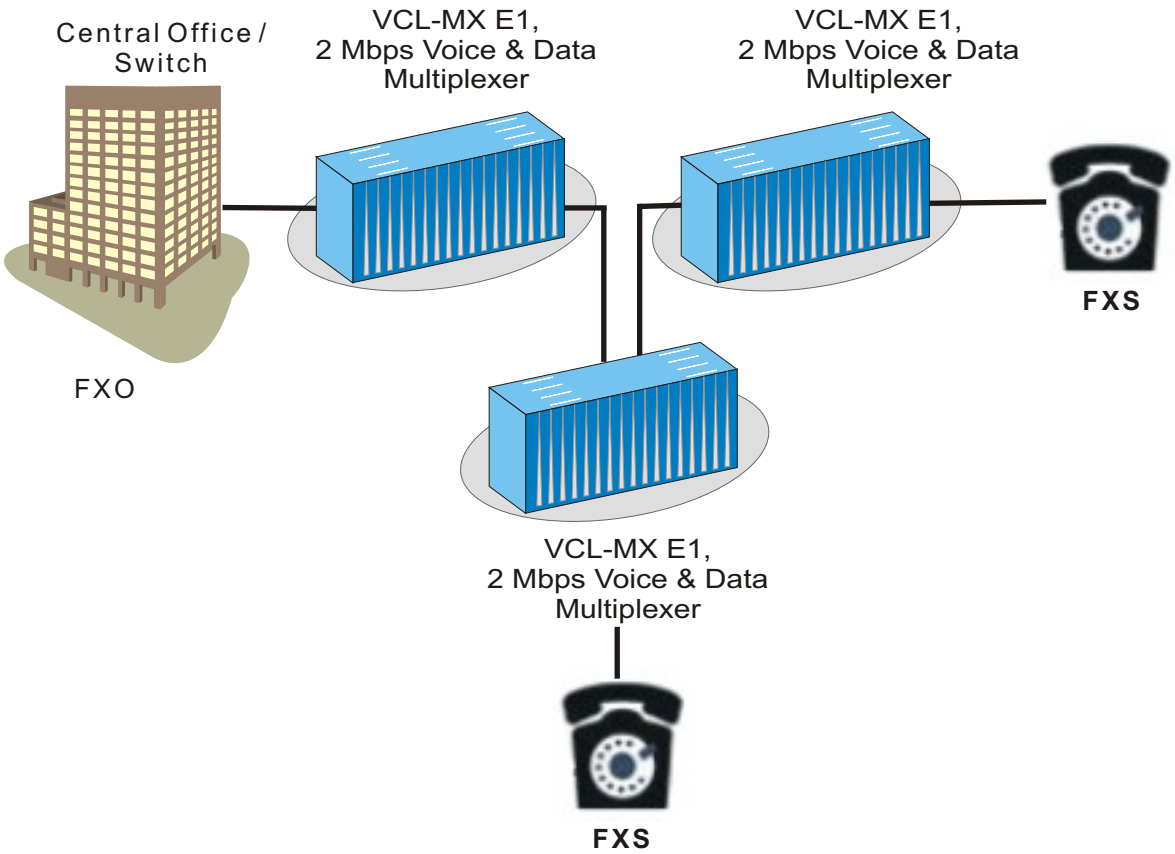
VCL-MX E1, 2Mbps Voice & Data Multiplexer

Connecting at the Central Office/Switch - E & M Interfaces



Applications # 06

VCL-MX E1, 2Mbps Voice & Data Multiplexer
Using in a Subscriber Loop Point to Point or Drop/Insert Application



FXO/JNC 2 wire exchange loop interface card

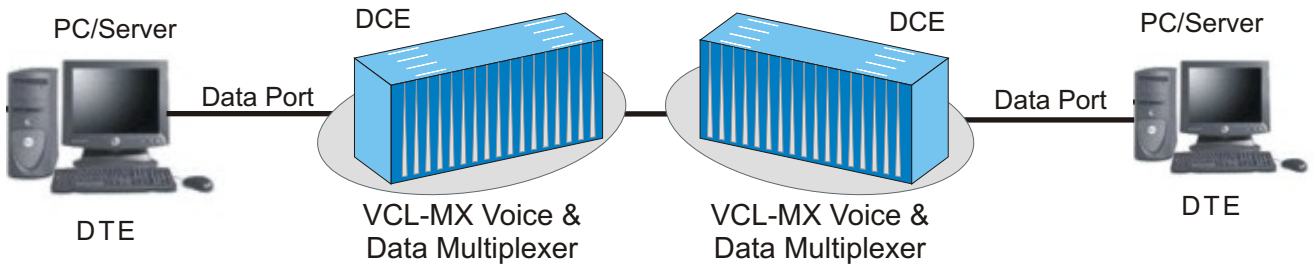
FXS/SLC Wire subscriber loop interface card

Applications # 07

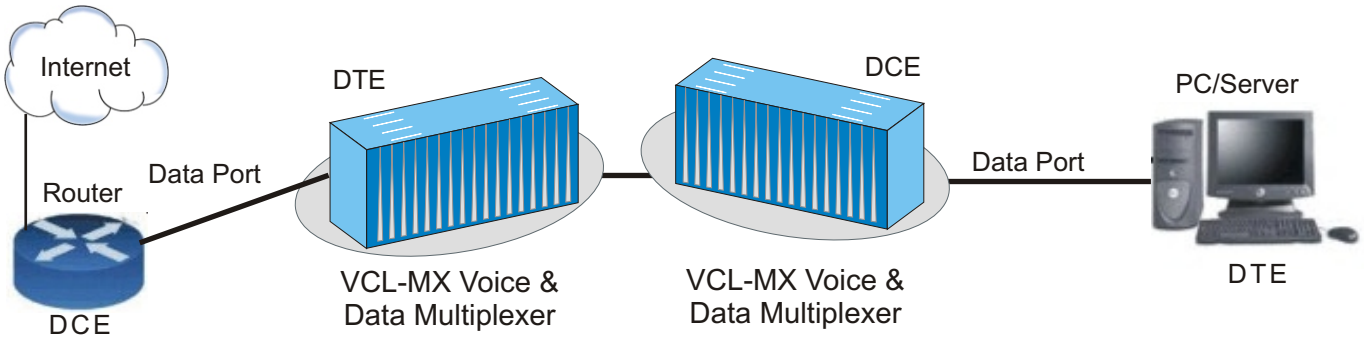
VCL-MX E1, 2Mbps Voice & Data Multiplexer

Providing Synchronous (V.11, X.21, V.35, V.36, RS422, RS530)
"n x 64" Kbps Data Interfaces

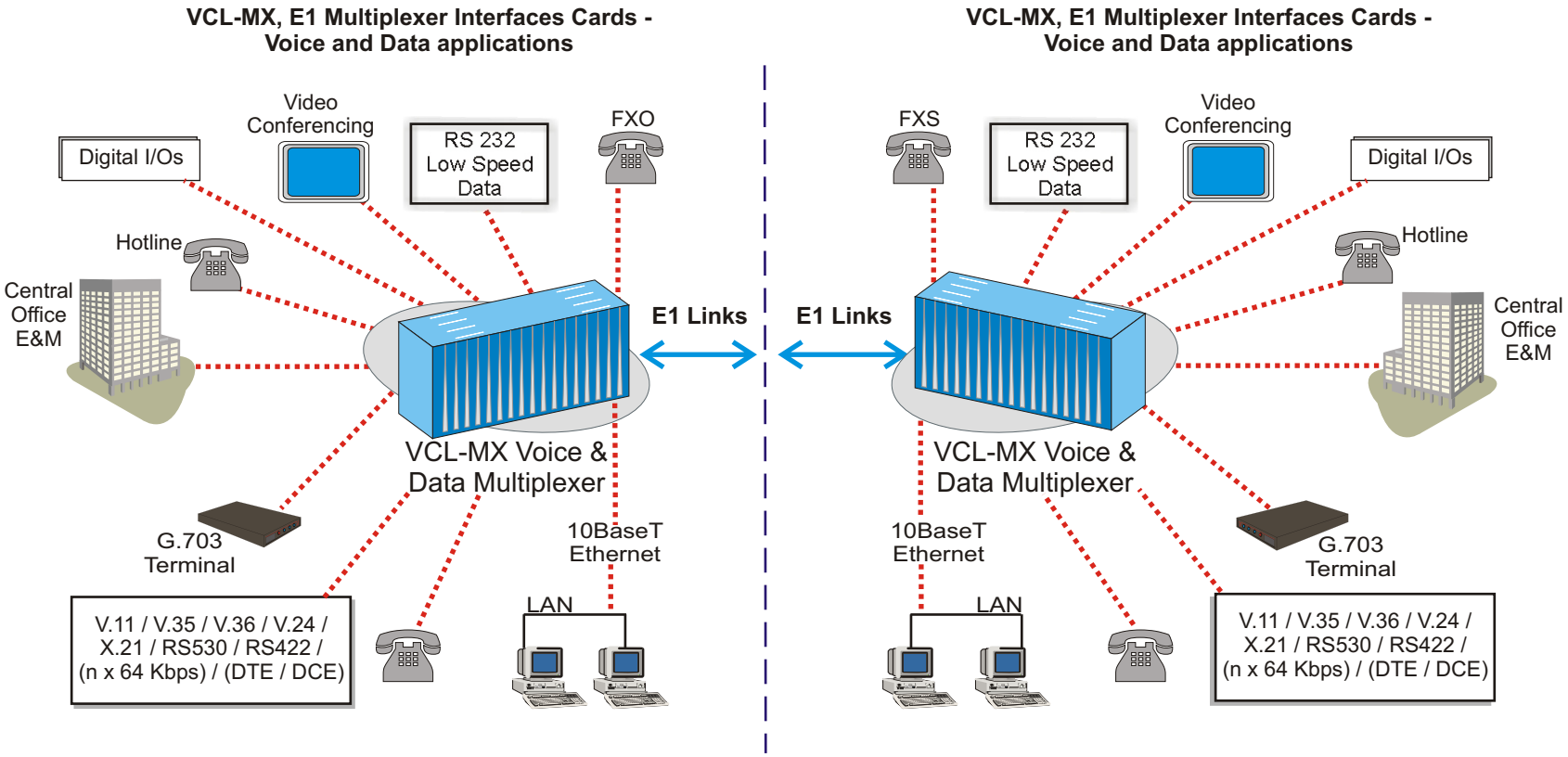
DCE- Remote DCE Configuration
Data interface card (Application 1)



DCE- Remote DTE Configuration
Data interface card (Application 2)



Applications # 08



User Configurable Interface Card

Voice Interface

- POTS service from a Central Office Switch (FXO & FXS)
- Hot Line (FXS-FXS)
- 2 Wire and 4 Wire, E&M applications
- 15W, sine-wave, 75VRMS / 86VRMS 20Hz/ 25 Hz Ringer for FXS and Hot-line (FXS-FXS) interfaces
- Magneto (GEN-GEN)

System Management

- NMS/Telnet Management
- Inband Management
- Out of band Management

Data Interfaces

- RS232 asynchronous data
- RS485 asynchronous data
- G.703 @ 64 Kbps, co-directional synchronous data
- iDSL @ 128 Kbps
- V.35, n X 64 Kbps
- V.36, n X 64 Kbps
- X.21, n X 64 Kbps
- RS530, n X 64 Kbps
- 10BaseT Bridge Interface Card
- Fractional E1 (FE1)
- Universal Data Interface Card (User Configurable)

Technical Specifications - E1 Interface (Main Link)

Number of Interfaces	2
Conformity (Electrical)	G.703
Frame Structure	As per ITU (CCITT) G.704
Signaling	Channel Associated Signaling
PCM Sampling Rate	8000 Samples/sec
Encoding Law	A Law as per ITU (CCITT)
Bit Rate	2048 Kbps ± 50 ppm
Code	HDB3
Nominal Impedance	120 Ω balanced /75 Ω unbalanced (75 Ω option)
Peak Voltage of a mark For 120 Ω Balanced interface 75 Ω Unbalanced interface	 3.0 V ± 0.3 V 2.37 V ± 0.237 V
Peak Voltage of a space for 120 Ω Balanced interface 75 Ω Unbalanced interface	 0 V ± 0.3 V 0V ± 0.237 V
Nominal Pulse Width	244 ns
Pulse Mask	As per ITU (CCITT) Rec. G.703
Output Jitter	<0.05 UI (in the frequency range of 20Hz to 100 KHz)
Permissible Attenuation	6 dB at 1 MHz
Return Loss at: 51.2 KHz to 102.4 KHz 102.4 KHz to 2048KHz 2048KHz to 3072 KHz	 > 12dB > 18dB > 14dB
Jitter Tolerance	As per ITU (CCITT) G.823
Loss and recovery of frame alignment	As per clause 3 of ITU (CCITT) G.732
Loss and recovery of multiframe alignment	As per clause 5.2 of ITU (CCITT) G.732

2 Wire - Voice Frequency Interface(s) - FXS (VCL-CB-025)

Number of Channels per Card	2
Interface Type	FXS
Maximum Number of Channels	20
Transmission performance	Fully Compliant to ITU (CCITT) G.712 (G.713, G.714) specification
Line Impedance	600 Ω (900 Ω optional)
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss	-2.0dB Nominal (User adjustable)
Idle Channel Noise	≤-65dB
Return Loss	300Hz - 600Hz - ≥ 12dB 600Hz - 3400Hz - ≥ 15dB
Longitudinal Balance	≥ 46dB between 300Hz to 3400Hz
Ring Frequency	25 Hz (20Hz, Optional)
Ring Voltage	≥ 75 volts RMS into a load of 5 R.E.N. With a 0.30 Erlang traffic pattern
Subscriber Loop Current	≥ 23mA into a subscriber loop of 1000 Ohms
Overload Level	+3.14dBm ± 0.5dBm
Battery Reversal	All channels
Dial Pulse Speed	8-12 pps - Pulse Dialing / DTMF Dialing

2 Wire - Voice Frequency Interface(s) - FXS (VCL-CB-025-EXT)

Number of Channels per Card	2
Interface Type	FXS - Ext
Maximum Number of Channels	20
Transmission performance	Fully Compliant to ITU (CCITT) G.712 (G.713, G.714) specification
Line Impedance	600 Ω (900 Ω optional)
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss (nominal)	-2dB (user adjustable range of -2dB to -8dB)
User selectable range for insertion loss	1dB to 7dB
Input level minimum	-11dB
Input level maximum	3.2dB
Transmit Gain	0 to 16dB (user configurable)
Receive Attenuation	0 to 16dB (user configurable)
Idle Channel Noise	≤ -65dB
Return Loss	300Hz - 600Hz - ≥ 12dB 600Hz - 3400Hz - ≥ 15dB
Longitudinal Balance	≥ 46dB between 300Hz to 3400Hz
Ring Frequency	25 Hz (20Hz, Optional)
Ring Voltage	≥ 75 volts RMS into a load of 5 R.E.N. with a 0.30 Erlang traffic pattern
Subscriber Loop Current	≥ 23mA into a subscriber loop of 1000 ohms
Overload Level	+3.14dBm ± 0.5dBm
Battery Reversal	All channels
Dial Pulse Speed	8 -12 pps - Pulse Dialing/DTMF Dialing

Hot-Line Interface Card (VCL-CB-027)

Number of Channels per Card	2
Interface Type	Hotline
Maximum Number of Channels	20
Transmission performance	Fully Compliant to ITU (CCITT) G.712 (G.713, G.714) specification
Line Impedance	600 Ω
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss	-2.0dB Nominal
Idle Channel Noise	≤ -65dB
Return Loss - 2 wire	300Hz - 600Hz - ≥ 12dB 600Hz - 3400Hz - ≥ 15dB
Longitudinal Balance	≥ 46dB between 300Hz to 3400Hz
Ring Frequency	25 Hz (20Hz, Optional)
Ring Voltage	≥ 75 volts RMS into a load of 5 R.E.N. with a 0.30 Erlang traffic pattern
Subscriber Loop Current	≥ 23mA into a subscriber loop of 1000 ohms
Overload Level	+3.14dBm ± 0.5dBm
Battery Reversal	All channels
Dial Pulse Speed	10 pps - Pulse Dialing / DTMF Dialing

2 Wire - Voice Frequency Interface(s) - FXO (VCL-CB-030)

Number of Channels per Card	2
Interface Type	FXO
Maximum Number of Channels	20
Transmission performance	Fully Compliant to ITU (CCITT) G.712 (G.713, G.714) specification
Line Impedance	600 Ω (900 Ω optional)
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss	-2.0dB Nominal (User adjustable)
Idle Channel Noise	≤ -65dB
Return Loss - 2 wire	300Hz - 600Hz - ≥ 12dB 600Hz - 3400Hz - ≥ 15dB
Longitudinal Balance	≥ 46dB between 300Hz to 3400Hz
Ring Frequency	25 Hz (20Hz, Optional)
Ring Voltage	≥ 75 volts RMS into a load of 5 R.E.N. with a 0.30 Erlang traffic pattern
Subscriber Loop Current	≥ 23mA into a subscriber loop of 1000 ohms
Overload Level	+3.14dBm ± 0.5dBm
Battery Reversal	All channels
Dial Pulse Speed	8 -12 pps - Pulse Dialing/DTMF Dialing

E&M 2 Wire / 4 Wire Voice Frequency Interface (VCL-CB-035)

Number of Channels per Card	2
Interface Type	2W / 4W E&M
Maximum Number of Channels	20
Transmission performance	Fully compliant to ITU (CCITT) G.712 Specification
Line Impedance	600 Ohms
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss / Gain	-2.0dB Nominal (User adjustable between 0dB and 16dB)
Idle Channel Noise	$\leq$-65dB
Return Loss	300Hz - 600Hz - $\geq$ 12dB 600Hz - 3400Hz - $\geq$ 15dB
Longitudinal Balance	$\geq$ 46dB between 300Hz to 3400Hz
Overload Level	+3.14dBm ± 0.5dBm
E&M Signaling Rate	10 pps

2 Wire / 4 Wire - Voice Frequency Interface(s) - E&M (VCL-MX-035-EXT)

Number of Channels per Card	2
Interface Type	E&M - Ext
Maximum Number of Channels	20
Transmission performance	Fully Compliant to ITU (CCITT) G.712 (G.713, G.714) specification
Line Impedance	600 Ω (900 Ω optional)
Voice Channel Frequency	300Hz-3400Hz
Insertion Loss (nominal)	-2dB (user adjustable range of -2dB to -8dB)
User selectable range for insertion loss	1dB to 7dB
Input level minimum	-11dB
Input level maximum	3.2dB
Transmit Gain	0 to 16dB (user configurable)
Receive Attenuation	0 to 16dB (user configurable)
Idle Channel Noise	$\leq$ -65dB
Return Loss - 2 wire	300Hz - 600Hz - $\geq$ 12dB 600Hz - 3400Hz - $\geq$ 15dB
Return Loss - 4 wire	300Hz - 3400Hz - $\geq$ 20dB
Longitudinal Balance	$\geq$ 46dB between 300Hz to 3400Hz
Overload Level	+3.14dBm ± 0.5dBm
Dial Pulse Speed	Pulse / MFC Dialing / DTMF Dialing

Low Speed Data Interface RS232 (VCL-CB-045)

Interface	RS232
Number of Interfaces per Card	2
Maximum Number	20
Conformity	RS232
Mode	Asynchronous
Bit Rate	50 Kbps to 19.2 Kbps
User Interface	DCE
Character Length	5 / 6 / 7 / 8 (Auto-Select)
Stop Bits	1 / 1.5 / 2 (Auto-Select)
Parity	Even / Odd / 0's / 1's / none (Auto-Select)

iDSL - ISDN DSL (VCL-MX-90)

"U" Interface	Meets ANSI T1.601-1992 requirements
Line Rate	128 Kbits/s
Frame Format	2B as per CCITT Rec.1.430
Line Code	2B1Q as per CCITT Rec.G.961
Accepted Line Attenuation	42dB at 40 KHz
Pulse Shape	As per CCITT Rec.G.961
Multiplexer Emulation	LT Emulation
Customer Premises Equipment	NT Emulation
Impedance	135 Ohms at 40KHz

Maximum distance : 5 km (4 miles) on 0.5 mm twisted Pan. Distance may vary with cable guage.
For distance using various cable guages please refer chart below.

Distance in kms. (Miles)				
Data Rate (Kbps)	Wire Gauge (AWG/mm)			
	19 (.9mm)	22 (.6mm)	24 (.5mm)	26 (.4mm)
128 / 144	17.4 (10.8)	11.6 (7.2)	8.1 (5.0)	5.5 (3.4)

G.703 @ 64kbps, Synchronous Data Interface (VCL-CB-060)

Interface	G.703 @ 64 Kbps
Number of Interfaces per Card	2
Maximum Number	20 ,G.703, 64Kbits / sec. Interface
Conformity	To (CCITT) Rec. G.703
Mode	Synchronous, Co-directional
Bit Rate	64Kbps

GEN-GEN / Magneto Interface Card (VCL-MX-1478-GEN)

Number of Channels per Card	2
Interface Type	Magneto, 2-wire (GEN-GEN)
Line Impedance	600 Ohms
Voice Channel Frequency	300Hz-3400Hz
Ringing generator frequency	25Hz
Ring Voltage	75 volts RMS
Maximum Number of Channels	20
Transmission performance	Fully compliant to ITU (CCITT) G.712 specification
Insertion Loss / Gain	-2.0dB Nominal
Idle Channel Noise	-65dB
Return Loss	300Hz - 600Hz - ≥ 12dB 600Hz - 3400Hz - ≥ 15dB
Longitudinal Balance	≥ 46dB between 300Hz to 3400Hz
Overload Level	+3.14dBm ± 0.5dBm

High Speed Synchronous "n x 64" Data Interface Type: V.35 (VCL-MX-55)

Interface	V.35
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits / sec. Interface maximum value of "**N**" =30) - User Selectable
Conformity	V.35
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE

High Speed Synchronous "n x 64" Data Interface Type: V.36 (VCL-MX-56)

Interface	V.36
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits/sec. Interface maximum value of "**N**" =30) - User Selectable
Conformity	V.36
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE

High Speed Synchronous "n x 64" Data Interface Type: RS530 (VCL-MX-57)

Interface	RS530
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits/sec. Interface maximum value of "**N**" =30) - User Selectable
Conformity	RS530
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE

High Speed Synchronous "n x 64" Data Interface Type: X.21 (VCL-MX-58)

Interface	X.21
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits/sec. Interface maximum value of "**N**" =30) - User Selectable
Conformity	X.21
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE

Universal Data Interface: High Speed Synchronous "n x 64" Data Interface Type - User Configurable DCE-DTE (VCL-MX-59)

Interface	V.35 (DTE/DCE), V.36 (DTE/DCE), X.21 (DTE/DCE), RS530 (DTE/DCE), RS442 (DCE/DTE), V.11 (DCE/DTE)
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits/sec. Interface maximum value of "**N**" =30)-User Selectable
Conformity	Universal User-Configurable as above
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE/DTE (user programmable for DTE / DCE mode)

High Speed Synchronous "n x 64" Data Interface Type: 10BaseT Ethernet Bridge (VCL-MX-10BaseT)

Interface	10BaseT (Bridge)
Number of Interfaces per Card	1, ("**N**" x 64KBits/sec. per Card)
Bandwidth	("**N**" x 64 Kbits/sec. Interface maximum value of "**N**" =30)-User Selectable
Conformity	10BaseT Ethernet Bridge
Mode	Synchronous
Bit Rate	64 Kbps to 1920 Kbps
User Interface	DCE

Protection

Central Office Terminal and Remote Terminal are protected against power surges and transients occurring from lightning and electric induction as per CCITT Rec. Table I/K-20 towards line side

Clock

Timing Options	Internal Clock, Loop-Timed Clock
Synchronization Sources	Internal Clock, span clock timing derived from incoming HDB3 links (Loop-Timed)
Default Option	Internal Clock

Management and Control Interfaces

Serial Management Port - RS232 Interface
10/100BaseT Telnet over a TCP/IP Network

System Access and Management

Windows XP and Windows 7 compatible GUI (Graphical User Interface)
Telnet - CLI (Command Line Interface) - Out-of-Band Management Interface
In-band Management of Remote Units over the E1 links

Environmental

Temperature and Humidity	0°C to + 50°C, 90% R.H. (Non-condensing)
Altitude	upto 9,000 feet

Power Supply

Input DC Voltage	-48V DC (nominal)
Range of Input	-40V to -60V DC
Output Voltages	+5V, -5V, filtered -48V (for term. cards)
Full Load Output Current	8A at +5V, 0.5A at -5V
Input Voltage Reversal Protection	Provided in the Card
Over Current Protection	10A for +5V, 1.0A for -5V
Short Circuit Protection	Current limit - 6A. Recovers on removal of short
Efficiency at Full Load	>86%
Ripple at Full Load	<5mVrms
Spike at Full Load	<50mV

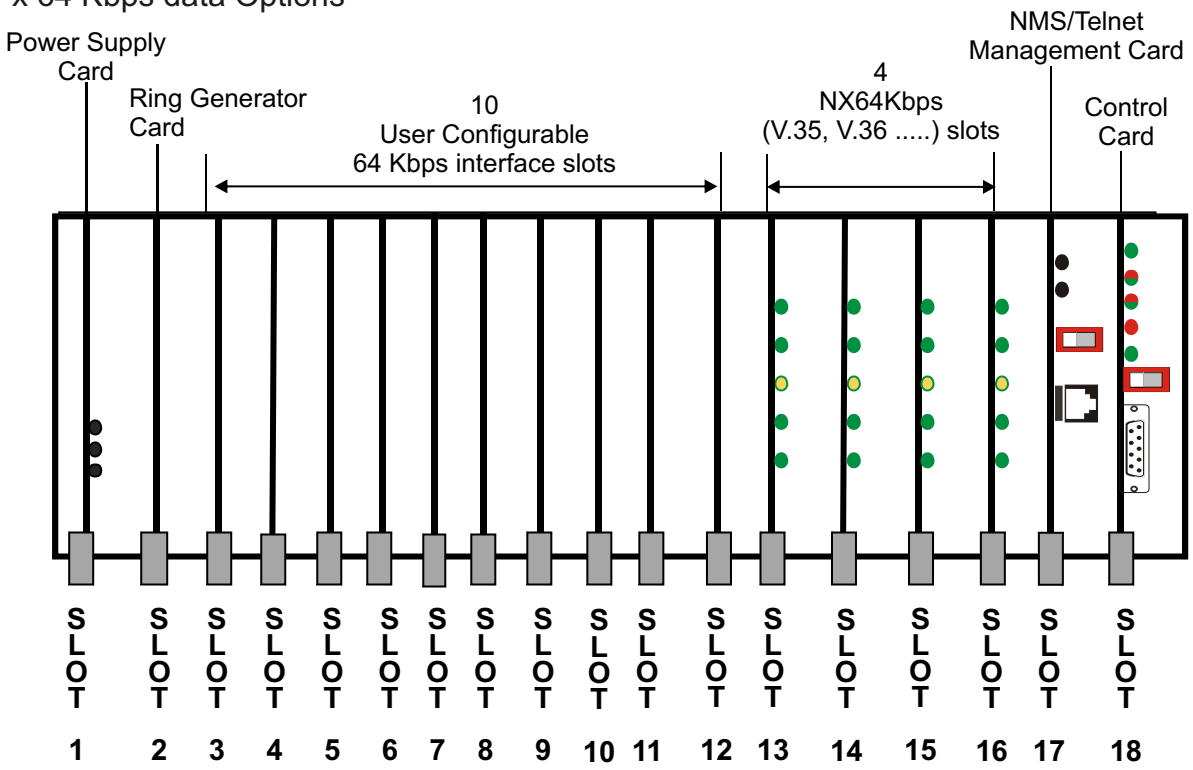
Power Consumption

Power Consumption	25 watt (with all Voice & Data Circuits)

VCL-MX-Version # 3-STD

Front View

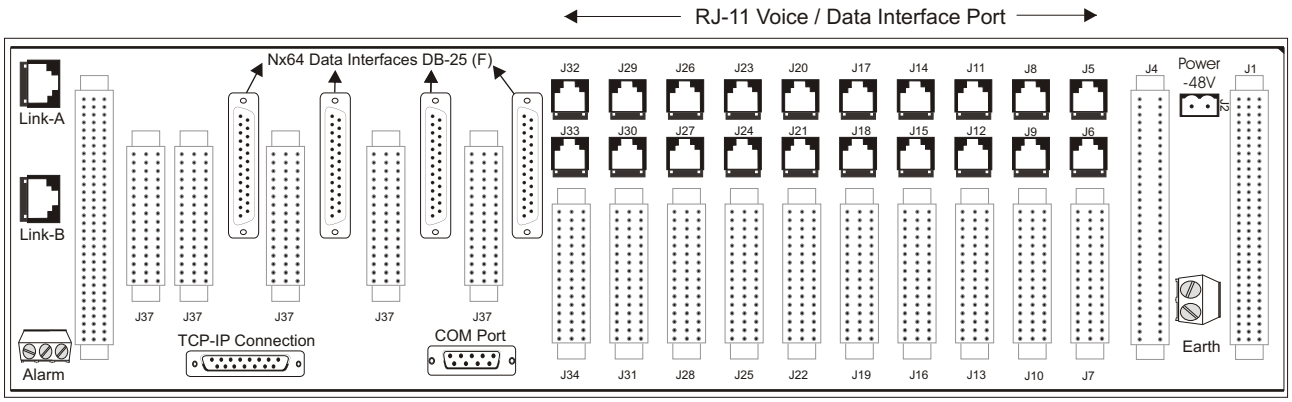
Voice and Data Drop-Insert Multiplexer with In-band Management Interface and “n”x 64 Kbps data Options



Available Interfaces:

Interfaces from slot 3 to 12: FXO / FXS / E&M / RS232 / iDSL / G.703 / Magneto (GEN-GEN)
Nx64 Interfaces from slot 13 to 16: V.35 / V.36 / RS530 / X.21 / 10BaseT / Fractional E1 Framed and Un-Framed / Universal Data Interface Card.

Rear View



Core System Composition	Description	Part No.
19-Inch Shelf 3U high	19-Inch Shelf and Backplane	VCL-MX-003
Slot 1	Power Supply Card	VCL-MX-010
Slot 2	Ringer Card	VCL-CB-040
Slot 3 to 12	10 User Configurable voice & data interface(s)	As per user requirement
Slot 13 to 16	“n” x 64kbps Interface Cards	As per user requirement
Slot 17	NMS/Telnet Management Card	VCL-MX-NMS
Slot 18	Control Card with In-band Management	VCL-MX-015-3

Ordering Information

VCL-MX E1 Core System (Common Equipment)			
S. No.	**Part #**	**Product Description**	**Qty**
1.	VCL-MX-015-3	E1 Control Card. 2, E1s for Drop-Insert with In-Band Management. Version 3	1
2.	VCL-MX-010-1497	(-) 48VDC Input Power Supply Card, [Output : +5VDC, -5VDC, filtered -48VDC (for terminal cards)]	1
3.	VCL-MX-NMS	NMS / Telnet Management Card for connecting the multiplexer to be managed in a LAN - allows the USER to assign a unique IP address to each multiplexer connected in a LAN to be Managed from a single point / Telnet - Optional	1
4a.	VCL-MX-003-120-01	19" Shelf 3U High (Sub-rack) fitted with Connectorized Backplane to accommodate 30 Voice and Data Channels [14 Slots (10 + 4) for User Configurable Interface Cards] [E1 120Ω RJ45] OR	1
4b.	VCL-MX-003-120-02	19" Shelf 3U High (Sub-rack) fitted with Connectorized Backplane to accommodate 30 Voice and Data Channels [13 Slots (10 + 3) for User Configurable Interface Cards] [E1 120Ω RJ45] [Supports Dual (2) Power Supply Card] OR	1
4c.	VCL-MX-003-075	19" Shelf 3U High (Sub-rack) fitted with Connectorized Backplane to accommodate 30 Voice and Data Channels [14 Slots (10 + 4) for User Configurable Interface Cards] [E1 75Ω BNC]	1

VCL-MX, User Configurable Interfaces

VCL-MX, User Configurable Interfaces			
S.No	**Part #**	**Product Description**	**Qty**
1.	VCL-CB-025	2 Port VF, RT (FXS) @ @ 64Kbps Central Office Remote Terminal Line Interface Card 10 (max) per System / Chassis	1
2.	VCL-CB-027	2 Port VF, Hot-Line (FXS - Ring-Down) @ 64Kbps Line Interface Card 10 (max) per System / Chassis	1
3.	VCL-CB-030	2 Port VF, CO (FXO) @ 64Kbps Central Office Line Interface Card 10 (max) per System / Chassis	1
4.	VCL-CB-035-EXT	2 Port VF, E&M, 2 Wire / 4 Wire Trunk Line Interface Card (Programmable Tx and Rx settings / VF range 0 to -15dB (gain), 10 (max) per System / Chassis	1
5.	VCL-MX-040-1498	Ring Generator Card, Central Office Ring Generator 1 per System/ Chassis with FXS Interfaces	1
6.	VCL-CB-045	2 Port, RS232, 50 Kbps to 19.2 Kbps DCE Asynchronous Data Interface Card, 10 (max) per System / Chassis	1
7.	VCL-MX-059	1 Port, Universal Synchronous Data Interface Card V.35, V.36, RS530, X.21, V.11, DTE/DCE, "N" x 64Kbps Synchronous Data Interface, User Selectable Data Rate of "N" (1 thru 30) - DCE or DTE (User Configurable), 3 (max) or 4 (max) per System / Chassis	1
8.	VCL-CB-060	2 Port, G.703 @ 64kbps, Synchronous Co-directional Data Interface 10 (max) per System / Chassis	1
9.	VCL-CB-080	2 Port, iDSL Modem Central Office / ISP Multiplexer Side Card transports 64 / 128 Kbps on a single twisted copper pair upto 5 KM (ISDN DSL) 10 (max) per System / Chassis	1
10.	VCL-MX-10BaseT Bridge	1 Port, Integrated 10BaseT Ethernet Bridge 64Kbps to 16Mbps High Speed Synchronous Data Interface Card User Selectable ("n" x 64) Bandwidth. "n" = 1 thru 30, 3 (max) or 4 (max) per System / Chassis	1

Ordering Information

Optional and Accessories			
S.No.	**Part #**	**Product Description**	**Qty**
1.	VCL-HRNS 1022	FXS/FXO 2 Port Connectorized Cable [2RJ11M-Open] [1 cable each FXO/FXS card]	1
2.	VCL-HRNS 1068	E&M 1 Port Connectorized Cable [RJ11M6P6C-Open] [2 cables each E&M card]	1
3a.	VCL-HRNS 1018	RS232 1 Port Connectorized Cable [RJ11M6P6C-DB9F] [2 cables each RS232 card] OR	1
3b.	VCL-HRNS 1074	RS232 1 Port Connectorized Cable [RJ11M6P6C-DB9M] [2 cables each RS232 card]	1
4a.	VCL-HRNS 1073	V.35 1 Port Connectorized Cable [DB25M-Winchester F] [1 cable each V.35 card] OR	1
4b.	VCL-HRNS 1075	V.35 1 Port Connectorized Cable [DB25M-Winchester M] [1 cable each V.35 card]	1
5a.	VCL-HRNS 1225V11F	V.36/RS530/V.11 1 Port Connectorized Cable [DB25M-DB37F] [1 cable each V.36/RS530 Card] OR	1
5b.	VCL-HRNS 1225V11M	V.36/RS530/V.11 1 Port Connectorized Cable [DB25M-DB37M] [1 cable each V.36/RS530 card]	1
6a.	VCL-HRNS 1225X21F	X.21 1 Port Connectorized Cable [DB25M-DB25F] [1 cable each X.21 Card] OR	1
6b.	VCL-HRNS 1225X21M	X.21 1 Port Connectorized Cable [DB25M-DB25M] [1 cable each X.21 Card]	1
7a.	VCL-HRNS 1020	G.703 1 Port Cross Connectorized Cable [RJ11M-RJ45M] [2 cables each G.703 card]	1
7b.	VCL-HRNS 1076	G.703 1 Port Parallel Connectorized Cable [RJ11M-RJ45M] [2 cables each G.703 card]	1
8a.	VCL-HRNS 1087	iDSL CO 2 Port Connectorized Cables [RJ11M-RJ45M] [1 cables each iDSL card]	1
8b.	VCL-HRNS 1088	iDSL RT 2 Port Connectorized Cables [RJ11M-DB9M] [1 cables each iDSL card]	1
9.	VCL-HRNS 1225LBRJ45M	LAN Bridge Connectorized Cable [DB25M-RJ45M] [1 cable each Integrated 10BaseT Bridge card]	1
10.	UMIKitMXV3STD	System Core Cables, Installation Accessories, Documentation, System User Manual, System User Manual Disk etc	1

Ordering Information

Power Supply (External) AC to DC Converter			
S.No.	**Part #**	**Product Description**	**Qty**
1.	VCL-EPSA 0002	Power Supply (External) AC to DC Converter, Portable Adapter Version, PW-065A-1Y48F1, Universal AC Input [100-240VAC~2A, 50-60Hz] to DC Output [(-) 48VDC~1.35A 65W] [1 output]	1
2.	VCL-ACDC-48-50W-1.1A	Power Supply (External) AC to DC Converter Portable Desktop Version, Universal AC Input [93VAC-276VAC, 47Hz-63Hz] to DC Output [(-) 48VDC~1.10A 50W] [1 Fused output]	1
3.	VCL-ACDC-48-150W-3.2A	Power Supply (External) AC to DC Converter Portable Desktop Version, Universal AC Input [93VAC-276VAC, 47Hz-63Hz] to DC Output [(-) 48VDC~3.2A 150W] [1 Fused output]	1
4.	VCL-ACDC-48-150W-3.2A-RK	Power Supply (External) AC to DC Converter 19” 2U Rack Mount Version, Universal AC Input [93VAC-276VAC, 47Hz-63Hz] to DC Output [(-) 48VDC~3.20A 150W] [4 Fused outputs]	1

Notes :

Technical specifications are subject to changes without notice.
All brand name and trademarks are the property of their respective owners.
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Headquarters: Phoenix, Arizona

Orion Telecom Networks Inc.

20100, N 51st Ave, Suite B240,
Glendale AZ 85308
Phone: +1 480-816-8672
Fax: +1 480-816-0115
E-mail: sales@oriontelecom.com
Website: http://www.oriontelecom.com

Regional Office: Miami, Florida

Orion Telecom Networks Inc.

4000 Ponce de Leon Blvd. Suite 470,
Coral Gables, FL 33146 U.S.A.
Phone: 1-305-777-0419,
Fax: 1-305-777-0201
E-mail: sales@oriontelecom.com
Website: http://www.oriontelecom.com