



# ORION TELECOM NETWORKS INC.

## VCL-Ethernet over E3 Switch (Ethernet to E3 Switch)

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### Product Brochure & Data Sheet

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## Product Overview

Orion offers its Ethernet over E3 Switch (Ethernet to E3 Switch) packaged in a 19-inch rack-mountable chassis.

Orion Ethernet over E3 Switch (Ethernet over E3 Switch) provides a 100BaseT Ethernet and 100Base-FX optical ethernet interfaces on the user side which may be used to transport Ethernet traffic over a E3 link. Both ethernet interfaces may be used simultaneously. The Switch provides a simple and cost effective method to convert and transport ethernet data over an E3 link.



Front View

## Features and Highlights

- Ethernet interface to G.703 E3 34 Mbps converter
- 4x100BaseT full duplex fast ethernet interface in accordance with IEEE802.3
- 3x100BaseT full duplex fast ethernet interface + 1x100Base-FX full duplex optical ethernet interface accordance with IEEE802.3
- Framed and un-framed E3 options available
- Local and Remote access and monitoring with either RS232 or 10/100BaseT for remote management over TCP-IP network.
- Power Supply: -48V DC, Dual (1+1) protected Inputs or AC 100V to 240V AC, 50Hz / 60Hz power supply options available.
- Ethernet frame size 1500 bytes (max)
- Prevents any data overflows, or loss of packets in the event of a data burst.

## Applications

- 100 BaseT Ethernet and 100Base-FX optical to E3 conversion (Ethernet over E3).

## Indications and Alarm Monitoring

- E3 Loss of Signal
- Loss of E3 frame (in framed E3 mode)
- Loss of incoming signal at 100 BaseT ethernet
- Loss of ethernet packets, errored ethernet packets, over-sized ethernet packets and under-sized ethernet packets log.
- Configuration Error Alarm
- Clock Status
- +3 Volts Power Supply
- -48V DC present
- Configuration Error

## Programmable Features

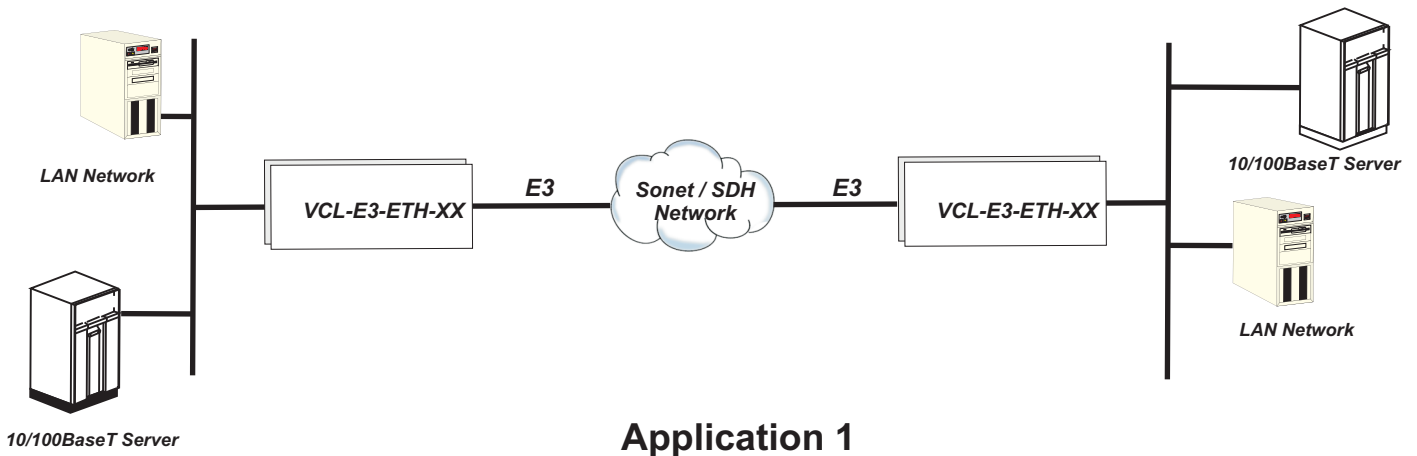
- Telnet interface for remote programming and monitoring by using CLI text commands
- Easy to use programming using Windows based GUI.

## Status Monitoring

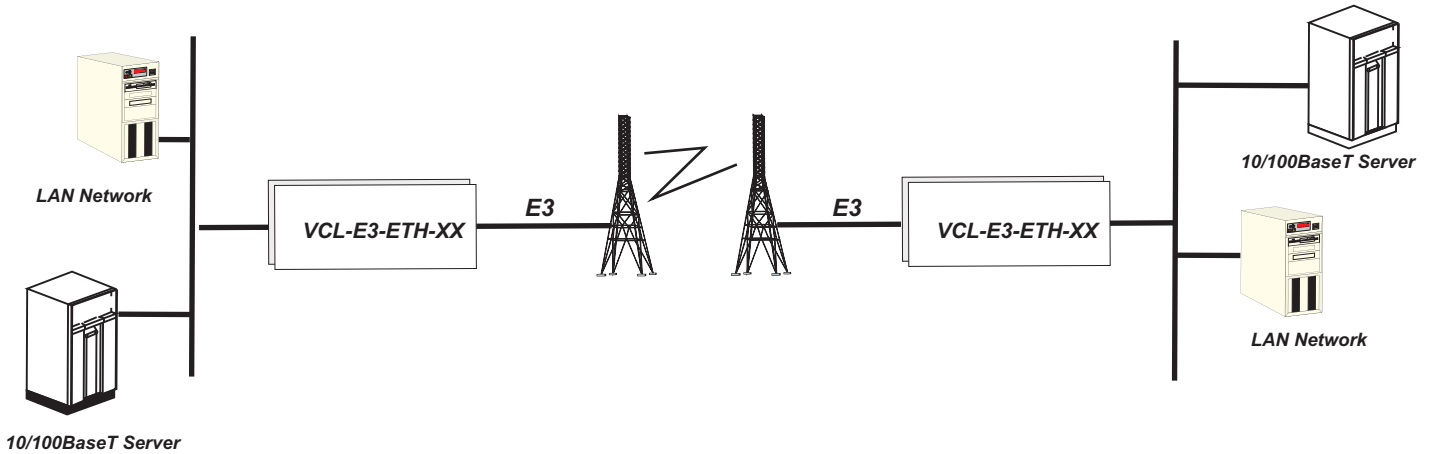
- Status of alarms on E3 interface
- Status of alarms on 100BaseT interface.

Ethernet Interface	
Interface Types	100BaseT and 100Base-FX optical
Standards Compliance	IEEE 802.3-2002 RFC1662 RFC2615 X.86 RMII
Interface Rate	100BaseT limited to E3 transmission rate
Protocol	HDLC/X.86 (LAPS) Encapsulation

E3 Interface	
Bit Rate	34.368 Mbps
Bit Rate Tolerance	+20ppm
Line Code	HDB3
Frame Structure	As per G.751
Interfaces	As per G.703
Connectors	BNC, Co-axial Un-balanced
Impedance	75 Ohms



**Application 1**  
**Remote LAN Connections over**  
**Optical Sonet/SDH Network**



**Application 2**  
**Remote LAN Connections over Wireless E3**

## Technical Specifications

### DC Adapter Power Supply Specifications (DC Option)

Power Supply	-48V DC (-40V DC to -60V DC)
Input DC voltage	-48V DC ( nominal )
Range of input	-40V to -60V DC
Output voltages	+3.3V
Full Load Output Current	2A at +3.3V
Input Voltage Reversal Protection	Provided in the Card
Over Current Protection	2A for +3.3V
Short Circuit Protection	Current limit - 3A. Recovers on removal of short
Under Voltage	< 3.17V
Over Voltage	3.5V
Efficiency at full load	>90%
Ripple at full load	<5mVrms
Spike at full load	<50mV

### AC Power Supply Specifications (AC Option)

Input AC voltage of AC Adapter	100 - 240 Volt AC
Range of input AC voltage	100 V to 240 V AC
System Input voltage	7.5 V DC to 9.0 V DC, DC input polarity protection.
Maximum full load output Current	2.5 A at 7.5 V DC/9.0 V DC
Input voltage reversal Protection	Provided in the Card
Efficiency at full load	>86%

### Power Supply options

Power Supply	-48V DC (-40V DC to -60V DC) (Optional)*
Power Supply	AC input (Optional)*

\* Please specify the Power Supply Option (AC or DC) which is required before placing the order. Please see ordering information in this data sheet for details.

### Power Consumption

Power Consumption	9 Watts
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### Chassis

1U High (42 mm)
19-inch rack-mounting shelf.

**Number of Ethernet Interface**

10/100BaseT (Electrical)	4
10/100BaseT Electrical +100Base FX Optical	3 Electrical and 1 Optical

**100BaseT Interface (Electrical Ethernet)**

Interface Types	100BaseT
Standards Compliance	IEEE 802.3-2002 RFC1662 RFC2615 X.86 RMII
Interface Rate	100BaseT limited to E3 transmission rate
Protocol	HDLC/X.86 (LAPS) Encapsulation
Connectors	RJ-45 (100 BaseT Electrical)

**100Base-FX Interface (Optical Ethernet)**

Interface Types	100Base-FX
Standards Compliance	IEEE 802.3-2002 RFC1662 RFC2615 X.86 RMII
Interface Rate	100Base-FX optical limited to E3 transmission rate
Protocol	HDLC/X.86 (LAPS) Encapsulation
Connectors	SC

**Ethernet Interface Specifications - 100Base-FX (Optical) - 850nm Multi Mode**

**Transmitter Optical Characteristics**

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Center Wavelength	830nm	850nm	860nm
Output Spectral Width (RMS)			0.85nm
Average Output power	-10dBm		-3dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	SC		

**Receiver Optical Characteristics**

<b>Parameter</b>	<b>Minimum</b>	<b>Typical</b>	<b>Maximum</b>
Data Rate		125Mb/s	
Receive Sensitivity	-24dBm		
Maximum Input Power			-3dBm
Operating Wavelength	-10dBm	850nm	
Connectors	SC		

**Ethernet Interface Specifications - 100Base-FX (Optical) - 1310nm Single Mode**

**Transmitter Optical Characteristics**

<b>Parameter</b>	<b>Minimum</b>	<b>Typical</b>	<b>Maximum</b>
Data Rate		125Mb/s	
Center Wavelength	1260nm	1310nm	1360nm
Output Spectral Width (RMS)			6nm
Average Output power	-15dBm	-12dBm	-8dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	SC		

**Receiver Optical Characteristics**

<b>Parameter</b>	<b>Minimum</b>	<b>Typical</b>	<b>Maximum</b>
Data Rate		125Mb/s	
Receive Sensitivity	-32dBm		
Maximum Input Power			-15dBm
Operating Wavelength	1100nm		1600nm
Connectors	SC		

## Ethernet Interface Specifications - 100Base-FX (Optical) - 1550nm Single Mode

### Transmitter Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Center Wavelength	1480nm	1550nm	1580nm
Output Spectral Width (RMS)			4nm
Average Output power	-15dBm	-12dBm	-8dBm
Output optical Eye	Complaint with ITU-T G.957		
Connectors	SC		

### Receiver Optical Characteristics

Parameter	Minimum	Typical	Maximum
Data Rate		125Mb/s	
Receive Sensitivity	-32dBm		
Maximum Input Power			-15dBm
Operating Wavelength	1100nm		1600nm
Connectors	SC		

### E3 Interface

Number of E3 Interfaces	1
Bit rate	34.368 Mbps
Bit rate tolerance	$\pm 20$ ppm
Line code	HDB3
Frame structure	As per G.751
Interfaces	As per G.703
Connectors	BNC, Co-axial Un-balanced
Impedance	75 Ohms
Permissible attenuation	12dB @ 17184 KHz
Signal level to declare loss of signal condition	-35dB (maximum)
Signal level to clear loss of signal condition	-15dB (minimum)

**Clock**

Internal	System Internal Clock
Loop-Timed	Timed from E3 Interface

**Management and Control**

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

**Command Language**

Command Line Interface (English text commands)
Windows based GUI (optional)

**NMS (with Telnet) XPort Specifications**

Network interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP, DHCP, BOOTP, TFTP, Auto IP, SMTP and HTTP
LEDs	10Base-T and 100Base-TX Activity, Full/half duplex
Management	Internal web server, SNMP (read only), Serial login, Telnet login
EMI compliance	Radiated and conducted emissions - complies with Class B limits of EN55022:1998 Direct and Indirect ESD - complies with EN55024:1998 RF Electromagnetic Field Immunity - complies with EN55024:1998 Electrical Fast Transient/Burst Immunity - complies with EN55024:1998 Power Frequency Magnetic Field Immunity - complies with EN55024:1998 RF Common Mode Conducted Susceptibility - complies with EN55024:1998



## Ordering Information

S. No.	Part #	Product Description
1.	VCL-1457_1458-E3-4ETH-AC-DLX	<p>VCL-Ethernet over E3 Switch (4Ethernet to E3 Switch) 19" Shelf 1U High Mount Version</p> <p>Supports :</p> <ul style="list-style-type: none"> <li>- 4 x Ethernet [100Mbps, Electrical RJ45 (F)]</li> <li>- 1 x E3 [34Mbps, 75Ω 2xBNCF Co-axial] [Framed and un-framed options - User Programmable]</li> <li>- 1 x 100-240VAC Power Supply Input [Adapter Option]</li> <li>- 1 x Systems Core Cables, Installation accessories, Documentation, System User Manual / Disk etc (Set)</li> <li>- OAM : 10/100BaseT Ethernet - RJ45 (Telnet) and Serial Port (DB-9 COM Port)</li> </ul>
2.	VCL-1457_1458-E3-4ETH-DC-DLX	<p>VCL-Ethernet over E3 Switch (4Ethernet to E3 Switch) 19" Shelf 1U High Mount Version</p> <p>Supports :</p> <ul style="list-style-type: none"> <li>- 4 x Ethernet [100Mbps, Electrical RJ45 (F)]</li> <li>- 1 x E3 [34Mbps, 75Ω 2xBNCF Co-axial] [Framed and un-framed options - User Programmable]</li> <li>- 2 x -48VDC Power Supply Input</li> <li>- 1 x Systems Core Cables, Installation accessories, Documentation, System User Manual / Disk etc (Set)</li> <li>- OAM : 10/100BaseT Ethernet - RJ45 (Telnet) and Serial Port (DB-9 COM Port)</li> </ul>
3.	VCL-1457_1459-E3-4ETH-AC-DLX-1310SM-020	<p>VCL-E3 Ethernet Electrical &amp; Optical Switch 19" Shelf 1U High Mount Version</p> <p>Supports :</p> <ul style="list-style-type: none"> <li>- 4 x Ethernet [100Mbps] <ul style="list-style-type: none"> <li>- 3 x Electrical RJ45 (F) Port AND</li> <li>- 1 x Optical Port, Duplex SC, 1310nm, 20Km, Single-Mode</li> </ul> </li> <li>- 1 x E3 [34Mbps, 75Ω 2xBNCF Co-axial] [Framed and un-framed options - User Programmable]</li> <li>- 1 x 100-240VAC Power Supply Input [Adapter Option]</li> <li>- 1 x Systems Core Cables, Installation accessories, Documentation, System User Manual / Disk etc (Set)</li> <li>- OAM : 10/100BaseT Ethernet - RJ45 (Telnet) and Serial Port (DB-9 COM Port)</li> </ul>
4.	VCL-1457_1459-E3-4ETH-DC-DLX-1310SM-020	<p>VCL-E3 Ethernet Electrical &amp; Optical Switch 19" Shelf 1U High Mount Version</p> <p>Supports :</p> <ul style="list-style-type: none"> <li>- 4 x Ethernet [100Mbps] <ul style="list-style-type: none"> <li>- 3 x Electrical RJ45 (F) Port AND</li> <li>- 1 x Optical Port, Duplex SC, 1310nm, 20Km, Single-Mode</li> </ul> </li> <li>- 1 x E3 [34Mbps, 75Ω 2xBNCF Co-axial] [Framed and un-framed options - User Programmable]</li> <li>- 1 x -48V DC Power Supply Input</li> <li>- 1 x Systems Core Cables, Installation accessories, Documentation, System User Manual / Disk etc (Set)</li> <li>- OAM : 10/100BaseT Ethernet - RJ45 (Telnet) and Serial Port (DB-9 COM Port)</li> </ul>

**Notes :** \_\_\_\_\_

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Technical specifications are subject to changes without notice.  
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