



ORION TELECOM NETWORKS INC.

VCL-Ethernet over T1 Switch (Ethernet to T1 Switch)

Product Brochure & Data Sheet

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Product Overview

Orion offers its Ethernet over T1 Switch (Ethernet to T1 Switch) packaged in a 19-inch rack-mountable chassis.

Orion Ethernet over T1 Switch (Ethernet over T1 Switch) provides a four 100BaseT Ethernet and 100Base-FX optical ethernet interfaces on the user side which may be used to transport Ethernet traffic over a T1 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 T1 link.

Features and Highlights

- Ethernet interface to T1 45 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 T1 options available
- Local and Remote access and monitoring with either RS232 or 10/100BaseT for remote management over TCP-IP network
- Power Supply: - 48 V DC or 110 V AC power supply options available.

Applications

- 100 BaseT Ethernet and 100Base-FX optical to T1 conversion (Ethernet over T1).

Indications and Alarm Monitoring

- T1 Loss of Signal
- Loss of T1 frame (in framed T1 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

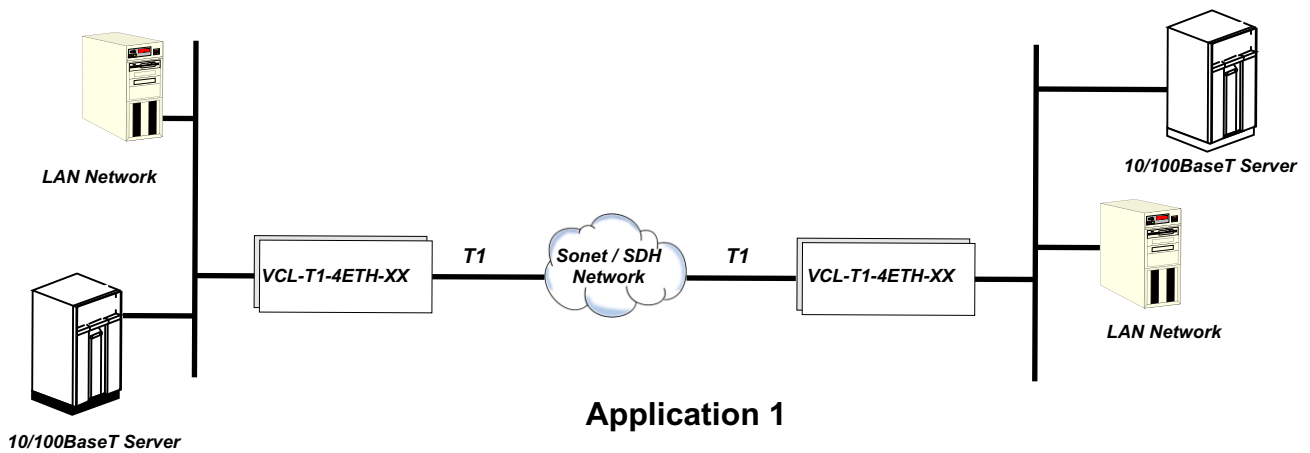
- Telnet interface for remote programming and monitoring by using CLI text commands
- Easy to use programming using Windows based GUI.

Status Monitoring

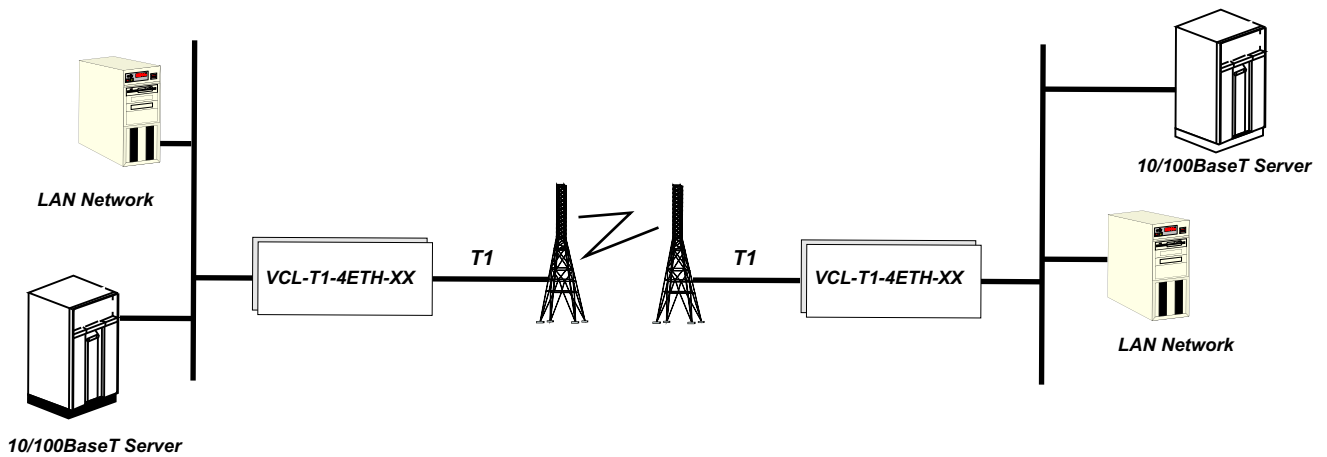
- Status of alarms on T1 interface
- Status of alarms on 100BaseT interface.

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 T1 transmission rate
Protocol	HDLC/X.86 (LAPS) Encapsulation

T1 Interface	
Bit Rate	1.544 Mbps ± 50 bps
Bit Rate Tolerance	^{+/-} 20ppm
Line Code	AMI, B8ZS (Selectable)
Framing options *	D4, ESF (Selectable)
Framing structure	As per ITU (CCITT) G.704
Electrical	ITU-T G.703
Jitter	ITU-T G.823, ITU-T 1.431
Connectors	RJ-45 (F)
Impedance	100 Ohms



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



Application 2

Remote LAN Connections over Wireless T1

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 T1 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 T1 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

Parameter	Minimum	Typical	Maximum
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**

Parameter	Minimum	Typical	Maximum
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

Parameter	Minimum	Typical	Maximum
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		

T1 Interface

Line rate	T1 (1.544 Mbps \pm 50 bps)
Framing structure	As per ITU (CCITT) G.704
Framing options	D4, ESF (Selectable)
Line coding	AMI, B8ZS (Selectable)
Electrical	ITU-T G.703
Jitter	ITU-T G.823, ITU-T 1.431
Impedance	100 Ohms
Connector	RJ-45 (F)

Framing options * - All framing options are user selectable.

Clock

Internal	System Internal Clock
Loop-Timed	Timed from T1 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

VCL-Ethernet over T1 Switch		
S. No.	Part #	Product Description
1.	VCL-T1-4ETH-DC-STD-UF	Ethernet over T1 Switch with -48V DC Input (unframed T1)
2.	VCL-T1-4ETH-AC-STD-UF	Ethernet over T1 Switch with AC Power Input (unframed T1)
3.	VCL-T1-4ETH-DC-DLX-F	Ethernet over T1 Switch with -48V DC Input (unframed and framed T1 - user selectable)
4.	VCL-T1-4ETH-AC-DLX-F	Ethernet over T1 Switch with AC Power Input (unframed and framed T1 - user selectable)
5.	VCL-T1-4ETH-DC-DLX-850	Ethernet over T1 Switch with -48V DC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 850 nm wave length
6.	VCL-T1-4ETH-AC-DLX-850	Ethernet over T1 Switch with AC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 850 nm wave length
7.	VCL-T1-4ETH-DC-DLX-1310	Ethernet over T1 Switch with -48V DC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 1310 nm wave length
8.	VCL-T1-4ETH-AC-DLX-1310	Ethernet over T1 Switch with AC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 1310 nm wave length
9.	VCL-T1-4ETH-DC-DLX-1550	Ethernet over T1 Switch with -48V DC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 1550 nm wave length
10.	VCL-T1-4ETH-AC-DLX-1550	Ethernet over T1 Switch with AC Power option, 3x100BaseT Electrical and 1x100Base-FX optical Interface with 1550 nm wave length

Note:

All DLX models provide both framed and un-framed T1 options (user-programmable).

