



# ORION TELECOM NETWORKS INC.

## VCL-STM-1 Optical Repeater Product Brochure & Data Sheet

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## Product Overview

Orion VCL-STM-1 Optical Repeater is a cost-effective solution which allows its users to transport an optical link over an extended range by amplifying and repeating the optical signal. A 1+1 optical interface option is also offered and available in the event that two STM-1 links are required to be extended on the same optical route.

VCL-STM-1 Optical Repeater is a compact solution housed in a 19" rack 1U high, which can be placed on the desktop or installed in a standard 19 inch rack. Complete loop-back facility is supported for system diagnostic and commissioning. Compact casing and simple operation achieve cost saving and investment protection.

This unit offers two power supply options. Options for the power supply to the equipment include:

1. Dual DC - 48V Inputs (range -18 V DC ~ -72 V DC)
2. Dual AC 110 V AC to 240 V AC, 50 / 60 Hz Inputs

## Applications

- To extend 1+0 optical links
- To extend 1+1 redundant optical links
- To convert short haul (1310nm) single mode interfaces to long haul (1550nm) single mode interfaces for extended reach.
- To convert (850nm) multi-mode optical interfaces to either long haul (1310nm) single mode, or long haul (1550nm) single mode interfaces.

## Features

- 1+0 STM-1 Optical Repeater version
- 1+1 STM-1 Optical Repeater version for optical link redundancy
- SFP based design. Provides field removable / upgradable optical SFPs
- Short haul (1310nm), long haul (1550nm) and multi mode (850nm) optical SFP modules
- Clock recovery and clock re-generation
- Jitter Attenuation
- Management options:
  - ▶ Serial RS232 Port (COM Port)
  - ▶ Serial USB Port (COM Port)
  - ▶ 10/100 BaseT Remote Management over LAN Telnet
  - ▶ 10/100 BaseT Telnet over TCP-IP Network
  - ▶ SNMP V2
  - ▶ Windows XP and Windows 7 compatible Network Management System (NMS)

## Features

- High reliability, complies to ITU-T G.957 specifications
- State-of-the-art design, ensure normal working under difficult environments
- Supports local and remote loop-back on electrical or optical interface for system diagnostics
- Simple operation and maintenance
- Compact design and low power consumption
- ITU-T G.783 compatible loss of signal detect
- Duplex LC optical interface
- Hot-pluggable
- Supports DDM function for read back of transmit and received optical power and alarms
- Class 1 laser safety
- Compliant with ITU-T G.957 STM-1

## Compliance:

G.707	Network node interface for the synchronous digital hierarchy (SDH)
G.781	Structure of Recommendations on equipment for the Synchronous Digital Hierarchy (SDH)
G.782	Types and characteristics of Synchronous Digital Hierarchy (SDH) equipment
G.783	Characteristics of Synchronous Digital Hierarchy (SDH) equipment functional blocks
G.813	Timing characteristics of SDH equipment slave clocks (SEC)
G.825	Control of Jitter and Wander within Digital Networks Which are Based on the Synchronous Digital Hierarchy (SDH)
G.957	Provides one standard STM-1 optical interface complying with G.957
G.958	Digital line systems based on the Synchronous digital hierarchy for use on optical fiber cables

## Specifications:

### STM-1 optical interface

Data Rate	155.52 Mbps
Standard	ITU-T G.957 STM-1
Coding	NRZ
Connector	LC
Light source	Laser Diode
Wave length options	1310nm 1550nm
Transmission Type	Dual Fiber (standard) Single Fiber Bi-directional (optional)
Transmit power options - S 1.1	-11.5dBm (1310nm)
Transmit power options - L 1.1 / L 1.2	-2.5dBm (1310nm / 1550nm)
Receive sensitivity options - S 1.1	-28 dBm (1310nm)
Receive sensitivity options - L 1.1 / L 1.2	-34 dBm (1310nm) / -38 dBm (1550nm)
Receiver overload - S 1.1	- 10 dBm (1310nm)
Receiver overload - L 1.1 / L 1.2	- 10 dBm (1310nm / 1550nm)
Section loss - S 1.1	0 - 12 dB
Section loss - L 1.1 / L 1.2	10 - 28 dB
Automatic Laser Shut Down Option	Provided - User selectable option

**\*Note :** SFPs for a complete range of Transmit Power options are available.

The available SFPs include extended reach SFPs that can service optical spans of up to 120 KM. Please contact the factory for details.

### Clock

Synchronized to the network clock.
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## Specifications:

### AC Power Supply Specifications

Output voltage of AC Adapter	100 - 240 Volt AC
Range of input AC voltage	100 V to 240 V AC, 50Hz / 60Hz.
System Input voltage	7.5 V DC to 9.0 V DC with DC input polarity Protection.
Power Supply Rating - Maximum full load output current	2.5 A at 7.5 V DC/9.0 V DC
Power consumption (1+0 Version)	8 watts
Power consumption (1+1 Version)	10 watts
Input voltage reversal protection	Provided in the Card
Efficiency at full load	>86%
Feed connectors	Dual Feed - 2 AC Inputs

### DC Power Supply Specifications

Power supply	- 48V DC (-18V DC to -72V DC)
Input voltage reversal protection	Provided in the Card
Power supply	1+1 Protected Inputs
Power consumption (1+0 Version)	8 watts
Power consumption (1+1 Version)	10 watts
Feed connectors	Dual Feed - 2 DC Inputs

### Command Language

Command Line Interface (English text commands)
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## System Management and Access

Windows XP and Windows 7 compatible GUI
Telnet - CLI (Command Line Interface)
SNMP V2 (MIB File provided with the equipment)

## Management Ports and Options

Serial RS232 Port (COM Port)
Serial USB Port (COM Port)
10/100 BaseT Remote Management over LAN Telnet
10/100 BaseT Telnet over TCP-IP Network
SNMP V2
Network Management System (NMS)

## Ethernet Management Port (Telnet and SNMP) Specifications

Network Interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing), MDI-X.
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols Supported	ARP, UDP/IP, TCP/IP, Telnet
Management	SNMP (read only), Telnet login
EMI Compliance	<ul style="list-style-type: none"> <li>- Radiated and conducted emissions - complies with Class B limits of EN55022:1998</li> <li>- Direct and Indirect ESD - complies with EN55024:1998</li> <li>- RF Electromagnetic Field Immunity - complies with EN55024:1998</li> <li>- Electrical Fast Transient/Burst Immunity - complies with EN55024:1998</li> <li>- Power Frequency Magnetic Field Immunity - complies with EN55024:1998</li> <li>- RF Common Mode Conducted Susceptibility - complies with EN55024:1998</li> </ul>

## System Compliance and Regulatory

<ul style="list-style-type: none"> <li>• Meets CE emission requirements</li> </ul>
<ul style="list-style-type: none"> <li>• Complies with FCC Part 68 and EMC FCC Part 15 Class 2</li> </ul>
<ul style="list-style-type: none"> <li>• Operation ETS 300 019 Class 3.2</li> </ul>
<ul style="list-style-type: none"> <li>• Storage ETS 300 019 Class 1.2</li> </ul>
<ul style="list-style-type: none"> <li>• Transportation ETS 300 019 Class 2.3</li> </ul>

**Chassis - Mechanical Specifications**

Rack mounting	Standard 19-Inch. DIN Rack
Height	42 mm. 1U high
Depth	125 mm.
Width	19-Inch. rack-mounting shelf
Weight	1.5 kg.

**Environment**

Working temperature	- 10°C ~ +60°C for operation
Relative humidity	< 90% (Non condensing)

Technical specifications are subject to change without notice.  
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