

# VALIANT COMMUNICATIONS LIMITED



## **STM-1 Optical to STM-1 Electrical Converter**

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### Product Brochure

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### Product Overview

Valiant's STM-1 Optical to STM-1 Electrical converter provides a simple and cost-effective conversion between STM-1 optical interface and STM-1 electrical interface. STM-1 Optical to STM-1 Electrical converter is an interface conversion equipment supplied with one STM-1 electrical (75 Ohms BNC) interface and one STM-1 optical (MSA compliant SFP) interface.



1+1, STM-1 Optical to STM-1 Electrical converter option is also offered and available.

STM-1 Optical to STM-1 Electrical converter is a compact solution housed in a 1U high (44mm), 19-inch rack-mountable shelf, which can be installed in any DIN-standard 19-inch rack.

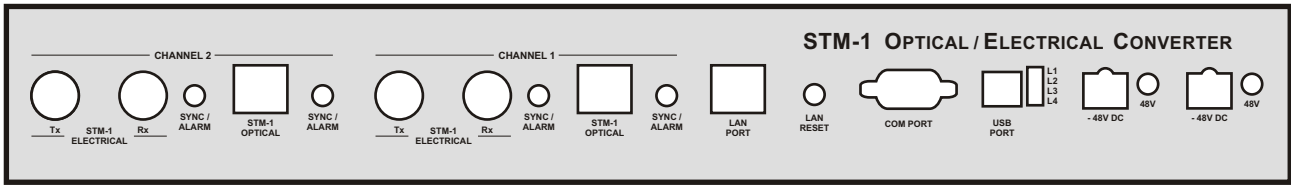
This unit offers five power supply options. Options for the power supply to the equipment include:

- a) 110~240 VAC 50/60 Hz plus -48VDC Inputs (range -18VDC~-72VDC), for power redundancy.
- b) Dual DC - 48V Inputs (range -18V DC ~ -72V DC), for power input redundancy.
- c) Dual AC 110V AC to 240V AC, 50 / 60 Hz Inputs, for power input redundancy.
- d) Single AC 110V AC to 240V AC, 50 / 60 Hz Inputs.
- e) Single -48V DC (range -18V DC ~ -72V DC) Input.

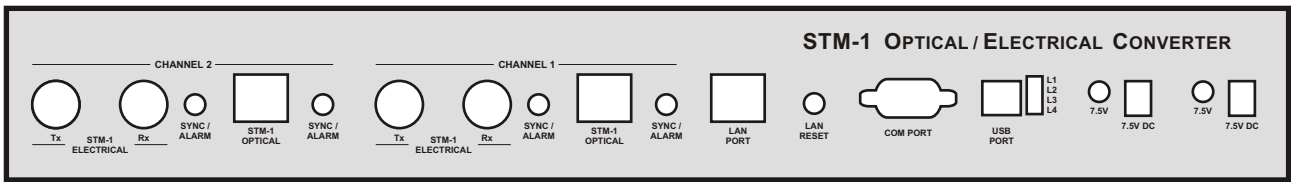
### Features

- 1+0, STM-1 Optical to STM-1 Electrical converter version.
- Dual (1+1), STM-1 Optical to STM-1 Electrical converter version.
- Standard 75 BNC connector of the STM-1 electrical interface.
- Standard MSA compliant SFP optical interface. Allows installation of field removable / field upgradable optical SFPs.
- Short haul (1310nm), long haul (1550nm) and multi mode (850nm) optical SFP modules offered.
- Offers multiple distance SFP options on the optical link 15KM, 40KM, 80KM, 120KM, 150KM, 200KM and 260KM.
- Management options:
  - Serial RS232 Port (COM Port).
  - USB interface (COM Port).
  - 10/100 BaseT Ethernet Port allows the equipment to be remotely accessed using Telnet over a TCP-IP Network.
  - SNMP V2 monitoring.
  - Network Management System - Windows XP and Windows 7 compatible Network Management System (NMS).
- High reliability, complies to ITU-T G.703 and G.957.
- Low power consumption.
- Supports local and remote loop-back on electrical or optical interfaces for system diagnostics.
- Simple operation and maintenance.
- 75 Ohms compliant with ITU-T G.703 and Telcordia GR-253 155Mbps electrical interfaces (BNC connector).
- ITU-T G.783 compatible loss of signal detect.
- STM-1 Electrical Interface - handles over 12.7dB of cable loss.
- SFP - LC optical interface.
- SFP with DDMI Interface - for read back of transmit and received optical power.
- Class 1 laser safety.
- Compliant with ITU-T G.957 STM-1.

**Front View - DC Version**



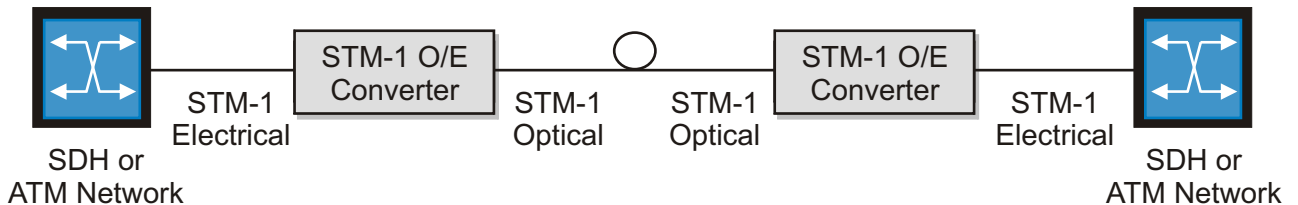
**Front View - AC Version**



**Compliance**

G.703	Provides one standard STM-1 electrical interface complying with G.703
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

**Application Diagram**



## Technical Specifications

### STM-1 Electrical Interface

Data Rate	155.52 Mbps
Standard	ITU-T G.703 Compliant
Impedance	75 Ohms resistive
Peak to peak voltage (signal)	1 ± 0.1 V
Rise time between 10% and 90% amplitudes of the measured steady state amplitude	≤ 2 ns
Maximum Attenuation	12.7dB at 78Mhz
Jitter	As per ITU-T G.825
Line Code	CMI
Physical Connector	BNC Coaxial

### 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	850nm / 1310nm / 1550nm
Transmission type	Dual Fiber (standard) Single Fiber Bi-directional (optional)
Automatic Laser Shut Down Option	Provided - User selectable option
Transmit power	As per SFP used
Receive sensitivity	As per SFP used

### Alarms

- LOS (Loss of Signal).
- AIS (All Ones Alarm).
- Optical Power Input High Alarm.
- Optical Power Input Low Alarm.
- SNMP V2 Traps.

### Loop-backs

- STM-1 Electrical local loop-back.
- STM-1 Electrical remote loop-back.
- STM-1 Optical local loop-back.
- STM-1 Optical remote loop-back.

## Management Options

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

## Security and Protection

- Secured Access via SSH V2.
- Password Protection: Password Protection in compliance with the mandatory clauses of the GR-815-CORE-2 specifications for secured access control.
- Security Audit: All access logs for up to 30 days are maintained for security audit purposes.
- Logging: Maintains a log of all successful and un-successful attempts. Logged information includes the ID and the IP address of the accessing entities. Alerts the administrator if the un-successful logging attempts exceed 5.

## Power Supply

Input voltage	<ul style="list-style-type: none"> <li>- Dual 110~240 VAC 50/60 Hz plus -48VDC Inputs (range -18VDC~-72VDC)</li> <li>- Dual DC -48V Inputs (range -18V DC ~ -72V DC)</li> <li>- Dual AC 110V AC to 240V AC, 50 / 60 Hz Inputs</li> <li>- Single AC 110V AC to 240V AC, 50 / 60 Hz Inputs</li> <li>- Single -48V DC (range -18V DC ~ -72V DC) Input</li> </ul>
Power consumption	<ul style="list-style-type: none"> <li>≤ 8 W (1+0 version)</li> <li>≤ 12 W (1+1 version)</li> </ul>

## Environmental

Working temperature	-5°C ~ +50°C for operation
Relative humidity	< 90% (Non condensing)
Altitude	Sea level to 5000 meters

## Mechanical Specification

Rack Mounting	Standard 19 Inch. DIN Rack
Height	44 mm.
Depth	125 mm.
Width	205 mm.
Weight	1.5 kg

## Ordering Information

S. No.	Part #	STM-1 O/E (Common Equipment)
1	STM-1-10-OE-1479-AC-DC	VCL-STM-1 Optical / Electrical Converter (1+0) - 1xSTM-1 electrical interface (155 Mbps, BNC Coaxial) - 1xSTM-1 optical interface (SFP based/SFPs not included) - AC+DC 100-240V AC, 50-60Hz plus -48VDC power input - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual
2	STM-1-11-OE-1479-AC-DC	VCL-STM-1 Optical / Electrical Converter (1+1) - 2xSTM-1 electrical interface (155 Mbps, BNC Coaxial) - 2xSTM-1 optical interface (SFP based/SFPs not included) - AC+DC 100-240V AC, 50-60Hz plus -48VDC power input - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual
3	STM-1-10-OE-1479-DC	VCL-STM-1 Optical / Electrical Converter (1+0) - 1xSTM-1 electrical interface (155 Mbps, BNC Coaxial) - 1xSTM-1 optical interface (SFP based / SFPs not included) - 1 DC -48V DC power input - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual
4	STM-1-11-OE-1479-2DC	VCL-STM-1 Optical / Electrical Converter (1+1) - 2xSTM-1 electrical interfaces (155 Mbps, BNC Coaxial) - 2xSTM-1 optical interfaces (SFP based/SFPs not included) - Dual -48V DC power inputs - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual
5	STM-1-10-OE-1479-AC	VCL-STM-1 Optical / Electrical Converter (1+0) - 1xSTM-1 electrical interface (155 Mbps, BNC Coaxial) - 1xSTM-1 optical interface (SFP based/SFPs not included) - 100-240V Universal AC, 50-60Hz power input - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual
6	STM-1-11-OE-1479-2AC	VCL-STM-1 Optical / Electrical Converter (1+1) - 2xSTM-1 electrical interface (155 Mbps, BNC Coaxial) - 2xSTM-1 optical interface (SFP based/SFPs not included) - Dual 100-240V Universal AC, 50-60Hz power input - SNMP V2 - 19-inch 1U High Rack Mount - System Cables, System GUI Disk, MIB File, User Manual

## Ordering Information

S. No.	Part #	SFP Description	Wave Length	Distance
1	VCL-EMOD-0262	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Duplex LC, MMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	850nm	2Km
2	VCL-EMOD-0193	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, S-1.1, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1310nm	15Km
3	VCL-EMOD-0194	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.1, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1310nm	40Km
4	VCL-EMOD-0217	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, SMF, +3.3V, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	80Km
5	VCL-EMOD-0156	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, LR-2/LR-3, Fast Ethernet L-1.2, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	120Km
6	VCL-EMOD-0243	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, L-1.2, Duplex LC, SMF, +3.3V, MSA, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	150Km
7	VCL-EMOD 0171	155Mbps SFP Transceiver SDH/STM-1 L-1.2, Duplex LC, SMF, +3.3V, DDM, External Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	200Km
8	VCL-EMOD 0244	155Mbps SFP Transceiver SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, SMF, +3.3V, DDM, Internal Calibration, RoHS [1 SFP for 1+0, 2 SFP for 1+1 configuration]	1550nm	260Km

## Ordering Information

S. No.	Part #	Cables & Accessories
1	Patch Cord	Optical Patch Cord Connectorized Cable (3 Meters) (Two Patch Cords for each STM-1 Port)
2	Patch Cord	Optical Patch Cord Connectorized Cable (10 Meters) (Two Patch Cords for each STM-1 Port)
3	Attenuator	Connector (Optical Attenuator) (One Optical Attenuator for each STM-1 Port)

Technical specifications are subject to changes without notice.  
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