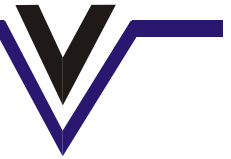


# VALIANT COMMUNICATIONS LIMITED



## **STM-1 63 E1 (Optical / Electrical) Add-Drop SDH Multiplexer**

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### Product Brochure

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## Product Overview

STM-1 63 E1 (Optical / Electrical) Add-Drop SDH Multiplexer unit is a modular platform unit with two 155.52Mbps optical / electrical interfaces, which may be used in a point-to-point, chain or ring application to provide an ultra-compact, cost effective and flexible service platform.



**STM-1 63 E1 (Optical / Electrical)  
Add-Drop SDH Multiplexer**

63xE1 interfaces (120 Ohms [RJ-45] and 75 Ohms [BNC]) options along with Engineering Order Wire is available. The user removable / replaceable STM-1 Optical / Electrical interface option makes it easy to meet various and changing user requirements. Valiant's STM-1(SDH) Transmission Equipment provides full capability to cross-connect at E1 level between all tributaries.

The equipment can be used as Terminal Multiplexer (TM) or an Add-Drop-Multiplexer (ADM) to build a point-to-point, ring and chain (add-drop) transmission network.

## Features

- Supports upto 63 E1s
- 1U height, 19-Inch standard rack-mountable chassis
- Service interfaces
  - › 2 x STM-1 optical interfaces, MSA compliant SFP (pluggable) optical module (LC connector) based design, which supports onsite optical port replacement
  - › 2 x STM-1 electrical interfaces, SFP electrical module (Mini BNC connector) Optional
  - › Maximum 63 E1 interfaces compliant with ITU-T G.703
  - › 120 Ohms E1 and 75 Ohms E1 interfaces options available
- Provides complete diagnostics facilities to the user for monitoring optical ports and provide reading of optical transmit power, optical receive power, laser temperature, bias current in voltage alarms etc.
- Performance Monitoring and Alarms - Error counts for B1, B2, B3
- Performance Analysis - Error Seconds (ES), Several Error Seconds (SES), Unavailable seconds (UAS), Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE)
- Management and Maintenance interfaces
  - › 10/100BaseT Ethernet management interface
  - › RS232 serial management interface
  - › Remote (Telnet) management interface
  - › Windows XP based Graphical User Interface (GUI)
  - › Windows 7 based Graphical User Interface (GUI)
  - › SNMP V2 Monitoring
  - › Engineering Order Wire (EOW) interface (RJ-11)
  - › NMS (Network Management System) for monitoring multiple units from a single / central location.

## Features

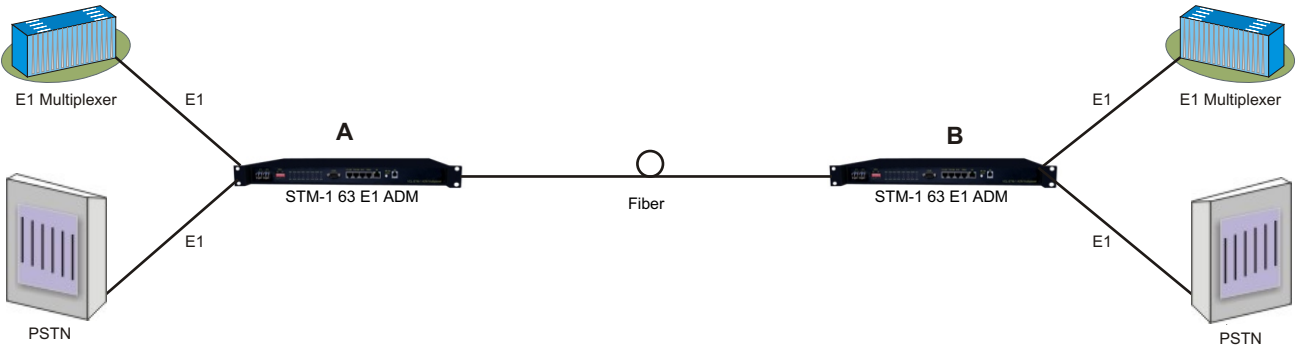
- Timing mode
  - › Synchronization with STM-1 line timing
  - › Synchronization with timing from any of the E1 interfaces
  - › External timing source option - 120 Ohms 2MBps (External Bits Clock)
  - › External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable
  - › Internal Clock - ITU-T G.813 internal oscillator (Stratum 3)
  - › The timing source can be auto-switched according to default or operator programmed settings
- Supports 1+1 Line Protection and Automatic Protection Switching (APS) with less than 50ms recovery
  - › All 63 VC12s can be mapped (east or west) in 1+1 protection mode
  - › Out of 63 VC12s, 21 VC12s (43-63) can be mapped to either direction (east or west) without protection (1+0)
- Supports point-to-point, ring and chain topology
- Local management and network-based management via a unified platform
- Supports Remote Power Down Detection and Auto Laser Shutdown
- Supports STM-1 and E1 loop-back for troubleshooting
- 850nm multi-Mode, 1310nm Single Mode and 1550nm Single Mode optical interface options offered
- Easy to operate
- Redundant power supply card options AC+DC, DC+DC and AC+AC
  - › 110V AC - 240V AC (50/60 Hz) power options available
  - › -48VDC power option available
- Power consumption less than 20W.

## Alarm and Indicator Monitoring

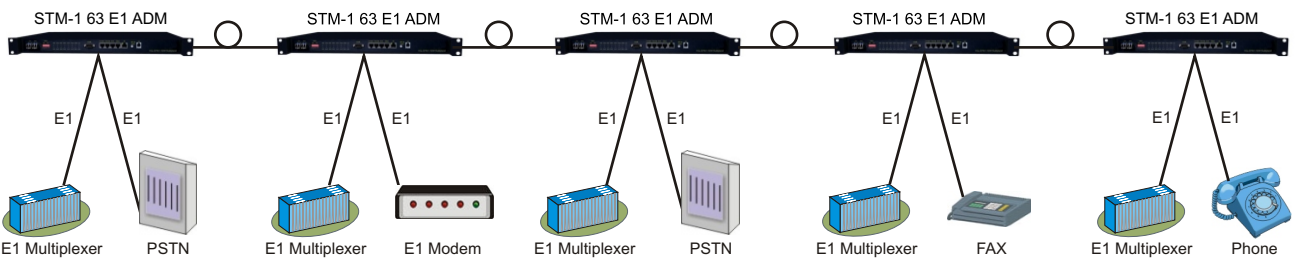
- Power Indicator
- Current Status (integrity and activity) Indicator
- Urgent Alarm Indicator
- Minor Alarm Indicator
- Optical Signal Loss Alarm Indicator
- Remote Device Power-down Indicator
- Auto Laser Shutdown (ALS) Indicator
- Engineering Order-Wire (EOW) Indicator
- Dry contact via 9-pin, D-type male connector
- Buzzer Alarm
- SNMP Diagnostic and Monitoring.

### Network Application

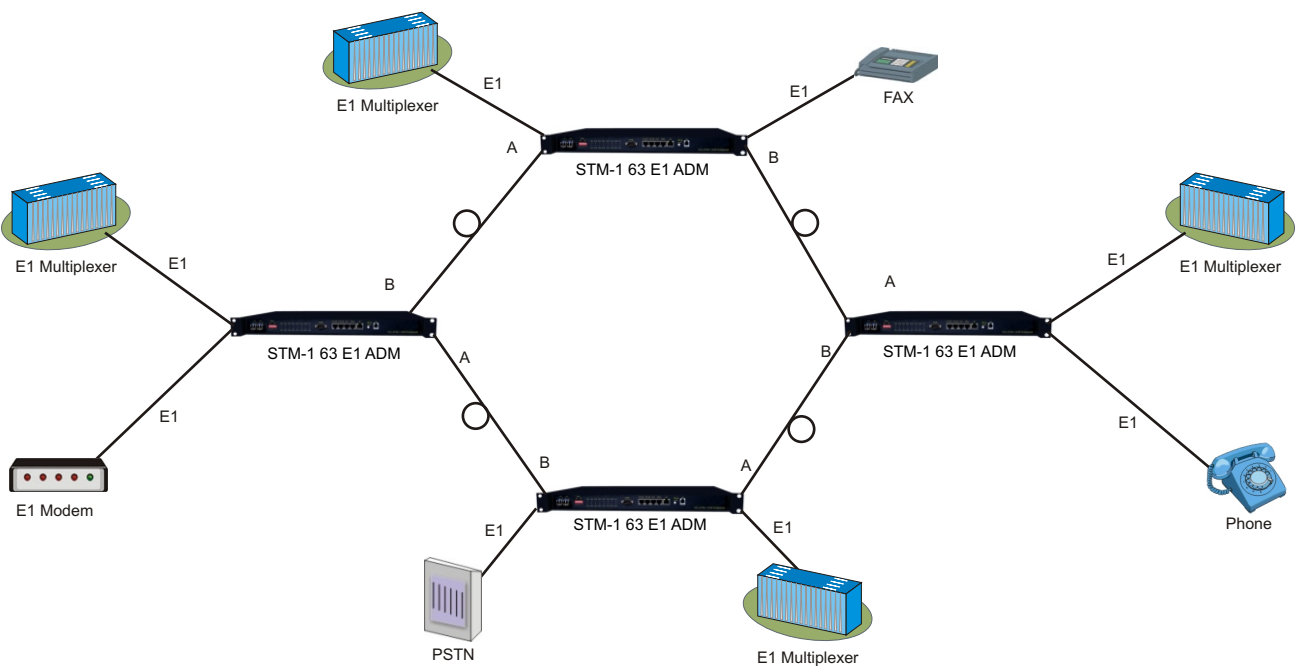
#### Point to point network application diagram



#### Chain network application diagram



#### Ring network application diagram



## Technical Specifications

### Network Topology and Interfaces

Network topology	Point to point network, Ring and Chain
Service interfaces	STM-1 SDH single optical or double optical ports (1+1 protection) supported or - STM-1 SDH single electrical or double electrical ports (1+1 protection) supported - 63 E1 - 120 Ohms or 75 Ohms

### STM-1 Electrical Interface - Technical Specifications

Data Rate	155.52 Mbps
Standard	ITU-T G.703 Compliant
Line Code	CMI
Physical Connector	Mini BNC
Automatic 1+1 line protection	Less than 50 ms switching / recovery

### STM-1 Optical Interface - Technical Specifications

Data Rate	155.52 Mbps
Standard	ITU-T G.957 compliant
Bit rate	155.520Mbps
Coding	NRZ
Connector	LC
Light source	Class 1 Laser
Wave length	850nm/1310nm/1550nm (optional) - 1310nm Std.
Transmit power	S 1.1, L 1.1, L 1.2 (- 11 dBm to - 2.5 dBm - as may be ordered)
Receive sensitivity	S 1.1, L 1.1, L 1.2 (- 28 dBm to - 34 dBm - as may be ordered)
Automatic 1+1 Line Protection	Less than 50 ms switching / recovery
Automatic Laser Shut Down Option	User selectable options

### STM-1 Monitoring and Performance Analysis

Performance Monitoring and Alarms	Error counts for B1, B2, B3
Performance Analysis	Error Seconds (ES), Several Error Seconds (SES), Unavailable Seconds (UAS), Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE)

## Optical Interfaces

Type	Wavelength (nm)	Mean launched power (dBm)	Receiver sensitivity (dBm)	Receiver overload (dBm)	Connector	Configuration
Double fibers, Two Direction	1310	-8 ~ -12	-36	-3	LC	Standard (S1.1)
	1310	0 ~ -5	-36	-3	LC	Optional (L1.1)
Single fiber, One Direction	1310/1550	-8 ~ -14	-30	-3	LC	Optional
	1310/1550	0 ~ -5	-30	-3	LC	Optional

## E1 Interface Specification - 120 Ohms

Number of E1s (Max) per system	63 E1 Interfaces
Line Rate per E1	(2.048 Mbps ± 50 bps)
Line Code	HDB3
Framing Structure	As per ITU (CCITT) G.704
Framing Options	Un-Framed/PCM 30/PCM 31
Electrical	As per ITU-T G.703
Jitter	As per ITU-T G.823
Impedance	120 Ohms balanced
Nominal Pulse Width	244ns
Connector	RJ-45 (F)

## E1 Interface Specification - 75 Ohms

Number of E1s (Max) per system	63 E1 Interfaces
Line Rate per E1	(2.048 Mbps ± 50 bps)
Line Code	HDB3
Framing Structure	As per ITU (CCITT) G.704
Framing Options	Un-Framed/PCM 30/PCM 31
Electrical	As per ITU-T G.703
Jitter	As per ITU-T G.823
Impedance	75 Ohms unbalanced
Nominal Pulse Width	244ns
Connector	BNC

## E1 port (TU 12) Performance Analysis

- Error Bits (EB)
- Error Seconds (ES)
- Several Error Seconds (SES),
- Unavailable seconds (UAS)
- Remote Error Indication (REI)
- Code Violation (CV)

## Clock Synchronization Options

Clock Synchronization options	Synchronization with STM-1 line timing
	Synchronization with timing from any of the E1 interfaces (63 E1 tributary interfaces)
	External timing source option - 120 Ohms 2Mbps (External Bits Clock)
	External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable
	Internal Clock - ITU-T G.813 internal oscillator (Stratum 3)
	The timing source can be auto-switched according to default or operator programmed settings

## Engineering Order Wire (EOW)

Engineering Order Wire (EOW)	RJ-11 connector
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## NMS

- Graphical User Interface (GUI) Windows XP / Windows Vista compatible
- SNMP V2 based NMS

## Power Supply Options

DC Mains Input	- 48VDC (range -36V DC to -75V DC)
AC Main Input	100V AC to 240V AC, 50 / 60 Hz
Power Protection	1+0 (AC, DC), 1+1 (AC+AC, AC+DC, DC+DC)
Power Consumption	< 20 Watts

## Operating Conditions

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

## Mechanical Specifications

Rack Mounting	Standard 19 Inch. DIN Rack
Height	44 mm.
Depth	256 mm.
Width	440 mm.
Weight	3.75 kg

## Ordering Information

S. No.	Part	Description
1	VCL-STM-1-63E1-ADM-MUX	STM-1 63 E1 (Optical/Electrical) Add-Drop Multiplexer SDH transmission unit 19" Metal Box 1U High Rack Mount Version

## Please specify options

### STM-1 Port Options

S. No.	Part	Description
1	OPT-1+0-1310-20KM	1 x Optical SFP - 1310nm, 20KM S1.1 (LC)
2	OPT-1+1-1310-20KM	2 x Optical SFP - 1310nm, 20KM S1.1 (LC)
3	OPT-1+0-1310-40KM	1 x Optical SFP - 1310nm, 40KM L1.1 (LC)
4	OPT-1+1-1310-40KM	2 x Optical SFP - 1310nm, 40KM L1.1 (LC)
5	OPT-1+0-1550-80KM	1 x Optical SFP - 1550nm, 80KM L1.2 (LC)
6	OPT-1+1-1550-80KM	2 x Optical SFP - 1550nm, 80KM L1.2 (LC)
7	OPT-1+0-1550-120KM	1 x Optical SFP - 1550nm, 120KM L1.2 (LC)
8	OPT-1+1-1550-120KM	2 x Optical SFP - 1550nm, 120KM L1.2 (LC)
9	ELE-1+0	1 x Electrical SFP (mini BNC)
10	ELE-1+1	2 x Electrical SFP (mini BNC)

### E1 Options

S. No.	Part	Description
1	63E1-120	63 E1 Card with 8 x DB-37 to 8 x RJ-45
2	63E1-75	63 E1 Card with 8 x DB-37 to 16 x BNC

### Power Supply Options

S. No.	Part	Description
1	DC-1+0	1 x DC Mains Input - 48VDC (range 40V to 60V)
2	DC-1+1	2 x DC Mains Input - 48VDC (range 40V to 60V)
3	AC-1+0	1 x AC Mains Input 110Volts-240 Volts, 50Hz/60Hz
4	AC-1+1	2 x AC Mains Input 110Volts-240 Volts, 50Hz/60Hz



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Technical specifications are subject to changes without notice.  
Revision 04 - Jan 13, 2012

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