VALIANT COMMUNICATIONS

Ethernet over SDH (STM-1)

Product Overview

Valiant's Ethernet over SDH (STM-1) Equipment is a modular platform unit with two pluggable 155.52Mbps optical / electrical interfaces, which may be used in a point-to-point, chain or ring application to provide a compact, cost effective and flexible solution to deliver multiple Ethernet channels.

Ethernet over SDH (STM-1) – Available bandwidth on four Ethernet ports (4VCG) on an STM-1 link (126Mbps bandwidth aggregated on 4 Ethernet ports).

Interface card options include the 4x100BaseT Ethernet interface card (1 VCG, 4 Ports 1 Channel), 4x100BaseT Ethernet interface card (4 VCG, 4 Ports 4 Channels) and Gigabit Ethernet interface card 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, Ethernet and Gigabit Ethernet over SDH Transmission Equipment provides full capability to cross-connect at E1 level between all tributaries. The equipment can be used as Terminal Multiplexer (TM) to build a point-to-point, chain or ring SDH transmission network.

Features

- 1U height, 19-Inch standard rack-mountable chassis
- 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)
- Supports 1+1 Line Protection and Automatic Protection Switching (APS) with less than 50ms recovery
- Supports point-to-point, ring and chain topology (4 VCG card only)
- Local management and network-based management via a unified platform
- Supports Remote Power Down Detection and Auto Laser Shutdown
- Supports STM-1 loop-back for troubleshooting
- 850nm multi-Mode, 1310nm Single Mode and 1550nm Single Mode optical interface options offered
- Ethernet mapping adopts GFP/VC-12 virtual concatenated technology; according with MSTP criterion
- Provides Ethernet over SDH mapping through standard GFP and VC-12 virtual concatenation (VCAT)
- Ethernet bandwidth can be adjusted by the user between 2MBps ~126 Mbps (VC-12 mapping)
- Supports MAC Address list filtration, learning and updating function
- Easy to operate

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
- 4 x 10/100BaseT Ethernet (electric) interface
- 10/100BaseT (FE) Ethernet Interface Options
- 4 Ports, 4 Channels (4 VCG), and
- 4 Ports, 1 Channel (1 VCG)

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.

Timing mode

- Synchronization with STM-1 line timing
- 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

Redundant power supply card options

- 110V AC - 240V AC (50/60 Hz) power options available
- 48V DC power option available
- Power consumption less than 12W.

Ethernet port (1 VCG/4 VCG/GigE) Performance Analysis

- All Received Packets
- All Transmitted Packets
- Received Dropped Packets

Mechanical Specifications

- H X D X W = 44mm X 265mm X 440mm
- Weight = 3.25 Kg

Ethernet Standards Conformity

- Generic Framing Procedure GFP-F compliant with ITU-T G.7041
- VCAT compliant with ITU-T G.707 and LCAS compliant with ITU-T G.7042
- Ethernet flow control on WAN port and LAN port
- Large buffer size upto 410,000 bytes
- Maximum Frame length (MTU size):1536 bytes with 4 port 1 channel (1 VCG) Ethernet Card
- Maximum Frame length (MTU size):2036 bytes with 4 port 4 channel (4 VCG) Ethernet Card
- Auto MID/MID-X for Ethernet Interfaces
- Support 802.1Q based VLAN tagging (4 ports 1 channel (1 VCG) Ethernet Card only)
- Support Port based VLAN tagging (4 ports 1 channel (1 VCG) Ethernet Card only)

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
- Ethernet Card Status Indicator

Network Technology

- General Alarm Indicator for Ethernet Card (including Link-down of Ethernet Port)
- Auto Laser Shutdown (ALS) Indicator
- Engineering Order-Wire (EOW) Indicator
- Ethernet Link Indicator
- Ethernet Speed Indicator
- Dry contact via 9-pin, D-type male connector
- Buzzer Alarm
- SNMP Diagnostic and Monitoring

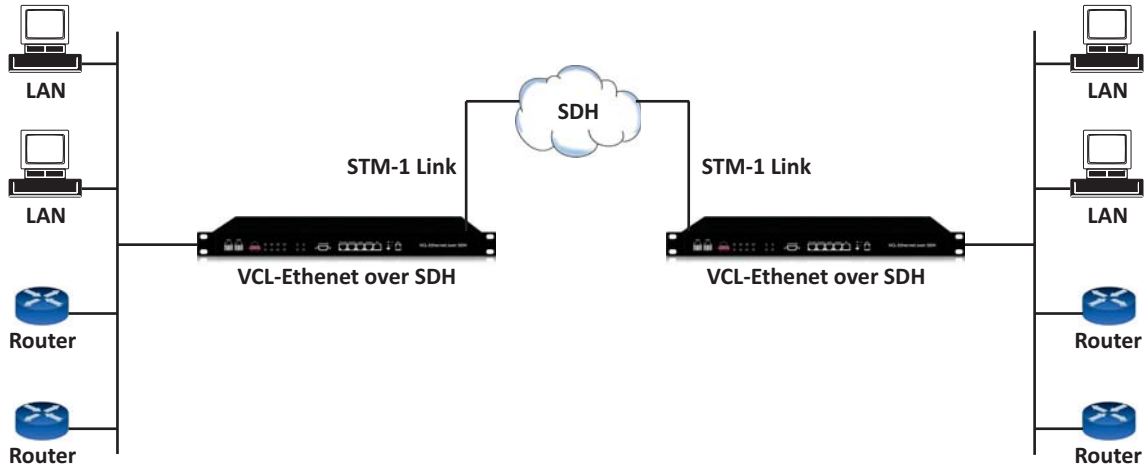
Clock Synchronization Options

- Synchronization with STM-1 line timing
- 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

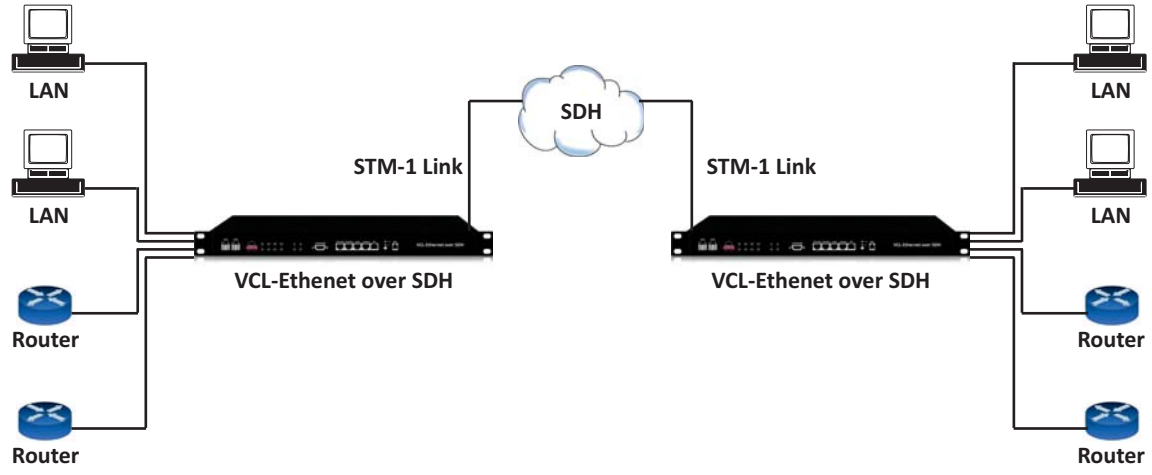
Engineering Order Wire (EOW)

- RJ-11 connector.

Application: Point to point network (Shared Link Mode) – 1 VCG Card Application



Application: Point to point network (Discrete Link Mode) – 4 VCG Card Application



Network Topology and Interfaces (Point to Point network)

- STM-1 SDH single optical or double optical ports
- (1+1 protection) supported
- 10/100BaseT Ethernet
- 10/100/1000BaseT or 1000Base-FX GigE

NMS

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

Operating Conditions

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

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

1 VCG- Ethernet Interfaces Specification: 10/100BaseT

Number of Interfaces	4
Number of VCG/ Channel	1
Interface Types	10/100BaseT
Ethernet Mode	Half/Full
MDI/MDI-X Support	Yes
VCAT Compliance	ITU-T G.707
LCAS Compliance	ITU-T G.7042
GFP-F	ITU-T G.7041
Frame Size	1536 bytes
Transmission Bit Rate	10/100 Mbps
Connectors	RJ-45 Electrical
802.1Q MAC packet transparent transmission supported	
Ethernet data rate can be adjusted from 2M to 100M	

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

4 VCG- Ethernet Interfaces Specifications: 10/100BaseT

Number of Interfaces	4
Number of VCG/Channels	4
Interface Types	10/100BaseT
Ethernet Mode	Half/Full
MDI/MDI-X Support	Yes
VCAT Compliance	ITU-T G.707
LCAS Compliance	ITU-T G.7042
GFP-F	ITU-T G.7041
Frame Size	2036 bytes
Transmission Bit Rate	10/100 Mbps
Connectors	RJ-45 Electrical
802.1Q MAC packet transparent transmission supported	
Ethernet data rate can be adjusted from 2M to 126M	

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 maybe 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 Automatic Laser Shut	Less than 50 ms switching / recovery
Down Option	User selectable options

Optical Interface

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

Ordering Information

A. VCL-Ethernet over SDH (STM-) Common Equipments (CORE UNIT without PSUs)

Part	Description
VCL-ETH-O-SDH	VCL - Ethernet over SDH (STM-1) 19-inch 1U High Rack Mount version Supports: – 2 x STM-1 Ports (1+1) [SFP based - without SFPs] – 1 x System Core Cables, Installation accessories, Documentation, System User Manual/ Disk etc (Set) – OAM: EOW, SNMP, EMS, NMS * Add Power Supply Option from below

B. STM-1 SFP Options (Maximum 2 SFPs per CORE UNIT)

Part	Description
VCL-EMOD 0193	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, S-1.1, Duplex LC, 1310nm, 15Km, SMF
VCL-EMOD 0194	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.1, Duplex LC, 1310nm, 40Km, SMF
VCL-EMOD 0217	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, 1550nm, 80Km, SMF
VCL-EMOD 0156	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, LR-2/LR-3, Fast Ethernet, L-1.2, Duplex LC, 1550nm, 120Km, SMF
VCL-EMOD 0243	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, L-1.2, Duplex LC, 1550nm, 150Km, SMF
VCL-EMOD 0195	155Mbps SFP Copper Transceiver, STM-1e (Es1) [Electrical], 75Ω DIN 1.0/2.3 female coaxial, MSA, Grounds Isolated, RoHS

C. Ethernet Options (Any One Option)

Part	Description
0169E	4 x Ethernet Port [100Mbps, Electrical RJ45 (F), 1VCG (1 Channel)+VLAN]
0210E	4 x Ethernet Port [100Mbps, Electrical (F), 4VCG (4 Channel)]
0264E	4 x Ethernet Port [100Mbps, Electrical RJ45 (F), 4VCG (4 Channel)+VLAN]

D. Cables And Accessories Options (As per site Requirement)

Part	Description
VCL-HRNS 1229	Optical Patch Cord Connectorized Cable [2LC-2LC, 3m, SM]
VCL-HRNS 1238	Optical Patch Cord Connectorized Cable [2LC-2LC, 10m, SM]
VCL-HRNS 1242	Optical Patch Cord Connectorized Cable [LC-FC, 10m, SM]
VCL-HRNS 1243	Optical Patch Cord Connectorized Cable [2LC-2FC, 10m, SM]
VCL-HRNS 1239	Optical Patch Cord Connectorized Cable [LC-SC, 10m, SM]
VCL-HRNS 1258	Optical Patch Cord Connectorized Cable [2LC-2SC, 10m, SM]
VCL-HRNS 1216	Mini-BNC-to-Big-BNC Connectorized Cable [3m]
VCL-ECON 1172	Connector (Attenuator LC-LC (10 db.))
VCL-ECON 1173	Connector (Attenuator LC-LC (20 db.))
VCL-ECON 1186	Connector (Attenuator FC-FC (10 db.))
VCL-ECON 1187	Connector (Attenuator FC-FC (20 db.))
VCL-ECON 1197	Connector (Attenuator SC-SC (10 db.))
VCL-ECON 1198	Connector (Attenuator SC-SC (20 db.))

E. Power Supply Options (Any one option)

Part	Description
AC220	1 x 100-240V AC Power Supply Input
DC048	1 x (-) 48V DC Power Supply Input
ACDC	1 x 100-240V AC Power Supply Input 1 x (-) 48V DC Power Supply Input
AC220R	2 x 100-240V AC Power Supply Input
DC048R	2 x (-) 48V DC Power Supply Input

Revision – 12, May 25, 2022

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