VCL-Gigabit Ethernet over SDH (Gigabit Ethernet over STM-1)

Product Brochure

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Product Overview

Valiant's Gigabit 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 application to provide a compact, cost effective and flexible solution to deliver multiple Ethernet channels.

VCL-Gigabit Ethernet over SDH (STM-1)

- Gigabit Ethernet over SDH (STM-1) – Available bandwidth on a single Ethernet port on an STM-1 link is 137Mbps.

Gigabit Ethernet interface card 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 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 SDH transmission network.

Features

- 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
  - GigE (Gigabit) Ethernet interface Options
    - ✓ 1 x Optical GigE (Gigabit) Ethernet interface, or
    - ✓ 2 x Electrical 1000BaseT (Gigabit) Ethernet Interface
- 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.

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Features

- 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
- Ethernet Standards Conformity
  - Electrical Gigabit compliant with 802.3ab
  - Optical Gigabit compliant with 802.3z
  - 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):1552 bytes
  - Auto MID/MID-X for Ethernet Interfaces
  - Support 802.1Q based VLAN tagging
  - Support Port based VLAN tagging
  - Performance Analysis
    - ✓ All Received Packets
    - ✓ All Transmitted Packets
    - ✓ Received Dropped Packets
- Supports 1+1 Line Protection and Automatic Protection Switching (APS) with less than 50ms recovery
- Supports point-to-point
- 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 Gigabit 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
- 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
  - -24VDC power option available
- Power consumption less than 12W.

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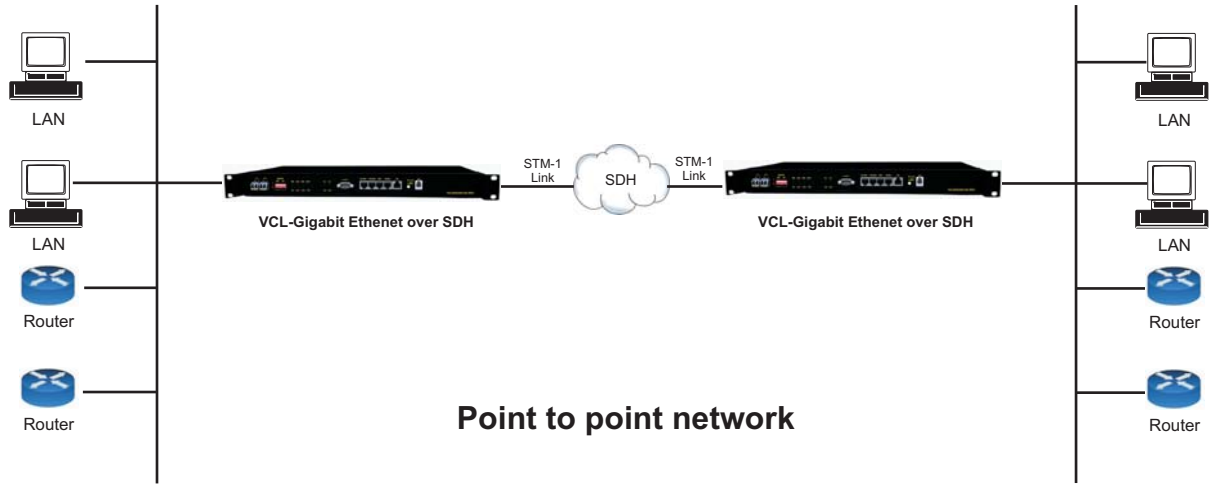
Alarm and Indicator Monitoring

- 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
- 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

Network Application



Technical Specifications

Network Topology and Interfaces

Network topology	Point to point network
Service interfaces	STM-1 SDH single optical or double optical ports (1+1 protection) supported - 10/100/1000BaseT Electrical Gigabit Ethernet - 1000Base-FX Optical Gigabit Ethernet

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 - 36 dBm - as may be ordered)
Automatic 1+1 Line Protection	Less than 50 ms switching / recovery
Automatic Laser Shut Down Option	User selectable options

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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

GigE - Ethernet Interface Specification (Option 1)

Number of Interfaces	2 Electrical (Comply with IEEE 802.3ab)
	1 Optical - Optional (Comply with IEEE 802.3z)
Interface Types	10/100/1000BaseT or 1000Base-FX (LC)
MDI/MDI-X Support	Yes (Electrical port)
VCAT Compliance	ITU-T G.707
LCAS Compliance	ITU-T G.7042
GFP-F	ITU-T G.7041
Frame Size	1552 bytes
Transmission Bit Rate	10/100/1000 Mbps
Connectors	RJ-45 Electrical / LC - Optical
802.1Q MAC packet transparent transmission supported	
Ethernet data rate can be adjusted from 2M to 100M	

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GigE - Ethernet Interface Specification (Option 2)

Number of Interfaces	1 Electrical (Comply with IEEE 802.3ab)
	1 Optical - Optional (Comply with IEEE 802.3z)
Interface Types	10/100/1000BaseT or 1000Base-FX (LC)
MDI/MDI-X Support	Yes (Electrical port)
VCAT Compliance	ITU-T G.707
LCAS Compliance	ITU-T G.7042
GFP-F	ITU-T G.7041
Frame Size	1552 bytes
Transmission Bit Rate	10/100/1000 Mbps
Connectors	RJ-45 Electrical / LC - Optical
802.1Q MAC packet transparent transmission supported	
Ethernet data rate can be adjusted from 2M to 137M	

Ethernet port Performance Analysis

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

Clock Synchronization Options

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)

Engineering Order Wire (EOW)	RJ-11 connector

NMS

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

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Power Supply Options

DC Mains Input	-48V DC (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	< 12 Watts

Operating Conditions

Ambient temperature	$-10^{o}C$ ~ $+60^{o}C$
Relative humidity	<90% (Non condensing)

Mechanical Specifications

Rack Mounting	Standard 19 Inch. DIN Rack
Height	44 mm.
Depth	256 mm.
Width	440 mm.
Weight	3.25 kg

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Ordering Information

A VCL-Gigabit Ethernet over SDH (STM-1) Common Equipment

S. No.	Part	Description	Remarks
1	VCL-0320-GigE-o-SDH137	VCL-Gigabit 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 (C)	CORE UNIT without PSUs

B Gigabit Ethernet Options

S. No.	Part	Description	Remarks
1	0223OE	Gigabit Ethernet Port (4VCG, 4 Channel, 100M bandwidth) - 2 x Electrical Port [RJ45 (F)] OR - 1 x Optical Port [SFP based - without SFP]	Any one option
2	0319OE	Gigabit Ethernet Port (1VCG, 1 Channel, 137M bandwidth) - 1 x Electrical Port [RJ45 (F)] OR - 1 x Optical Port [SFP based - without SFP]	

C Power Supply Options

S. No.	Part	Description	Remarks
1	AC220	1 x 100-240V AC Power Supply Input	Any one option.
2	DC048	1 x (-) 48V DC Power Supply Input	
3	ACDC	1 x 100-240V AC Power Supply Input 1 x (-) 48V DC Power Supply Input	
4	AC220R	2 x 100-240V AC Power Supply Input [Redundant]	
5	DC048R	2 x (-) 48V DC Power Supply Input [Redundant]	

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D Gigabit SFP Options

S. No.	Part	Description	Remarks
1	VCL-EMOD 0231	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 15Km, SMF	Maximum 1 SFP per optical ethernet
2	VCL-EMOD 0255	1.25Gbps SFP Transceiver Duplex LC, 1310nm, 40Km, SMF	
3	VCL-EMOD 0256	1.25Gbps SFP Transceiver Duplex LC, 1550nm, 80Km, SMF	

E STM-1 SFP Options

S. No.	Part	Description	Remarks
1	VCL-EMOD 0193	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, S-1.1, Duplex LC, 1310nm, 15Km, SMF	Maximum 2 SFPs per CORE UNIT.
2	VCL-EMOD 0194	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.1, Duplex LC, 1310nm, 40Km, SMF	
3	VCL-EMOD 0217	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, Fast Ethernet, L-1.2, Duplex LC, 1550nm, 80Km, SMF	
4	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	
5	VCL-EMOD 0243	155Mbps SFP Transceiver, SDH/STM-1, SONET/OC-3, L-1.2, Duplex LC, 1550nm, 150Km, SMF	
6	VCL-EMOD 0195	155Mbps SFP Copper Transceiver, STM-1e (Es1) [Electrical], 75Ω DIN 1.0/2.3 female coaxial, MSA, Grounds Isolated, RoHS	

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F Cables and Accessories Options

S. No.	Part	Description	Remarks
1	VCL-HRNS 1229	Optical Patch Cord Connectorized Cable [2LC-2LC, 3m, SM]	As per Site Require ment.
2	VCL-HRNS 1238	Optical Patch Cord Connectorized Cable 2LC-2LC, 10m, SM]	
3	VCL-HRNS 1242	Optical Patch Cord Connectorized Cable [LC-FC, 10m, SM]	
4	VCL-HRNS 1243	Optical Patch Cord Connectorized Cable [2LC-2FC, 10m, SM]	
5	VCL-HRNS 1239	Optical Patch Cord Connectorized Cable [LC-SC, 10m, SM]	
6	VCL-HRNS 1258	Optical Patch Cord Connectorized Cable [2LC-2SC, 10m, SM]	
7	VCL-HRNS 1216	Mini-BNC-to-Big-BNC Connectorized Cable [3m]	
8	VCL-ECON 1172	Connector (Attenuator LC-LC (10 db.))	
9	VCL-ECON 1173	Connector (Attenuator LC-LC (20 db.))	
10	VCL-ECON 1186	Connector (Attenuator FC-FC (10 db.))	
11	VCL-ECON 1187	Connector (Attenuator FC-FC (20 db.))	
12	VCL-ECON 1197	Connector (Attenuator SC-SC (10 db.))	
13	VCL-ECON 1198	Connector (Attenuator SC-SC (20 db.))	

Technical specifications are subject to changes without notice.
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