VALIANT COMMUNICATIONS

Product Overview:

VCL-2739, 1588v2 PTP Aware Switch (PTP Transparent Clock). The VCL-2739 is a non-blocking wire-speed Ethernet switch with full support for IEEE 1588v2 Precision Time Protocol (PTP) Transparent Clock features.

Features of IEEE 1588v2 PTP Switch & Clock Synchronization:

- Transparent Clock (TC) with auto correction update and Boundary Clock
- Master and Slave Ordinary Clock (OC) support
- End-to-end (E2E) and Peer-to-peer (P2P) delay mechanism support
- PTP multicast and unicast message support
- PTP message transport over IPv4 and IEEE 802.3 (layer 2)
- IEEE 1588v2 PTP packet filtering
- One-step and Two-step.

Features:

- Six Ports:
    - 5x10/100/1000Base-T Electrical Ethernet Ports
    - 1x1000Base-X SFP based Optical Fiber Ethernet Port
- IEEE 1588 v2 Transparent Clock capable of distributing precision time across the substation network
- IEEE 802.3x full-duplex flow control and half-duplex back pressure collision control.

Substation and Industrial Hardened Switch

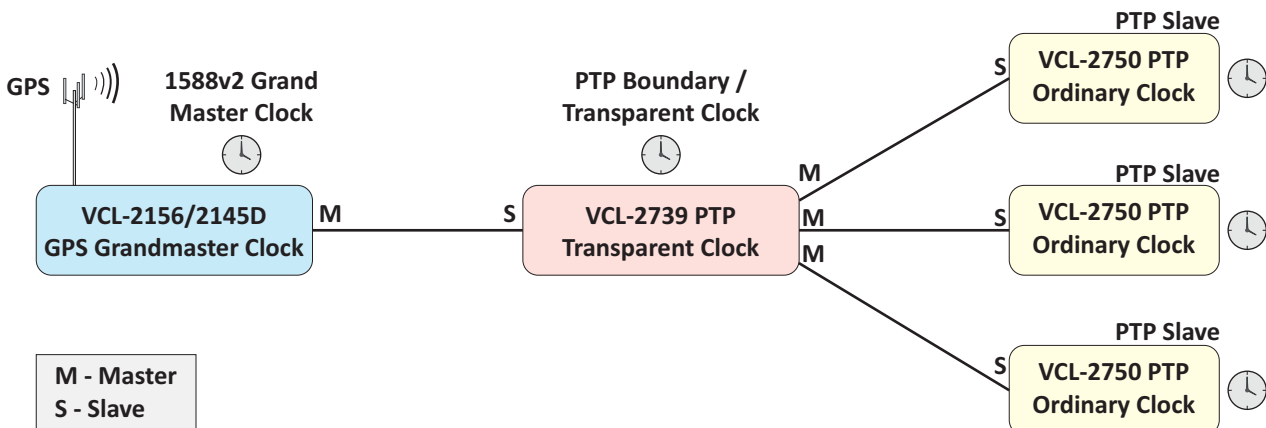- IEC 61850-3 and IEEE 1613 compliance for operating in electric substation environments.

Switch Performance Capabilities

- 10/100/1000Mbps Ethernet switch basic functions: frame buffer management, address look-up table, queue management, MIB counters
- Non-blocking store-and-forward switch fabric assures fast packet delivery by utilizing 4096 entry forwarding table with 256K Byte frame buffer
- Jumbo packet support up to 9000 bytes.

Applications:

- IEC 61850 networks power substation automation
- Industrial Ethernet (Profinet, MODBUS, Ethernet/IP)
- Supports 3G/4G/5G Ethernet networks
- Industrial control/automation
- Test and measurement applications.

Application Diagram: IEEE-1588v2 Grandmaster and Boundary Function in PTP Network

Note: - Accuracy between PTP Grandmaster and PTP Slave better than 100ns.
- Phase synchronized 1PPS between PTP Grandmaster and PTP Slave.

Technical Specifications

Power Supply Specifications:

Input DC voltage	48V DC (nominal)
Range of input voltage	15V to 60V DC Input
Voltage reversal protection	Provided
Short circuit protection	Provided

Additional Power Supply Options (external adaptor):

- AC Power - 100 to 240V AC, 50/60 Hz
- DC Power - 110VDC, 220VDC

Power Consumption:

- < 20W at ambient (steady state 24°C)

Local / Remote Communication Options:

- Telnet / SSH (With option to disable clear text communication to comply with NERC security requirements)
- CLI Control Interface (HyperTerminal or VT100)

Management and Control Ports:

- Serial Management Port (Connector type USB)
- 100/1000 Base-T Ethernet

Security and Protection:

- Password Protection
- SSH

Command Language:

- English text commands
- Graphical User Interface (GUI) - English

Mechanical Specifications:

- H x W x D: 42 x 168 x 134 mm
- Weight: 0.5 Kg.

Environmental (Equipment):

Operational:	-10C to +50C (Typical: +25C)
Cold start	0C
Storage	-40C to +85C
Humidity	95% non-condensing
Cooling	Convention Cooled. No cooling fans are required.

MTBF and Equipment MTBF:

- Per MIL-HDBK-217F: ≥ 15.8 years @ 24C
- Per Telcordia SSR 332, Issue 1: ≥ 20.2 years @ 24C

Compliance:

- EMC FCC Part 15 Class 2
- Operation ETS 300 019 Class 3.2
- Storage ETS 300 019 Class 1.2
- Transportation ETS 300 019 Class

Ordering Information

Part No.	Description
VCL-2739-DIN-DC015060	PTP 1588v2 Aware Switch DIN Rail Mount Version Supports: - 5 x 10/100/1000Base-T Electrical Ethernet Port (Rj45) - 1 x 1000Base-SX Optical Fiber Port (SFP not included) - 1 x 15~60V DC Power Supply Input - Serial / Remote Management - Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual

*SFP Options:

Part No.	Description
VCL-EMOD 0206	SFP Transceiver, Gigabit, Duplex LC, 7.5dB, 850nm, 0.34 Miles / 550m, MMF (Multi-Mode)
VCL-EMOD 0482	SFP Transceiver, Gigabit, Duplex LC, 14dB, 1310nm, 12.42 Miles / 20Km, SMF (Single-Mode)
VCL-EMOD 0255	SFP Transceiver, Gigabit, Duplex LC, 22dB, 1310nm, 24.85 Miles / 40Km, SMF (Single-Mode)

*External Power Supply Options:

Part No.	Description
VCL-EMOD 0444-AC220	External Power Supply - DIN Rail Mount Power Supply (External) AC to DC Converter, DRL30-24-1, DIN Rail Mount - 1 x AC Input [90~240V AC, 50/60Hz] - 1 x DC Output [24VDC~1.25A, 30W]
VCL-EMOD 0444-DC220	External Power Supply - DIN Rail Mount Power Supply (External) DC to DC Converter, DRL30-24-1, DIN Rail Mount : - 1 x DC Input [100~250V DC] - 1 x DC Output [24VDC~1.25A, 30W]

Revision – 2.4, August 24, 2023