

## High Performance Sub-Master Clock Unit

### Product Overview

Valiant's Valiant's VCL-2103 SUB-MASTER CLOCK is a high-performance intermediate time synchronization source which may be directly synchronized to a Primary GPS Reference (Master) Clock or any other NTP time source to provide Time-of-Day synchronization to secondary NTP / SNTP Slave devices in the network. The VCL-2103 Sub-Master Clock mediates between the Primary GPS Reference (Master) Clock or any other time source and the Slave NTP / SNTP devices, such as Time-Of-Day Display Clocks in a LAN, to effectively isolate the GPS Primary Reference Clock Source from the NTP / SNTP Slave devices and provide NTP / SNTP time-of-day synchronization with millisecond accuracy.



The VCL-2103 Sub-Master Clock provides two distinctly separate Ethernet Ports, each of which is assigned its own IP address which allows the VCL-2103 Sub-Master Clock to synchronize with the Primary GPS Reference (Master) Clock and to also provide time synchronization to multiple Slave NTP / SNTP devices in a LAN network.

Multiple VCL-2103 Sub-Master Clock Units can be installed in a network to synchronize with the Primary GPS Reference (Master) Clocks to provide 1+1 or n+1 source redundancy in a NTP / SNTP time synchronization network.

### Features, Highlights and Options:

- IPv4 compliant Sub-Master Clock
- Ethernet 10/100BaseT, NTP / SNTP Date and Time Synchronization
- EEPROM for setting retention after power down
- High-Performance NTP Server running at 533MHz clock speed
- Unmatched security. Password Protection and Firewall. Resistant to DOS (Denial of Service) attack and unauthorized access
- Capable of serving up to 1500, VCL-2106 Slave Display Clocks or other standard / third party NTP/SNTP Clients

### Input:

- 1 x 10/100/1000BaseT Ethernet NTP Input Port with automatic synchronization to redundant NTP Server(s) based upon Stratum level of source for master clock synchronization.

### Output

- 1 x 10/100BaseT Ethernet NTP / SNTP Output Ports for slave device(s) synchronization

### Reliability and Timing Accuracy:

- May be provisioned in a 1+1, or n+1 redundant configuration.
- Dual OCXO based, extremely high (best in class) internal clock accuracy.
- The clock drift is less than  $\pm 0.001$  second in a 24 hour time-period / 0.5 second per year (in the temperature range of -10C to +50C) in the absence of loss of GPS Synchronization.

### Environmental:

- Temperature:
  - Operating Range: -20C to +65C
  - Storage: -40C to +75C
- Humidity 0-95% (without condensation)
- Altitude: Up to 3000 meters
- Industrial Hardened Design. Non-corrosive chassis.
- Protection: IP 30

### Certification:

- CE and FCC approval
- Conducted Immunity as per IEC 61000-4-6
- Radiated Immunity IEC 61000-4-3
- Meets and exceeds CISPR 22 / EN55022 Class B emission requirements
- Voltage and Surge Withstand: Meets and exceeds
- IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5 specifications.
- Interruptions and Voltage variations meets and exceeds IEC 61000-4-11 specifications.

**Local / Remote Management and Monitoring Ports:**

- RS-232C
- USB
- 10/100BaseT Ethernet RJ45
- 1 x External Alarm Relay Contact

**Local / Remote System Access, Control and Management Options:**

- Telnet, SSH
- Online Firmware upgrade
- CLI Control Interface (HyperTerminal or VT100)
- SNMP V2 Traps (MIB File provided)

**MTBF (Mean Time Between Failure):**

- Per MIL-HDBK-217F: > 25 years @ 40C
- Per Telcordia SSR 332, Issue 1: > 29 years @ 40C

**Power Supply Options\*:**

- 24V DC
- 48V DC
- 110V DC
- 90V AC-240V AC, 50/60 Hz
- 1+0 and 1+1 Dual Redundant Power Supply Options

**Power Consumption:**

- < 10 Watts

**Description: VCL-SMC, Sub Master Clock:**

- Remote Management over TCP-IP Network
- 19-Inch, 1U
- 1 x NTP, 10/100/1000BaseT Ethernet Input Ports (NTP Receiver / Client Port)
- 1 x NTP / SNTP, 10/100BaseT Ethernet Output Ports (NTP Host / Server Port)

**Ordering Information and Dimensions:**

Version	Width	Height	Depth	Weight
VCL-2103	480 mm	44 mm	250 mm	2.2 kgs

\* Please specify the required power supply option.

Technical specifications are subject to changes without notice.  
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