VCL-3048, NTP TIME SERVER

Product Overview

The **VCL-3048 NTP Time Server** is designed to provide NTP clock that is locked to a GPS / GNSS reference to provide time synchronization to private networks such as Railways and Metro (ticketing and platform) networks, Airports and Air-Traffic Control facilities, Electric Sub-Stations, Power Distribution and Transmission companies, Oil and Gas Utilities, ISPs and Cable TV networks as well as to Campus networks that are required to maintain a complete isolation from public networks for security reasons. It may be also used by 2G, 3G and LTE service providers which provide a time of day reference to their customers over their wireless networks.

VCL-3048 locks to a GPS / GNSS reference to provide an NTP time on a 10/100 BaseT Ethernet Port which can be used to serve various types of assets in the network.

Features and Highlights:

- High Accuracy GPS / GNSS time reference for SCADA applications
- 1 X 10/100 Mbit/s, RJ-45 NTP (Ethernet) interface
- Stratum 1 compliant (PR) Primary Reference Source when locked to GPS / GNSS
- High bandwidth NTP performance
- Services up to 3,000 NTP requests per second
- 3 x IRIG-B Unmodulated Outputs
  - 1 x BNC (50 Ohms),
  - 1 x RS-232 (Terminal),
  - 1 x RS-485 (Terminal)
- 1 x 1PPS
- External Dry Contact Alarms Relay (NO/NC)
- May be used to provide synchronization to upto 15,000 NTP and SNTP clients
- Supports Unicast, Multicast and Broadcast
- Leap Second correction Support
- MD5 authentication for NTP clients
- Meets and comply with Power Contact and Lightening Protection as per Telcordia GR-1089-CORE and EN61000-4-5 Level 3 specifications.
- Alert notifications via SNMP Traps, SNMPv2, SNMPv3
- Concurrent IPv6 and IPv4 operation
- Supported network protocols: IPv4, IPv6, SSH, TELNET, FTP, SYSLOG
- Secure network management: enable or disable options
- Temperature Compensated quartz oscillators (TCXO) hold-over
- DC (15~60) V DC Power Supply.

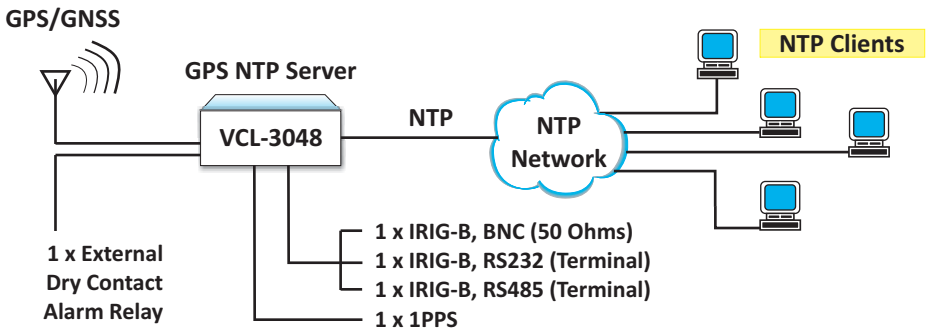
VCL-3048 is equipped with a highly accurate, TCXO to provided a high stability holdover clock in the event of unavailability of the GPS / GNSS signal, or GPS / GNSS antenna failure, or temporary loss of reception in a totally isolated network without any external reference.

VCL-3048 provides remote management and monitoring facility with a password based access using SSH as well as MD5 authentication to ensure operational reliability and security. Additional features include remote login and remote firmware upgrade (file transfer) capabilities.

VCL-3048 includes complete SNMP monitoring as well as support for enterprise directory services for user authentication, internal and external logging and monitoring of alarm and error messages through Syslog ensures a high level of system manageability.

Other features include DHCP for installation convenience and support concurrent IPv4/IPv6 networks to provide NTP time and frequency synchronization.

Application Diagram



Performance:

The VCL-3048 provides a 10/100 BaseT Industrial Ethernet NTP Port that meets and complies with "Power Contact and Lightening Protection" as per Telcordia GR-1089-CORE and EN61000-4-5 Level 3 specifications making it suitable for the equipment to be installed in harsh industrial environments which include Electric Sub-Stations, Railway and Metro Networks.

VCL-3048 provides a better than 30 nanosecond accuracy to assure high bandwidth NTP Performance of better than 3,000 NTP requests per second.

Monitoring and Management:

The VCL-3048 can be managed by Graphical User Management Interface. A text based and menu driven setup utility is also available via Telnet or SSH. An optional Graphical User Network Management Interface (NMS) allows multiple systems installed on a networks to be monitored and configured from a single or multiple management locations.

Technical Specifications:

GPS/GNSS Receiver Specifications:

- 50 Channel GPS Receiver
- 72 Channel GNSS Receiver
- GPS L1 frequency, C/A Code Receiver
- Tracks up to 12 satellites simultaneously
- Synchronizing Time:
  - Acquisition time - Hot Start: 1 sec.
  - Acquisition time - Warm Start: 28 sec.
  - Acquisition time - Cold Start: 28 sec.
- GPS / GNSS Signal
  - Tracking and Navigation: -162 dBm
  - Reacquisition -160 dBm
  - Cold Start -148 dBm
- Antenna Connector: TNC
- Accuracy Of Time-Pulse Signal referenced to GPS: ± 30ns
- Accuracy Of Time-Pulse Signal referenced to GNSS: ± 20ns
  (Note: with all satellites in view at -130db)

Holdover Clock:

- TCXO (Temperature Compensated Crystal Oscillator)
- Accuracy ± 2.5ppm

Synchronization Input:

- 1 x GPS / GNSS (TNC)

NTP Output:

- 1 x 10/100Mbps NTP / SNTP Interface

IRIG-B Outputs:

- 1 x 1 PPS, phase-locked to UTC (BNC)
- 1 x IRIG-B Un-Modulated (BNC-50 Ohms)
- 1 x IRIG-B Un-Modulated, RS-485 Terminal
- 1 x IRIG-B Un-Modulated, RS-232 Terminal

IRIG-B Timecode Support:

IRIG B000	100pps, DCLS signal, no carrier BCD (Time of Year), CF, SBS
IRIG B002	100pps, DCLS signal, no carrier BCD (Time of Year)
IRIG B003	100pps, DCLS signal, no carrier BCD (Time of Year) SBS
IRIG B004	100pps, DCLS signal, no carrier CF, SBS

Management and Monitoring Software:

- Telnet / SSH (option to disable clear text communication to comply with NERC security requirements)
- GUI (Graphical User Interface) - Runs on any PC operating on Windows 7, Windows 8 or Windows 10 OS.

Network Time Protocol:

- NTP v2, (RFC 1119), NTP v3 (RFC 1305), NTP v4, (RFC 5905), SNTP v3 (RFC 1769), SNTP v4 (RFP 2030), MD5, SHA1 Authentication
- Internet Protocol: IPv4/IPv6
- NTP version 4.2.8p7
- Time Protocol: TIME (RFC 868)
- Daytime Protocol: DAYTIME (RFC 867)
- Supports Unicast, Multicast and Broadcast

Local / Remote Management and Monitoring Ports:

- USB
- 10/100BaseT Ethernet RJ45
- External Dry Contact Alarm Relay 2Amp @ 60V.
- Telnet / SSH (option to disable clear text communication to comply with NERC security requirements)
- CLI Control Interface (HyperTerminal or VT100)
- SNMPv2, SNMPv3 Traps (MIB files provided)
- Syslog, HTTP, HTTPS, TCP, UDP, FTP
- GUI (Graphical User Interface) - Runs on any PC operating on Windows 7, Windows 8 or Windows 10 OS.

Security and Protection:

- Password Protection with password strength monitor
- SSH

Environmental (Equipment):

Operational	-25C to +65C
Cold start	-10C
Storage	-40C to +85C
Humidity 95%	non-condensing
Cooling	Convention Cooled. No cooling fans are required.

Mechanical Specifications:

- DIN Rail Mount Enclosure
- H x W x D: 42 x 168 x 175 mm
- Weight: 1.0 Kg

Standards & Compliance:

- IEC - EMC – Certified to EN 55032: CISPR 32, EN 55024:2005
- RoHS, CE – 2001/95/EC, 2006/95/EC, EN60950-1, EN61000-6-2, EN61000-6-4
- FCC – FCC Part 15 B Class A: Conducted Emission test on Power Line
- FCC Part 15 B Class A: Radiated Emission >1 GHz FCC, 6 GHz, on Power Line.

Power Supply Specifications:

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

Additional Power Supply Options (external adaptor):

- AC Power - 100V AC to 240V AC, 50/60 H
- DC Power - 110V DC; 220V DC

Power Consumption:

- < 10W at ambient (steady state 24°C)

Antenna Specifications:

- Antenna Type: Active
- Polarization: Right hand circular
- Frequency Band: 1575.42 MHz ±10 MHz
- Amplifier Gain: 40dB ± 4dB
- VSWR: <2.0 Max, 1.0 Typical
- Operating temperature: -40C to +85C
- Out of Band Rejection: ≥ -60dB @ ±50MHz off center (1575.42 MHz) frequency
- Lightening Protection: According to EN61000-4-5 Level 3 (Optional).
- LMR400 (or equivalent) Cable Length - 30, 50, 60 and 90 meters

MTBF:

- Per MIL-HDBK-217F: ≥ 33 years @ 24C
- Per Telcordia SSR 332, Issue 1: ≥ 42 years @ 24C

Ordering Information:

Part Number	VCL-3048-xxx-yy
Description	NTP Server
IRIG-B	xxx: BNC, RS232, Rs485
Power	yy: DC24 or DC48 or AC

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Technical specifications are subjects to changes without notice.
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U.K.

Valiant Communications (UK) Ltd
Central House Rear Office
124 High Street, Hampton Hill,
Middlesex, TW12 1NS, U.K.

E-mail: gb@valiantcom.com

U.S.A.

Valcomm Technologies Inc.
4000 Ponce de Leon Blvd.,
Suite 470, Coral Gables,
FL 33146, U.S.A.

E-mail: us@valiantcom.com

INDIA

Valiant Communications Limited
71/1, Shivaji Marg,
New Delhi - 110015,
India

E-mail: mail@valiantcom.com