VALIANT COMMUNICATIONS

VCL-3045

NTP to IRIG-B Converter

Desktop / DIN Rail Version

Product Overview:

VCL-3045 is synchronized by an NTP Server and can be used as a time source for equipment that requires IRIG-B inputs for time-of-day synchronization.

VCL-3045 is available in a small form factor DIN Rail chassis.

BNC

Features and Benefits:

- May be synchronized from a local or public NTP server
- Provides 4 Unmodulated IRIG-B output (BNC, RS232, RS485 / RS422) options
- Built-in real-time clock / real-time logging maintains a history of all events.
- Serial Management Interface (USB) for local access.
- Remote access over Telnet and SSH. Allows the user to access and carry out maintenance
- User-Selectable IRIG-B Time Output: Local Time / UTC
- Password Controlled Access. Maintains a complete log of all logins.

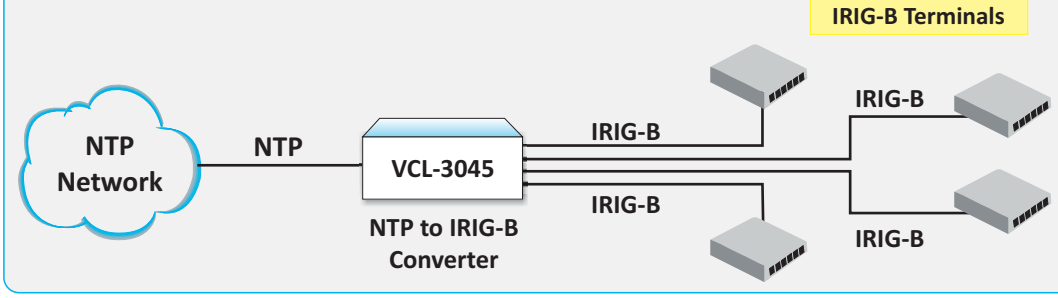
Chassis Description:

- The NTP to IRIG-B converter is a substation hardened design available in a small form factor, compact DIN Rail / desktop chassis.

Key Features:

- **Isolates and Secures:** Designed to provide an accurate time-reference to IEDs in an IP network in which NTP Servers are installed to provide time synchronization but IEDs such as the Protection Relays and RTUs require IRIG-B time inputs.
- Isolates the time-synchronization input of IEDs such as the Protection Relays and RTUs from the IP network.
- The IRIG-B interface remains the only connection between the VCL-3045 and the Protection Relay / RTUs, thereby providing maximum security and isolation to IEDs an IP network from external hostile elements.
- **Enables flexibility in installation:** Provides flexibility to synchronize multiple Protection Relays and RTUs distributed over a large Ethernet network footprint from a single NTP Server.
- **Enables secure and compact installations:** Can be installed to provide IRIG-B time-synchronization in locations that require a compact installation in a secure enclosure, without need for installing additional external GPS antennas - especially in areas that are prone to lightning strikes and acts of vandalism.
- **Increases reliability, availability and accuracy. Allows the option of providing time-source redundancy:** Provides the option of synchronizing with multiple (up to 3) NTP Servers as redundant time synchronization sources. VCL-3045 incorporates a unique BCMA (Best Master Clock Algorithm) feature not found in GPS based IRIG-B time synchronization servers. The BCMA feature ensures that the terminal equipment which requires an IRIG-B Input for time synchronization always remains synchronized to the best available clock source available in that network. The BCMA feature allows the user to assign up to 3 NTP Servers to become the best alternate time synchronization sources for the terminal equipment. VCL-3045 automatically switches to and selects the best available source (NTP Server) with the best available reference with the least amount of jitter and wander.
- **Provides flexibility of usage and enhanced efficiency allowing for maximum utilization of the available resources – without needless replication:** Provides the flexibility to distribute multiple IRIG-B Outputs over an existing Ethernet network from a single (or multiple) time-sources. Does not require any special cabling.

Application Diagram:



IRIG-B Option*
(any one type):
- 50 Ohms (BNC)
- RS422 / RS485
- RS232 (Twisted Pair)

* *IRIG-B option to be specified at the time of ordering.*

RS485

RS232

Technical Specifications

NTP Input Specifications:

Number of Input NTP Ports	1
Interface Type	10/100BaseT
Interfaces	RJ-45

Network Time Protocol:

- NTP v4
- Internet Protocol: IPv4, IPv6
- Time Protocol: TIME (RFC 868)

IRIG-B Output Specifications:

Number of Output Ports	4
Interface Type	Unmodulated, DCLS signal, No Carrier
Interface Options	BNC (50 Ohms unbalanced) or RS232 Twisted Pair or RS422 / RS485

Un-modulated 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, BCD (Time of Year), BCD (Year)

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 Hz
- DC Power - 110V DC; 220V DC

Power Consumption:

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

Local / Remote Communication Options:

- SSH for secure connection
- Telnet (With option to disable clear text communication to comply with NERC security requirements)
- CLI Control Interface (HyperTerminal or VT100)
- System logs

Management and Control Ports:

- Serial Management Port - USB Port
- 10/100 BaseT for remote management

Security and Protection:

- Password Protection
- Multi-level access control

Command Language:

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

Environmental (Equipment):

Operational	-20C to +60C (Typical: +25C)
Cold start	0C
Storage	-40C to +85C
Humidity	95% non-condensing
Cooling	Convention Cooled. No cooling fans are required.

Physical Dimension:

H x W x D: 42 x 168 x 175mm
Weight: 1.0 Kg.

EMI, EMC, Surge Withstand and other Compliances

EN 50081-2	EN 50082-2	IEC 60068-2-29
IEC 61000-4-6 (Conducted Immunity)	IEC 60068-2-6	IEC 60068-2-2
IEC 60068-2-78	IEC 60068-2-1	IEC 60068-2-14
CISPR 32 / EN55032 Class A (Conducted Emission and Radiated Emission)		
IS 9000 (Part II Sec. 1-4, Part III Sec. 1-5, Part IV, Part 14 Sec. 1-3)		
IEC 60870-2-1	IEC 61000-4-5	IEC 61000-4-8
IEC 61000-4-2	IEC 61000-4-11	IEC 61000-4-4
IEC 61000-4-3 (Radiated Immunity)		

Electromagnetic Standards Compliance:

- EN 50081-2
- EN 50082-2
- IEC 61000-6-2 (Immunity)
- IEC 61000-6-4 (Emission)
- Complies to IEEE and IEC standards

CE Compliance:

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility 2014/30/EU

Technical Specifications

Other Regulatory Compliances:

- RoHS,
- CE Marking
- Complies with FCC Part 68 and EMC FCC Part 15

MTBF and Equipment MTBF:

- Per MIL-HDBK-217F: ≥ 17 years @ 24C
- Per Telcordia SSR 332, Issue 1: ≥ 26 years @ 24C

Ordering Information:

Core Unit :

Part No.	Product Description
VCL-3045-DIN-DC15~60	VCL-3045, NTP to IRIG-B Converter DIN Rail Mounting Version 1 x 15~60V DC Power Supply Input - 1 x NTP Port [10/100BaseT, RJ45 (F)] [# Add IRIG-B Option] - Management: Telnet (RJ45 (F) Port), Serial Port (USB), (GUI) - Installation Kit: System Core Cables, User Manual

Add IRIG-B Option: (Any One Option)

BNC-050	4 x IRIG-B Port [unmodulated 50 Ohms, BNC F connector]
8x2-232	4 x RS232 / IRIG-B Port [8x2 M Terminal Block]
8x2-485	4 x RS485 / IRIG-B Port [8x2 M Terminal Block]

Additional Power Supply Options (External Adaptor):

Part No.	Product Description
VCL-EMOD 0444-AC220	External Power Supply - DIN Rail Mount AC to DC Converter, DRL30-24-1, DIN Rail Mount: **Input:** 1 x AC Input [90~240V AC, 50-60Hz] **Output:** 1 x DC Output [24VDC~1.25A, 30W]
VCL-EMOD 0444-DC220	External Power Supply - DIN Rail Mount DC to DC Converter, DRL30-24-1, DIN Rail Mount: **Input:** 1 x DC Input [110~250V DC] **Output:** 1 x DC Output [24VDC~1.25A, 30W]

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Technical specifications are subject to changes without notice.
Revision 2.7 - January 05, 2026

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