

Introduction:

The **VCL-2705 GPS Receiver and Time Distribution Unit** is a compact and cost-effective solution to provide 3 commonly used types of IRIG-B outputs to make it suitable in any application which requires an IRIG-B time input. This solution is designed to work in harsh environments including outdoor control enclosures. Meets IEEE C37.90 and IEC 61850-3 standard for robustness.



Suitable for utility applications including relay event correlation and other high-accuracy timing requirements. Un-Modulated IRIG-B outputs with $\pm 400\text{ns}$ accuracy to meet the requirements for existing and future timing applications.

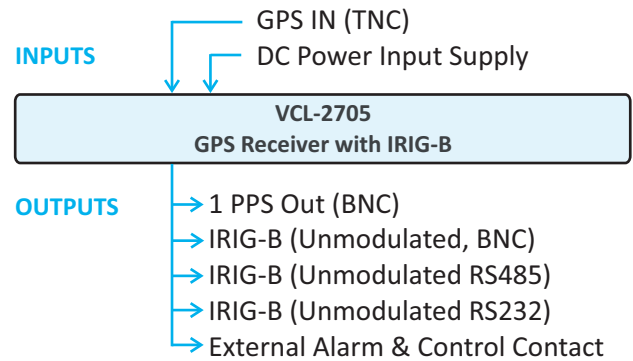
The VCL-2705 is a high-performance GPS Receiver which provides multiple IRIG-B outputs at sub-microsecond accuracy. The VCL-2705 is designed to provide 1 x IRIG-B (BNC) output, 1 x IRIG-B (RS485) differential pair with multi-drop capability to support up to 16 RTUs and 1 x IRIG-B (RS232) output. Unit also provides one external dry contact alarm relay.

The relay has a rating of 2 Amps (amperes) and a maximum switching voltage of 60V DC, which can be connected to an external alarm such as a piezoelectric buzzer or an DC powered (LED) lamp and can be wired up for either NO or NC contact.

Features and Highlights:

- 1 x 1 PPS Out (50 Ohms BNC)
- 1 x IRIG-B Unmodulated coaxial output (50 Ohms BNC- Female), 5V DC Shifted
- 1 x IRIG-B Unmodulated differential pair output (RS485, Terminal)
- 1 x IRIG-B Unmodulated twisted pair output (RS232, Terminal)
- GPS Accuracy: $<100\text{ns}$ when locked with GPS or GNSS
- IRIG-B Accuracy: better than $\pm 400\text{ns}$
- 12V ~60V DC Power Supply input
- 1 x 3-pin (NO, NC & COM) External Dry Contact Alarm and Control Contact
- Un-Modulated IRIG-B Format: B000, B002, B003, B004.
- Support anti-jamming and anti-spoofing

Block Diagram:



Technical Specifications:

Input / Output Interfaces	Number of Interfaces	Connector
GPS or GNSS (GPS + GLONASS) Input Interface	01	TNC
Input Power Supply (12 ~ 60V DC)	01	2 PIN DC Power Connector
1PPS Out	01	BNC (Female)
IRIG-B (Unmodulated) Output - 50 Ohms coaxial Interface	01	BNC (Female)
IRIG-B (Unmodulated) Output - RS485, differential twisted pair interface	01	Terminal
IRIG-B (Unmodulated) Output - RS232, twisted pair interface	01	Terminal

GPS/GNSS Receiver Specifications:

- 50 Channel GPS Receiver/ 72 Channel GNSS Receiver
- GPS L1 frequency, C/A Code Receiver
- Tracks up to 12 / 24 satellites in GPS /GNSS mode
- Synchronizing Time: Hot Start (1 sec.), Warm Start (28 sec.) and Cold Start (28 sec.)
- GPS Signal: Tracking and Navigation: -162dBm
- Accuracy of Time-Pulse Signal referenced to GPS: $\pm 30\text{ns}$
- Accuracy of Time-Pulse Signal referenced to GNSS: $\pm 20\text{ns}$
- Automatic Leap Year Correction and Learning.

Antenna Specifications:

Antenna Type	Active
Frequency Band	1575.42MHz
Amplifier Gain	38dB (supports up to 50 meters of LMR 240 antenna cable)
VSWR	$<2.0\text{Max}$, 1.0 Typical
Operating temperature	-20°C to +60°C

Technical Specification

Synchronization Inputs:

- 1 x GPS / GNSS (TNC)

Power Supply:

Power Input	12V DC to 60V DC
Power Consumption	<10Watts ambient (steady state 24°C)
Optional Power Supply Adapter Options	110V~240VAC, 50/60Hz 110VDC 220~250VDC

IRIG-B Format:

Format	Description
IRIG B004	BCD _{TOY} (Time) BCD _{YEAR} (Year) CF, SBS*

*SBS = Straight Binary Seconds

Environmental:

Operational	-20°C to +60°C (Typical: +25°C)
Cold start	0°C
Storage	-40°C to +70°C
Humidity	95% non-condensing
Cooling	Convention Cooled. No cooling fans are required.

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
IEC 60870-2-1	IEC 61000-4-5	IEC 61000-4-8
IEC 61000-4-4	IEC 61000-4-2	IEC 61000-4-11
IEC 61000-4-3 (Radiated Immunity)		
Telcordia GR-1089 Surge and Power Contact		
CISPR 32 / EN55032 Class A		
(Conducted Emission and Radiated Emission)		
ISO 9000 (Part II Sec. 1-4, Part III Sec. 1-5, Part IV, Part 14 Sec. 1-3)		

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

Other Regulatory Compliances:

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

Mechanical Specifications:

- H x W x D: 42 x 168 x 84 mm
- Weight: 0.4 Kg.

Chassis:

- DIN Rail Mounting. Ruggedized Aluminum Chassis.

Ordering Information:

Part No.:	Description
VCL-2705	VCL-2705 GPS Receiver with IRIG-B and 1 PPS Outputs DIN Rail Mounting Version Supports: <ul style="list-style-type: none"> - 12V~60V DC Power input - 1 PPS Output (BNC-Female) - 1 x IRIG-B Unmodulated output (BNC- Female), 5V* DC Shifted - 1 x IRIG-B Unmodulated output (RS485) - 1 x IRIG-B Unmodulated output (RS232) - 1 x GPS Antenna with 10-meter standard cable - Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual

* Also available with 1 x IRIG-B at 50 Ohms (BNC Female) 3.3V DC Shifted.

Optional:

110~240V, 50/60Hz AC Adapter	Provides 24V DC Output
110V DC Adapter	Provides 24V DC Output
220-250V DC Adapter	Provides 24V DC Output
Extra Length Antenna Cable	30 meter LMR240 cable
	60 meter LMR240 cable
	100 meter LMR400 cable

Technical specifications are subject to changes without notice.

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