

VCL-2705

GPS RECEIVER WITH IRIG-B



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.

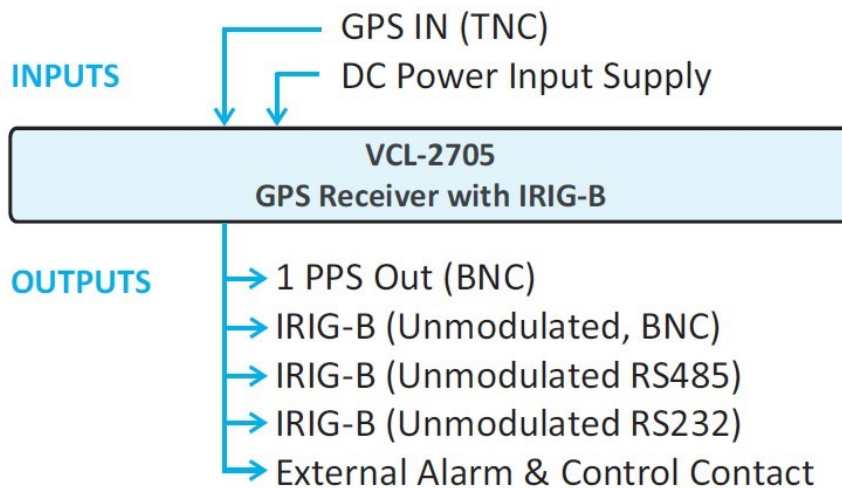
The VCL-2705 is a high-performance GPS Receiver which provides multiple IRIG-B outputs at sub-microsecond accuracy. The VCL-2705 is designed to provide 1 x IRIG-B (BNC) output, 1 x IRIG-B (RS485) differential pair with multi-drop capability to support up to 16 RTUs and 1 x IRIG-B (RS232) output. Unit 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 * 1 PPS Out (50 Ohms BNC)
- 1 * IRIG-B Unmodulated coaxial output (50 Ohms BNC- Female), 5V DC Shifted
- 1 * IRIG-B Unmodulated differential pair output (RS485, Terminal)
- 1 * 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 * 3-pin (NO, NC & COM) External Dry Contact Alarm and Control Contact
- Un-Modulated IRIG-B Format: B000, B002, B003, B004

Block Diagram



Technical Specifications

Input/Output Interfaces	Number of Interfaces	Connector
GPS or GNSS (GPS+GLONASS) Input Interface	01	TNC
Input Power Supply DC (12~60 V 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 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: ± 30 ns
- Accuracy of Time-Pulse Signal referenced to GNSS: ± 20 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	<2.0Max, 1.0 Typical
Operating temperature	-20 °C to +60 °C

Synchronization Inputs

- 1 * 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~240V AC, 50/60Hz
	110V DC
	220~250V DC

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
IEC 61000-4-6 (Conducted Immunity)	IEC 60068-2-6	IEC60068-2-2
IEC 60068-2-78	IEC 60068-2-1	IEC 60068-2-14
IEC 60870-2-1	IEC 61000-4-5	IEC61000-4-8
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 / EN 55032 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 691000-6-4 (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
- Telcordia GR-1089 Surge and Power Contact

Mechanical Specifications

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

Chassis

- DIN Rail Mounting: Ruggedized Aluminium Chassis

Ordering information

Reference	Description
VCL-2705	VCL-2705 GPS Receiver with IRIG-B and 1 PPS Outputs DIN Rail Mounting Version Supports: 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
200-250V DC Adapter	Provides 24V DC Output
Extra Length Antenna Cable	30 meter LMR240 cable
	60 meter LMR240 cable
	100 meter LMR400 cable



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