VS101 and VS111 GPS Compass

Professional Heading and Positioning Receiver

No longer in production & sale

Precise applications demand the heading and positioning performance of the VS101™ and VS111™ GPS compass. Ideal for professional machine control and navigation applications, the VS101/111 delivers reliable accuracy at significantly less cost than competitors' products or traditional methods. The Crescent® Vector™ II technology brings a series of new features to the VS101/111 including heave, pitch and roll output, and more robust performance.

The VS101/111 receiver, with its display and user interface, can be conveniently installed near the operator. The two antennas are mounted separately and with a user-determined separation to meet the desired accuracy.

Powered by Crescent

The VS101 uses SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS positioning. The VS111 includes both SBAS and radio beacon differential GPS positioning options.

Key VS101 and VS111 GPS Compass Advantages

- Affordable solution delivers 2D GPS heading accuracy better than 0.1 degree rms
- Differential positioning accuracy of less than 60 cm, 95% of the time
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS
- Fast heading and positioning output rates up to 20 Hz
- SBAS compatible (WAAS, EGNOS, MSAS etc.), integrated beacon (VS111 only), and optional external differential input
- COAST™ technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal
- The status lights and menu system make the VS101 series easy to monitor and configure

VS101 and VS111 GPS Compass

GPS Sensor Specifications

Receiver Type:	L1, C/A code, with carrier phase smoothing
Channels:	Two 12-channel, parallel tracking (Two 10-channel when tracking SBAS)
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	Standard 10 Hz, optional 20 Hz (position and heading)
Horizontal Accuracy:	< 0.02 m 95% confidence (RTK[1,4]) < 0.6 m 95% confidence (DGPS[1]) < 2.5 m 95% confidence (autonomous, no SA[2])
Heading Accuracy:	< 0.30° rms @ 0.5 m antenna separation < 0.15° rms @ 1.0 m antenna separation < 0.10° rms @ 2.0 m antenna separation
Pitch / Roll Accuracy:	< 1° rms
Heave Accuracy:	30 cm
Timing (1PPS) Accuracy:	50 ns
Rate of Turn:	90°/s maximum
Cold Start:	< 60 s typical (no almanac or RTC)
Warm Start:	< 20 s typical (almanac or RTC)
Hot Start:	< 1 s typical (almanac, RTC and position)
Heading Fix:	< 10 s typical (valid position)
Antenna Input Impedance:	50 Ω
Maximum Speed:	1,850 kph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Beacon Sensor Specifications (VS111 version)

Channels:	2-channel, parallel tracking
Frequency Range:	283.5 to 325 kHz
Operating Modes:	Manual, automatic and database
Compliance:	IEC 61108-4 beacon standard

Communications

Serial ports:	2 full-duplex RS-232
Baud Rates:	4800 - 115200
Correction I/O Protocol:	RTCM SC-104, L-Dif™[3], RTK[3]
Data I/O Protocol:	NMEA 0183, Crescent binary[3], L-Dif[3], RTK[3]
Timing Output:	1PPS (HCMOS, active high, rising edge sync, 10 kΩ, 10 pF load)
Event Marker Input:	HCMOS, active low, falling edge sync, 10 kΩ

Environmental

Operating Temperature:	-30°C to +70°C (-22°F to +158°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing
Shock and Vibration:	EP 455
EMC:	FCC Part 15, Subpart B, CISPR22, CE

Power

Input Voltage:	9 to 36 VDC
Power Consumption:	4.1 W nominal
Current Consumption:	340 mA @ 12 VDC nominal
Power Isolation:	Isolated power supply
Antenna Voltage:	5 VDC nominal
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB
Antenna Input Impedance:	50 Ω

Mechanical

Dimensions:	18.9 L x 11.4 W x 7.1 H (cm) 7.4 L x 4.5 W x 2.8 H (in)
Weight:	0.86 kg (1.9 lb)
Status Indication:	Power, primary GPS lock, secondary GPS lock, DGPS lock, and heading lock
Power Switch:	Miniature push-button
Power Connector:	2-pin, micro-Conxall
Data Connectors:	DB9-female (x2)
Antenna Connectors:	TNC-female (x2)

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 1° heading for periods up to 3 minutes when loss of GPS has occurred
Tilt Sensors:	Assists in fast start-up of heading solution

Authorized Distributor:

1 Depends on multipath environment, antenna selection, number of satellites in view, satellite geometry, baseline length (for local services), and ionospheric activity
2 Depends on multipath environment, number of satellites in view, and satellite geometry
3 Hemisphere GPS proprietary
4 Up to 5 km baseline length

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