V101 and V111 GPS Compass

Professional Heading and Positioning Smart Antenna

No longer in production & sale

V101™

V111™

Powered by **Crescent**

Experience superior navigation from the accurate heading and positioning performance available with the V101™ and VS111™ GPS compass. The Crescent® Vector™ II technology brings a series of new features to the V101/111 including heave, pitch and roll output, and more robust performance. The rugged enclosure combines Hemisphere GPS' Crescent Vector II OEM board and two multipath-resistant antennas for accuracy, portability and simple installation. The half-meter length smart antenna mounts easily to a flat surface or pole. The stability and maintenance-free design of the V101 replaces traditional gyrocompasses at a fraction of the cost.

The V101 uses SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS positioning. The V111 includes both SBAS and radio beacon differential GPS positioning options.

Key V101 and V111 GPS Compass Advantages

- Affordable solution delivers 2D GPS heading accuracy better than 0.3 degree rms
- Differential positioning accuracy of less than 60 cm, 95% of the time
- Smart antenna design ensures simple installation into finished product
- 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 (V111 only), and optional external differential input
- COAST™ technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal

V101 and V111 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 20 Hz (position and heading)
Horizontal Accuracy:	< 0.6 m 95% confidence (DGPS[1]) < 2.5 m 95% confidence (autonomous, no SA[2])
Heading Accuracy:	< 0.30° rms
Pitch / Roll Accuracy:	< 1° rms
Heave Accuracy:	30 cm
Timing (1PPS) Accuracy:	50 ns
Rate of Turn:	90°/s max
Compass Safe Distance:	125 cm (49.2 in)[5]
Cold Start:	< 60 s typical (no almanac or RTC)
Warm Start:	< 20 s typical (almanac and RTC)
Hot Start:	< 1 s typical (almanac, RTC and position)
Heading Fix:	< 10 s typical (valid position)
Maximum Speed:	1,850 kph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Beacon Sensor Specifications (V111 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 and 2 half-duplex RS-422
Baud Rates:	4800 - 38400
Correction I/O Protocol:	RTCM SC-104, L-Dif™ [3]
Data I/O Protocol:	NMEA 0183, Crescent binary[3], L-Dif[3]
Timing Output:	1PPS (HCMOS, active high, rising edge sync, 10 kΩ, 10 pF load)
Heading Warning I/O:	Open relay system indicates invalid heading

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:	IEC 60945
EMC:	FCC Part 15, Subpart B CISPR22, CE
IMO Wheelmark Certification:	Yes

Power

Input Voltage:	9 to 36 VDC
Power Consumption:	4 W nominal
Current Consumption:	330 mA @ 12 VDC nominal
Power Isolation:	Isolated power supply
Reverse Polarity Protection:	Yes

Mechanical

Dimensions:	60 L x 16 W x 18 H (cm)[4] 23.6 L x 6.3 W x 7.1 H (in)[4]
Weight:	1.5 kg (3.3 lb)[4]
Power/Data Connector:	18-pin, environmentally sealed

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

Certifications

BSH/4612/4411398/10

0735

Authorized Distributor:

1 Depends on multipath environment, 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 Not including mounts
5 This is the minimum safe distance measured when the product is placed in the vicinity of the steering magnetic compass. The ISO 694 defines "vicinity" relative to the compass as within 5 m (16.4 ft) separation.

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