Vector V103 and V113 GPS Compass

Professional Heading and Positioning Smart Antenna; Supports NMEA 0183 and NMEA 2000

Powered by Crescent

Vector V103 Vector V113

Experience the IMO Wheelmarked Vector™ V103™ GPS Compass series for its superb heading and positioning performance. The new, rugged IP69K design housing is sealed for the harshest environments. It incorporates fixed and pole mounting capability for both marine and land applications. The Vector V103 Series is suitable for both commercial and professional marine, as well as for machine mounting in open pit mining, construction and other applications.

The V103 and V113 utilize all of the recent innovations in Hemisphere GPS' Crescent® and Vector technology. New Cross-Dipole low-multipath antennas are separated by 50 cm between phase centers, resulting in better than 0.3° rms heading performance while delivering position accuracy of better than 60 cm 95% of the time when using SBAS (EGNOS, MSAS & WAAS) or Beacon corrections.

The V103 and V113 support both NMEA 0183 and NMEA 2000 interfacing, enabling a seamless choice of communication protocols with Hemisphere GPS' messaging. Crescent Vector technology delivers accurate and continuous performance, including position, heading, heave, pitch and roll. The stability and maintenance-free design of the Vector V103 Series replaces traditional gyrocompasses and stand-alone GPS at a fraction of the cost.

Key Vector V103 and V113 GPS Compass Advantages

- IMO type approved as a Transmit Heading Device (THD)
- Professional heading < 0.3° rms
- Differential position accuracy of < 60 cm @ 95%
- Heave < 30 cm rms
- Pitch and Roll < 1° rms
- Reliable IP69K smart antenna housing design
- Accurate heading up to 3 minutes during GPS outages
- COAST technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS
- Flexibility for easy integration into NMEA 0183 and 2000 interfaces

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GPS Sensor Specifications

Receiver Type:	L1 C/A code, with carrier phase smoothing
Signal Tracking:	Dual L1 GPS receiver design, parallel tracking
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	20 Hz standard
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[6] rms
Timing (1PPS) Accuracy:	50 ns
Rate of Turn:	90˚/s maximum
Compass Safe Distance:	.75 m (with enclosure)[5]
Cold Start:	< 60 s (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 mph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Beacon Sensor Specifications (V113 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:	1 full-duplex RS-232; 1 full-duplex RS-422 and 1 half-duplex RS-422 (Tx only)
Baud Rates:	4800 - 38400
Correction I/O Protocol:	RTCM v2.3 (DGPS), RTCM SC-104, L-Dif™ [3]
Data I/O Protocol:	NMEA 0183, NMEA 2000, Crescent binary[3], L-Dif
Timing Output:	1PPS CMOS, active low, falling edge sync, 10 kΩ, 10pF 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
Vibration:	IEC 60945
EMC:	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22
IMO Wheelmark Certification:	Yes[7]

Power

Input Voltage:	6 to 36 VDC	
Power Consumption:	V103	V113
	~ 3 W nominal	~ 3.3 W nominal
Current Consumption:	V103	V113
	~ 320 mA @ 9 VDC	~ 350 mA @ 9 VDC
	~ 240 mA @ 12 VDC	~ 265 mA @ 12 VDC
	~ 180 mA @ 16 VDC	~ 200 mA @ 16 VDC
Power Isolation:	Isolated to enclosure	
Reverse Polarity Protection:	Yes	

Mechanical

Dimensions:	66.3 L x 20.9 W x 14.6 H (cm) 26.1 L x 8.3 W x 5.8 H (in)	
Weight:	V103	V113
	2.1 kg (4.6 lb)	2.4 kg (5.4 lb)
Power/Data Connector:	18-pin, environmentally sealed	
Status Indications (LED):	Power	

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 1˚ per minute heading for periods up to 3 minutes when loss of GPS has occurred [4]
Tilt Sensors:	Provide pitch and roll data and assist in fast start-up and reacquisition of heading solution.

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] Under static conditions
[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.
[6] Based on a 40 second time constant
[7] NMEA 0183 only

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