Vector™ H102™ GPS Compass OEM Board

Heading and Positioning Smart Antenna Module

key features

- **Affordable solution delivers 2D GPS heading accuracy better than .75 degree rms**
- **Differential positioning accuracy of 1.0 m, 95% of the time**
- **All-in-one, smart antenna design ensures simple integration into finished product**
- **Fast heading and position output rates up to 20 Hz**
- **NMEA 2000 certified**
- **Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of GPS**
- **SBAS compatible (WAAS, EGNOS, MSAS, etc.) and optional external differential input**
- **COAST™ technology maintains differentially corrected positioning for 40 minutes after loss of differential signal**

Enjoy the simplified integration, flexible communication, and powerful, precise performance of the all-in-one Vector™ H102™ GPS compass OEM board. The integrated Crescent® Vector™ II technology offers precise heading and positioning as well as heave, pitch, and roll output.

The Vector H102 integrates two GPS antennas, a CANBUS communications processor, a single axis gyro, tilt sensors and a power supply into a single module. The dual antennas allow for ease of integration into your application and provide .75 degree heading and 1.0 m position accuracy even while sitting stationary. The gyro and tilt sensor improve system performance and provide backup heading information if the GPS-based heading is temporarily lost. The integrated Crescent Vector II technology provides more accurate code phase measurements and improved multipath mitigation resulting in excellent accuracy and stability.

Hemisphere

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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:	10 Hz standard, 20 Hz optional (position and heading)
Horizontal Accuracy:	< 1.0 m 95% confidence (DGPS[1]) < 2.5 m 95% confidence (autonomous, no SA[2])
Heading Accuracy:	< 0.75˚ rms
Pitch/Roll Accuracy:	< 1.5˚ rms
Heave Accuracy:	30 cm[5]
Rate of Turn:	90˚/s maximum
Compass Safe Distance:	30 cm (with enclosure)[4]
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 kph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Communications

Serial Ports:	2 full-duplex RS-232
Baud Rates:	4800 - 115200
Correction I/O Protocol:	RTCM SC-104
Data I/O Protocol:	NMEA 0183, Crescent binary[3], NMEA 2000

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 (when installed in an enclosure)
Vibration:	IEC 60945 (when mounted in an enclosure with screw mounting holes utilized)
EMC:	FCC Part 15, Subpart B, CISPR22, CE

Power

Input Voltage:	6 to 36 VDC
Power Consumption:	3 W nominal
Current Consumption:	240 mA @ 12 VDC
Power Isolation:	Isolated to ground
Reverse Polarity Protection:	Yes

Mechanical

Dimensions:	37.5 L x 10.5 W x 2.5 H (cm) 14.8 L x 4.1 W x 1.0 H (in)
Weight:	.25 kg (8.8 oz)

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

[1] Depends on multipath environment, number of satellites in view, satellite geometry, ionospheric activity and use of SBAS

[2] Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity

[3] Hemisphere GPS proprietary

[4] 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

[5] Based on a 40 second time constant

Authorized Distributor:

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Hemisphere

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