Hemisphere®

Vector™ V104
GPS Smart Antenna

COMPACT GPS POSITIONING AND HEADING SMART ANTENNA

Vector™ V104 GPS Smart Antenna offers superior navigation including accurate positioning and heading performance. V104 uses SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS position allowing Hemisphere GNSS to provide a low cost and highly effective positioning and heading based smart antenna.

The rugged and low-profile enclosure combines Hemisphere GNSS' Crescent® Vector technology and two multi-path resistant antennas for accuracy, portability and simple installation. The smart antenna, measuring approximately 25 cm in length, mounts easily to a flat surface or pole. The stability and maintenance-free design of V104 provides traditional GPS position and heading at a low cost, replacing the combination of low-accuracy GPS and fluxgate compass.

Key Features

- Provides position, heading, pitch, roll, and heave
- Excellent in-band and out-of-band interference rejection
- 2° (RMS) heading accuracy in an amazingly small form factor
- Integrated gyro and tilt sensors deliver fast start up times and provide heading updates during temporary loss of GPS and satellites
- Differential position accuracy of 1m, 95% of the time
- Accurate heading for up to 3 minutes during GNSS outages
- Offered as a Serial or NMEA 2000 version

GPS Receiver Specifications

Receiver Type:	Vector GPS L1 Compass
Signals Received:	GPS
Channels:	48
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional
Rate of Turn:	90°/s maximum
Compass Safe Distance:	30 cm [4]
Cold Start:	60 s (no almanac or RTC)
Warm Start:	30 s typical (almanac and RTC)
Hot Start:	10 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)

Accuracy

Position:	**RMS (67%)**
Autonomous, no SA: [1]	1.5 m
SBAS: [2]	0.5 m
Heading (RMS):	2°
Pitch/Roll (RMS):	2°
Heave (RMS):	30 cm [3]

Communications

Ports:	2 full-duplex RS232 6 or 1 NMEA 2000 [7]
Baud Rates:	4800 - 115200
Correction I/O Protocol:	RTCM SC-104
Data I/O Protocol:	NMEA 0183 [6], NMEA 2000 [7], Hemisphere Crescent binary [5]

Power

Input Voltage:	8-36 VDC
Power Consumption:	~ 2.0 W nominal
Current Consumption:	0.16 A @ 12 VDC
Power Isolation:	Isolated to enclosure
Reverse Polarity Protection:	Yes

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:	100% non-condensing
Mechanical Shock:	IEC 60945
Vibration:	IEC 60945
EMC:	CE (IEC 60945 Emissions and Immunity), FCC Part 15 Subpart B, CISPR22
IP Rating:	IP69
Enclosure:	UV resistant, white plastic, Geloy CR7520 (ASA)

Mechanical

Dimensions:	
Not including mount:	25.9 L x 12.9 W x 4.5 H (cm) 10.2 L x 5.1 W x 1.8 H (in)
Including mount:	25.9 L x 12.9 W x 12.8 H (cm) 10.2 L x 5.1 W x 5.0 H (in)
Weight:	
Not including mount:	0.4 kg (0.9 lb)
Including mount:	0.5 kg (1.1 lb)
Power/Data Connector:	8-pin Male for Serial or 5 Pin Male NMEA 2000 Micro connector

Aiding Devices

Gyro:	Provides smooth heading, fast heading reacquisition and reliable 2° per minute heading for periods up to 3 minutes when loss of GPS has occurred
Tilt Sensors:	Provide pitch and roll data, assist in fast start-up and reacquisition of heading solution

1. Depends on multipath environment, number of satellites in view, satellite geometry, no SA, and ionospheric activity
2. Depends on multipath environment, number of satellites in view, SBAS coverage and satellite geometry
3. Based on a 40-second time constant
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. Hemisphere GNSS proprietary
6. Serial model only
7. NMEA 2000 model only

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