

# Vector™ V320 GNSS Compass

## All-in-one Professional Positioning and Heading Receiver



### key features

- Simple all-in-one RTK-capable heading solution
- Athena™ and Atlas® capable
- Multi frequency GPS/GLONASS/BeiDou RTK capable
- Maintain position and heading lock when more of the sky is blocked
- Accurate heading with a precise baseline
- Integrated gyro and tilt sensors deliver fast start-up times and provide heading updates during temporary loss of satellites

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Vector V320 is the first all-in-one multi-frequency, multi-constellation GNSS smart antenna, which provides RTK level position and precise heading. Using Hemisphere's patented Eclipse™ Vector GNSS technology, V320 is a strong addition to our V family. The rugged IP69 design housing is sealed for the harshest environments. It incorporates fixed and pole mounting capability for both marine and land applications. The Vector V320 is series are suitable for both dynamic positioning and professional marine survey. The V320 provides a great solution for machine control and other challenging applications.

The all-in-one V320 smart antenna can be installed in various environments. With a set separation, the V320 provides consistent and reliable position and heading accuracy. The Vector V320 can use Atlas L-band and SBAS (WAAS, EGNOS, MSAS, etc.) for differential GNSS position.



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# Vector V320 GNSS Compass

## GNSS Receiver Specifications

Receiver Type: Vector GNSS RTK Receiver  
Signals Received: GPS, GLONASS, BeiDou, and Atlas  
Channels: 540  
GPS Sensitivity: -142 dBm  
SBAS Tracking: 3-channel, parallel tracking  
Update Rate: 10 Hz standard, 20 Hz available by subscription  
Timing (1PPS)  
Accuracy: 20 ns  
Rate of Turn: 100°/s maximum  
Compass Safe Distance: 30 cm (with enclosure)  
Cold Start: 60 s (no almanac or RTC)  
Warm Start: 20 s typical (almanac and RTC)  
Hot Start: 5 s typical (almanac, RTC and position)  
Heading Fix: 20 s typical (valid position)  
Maximum Speed: 1,850 mph (999 kts)  
Maximum Altitude: 18,288 m (60,000 ft)

## Positioning Accuracy

|                             |                                                        |               |
|-----------------------------|--------------------------------------------------------|---------------|
| RMS:                        | Horizontal                                             | Vertical      |
| Single Point <sup>1</sup> : | 1.2 m                                                  | 2.5 m         |
| SBAS (WAAS) <sup>2</sup> :  | 0.3 m                                                  | 0.6 m         |
| L-Band <sup>3,6</sup> :     | 0.08 m                                                 | 0.16 m        |
| RTK <sup>1,3</sup> :        | 10 mm + 1 ppm                                          | 20 mm + 2 ppm |
| Heading Accuracy:           | < 0.2° rms                                             |               |
| Pitch/Roll Accuracy (RMS):  | 1°                                                     |               |
| Heave                       |                                                        |               |
| Accuracy (RMS):             | 30 cm (DGPS) <sup>5</sup> , 10 cm (RTK) <sup>2,4</sup> |               |

## L-Band Receiver Specifications

Receiver Type: Single Channel  
Channels: 1530 to 1560 MHz  
Sensitivity: -130 dBm  
Channel Spacing: 5 kHz  
Satellite Selection: Manual or Automatic  
Reacquisition Time: 15 sec (typical)

## Communications

Serial Ports: 1 full-duplex RS-232; 1 full-duplex RS-422 and 1 half-duplex RS-422 (Tx only)  
Baud Rates: 4800 - 115200  
Correction I/O Protocol: RTCM v2 (DGPS), RTCM v3 (RTK), CMR (RTK), CMR+ (RTK) <sup>3</sup>  
Data I/O Protocol: NMEA 0183, NMEA 2000, Crescent binary<sup>5</sup>  
Timing Output: 1 PPS (CMOS, active high, rising edge sync, 10 kΩ, 10 pF load)  
Heading Warning I/O: Open relay system indicates invalid heading

## Power

Input Voltage: 8 to 36 VDC  
Power Consumption: 6.10 W nominal (GPS L1/L2)  
7.25 W nominal (GPS L1/L2 + GLONASS L1/L2)  
8.50 W nominal (GPS L1/L2 + GLONASS L1/L2 + BeiDou B1/B2)  
9.50 W nominal (GPS L1/L2 + GLONASS L1/L2 + BeiDou B1/B2 + L-band)  
Power Isolation: Yes  
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: 95% non-condensing  
Mechanical Shock: EP455 Section 5.14.1  
Vibration: EP455 Section 5.15.1 Random  
EMC: CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22  
Enclosure: IP69

## 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: 2.1 kg (4.6 lb)  
Status Indications (LED): Power  
Power/Data Connector: 18-pin, environmentally sealed

## Aiding Devices

Gyro: Provides heading smoothing with GNSS. Drift rate is 1° per minute in heading for periods up to 3 minute when loss of GNSS has occurred <sup>3</sup>  
Tilt Sensors: Provide pitch and roll data and 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, WAAS coverage and satellite geometry.

3 Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for differential services), and ionospheric activity.

4 Based on a 40 second time constant

5 Hemisphere GNSS proprietary

6 Requires a Hemisphere GNSS subscription

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