



## ALL-IN-ONE PROFESSIONAL POSITIONING AND HEADING RECEIVER



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 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.

### 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

## GNSS Receiver Specifications

<b>Receiver Type:</b>	Vector GNSS RTK Receiver
<b>Signals Received:</b>	GPS, GLONASS, BeiDou, and Atlas
<b>Channels:</b>	502
<b>GPS Sensitivity:</b>	-142 dBm
<b>SBAS Tracking:</b>	3-channel, parallel tracking
<b>Update Rate:</b>	10 Hz standard, 20 Hz optional
<b>Timing (1 PPS)</b>	
<b>Accuracy:</b>	20 ns
<b>Rate of Turn:</b>	100°/s maximum
<b>Compass Safe</b>	
<b>Distance:</b>	30 cm (with enclosure)
<b>Cold Start:</b>	60 s (no almanac or RTC)
<b>Warm Start:</b>	30 s typical (almanac and RTC)
<b>Hot Start:</b>	10 s typical (almanac, RTC and position)
<b>Heading Fix:</b>	10 s typical (valid position)
<b>Antenna Input</b>	
<b>Impedance:</b>	50 Ω
<b>Maximum Speed:</b>	1,850 kph (999 kts)
<b>Maximum Altitude:</b>	18,000 m (59,055 ft)

## Accuracy

<b>Position:</b>	<b>RMS (67%)</b>	<b>2DRMS (95%)</b>
<b>Single Point:</b> <sup>1</sup>	1.2 m	2.5 m
<b>SBAS:</b> <sup>2</sup>	0.3 m	0.6 m
<b>Atlas (L-Band):</b> <sup>6</sup>	0.08 m	0.16 m
<b>RTK:</b> <sup>1,3</sup>	10 mm + 1 ppm	20 mm + 2 ppm
<b>Heading (RMS):</b>	0.2°	
<b>Pitch/Roll (RMS):</b>	1°	
<b>Heave (RMS):</b>	30 cm (DGPS) <sup>5</sup> , 10 cm (RTK) <sup>2,4</sup>	

## L-Band Receiver Specifications

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

## Communications

<b>Ports:</b>	1 full-duplex RS-232; 1 full-duplex RS-422 and 1 half-duplex RS-422 (Tx only)
<b>Baud Rates:</b>	4800 - 115200
<b>Correction I/O Protocol:</b>	Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR <sup>7</sup> , CMR+ <sup>7</sup>
<b>Data I/O Protocol:</b>	NMEA 0183, NMEA 2000, Crescent binary <sup>5</sup>
<b>Timing Output:</b>	1 PPS (active high, rising edge sync, 10 kΩ, 10 pF load)
<b>Heading Warning I/O:</b>	Open relay system indicates invalid heading

## Power

<b>Input Voltage:</b>	8 - 36 VDC
<b>Power Consumption:</b>	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)
<b>Power Isolation:</b>	Yes
<b>Reverse Polarity Protection:</b>	Yes

## Environmental

<b>Operating Temperature:</b>	-30°C to +70°C (-22°F to +158°F)
<b>Storage Temperature:</b>	-40°C to +85°C (-40°F to +185°F)
<b>Humidity:</b>	95% non-condensing
<b>Mechanical Shock:</b>	EP455 Section 5.14.1
<b>Vibration:</b>	EP455 Section 5.15.1 Random
<b>EMC:</b>	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22
<b>Enclosure:</b>	IP69

## Mechanical

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

## Aiding Devices

<b>Gyro:</b>	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>
<b>Tilt Sensors:</b>	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
7. CMR and CMR+ do not cover proprietary messages outside of the typical standard



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