Experience the Vector VS330 with our powerful Athena GNSS core engine technology. The Vector VS330 supports precise marine, dynamic positioning, and land applications that require RTK positioning and precise heading performance.

The Vector VS330 utilizes all of the innovations in Hemisphere GNSS’ Eclipse™ Vector technology. Our optimized Eclipse Vector technology brings a series of new features to the Vector VS330 including heave, pitch, and roll output, and more robust positioning and heading performance.

The Vector VS330 receiver, with its display and user interface, can be conveniently installed near the operator. The two antennas are mounted separately with a user-determined separation to meet the desired heading accuracy. The fully-subscribed Vector VS330 uses Atlas L-band, Beacon, and SBAS for differential positioning. Our firmware allows the VS330 to smoothly transition between DGNSS systems.
### GNSS Receiver Specifications

**Receiver Type:** Vector GNSS L1/L2 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 optional  
**Timing (PPS):** 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, RTC and position)  
**Hot Start:** 5 s typical (valid position)  
**Heading Fix:** 20 s typical (valid position)  
**Maximum Speed:** 1,850 mph (999 kts)  
**Maximum Altitude:** 18,288 m (60,000 ft)  
**Differential Options:** SBAS, Beacon, External RTCM, Atlas L-band and Athena RTK  

### Positioning and Heading Accuracy

<table>
<thead>
<tr>
<th>RMS</th>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Point</td>
<td>1.2 m</td>
<td>2.5 m</td>
</tr>
<tr>
<td>SBAS/WAAS</td>
<td>0.3 m</td>
<td>0.6 m</td>
</tr>
<tr>
<td>Code Differential</td>
<td>0.3 m</td>
<td>0.6 m</td>
</tr>
<tr>
<td>GPS</td>
<td>10 mm + 1 ppm</td>
<td>20 mm + 2 ppm</td>
</tr>
<tr>
<td>Heading Accuracy</td>
<td>0.2˚ rms @ 0.5 m antenna separation</td>
<td>0.5˚ rms @ 1.0 m antenna separation</td>
</tr>
<tr>
<td>Pitch/Roll Accuracy</td>
<td>1˚</td>
<td></td>
</tr>
<tr>
<td>Heave Accuracy</td>
<td>30 cm (DGPS)</td>
<td>10 cm (RTK)</td>
</tr>
</tbody>
</table>

### Beacon Receiver Specifications

**Channels:** 2-channel, parallel tracking  
**Frequency Range:** 283.5 to 325 kHz  
**Operating Modes:** Manual, Automatic, and Database  
**Compliance:** IEC 61108-4 beacon standard  

### 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:** 2 full-duplex RS232, 1 half-duplex RS422 port  
**USB Ports:** 1 USB-A  
**Baud Rates:** 4800 - 115200  
**Correction I/O Protocol:** RTCM SC-104, L-Diff™, RTCM v2 (DGPS), RTCM v3 (RTK), CMR (RTK), CMR+ (RTK)  
**Data I/O Protocol:** NMEA 0183, Hemisphere GNSS binary  
**Timing Output:** 1 PPS (CMOS, active high, rising edge sync, 10 kΩ, 10 pF load)  

## Environmental

### Operating Temperature

-30°C to + 70°C (-22°F to + 158°F)  
40°C to + 85°C (-4°F to + 185°F)  
95% non-condensing  

### Vibration

EP455 Section 5.16.1 Random  

### EMC

CE (IEC 60945 Emissions and Immunity)  
FCC Part 15, Subpart B  
CISPR22  

### Power

**Input Voltage:** 8-36 VDC  
**Power Consumption:** 5.3 W nominal (GPS L1/L2 + GLONASS L1/L2)  
7 W nominal (GPS L1/L2 + GLONASS L1/L2 + BeiDou B1/B2 + L-band)  
0.44 A nominal (GPS L1/L2 + GLONASS L1/L2)  
0.51 A nominal (GPS L1/L2 + GLONASS L1/L2 + BeiDou B1/B2 + L-band)  
**Power Isolation:** 500 V  
**Reverse Polarity Protection:** Yes  
**Antenna Voltage:** 5 VDC maximum 60mA  
**Antenna Short Circuit Protection:** Yes  
**Antenna Gain Input Range:** 10 to 40 dB  
**Antenna Input Impedance:** 50 Ω  

### Mechanical

**Dimensions:** 20.2 L x 12.0 W x 7.5 H (cm)  
8.0 L x 4.7 W x3.0 H (in)  
**Weight:** ~1.1 kg (~2.5 lbs.)  
**Status Indications (LED):** Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock, L-band DGNSS lock  
**Power Switch:** Front panel soft switch  
**Power/Data Connector:** 9-pin ODU metal circular  
**Power Connector:** 2-pin ODU metal circular  
**Data Connector:** DB9 (sealed)  
**Antenna Connectors:** 2 TNC (female)  

### 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  
2 Requires a subscription  
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 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 Hemisphere GNSS proprietary