Vector™ VS330™ GNSS Compass

Professional Heading and Positioning Receiver

key features

- **Extremely accurate heading with baselines greater than 50 m**
- **Dual frequency GPS/GLONASS RTK capable**
- **L-Band DGNSS/HP/XP (OmniSTAR®) and Beacon capable**
- **Automatic Antenna Baseline Survey**
- **Maintain heading and position lock when more of the sky is blocked**
- **RTK, L-Band DGNSS, Beacon and SBAS capable**
- **COAST™ technology maintains differentially-corrected positioning for 40 minutes or more after loss of differential signal**
- **Integrated gyro and tilt sensors help deliver fast start-up times and provide heading updates during temporary loss of satellites**

Experience the Vector™ VS330™ with Eclipse™ GNSS technology, an addition to our Vector VS family. Developed for precise marine, dynamic positioning, and land applications requiring precise heading and RTK position 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 heading and positioning performance.

The Vector VS330 receiver, with its display and user interface, can be conveniently installed near the operator. The two antennas are mounted separately and with a user-determined separation to meet the desired heading accuracy. The Vector VS330 uses L-Band DGNSS (VBS/HP/XP/G2) and SBAS for differential GNSS positioning. Our MFA DGNSS patented technology allows the VS330 to smoothly transition between DGNSS systems.

Hemisphere

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Vector VS330 GNSS Compass

GNSS Sensor Specifications

Receiver Type:	Vector GNSS L1/L2 RTK Receiver
Signals Received:	GPS, GLONASS
Channels:	540
GPS Sensitivity:	-142 dBm
SBAS Tracking:	3-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional

Positioning Accuracy:

RMS:	Horizontal	Vertical
Single Point [1]:	1.2 m	2.5 m
SBAS (WAAS) [2]:	0.3 m	0.6 m
L-Band DGNSS (HP) [3]:	0.1 m	0.2 m
Code Differential GNSS [1]:	0.3 m	0.6 m
RTK [2, 4]:	10 mm + 1 ppm	20 mm + 2 ppm

Heading Accuracy:	0.17° rms @ 0.5 m antenna separation 0.09° rms @ 1.0 m antenna separation 0.04° rms @ 2.0 m antenna separation 0.02° rms @ 5.0 m antenna separation 0.01° rms @ 10.0 m antenna seperation
Pitch/Roll Accuracy (RMS):	1°
Heave Accuracy (RMS):	30 cm (DGPS) [5], 10 cm (RTK) [2,4]
Timing (1PPS) Accuracy:	20 ns
Rate of Turn:	100°/s maximum
Compass Safe Distance:	30 cm (with enclosure) [6]
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 mph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)
Differential Options:	SBAS, Beacon, External RTCM, L-Band (VBS/HP/XP/G2) and RTK

Beacon Sensor 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 Sensor Specifications

Sensitivity:	-130 dBm
Channel Spacing:	7.5 KHz
Satellite Selection:	Manual and Automatic
Reacquisition Time:	15 seconds (typical)
Rejection:	15 kHz spacing > 30 dB, 300 kHz spacing > 60 dB

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-Dif™ [7], RTCM v2 (DGPS), RTCM v3 (RTK), CMR (RTK), CMR+ (RTK) [3]
Data I/O Protocol:	NMEA 0183, Hemisphere GNSS binary [6]
Timing Output:	1 PPS (CMOS, active high, rising edge sync, 10 kΩ, 10 pF load)

Power

Input Voltage:	8 to 36 VDC
Power Consumption:	5.3 W nominal (GPS L1/L2 + GLONASS L1/L2) 6.2 W nominal (GPS L1/L2 + GLONASS L1/L2 + L-Band)
Current Consumption:	0.44 A nominal (GPS L1/L2 + GLONASS L1/L2) 0.52 A nominal (GPS L1/L2 + GLONASS L1/L2 + 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

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 Operational (when mounted in an enclosure with screw mounting holes utilized) EP455
Vibration:	Section 5.15.1 Random
EMC:	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22
Enclosure:	IP66 (IEC 60529)

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 [4]
Tilt Sensors:	Provide pitch, roll data, assist in fast start-up and heading reacquisition

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, satellite geometry, no SA, and ionospheric activity.

3 Requires a subscription from OmniSTAR®

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

5 Based on a 40 second time constant

6 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.

7 Hemisphere GNSS proprietary

Authorized Distributor:

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Hemisphere

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