C-Nav®

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Vector™ V500 GNSS Smart Antenna

Multi-Frequency, Multi-GNSS Vector Compass

Oceaneering is an authorized reseller of the Vector V500, Hemisphere® GNSS' all-in-one multi- frequency, multi-GNSS smart antenna which provides RTK-level position and precise heading. This rugged design is sealed for the harshest environments and is a great solution for professional marine and other challenging applications.

The all-in-one V500 combines simple installation with consistent and precise heading accuracy and RTK positioning.

Vector™ V500 GNSS Smart Antenna

Key Features

- Simple all-in-one RTK-capable
- Multi-frequency GPS/GLONASS/BeiDou/Galileo/QZSS/IRNSS
- Athena™ RTK and Atlas® L-band capable
- Supports Ethernet, CAN, Serial, Bluetooth, and Wi-Fi
- Powerful WebUI accessed via Wi-Fi
- Fully rugged solution for the harshest environments

GNSS Receiver Specifications	
Receiver Type	Vector GNSS RTK Receiver
Signals Received	GPS, GLONASS, BeiDou, Galileo, QZSS [7], and Atlas
Channels	1059
GPS Sensitivity	-142 dBm
SBAS Tracking	3-channel, parallel tracking
Update Rate Timing (1 PPS)	10 Hz standard, 20 Hz optional
Accuracy	20 ns
Rate of Turn	100°/s maximum
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)

Antenna Input	
Impedance	50 Ω
Maximum Speed	1,850 mph / 999 kts
Maximum Altitude	18288 m / 60,000 ft
Differential Options	SBAS, Atlas (L-band), RTK

Accuracy		
Position	RMS (67%)	2DRMS (95%)
Single Point [1]	2.4 m	-
SBAS [2]	0.6 m	-
Atlas H10 [6]	0.08 m	0.16 m
Atlas H30 [6]	0.3 m	-
Atlas Basic [6]	0.5 m	-
RTK [1,3]	8 mm + 1 ppm	15 mm + 2 ppm
Heading (RMS)	0.27°	
Pitch/Roll (RMS)	1°	
Heave (RMS)	30 cm (DGPS) 1,10 cm (Atlas) [1, 6], 5 cm (RTK) [1, 6]	

L-Band Receiver Specifications	
Channels	1525 to 1560 MHz
Sensitivity	-130 dBm
Channel Spacing	5 kHz
Satellite Selection	Manual or Automatic
Reacquisition Time	15 sec (typical)

Communications	
Ports	1 x full-duplex RS-232/RS-422, 1x RS232, 2 x CAN, 1 x Ethernet
Baud Rates	4800 - 115200
Radio Interfaces	Bluetooth 2.0 (Class 2), Wi-Fi 2.4 GHz Correction I/O
Protocol	Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR[8], CMR+[8]
Data I/O Protocol	NMEA 0183, Hemisphere GNSS binary
Timing Output	1 PPS (CMOS, rising edge sync) Event Marker
Input	Open drain, falling edge sync, 10 kΩ, 10 pF load

Power	
Input Voltage	9 - 32 VDC
Power Consumption	7.5 W maximum
Current Consumption	1.8 A maximum
Power Isolation	No
Reverse Polarity Protection	Yes

Environmental	
Operating Temperature	-40°C to 70°C / -40°F to 158°F
Storage Temperature	-40°C to 85°C / -40°F to 185°F
Humidity	95% non-condensing
Enclosure	ISO 60529:2013 for IPX6/IPX7/IPX9
Vibration	IEC 60945:2002 Section 8.7 Vibration
EMC	IEC 60945:2002 EN 301 489-1 V2.1.1 EN 301 489-5 V2.1.1 EN 301 489-19 V2.1.0 EN 303 413 V1.1.1

Mechanical	
Dimensions (LxWxH)	27.0 x 8.7 x 4.8 in / 68.6 x 22.0 x 12.3 cm
Weight	8.2 lb / 3.7 kg
Status Indications (LED)	Power, GNSS Lock, Heading
Power/Data Connector	22-pin environmentally sealed

Aiding Devices	
Gyro	Provides smooth heading, fast heading reacquisition and reliable < 1° per min heading for periods up to 3 min. when loss of GPS has occurred [4]
Tilt Sensors	Provide pitch, 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. With future firmware upgrade and activation
8. CMR and CMR+ do not cover proprietary messages outside of the typical standard

01.20.2020

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