Hemisphere®

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Vector™ V500 GNSS Smart Antenna

atlas®

The Vector V500 is 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.

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], IRNSS [7], and Atlas
Channels:	1,100+
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional
Timing (1 PPS) 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:	1,342 mph (1,166 kts)
Maximum Altitude:	18,000 m (59,055 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:	1x full-duplex RS-232/RS-422, 1x RS232, 2x CAN, 1x 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:	IEC60945:2002 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:	68.6 L x 22.0 W x 12.3 H (cm) 27.0 L x 8.7 W x 4.8 H (in)
Weight:	3.7 kg (8.2 lb)
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

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