



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

|                                 |   |
|---------------------------------|---|
| <b>Receiver Type:</b>           | Vector GNSS RTK Receiver  |
| <b>Signals Received:</b>        | GPS, GLONASS, BeiDou, Galileo, QZSS <sup>7</sup> , IRNSS <sup>7</sup> , and Atlas |
| <b>Channels:</b>                | 1059  |
| <b>GPS Sensitivity:</b>         | -142 dBm  |
| <b>SBAS Tracking:</b>           | 2-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>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 Impedance:</b> | 50 Ω  |
| <b>Maximum Speed:</b>           | 1,850 mph (999 kts)   |
| <b>Maximum Altitude:</b>        | 18,288 m (60,000 ft)  |
| <b>Differential Options:</b>    | SBAS, Atlas (L-band), RTK   |

## Accuracy

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

## L-Band Receiver Specifications

|                             |                     |
|-----------------------------|---------------------|
| <b>Channels:</b>            | 1525 to 1560 MHz    |
| <b>Sensitivity:</b>         | -130 dBm            |
| <b>Channel Spacing:</b>     | 5 kHz               |
| <b>Satellite Selection:</b> | Manual or Automatic |
| <b>Reacquisition</b>        |                     |
| <b>Time:</b>                | 15 sec (typical)    |

## Communications

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

## Power

|                                     |               |
|-------------------------------------|---------------|
| <b>Input Voltage:</b>               | 9 - 32 VDC    |
| <b>Power Consumption:</b>           | 7.5 W maximum |
| <b>Current Consumption:</b>         | 1.8 A maximum |
| <b>Power Isolation:</b>             | No            |
| <b>Reverse Polarity Protection:</b> | Yes           |

## Environmental

|                               |  |
|-------------------------------|--|
| <b>Operating Temperature:</b> | -40°C to +70°C (-40°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>Enclosure:</b>             | ISO 60529:2013 for IPx6/IPx7/IPx9  |
| <b>Vibration:</b>             | IEC 60945:2002 Section 8.7 Vibration   |
| <b>EMC:</b>                   | IEC60945:2002<br>EN 301 489-1 V2.1.1<br>EN 301 489-5 V2.1.1<br>EN 301 489-19 V2.1.0<br>EN 303 413 V1.1.1 |

## Mechanical

|                                  |  |
|----------------------------------|--|
| <b>Dimensions:</b>               | 68.6 L x 22.0 W x 12.3 H (cm)<br>27.0 L x 8.7 W x 4.8 H (in) |
| <b>Weight:</b>                   | 3.7 kg (8.2 lb)  |
| <b>Status Indications (LED):</b> | Power, GNSS Lock, Heading                                    |
| <b>Power/Data Connector:</b>     | 22-pin environmentally sealed                                |

## Aiding Devices

|                      |   |
|----------------------|---|
| <b>Gyro:</b>         | Provides smooth heading, fast heading reacquisition and reliable < 1° per min heading for periods up to 3 min. when loss of GPS has occurred <sup>4</sup> |
| <b>Tilt Sensors:</b> | 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



GRAFINTA S.A. - Avd. Filipinas, 46 - 28003 Madrid - Telf. 91 553 7207 - grafinta@grafinta.com - www.grafinta.com

## Hemisphere GNSS

8515 E. Anderson Drive  
Scottsdale, AZ 85255, USA

Phone: +1 (480) 348-6380  
Toll-Free: +1 (855) 203-1770  
Fax: +1 (480) 270-5070

precision@hgns.com  
www.hgns.com