



**GNSS
FOR
CONTROL
SYSTEMS**

**RECEIVER
MACHINE**



The Vector VR1000 is Hemisphere GNSS' premiere multi- GNSS, multi-frequency position and heading receiver designed specifically for the machine control market. Providing precise heading, Athena RTK positioning, and full Atlas capability, its rugged design is compliant to IP69K, MIL-STD-810G, and IEC 60068-2 standards.

The VR1000 supports antenna separations up to 10 meters, offering heading accuracy to 0.01 degrees RMS in addition to RTK position accuracy and full support for Hemisphere GNSS' Atlas Global Correction Service.

Key Features

- Athena™ RTK Engine
- Extremely accurate heading with baselines up to 10m
- Multi-frequency GPS/GLONASS/BeiDou/Galileo/QZSS/IRNSS
- Atlas® Global Correction Service
- Integrated Ethernet, CAN, internal 400MHz radio, Serial, Bluetooth, and Wi-Fi
- Powerful WebUI accessed via Wi-Fi plus 12 multi-color LEDs
- Integrated IMU delivers fast start-up times and maintains heading during temporary GNSS outage
- Fully rugged IP69K, and MIL-STD-810G compliant solution for the harshest environments

GNSS Receiver Specifications

Receiver Type: GNSS Position & Heading RTK Receiver
Signals Received: GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS, and Atlas
Channels: 1059
GPS Sensitivity: -142 dBm
SBAS Tracking: 3-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: 40 s (no almanac or RTC)
Warm Start: 20 s typical (almanac and RTC)
Hot Start: 5 s typical (almanac, RTC and position)
Heading Fix: 10 s typical (Hot Start)
Antenna Input
Impedance: 50 Ω
Maximum Speed: 1,850 mph (999 kts)
Maximum Altitude: 18,288 m (60,000 ft)
Differential Options: SBAS, Atlas (L-band), RTK

Accuracy

Positioning: RMS (67%) 2DRMS (95%)

Autonomous,

no SA: 2 1.2 m 2.5 m

SBAS: 2 0.25 m 0.5 m

Atlas: 2,3 0.04 m 0.08 m

RTK: 1 10 mm + 1 ppm 20 mm + 2 ppm **Heading (RMS):** <

0.2° @ 0.5 m antenna separation

< 0.1° @ 1.0 m antenna separation

< 0.05° @ 2.0 m antenna separation

< 0.02° @ 5.0 m antenna separation

< 0.01° @ 10.0 m antenna separation

Pitch/Roll (RMS): 1°

Heave (RMS): 30 cm (DGPS) 3,10 cm (RTK) 3

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)

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 Requires a subscription

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

5 Hemisphere GNSS proprietary

6 CMR and CMR+ do not cover proprietary messages outside of the typical standard



Communications

Ports: 1x full-duplex RS-232/RS-422, 1x full-duplex

RS232, 2x CAN, 1x Ethernet

Baud Rates: 4800 - 115200

Radio Interfaces: Bluetooth 2.0 (Class 2), Wi-Fi 2.4 GHz, UHF (400 MHz)

Correction I/O

Protocol: Hemisphere GNSS proprietary ROX

format, RTCM v2.3, RTCM v3.2, CMR6,

CMR+6

Data I/O Protocol: NMEA 0183, Hemisphere GNSS binary

Timing Output: 1 PPS, CMOS, active high, rising edge sync, 10 kΩ, 10 pF load

Event Marker

Input: CMOS, active low, falling edge sync, 10 kΩ, 10 pF load

Power

Input Voltage: 9-36 VDC

Power

Consumption: 10.8W Maximum (All signals and L-band)

Current

Consumption: 1.2A 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: 5% non-condensing

Mechanical

Shock:

50G, 11ms half sine pulse (MIL-STD-810G

w/ Change 1 Method 516.7 Procedure 1)

Vibration:

7.7Grms (MIL-STD-810G w/Change 1

Method 514.7 Category 24)

CE (ISO14982/EN13309/ISO13766/

IEC60945), Radio Equipment Directive

2014/53/EU, E-Mark, RCM

Enclosure: IP69K

Mechanical

Dimensions:

No Plate: 23.2 L x 16.5 W x 7.9 H (cm)

9.1 L x 6.5 W x 3.1 H (in)

With Plate: 23.2 L x 21.4 W x 8.3 H (cm)

9.1 L x 8.4 W x 3.3 H (in)

Status Indications

(LED): Power, Primary Antenna, Secondary

Antenna, Heading, Quality, Atlas,

Bluetooth, Wi-Fi, CAN1, CAN2, Ethernet,

Radio

23-pin multi-purpose

Power/Data

Connector:

Aiding

Devices Gyro:

Provides smooth heading, fast heading reacquisition and reliable < 0.5° per min heading for periods up to 3 min. when loss of GNSS has occurred 4

Tilt Sensors:

Provide pitch/roll data and assist in fast start-up and reacquisition of heading solution

1300 769 359

Locations:

Toowoomba - Mackay - Brisbane - Townsville - Rockhampton - Gold Coast - Sunshine Coast - Newcastle - Hunter Valley - Adelaide - Perth