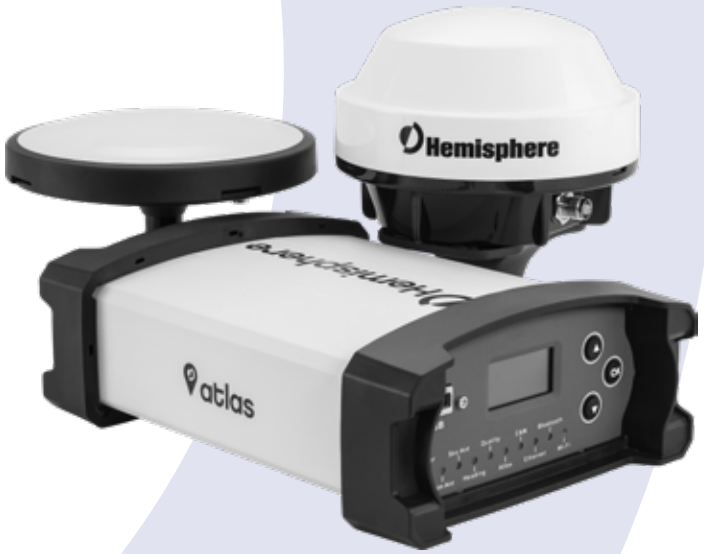
Vector™ VS1000 GNSS Receiver

High-Precision Positioning & Heading for Professional Marine Systems

key features

- **Athena™ RTK and Atlas® L-band capable**
- **Extremely accurate heading (to 0.01° RMS)**
- **Multi-frequency GPS/ GLONASS/BeiDou/Galileo/ QZSS/IRNSS**
- **Purpose-built for the most challenging environments**
- **Supports Ethernet, CAN, Serial, USB, Bluetooth, and Wi-Fi**
- **Powerful WebUI accessed via Wi-Fi plus a 128x64 display and 10 multi-color LEDs**



atlas

The Vector VS1000 is Hemisphere GNSS' premiere multi-GNSS, multi-frequency receiver designed specifically for the professional marine market. Providing precise heading, Athena RTK positioning, and full Atlas capability, its rugged design is compliant to IP67, MIL-STD810G, MIL-STD-202F, and IEC 60068-2 standards.

The VS1000 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 worldwide L-band corrections.

Hemisphere®

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Vector VS1000 GNSS Receiver

GNSS Receiver Specifications

Receiver Type:	Vector GNSS RTK Receiver
Signals Received:	GPS, GLONASS, BeiDou, Galileo, QZSS [7], IRNSS [7] and Atlas [3]
Channels:	1059
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional
Timing (1PPS)	
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:	18,288 m (60,000 ft)
Differential Options:	SBAS, Atlas (L-band), RTK

Accuracy

Positioning:	Horizontal (95%)	Vertical (95%)
Single Point: [1]	2.4 m	
SBAS: [2]	0.6 m	
Atlas H10 (L-band): [6]	0.08 m	0.16 m
Atlas H30 (L-band): [6]	0.3 m	
Atlas Basic (L-band): [6]	0.5 m	
RTK: [1, 3]	8 mm + 1 ppm	15 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) [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 CAN, 1x Ethernet, 1x USB, 1x 12-pin multi-purpose (RS232, RS422, CAN, 1PPS, Event Marker)
Baud Rates:	4800 - 115200
Radio Interfaces:	Bluetooth 2.0 (Class 2), Wi-Fi 2.4 GHz
Correction I/O Protocol:	Atlas, Hemisphere GNSS proprietary, RTCM v2.3 (DGPS), RTCM v3 (RTK), CMR, CMR+ [1]
Data I/O Protocol:	NMEA 0183, Hemisphere GNSS binary
Timing Output:	1PPS (CMOS, rising edge sync)
Event Marker Input:	Open drain, falling edge sync, 10 kΩ, 10 pF load

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
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:	
No mounting 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 Mounting 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)
Display:	128 x 64 Resolution
Weight:	1.7 kg (3.8 lb)
Status Indications (LED):	Power, Primary Antenna, Secondary Antenna, Heading, Quality, Atlas, Bluetooth, Wi-Fi, CAN, Ethernet
Power/Data Connector:	M12 CAN/Power, 12-pin multi-purpose
Antenna Connectors:	BT/Wi-Fi

Aiding Devices

Gyro:	Provides fast reacquisition and reliable heading for short periods when loss of GNSS has occurred
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

Authorized Distributor:

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