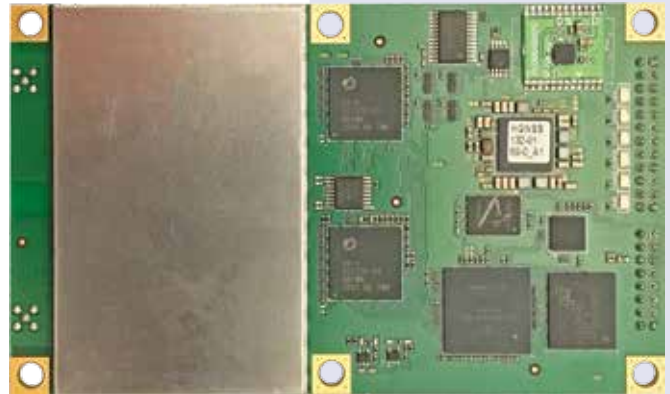


# Vector™ H328 GNSS Compass Board

## Advanced Heading and RTK Positioning

### key features

- Extremely accurate heading with short baselines
- Multi-frequency position, dual-frequency heading supporting GPS, GLONASS, BeiDou, Galileo, QZSS, and L-band
- Atlas® L-band capable to 8 cm 95%
- Fast RTK acquisition and reacquisition times
- Excellent coasting performance
- 5 cm RMS RTK-enabled heave accuracy
- Strong multipath mitigation and interference rejection



Develop sophisticated machine control and navigation solutions in a world full of complex dynamic environments. The Vector H328 is our most advanced GNSS heading and positioning board.

The Vector H328 utilizes dual antenna ports to create a series of additional capabilities to Eclipse™ Vector technology including fast, high-accuracy heading over short baselines, RTK positioning, onboard Atlas L-band, RTK-enabled heave, low-power consumption, and precise timing.

#### Scalable Solutions

With the Vector H328, positioning is scalable and field upgradeable with all Hemisphere software and service options. Utilize the same centimeter-level accuracy in either single frequency mode, or employ the full performance and fast RTK initialization times over long distances with multi-frequency multi-constellation GNSS signals. High-accuracy L-band positioning from meter to sub-decimeter levels available via Atlas correction service.

#### Ease of Migration

Leverage the industry standard form factor for easy upgradeability from other manufacturers' modules.





# Vector H328 GNSS Compass Board

## GNSS Receiver Specifications

Receiver Type:	GPS, GLONASS, BeiDou, Galileo, QZSS, L-Band, RTK	
Signals Received:	GPS L1, L1P, L2C, L2P, L5 GLONASS G1, G2, Pcode BeiDou B1, B2, B3 Galileo E1, E5a, E5b QZSS L1, L2C, L5 L-Band	
GPS Sensitivity:	-142 dBm	
SBAS Tracking:	3-channel, parallel tracking	
Update Rate:	10Hz standard, up to 50Hz optional	
Timing (1PPS) Accuracy:	20 ns	
Rate of Turn:	100°/s maximum	
Cold Start:	< 40 s typical (no almanac, ephemeris, position, or RTC)	
Warm Start:	< 20 s typical (almanac and RTC)	
Hot Start:	< 5 s typical (almanac, ephemeris, position, or RTC)	
Heading Fix:	< 10 s typical (Hot Start)	
Antenna Input Impedance:	50 Ω	
Maximum Speed:	1,850 kph (999 kts)	
Maximum Altitude:	18,288 m (60,000 ft)	

## Positioning and Heading Accuracy

RMS (67%)	Horizontal	Vertical
RTK: <sup>1,2</sup>	8 mm + 1 ppm	15 mm + 2 ppm
SBAS (WAAS): <sup>1</sup>	0.3 m	0.6 m
Autonomous, no SA: <sup>1</sup>	1.2 m	2.4 m
Atlas H10 (L-band):	0.04 m	
Atlas H30 (L-band):	0.15 m	
Atlas H100 (L-band):	0.50 m	
Heading Accuracy:	< 0.2° rms @ 0.5 m antenna separation < 0.1° rms @ 1.0 m antenna separation < 0.05° rms @ 2.0 m antenna separation < 0.02° rms @ 5.0 m antenna separation < 1° rms	
Pitch / Roll Accuracy:	30 cm rms (DGPS) <sup>4</sup> , 5 cm rms (RTK) <sup>4</sup>	
Heave Accuracy:		

## L-Band Receiver Specifications

Receiver Type:	Single Channel
Channels:	1525 to 1560 MHz
Sensitivity:	-140 dBm
Channel Spacing:	5.0 kHz
Satellite Selection:	Manual and Automatic
Reacquisition Time:	15 seconds (typical)
Processor:	DSP for demodulation and protocol decoding module provides processing for the differential algorithms

<sup>1</sup> Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

<sup>2</sup> Depends also on baseline length

<sup>3</sup> Requires a subscription from Hemisphere GNSS

<sup>4</sup> Based on a 40 second time constant

<sup>5</sup> Hemisphere GNSS proprietary

## Authorized Distributor:

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## Communications

Serial Ports:	3 full-duplex (1 3.3 V CMOS, 1 3.3VCMOS with flow control, 1 RS-232 with flow control), 1 USB Device (OTG with future FW upgrade), Ethernet 10//100Mbps, 2 CAN (NMEA2000, ISO 11783), SPI
Interface Level:	3.3V CMOS
Baud Rates:	4800 - 115200
Correction I/O Protocol:	Hemisphere GNSS proprietary, ROX Format, RTCM v2.3, RTCM v3.2, CMR, CMR+
Data I/O Protocol:	NMEA 0183, Crescent binary <sup>5</sup>
Timing Output:	1PPS, CMOS, active low, falling edge sync, 10 kΩ, 10 pF load
Event Marker Input:	CMOS, active low, falling edge sync, 10 kΩ, 10 pF load

## Power

Input Voltage:	3.3 VDC +/- 5%
Power Consumption:	3.5W all signals and L-band
Antenna Voltage:	15 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB
Antenna Input Impedance:	50 Ω

## Environmental

Operating Temperature:	-40°C to +85°C (-40°F to +185°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing (when installed in an enclosure)

## Mechanical

Dimensions:	100 L x 60 W x 10 H (mm)
Weight:	44 g
Status Indication (LED):	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock, Atlas L-band lock
Power/Data Connector:	24-pin male header 2 mm pitch
Antenna Connectors:	16-pin male header 2 mm pitch MCX, female, straight

## 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 GPS has occurred <sup>4</sup>
Tilt Sensors:	Provide pitch, roll data and assist in fast start-up and reacquisition of heading solution



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