Vector™ H301 GNSS Compass Board

Advanced Heading & Positioning with Athena™

key features

- **Extremely accurate heading with short baselines**

- **L1/L2 GPS/GLONASS/BeiDou RTK capable**

- **Small form factor**

- **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 H301 is our smallest multi-frequency, multi-GNSS heading and positioning board.

The Vector H301 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, RTK-enabled heave, low power consumption, and precise timing.

Integrate the Vector H301 into your applications to experience exceptional performance, flexibility and cost savings. This incredible GNSS board uses advanced multipath mitigation techniques and offers full scalability and expandability from L1 GPS to L1/L2 GPS/GLONASS/BeiDou RTK performance.

Hemisphere®

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Vector H301 GNSS Compass Board

GNSS Receiver Specifications

Receiver Type:	Multi-frequency, multi-GNSS RTK
Signals Received:	GPS, GLONASS, and BeiDou
Channels:	744
GPS Sensitivity:	-142 dBm
SBAS Tracking:	3-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional

Horizontal Accuracy:	RMS (67%)	2DRMS (95%)
RTK: [1,2]	8 mm + 1 ppm	15 mm + 2 ppm
SBAS (WAAS): [1]	0.25 m	0.50 m
Autonomous, no SA: [1]	1.20 m	2.40 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
Pitch / Roll Accuracy:	< 1° rms
Heave Accuracy:	30 cm rms (DGPS) [3], 5 cm rms (RTK) [3]
Timing (1PPS) Accuracy:	20 ns
Rate of Turn:	100°/s maximum
Cold Start:	< 60 s typical (no almanac, ephemeris, position or RTC)
Warm Start:	< 30 s typical (almanac and RTC)
Hot Start:	< 5 s typical (no almanac, ephemeris, position or RTC)
Heading Fix:	< 20 s typical (Hot Start)
Antenna Input Impedance:	50 Ω
Maximum Speed:	1,850 kph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Communications

Serial Ports:	4 full-duplex 3.3 V CMOS (3 main serial ports, 1 differential-only port), 1 USB Host, 1 USB Device
Baud Rates:	4800 - 115200
Correction I/O Protocol:	L-Dif™ [4], RTCM v2.3 (DGPS), RTCM v3 (RTK)
Data I/O Protocol:	NMEA 0183, Crescent binary [4], L-Dif [4]
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:	< 4.3 W at 3.3 V (L1/L2 GPS/GLONASS/ BeiDou; gyro)
Current Consumption:	< 1290 mA at 3.3 V (L1/L2 GPS/GLONASS/ BeiDou; gyro)
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:	7.8 L x 7.8 W x 1.6 H (cm) 3.07 L x 3.07 W x 0.63 H (in)
Weight:	55 g (1.94 oz.)
Status Indication (LED):	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock
Power/Data Connector:	34-pin male header, 0.08" pitch 2 mm pitch
Antenna Connectors:	MCX, female, straight

Aiding Devices

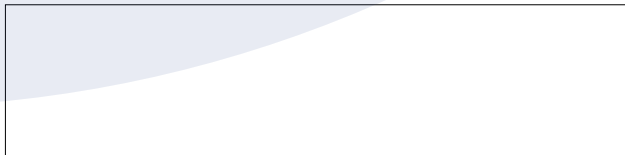|	
Gyro:	Provides smooth heading, fast heading reacquisition and reliable < 0.5° per minute heading for periods up to 3 minutes when loss of GNSS has occurred
Tilt Sensors:	Provide pitch and roll data, and assist in fast start-up and reacquisition of heading solution

[1] Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

[2] Depends also on baseline length

[3] Based on a 40 second time constant

[4] Hemisphere GNSS proprietary

Authorized Distributor:

Hemisphere®