Vector™ H320™ GNSS Compass Board

Advanced Heading & RTK Positioning

key features

- **Extremely accurate heading with short baselines**
- **L1/L2 GPS/GLONASS RTK capable**
- **L-Band DGNSS/HP/XP (OmniSTAR®) capable**
- **Excellent coasting performance**
- **Fast RTK acquisition and reacquisition times**
- **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™ H320™ is our most advanced GNSS heading and positioning module available from Hemisphere GNSS.

The Vector H320 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, on-board L-Band DGNSS/HP/XP reception, RTK-enabled heave, low power consumption, and precise timing.

Integrate the Vector H320 into your applications to experience exceptional performance, flexibility and cost savings. This incredible GNSS module uses advanced multipath mitigation techniques and offers full scalability and expandability from L1/L2 GPS/GLONASS to L1/L2 GPS/GLONASS RTK performance.

Hemisphere

precision@hemispheregnss.com
www.hemispheregnss.com

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GPS Sensor Specifications

Receiver Type:	Dual GNSS RTK	
Signals Received:	GPS, GLONASS, and GALILEO [1]	
Channels:	270	
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: [2]	10 mm + 1 ppm	20 mm + 2 ppm
L-band DGNSS/HP/XP (OmniSTAR): [3]	0.08 m	0.16 m
SBAS (WAAS): [3]	0.25 m	0.50 m
Autonomous, no SA: [3]	1.20 m	2.50 m
Heading Accuracy:	< 0.17° rms @ 0.5 m antenna separation < 0.09° rms @ 1.0 m antenna separation < 0.04° 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)[4], 5 cm rms (RTK)[4]	
Timing (1PPS) Accuracy:	20 ns	
Rate of Turn:	100°/s maximum	
Cold Start:	< 40 s typical (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 kph (999 kts)	
Maximum Altitude:	18,288 m (60,000 ft)	

L-band DGNSS/HP/XP Sensor Specifications

Sensitivity:	-130 dBm
Channel Spacing:	7.5 kHz
Satellite Selection:	Manual and Automatic
Reacquisition Time:	15 seconds (typical)
Rejection:	15 kHz spacing > 30 dB, 300 kHz spacing > 60 dB
Processor:	DSP for demodulation and protocol decoding module provides processing for the differential algorithms
Command Support:	Reports L-band DGNSS/HP/XP (OmniSTAR) region, satellite info, allows input and status of L-band DGNSS/HP/XP (OmniSTAR subscription, Bit Error Rate output for reception quality indication and manual frequency tuning

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:	RTCM SC-104, L-Dif™, RTCM v2.3 (DGPS), RTCM v3 (RTK), CMR, CMR+
Data I/O Protocol:	NMEA 0183, Crescent binary [5], L-Dif
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
Heading Warning I/O:	Pin 62

Power

Input Voltage:	3.3 VDC +/- 5%
Power Consumption:	< 3.2 W at 3.3 V (L1/L2 GPS/GLONASS)
Current Consumption:	< 970 mA at 3.3 V (L1/L2 GPS/GLONASS)
Power Consumption:	< 3.9W at 3.3V (L1/L2 GPS/GLONASS; L-band DGNSS/HP/XP)
Current Consumption: L-band	< 1180 mA at 3.3V (L1/L2 GPS/GLONASS; DGNSS/HP/XP)
Antenna Voltage:	15 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB
Antenna Input Impedance:	50 Ω

Environmental

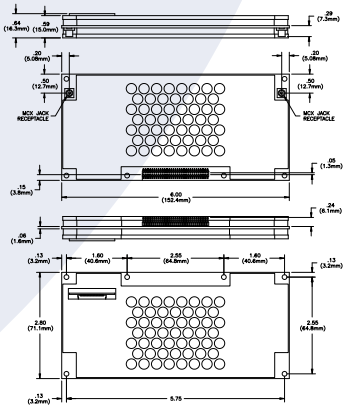
Operating Temperature:	-40°C to +85°C (-40°F to +185°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing (when installed in an enclosure)

Mechanical

Dimensions:	15.2 L x 7.1 W x 1.6 H (cm) 6.0 L x 2.8 W x 0.63 H (in)
Weight:	.105 kg (3.70 oz.)
Status Indication (LED):	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock, L-band DGNSS/HP/XP lock
Power/Data Connector:	70-pin male header, 0.05" pitch (1.27 mm)
Antenna Connectors:	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 [6]
Tilt Sensors:	Provide pitch, roll data and assist in fast start-up and reacquisition of heading solution



[1] Firmware update required
[2] Depends on multipath environment, antenna selection, number of satellites in view, satellite geometry, baseline length (for local services), and ionospheric activity
[3] Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity
[4] Based on a 40 second time constant
[5] Hemisphere GPS proprietary
[6] Under static conditions

Authorized Distributor:

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Hemisphere

Hemisphere GNSS, Inc.
8444 N 90th Street, Suite 120
Scottsdale, AZ, USA 85258

Toll-Free: +1-855-203-1770
Phone: +1-480-348-6380
Fax: +1-480-270-5070
precision@hemispheregnss.com
www.hemispheregnss.com