Crescent® Vector™ H200 Board

Next Generation, High Performance GNSS Module

key features

- **Extremely accurate heading with short baselines**
- **L1 GPS/GLONASS RTK capable**
- **L-Band capable (LX-2 module required)**
- **Fast RTK acquisition and reacquisition times**
- **Excellent coasting performance**
- **10 cm heave accuracy with RTK**
- **Strong multipath mitigation and interference rejection**

The Crescent® Vector™ H200™ GNSS module is the next generation, single frequency, high-performance GNSS heading, positioning, and attitude module available on the market from Hemisphere GNSS.

The Vector H200 GNSS module provides integrators with an opportunity for developing sophisticated marine, navigation, and land applications in challenging, dynamic environments. The H200 module uses Hemisphere GNSS' advancements in Vector technology; advanced multipath mitigation techniques and Hemisphere GNSS' patented Multifunction Application.

Vector H200 is capable of providing heading of 0.04° with a 5 meter antenna baseline and either RTK[1], L-Band[1], or SBAS positioning depending on your location requirements.

Integrate the robust Vector H200 module into your applications to experience exceptional heading, positioning, and attitude performance within a compact size. Diversity and cost savings makes it an ideal part of your solution for system integrators.

[1] Requires additional components

Hemisphere

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GNSS Sensor Specifications

Receiver Type:	GNSS L1 RTK
Signals Received:	GPS, GLONASS, Galileo[1]
Channels:	540
GNSS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	Standard 10 Hz, optional 20 Hz (position and heading)

Positioning Accuracy

RMS (67%):	Horizontal	Vertical
Autonomous:[2]	1.2 m	2.5 m
SBAS (WAAS): [2]	0.3 m	0.6 m
L-band DGPS:	0.3 m	0.6 m
Code Differential GPS:	0.3 m	0.6 m
L-band L1/L2:	0.15 m	0.3 m
RTK:[2,3]	10 mm + 1 ppm	20 mm + 2 ppm

Heading Accuracy: [3]	0.30˚ rms @ 0.5 m antenna separation 0.15˚ rms @ 1.0 m antenna separation 0.08˚ rms @ 2.0 m antenna separation 0.04˚ rms @ 5.0 m antenna separation
Pitch/Roll Accuracy:	< 1˚ rms
Heave Accuracy:	30 cm[4]
Timing (1PPS) Accuracy:	20 ns
Rate of Turn:	145˚/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 (valid position)
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)
USB Ports:	1 USB Host, 1 USB Device
Baud Rates:	4800 - 115200
Correction I/O Data I/O Protocol:	NMEA 0183, Crescent binary[5]
Protocol:	RTCM SC-104, L-Dif™[5], RTCM v2 (DGPS), RTCM v3 (RTK), CMR (RTK), CMR+ (RTK)[6]
Timing Output:	1PPS, 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
Heading Warning I/O:	Pin 62

Power

Input Voltage:	3.3 VDC +/- 5%
Power Consumption:	< 2.1 W nominal GPS (L1) and GLONASS (L1)
Current Consumption:	< 0.63 A nominal GPS (L1) and GLONASS (L1)

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 in an enclosure)
Shock and Vibration:	Mechanical Shock: EP455 Section 5.14.1 Operational (when mounted in an enclosure with screw mounting holes utilized) Vibration: EP455 Section 5.15.1 Random
EMC:	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR 22

Mechanical

Dimensions:	10.9 L x 7.1 W x 0.5 H (cm) 4.3 L x 2.8 W x 0.2 H (in)
Weight:	~ 50 g (~ 1.8 oz)
Status Indications (LED):	Power, master GPS lock, secondary GPS lock, differential lock, DGPS position, and heading lock

Aiding Devices

Gyro:	Provides smooth and fast heading reacquisition. During loss of GNSS signals heading stability is degraded by < 1˚ per minute for up to 3 minutes.[6]
Tilt Sensors:	Provide pitch and roll data and assist in fast startup and reacquisition of heading solution.

[1] Firmware update required

[2] Depends on multipath environment, number of satellites in view, and satellite geometry

[3] Depends on multipath environment, antenna selection, number of satellites in view, satellite geometry, baseline length (for local services), and ionospheric activity

[4] Based on a 40 second time constant

[5] Hemisphere GNSS proprietary

[6] IMO standard

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