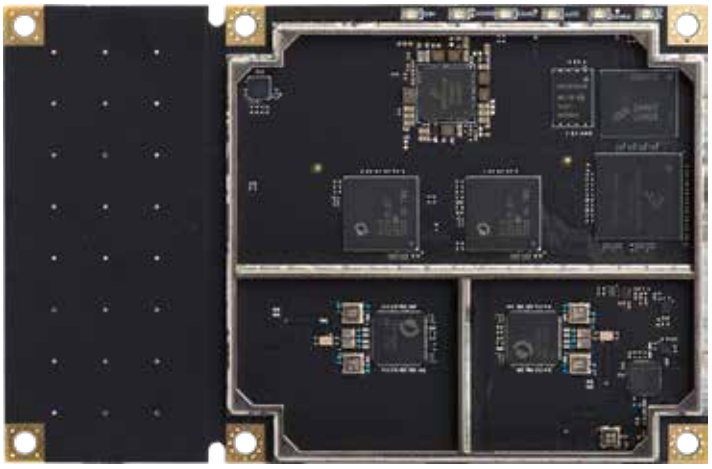
Hemisphere®

Crescent® Vector™ H220 GNSS OEM Board

NEXT GENERATION, HIGH-PERFORMANCE GNSS POSITION AND HEADING MODULE



atlas®

The Crescent Vector H220 GNSS OEM board is the next generation, single-frequency, high-performance GNSS heading, positioning, and attitude module available from Hemisphere GNSS.

The H220 provides integrators with an opportunity for developing sophisticated marine, navigation, and land applications in challenging dynamic environments. The H220 uses Hemisphere's advancements in Vector technology, advanced multipath mitigation techniques, and Hemisphere's patented Multifunction Application.

H220 is capable of providing heading of 0.04° with a 5 meter antenna baseline and either RTK or SBAS positioning depending on your location requirements. With Atlas corrections, the H220 can obtain instant sub-meter accuracy worldwide.

Integrate the robust H220 GNSS OEM board into your applications to experience exceptional heading, positioning, and attitude performance. Diversity and cost savings make it an ideal part of your solution for system integrators.

Key Features

- Extremely accurate heading with short baselines
- Single Frequency GPS/GLONASS/BeiDou/Galileo QZSS RTK capable
- Integrated L-band for Atlas® corrections
- Excellent coasting performance
- 10 cm RMS heave accuracy with RTK
- Strong multipath mitigation and interference rejection
- New multi-axis gyro and tilt sensor for reliable coverage during short GNSS outages

GNSS Receiver Specifications

Receiver Type:	Single Frequency GPS, GLONASS, BeiDou, Galileo, QZSS4, and Atlas
Signals Received:	GPS L1CA/L1P GLONASS G1, P1 BeiDou B1 GALILEO E1BC QZSS L1CA4 Atlas
Channels:	424
GPS Sensitivity:	-142 dBm
SBAS Tracking:	2-channel, parallel tracking
Update Rate:	10 Hz standard, 1 Hz, 20 Hz or 50 Hz[5] optional (with activation)
Timing (1 PPS) Accuracy:	20 ns
Rate of Turn:	100°/s maximum
Cold Start:	60 s typical (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 (Hot Start)
Antenna Input Impedance:	50 Ω
Maximum Speed:	1,850 mph (999 kts)
Maximum Altitude:	18,288 m (60,000 ft)

Accuracy

Positioning:	**RMS (67%)**	**2DRMS (95%)**
Autonomous, no SA: [1]	1.2 m	2.5 m
SBAS: [1]	0.3 m	0.6 m
Atlas Basic: [1, 3]	0.50 m	1.0 m
RTK: [1]	10 mm + 1 ppm	20 mm + 2 ppm
Heading (RMS):	0.30˚ @ 0.5 m antenna separation 0.15˚ @ 1.0 m antenna separation 0.08˚ @ 2.0 m antenna separation 0.04˚ @ 5.0 m antenna separation	
Pitch/Roll (RMS):	1°	
Heave (RMS): [1]	30 cm (DGPS), 10 cm (RTK)	

L-Band Receiver Specifications

Receiver Type:	Single Channel
Channels:	1525 to 1560 MHz
Sensitivity:	-130 dBm
Channel Spacing:	5.0 kHz
Satellite Selection:	Manual and Automatic
Reacquisition Time:	15 seconds (typical)

1. Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity
2. Based on a 40 second time constant
3. Hemisphere GNSS proprietary
4. With future firmware upgrade and activation
5. CMR and CMR+ do not cover proprietary messages outside of the typical standard

Communications

Ports:	4 x full-duplex 3.3V CMOS (3 x main serial ports, 1 x differential-only port) 1 x USB Host 1 x USB Device
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[5], CMR+[5]
Data I/O Protocol:	NMEA 0183, Crescent binary [3]
Timing Output:	1 PPS, 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

Power

Input Voltage:	3.3 VDC +/- 5%
Power Consumption:	2.1 W nominal GPS (L1) and GLONASS (L1)
Current Consumption:	0.64 A nominal GPS (L1) and GLONASS (L1)
Antenna Voltage:	5 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB

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)
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:	109 L x 71 W x 5 H (mm) 4.3 L x 2.8 W x 0.2 H (in)
Weight:	50 g (1.77 oz)
Status Indications (LED):	Power, Primary and Secondary GNSS lock, Differential lock, DGNSS position, Heading
Power/Data Connector:	34-pin male header 2 mm pitch
Antenna Connectors:	MCX, female, straight

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. [2]
Tilt Sensors:	Provide pitch and roll data and assist in fast startup and reacquisition of heading solution.

Hemisphere®

Hemisphere GNSS
8515 E. Anderson Drive
Scottsdale, AZ 85255, USA

Phone: +1 (480) 348-6380
Toll-Free: +1 (855) 203-1770
Fax: +1 (480) 270-5070

precision@hgnss.com
www.hgnss.com

Rev. A1 (07/2019)