



# MULTI- CONSTELLATION, SINGLE-FREQUENCY



## Key Features

- Extremely affordable single frequency, multi constellation solution with up to 20 Hz update rate
- GPS, GLONASS, BeiDou, Galileo, and QZSS-ready
- Fast start-up and reacquisition times allow you to get right to work
- High-precision, differential positioning accuracy of 60 cm, 95% of the time
- Exclusive e-Dif® option where other differential signals are not practical
- COAST and SureTrack maintain sub-meter DGNSS positioning for 40 minutes after correction loss
- Small form and low-power consumption design is ideal for easy integration



Hemisphere GNSS' Crescent P206 and P207 OEM modules use GPS, GLONASS, and BeiDou, and are Galileo and QZSS ready. Track more signals for unparalleled positioning performance even in challenging environments. Leverage the compact size and easy integration in your design. The 34-pin P206 module is a drop-in upgrade for many Hemisphere products. P207 is a drop in upgrade for existing Crescent designs using standard 20 pin modules from other manufacturers.

DGPS and SBAS with patented COAST™ software enables Hemisphere receivers to use previous DGPS and SBAS correction data during times of interference, signal blockage and weak signal. The receiver will coast and continue to maintain sub-meter positioning for up to 40 minutes without any DGPS signal. When your corrections are only for one GNSS constellation, for example GPS using SBAS, Hemisphere's patented SureTrack™ goes to work to model all other satellites, helping maintain an accurate solution in challenging environments.

## GNSS Receiver Specifications

<b>Receiver Type:</b>	GNSS single-frequency RTK with carrier phase	
<b>Signals Received:</b>	GPS, GLONASS, BeiDou, GALILEO <sup>1</sup> , and QZSS <sup>1</sup>	
<b>Channels:</b>	103	
<b>GPS Sensitivity:</b>	-142 dBm	
<b>SBAS Tracking:</b>	3-channel, parallel tracking	
<b>Update Rate:</b>	1 Hz standard, 10 or 20 Hz optional	
<b>Timing (1 PPS)</b>		
<b>Accuracy:</b>	20 ns	
<b>Cold Start:</b>	< 60 s typical (all unknown)	
<b>Warm Start:</b>	< 30 s typical (no ephemeris)	
<b>Hot Start:</b>	< 10 s typical (all known)	
<b>HeadStart:</b> <sup>5</sup>	Removable, auto-recharging onboard clock battery	
<b>Maximum Speed:</b>	1,850 mph (999 kts)	
<b>Maximum Altitude:</b>	18,288 m (60,000 ft)	

## Accuracy

<b>Positioning:</b>	<b>RMS (67%)</b>	<b>2DRMS (95%)</b>
<b>Autonomous, no SA:</b> <sup>3</sup>	1.2 m	2.5 m
<b>SBAS:</b> <sup>3</sup>	0.3 m	0.6 m
<b>RTK:</b> <sup>2</sup>	10 mm + 1 ppm	20 mm + 2 ppm

## Communications

<b>Ports:</b>	4x full-duplex 3.3 V CMOS (3 main serial ports 1x differential-only port) 1x USB Host <sup>6</sup> 1x USB Device
<b>Baud Rates:</b>	4800 - 115200
<b>Correction I/O Protocol:</b>	Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR <sup>8</sup> , CMR+ <sup>8</sup>
<b>Data I/O Protocol:</b>	NMEA 0183, Crescent binary <sup>7</sup>
<b>Timing Output:</b>	1 PPS, CMOS, active high, rising edge sync, 10 k $\Omega$ , 10 pF load
<b>Event Marker Input:</b>	CMOS, active low, falling edge sync, 10 k $\Omega$ , 10 pF load

## Power

<b>Input Voltage:</b>	3.3 VDC +/- 5%
<b>Power Consumption:</b>	1.2 W nominal L1 GPS 1.4 W nominal single frequency GPS + GLONASS + BeiDou
<b>Current Consumption:</b>	0.30 A nominal GPS (L1) 370 mA nominal L1 GPS 420 mA nominal single frequency GPS + GLONASS + BeiDou
<b>Antenna Voltage:</b>	15 VDC maximum Antenna Short Circuit
<b>Antenna Short Circuit Protection:</b>	Yes
<b>Antenna Gain Input Range:</b>	10 to 40 dB
<b>Antenna Input Impedance:</b>	50 $\Omega$

## Environmental

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

## Mechanical

<b>Dimensions:</b>	7.25 L x 4.1 W x 1.1 H (cm) 2.85 L x 1.61 W x 0.43 H (in)
<b>Weight:</b>	.105 kg (3.70 oz.)
<b>Status Indications (LED):</b>	Power, Primary and Secondary GPS lock, Differential lock, DGPS position, Heading, RTK lock, Atlas L-band lock
<b>Power/Data Connector:</b>	
<b>P206:</b>	34-pin male header 0.05" pitch
<b>P207:</b>	20-pin male header 0.05" pitch
<b>Antenna Connectors:</b>	MCX, female, straight

1. Firmware update required
2. Depends on multipath environment, number of satellites in view, satellite geometry baseline length (up to 10 km) and ionospheric activity
3. Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity
4. Cold start means no approx. position, no approx. time, no almanac, no ephemeris - Warm starts require an approx. position, approx. time, and almanac - Hot starts require an approx. position, approx. time, and valid ephemeris
5. Maintains time while receiver is powered off, reducing cold start occurrences
6. P206 Only
7. Hemisphere GNSS proprietary
8. CMR and CMR+ do not cover proprietary messages outside of the typical standard



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