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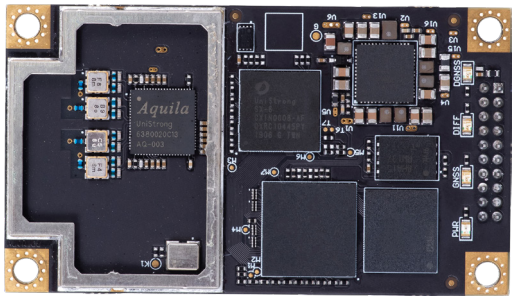
Phantom™ 20/34

GNSS OEM Boards



MULTI-FREQUENCY, MULTI-GNSS RTK & ATLAS®

atlas®



Key Features

- Multi-Frequency GPS, GLONASS, BeiDou, Galileo, and QZSS
- Long-range RTK baselines up to 50 km with fast acquisition times
- Compatible with many RTK sources including Hemisphere GNSS' ROX format, RTCM, CMR, CMR+
- Mechanically and electrically (pin-for-pin) compatible with many other manufacturers' modules
- Atlas® L-band capable to 4 cm RMS
- Athena™ GNSS engine providing best-in-class RTK performance
- Serial, USB host (Phantom 34 only), USB device, and CAN connectivity for ease of use and integration

Track More Signals for the Most Robust Low-Power Multi-Frequency, Multi-GNSS Solution

Track more signals for unparalleled positioning performance with Hemisphere GNSS' new Phantom 20 and 34 OEM boards. The latest technology platform enables simultaneous tracking of all satellite signals including GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS and L-band making it the most robust and reliable solution for GIS, agriculture, and machine control. The power management system efficiently governs the processor, memory, and ASIC making it ideal for multiple integration applications.

Experience Unparalleled Accuracy and Reliability with Advanced Technology Features

The Phantom 20 and 34 are the most accurate and reliable OEM modules with two advanced technology features; aRTK™ and Tracer™. Hemisphere's aRTK technology, powered by Atlas, allows the Phantom 20 and 34 to operate with RTK accuracies when RTK corrections fail. Tracer uses specialized algorithms to sustain positioning in the absence of correction data.

Scalable Solutions

With the Phantom 20 and 34, positioning is scalable and field upgradeable with all Hemisphere software and service options. Use the same centimeter-level accuracy in either single frequency mode, or employ the full performance and fast RTK initialization times over long distances with multi-frequency, multi-constellation GNSS signals. High- accuracy L-band positioning from meter to sub-decimeter levels available via Atlas GNSS correction service.

Ease of Migration

Leverage the industry standard form factor for easy upgradeability from other manufacturers' modules.

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GNSS Receiver Specifications

Receiver Type:	Multi-Frequency GPS, GLONASS, BeiDou, Galileo, QZSS, and Atlas
Signals Received:	GPS L1CA/L1P/L1C/L2P/L2C/L5 GLONASS G1/G2/G3, P1/P2 BeiDou B1i/B2i/B3i/B10C/B2A/B2B/ACEBOC GALILEO E1BC/E5a/E5b/E6BC/ALTBOC QZSS L1CA/L2C/L5/L1C/LEX IRNSS L5 Atlas
Channels:	800+
GPS Sensitivity:	-142 dBm
SBAS Tracking:	3-channel, parallel tracking
Update Rate:	1 Hz standard, 10 Hz, 20 Hz or 50Hz optional (with activation)
Timing (1 PPS)	
Accuracy:	20 ns
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)
Antenna Input Impedance:	50 Ω
Maximum Speed:	1,850 kph (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 H10: [1, 3]	0.04 m	0.08 m
Atlas H30: [1, 3]	0.15 m	0.3 m
Atlas Basic: [1, 3]	0.50 m	1.0 m
RTK: [1]	8 mm + 1 ppm	15 mm + 2 ppm

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. Depends on multipath environment, number of satellites in view, SBAS coverage, satellite geometry, and ionospheric activity
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, 1x differential port) 1 x USB Host (Phantom 34 only) 1 x USB Device 2 x CAN (NMEA2000, ISO 11783)
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:	< 1.8 W all signals + L-Band
Current Consumption:	545 mA
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:	
Phantom 20:	72 L x 41 W x 10 H (mm) 2.8 L x 1.6 W x 0.4 H (in)
Phantom 34:	71 L x 41 W x 10 H (mm) 2.8 L x 1.6 W x 0.4 H (in)
Weight:	22 g (0.79 oz)
Status Indications (LED):	Power, GNSS lock, Differential lock, DGNSS position
Power/Data Connector:	
Phantom 20:	20-pin male header, 0.08" (2 mm) pitch
Phantom 34:	34-pin male header, 0.05" (1.27 mm) pitch
Antenna Connectors:	MCX, female, straight

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