

Hemisphere[®] R632 Multi-GNSS RTK, High- Accuracy Receiver



FEATURES

Compact, powerful easily upgradeable complete solution

Astounding interference rejection and multipath mitigation

Worldwide stand-alone positioning to 4 cm

Hemisphere® R632 Multi-GNSS RTK, High-Accuracy Receiver

The Hemisphere® R632 receiver is the ultimate complete solution in an exceptionally compact and powerful package easily upgradeable to a 0.1° accurate heading. The receiver is developed on the foundation of Hemisphere's® next generation Lyra™, Cygnus™ and Aquila™ core technologies, with astounding interference rejection and multipath mitigation providing performance, communications, and connectivity. The Hemisphere® R632 receiver and Atlas correction network can be used together, achieving worldwide stand-alone positioning to 4 cm.

Additional Features

- » Tracks multi-frequency GPS, GLONASS, BeiDou (including Phase 3), Galileo, IRNSS, QZSS, and Atlas® L-band constellations
- » Long-range real-time kinematic (RTK) baselines up to 31 mi / 50 km with swift acquisition times
- » Ultra-high frequency (UHF) of 400 MHz and 900 MHz; GSM, 3G, and 4G cellular; Bluetooth; and Wi-Fi wireless communication
- » Athena™ GNSS engine providing superior RTK performance
- » Status LEDs and powerful WebUI, enabling easy monitoring and configuration
- » Ethernet, serial, and USB, providing excellent connectivity

Specifications

GNSS Receiver	
Receiver Type	Multi-Frequency GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS, and Atlas® L-band
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/ALTB0C QZSS L1CA/L2C/L5/L1C/LEX IRNSS L5 Atlas L-band
GPS Sensitivity	-142 dBm
SBAS Tracking	3-channel, parallel tracking
Update Rate	10 Hz standard, 20 Hz optional (with activation)
Timing (1PPS) 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 mph / 999 kts
Maximum Altitude	59,055 ft / 18 000 m

Accuracy

Heading (RMS)	0.2° @ 1.64 ft / 0.5 m antenna separation 0.1° @ 3.3 ft / 1.0 m antenna separation 0.05° @ 6.6 ft / 2.0 m antenna separation
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Positioning (RMS)	Horizontal	Vertical
Single Point	3.94 ft / 1.2 m	7.9 ft / 2.4 m
SBAS ¹	0.98 ft / 0.3 m	2 ft / 0.6 m
Atlas H10 ¹	0.13 ft / 0.04m	0.3 ft / 0.08 m
Atlas H30 ^{1,3}	0.49 ft / 0.15 m	1 ft / 0.3 m
Atlas Basic ^{1,3}	1.64 ft / 0.5 m	3.3 ft / 1.0 m
RTK ^{1,2}	0.3 in / 8 mm + 1 ppm	0.6 in / 15 mm + 1 ppm

L-Band Receiver

Receiver Type	Single Channel
Frequency Range	1,525 to 1,560 MHz
Sensitivity	-130 dBm
Channel Spacing	5.0 kHz
Satellite Selection	Manual and Automatic
Reacquisition Time	15 s (typical)

Communications

Bluetooth	Bluetooth 2.1+EDR / 4.0 LE
Wi-Fi	802.11 b/g
Network	LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/ B13/ B18/B19/B20/B25/B26/B28 LTE TDD: B38/B39/B40/B41 UMTS: B1/B2/B4/B5/B6/B8/B19 GSM: B2/B3/B5/B8
Radio	Frequency range: 410MHz ~ 470MHz and 902.4MHz ~ 928MHz Channel Spacing: 12.5 KHz/25 KHz Protocol: TrimTalk 450S, PCC EOT, TrimMark III (19200)
RTK Formats	RTCM2.1, RTCM2.3, RTCM3.0, RTCM3.1, RTCM3.2 including MSM
Correction I/O Protocol	Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR, CMR+
Data I/O Protocol	NMEA 0183, Hemisphere GNSS binary
Timing Output	1PPS (CMOS, rising edge sync)
Event Marker Output	Open drain, falling edge sync, 10 k ohm, 10 pF load

Physical

Weight	19.4 oz / 550 g
Dimensions	4.1 in x 5.9 in x 1.3 in / 105 mm x 150 mm x 34 mm
Power Connector	2-pin metal ODU
Antenna Connector	TNC female, straight (2x)
Data Connector	D-SUB 26 (2x RS485, 1x RS232, 1x USB2, 1x 1PPS, 1x Event, 1x 100m Ethernet) Multi I/O Hub: Breaks out DB26 to 3xDB $\frac{9}{16}$ xRJ45 $\frac{1}{2}$ xSMA (1PPS/Event)/1xUSB available as optional accessory
LTE Connector	SMA
UHF Connector	SMA
Other	Micro SIM card slot and Micro SD card slot
Storage Type	8 GB internal, Micro SD card up to 32 GB

Environmental

Operating Temperature	-22°F ~ +149°F / -30°C ~ +65°C
Storage Temperature	-40°F ~ +176°F / -40°C ~ +80°C
Protection	IP6x, IPx6, IPx7
Shock Resistance	EP455 Section 5.41.1 Operational
Humidity	95% non-condensing
Vibration	EP455 Section 5.15.1 Random
EMC	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B, CISPR22
Inflammability	UL recognized, 94HB Flame Class Rating (3) 0.06 in / 1.49 mm
Chemical Resistance	Cleaning agents, soapy water, industrial alcohol, water vapor, solar radiation (UV)

Electrical

Input Voltage	8 to 36 V DC
Power Consumption	7.65 W nominal (all signals + L-band)
Reverse Polarity Protection	Yes
Antenna Voltage Output	5 V DC maximum
Antenna Short Circuit Protection	Yes
Input Range	10 to 40 dB

User Interface

LEDs	Power, Satellite, Bluetooth, Cellular, Wi-Fi, UHF, Heading ³
WebUI	Supports software updates, receiver status and settings and data downloads via smartphones, tablets, or other Wi-Fi-capable devices

¹Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity

²Depends also on baseline length

³Requires an activation or subscription

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