# Hemisphere®



# MULTI-GNSS RTK, HIGH-ACCURACY RECEIVER



## atlas®

The new **R632** GNSS receiver is a full- solution product in an incredibly compact and powerful package, offering the ability to easily upgrade to an astounding 0.01° accurate heading.

Built on the foundation of Hemisphere's new Lyra, Cygnus and Aquila core technologies, the **R632** offers amazing new interference rejection and multipath mitigation. The result is an exceptional combination of performance, communications, and connectivity.

The **R632's** standard configuration offers multiple methods of connectivity and an impressive array of wireless communications.

Through Hemisphere's Atlas correction network, the **R632** offers worldwide stand-alone positioning to 4 cm.

The **R632** is an incredible solution for almost any application requiring professional-level position and heading performance.

## Key Features

- Multi-frequency GPS, GLONASS, BeiDou (including Phase 3), Galileo, IRNSS, QZSS, and Atlas L-band
- Long-range RTK baselines up to 50 km with fast acquisition times
- Worldwide Atlas L-band corrections to 4 cm
- UHF (400MHz& 900MHz), cellular (GSM, 3G & 4G, Bluetooth, and Wi-Fi wireless communication
- Athena GNSS engine providing best-in-class RTK performance
- Status LEDs and powerful WebUI, making the R632 easy to monitor and configure
- Ethernet, Serial, and USB, providing exceptional connectivity

## GNSS Receiver Specifications

| | |
|---|---|
| **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/ALTBOC |
| | 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:** | 18,000 m (59,055 ft) |

## Accuracy

| | |
|---|---|
| **Heading (RMS):** | 0.2° @ 0.5 m antenna separation |
| | 0.1° @ 1.0 m antenna separation |
| | 0.05° @ 2.0 m antenna separation |

| Positioning (RMS): | Horizontal | Vertical |
|---|---|---|
| **Single Point:** | 1.2 m | 2.4 m |
| **SBAS:** [1] | 0.3 m | 0.6 m |
| **Atlas H10:** [1] | 0.04 m | 0.08 m |
| **Atlas H30:** [1,3] | 0.15 m | 0.3 m |
| **Atlas Basic:** [1,3] | 0.5 m | 1.0 m |
| **RTK:** [1,2] | 8 mm + 1 ppm | 15 mm + 1 ppm |

## L-Band Receiver Specifications

| | |
|---|---|
| **Receiver Type:** | Single Channel |
| **Frequency Range:** | 1525 to 1560 MHz |
| **Sensitivity:** | -130 dBm |
| **Channel Spacing:** | 5.0 kHz |
| **Satellite Selection:** | Manual and Automatic |
| **Reacquisition Time:** | 15 seconds (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 kΩ, 10 pF load |

## Physical

| | |
|---|---|
| **Weight:** | 550 g |
| **Dimensions:** | 105 x 150 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) |
| **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:** | -30°C ~ +65°C |
| **Storage Temperature:** | -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) 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. |

1. Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity
2. Depends also on baseline length
3. Requires an activation or subscription from Hemisphere GNSS

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