Hemisphere®

R620
GNSS Receiver

MULTI-GNSS RTK, HIGH-ACCURACY RECEIVER

atlas®

The R620 GNSS receiver is a full solution product in a compact enclosure. The R620 utilizes Hemisphere GNSS' all-new Lyra™ II digital ASIC platform and our latest GNSS patented technology. The R620 provides accurate positioning using several differential correction methods such as Athena™ RTK, Atlas® L-band corrections (Atlas Basic, H30, H10), and SBAS.

Atlas is Hemisphere's industry-leading global correction service, which can be added as a subscription to the R620. Atlas delivers world-wide centimeter-level correction data over L-band communication satellites. With Atlas, R620 users are able to experience sub-decimeter positioning performance anywhere on earth, without the need to be near a GNSS or communication infrastructure.

Key Features

- Multi-frequency GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS, and Atlas L-band
- Long-range RTK baselines up to 50 km with fast acquisition times
- UHF, cellular, Bluetooth, and Wi-Fi wireless communication
- Athena GNSS engine providing best-in-class RTK performance
- Status LEDs and powerful WebUI make R620 easy to monitor and configure
- Ethernet (including PoE), CAN, Serial, and USB provide exceptional communications flexibility

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 or 50 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:	18,288 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]	0.5 m	1.0 m
RTK: [1,2]	8 mm + 1 ppm	15 mm + 2 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, NMEA2000, 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 CAN, 1x 100m Ethernet)
LTE Connector:	SMA
UHF Connector:	SMA
Other:	Micro SIM card slot and Micro SD card slot
Storage Type:	18 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:	2 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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