Hemisphere®

R330
GNSS Receiver

MULTI-GNSS RTK, HIGH-ACCURACY RECEIVER

atlas®

The R330 GNSS receiver is a full solution product in a compact enclosure. The R330 use the Hemisphere GNSS' Eclipse™ platform and our latest GNSS patented technology. The R330 provides accurate positioning using several differential correction methods such as Athena™ RTK, Atlas® L-band corrections (Atlas Basic, H30, H10), Beacon, and SBAS. Our patented Multifunction Application (MFA) firmware allows the R330 to smoothly transition between DGNSS systems.

The R330 GNSS receiver works well in any marine or land application where positioning accuracy is required. The base unit is configured as single frequency, 10 Hz, SBAS, and raw data. The unit can be optionally subscribed to multi-freqeuncy, multi-GNSS, 20 Hz, RTK, Atlas (Atlas Basic, H30, or H10), and Beacon. Compatible GNSS antennas for the R330 are A21, A25, A31, A42, A43, A45 and A52.

The R330 GNSS receiver works with two new advanced technology features; aRTK™ and Tracer™. Hemisphere's aRTK technology, powered by Atlas, allows the R330 to operate with RTK accuracies when RTK corrections fail. Tracer uses specialized algorithms to sustain positioning in the absence of corrections data.

Key Features

- Atlas® L-band capable to 4 cm RMS
- Athena™ GNSS engine providing best-in- class RTK performance
- Fast update rate of up to 20 Hz
- Status LEDs and menu system make R330 easy to monitor and configure
- USB flash drive for data logging

GNSS Receiver Specifications

Receiver Type:	Multi-Freqeuncy GPS, GLONASS, BeiDou, Galileo, and Atlas
Signals Received:	GPS, GLONASS, BeiDou, Galileo, and Atlas
Channels:	227
GPS Sensitivity:	-142 dBm
SBAS Tracking:	3-channel, parallel tracking
Update Rate:	10 Hz standard, 20 Hz optional
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 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: [2]	0.3 m	0.6 m
Atlas H10: [3, 5]	0.04 m	0.08 m
Atlas H30: [3, 5]	0.15 m	0.30 m
Atlas Basic: [3, 5]	0.50 m	1.0 m
RTK: [4]	8 mm + 1 ppm	15 mm + 2 ppm

Beacon Receiver Specifications

Channels:	2-channel parallel tracking
Frequency Range:	283.5 to 325.0 kHz
Operating Modes:	Manual, Automatic, and Database
Compliance:	IEC 61108-4 beacon standard

L-Band Receiver Specifications

Receiver Type:	Single Channel
Channels:	1525 to 1560 MHz
Sensitivity:	-130 dBm
Channel Spacing:	5 kHz
Satellite Selection:	Manual or Automatic
Reacquisition Time:	15 sec (typical)

Communications

Ports:	2 x full-duplex (RS-232) 1 x USB Host 1 x USB Device
Baud Rates:	4800 - 115200
Correction I/O Protocol:	Hemisphere GNSS proprietary ROX format, RTCM v2.3, RTCM v3.2, CMR[6], CMR+[6]
Data I/O Protocol:	NMEA 0183, Hemisphere GNSS binary [5]
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

Power

Input Voltage:	8-36 VDC
Power Consumption:	2.8W nominal All Signals + L-band
Current Consumption:	0.24 A nominal All Signals + L-band
Reverse Polarity Protection:	Yes
Antenna Voltage Output:	5 VDC maximum
Antenna Short Circuit Protection:	Yes
Antenna Gain Input Range:	10 to 40 dB

Environmental

Operating Temperature:	-30°C to + 70°C (-22°F to + 158°F)
Storage Temperature:	-40°C to +85°C (-40°F to +185°F)
Humidity:	95% non-condensing
Mechanical Shock:	EP455 Section 5.41.1 Operational
Vibration:	EP455 Section 5.15.1 Random
EMC:	CE (IEC 60945 Emissions and Immunity) FCC Part 15, Subpart B CISPR22

Mechanical

Dimensions:	17.8 L x 12.0 W x 4.6 H (cm) 7.0 L x 4.7 W x 1.8 H (in)
Display:	LED
Weight:	0.65 kg (1.42 lbs)
Status Indications (LED):	Power, GNSS lock, Differential lock
Power Switch:	Soft Switch
Power Connector:	2-pin metal ODU
Data Connector:	2 x DB9 (female) 2 x USB-A
Antenna Connector:	TNC (female), straight

1. Depends on multipath environment, number of satellites in view, satellite geometry, no SA, and ionospheric activity
2. Depends on multipath environment, number of satellites in view, SBAS coverage and satellite geometry
3. Requires a subscription
4. Depends on multipath environment, number of satellites in view, satellite geometry, baseline length (for differential services), and ionospheric activity
5. Hemisphere GNSS proprietary
6. CMR and CMR+ do not cover proprietary messages outside of the typical standard

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