S321+ GNSS Smart Antenna

Surveyor Tough

key features

- **Multi-Frequency, Multi-GNSS (GPS, GLONASS, BeiDou, Galileo, QZSS)**
- **Athena™ RTK engine and Atlas® L-band global corrections**
- **Dual hot-swappable lithium batteries provide 12 hours of battery life**
- **Wi-Fi, UHF, Cellular, and Bluetooth wireless communication**
- **Powerful WebUI control accessed via Wi-Fi**
- **8 GB internal memory for data logging, download, and upload**
- **Internal tilt sensor corrects the collected point coordinates, to a maximum inclination of 15°, in accordance with the tilt angle and direction of the range pole [5, 6]**

atlas

The S321+ is Hemisphere's all-new multi-GNSS, multi-frequency smart antenna. The S321+ provides robust performance and high precision in a compact and rugged package. With multiple wireless communication ports and an open GNSS interface, the S321+ can be used in a variety of operating modes. Use the S321+ as a precise base station sending RTK to your existing rover network. Turn S321+ into a lightweight and easy to use rover by connecting it to your base via UHF radio or Wi-Fi network. The built-in web user interface (WebUI) can be used to control and manage the receiver status and operation, as well as to upgrade the S321+ with new firmware and activations. S321+ is Athena-enabled and Atlas-capable (subscription required).

The S321+ receiver is powered by Athena RTK technology. With Athena, S321+ provides state-of-the-art RTK performance when receiving corrections from a static base station or network RTK correction system. With multiple connectivity options, the S321+ allows for RTK corrections to be received over radio, cell modem, Wi-Fi, Bluetooth, or serial connection. S321+ delivers centimeter-level accuracy with virtually instantaneous initialization times and cutting-edge robustness in challenging environments.

The S321+ receiver also enables users to work with Atlas. Atlas is Hemisphere's industry-leading global correction service, which can be added as a subscription to the S321+. Atlas delivers world-wide centimeter-level correction data over L-band communication satellites. With Atlas, S321+ users are able to experience sub-decimeter positioning performance anywhere on earth, without the need to be near a GNSS or communication infrastructure.

Atlas L-band has the following benefits:

• Positioning accuracy - Competitive positioning accuracies down to 2 cm RMS in certain applications.

• Positioning sustainability - Advanced position quality maintenance in the absence of correction signals, using Hemisphere's patented technology.

For more information about Athena RTK, see: http://hemispheregnss.com/Technology
For more information about Atlas, see: http://hemispheregnss.com/Atlas

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GNSS Receiver

Receiver Type:	Multi-Frequency GNSS
Positioning Modes:	RTK, L-band, DGNSS, SBAS, Autonomous
Channels:	572
RTK Formats:	RTCM3, ROX, CMR, CMR+[4]
L-Band Formats:	Atlas Basic, Atlas H30, Atlas H10
Update Rate/ Recording Interval:	Selectable from 1, 2, 4, 5, 10 Hz (20 Hz available)

Satellite Tracking

GPS:	L1CA, L1P, L2P, L2C, L5
GLONASS:	G1, G2, P1, P2
BeiDou:	B1, B2
QZSS:	L1C, L1CA, L2C, L5
Galileo:	E1BC, E5a, E5b
SBAS:	MSAS, WAAS, EGNOS, GAGAN

Performance

	Horizontal	Vertical
RTK: [1,2]	8 mm + 1 ppm	15 mm + 1 ppm
Static Performance (long occupation):	3 mm + 0.1 ppm	3.5 mm + 0.4 ppm
Static Performance (rapid occupation):	3 mm + 0.5 ppm	5 mm + 0.5 ppm
L-Band Performance: [1,3]	0.08 m	0.16 m
SBAS (WAAS): [1]	0.3 m	0.6 m
Autonomous, no SA: [1]	1.2 m	2.4 m

Communication

Connectors I/O:	5-pin Lemo connector for external power supply, Serial communication, and external radio devices 7-pin Lemo connector for USB OTG connection and troubleshooting 1 SMA antenna connector for internal radio 1 SMA antenna connector for modem module
WebUI:	To upgrade the software, manage the status and settings, data download, via smart phone, tablet or other electronic device, configure advanced radio settings
TTS:	Smart voice broadcast system. "Speaking" receiver
Reference Outputs:	RTCM2.1, RTCM2.3, RTCM3.0, RTCM3.1, RTCM3.2 including MSM

Radio

Frequency Range:	410 - 470 MHz
Channel Spacing:	12.5KHz / 25 KHz
Emitting Power:	0.5 /1 W
Operating Range:	3 - 5 km typical/10 km optimal (Depends on terrain and operating environment)

Wireless Module

Wi-Fi:	Integrated module with internal Wi-Fi antenna
Bluetooth:	Bluetooth 2.1 + EDR Integrated Bluetooth (BT) communication module with internal BT antenna

Cellular

PLS8-E (International):	**4G** - Penta Band LTE - 800/900/1800/2100/2600 MHz - FDD-Band (20, 8, 3, 7, 1) **3G** - Tri Band UMTS (WCDMA) - 900/1800/2100 MHz - FDD-Band (8, 3, 1) **2G** - Dual Band GSM/GPRS/EDGE - 900/1800 MHz
PLS8-X (North America):	**4G** - Penta Band LTE - 700/700/850/AWS (1700/2100)/1900 MHz - FDD-Band (13, 17, 5, 4, 2) **3G** - Tri Band UMTS (WCDMA) - 850/AWS (1700/2100)/1900 MHz - FDD-Band (5, 4, 2) **2G** - Quad Band GSM/GPRS/EDGE - 850/900/1800/1900 MHz

Power

Battery:	Hot-swappable 11.1 V - 37.74 Wh intelligent lithium (2 per kit)
Battery Life:	12 hour operation from two batteries with UHF radio in Rx mode
Voltage:	9 to 22V DC external power input with over-voltage protection (5-pin Lemo)
Charge Time:	Typically 7 hours

Memory

SIM card:	User accessible SIM card slot
Memory:	Internal 8 GB, accessible through USB and Wi-Fi.
SD card:	External Micro SD card slot, supports up to 64 GB.

Environmental

Operating Temperature:	-30°C to 60°C (-22°F to 140°F)
Storage Temperature:	-40°C to 80°C (-40°F to 176°F)
Waterproof/Dustproof:	IP67. Protected from temporary immersion to a depth of 1 meter
Shock Resistance:	MIL-STD-810G, method 516.6 Designed to survive a 2 m pole drop on concrete floor with no damage; designed to survive a 1 m free drop on hardwood floor with no damage
Vibration:	MIL-STD-810G, method 514.6E-I
Humidity:	Up to 100%
Inflammability:	UL recognized, 94HB Flame Class Rating (3). 1.49mm
Chemical Resistance:	Cleaning agents, soapy water, industrial alcohol, water vapor, solar radiation (UV)

Mechanical

Size:	14.6 D x 14.8 H (cm) 5.75 D x 5.83 H (in)
Weight:	<1.38 kgs (<3.05 lbs)
Mounting:	5/8"x11, 55° thread angle, stainless steel insert
Phase Center Offset:	GPS L1 and L2 offset below 2.5mm

1 Depends on multipath environment, number of satellites in view, satellite geometry, and ionospheric activity
2 Depends also on baseline length
3 Requires a subscription from Hemisphere GNSS
4 CMR and CMR+ do not cover proprietary messages outside of the typical standard
5 Magnetic interference impacts performance
6 Requires support of third party survey software

Authorized Distributor:

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