Hemisphere®

S631
GNSS Smart Antenna

MULTI-FREQUENCY, MULTI-GNSS SMART ANTENNA

atlas®

The S631 is Hemisphere's all-new multi-GNSS, multi-frequency smart antenna. The S631 provides robust performance and high precision in a compact and rugged package. With multiple wireless communication ports and an open GNSS interface, the S631 can be used in a variety of operating modes. Use the S631 as a precise base station sending RTK to your existing rover network. Turn S631 into a lightweight and easy to use rover by connecting it to your base via UHF radio or cellular network. The built-in web user interface (WebUI) can be used to monitor and control the receiver status and operation, as well as to upgrade the S631 with new firmware and activations. S631 is Athena™-enabled and Atlas®-capable (subscription required).

The S631 GNSS receiver is powered by Athena RTK technology. With Athena, S631 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 S631 allows for RTK corrections to be received over radio, cell modem, Wi-Fi, Bluetooth, or serial connection. S631 delivers centimeter-level accuracy with virtually instantaneous initialization times and cutting-edge robustness in challenging environments.

The S631 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 S631. Atlas delivers world-wide centimeter-level correction data over L-band communication satellites. With Atlas, S631 users 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 (400 MHz & 900 MHz), cellular, Bluetooth, and Wi-Fi wireless communication
- Athena GNSS engine providing best-in-class RTK performance
- Internal sensor corrects collected point coordinates to within 2 cm

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/B1OC/B2A/B2B/ACEBOC
GALILEO E1BC/E5a/E5b/E6BC/ALTBOC
QZSS L1CA/L2C/L5/L1C/LEX
IRNSS L5
Atlas

Channels: 800+

RTK Formats: RTCM2.1, RTCM2.3, RTCM3.0, RTCM3.1, RTCM3.2 including MSM

Recording Intervals: Selectable from 1, 2, 4, 5, 10 Hz (20 Hz or 50 Hz optional)

Accuracy

Positioning:	RMS (67%)	2DRMS (95%)
Autonomous, no SA: [1]	1.2 m	2.4 m
SBAS: [1]	0.3 m	0.6 m
Atlas (H10): [1,3]	0.04 m	0.08 m
RTK: [1,2]	8 mm + 1 ppm	15 mm + 2 ppm
Static Performance: [1]	2.5 mm + 1 ppm	5 mm + 1 ppm
Tilt Compensation (within 30°):	2 cm (with 1.8 m pole)	

Initialization Time: < 10 s

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)

WebUI: To upgrade software, manage settings, data download, via smartphone, tablet or other electronic device, configure advanced radio settings

Connector Ports

TNC: For connecting to UHF radio antenna

LEMO 5-pin: For connecting to external power supply, external radio

LEMO 7-pin: For serial port, USB

Card Slots: For Micro SIM card and Micro SD card

Data & Storage

Storage Type: 8 GB internal, SD card up to 32 GB

Physical

Weight: 1.19 kg (1 battery), 1.30 kg (2 batteries)

Dimensions: 156 x 76 mm

Environmental

Operating Temperature: -30°C ~ +65°C

Storage Temperature: -40°C ~ +80°C

Protection: IP67. Protected from temporary immersion to a depth of 1 m

Shock Resistance: MIL-STD-810G, method 516.6.
Designed to survive a 2 m pole drop on concrete floor.
Designed to survive a 1 m free drop on hardwood floor

Humidity: Up to 100%

Vibration: MIL-STD-810G, method 514.6E-I

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: 9 to 28 V DC

Battery: With removable dual battery, for single battery parameter: 7.2 V, 3400 mAh, 24.48 Wh

Working Time: 12 hours in Rover UHF mode (2 batteries)

User Interface

Button: Switch receiver on/off, broadcast current operation mode and status

LEDs: Power, Satellite, Data Link, Bluetooth

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 a subscription from Hemisphere GNSS

Hemisphere®

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