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 L1C/A/L1P/L1C/L2P/L2C/L5
- GLONASS G1/G2/G3, P1/P2
- BeiDou B1i/B2i/B3i/B1OC/B2A/B2B/ACEBOC
- GALILEO E1B/E5a/E5b/E6B/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:**
- Autonomous, no SA: 1.2 m, 2.4 m
- SBAS: 0.3 m, 0.6 m
- Atlas (H10): 8 mm + 1 ppm, 15 mm + 2 ppm
- RTK: 2.5 mm + 1 ppm, 5 mm + 1 ppm

**Static Performance:** 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 TDD: B38/B39/B40/B41
- 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 devices, 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.

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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

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