

# MULTI-FREQUENCY, MULTI-GNSS SMART ANTENNA



The F631 is Futura's all-new multi-GNSS, multi-frequency smart antenna. The F631 provides robust performance and high precision in a compact and rugged package. With multiple wireless communication ports and an open GNSS interface, the F631 can be used in a variety of operating modes. Use the F631 as a precise base station sending RTK to your existing rover network. Turn F631 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 F631 with new firmware and activations. F631 is Athena<sup>®</sup>-enabled.

The F631 GNSS receiver is powered by Athena<sup>®</sup> RTK technology. With Athena<sup>®</sup>, F631 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 F631 allows for RTK corrections to be received over radio, cell modem, Wi-Fi, Bluetooth, or serial connection. F631 delivers centimeter-level accuracy with virtually instantaneous initialization times and cutting-edge robustness in challenging environments.

### Key Features

- Multi-frequency GPS, GLONASS, BeiDou, Galileo, QZSS, IRNSS, and Atlas<sup>®</sup> L-band
- Long-range RTK baselines up to 31 miles with fast acquisition times
- UHF (400 MHz & 900 MHz), cellular, Bluetooth, and Wi-Fi wireless communication
- Athena<sup>®</sup> GNSS engine providing best-in-class RTK performance
- Internal sensor corrects collected point coordinates to within 2 cm
- Hot swappable batteries

## 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/ALTB0C  
QZSS L1CA/L2C/L5/L1C/LEX/SBAS/WAAS  
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%)
<b>Autonomous, no SA:</b> <sup>1</sup>	3.9 ft	7.8 ft
<b>SBAS:</b> <sup>1</sup>	0.98 ft	1.9 ft
<b>Atlas (H10):</b> <sup>1,3</sup>	0.4 ft	2.6 ft
<b>RTK:</b> <sup>1,2</sup>	0.13 ft	0.04 ft
<b>Static Performance:</b> <sup>1</sup>	0.09 in	0.19 in
<b>Tilt Compensation (within 30°):</b>	0.78 in (with 5.90 ft 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:** 2.62 lbs (1 battery), 2.86 lbs (2 batteries)  
**Dimensions:** 6.14 in x 2.99 in

## Environmental

**Operating Temperature:** -22 °F ~ 149°F  
**Storage Temperature:** -40 °F ~ 176°F  
**Protection:** IP67. Protected from temporary immersion to a depth of 1 m  
**Shock Resistance:** MIL-STD-810G, method 516.6.  
Designed to survive a 6.56 ft pole drop on concrete floor.  
Designed to survive a 328 ft 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) 0.05 in  
**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:** up to 12 hours in Rover UHF mode (2 batteries) Up to 8 hours in Base UHF mode (2 batteries)  
**User Interface Button:** Switch receiver on/off, broadcast current operation mode and status

## LEDs:

**WebUI:** Power, Satellite, Data Link, Bluetooth  
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

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