



ASTRA

Efficient Stakeout GNSS Receiver

The RinoNav ASTRA is an efficient GNSS receiver which can be used as a base station or a rover station. The compact design makes it easy to carry around in various complex environments. The ASTRA is perfect for any survey scenario, thanks to its internal TX/RX radio and 60° inclination IMU function.

Max 60° Tilt Survey: A Different Way of Working

- Quickly and accurately measure points while standing or walking without leveling the pole.
- Concentrate on where the pole tip needs to go, which is especially useful during a stakeout.
- Easily start a survey in environments that are hard to reach, such as building corners and slopes.
- No need to worry about the pole movement when measuring, provided the pole tip is stationary.

16GB Internal Memory

The built-in 16GB internal memory can store more data; there is no need to worry about a long-time span project.

Integrated Tx/Rx UHF Modem in a Compact Design

The built-in transceiver radio modem in the compact design of the ASTRA makes it a full-featured and portable GNSS receiver that works as a base or rover station.

Multi-constellation and Multi-frequency

With 1408 channels of GNSS tracking, it provides stable and reliable accuracy. All GNSS signals come with the standard, including GPS, BDS, GLONASS, GALILEO, and QZSS.

Light Weight & Compact Design

The compact design of the ASTRA makes it a small size and lightweight GNSS receiver, which is easy to carry around by users without getting tired.

Product Specification

ASTRA

Efficient Stakeout GNSS Receiver



| GNSS Performance | | |
|----------------------------|--|---|
| Satellites tracking | GPS | L1C/A/L2P (Y)/L2C/L5 |
| | BDS | B1I/B2I/B3I/B1C/B2a/B2b |
| | GLONASS | L1/L2 |
| | GALILEO | E1/E5a/E5b/E6 |
| | QZSS | L1/L2/L5/L6 ¹ |
| | SBAS | WAAS, GAGAN, MSAS, EGNOS, SDCM, BDS |
| | L-Band | B2b PPP (Only for the Asian-Pacific region) |
| Channels | 1408 | |
| Cold start | < 30 seconds | |
| Warm start | < 20 seconds | |
| Hot start | < 5 seconds | |
| RTK signal initialization | < 5 seconds | |
| Initialization reliability | > 99.9% | |
| Update rate | 20 Hz | |
| High precision static | <ul style="list-style-type: none"> H: 2.5 mm + 0.5 ppm RMS V: 5 mm + 0.5 ppm RMS | |
| Static and Fast Static | <ul style="list-style-type: none"> H: 3 mm + 0.5 ppm RMS V: 5 mm + 0.5 ppm RMS | |
| RTK | <ul style="list-style-type: none"> H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS | |
| Standard point positioning | <ul style="list-style-type: none"> H: 1.5 m RMS V: 2.5 m RMS | |
| Code differential | <ul style="list-style-type: none"> H: 0.4 m RMS V: 0.8 m RMS | |
| SBAS | <ul style="list-style-type: none"> H: 0.4 m RMS V: 0.8 m RMS | |
| Correction data | RTCM V3.X, RTCM2, CMR | |
| Data output | GGA, ZDA, GSA, GSV, GST, VTG, RMC, GLL, Binary | |

| Power Supply | |
|---------------|---|
| Battery | Rechargeable Built-in Lithium-ion battery x 1 3.6V ~ 10000 mAh Support 20W fast charging |
| Voltage | Type-C, Type-C PD 12V |
| Working time | Static: 20 hours |
| Charging time | Typically 5.5 hours |

1: It will be supported through future firmware update.

| System | |
|-------------------|---|
| Operation system | Linux |
| Internal memory | 16 GB |
| Bluetooth | BT 5.0 BR + EDR, BLE |
| Wi-Fi | IEEE 802.11 a/b/g/n/ac |
| TNC | Connect internal radio with antenna |
| Type-C port | Charge and data transmission |
| Web UI | View status, update firmware, set up working mode, download data, etc. |
| Intelligent voice | Broadcast working mode and status |
| MEMS | Dynamic tilt survey up to 60° Tilt survey performance: 10 mm + 0.7 mm/° tilt Less than 25 mm accuracy in the inclination of 30° |

| Physical | |
|-----------------------|--|
| Dimension | Φ120 mm x H71.5 mm |
| Weight | 502 g |
| Operating temperature | -30°C ~ +60°C |
| Storage temperature | -40°C - +80°C |
| Water / dust proof | IP67 |
| Shock | <ul style="list-style-type: none"> Withstand topple over from a 2 m survey pole onto hard surfaces Survive a 1.2 m free drop |
| Vibration | Vibration resistant |
| Humidity | Up to 100% |
| Indicators | Satellites, datalink, battery, Bluetooth |
| Button | Power button, short press to voice broadcast working mode and status |
| Certificate | FCC, CE, KC, ANATEL |

| Internal Radio | |
|-----------------|---|
| Type | TX and RX |
| Emitting power | 1 W |
| Operation range | 3-5 km typically |
| Frequency range | 410 - 470 MHz |
| Channel spacing | 12.5 kHz / 25 kHz |
| Protocol | Satel, Satel_ADL, PCC-GMSK, PCC-4FSK, HiTarget, TrimTalk, South, TrimMark III, GEOTALK, GEOMARK, PCCFST, PCCFST_ADL, HZSZ |