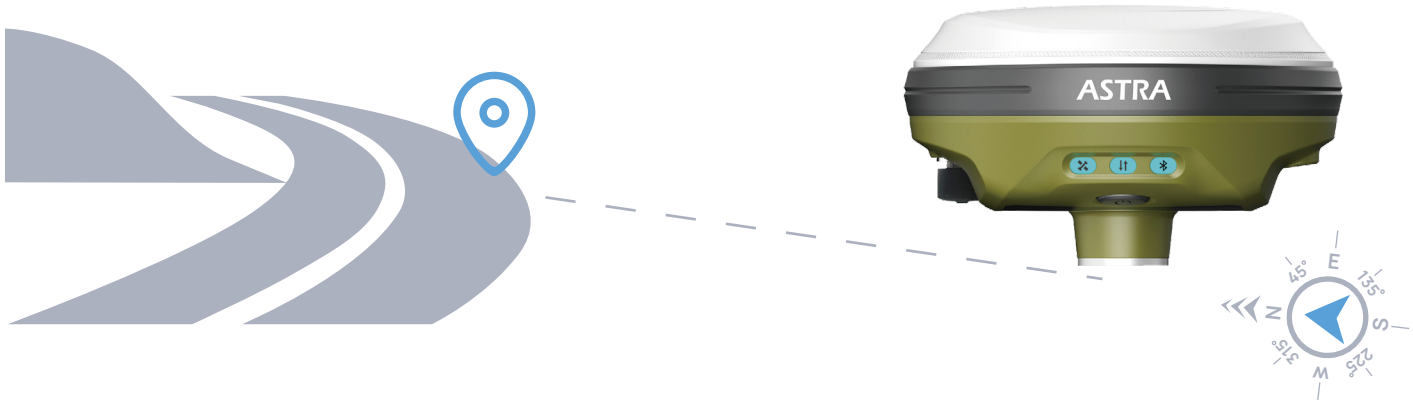
Datasheet

RinoNav



ASTRA

Efficient 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/L1C/L2P (Y)/L2C/L5
	BDS	B1I/B2I/B3I/B1C/B2a/B2b
	GLONASS	L1/L2/L3
	GALILEO	E1/E5a/E5b/E6
	NavIC	L5
	QZSS	L1/L2/L5
	SBAS	WAAS, GAGAN, MSAS, EGNOS, SDCM, BDS
	L-Band	B2b PPP (Only for the Asian-Pacific region), HAS[1]
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		■ H: 2.5 mm + 0.1 ppm RMS ■ V: 3.5 mm + 0.4 ppm RMS
Static and Fast Static		■ H: 2.5 mm + 0.5 ppm RMS ■ V: 5 mm + 0.5 ppm RMS
RTK		■ H: 8 mm + 1 ppm RMS ■ V: 15 mm + 1 ppm RMS
Standard point positioning		■ H: 1.5 m RMS ■ V: 2.5 m RMS
Code differential		■ H: 0.4 m RMS ■ V: 0.8 m RMS
SBAS		■ 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	■ 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