## SPECIFICATIONS

### GNSS Features

Channels……1598
GPS……L1C/A, L2C, L2P, L5
GLONASS……L1C/A, L1P, L2C/A, L2P, L3
BDS……B1, B2, B3
GALILEO……E1, E5A, E5B, E5AltBOC*, E6
SBAS……L1C/A, L5 (Just for the satellites supporting L5)
IRNSS……L5
QZSS……L1C/A, L2C, L5
L-Band……BDS-PPP, GALILEO-HAS*
Positioning output rate……1Hz~20Hz
Initialization time……< 10s
Initialization reliability……> 99.99%

### Positioning Precision

Code Differential GNSS Positioning……Horizontal: 0.25 m + 1 ppm RMS
Vertical: 0.50 m + 1 ppm RMS
GNSS Static……Horizontal: 2.5 mm + 0.5 ppm RMS
Vertical: 5 mm + 0.5 ppm RMS
Static (long observations)……Horizontal: 2.5mm + 0.1 ppm RMS
Vertical: 3mm + 0.4 ppm RMS
Real-Time Kinematic……Horizontal: 8 mm + 1 ppm RMS
(Baseline < 30km) Vertical: 15 mm + 1 ppm RMS
RTK NTRIP……Horizontal: 8mm + 0.5 ppm RMS
Vertical: 15mm + 0.5 ppm RMS
PPK……Horizontal: 3mm + 1 ppm RMS
Vertical: 5mm + 1 ppm RMS
SBAS positioning……Typically < 5m 3DRMS
RTK initialization time……< 10s
IMU tilt compensation……Additional horizontal pole tip uncertainty typically less than 8mm + 0.7 mm/°tilt down to 30°, 1.8m pole height
IMU tilt angle……0° ~ 60°

### Hardware Performance

Dimension……131mm(ϕ)× 80mm(H)
Weight……800g (battery included)
Material……Magnesium aluminum alloy shell
Operating temperature……-45℃ ~ +75℃
Storage temperature……-55℃ ~ +85℃
Humidity……100% Non-condensing
Waterproof/Dustproof……IP68 standard, protected from long time immersion to depth of 2m
IP68 standard, fully protected against blowing dust
Shock/Vibration……Withstand 2 meters pole drop onto the cement ground naturally
Power consumption……4W
Power supply……6-28V DC, overvoltage protection
Battery……Built-in 7.4 V 6800mAh rechargeable Lithium-ion battery
Battery life……16h (static mode)
10h (internal UHF base mode)
12h (rover mode)
Camera……2 MP
FOV……75°

### Communications

I/O Port……UHF antenna interface
Type-C
Internal UHF……2W radio receiver and transmitter
Frequency range……410 - 470MHz
Communication protocol……Farlink, Trimtalk450s, SOUTH, HUACE, ZHD
Communication range……Typically 8km with Farlink protocol
Bluetooth……BLEBluetooth 4.2 standard, Bluetooth 2.1 + EDR
NFC Communication……Realizing close range (shorter than 10cm) automatic pair between receiver and controller (controller requires NFC wireless communication module else)

### WIFI

Modem……802.11 b/g standard
WIFI hotspot……Receiver broadcasts its hotspot form web UI accessing with any mobile terminals
WIFI datalink……Receiver can transmit and receive correction data stream via WiFi datalink

### Data Storage/Transmission

Storage……4GB SSD internal storage standard, extendable up to 32GB
Automatic cycle storage (The earliest data files will be removed automatically while the memory is not enough)
Support external USB storage
Data transmission..The customizable sample interval is up to 20Hz (Reserve)
Plug and play mode of USB data transmission
Supports FTP/HTTP data download
Data format……Static data format: STH, Rinex2.01, Rinex3.02 and etc.
Differential data format: RTCM 2.x, RTCM 3.x
GPS output data format: NMEA 0183,
PJK plane coordinate, Binary code
Network model support: VRS, FKP, MAC,
fully support NTRIP protocol

### Sensors

Electronic bubble…….. Controller software can display electronic bubble, checking leveling status of the carbon pole in real-time
IMU……Built-in IMU module, calibration-free and immune to magnetic interference
Thermometer…… Built-in thermometer sensor, adopting intelligent temperature control technology, monitoring and adjusting the receiver temperature

### User Interaction

Operating system……Linux
Buttons…….. Single button
Indicators…….. 3 color LED indicators, and Battery indicator
Web interaction…… With the access of the internal web interface management via WiFi or USB connection, users are able to monitor the receiver status and change the configurations freely
Voice guidance…… The intelligent voice technology provides status and operation voice guidance, supports Chinese/English/Korean/Spanish/Portuguese/Russian/Turkish
Secondary development…… Provides secondary development package, and opens the OpenSIC observation data format and interaction interface definition
Cloud service……The powerful cloud platform provides online services like remote manage, firmware update, online register and etc.

*Items marked with * will be upgraded along with the update of assigned firmware version.*

*The data comes from the SOUTH GNSS product laboratory, and the specific situation is subject to local usage. The measurement accuracy, precision and reliability are associated with various factors, including the number of satellite tracking, observation time, multi-path, etc.*

CE FC MIL-STD 810G

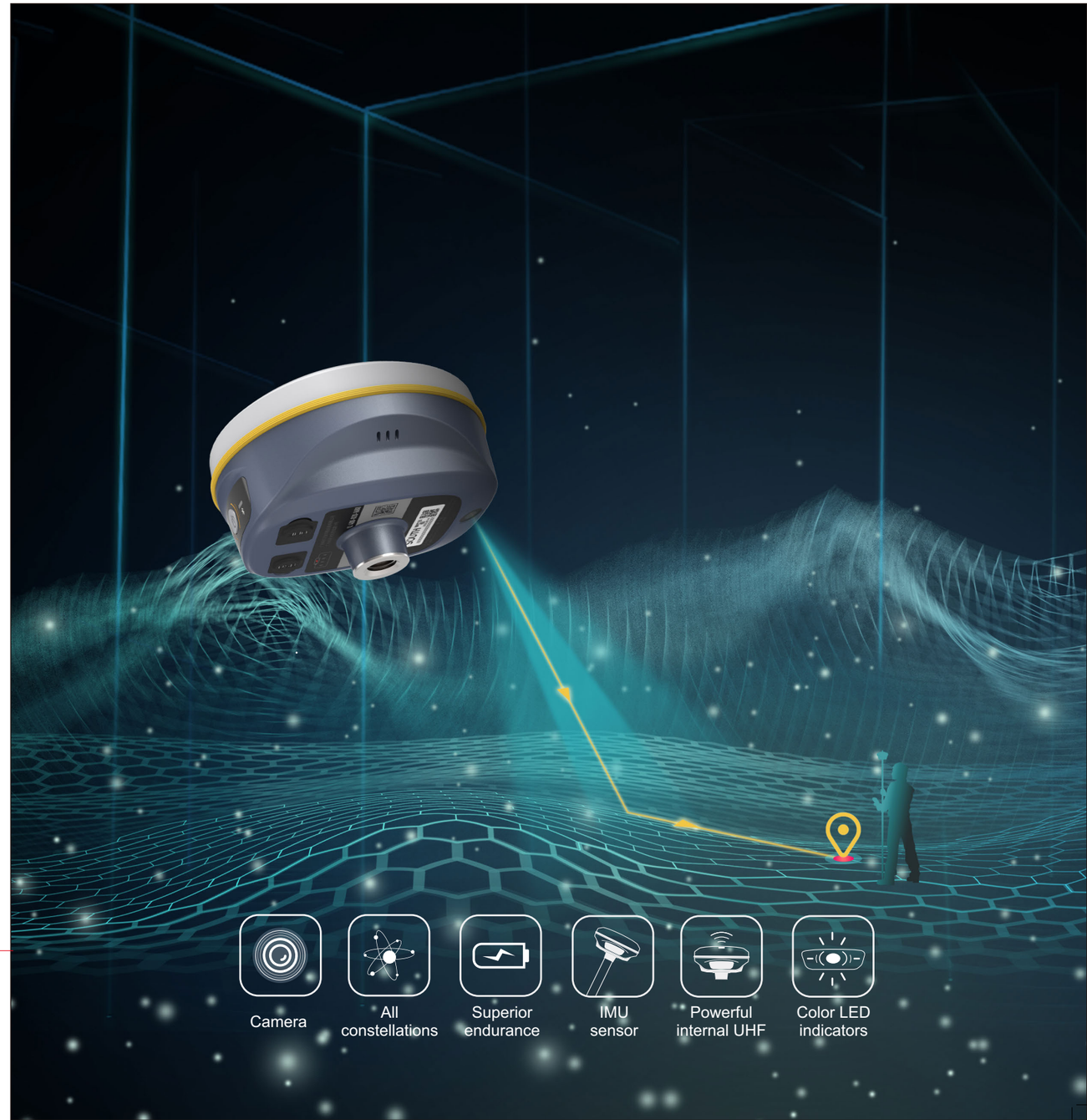
SOUTH
Target your success

www.geospb.ru

SOUTH
Target your success

# Insight V2

— Innovative Palm-sized Visual RTK —



# Fast and Precise AR Stakeout

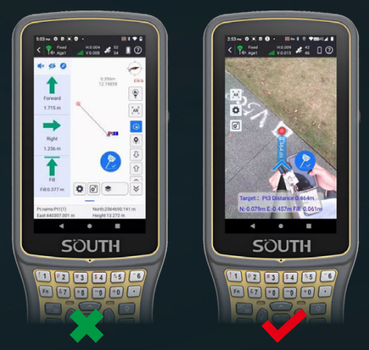
SOUTH new palm-size RTK receiver—Insight V2, seamlessly integrated with GNSS, IMU sensor and a camera, bringing RTK surveying and stakeout into a new era.

Based on integrated technology of GNSS positioning, IMU compensation, imaging, and calculating the real-time receiver's altitude, Insight V2 provides live visual data that results in the stakeout target accurately displayed on the screen hence precise and distinct navigation to the targets; moreover, without leveling bubble.

# Advanced Algorithm for Positioning

V2 exploits the SoC-type GNSS board with 1598 channels for multi-constellation and multi-frequency tracking, efficiently suppresses the interference signals, and obtains higher-quality observation data from GNSS constellations. V2 will bring a leap-forward experience of RTK performance, even in harsh environments.




# Virtual Guideline to Targets

AR technology superimposes a virtual guideline and distances from the target on the real-time image display; therefore, the field software can guide you to the points by live-view images that no need to worry about identifying directions, which saves time and effort.




# Superior Endurance

Benefiting from the SoC board and intelligent power management plan, the built-in 6800 mAh high-performance battery can support V2 continuously working for a whole daytime. And the power volume is indicated at the bottom of the receiver. Meanwhile, V2 adopts the mainstream Type-C interface, which supports web interface login and fast charging.

# Powerful Internal UHF

Insight V2 equips with a new self-developed digital radio module that utilizes "Farlink" communication technology, which increases signal sensitivity and transmission efficiency to achieve an ultra-long working range.




# Brilliant Inertial Measurement Unit

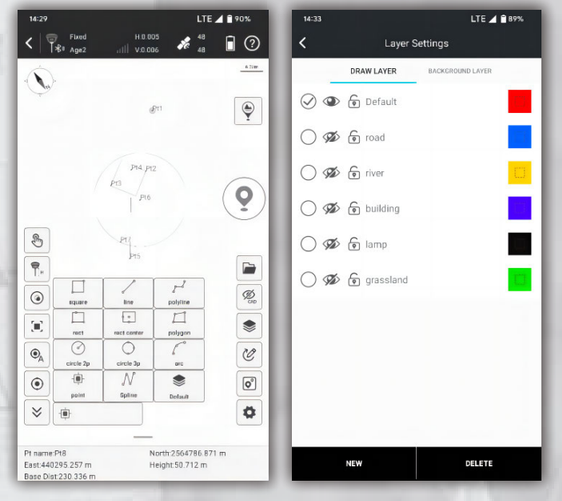
Built-in high-performance IMU automatic compensator corrects the coordinates to the pole tip, assisting you to quickly and accurately measure or stake out points at will without strictly leveling the receiver. Coupling with the latest sensor program, the IMU can initiate rapidly and easily by walking a few steps only.



# SurvStar APP

## Field Data Collection & Mapping: The Most Advanced is Here

### **Measure & Draw :** Save Time in Field work and Office



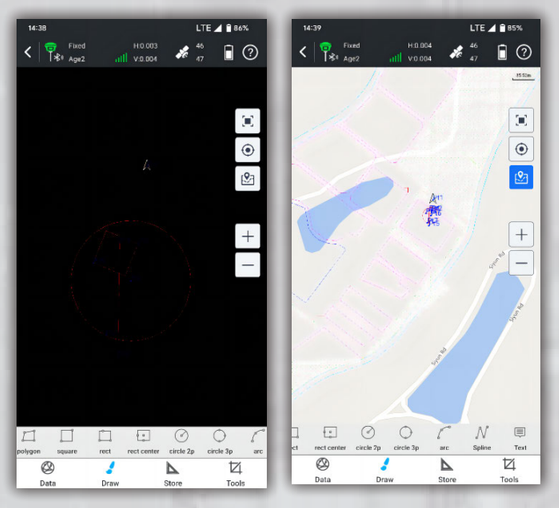

This feature allows you to draw the result map while completing point measurements.

• Before measuring points, users can choose the shape of the target object to be measured from 11 preset figures. The software will guide you to measure points in an order and automatically connect lines and complete the drawing of the figure.

• The .dxf or .dwg maps created on-site can be used directly in office work.

• Users can assign measured objects with different attributes, to different layers for measurement and management, making no mistakes.

### **CAD Draw :** Drafting without a PC



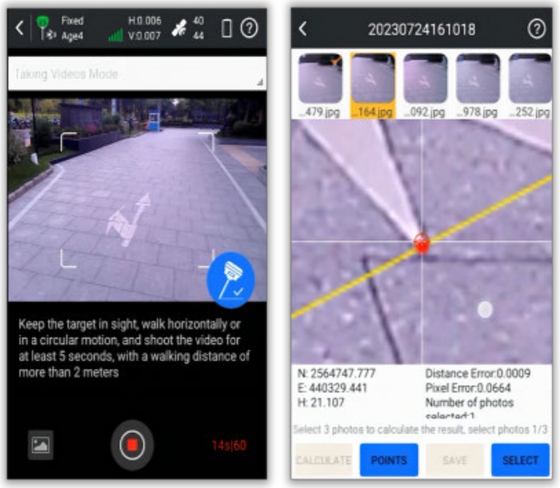
Select points to form a polygon, and directly identify the area division points for the surveyor to stake out. There is no more need for the user to guess a position to measure, and then to adjust.

• CAD drawing does not require a computer.

• CAD files prepared on office PCs can be edited and managed by users on RTK data collection terminals.

• Drawing tools include up to 11 types of figures and one type of text.

### **Visual Positioning :** Industry-Leading Non-Contact Measurement Technology




*(This function only works with the receiver models that have front-facing camera or dual-cameras)*

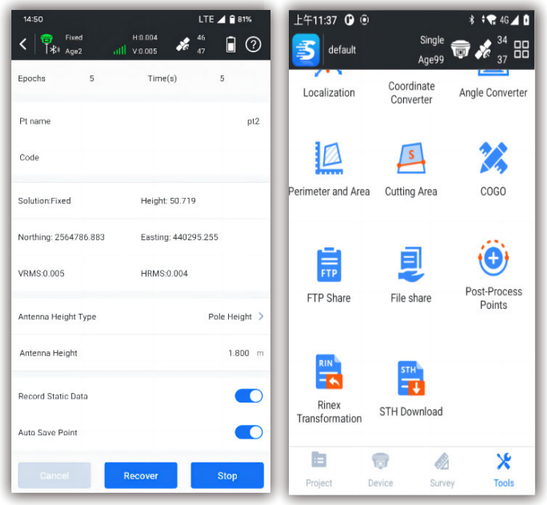
Photogrammetry Measurements can be conducted by taking pictures or videos. Coordinates of all points in the photos can be acquired.

• Now, target points that are inaccessible due to dangerous environments, poor satellite signals, or impassable terrain can be measured remotely.

• The captured image data can also be used with software like SGO, Pixel4D, DJI Terra, and CC for 3D modeling.

• Image measurement data can also be combined with drone measurement data to address issues of blurriness and deformation in ground data models collected by drones.

### **Static & PPK Measurement :** More Assistance Now is Available




The software provides both static and PPK data collection capabilities.

• Data can be downloaded wirelessly, no need for a PC and cables.

• It is possible to convert .sth files into RINEX files right on the data collector or tablet or your phone, no need of PC.

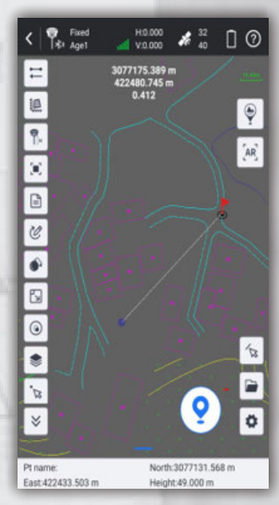
• Data can be shared with others through mobile Internet.

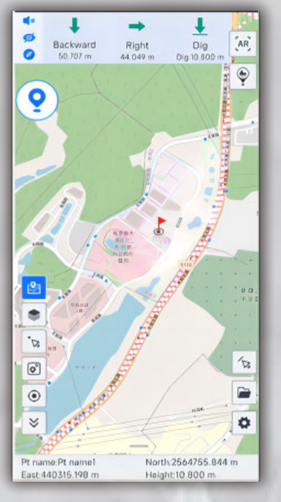
• The accuracy of PPK data collection is as high as Trimble equipment, the result can be directly imported for use in TBC.

# SurvStar APP

## Stakeout: Lighten Your Load, Increase Your Output

### CAD Stake-Out : Save Labor Cost and Reduce Errors




Traditional data collection software requires users to import points or lines to be setout from .csv or .txt files, users need to spend quite a lot of time to edit point and line libraries.

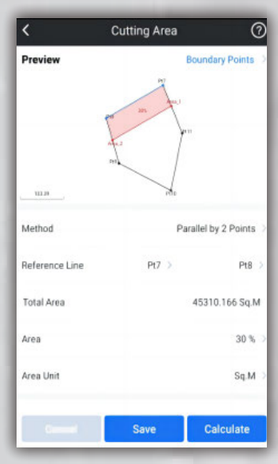
Moreover, for complex shapes such as curves, circles, and polygons, the traditional stake-out process is complicated. Now, our new CAD stake-out program offers a superior solution for surveyors.

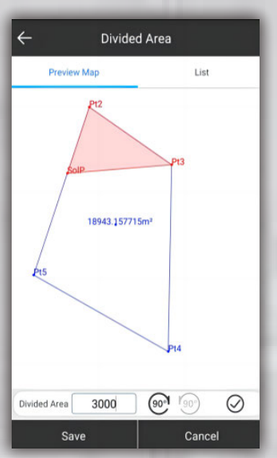
• No need for manual editing of point libraries.
• Staking-out geometric shape is faster and easier.

• No need for obtaining coordinate files before work. Staking-out can be done with just a CAD drawing.
• Online maps and CAD drawings can be displayed simultaneously, improving accuracy.

• AR guide lines make staking-out more intuitive.

### Area Division : Developed for Professional Cadastral Survey and Stake Out



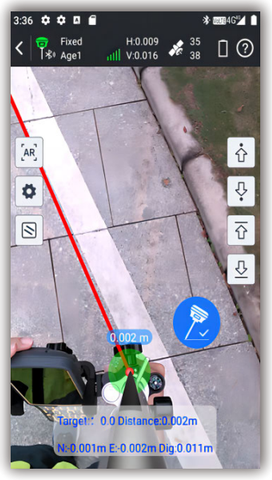

Select points to form a polygon, and directly identify the area division points for the surveyor to stake out. There is no more need for the user to guess a position to measure, and then to adjust.

• Six methods of division to determine the area division points. The methods are flexible and suitable to different user needs.

• The graphic display is intuitive and understandable.

### Live-View Stake-Out : Faster, More Accurate, More Intelligent




*(This function only works with the receiver models that have downward-facing camera or dual-cameras)*

Users utilize the real-time imagery captured by the camera at the bottom of the receiver and the AR guide lines displayed by the software, to locate the target points.

• When users perform stake-out with a dual-camera GNSS receiver, the software can call upon both cameras to work together. At medium to long distances, the software uses the front-facing camera to indicate the direction of travel, and at close range, it uses the downward-facing camera to find the specific location. This further increases the speed of staking out.

• AR guide lines can be displayed in point staking out, line staking out, and CAD staking out programs.

## Additional Features

### Compatiblewith Multiple Devices







*The App Now works with GNSS, Total Station, Echo Sounder, GIS Tablet, in future it will work with SLAM Scanner, Terrestrial Lidar Scanner.*

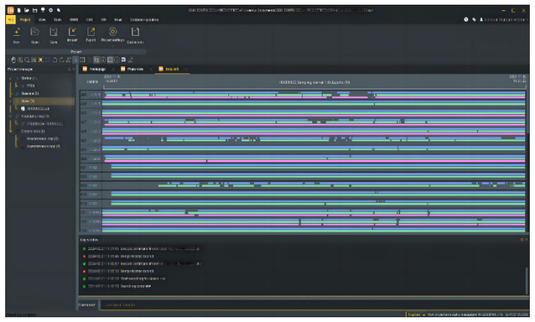
### Innovations for Better User Experience

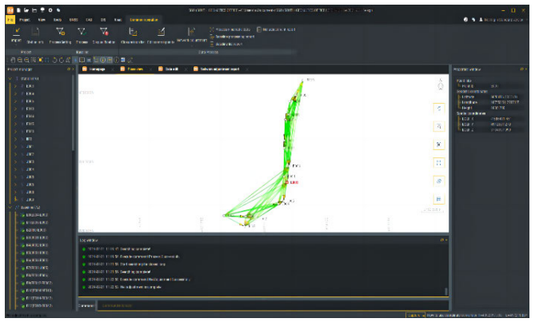
- RTK Data Backup
- QR Code Share
- Multiple Basemap Support
- Basemap
- Adjustment
- Network Mount Point Sorting
- NMEA Output Setting

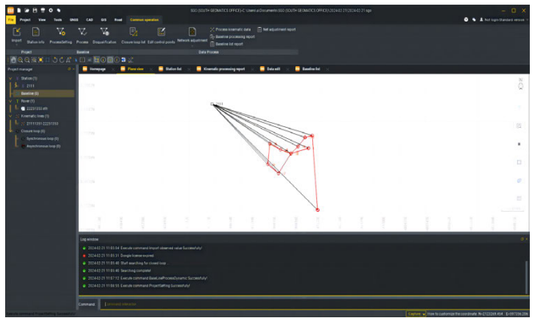
.....

# SOUTH Geo Office (SGO)

## Ideal GNSS Data Processor, Help You To Keep Advancing









### Data Processing & Reporting

When surveyors need to do post-processing of GNSS data, our software always can provide state-of-the-art technology to help you to produce optimal results. User just need to import field data, the software will automatically process GNSS baselines. Once results come out, the software can generate reports.

### RINEX Import and Export

This feature enables users to import the third party GNSS receiver data into our software and post-process it, by using the industry standard RINEX format.

### High Accuracy Guaranteed

RTK check, the unique function in our software, can compare RTK and PPK results to automatically acquire the most accurate coordinates for each target point.

It fills up the gap of poor corrections in RTK or hindered observations in PPK.

This improvement is to provide guarantee for your every survey.

### 3D Modelling

User can import photogrammetry image data into the software, to achieve 3D modeling, visually presenting geographic information data such as coordinates, areas, and volumes.

Model data can be transformed into different formats and applied with various coordinate parameters based on actual needs, making it adaptable to a wider range of application scenarios.

