# SPECIFICATIONS

## GNSS Features

Channels……………………………………………………………1698
GPS…………………………………………….L1C, L1C/A, L2C, L2P(Y), L5
GLONASS……………………………………………. G1, G2, G3
BDS…………………………………………. B1I, B2I, B3I, B1C, B2a, B2b
GALILEOS……………………………………..………. E1, E5a, E5b, E6, AltBOC*
SBAS…………………………………………………………………. L1*
IRNSS………………………………………………………………..…. L5*
QZSS…………………………………………………………L1, L2C, L5*
MSS L-Band…………………………………………………………. Reserve
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: 3.5 mm + 0.5 ppm RMS
Static (Long Observation)…………………Horizontal: 2.5 mm + 0.1 ppm RMS
Vertical: 3 mm + 0.4 ppm RMS
Rapid Static……………………………… Horizontal: 2.5 mm + 0.5 ppm RMS
Vertical: 5 mm + 0.5 ppm RMS
PPK…………………………………………………Horizontal: 3 mm + 1 ppm RMS
Vertical: 5 mm + 1 ppm RMS
RTK(UHF)…………………………………………Horizontal: 8 mm + 1 ppm RMS
Vertical: 15 mm + 1 ppm RMS
RTK(NTRIP)…………………………………Horizontal: 8 mm + 0.5 ppm RMS
Vertical: 15 mm + 0.5 ppm RMS
SBAS Positioning……………………………………………Typically<5m 3DRMS
RTK Initialization Time………………………………………….………. 2~8s
IMU Accuracy……………………………………………….8mm+0.7 mm/°tilt
IMU Tilt Angle………………………………………Optimal accuracy within 60°

## Hardware Performance

Dimension……………………………………………....134mm(φ)×79mm(H)
Weight………………………………………………..……860g (battery included)
Material……………………………………….Magnesium aluminum alloy shell
Operating Temperature………………………………………………-45℃~+75℃
Storage Temperature……………………………………………-55℃~+85℃
Humidity……………………………………………………100% Non-condensing
Waterproof/Dustproof…………………………………………………IP68 standard
Shock/Vibration………………………….…Withstand 2 meters pole drop onto the
cement ground naturally
Power Supply………………………………….6-28V DC, overvoltage protection
Battery…………………………… Inbuilt 7.4v 6800mAh rechargeable Lithium-
ion battery
Battery Life……………………………………………………… 25h (static)
20h (rover mode, optimal condition)

## Communications

I/O Port……………………….....…………5-PIN LEMO interface (external power
port + RS232)
Type-C interface (charge+OTG+Ethernet)
UHF antenna interface
Internal UHF…………………………...…………………………2W Radio Tx&Rx
Frequency Range…………………………………………..……..410-470MHz
Communication Protocol………………..………….Farlink, Trimtalk, SOUTH

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Communication Range…………… Typically 8-10km with Farlink protocol,
（12-15km in optimal condition）
Bluetooth……………………….… Bluetooth 5.0, Bluetooth 3.0/4.2 standard,
Bluetooth 2.1 + EDR
NFC Communication……………………………………………………. Support
Modem…………………………………………………… 802.11 b/g/n standard

## Data Storage/Transmission

Storage………………………………………………16GB SSD internal storage
Support automatic cycling storage
Support external USB storage (OTG)
The customizable sample interval is up to 20Hz
Data Transmission…….....….Plug and play mode of USB data transmission
Supports FTP/HTTP data download
Data Format…....………Static data format: STH, Rinex2.01, Rinex3.02, etc.
Differential data format: RTCM 2.1, RTCM
2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2
GPS output data format: NMEA 0183, PJK
plane coordinate, Binary code
Support: VRS, FKP, MAC, fully support
NTRIP protocol

## Sensors

IMU……………………………… Built-in IMU, calibration-free, 60 Degrees
Camera……………………… Front Camera: 8MP, Bottom Camera: 2MP,
(Live View AR stakeout)

Laser…………………………………… 3R green laser, 30m working range

Electronic Bubble…………… Controller software can display electronic
bubble, checking leveling status of the
carbon pole in real-time
Thermometer……………………….Built-in thermometer sensor, intelligent
temperature control technology, monitoring
and adjusting the receiver temperature

## User Interaction

Operating System………………………………………………………… Linux
Buttons……………………………………………………………. Single button
Indicators……………………… Data and power indicators

Web Interaction…………………… With access to Web UI via WiFi or USB
connection, users can monitor the receiver
status and change the configurations
Voice Guidance…………………..Chinese/English/Korean/Spanish/Arabic/
Portuguese/Russian/Turkish/French/Italian/

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 management,
firmware updates, online registers, etc.

＊Reserve for future upgrade.

*Remarks: Measurement accuracy and operation range might vary due to atmospheric conditions, signal multipath, obstructions, observation time, temperature, signal geometry and number of tracked satellites. Specifications subject to change without prior notice*



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## Measure More in Less Time

Laser measurement allows surveyors to collect target point at a position that traditional RTK can not reach directly, such as point on the surface of a wall, a tree, or sill of window, and the small space that surveyors can not step in.

## Measure in Darkness

Laser measurement enables surveyors to collect target points in dark environments (such as at night or in semi-indoor settings). It also allows for indoor distance measurements.

## Measure the Inaccessible

Laser measurement allows surveyors to capture target points in locations where traditional RTK cannot directly reach, such as points on walls, tree trunks, windowsills, and narrow spaces that surveyors cannot enter.

## Stay in Safe Position

Laser measurement helps users reduce risks when measuring near hazardous areas (such as busy roads and seaside lakes), ensuring the safety of surveyors. A safe working method is not only a personal requirement but also crucial or the happiness of your family.

## LASER STAKEOUT

### To Overcome the Difficulty

Lasers bring more possibilities to staking out.

Now, when you encounter tall obstructions near the target point in the field that block satellite signals, you will no longer be helpless.

Please just enable laser and continue the work.

Additionally, when it is inconvenient to carry instruments to the target point, you can also choose to stake out by laser from a distance of several meters away.

## CAD AR STAKEOUT

### Simplify Your Workflow

Live-view AR Stakeout can integrate the content of CAD drawing with real-world scenes, helping you stakeout targets more quickly.

The front camera helps surveyors in finding a general direction from a distance and understanding the distribution of surrounding features.

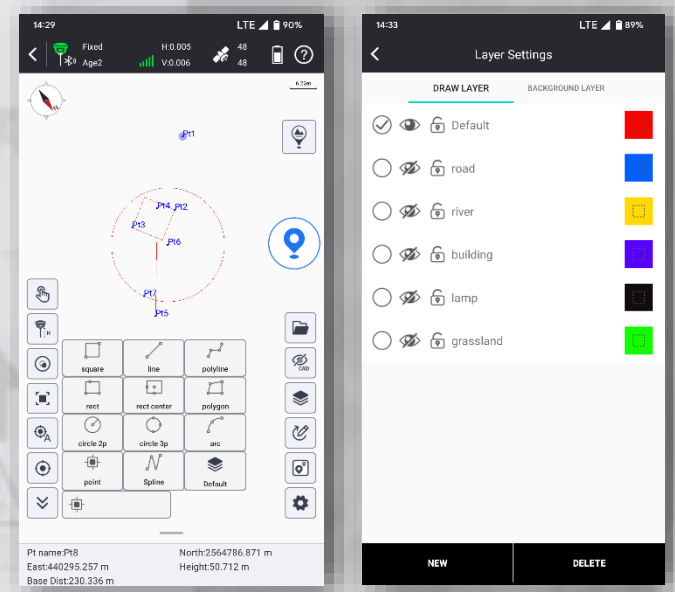The bottom camera enables precise stakeout as you approach the target.

With dual camera live-view stakeout, your work will be easier and more intuitive.

## 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.

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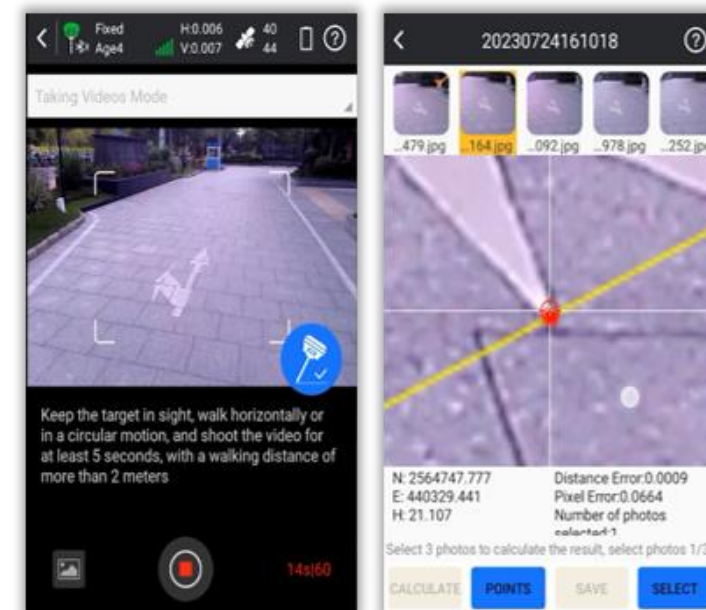


Photogrammetry Measurements can be conducted by taking pictures or videos. Coordinates of all points in the photos can be acquired.

• 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.

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

### CAD Draw : Drafting without a PC
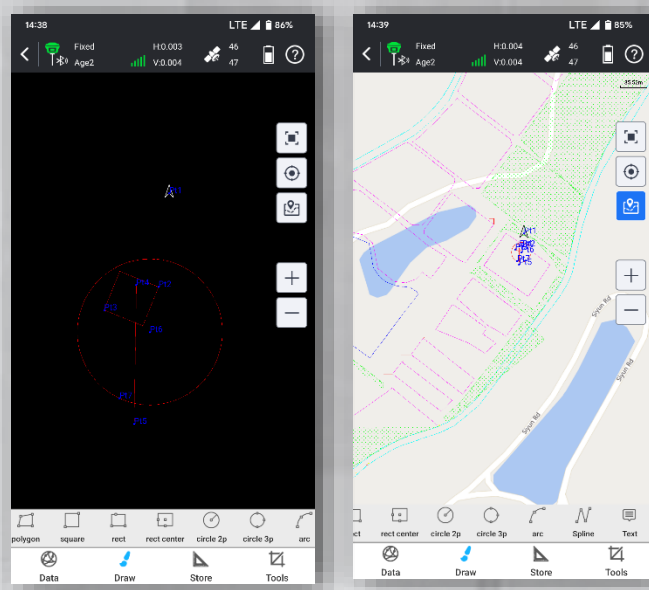


This feature enables CAD drawing capabilities, which were previously only possible on a PC. Now surveyors can edit CAD map on RTK controller or tablet or phones.

• 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.

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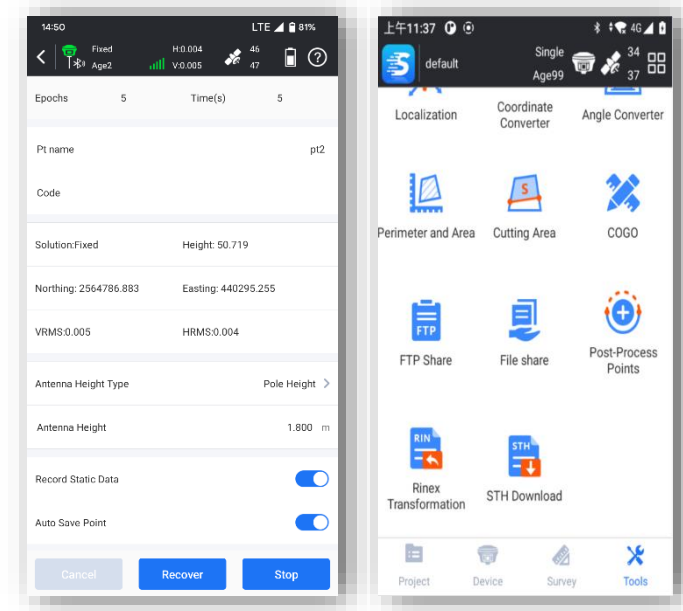


The software provides both static and PPK data collection capabilities.

• 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.

# RTK GO APP

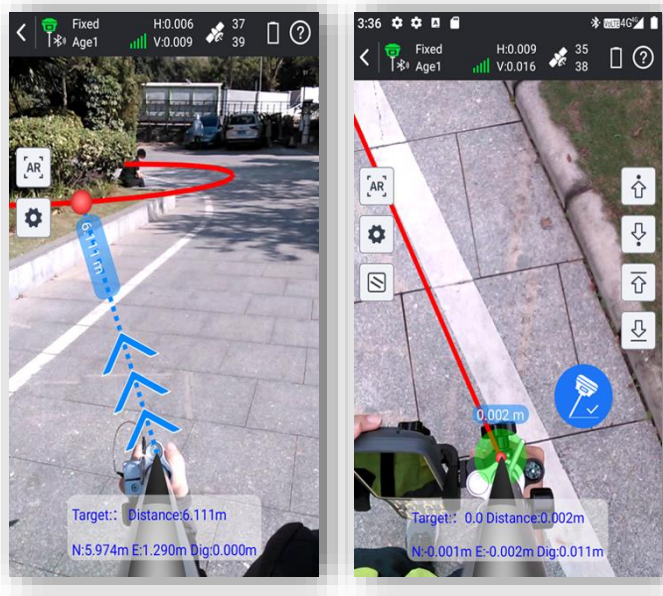## CAD Stake-Out : Save Labor Cost and Reduce Errors
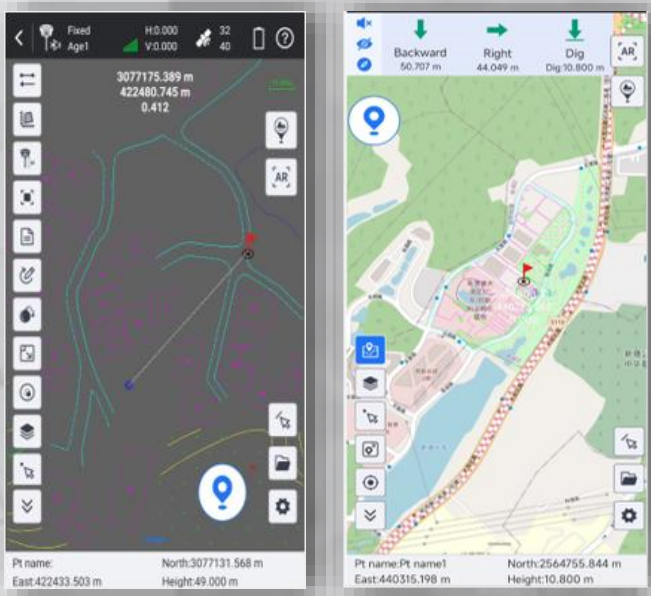


Traditional data collection software requires users to import points or lines to be setout from .csv or .txt files, users need to spend quite a lot of time to edit point and line libraries.

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

### Compatible with Multiple Devices
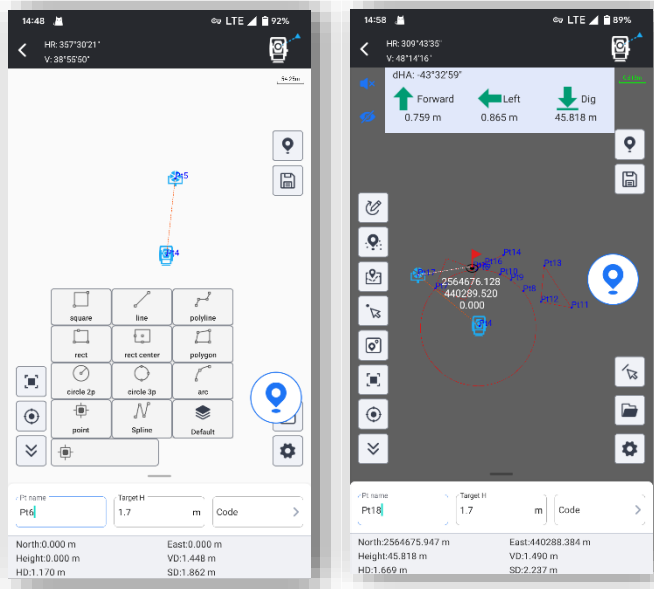


The App Now works with GNSS, Total Station, Echo Sounder, GIS Tablet, in future it will work with SLAM Scanner, Terrestrial Lidar Scanner.
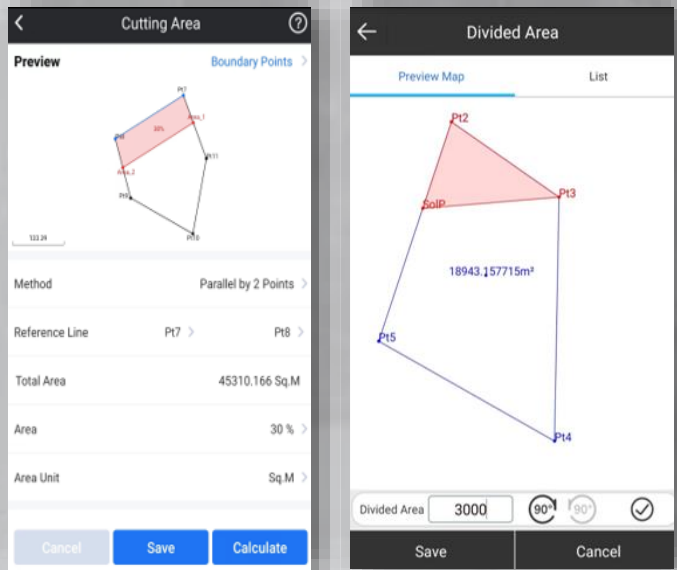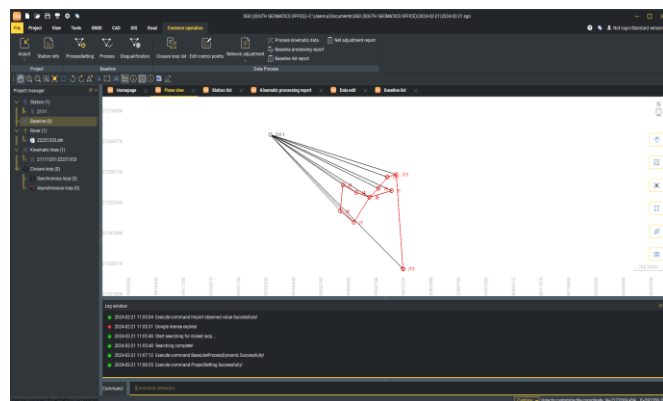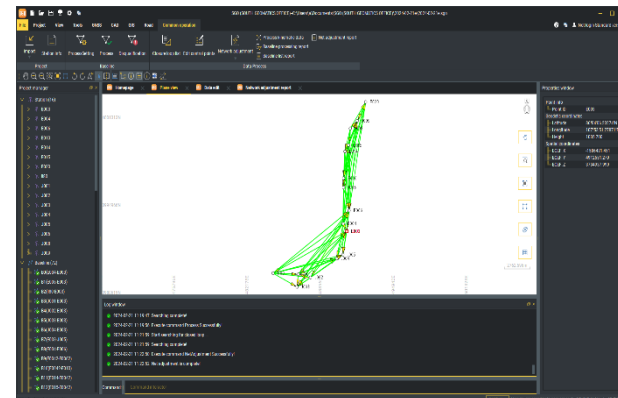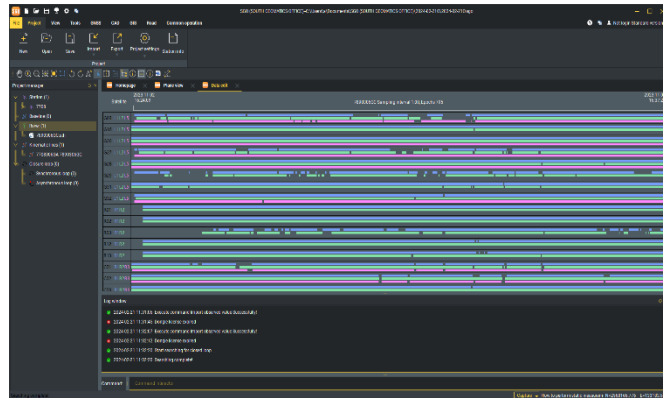
### Innovations for Better User Experience

■ RTK Data Backup

■ QR Code Share

■ Multiple Basemap Support

■ Basemap Adjustment

■ Network Mount Point Sorting

■ NMEA Output Setting

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# GEO DATA LAB
## 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.