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
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 module, calibration-free, 60°
Camera…… Video Shooting Camera: 8MP (can be used in AR stakeout)
AR stakeout camera: 2MP
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, adopting intelligent temperature control technology, monitoring and adjusting the receiver temperature

User Interaction

Operating System…… Linux
Buttons…… Dual buttons
Indicators……Satellites, data and power indicators
Display…… 1.14", 135*240
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/Portuguese/Russian/Turkish/French/Italian/Arabic
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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SANDING

LASER RTK T15

GREEN LASESR BEAM VALID WITHIN 30M

VIDEO-SHOOT TARGET AIMING

REMOTE DOT MEASUREMENT ACCURACY 2CM

VISUALIZED + 3D MODELING + PHOTOGRAMMETRY

Laser Measurement
— Four Advantages to Boost Your Productivity

3R Green Laser
Laser Measurement & Stakeout

8MP Camera
Video & Photo Shooting

2MP Camera
CAD AR Stakeout

Farlink 2.0 Radio
8-12 km Even Further!

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 & CAD AR Stakeout
— Level Up Your Efficiency to New Platform

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

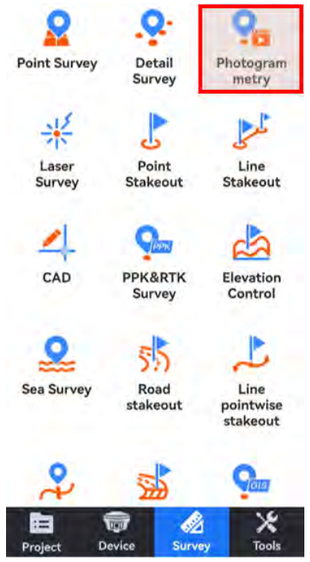
RAMA1 can integrate the content of CAD drawings with real-world scenes, helping you stakeout targets more quickly.

The front camera assists 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's help, your stakeout will be easier and more intuitive.

Photogrammetry Measurement in Real-Time
— Working Easily by Video Shooting

T15 can process a set of photos or a video, acquiring coordinates for hundreds of points within minutes. It boasts a wider working range and fewer blind spots through remote measurements with the camera. Locations that were once challenging, such as spaces under rooftops and areas with obstacles, are now easily measurable.



Utilizing visual positioning, surveyors can collect field data in a short time. The data can preserve safely in the device and is reusable at any time. These capabilities are particularly well-suited for distinctive GNSS measurement tasks, including documenting accident scenes and excavation sites for urban public facilities

Too Much Details to Measure

In Short of Time

Risky Terrain

Designed for Urban Surveying
--Cloud Server Online Processing

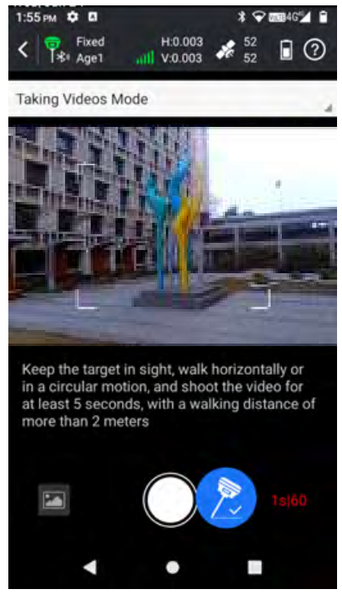
Surveyors, with a strong internet connection in urban areas, can process image data online using network and cloud servers. T15 achieves 2cm accurate coordinate data for image measurements within minutes, balancing precision and speed.

Designed for Field Surveying
--Data Controller Offline Processing

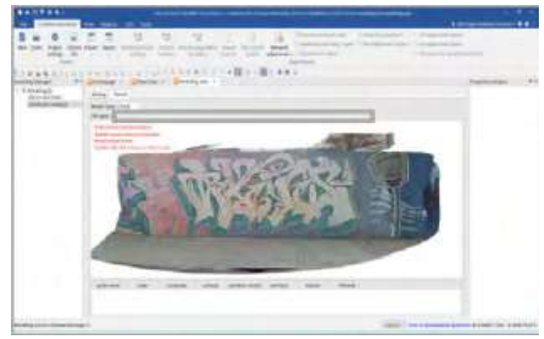
Without internet coverage, surveyors can perform offline image data processing using the data controller app. This mode offers the fastest processing speed, saving time on data uploads and delivering 2cm accuracy results within a few seconds.

3D Modeling & Post Processing
— Eyes On Now, Be Prepared for Future

T15 enables single-user 3D modeling, on the models visually displaying geographic information like coordinates, areas, and volumes. It supports transforming model data into diffe rent formats and customize coordinate parameters for diverse applications.



Shooting a Video



Generating 3D Model

Measuring on 3D Model

Work in Your Preferred Way

Surveyors can import T25 data into SANDING GEO Office (on PC) or third-party software for 3D modeling. Future updates to ARCSURV (Android App) will also include 3D modeling functions, allowing users to select the most suitable software for optimal work effic iency based on scenario and task requirements.

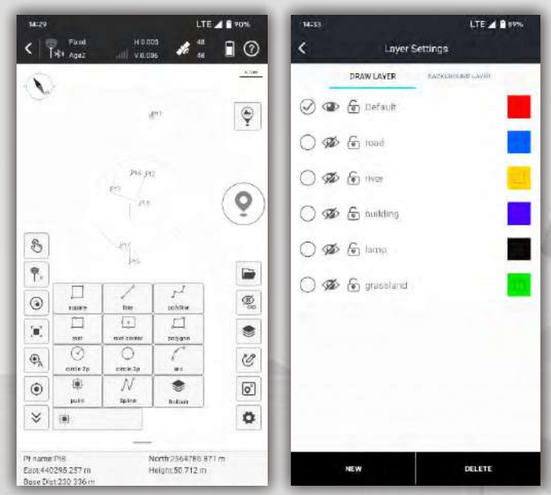
Ensuring a Smooth Journey

T15 harnesses 3D modeling tech, seamlessly integrating image measurements with UAV data, including DJI and other brands. Overcoming data gaps in UAV surveys, T15 supplements incomplete models by collecting ground image data, improving overall survey outcomes.

ARCSURV APP

Field Data Collection & Mapping: The Most Advanced is Here

Measure & Draw : Save Time in Field work and Office



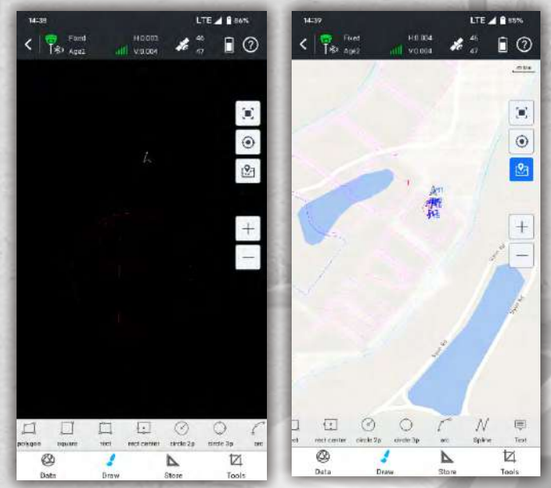
This feature allows you to draw the result map while completing point measurements.

• 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



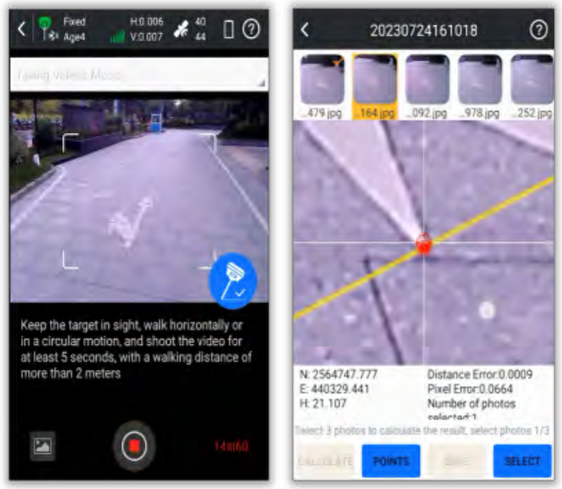
Select points to form a polygon, and directly identify the area division points for the surveyor to stake out. There is no more need for the user to guess a position to measure, and then to adjust.

• 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)

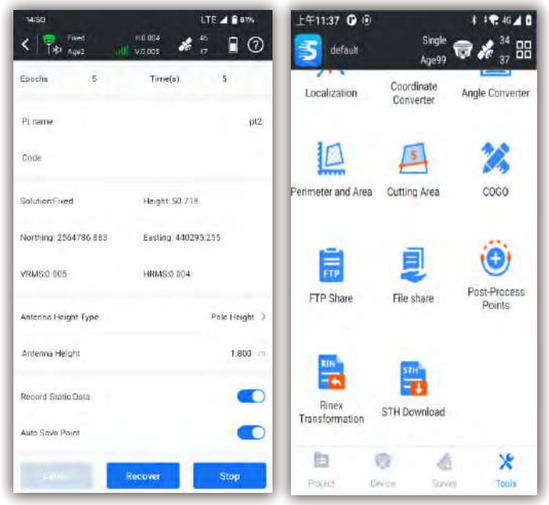
Photogrammetry Measurements can be conducted by taking pictures or videos. Coordinates of all points in the photos can be acquired.

• 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.

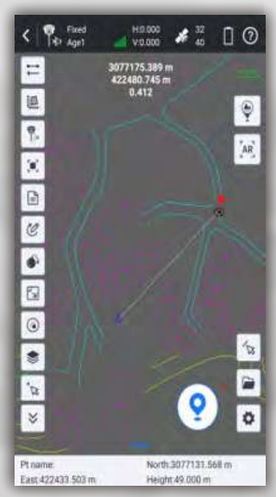
• Data can be shared with others through mobile Internet.

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

ARCSURV 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.

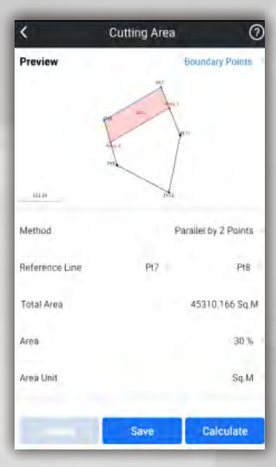
Moreover, for complex shapes such as curves, circles, and polygons, the traditional stake-out process is complicated. Now, our new CAD stake-out program offers a superior solution for surveyors.

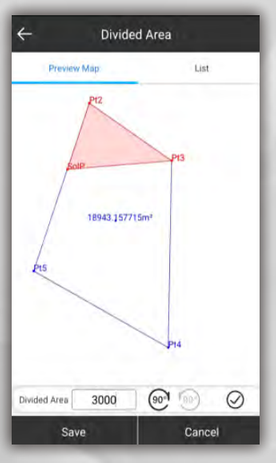
• No need for manual editing of point libraries.
• Staking-out geometric shape is faster and easier.

• 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

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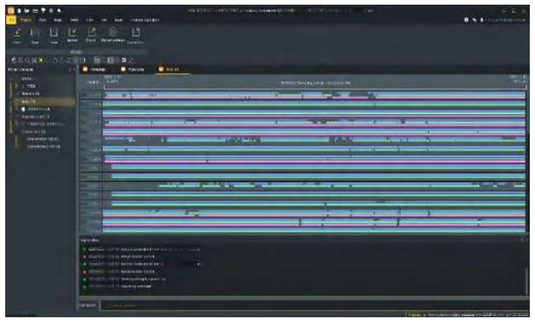
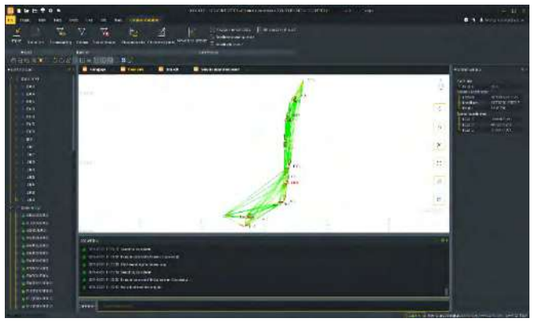
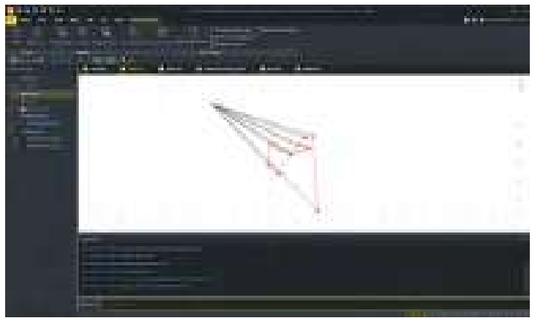
SANDING Geo Office (SGO)

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.