

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.....                 | B2b-PPP, E6B 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<br>Vertical: 0.50 m + 1 ppm RMS                                             |
| GNSS Static.....                                    | Horizontal: 2.5 mm + 0.5 ppm RMS<br>Vertical: 3.5 mm + 0.5 ppm RMS                                         |
| Static (Long Observation).....                      | Horizontal: 2.5 mm + 0.1 ppm RMS<br>Vertical: 3 mm + 0.4 ppm RMS                                           |
| Rapid Static.....                                   | Horizontal: 2.5 mm + 0.5 ppm RMS<br>Vertical: 5 mm + 0.5 ppm RMS                                           |
| PPK.....                                            | Horizontal: 3 mm + 1 ppm RMS<br>Vertical: 5 mm + 1 ppm RMS                                                 |
| RTK(UHF).....                                       | Horizontal: 8 mm + 1 ppm RMS<br>Vertical: 15 mm + 1 ppm RMS                                                |
| RTK(NTRIP).....                                     | Horizontal: 8 mm + 0.5 ppm RMS<br>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°                                                                                |
| SLAM Accuracy.....                                  | Relative Accuracy ≤1cm,<br>Absolute Accuracy (RTK) down to 3-5cm,<br>Absolute Accuracy (PPK) down to 2-4cm |
| Positioning Accuracy while Satellites Unlocked..... | 3-5cm @20m radius<br>(error increases 3cm per 10m additional)                                              |
| Contactless Measurement Accuracy.....               | 5cm @15m range                                                                                             |

| LIDAR                 |                                                |
|-----------------------|------------------------------------------------|
| Range.....            | 40m @ 10% reflectivity, 70m @ 80% reflectivity |
| FOV.....              | H: 360°, V: 59°                                |
| Point Frequency ..... | 200,000 points per second                      |
| Eye Safety Class..... | Class 1 (IEC 60825 -1: 2014)                   |

| Cameras                                         |                               |
|-------------------------------------------------|-------------------------------|
| Camera for SLAM LIDAR Colorization.....         | 12 MP x 2 units, left & right |
| Camera for contactless Visual-LiDAR survey..... | 8MP, frontward                |
| Camera for AR Visual Stakeout .....             | 2MP, downward                 |
| Eye Safety Class.....                           | Class 1 (IEC 60825 -1: 2014)  |

| Hardware Performance       |                                                                                                               |
|----------------------------|---------------------------------------------------------------------------------------------------------------|
| Dimension.....             | 134mm ×147mm x 138mm                                                                                          |
| Weight.....                | 1.38kg                                                                                                        |
| Material.....              | Magnesium aluminum alloy shell                                                                                |
| Operating Temperature..... | -20℃~+55℃                                                                                                     |
| Storage Temperature.....   | -40℃~+80℃                                                                                                     |
| Humidity.....              | 80% Non-condensing                                                                                            |
| Waterproof/Dustproof.....  | IP64 standard                                                                                                 |
| Battery.....               | Inbuilt 7.4v 5000mAh rechargeable Lithium-ion battery, hot-swappable 7.4v 6,800 mAh handgrip battery, 87.32Wh |
| Battery Life.....          | Air Meas./ Indoor Mapping/ Point Cloud San: > 3h,<br>GNSS Rover Mode and Static mode: > 24h                   |

| Communications              |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|
| I/O Port.....               | SIM card slot inbuilt (NANO SIM)<br>Type-C interface (charge+OTG+Ethernet) |
| Internal UHF.....           | UHF antenna interface                                                      |
| Frequency Range.....        | Inbuilt, Receiving only 410-470MHz                                         |
| Communication Protocol..... | Farlink, Trimtalk, SOUTH                                                   |
| Bluetooth.....              | Bluetooth 5.0, Bluetooth 3.0/4.2 standard,<br>Bluetooth 2.1 + EDR          |
| NFC Communication.....      | Auto paring device and controller by touch                                 |
| Modem.....                  | 802.11 b/g/n standard                                                      |

| Data Storage/Transmission |                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage.....              | 64GB SSD internal storage<br>Support automatic cycling storage<br>Support external USB storage (OTG)<br>The customizable sample interval is up to 20Hz                                                                                                                                                                                   |
| Data Transmission.....    | Plug and play mode of USB data transmission<br>Supports FTP/HTTP data download                                                                                                                                                                                                                                                           |
| Data Format.....          | Static data format: STH, Rinex2.01, Rinex3.02, etc.<br>Differential data format: RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2<br>GPS output data format: NMEA 0183, PJK plane coordinate, Binary code<br>Support: VRS, FKP, MAC, fully support NTRIP protocol<br>Post-processing free LAS point cloud output<br>With GEO coordinates |

| Sensors                |                                                                                                                                     |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 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.....               | Single button                                                                                                              |
| Indicators.....            | Satellites, 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/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.      |

| Software                      |                                                                                                                                                                                                                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mobile App Software.....      | Android with a lifetime license and driver included                                                                                                                                                                                                                                  |
| Post-processing software..... | for Windows with a lifetime license<br>- Georeferencing module, colorization module, slice module, profiles and debugging, import and export.<br>- Point Cloud Format: Raw format exportable to .LAS or .LAZ directly or through included software.<br>- Color Point Cloud Supported |
| *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

Mixed PLUS

VISUAL-LIDAR RTK  
FOR ALL SCENARIOS



VOLUME CALCULATION

INDOOR MAPPING

LASER SCANNING

VISUAL MEASURING

OUTDOOR MAPPING

3D MODELING

VISUAL STAKEOUT

## Integrates SLAM and RTK, Improving Your Capability

When combing the power of GNSS RTK Positioning and SLAM LiDAR Scanning, surveyors can work in both outdoor and indoor environments, performing contact or non-contact measurements according to their work need, to tackle tasks they couldn't accomplish previously.

Equipped with a professional graphic card by Nvidia and dual 12 MP panoramic cameras by SONY, ME is able to realistically restore scenes. The 8 MP front camera and 2 MP downward camera help surveyor to preform photogrammetry measurement and CAD-AR stakeout efficiently.

### GNSS Receiver

1698 channels GNSS Engine, Antenna, IMU sensor, UHF radio, internet module, Bluetooth.

### Camera (4 units)

12 MP panoramic camera 2 units, by SONY, for colorization.  
8 MP +2 MP for visual positioning.

### LiDAR Scanner

Absolute Accuracy<5 cm, relative accuracy <1cm, Scanning Rate 200,000 pts/s, Maximum Detection Range 70 m

### Graphic Processor

by NVIDIA, for real-time, true-color image processing

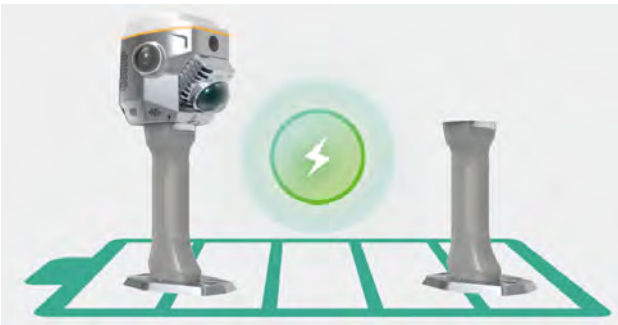
### Interface port

connecting telescopic pole or battery handle grip

## Uninterruptible Power Supply

The ME can get power from the internal battery, handle battery, and external power supply.

This uninterruptible power supply design eliminates the need for system restarts or reinitialization, ensuring continuity for large-scale, long-duration operations and improving operational efficiency.



## Air Meas., Capture A Lot of Points Contactlessly and Easily

The Air. Meas. function combines laser sensing technology and AI image matching engine. It collects 200,000 points data per second and enable users to collect multiple 3D coordinates by capturing a photo once.

Measuring from a range of 15 meters, while the accuracy remains 5 cm. This data collection method is a ideal solution for many complex environments for example hard-to-reach areas and hazardous areas.

Measuring with Air Meas. function, users don't need to stay steady and aim precisely, don't need to walk in the prescribed manner, don't need to level the range pole.

The data collection efficiency of Air Meas. is several times over traditional methods of Laser RTK or Visual Positioning RTK.



Cross-section Measurement



Pipeline Measurement



Dangerous Point Measurement



Building Facade Measurement



## Magicalc, GNSS Positioning Anywhere

ME system is capable to maintain 5 cm accuracy for a few minutes when GNSS satellite signals are out-of-reach, the solution status will change from "fixed" to "Mixed Solution".

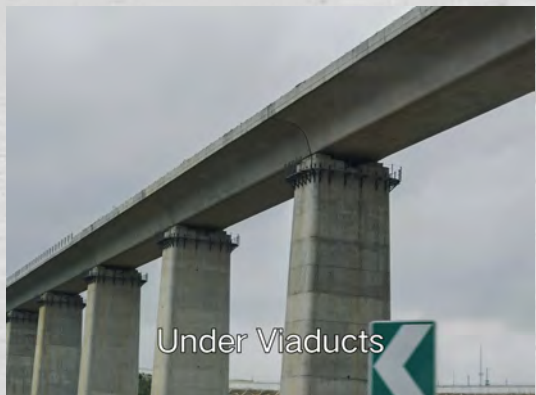
This innovative function enables users to seamlessly capture data in areas with limited GNSS signals, such as under overpasses, in tunnels, or in underground garages.



High-rise Buildings



Indoor Environments



Under Viaducts



Stockpiles



## Accurate Earthwork Volume Calculation

The ME system allows users to perform earthwork calculations by capturing 3D point clouds.

The simple and streamlined workflow is very practical and efficient for excavation, stockpile measurement, mining, constructions.

## Field Software for Data Collection

Ksurvey app, Data Collection control software, supports collection control, project management, real-time point cloud browsing and processing, visual positioning, CAD & AR stakeout, other measurement and calculation functions.

### Data Collector H9

- \* 8 Cores, 2.0 GHz CPU
- \* 7700 mAh high capacity battery
- \* 6 inches touch screen
- \* QWERTY full keyboard
- \* Android 12

Optimized for processing SLAM data and Photogrammetry data.



## Office Software for Post-processing

AcuteLas Studio software is designed to process AcuteLas series aerial LiDAR system data and 3D laser scanner data, including the functions one-key trajectory processing and laser scanner/ LiDAR data processing and fusion, point cloud classification, data quality check, quality report output, coordinate system conversion, point cloud classification, topographic survey module, etc.

|                  |                                              |
|------------------|----------------------------------------------|
| Operating System | Windows 10 IoT Enterprise or higher          |
| Processor        | Intel® 13th Gen Core™ i7 processor or better |
| RAM              | 32 GB or better                              |
| Storage          | SSD 1 TB or better                           |



## User Case: from a Municipal Surveying Department

**User Demand:** Working under viaducts, to measure or stake out road center lines and side lines, green belts, manhole covers, etc.

**Before:** Using both conventional GNSS RTK and total station, procedures are complicated

**Now:** Taking advantage of the "MagiCalc" function and "Mixed Solution", seamlessly capture data in areas with limited GNSS signals. Using the "AirMeas." and SLAM scanning function, remotely measure the targets that are hard to reach. Remaining a high efficiency in the job.

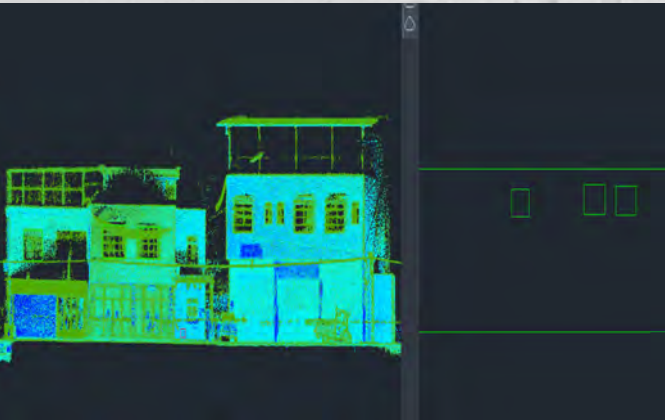


## User Case: from City Gas Company and Water Company

**User Demand:** Coordinate data collection of pipelines, valves, tees, nodes, elbows, household meters, etc.

**Before:** Using conventional GNSS RTK and total stations

**Now:** 1) In GNSS signal-obstructed environments and GNSS signal-denied environments, conventional RTK can not get fixed solution but ME system still can keep centimeter level accuracy by its Mixed Solution. 2) The coordinates of wall-mounted devices and pipes can be obtained in batches through SLAM scanning or AirMeas. function. 3) The real scene can be recorded for future reviewing.

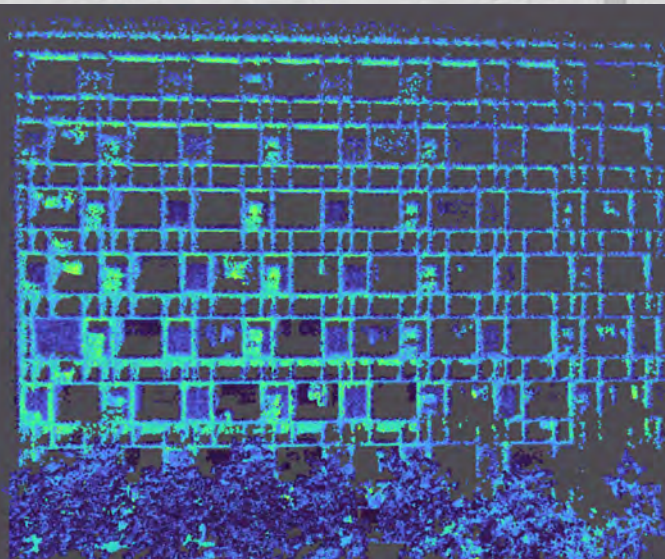


## User Case: from a Real Estate Company

**User Demand:** Measuring the area of the exterior wall, for building renovation

**Before:** 1) for small building, using tapes to measure and draw sketch manually. 2) for large buildings, using drones to perform aerial photogrammetry surveying, but ground floor and lower floors are difficult to measure by aerial survey.

**Now:** Using ME to scan the facade of the building, is much quicker and more precise than traditional methods. ME is able to scan up to eight floors high.



## User Case: from a Municipal Gardening Department

**User Demand:** Classifying the vegetation in the park

**Before:** Using conventional GNSS RTK, it takes one and half day to measure a park

**Now:** Using ME to quickly obtain true-color point clouds of various targets in the park, the field work takes only one hour. When going back to office, import point cloud to processing and mapping software, clearly identify the types of vegetation and draw topographic maps based on the positions and boundaries of each vegetation.

