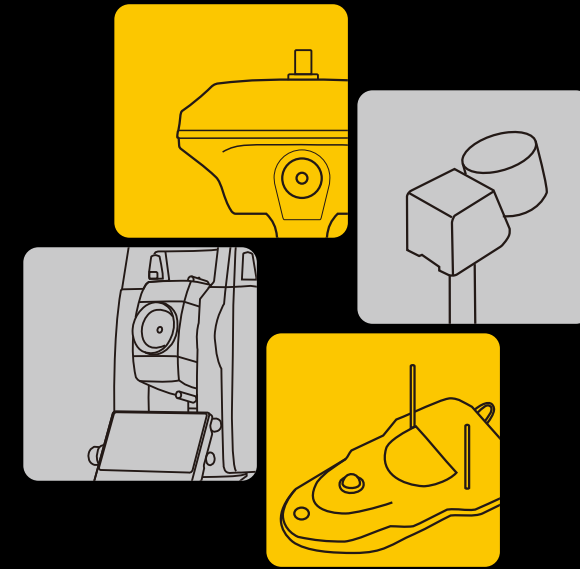




SOUTH Surveying & Mapping

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# General Catalogue 2024

(V.2024MAR)












- Established in **1989**, **25** Years of Overseas Business Experience
- A Chinese **Giant** Manufacturer Specializing in Geo-information Industry
- **5** World-class Production Bases Located in 4 Cities
- Plenty of the Very **First** China-made Survey Instruments (eg. TS, GPS, CORS, etc.) from Here
- Always Top Listed Among the Top 100 China's Geo-information Enterprises and Ranked **No.1** Several Times
- Complimented as the **National Brand** of Survey Equipment in 2009 by the Former Minister, Ministry of National Resources
- A Very Complete **Range** of Survey Products with Hardware and Software Both
  - 743,600+ Total Stations Sold Worldwide
  - 528,000+ GNSS Receivers Sold Worldwide
  - 8,600+ CORS in Service Worldwide
- A Variety of **GIS** Solutions and Hundreds of Successful Stories
- Key Breakthroughs Featuring **Unique** in Recent Years
- A Dedicated Survey **Services** Provider in Addition to Survey Supplies
  - 25,700+ Drone Flights
  - 240,790+ sq.km Aerial Coverage
  - 133,100+ km Mobile LiDAR Mapping
  - 32,071,080+ sq.m Building Elevational Scan
  - 38,537,000+ sq.m SLAM Mapping
  - 69,300+ Spots for Monitoring
  - 820+ Job Services
  - (Since 2017)





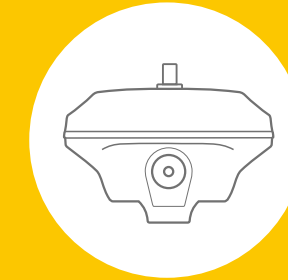


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*When Variety Meets Diversity*

1



## GNSS

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## INNO8 Dual-cam Flagship Masterpiece

- Visual positioning and AR stake-out on board
- Ready for online/off-line/post process and 3D modeling
- 1598/1698/1760 channels available, with upward antenna design
- Ultra-large HD touch screen 1.39-inch, color LCD
- 3W internal UHF, Farlink 2.0 radio datalink technology
- 10000 mAh internal battery and 64 GB internal memory



## Insight V3 Lightweight Dual-cam Mainstay

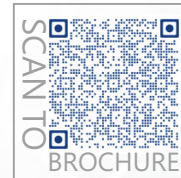
- Visual positioning and AR stake-out on board
- Ready for online/off-line/post process and 3D modeling
- 1698 channels and improved multi-satellite positioning algorithm
- 2W internal UHF, Farlink 2.0 radio datalink technology
- 1.14-inch screen display, yet 860 grams only
- 6800 mAh internal battery and 16 GB internal memory





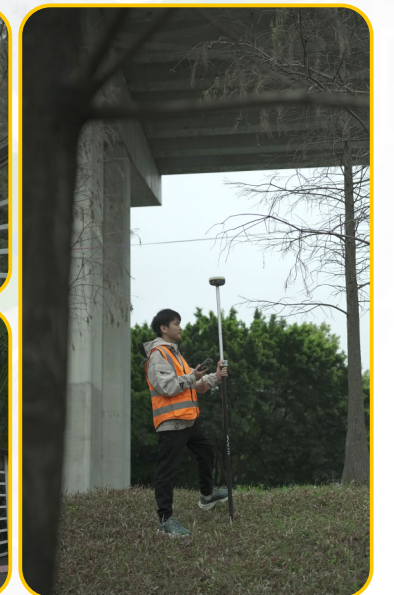
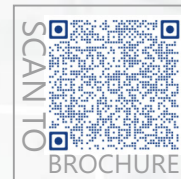
## INNO7 Multi-functional Large Screen Receiver

- 336/1598 channels available, with upward antenna design
- RTX XTRa technology to deliver cm-accurate positioning by SSR
- Ultra-large HD touch screen 1.54-inch, color LCD
- 3W internal UHF, Farlink 2.0 radio datalink technology
- 2 nos. 3400 mAh hot-swappable battery and 64 GB internal memory



## Insight V2 Entry-level AR Stake-out Starter

- Single-cam to enable AR stake-out on board
- 1598 channels and improved multi-satellite positioning algorithm
- 2W internal UHF, Farlink 2.0 radio datalink technology
- Type-C interfacing for web control access and fast recharge
- 6800 mAh internal battery, power indication without switching on even





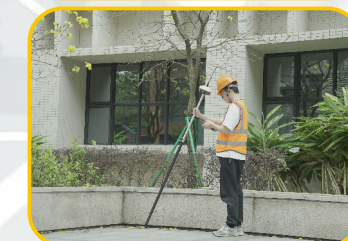
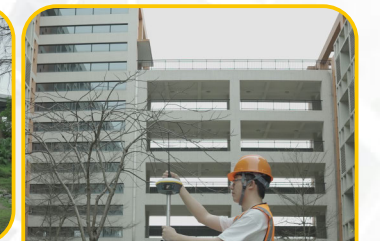
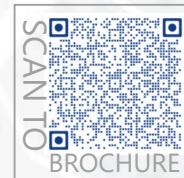
## Galaxy G4 Enhanced Fundamental Mainstay

- Features ultra-fast fixed solutions within second(s) under dense canopies
- 1698 channels and improved multi-satellite positioning algorithm
- 2W internal UHF, Farlink 2.0 radio datalink technology
- 4th generation IMU technology, calibration-free and nearly all-time usable
- 6800 mAh internal battery, internal memory extendable up to 128 GB



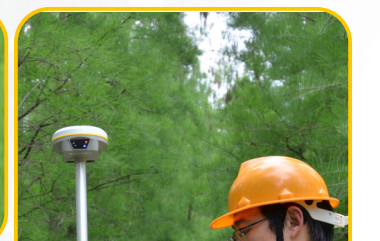
## Galaxy G5 Designed for Powerful Base

- 1760 channels for full constellation tracking
- 3W internal UHF, Farlink 2.0 radio datalink technology
- Upward antenna but indented design, IP 68 rating
- Ultra-large HD touch screen 1.3-inch, color LCD
- 10000 mAh internal battery, internal memory extendable up to 64 GB



## Galaxy G3 Supercharged Pocket-size Receiver

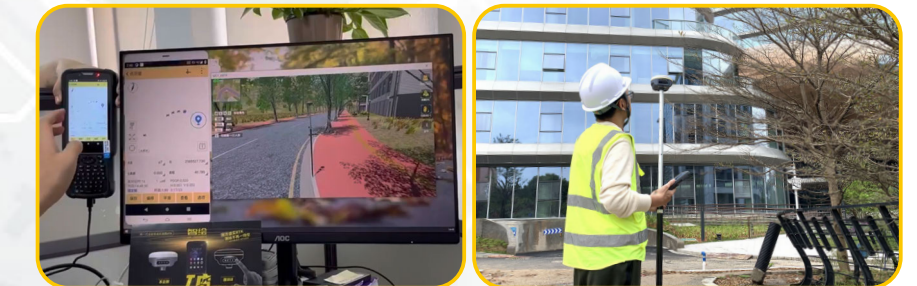
- 1598/1760 channels available
- 2W internal UHF, Farlink 2.0 radio datalink on board
- A lightweight but powerful unit, 790 grams only
- Fixed solutions kept at centimeter level for minutes while corrections are missing
- 6800 mAh internal battery, power indication through LED lights





## Galaxy G2 VR Combo Package Model

- 1598/1760 channels available
- 2W internal UHF, Farlink 2.0 radio datalink on board
- VR combo package available for modern survey training
- Simple but elegant, 4G telecom module on board, 850 grams only
- Fixed solutions kept at centimeter level for minutes while corrections are missing



## Galaxy G7 Radio & Telecom Module On Board

- 1598/1760 channels available
- 2W internal UHF, Farlink 2.0 radio datalink on board
- Simple but elegant, 4G telecom module on board, 970 grams
- Fixed solutions kept at centimeter level for minutes while corrections are missing
- 6800 mAh internal battery, internal memory extendable up to 64 GB



## Galaxy G9 A Smart Wireless Model

- 1598/1760 channels available
- 3W internal UHF, Farlink 2.0 radio datalink technology
- One button for all operations, power indication without switching on even
- Fixed solutions kept at centimeter level for minutes while corrections are missing
- 2 nos. 3400 mAh hot-swappable battery, working time up to 15 hours max.













## Galaxy G7Q An Economical Receiver Model

- 1598 channels available
- 2W internal UHF, Farlink 2.0 radio datalink technology
- One button for all operations
- Fixed solutions kept at centimeter level for minutes while corrections are missing
- 6800 mAh internal battery, working time up to 18 hours max.





## Comparison

Model	Inno8	Inno7	Insight V3	Insight V2	G2	G3	G4	G5	G7	G7Q	G9
Illustration											
VR Training		VR Program			VR Combo						
Photogrammetry	√		√								
AR Stake-out	√		√	√							
Channel	1598/1698/1760	336/1598	1698	1598	1598/1760	1598/1760	1698	1760	1598/1760	1598	1598/1760
Radio Antenna	Upward	Upward						Upward			
Internal Radio	1/2/3 W	1/2/3 W	2 W	2 W	2 W	2 W	2 W	1/2/3 W	2 W	2 W	1/2/3 W
4G Telecom	√	√	√		√		√	√	√	√	√
Tilt Survey	√	√	√	√	√	√	√	√	√	√	√
Touch Screen	√	√						√			
LCD Screen			√								
Net Weight	1.2 kg	1.2 kg	0.86 kg	0.8 kg	0.85 kg	0.79 kg	0.89 kg	1.35 kg	0.97 kg	0.9 kg	1.3 kg
Inbuilt Battery	10000 mAh		6800 mAh	6800 mAh	6800 mAh	6800 mAh	6800 mAh	10000 mAh	6800 mAh	6800 mAh	
Swappable Battery		2 * 3400mAh									2 * 3400 mAh
Internal Memory	64 GB	64 GB	16 GB	4 GB	8 GB	4 GB	4 GB	16 GB	4 GB	4 GB	16 GB



## H6 Rugged Data Collector

- Android 12 OS, 64GB ROM, fast than ever
- 5-inch touch screen with full keypad
- Seamlessly integrated with Google framework
- A durable and reliable fieldwork tool



## H10 Rugged Data Collector

- User-friendly subtractive design approach
- Android 12 OS, Bluetooth 5.0, QC 3.0, and GMS on board
- 5.5-inch touch screen, shortcut keys standby aside
- Features simplicity, clarity and convenience



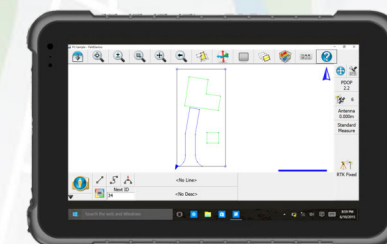
## N80/N80T Industrial-level GNSS Tablet

- Tailor-made to Geodesy, GIS and other related industries
- GNSS board, sensitive antenna, 5G telecom module on board
- Android 12 OS, 128 GB ROM, multi-touch screen, QC 3.0, GMS
- IP67 rating, a portable high-precision tablet PC



## HR842 New Ultra-rugged Tablet

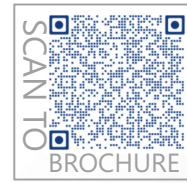
- Microsoft Windows 10 OS, ready to install FieldGenius and SurvCE
- Multi-threading applications available on board, empowered by high configuration
- 8-inch touch screen, 7-8 hours endurance with Wi-Fi
- IP67 rating, a robust tablet PC to challenge complex environments





## NET S10

A Full-feature CORS Receiver



- 336/1598 channels available, supports single BDS solution
- Ready for Bluetooth, Wi-Fi, radio, and 4G telecom
- LCD screen to display complete info of the receiver status
- 64 GB internal memory, extendable to 1 TB max.
- Supports encrypted algorithm SM2, SM4, and third-party encryption via TF card
- 8 independent paths available for data record simultaneously, ready to set at different frequencies
- Continuous recording enabled by auto-delete old files upon memory full
- 10000 mAh internal battery, working hours up to 20+ hours
- 3 nos. separate power supply interfaces to ensure uninterrupted operation
- IP68 rating, best for unattended complex environments

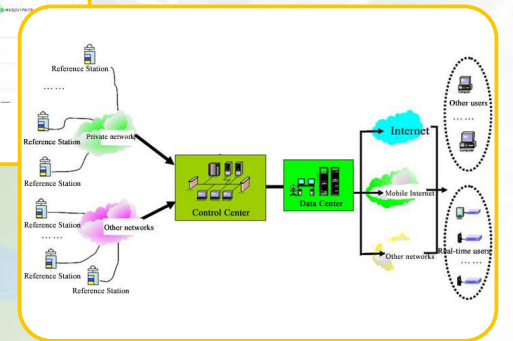
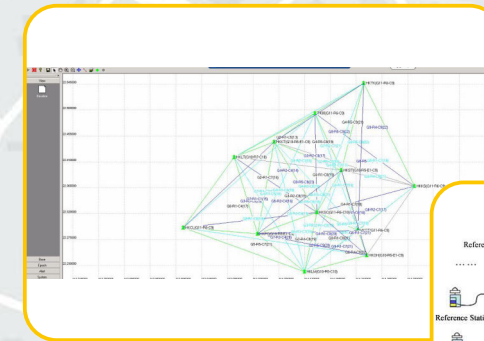


## NET S10mini

An Economical CORS Receiver



- Enjoys the same functionalities as the model S10 mentioned above only except,
- 336/1598 channels available
- A lightweight unit, 1.2 kg only
- 8 GB internal memory, extendable to 64 GB max.
- Web interface access to control only, no LCD screen on board
- External frequency scale port and TF card slot omitted



## CR3(G3)

Choke-ring Antenna



- Works outdoors to connect an indoor CORS receiver
- Designed for all-weather conditions and harsh environments
- 3rd generation, rejects LHCP signal for multipath mitigation as countermeasures
- 65dB antenna gain, and  $50 \pm 2$  dB LNA gain
- Market-proven in hundreds of projects internationally





## S1 A Powerful External UHF Radio

- User-friendly graphical interface, informative and intuitive
- An innovative radio frequency circuit design
- Ultralong range communication, 25-30 km against 25 W
- Features stable datalink powered by years of foundation and expertise
- 9600/19200 air baud rate



## S6(H) A Powerful External UHF Radio

- User-friendly graphical interface, informative and intuitive
- An innovative radio frequency circuit design
- Ultralong range communication, 25-30 km against 5/22/30 W
- Features stable datalink powered by years of foundation and expertise
- 9600/19200 air baud rate



## SurvStar RTK Fieldwork Software



Graphical

- CAD drawing on site, one-stop fieldwork solution
- CAD layout directly with map drawings, no coordinate transformation needed
- Meas&Map, to perform mapping while measuring points, easy one-shot



Image-based

- Photogrammetry on board, to measure inaccessible points out of reach via captured images or video streams. Image data could be further used for 3D modeling.
- AR stake-out available, by point/line/CAD. Target points could be easily reached with the visualized guide.



Transboundary

- GIS data acquisition, to work with high-precision tablet PC (eg. N80T)
- Bathymetry application, to go with echo sounder for water depth measurement. Bluetooth or Wi-Fi to connect.
- Total Station Link, to perform engineering survey with total station, switchable between total station and GNSS RTK in the same software.



## SurvX RTK Fieldwork Software

- Designed for both regular data controllers and Android smart devices
- Features simplicity, integrity, and market reputation
- A powerful and reliable kit for RTK fieldwork operation



## Field Genius RTK Fieldwork Software

- Provides a familiar and dependable experience through its code-free linework functionality
- Easy creation and editing of linework without the necessity to modify point descriptors
- An alternative to specific demands in particular markets



## SGO Geomatics Office Software

- Tailor-made to survey industry, a power station for geomatics data - Ready to edit, process, and analyze data from GNSS receivers, total stations, and levels
- Supports CAD, cloud services, online maps, road design, GIS/image process, project analysis, earthwork calculation, data quality check, and debugging, etc.



## NRS CORS Service Software

- Includes NRS-Net, NRS-Station, NRS-Server
- Merges the advantages of VRS, FKP and MAX
- Market-proven algorithm to deliver differential corrections





*Tomorrow or Accident Comes First*

2



## MONITORING

### Introduction

- 2.01 GNSS Monitoring
- 2.01 Smart Sensors Monitoring
- 2.01 Robotic Total Station Monitoring

### Mobile Station Receiver

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- 2.03 MR3

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- 2.03 S10mini

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- 2.06 ADM1

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- 2.07 RLG001

### Piezometer

- 2.08 SV40-VW

### Rain Gauge

- 2.09 RA01

### Visual Displacement Meter

- 2.10 VDM01

### Radar Flowmeter

- 2.11 RF01

### Smart Inclinomometer

- 2.12 CX01

### Soil Moisture Meter

- 2.13 HSL01

### Remote Terminal Unit

- 2.14 YC002

### Data Logger

- 2.15 MCU01

### Doppler Flowmeter

- 2.16 DPF01

### Float Water Level Gauge

- 2.17 FLG01

### Data Transfer Unit

- 2.18 MD260

### AMTS

- 2.19 Intelli-Cover II
- 2.19 iControl-T
- 2.19 CMesh

### Software Solution

- 2.21 SMOS
- 2.23 IoT Eco-system



## Introduction

Monitoring is a very wide concept in risk & asset management, and the value of geo-monitoring now is getting increased attention like strategically buying insurance. Within the current practice, we are engaged in a complete range of automated monitoring solutions by utilizing GNSS, Robotic Total Station, and a variety of smart sensors. Usually, a 24x7 monitoring project could consist of a single one or two collaborative methodologies mentioned below depending on the site conditions and job demands. Meanwhile, relevant software platforms shall accompany in service to visualize the system, process data and display realtime, report in meaningful ways, and deliver warning messages just in case.

## GNSS Monitoring

Generally speaking, this type of monitoring network includes permanently installed GNSS devices and transferable base station receivers collecting GPS observations and transmitting differential corrections as well, which is used to perform the regional monitoring of changes in the speed of tectonic movements of civilian structures or earth's crust and study the rate of deformation of architectural reality and earth's surface of small areas. Dedicated GNSS stations and quality control applications are quite commonly seen in terms of monitoring projects for bridges, dams, open-pit mines, slopes, buildings, etc. when centimeter to millimeter level accuracy is expected and satellite-based measurement is possible outdoors.

## Smart Sensors Monitoring

In the geo-information industry, a variety of smart sensors are applied to record structural or meteorological data that might lead to certain geological or hydrological changes eventually. Such transducers would be systematically installed in mid-air, ground surface, or underground to perform contactless or physical measurements, and issue alert warnings when any slight change beyond the critical threshold occurs. Compared to conventional survey equipment, sensors could be more cost-friendly yet fairly productive likewise to fit some of the economical solutions. This approach shall come with an IoT software platform accordingly to manage all kinds of data for comprehensive statistics and comparative analysis.

## Robotic Total Station Monitoring

Investigating surface displacements in complex environments is often subject to challenges due to apparent inaccessibility or harsh climatic conditions. To understand this key movement, Automated Monitoring Total Station (AMTS) has been in operation to continuously provide repeatable measurements with high accuracies, typically millimeter level, which features capturing data from a remote location, either within or outside the monitored area. As the total station principle is dependent on intervisibility instead of satellite signals tracking, such robotic devices might be operating also indoors and underground, for example, inside tunnels, and working together with some reflector prisms mounted onto the crucial target points.





## MR2/MR3 Integrated Mobile Station Receiver

- Rugged device against 7x24 continuous operation outdoors
- GNSS board, GNSS antenna, telecom module, and tilt sensor all in one unit
- Supports GPS, Glonass, Beidou, Galileo, QZSS, SBAS, IRNSS and even Beidou-PPP, Galileo-HAS
- Cost-efficient for quick installation and flexible maintenance
- AI-based wake-up data capture and sleep stand-by for less power consumption
- Data transfer via specific DTU control device instead of external sensor
- Remote control available via software platform or APP (custom build)
- Ready to work with solar power system (MR3 only)



MR2



MR3



## S10mini Mini CORS Receiver

- Rugged device against 7x24 continuous operation indoors
- GNSS board, telecom module (3G/4G and Ethernet), and tilt sensor all in one unit, ready to fit mini choke-ring antenna
- Supports GPS, Glonass, Beidou, Galileo, QZSS, SBAS, IRNSS and even Beidou-PPP, Galileo-HAS
- Stable power supply and telecom facilities needed for installation
- State-of-the-art Farlink 3W radio datalink built in, UHF working range 15 km max.
- Data transfer via specific DTU control device instead of external sensor
- Remote control available via software platform or APP (custom build)



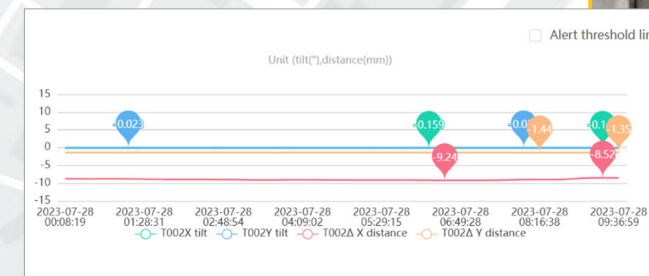
S10 mini





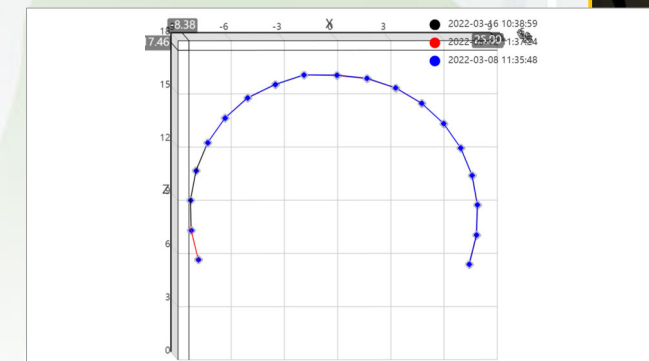
## MS1 All-in-one Tilt Sensor

- 3G/4G telecom module built in, wireless design, cable-free
- 3-year continuous operation powered by high-performance internal battery
- Accuracy performance 0.04° with temperature extrusion (0.005°, without)
- Remote control available via software platform or APP (custom build)
- Vibration triggered in case of emergency
- Market-proven in plenty of geological and construction safety monitoring projects



## ADM1 Array Displacement Meter

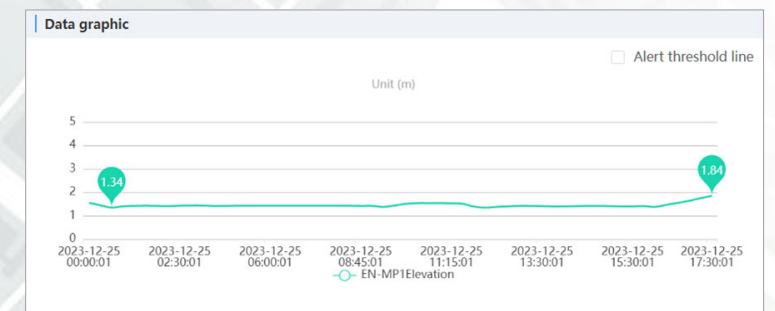
- Used for construction settlement, underground deformation, tunnel management, and railway settlement
- IP68 rating, ready to install in the water body
- Accuracy performance 0.005° without temperature extrusion
- Rotating angle auto adjustment, and sectional data forecasting available
- 0.5m/1m/2m per section in length, optional





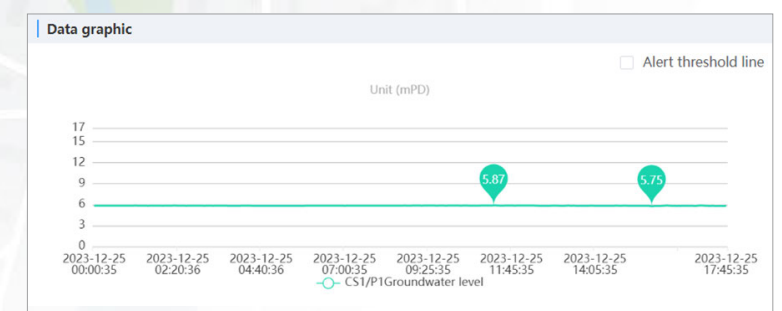
## RLG001 Radar Water Level

- Used for underground water level monitoring, flowrate prediction, tidal level observation, and hydrological forecasting
- Aluminum alloy housing, and 316L stainless steel trumpet
- Contactless measurement, working frequency up to 26GHz
- 0.4-30m typical measuring range, accuracy performance best up to 3mm
- RS-485 Modbus protocol, typical; SDI-12 protocol, optional
- IP65 rating, designed for 7x24 continuous operation
- LCD screen for data display, optional



## SV40-VW Piezometer

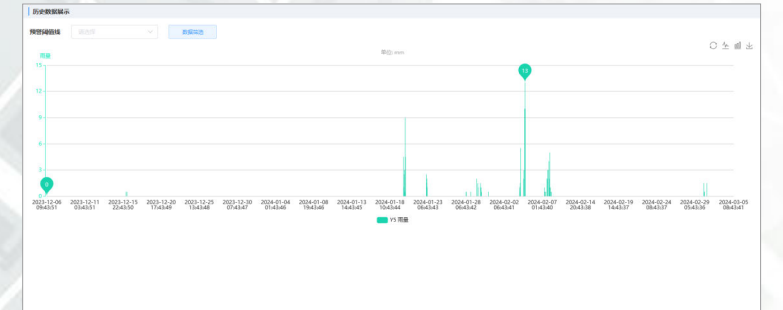
- Measures piezometric levels and pore water pressures in soil and rock formations
- Used for dam monitoring, tidal level observation, and foundation monitoring
- 0-35m measuring range,  $\leq 0.02\%$  F.S. resolution,  $\leq 0.1\%$  F.S. accuracy





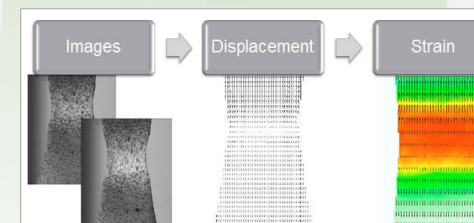
## RA01 Tipping Bucket Rain Gauge

- Measures volume, intensity, and duration of rainfall
- Used in meteorology, hydrology, agriculture, forestry, land use, geology, highway, railway, etc.
- Measuring accuracy  $\leq \pm 2\%$ , intensity range 0.01-8 mm/min
- Tipping bucket designed with 3D streamline style
- Self-cleaning against dust and water



## VDM01 Visual Displacement Meter

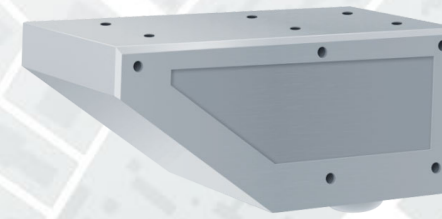
- Features cutting-edge DIC (Digital Image Correlation) and AI technologies
- Used for bridges, tunnels, slopes, buildings, foundations, dams, high formworks, etc.
- Detects structural displacement of the target in dynamic or static deformation
- Super subpixel-level edge algorithm, resolution up to 1/200 pixel
- One device ready to work for multiple points in a large area simultaneously





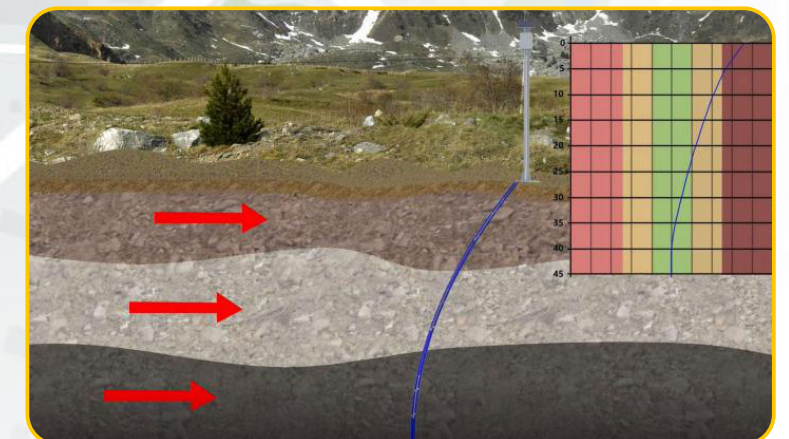
## RF01 Radar Flowmeter

- An integrated flowmeter sensor that continuously measures flow speed, water level, and flow volume
- Equipped with planar microstrip array antenna and inbuilt vertical angle adjustment on board
- Features contactless measurements of the water bodies by microwave radar
- High accuracy performance powered by fluctuating water surface modeling and signal process algorithm
- IP68 rating, ready to work outdoors against all weather conditions



## CX01 Smart Inclinator

- A 3-axis tilting sensor that fits 3D spatial detection
- Typically used in monitoring projects of dams, slopes, foundations, landslides, etc.
- Measures tilt angles and vibrations (eg. frequency, amplitude)
- Highly responsive, triggering signal output delay within 10 ms
- Field-proven in plenty of projects home and abroad





## HSL01 Soil Moisture Sensor

- Used in geological disaster monitoring, flood prevention and drought combat, soil moisture study, smart agricultural irrigation, etc.
- Measures soil moisture as well as ground surface displacement
- Contactless measurement, worry-free against erosion in soil
- IP68 rating, ready to work in complex outdoor environments



## YC002 Remote Terminal Unit

- Used for remote measurement and control in applications of water works, geological disaster prevention, roadway slope monitoring, mine slope monitoring, etc.
- Integrated with GPRS/CDMA/WCDMA/LTE/NB-IoT wireless remote and LoRa wireless short-range transfer
- IP67 rating, ready for data capture, storage, warning, and transfer in various monitoring applications
- Plenty of interfaces available, for tipping bucket, RS-232, RS-485, analog input, switch input, relay driver, etc.





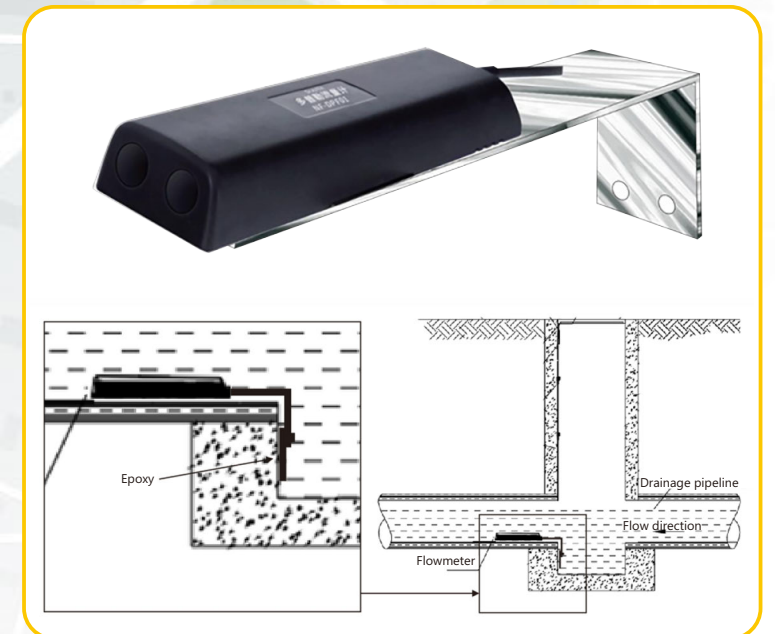
## MCU01 Multi-functional Data Logger

- Typically used in safety monitoring projects of geotechnical engineering purpose like dams, bridges, tunnels, slopes, dilapidated buildings, mines, nuclear power stations, civil buildings, etc.
- Plenty of interfaces available, default for RS-485, 4G telecom, Ethernet, and optional for Wi-Fi, Bluetooth, LoRa, NB-IoT
- Inbuilt high-capacity battery yet with mAh-level low power consumption design, ready to work continuously under severe conditions like rainy weather, external power supply breakdown, etc.
- A universal module that works with analog sensors of different brands, different signal output (eg. differential resistance, vibrating wire, voltage type, current mode), digital intelligent sensor, switching value counter, etc.
- Quite a few independent channels (1/4/8/16/20/32/40) available for connection



## DPF01 Doppler Flowmeter

- Used to measure flow speed and volume of the water body by the differences transmitted and reflected ultrasonic frequency
- Particularly designed to keep sludge away from key measuring component for less maintenance
- High accuracy performance empowered by irregular sectional water dynamic model and intelligent flux integral algorithm
- IP68 rating, a very rugged and reliable device against harsh environments





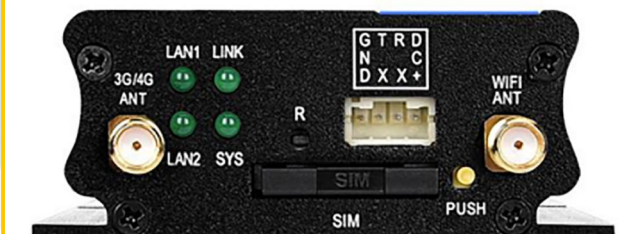
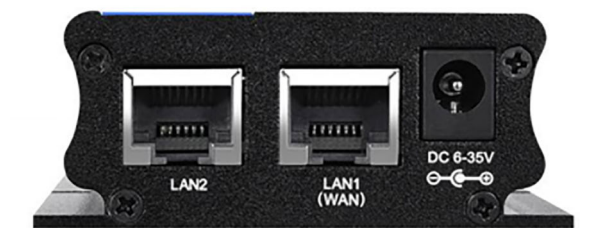
## FLG01 Float Water Level Gauge

- Used to observe the water level change of all types of water body such as rivers, lakes, reservoirs, dams, ditches, underground water, etc.
- Float diameter 10 or 15 cm optional, custom build available upon request
- High accuracy performance empowered by magneto-optical coding principle
- Reliable results independent of the impacts from temperature excursion and time drift
- Applicable for water level observatory station with vertical logging



## MD260 Data Transfer Unit

- An industrial-level Router for 4G telecom
- Used in electricity, oil, coal mine, finance, telecommunication, public security, industrial control, meteorology, waterworks, traffic, municipal, etc.
- A process tamer design, auto power-off and restart after internet disconnection
- RJ45, 10M/100M Ethernet cable interface
- Web control operation available
- Auto reconnect after internet disconnection, auto restart and timed restart available





## Intelli-Cover II AMTS Outdoor Mate

- Setup within minutes, unattended operation with fully automated covering/uncovering by time-program commands
- Rugged and durable, designed to withstand nearly all-weather conditions
- More economical and time-saving compared with concrete shelter establishment
- Compatible with the robotic total station of all major brands on the market
- Able to work with rain gauge, tilt sensor, etc. to trigger retraction in case of bad conditions

Note: Robotic total stations for automated monitoring are presented in Chapter #10, Construction.



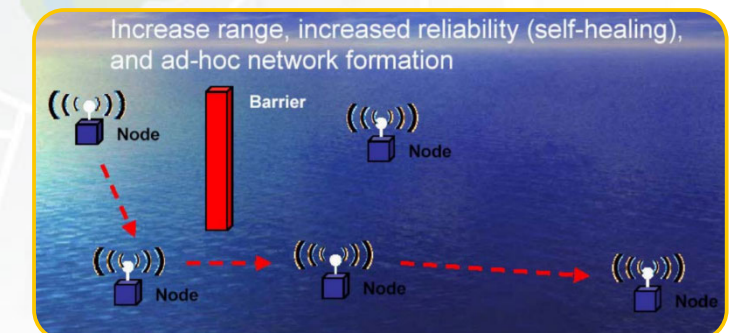
## iControl-T AMTS Datalink Mate

- A highly integrated device for power supply, data communication, automated control, and smart data process
- Used for robotic total station monitoring data transfer from site to data control center
- Designed with inbuilt 4G telecom module or fiber optic interfacing, optional
- Compatible with the robotic total station of all major brands on the market
- A field-proven solution due to high cost-performance in plenty of monitoring projects



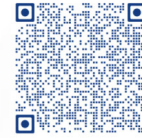
## CMesh AMTS Datalink Mate

- Transforming 4G telecom to ZigBee wireless communication
- 1 km communication range per pair, multi nodes to work together in a certain project
- First one with 4G telecom module to put in 4G coverage area, and others with ZigBee to put where 4G network is not available, like underground environment

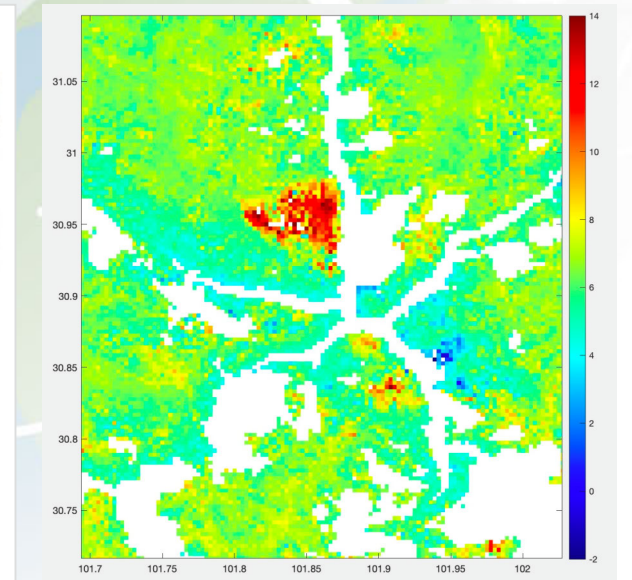
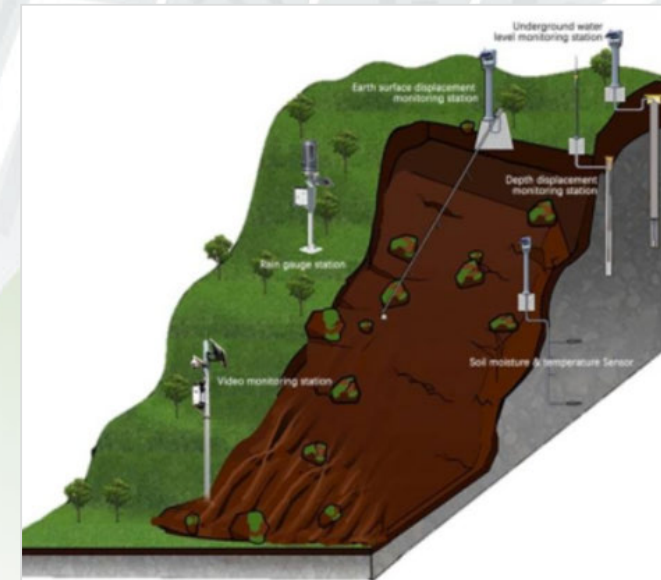




## SMOS Versatile Automatic Monitoring Software

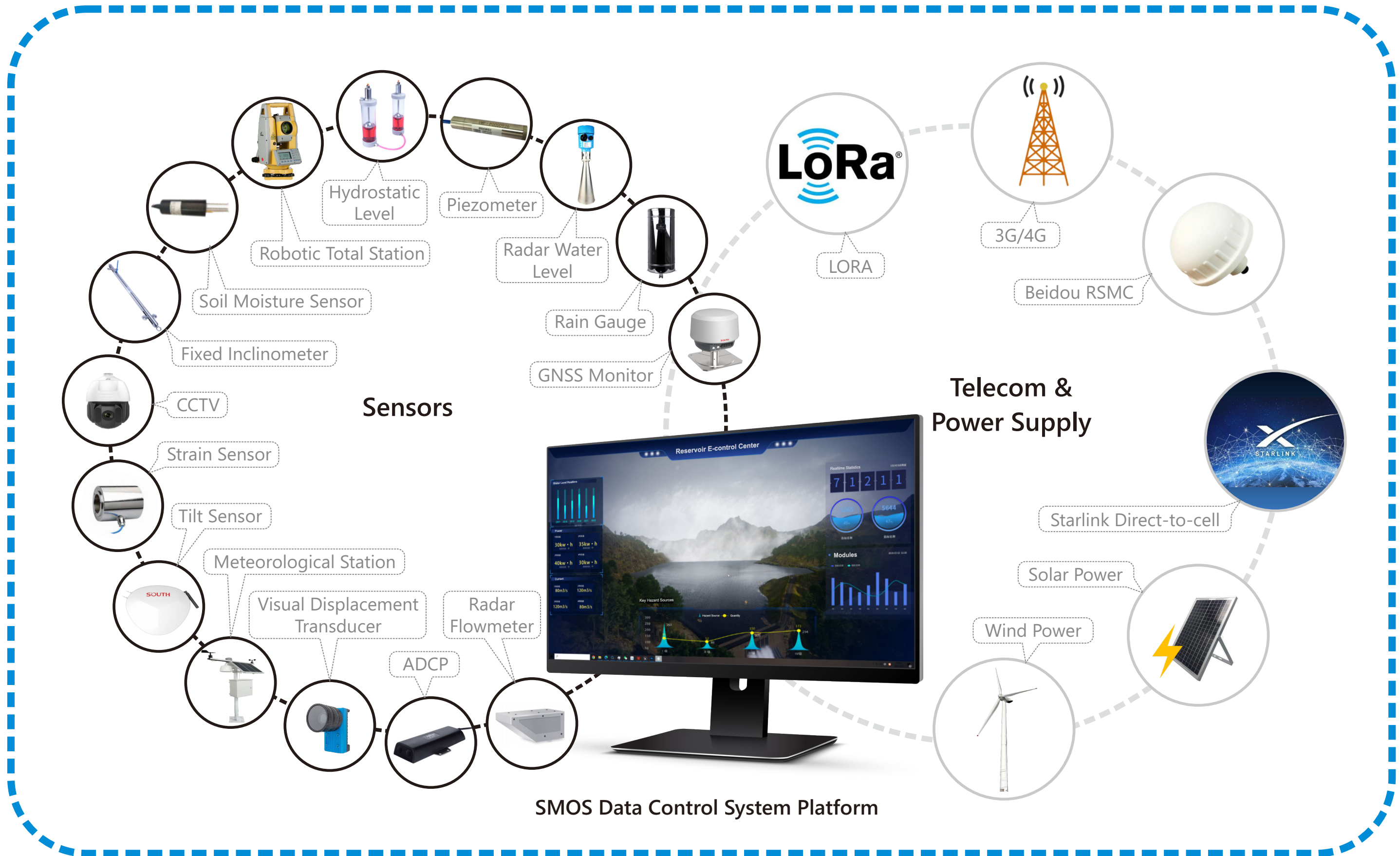


- Supports GNSS devices, robotic total stations, tilt sensors, geological devices, hydrological devices, strain gauges, meteorological sensors, InSAR data, third-party sensor integrations, etc.
- Processes all GNSS, frequencies, and signals and delivers corrections
- Deals with algorithms from GNSS, AI, InSAR, web server, etc.
- Delivers realtime data and live graphics, and presents historical data, data analysis, customized report output, auto alert/warning via SMS and email
- Fits a variety of applications such as water works, flood control, land subsidence, geological change, power grid safety, construction monitoring, etc.





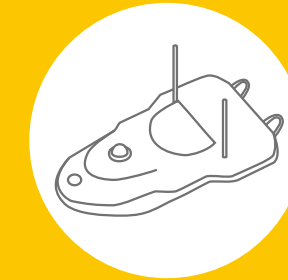
# SMOS IoT Eco-system





## Explore Underwater Science

3



## MARINE

### USV

3.01 AQUA M20

3.01 AQUA M10

### Echo Sounder

3.03 AQUA F28S+

3.03 AQUA F260D

3.03 AQUA F19S+

3.03 AQUA F19D

3.05 AQUA T400

3.05 Comparison

### ADCP

3.07 S5

### Side Scan Sonar

3.07 SS500

### Sound Velocity Sensor

3.08 SV30

### Tide Gauge

3.08 SV40

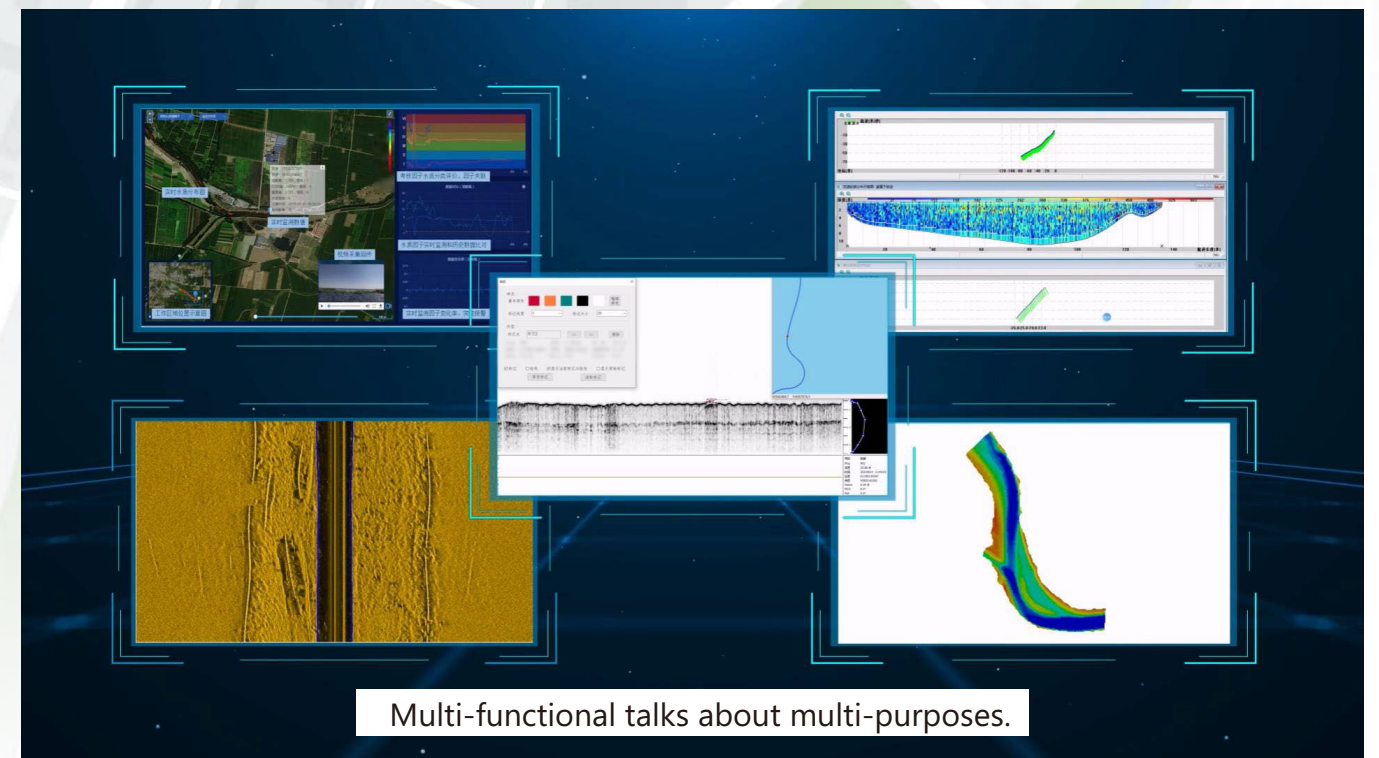
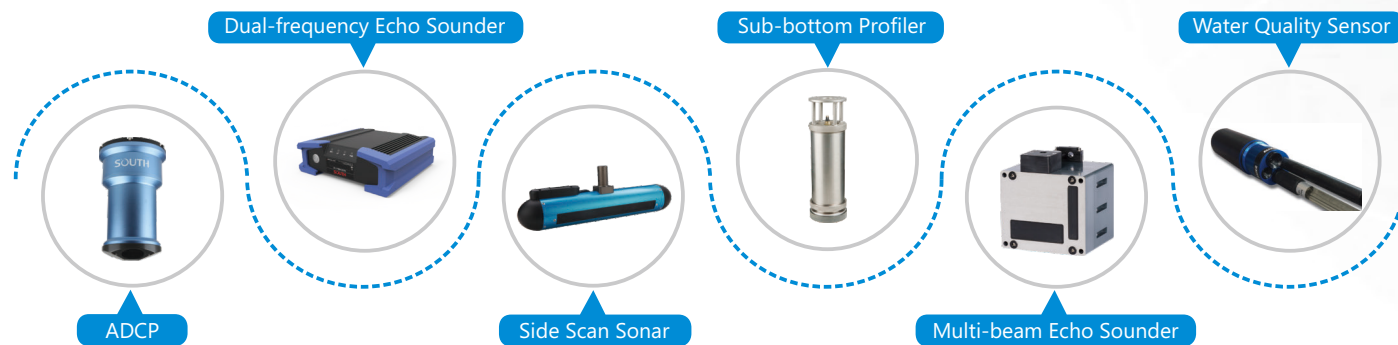


## AQUA M10 Entry-level Unmanned Surface Vessel

- An economical solution for basic bathymetry application
- 360° pano camera and obstacle avoidance sensor on board
- Network bridge integrated with remote controller, control all in one
- Integrated master control for unmanned boat operation
- Auto-pilot, mission control, and marine survey all in one software

## AQUA M20 Multi-functional Unmanned Surface Vessel

- Cutting-edge moon pool, ready to fit a variety of payloads
- 360° pano camera and obstacle avoidance sensor on board
- Network bridge integrated with remote controller, control all in one
- Double-deck hull design, more rugged and reliable for navigation
- Auto-pilot, mission control, and marine survey all in one software

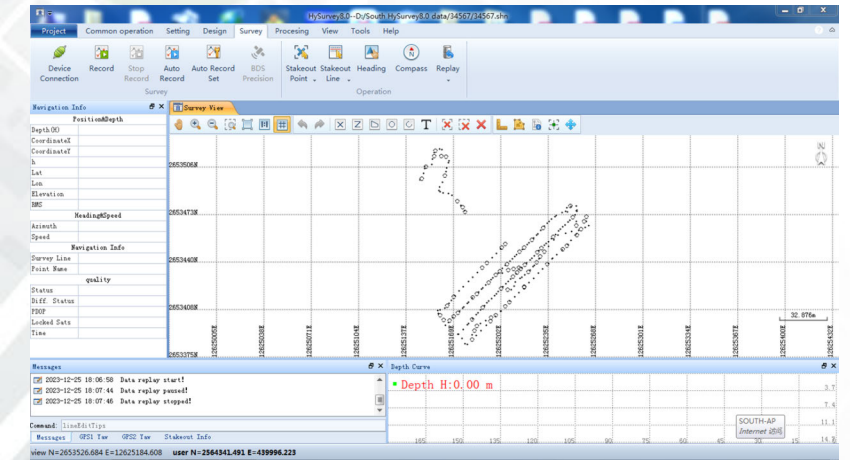




### AQUA F28S+ Single-frequency Echo Sounder



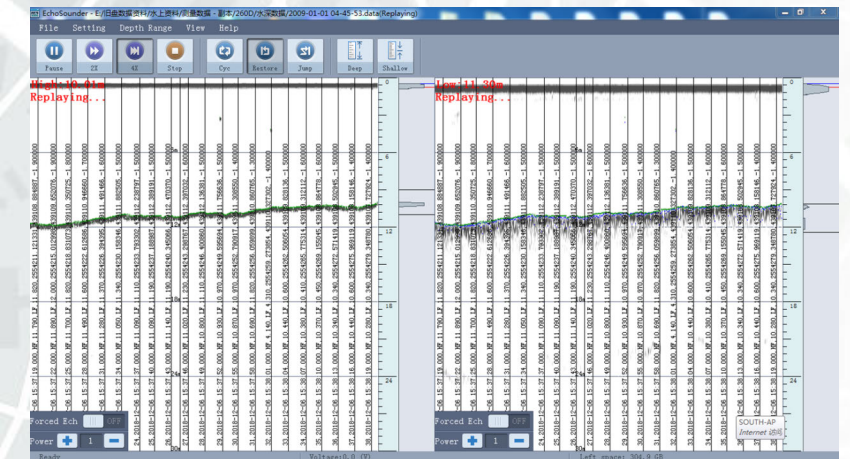
- Aluminum alloy housing and compact design, rugged for missions on manned boat
- Quality DSP chip process for reliable waveform and water depth measurement
- Automatic control of pulse width, gain, power and switch in software
- Enhanced shallow-water tracking mode on board



### AQUA F260D Dual-frequency Echo Sounder



- High frequency obtains accurate results while low frequency enjoys better penetrability
- Best for complex water bodies and coastal fluid mud layer in dredged area
- Other features same as the single-frequency model AQUA F28S+



### AQUA F19S+ Single-frequency Echo Sounder Mini

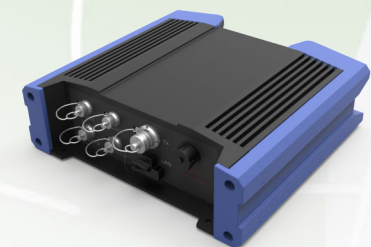


- Lightweight and handy, ready to fit USV as a must-have component
- Wi-Fi access via tablet PC, and Bluetooth communication with GNSS
- built-in web UI operation, easy to configure and remotely control



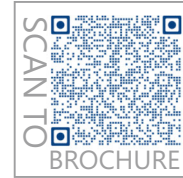
### AQUA F19D Dual-frequency Echo Sounder Mini

- Dual-frequency version of the model above
- Other features same as the single-frequency model AQUA F19S+

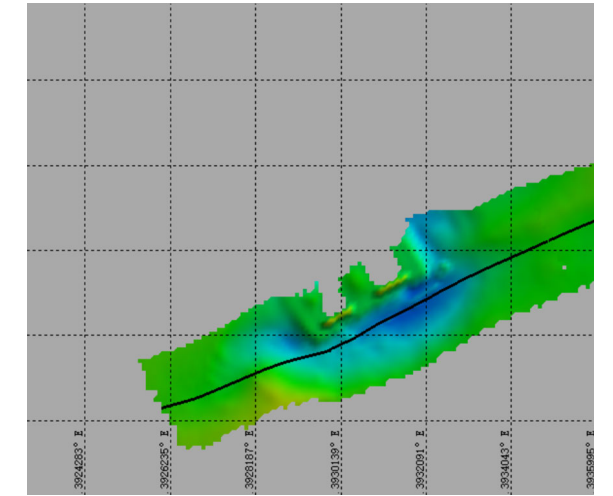




## AQUA T400 Multi-beam Echo Sounder



- Designed to collect hundreds or even thousands of sound intensity sample data within the measurement section, thus implement full coverage measurement in the area
- Used for water course survey, underwater topography, marine-land integrated 3D measurement, etc.
- One-man portable unit, designed for unmanned platforms like USV, ROV, AUV, etc.
- Highly integrated with IMU and GNSS, independent of external devices



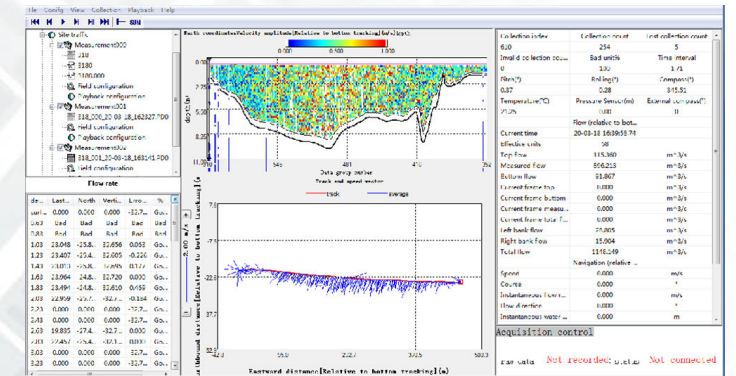
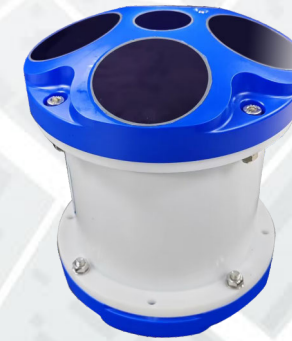
## Comparison

Model	AQUA F28S+	AQUA F260D	AQUA F19S+	AQUA F19D	AQUA T400
Frequency	200 kHz	200/20 kHz	200 kHz	200/20 kHz	400 kHz
Beam	1	1	1	1	512
Integrated with PC	√	√	×	×	×
Software Control	Onboard	Onboard	Web UI	Web UI	Remotely operated or connected to PC
Designed for Unmanned Platforms	×	×	√	√	√
Power Supply	External battery needed	External battery needed	External battery needed	External battery needed	External battery needed



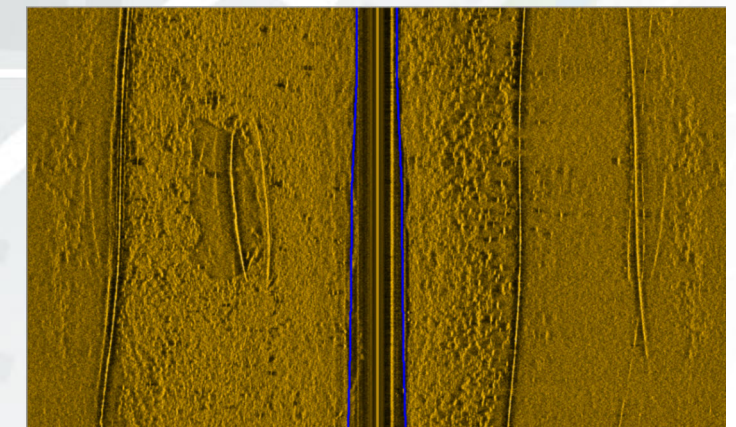
## S5 Acoustic Doppler Current Profiler (ADCP)

- Used for water current measurement in dynamic mode
- 5 beams in total, 4 for current measurement and 1 for depth
- Profiling range 80m max. and bottom tracking depth 120m max.
- Working frequency 600 kHz typical, 1200 kHz optional
- Supports 0.5-4m layer, current velocity accuracy  $\pm 0.25\% \pm 2\text{mm/s}$



## SS500 Side Scan Sonar

- Used for marine survey detection and presenting a detailed underwater picture
- One-man portable operation and hydromechanical structure design
- Ultrawide coverage, up to 14 times of water depth
- Quality CHIRP imaging technology and anti-interference performance

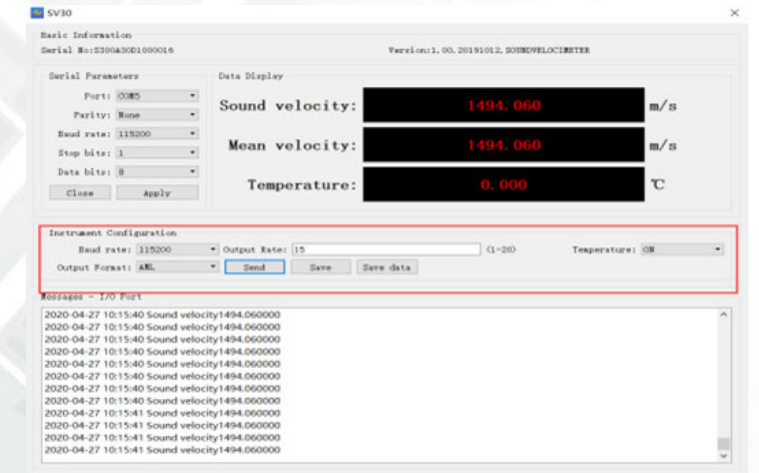
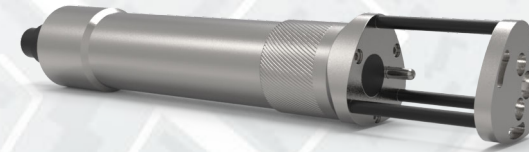




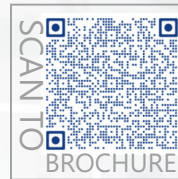
## SV30 Sound Velocity Sensor



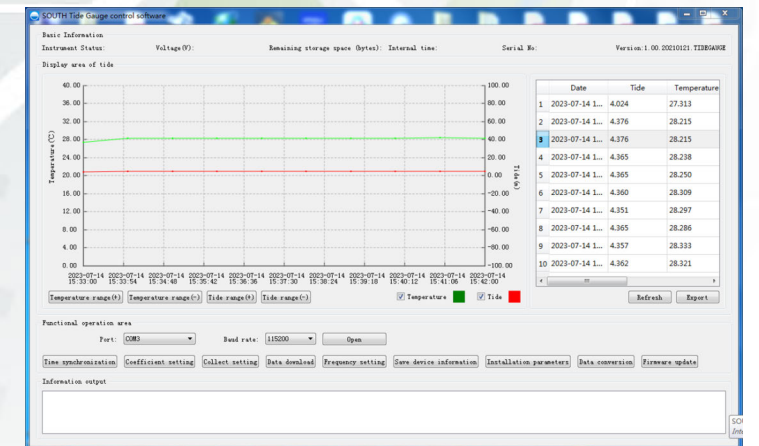
- Direct measurement of sound velocity, water temperature
- Corrosion and pressure resistant hull,
- 316L stainless steel
- Direct reading by advanced digital signal processing technology
- A variety of data formats to export available



## SV40 Tide Gauge



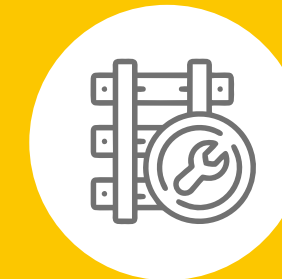
- Used for studying long-term variations in currents and the volume of water
- Typically installed on the seabed, trestle bridge, dock, anchorage, etc.
- POM material stands out for its high strength, hardness, and rigidity over a wide range of temperatures
- Outstanding data security for time recording and pressure recording





*Field & Track Proven*

4



## RAIL TRANSPORT

### Track Geometry Measuring System

- 4.01 MEASLEY IV
- 4.01 MEASLEY Combo
- 4.01 i-MEASLEY
- 4.03 Comparison

### Metro Tunnel Inspection System

- 4.05 MS100
- 4.05 MS100 Pro
- 4.05 Tunnel Scan&Go
- 4.05 Tunnel Fulicle
- 4.07 Comparison



### MEASLLEY IV Track Geometry Measuring Trolley System

- Unique trolley structure and enhanced body materials
- Modular design, easy to assemble and maintain
- Wireless connection between trolley and data collector
- Conducts absolute measurement with robotic total station
- An economical but reliable solution for railway construction and maintenance



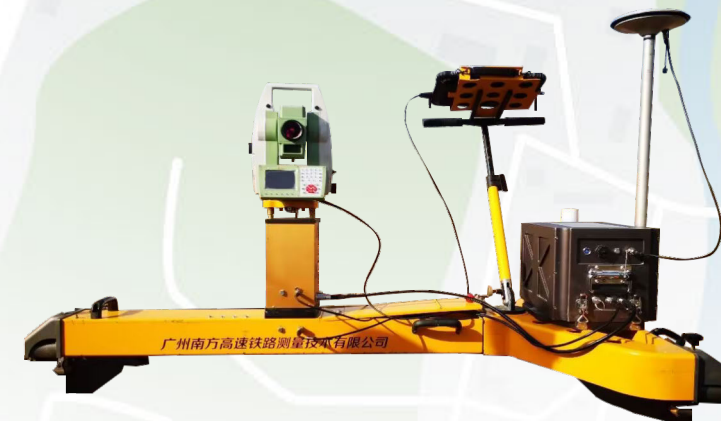
### MEASLLEY Combo Track Geometry Measuring Trolley System

- Integrated trolley body, assembly free
- Simplified but classic structure, easy to operate and maintain
- Separate guide pulley, able to move on trimming track and measure precisely
- Suited to absolute static measurement stop&go and relative dynamic measurement
- Used to adjust rail tracks in both construction and operational stages



### i-MEASLLEY Track Geometry Measuring Trolley System

- One platform suited to TS+IMU aided, GNSS+IMU aided or TS aided mode, switchable
- Ready to work in both open air and tunnel environments
- Continuous measurements instead of repeated station movement and levelling
- Enjoys extremely high job efficiency due to dynamic measurements
- Less affected by weather conditions, and high anti-interference capability





## Comparison

Model	MEASLEY IV	MEASLEY Combo	i-MEASLEY
Absolute Measurement	√	√	√
Relative Measurement	×	√	×
Robotic Total Station to Work with	Leica	Leica	Leica
IMU Module	×	×	√
Applicable for	construction & maintenance	construction & maintenance	ideal for maintenance
Work Efficiency	200-500m in 8 hours	Absolute: 200-500m in 8 hours; Relative: 800-1500m in 8 hours	3-4 km in 8 hours



## MS100

One-stop Metro Tunnel Mobile Scanning & Automated Detection System

- Motorized trolley-based laser scanning
- All-in-one software-driven setting, acquisition and analysis
- On-site realtime display geared by industrial computer built in trolley body
- Scientific and comprehensive report for structure deformation and inwall defects
- Lining cracks detected up to width 2 mm
- Computer vision enjoys much higher efficiency compared to manual inspection

## MS100 Pro

One-stop Metro Tunnel Mobile Scanning & Automated Detection System

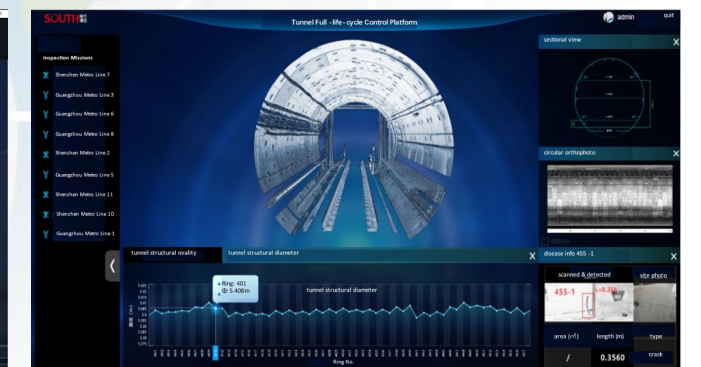
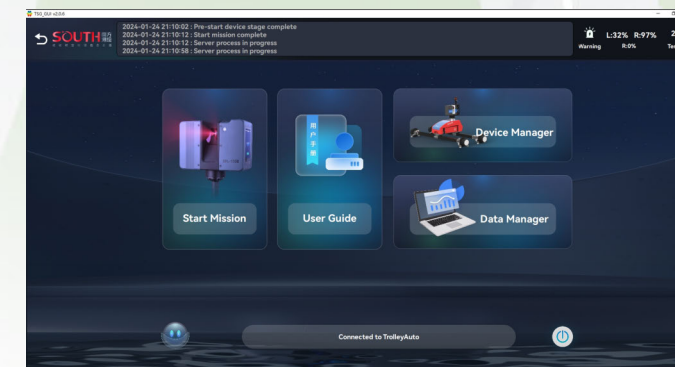
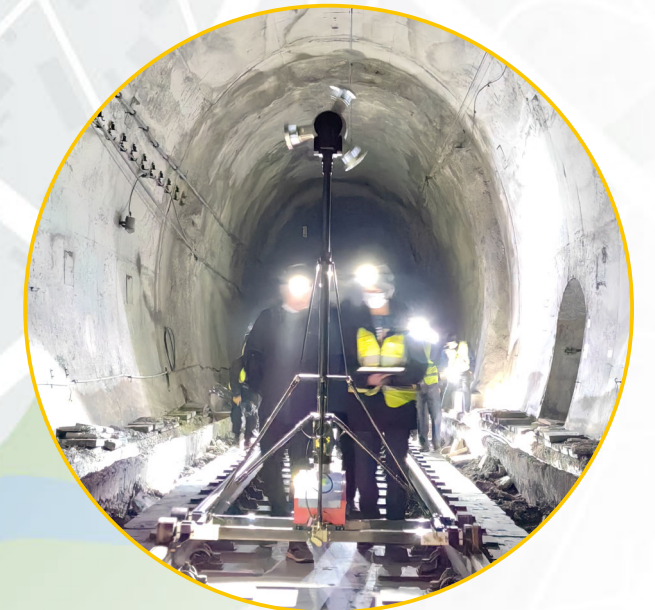
- Multi-lens camera system Clover equipped as well
- Lining cracks detected up to width 0.2 mm even

## Tunnel Scan&Go Tunnel Inspection All-in-one Software

- enables the users to conduct automated scanning, data analysis, intelligent detection, report export, etc.
- deliverables include circular orthophoto, 3D point cloud, structural data analysis and detected inwall defects

## Tunnel Fulicle Tunnel Full-life-cycle Control Platform

- Scientific management of historical results
- All data traceable and analyzable
- Easy to perform tendency changes based on analysis of Before & After
- Out-of-tolerance alerts triggered ahead of emergency
- A powerful system platform ready to manage plenty of metro lines





## Comparison

	Model	MS100	MS100 Pro
Component	TrolleyAuto	√	√
	Laser Scanner	√	√
	Software Tunnel Scan&Go	√	√
	Clover Camera System		√
Output	Grey-scale Image (derived from point cloud)	√	√
	Ultrahigh Resolution Image		√
	Inspection Report	√	√
	<b>Tiny Crack Detected</b>	Up to 2 mm	Up to 0.2 mm
Tunnel Structure	Ovality	√	√
	Tunnel Limit	√	√
	Tunnel Clearance	√	√
	Tunnel Convergence	√	√
	Segment Stagger	√	√
Inwall Defect	Lining Crack	√	√
	Leakage	√	√
	Moist	√	√
	Concrete Peeling-off	√	√
	Concrete Falling-block	√	√

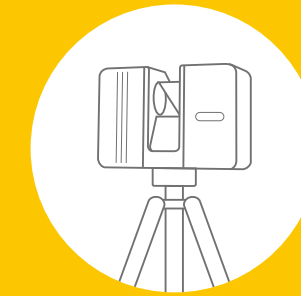
Software	Tunnel Scan&Go	Tunnel Fulicle
type	software kit	software platform
supply	standard, must-have	optional
applicable for	contractors and rail authorities both	rail authorities mainly *
target	fieldwork, post process	big data management
---- functions included ----		
fieldwork setting	√	x
fieldwork control	√	x
realtime display	√	x
circular orthophoto generation	√	x
AI detection	√	x
structure info computation	√	x
single-task report export	√	x
full-life cycle management	x	√
traceable data records	x	√
overall/specific statistics	x	√
big data analysis	x	√
before & after comparison	x	√
deformation monitoring	x	√
out-of-tolerance warning	x	√
general report export	x	√

Note\*: the software platform Fulicle for big data management is mainly designed for rail authorities which need to make full use of the captured data and run full-life-cycle management. But, in case that big contractors receive job services for long-term cooperation (eg. 3-5 years) with the local rail authority, it's also recommended to consider this MT-GIS to keep certain database against long-term management.



## Through Point Cloud

# 5



## 3D LASER

- 5.01 AcuteLas SPL-1500/500/500E Terrestrial Laser Scanner
- 5.01 AcuteLas SA130 UAV-based LiDAR System
- 5.01 AcuteLas SG130 UAV-based LiDAR System
- 5.03 Post-processing Software
- 5.04 Applications



### AcuteLas SPL-1500/500/500E Terrestrial Laser Scanner

- Compact design and extremely lightweight
- Built in camera and dual-axis compensator
- Long measuring range yet high accuracy performance
- Efficient scans and imaging within minutes only
- Customized backpack available for handy package



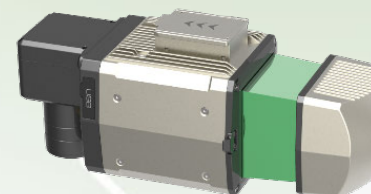
### AcuteLas SA130 UAV-based LiDAR System

- Ready to fit VTOL fixed-wing drones and multi-rotor UAVs
- 2 kg only, but measuring range up to 1500 m
- Ground control software Fly2Map Pilot integrated with LiDAR settings
- All-in-one post process software AcuteLas Studio



### AcuteLas SG130 UAV-based LiDAR System

- Scientific management of historical results
- All data traceable and analyzable
- Easy to perform tendency changes based on analysis of Before & After
- Out-of-tolerance alerts triggered ahead of emergency
- A powerful system platform ready to manage plenty of metro lines

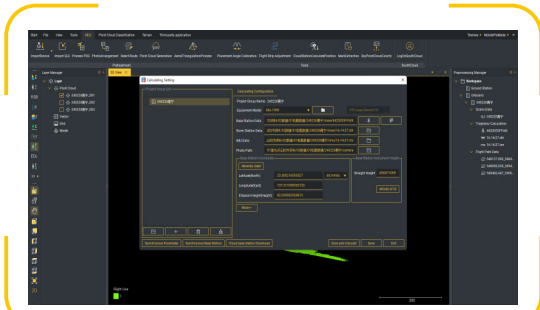




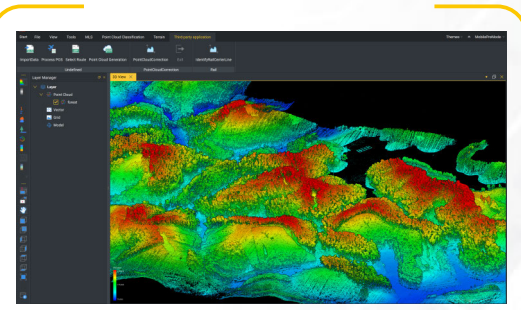
# AcuteLas Studio Post-processing Software

Based on years of experience in mobile mapping projects and deep learning in laser R&D, AcuteLas Studio is a software program particularly designed for point cloud processing and applications.

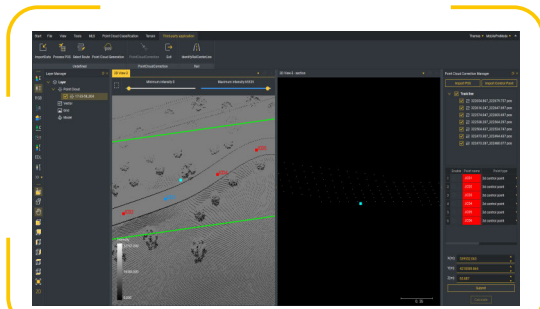
# Applications



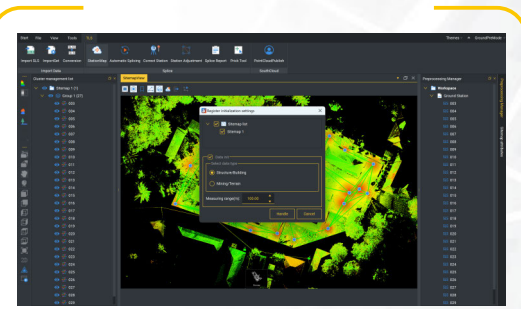
MMS (UAV/SUV based) Trajectory Process



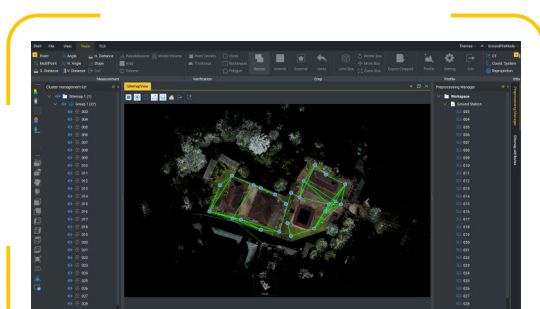
MMS (UAV/SUV based) Data Pre-process



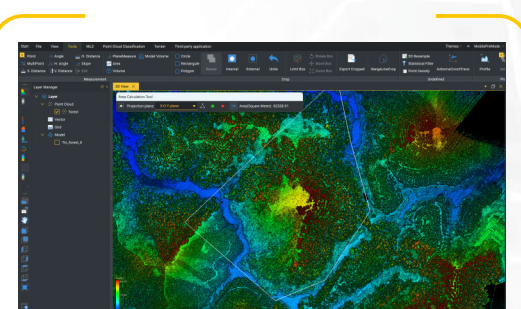
Trajectory Correction



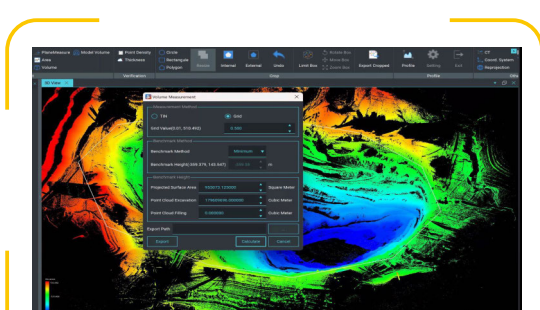
TLS Auto Global Registration



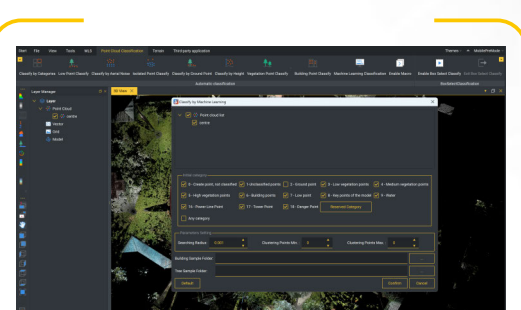
TLS Site Map



3D Measurement



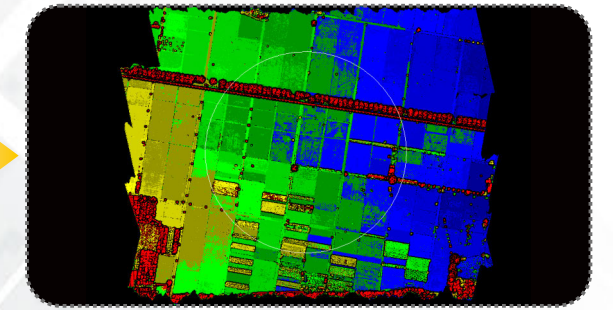
Volume Calculation



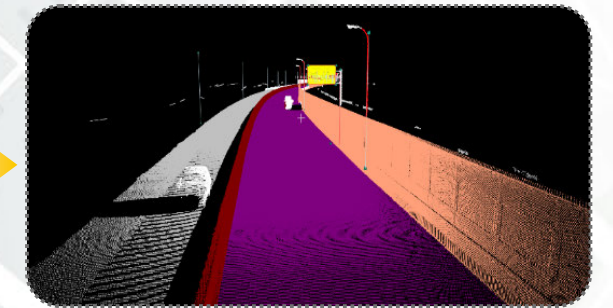
Auto Point Cloud Classification



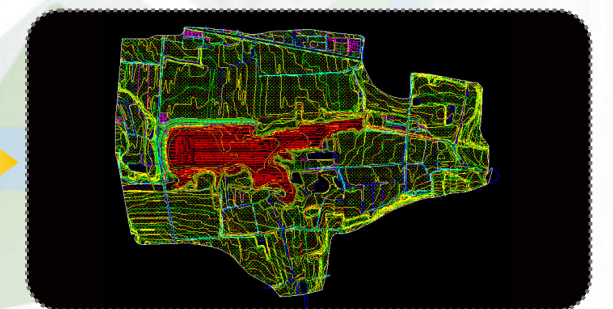
Countryside Topography 1:500, VTOL fixed-wing + LiDAR, China



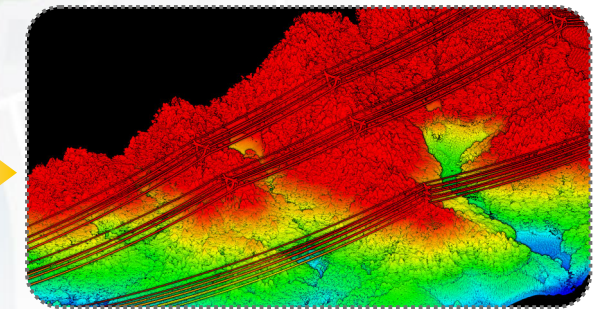
High-precision Street Mapping, SUV-based LiDAR + 360° Pano Camera, China



Reservoir Topography 1:500, UAV-based LiDAR + RGB Camera, China

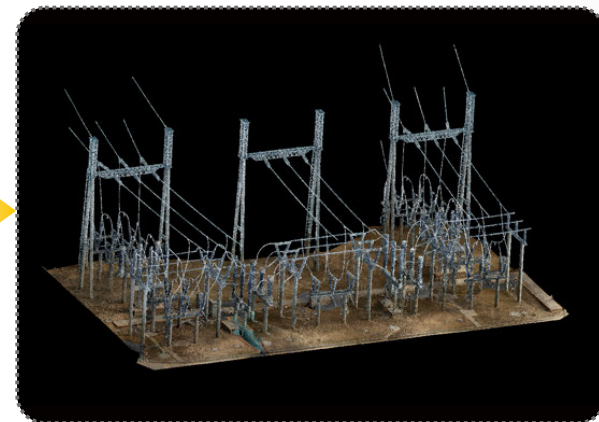


Power Grid Inspection, UAV-based LiDAR + RGB Camera, China

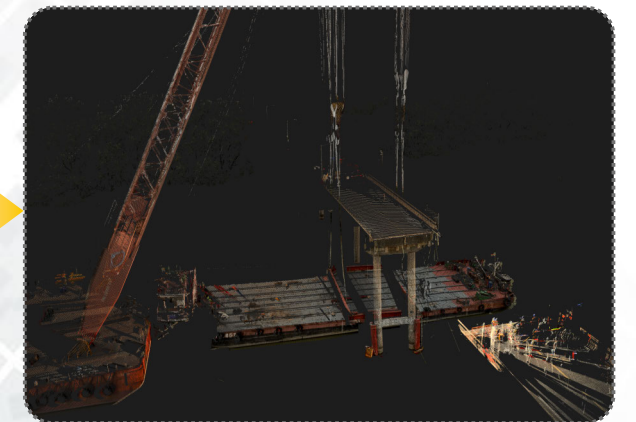




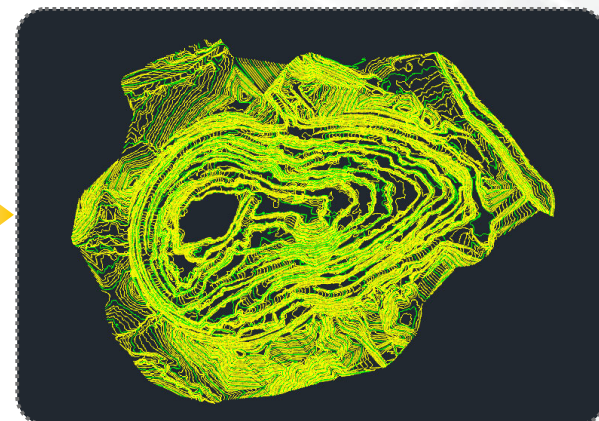
# Applications



Substation E-documentation, 20 Scans in total, China



Broken Bridge Renovation, 20 Scans in total, China



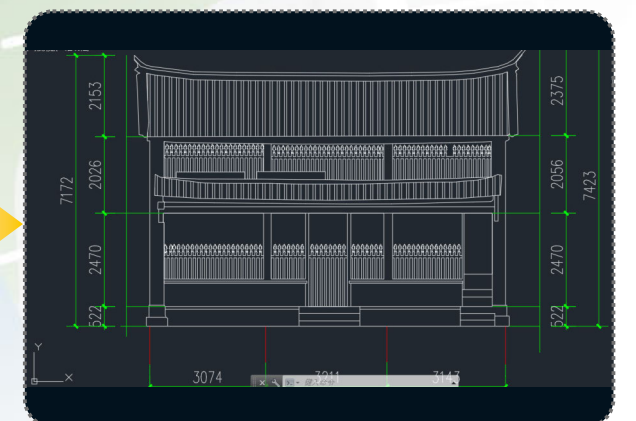
Mine Topography 1:500, 1200x800m Area Size, Height Drop 170m, China



Historical Building BIM Data Capture, 54 Scans in total, China



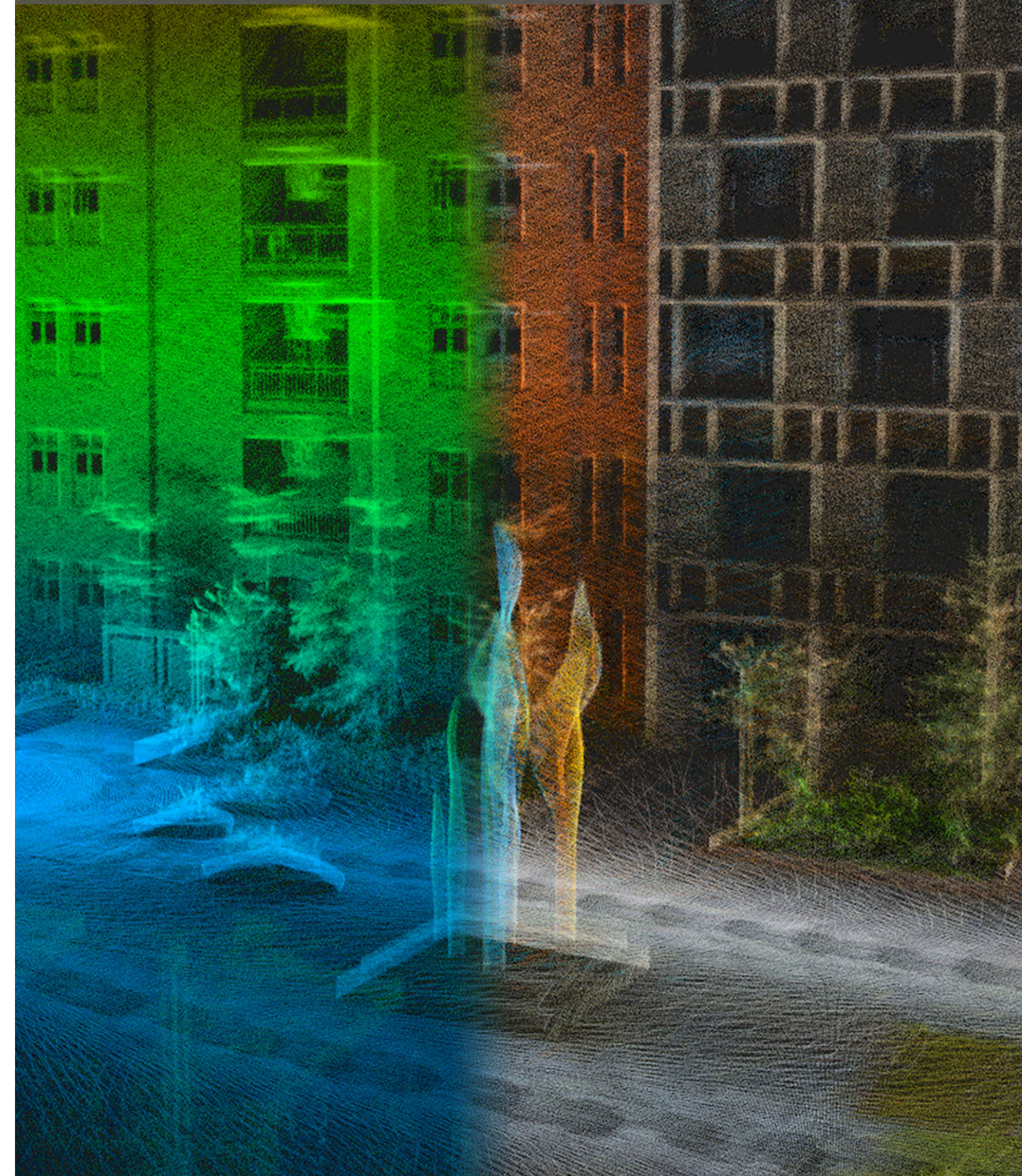
Resort E-documentation, 832 Scans in total, Nigeria



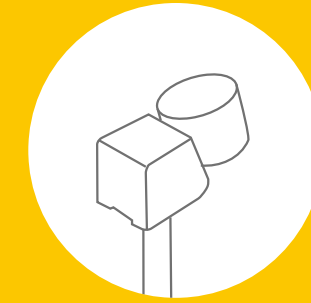
Villa BIM Data Capture, 138 Scans in total, China



## *Survey-grade Speaks Aloud*



# 6



## SLAM

- 6.01 RobotSLAM
- 6.01 RobotSLAM Lite
- 6.03 Comparison
- 6.05 RobotSLAM Palm
- 6.05 RobotSLAM Engine
- 6.07 Application



### RobotSLAM Handheld 3D Laser Scanner

- Backpack 3-in-1 magic on board
- Inbuilt GNSS for direct geo-referencing
- Multiple platform suites to meet diverse needs
- Intuitive LED screen, independent to APP control in use
- 2 storage modes and 2 download methods available



Handheld

ready to work in indoor, outdoor and underground environments



Backpack

easy to carry and well fits long-time working indoors and outdoors



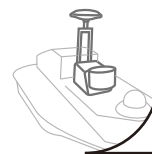
AI Robot Dog

wireless remote scanning of potentially hazardous zones



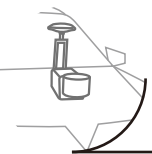
UAV-based

aerial perspective to scan building top which handheld mode cannot



USV-based

to scan shoreside and integrate with underwater topography



SUV-based

mounted onto a car for entry-level automobile mapping



### RobotSLAM Lite Handheld 3D Laser Scanner

- 1.3 kg only, more portable in use
- Cable free operation with battery-built-in grip handle
- Fixed scanner acquisition, suited to indoor confined spaces
- LED on board for intuitive fieldwork control
- Live point cloud comes with APP RobotSLAM Palm



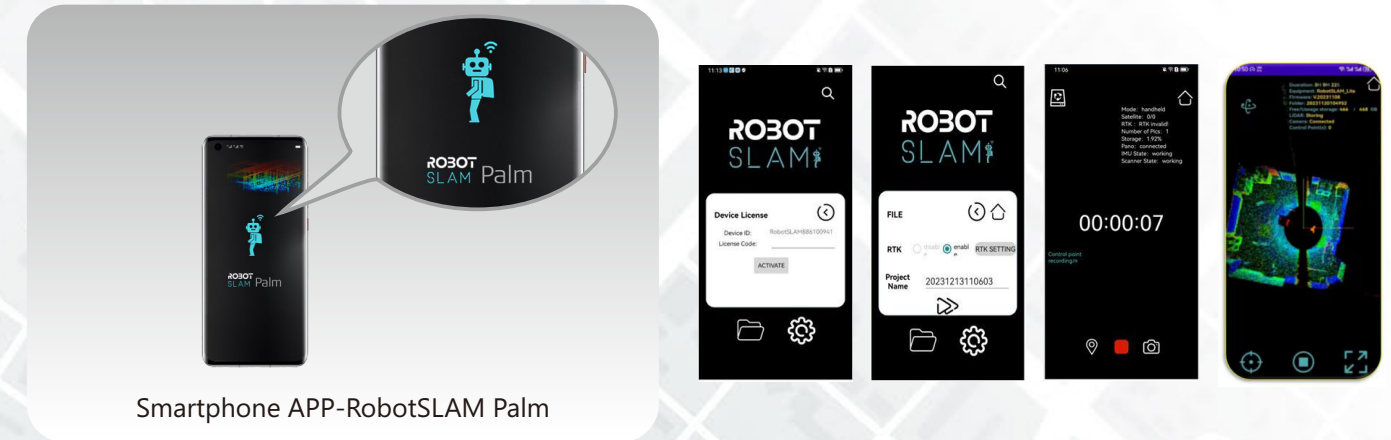
## Comparison

Model		RobotSLAM Standard	RobotSLAM Professional	RobotSLAM Plus Standard	RobotSLAM Plus Professional	RobotSLAM Lite
Rotatable Scanner		√	√	√	√	×
Key Specification	Laser Channel	16	16	32	32	--
	Scan Rate	320,000 pts/sec	640,000 pts/sec	320,000 pts/sec	640,000 pts/sec	200,000 pts/sec
	Measuring Range	120 m	120 m	120 m	120 m	70 m
	FOV	360°x285°	360°x285°	360°x285°	360°x285°	360°x59°
	LED Screen	√	√	√	√	√
	Inbuilt RTK	√	√	√	√	×
Working Mode	Handheld	√	√	√	√	√
	Backpack 3-in-1	option	√	option	√	×
	Other Platforms	SUV/USV/UAV/AI Robot Dog, optional				×
Storage	Inbuilt SSD	512 GB	512 GB	512 GB	512 GB	512 GB
	Removable SD Card	128 GB	128 GB	128 GB	128 GB	×
Download	Ethernet Cable	√	√	√	√	√
	SD Card Copy	√	√	√	√	×



## RobotSLAM Palm Smartphone APP

- Fieldwork setting and control
- Live cloud and realtime trajectory display
- Task timer and device status display
- Device license update



## RobotSLAM Engine Post-process Software

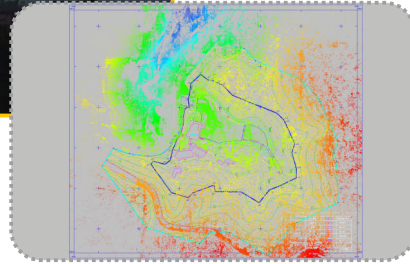
- Multi-task registration
- Coordinate system transformation
- Enable RTK for adjustment
- Loop closure review and processing replay
- Accuracy verification and control report



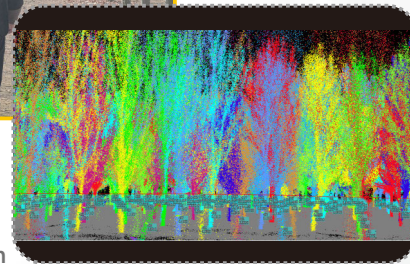


# Applications

## Topography & Mapping

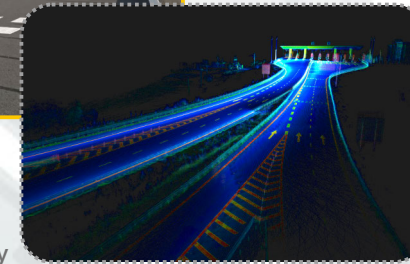
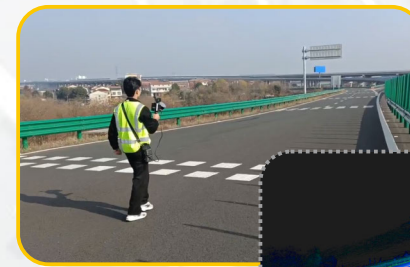


Topography Survey  
RobotSLAM in UAV-based mode, China

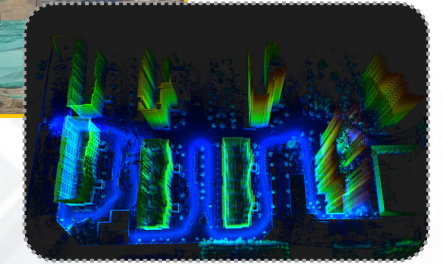


Forestry Investigation  
RobotSLAM in backpack mode, China

## Civil Engineering

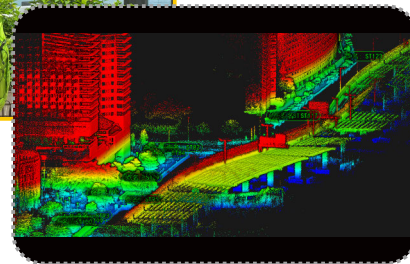


Road As-built Survey  
RobotSLAM in handheld mode, China

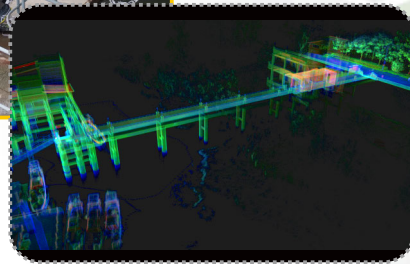


Building As-built Survey  
RobotSLAM in handheld mode, China

## Smart City

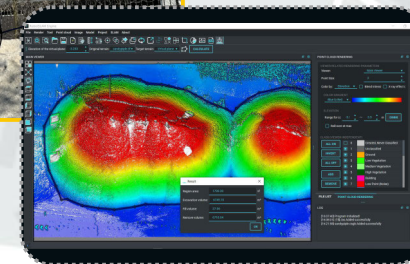


Urban Landscape  
RobotSLAM in handheld mode, Hong Kong



Shoreside Scan  
RobotSLAM in USV-based mode, China

## Mining



Stockpile Volume Calculation  
RobotSLAM in handheld mode, Russia

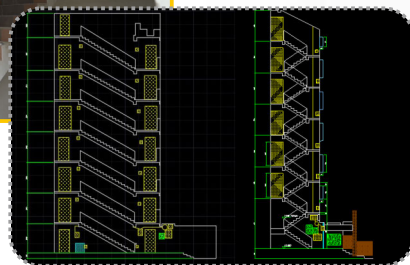


Tunnel Surveying  
RobotSLAM in handheld mode, China

## BIM Data Capture

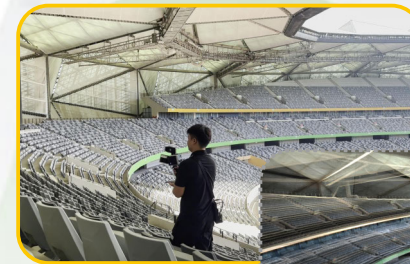


Rapid Scan for Renovation  
RobotSLAM in handheld mode + UAV-based LiDAR, China



Building Elevational Surveying  
RobotSLAM in handheld mode, China

## Digital Twin



Large Complex E-documentation  
RobotSLAM in handheld mode, China



Road Inventory E-documentation  
RobotSLAM in SUV-based mode, Hong Kong



World's First

7



VR-GEO

#### Introduction

7.01 Introduction

#### VR Combo

7.03 Total Station N1

7.03 GNSS RTK G2

7.05 Laser Scanner SPL-1500

7.05 Drone SF-600E

#### VR-Geo Program

7.07 Digital Mapping

7.07 Ordinary Leveling Survey

7.07 Total Station Survey Traverse

7.07 Drone Phantom4RTK Operation



## Introduction

How to conduct survey training during the post-pandemic phase? Equipment availability has been a headache to campus as always. Meanwhile, fieldwork is somehow subject to weather, environment, and time. The practical training for senior graders is always a big challenge in college survey teaching, as some complex environments are hard to observe, reproduce, and deal with, for example, mountains, dams, mining sites, tunnels, etc. Therefore, field demonstration in complex terrains would be not that realistic, as it inevitably comes with high cost, high loss, and high risk in practice, like unexpected outdoor hazards (eg. electrocution, sunstroke, snake bite) may be a time bomb indeed.

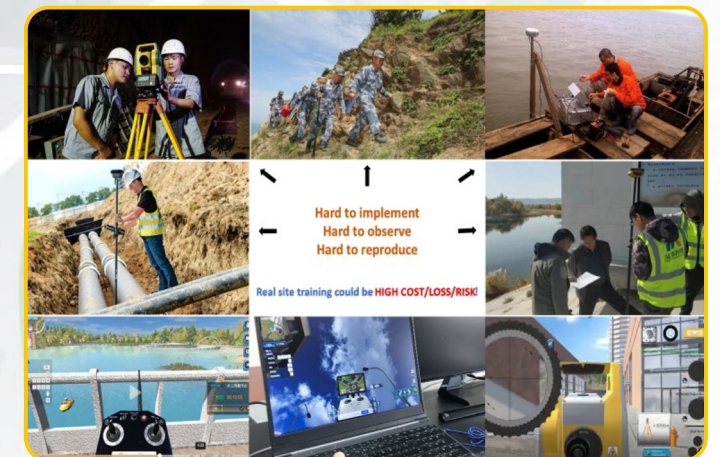


On the other hand, without relevant routine assignments and checkpoint tests, it's not easy for teachers to evaluate whether the students have mastered the operational skills and accomplished the goal. More fun is expected in teaching activities, yet nothing but books and instruments can be relied on in reality. Paperwork is indeed less instructive and impressive compared to the situational approaches. Dedicated students would like to stay connected with modern technologies and social needs.



This was how the World's First VR-Geo application came into the geospatial society in terms of modern survey training.

Maybe you have no idea of what it is and how it works yet, it's indeed impacting there. Usually, only those who have a sound vision and open mind will see a bigger picture and take the fruit first. When most of the markets are not aware of this new revolution, mainland China has become the pioneer that integrates VR technology into teaching, training, exams as well as survey skill contests. Meanwhile, the Ministry of Education here is now accelerating the 1+X Program for survey skills certification. To look further, more and more overseas parties have shown great interest in this amazing invention because it vividly talks about unique instead of competitive.



And now, VR-Geo consists of 2 categories, VR Combos and VR Programs.



## Total Station N1 VR Combo Best for In-class Teaching

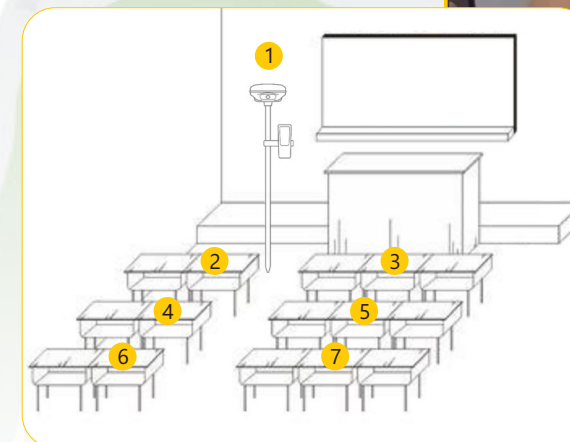
- Real equipment Total Station N1, supplied with one standard package
- State-of-the-art real equipment smart-linked with 3D virtual environment
- Immersive user experience brought by combo survey training program
- Ideal for in-class teaching (for lecturers) and practice (for students)
- Typically 5-7 sets for one class, 1 (must have) at teaching platform, 4-6 among students
- Additional simulated survey training program (Total Station N1) for off-school practice



Virtual survey training program + equipment used in Reality = **VR Combo**

## GNSS RTK G2 VR Combo Best for In-class Teaching

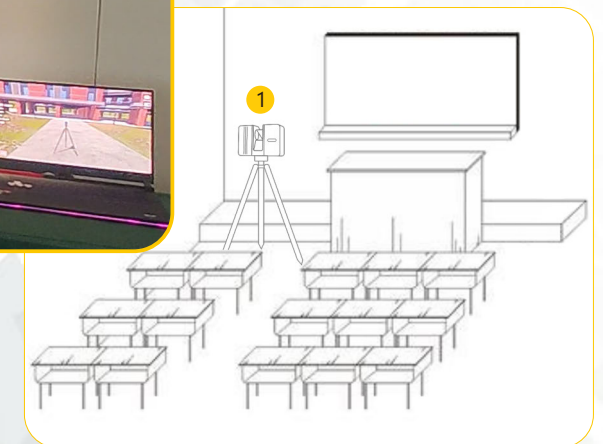
- Real equipment GNSS RTK G2, supplied with one standard package
- State-of-the-art real equipment smart-linked with 3D virtual environment
- Immersive user experience brought by combo survey training program
- Ideal for in-class teaching (for lecturers) and indoor practice (for students)
- Typically 5-7 sets for one class, 1 (must have) at teaching platform, 4-6 among students
- Additional simulated survey training program (GNSS RTK G2) for off-school practice





## Laser Scanner SPL-500E VR Combo Best for In-class Teaching

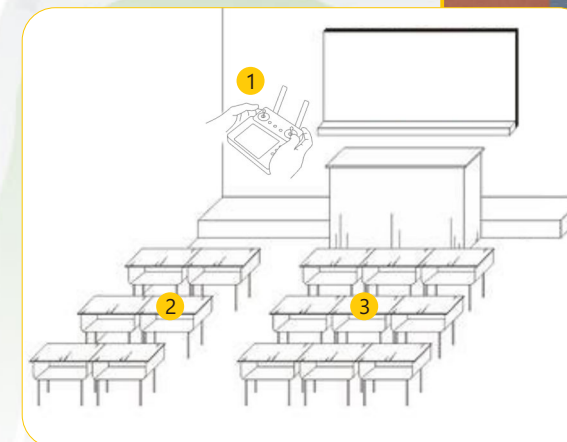
- Real equipment Laser Scanner SPL-500E, supplied with one standard package
- State-of-the-art real equipment smart-linked with 3D virtual environment
- Immersive user experience brought by combo survey training program
- Ideal for in-class teaching (for lecturers) and indoor practice (for students)
- Typically 1 set for one class
- Additional simulated survey training program (Laser Scanner SPL-1500) for off-school practice



Virtual survey training program + equipment used in Reality = **VR Combo**

## Fly2Map Drone SF-600E VR Combo Best for In-class Teaching

- Real equipment Fly2Map Drone SF-600E, supplied with one standard package
- State-of-the-art real equipment smart-linked with 3D virtual environment
- Immersive user experience brought by combo survey training program
- Ideal for in-class teaching (for lecturers) and indoor practice (for students)
- Typically 2-3 sets for one class, 1 (must have) at teaching platform, 1-2 among students





## Digital Mapping Simulated Survey Training

- Designed for simulated survey planning and general execution workflow
- Various equipment (TS, RTK, etc.) to deploy upon survey missions
- All measured data (with genuine coordinates) possible to proceed with CAD mapping
- Scientific mission assessment by time control and finish quality
- Best for in-class teaching, off-school practice, and online survey contests even

## Ordinary Leveling Survey Simulated Training

- Designed for typical leveling survey training (with auto level) before entering commercial society
- Fundamental knowledge to acquire even after class through repeated practice
- Benchmarks, turning points, height difference calculation, etc. as checkpoints
- All virtual-based staff readings to record in the fieldbook of VR program
- Learn-practice-quiz cycle as a perfect closure from compliance to competence

## Total Station Survey Traverse Simulated Training

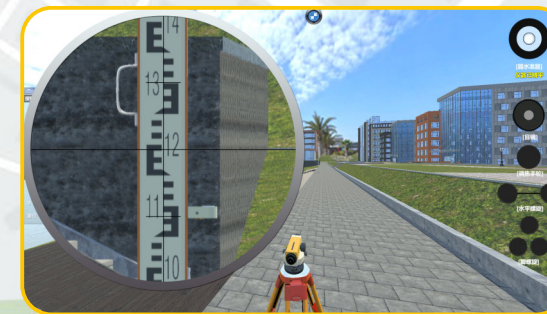
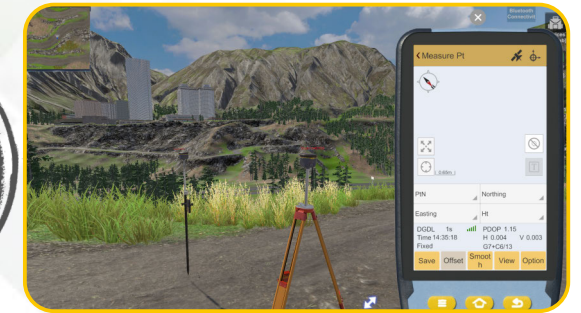
- Designed for typical total station survey traverse training before entering commercial society
- Fundamental knowledge to acquire even after class through repeated practice
- Line or path of travel, traverse point measurements, open/closed/compound traverse, etc. as checkpoints
- To establish accurate control of distance and direction (i.e. coordinates, elevation, bearings, etc.)
- Learn-practice-quiz cycle as a perfect closure from compliance to competence

## Drone Phantom4RTK Simulated Training

- Designed for repeated practice of drone operation with no risk of crash
- Aircraft assembly, drone settings, flight planning, mission control, etc. as checkpoints
- All captured images ready for drone photogrammetry processing practice
- Easier to learn from A to Z and experience unexpected before risky physical attempts
- A new shortcut to transform UAV beginners into qualified pilots in batch



Sim-to Real  
Scenes.  
Sim-but-Real  
Experience.



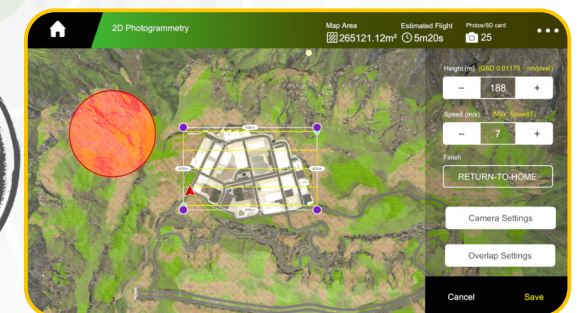
World's First!  
A Breakthrough  
in Modern Survey  
Training



It's about  
Unique instead  
of Competitive.



All features =  
Gimmicks +  
Selling Points





## Data Control in Geo Way

8



GIS

- 8.01 Smart IoT Water Management System
- 8.01 Smart Airport Control System
- 8.03 Urban Unauthorized Land Use Investigation System
- 8.03 Map One-map
- 8.05 Smart City Brains
- 8.05 A Variety of Smart City Applications

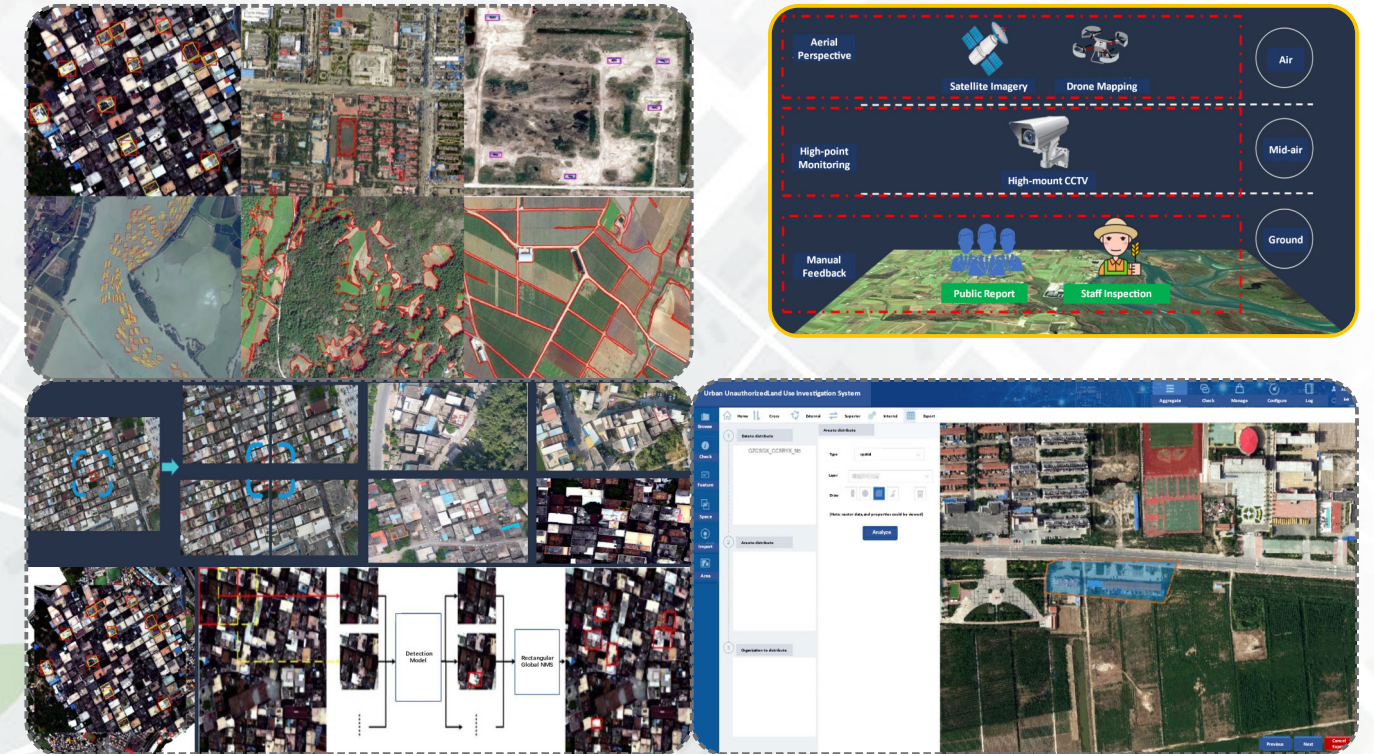






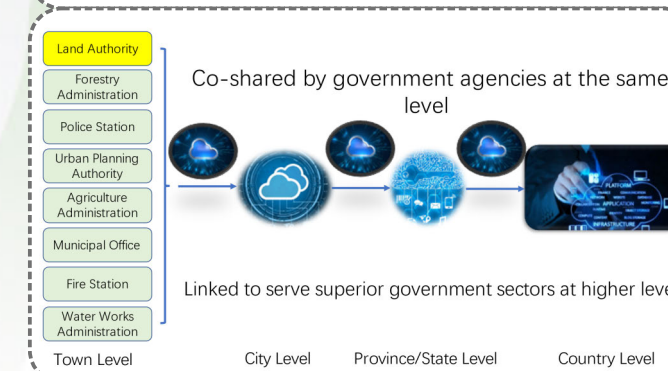
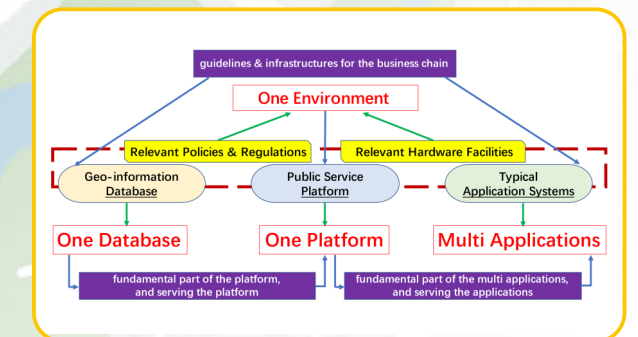
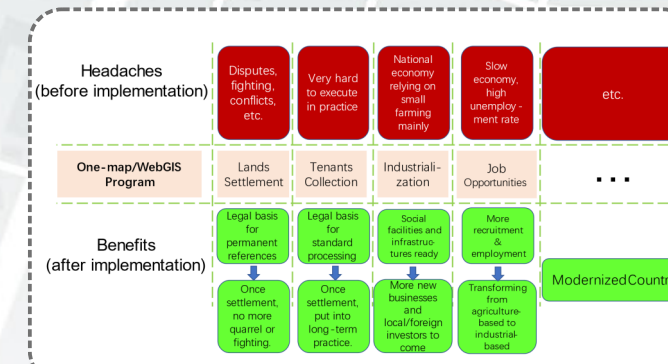
## Urban Unauthorized Land Use Investigation System

- Smart investigation integrated with multi-source data, independent of manual visual inspection only
- Target detection and feature extraction powered by online training model and AI deep learning
- One platform consisting of sampling, model training, assessment, and application
- Data-driven smart management loop closure from discovery to treatment
- General display, violation sourcing, land procession and legal statistics all in one system
- Enjoys integrity, validity, time efficiency, traceability, etc.



## Map One-map

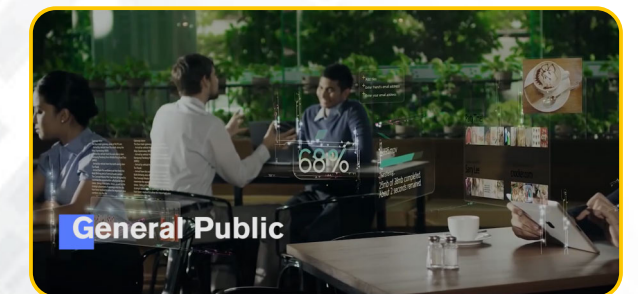
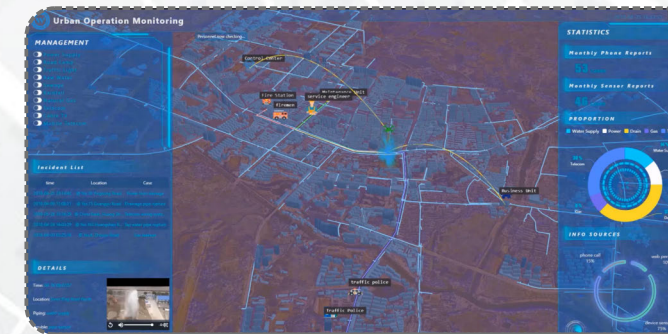
- To generate unified data standards and geo-spatial datum and enhance data integrity for all-purpose uses
- To avoid repeated investments in labor and facilities at different authorities
- To meet the demand of new industrialization reform, modern agriculture transformation, and a fast-growing urbanization process
- Expected to better control of the population, land use, public works, natural resources, public security, etc. and push economic growth by greatly boosting many industries such as real estate, manufacturing, commerce, logistics, tourism, traffic, transportation, etc.
- Plenty of successful cases and implementation experience in mainland China





## Smart City Brains

- Benefits a great deal to government, businesses, and the public in terms of efficiency, opportunities, and life enjoyment
- Shaping the digitized urbanism to intellectual control of tomorrow
- Consisting of e-governing, traffic management, public security, and location-based services
- All necessary interactions for local authorities like gas, water supply, electricity and other city components
- Includes precaution, trouble-shooting, and post-analysis as a complete loop closure



## A Variety of Smart City Applications

A smart city is a technologically modern urban area that uses different types of electronic methods and sensors to collect specific data. Information gained from that data is used to manage assets, resources, and services efficiently, and in return, the data is used to improve operations across the city. We integrate information and communication technology (ICT), and various physical devices connected to the Things (IoT) network to optimize the efficiency of city operations and services and connect to citizens, yet plenty of other applications (eg. utilities, community services, power plants, forestry, etc.) are not listed here. Interested parties are requested to contact our team and talk further.



- Smart Railway
- Smart Mining
- Smart Fire-fighting
- Smart Electricity
- Smart Roadway
- Smart Water IoT Control
- Smart Pipeline Networking
- Smart Housing
- Smart Harbor
- Smart Maritime
- Smart Construction
- ...



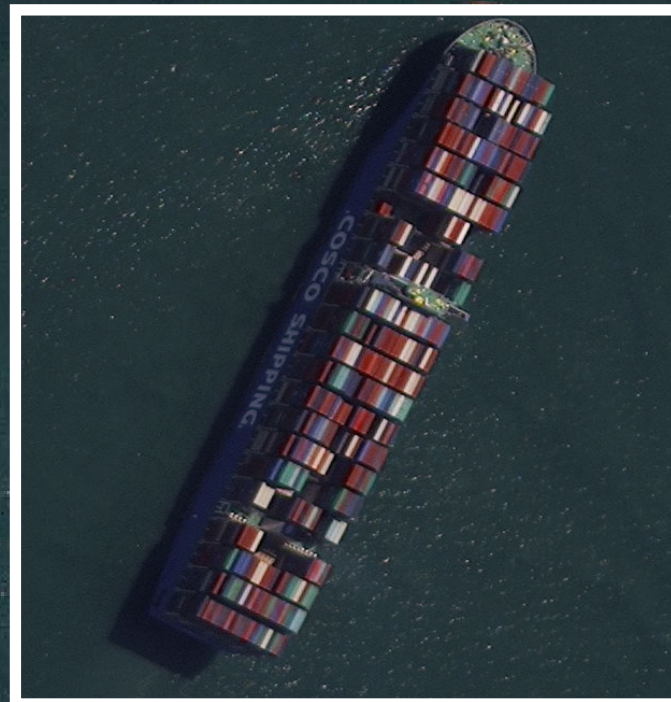
## Mapping in the Far Distance

9



## REMOTE SENSING

- 9.01 Introduction
- 9.03 Conventional Satellite Imagery
- 9.03 Cloud-based Satellite Image Basemap





## Introduction

Satellite imagery, capturing data without making physical contact, is one of the remote sensing methodologies and is typically independent of conventional labor forces.

When the area of interest is indeed very large, for instance, hundreds of square kilometers or even bigger, low-altitude UAV photogrammetry shall not be applicable due to comparably low efficiency. Still, such data is expected to be acquired frequently sometimes. In this case, satellite imagery could be a perfect solution in terms of cost performance. On the other hand, a combination of airborne (either UAV or manned aircraft) and satellite-based data acquisition would better handle some complicated projects.



Satellite images have many applications in agriculture, geology, forestry, biodiversity conservation, regional planning, education, intelligence, and warfare. Images can be in visible colors and other spectra. There are also elevation maps, usually made by radar imaging.

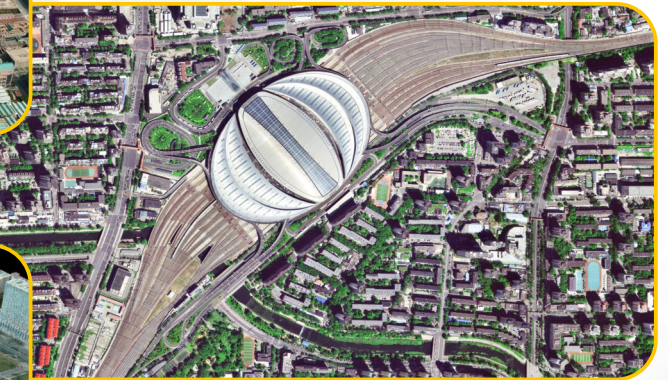
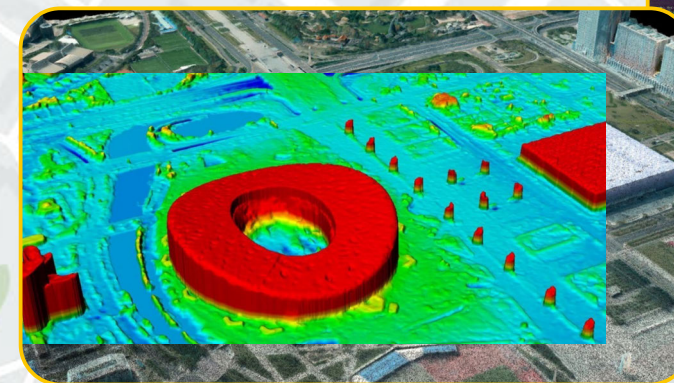
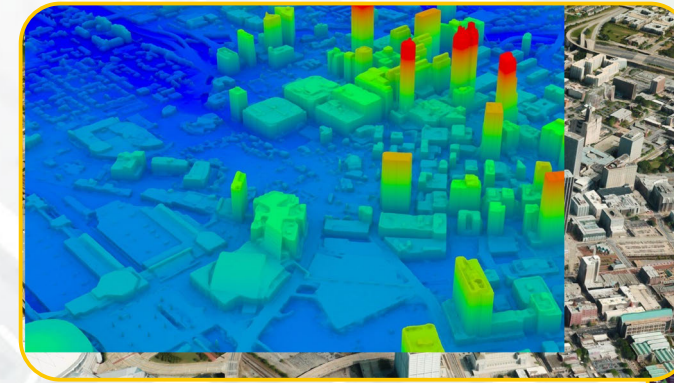
To meet the diverse needs of the market, we have been engaged in this business for years. Large territories with periodic studies usually come with this convincing methodology.





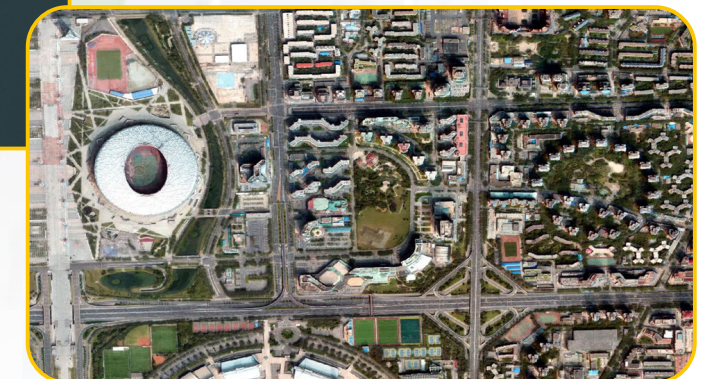
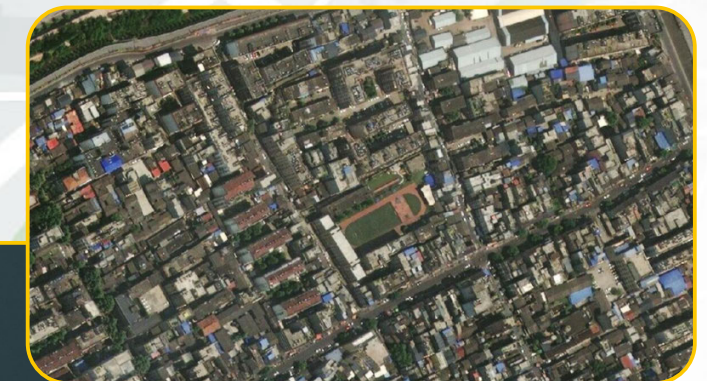
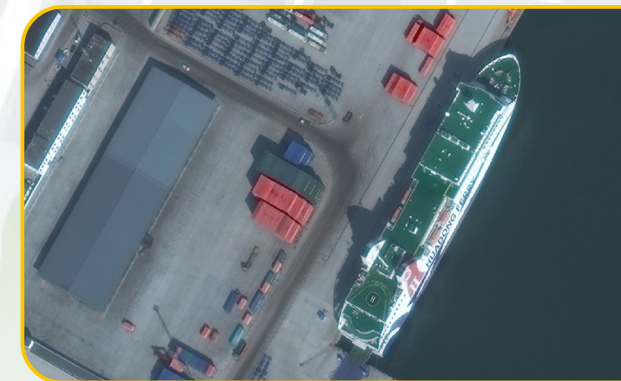
## Conventional Satellite Imagery

- multiple satellite sources (from USA, France, Korea, China, etc.), like WorldView-1/2/3/4, GeoEye, QuickBird, Gaofen-1/2, Jinlin-1, Superview-1, Beijing-2/3, Ikonos, Pleiades, Kompsat-1/2/3, etc.
- a variety of resolution options, 1.0/0.8/0.5/0.4/0.3 m available
- panchromatic or multi-spectral (4/8/16 bands), ortho-ready or stereo pair, archive or on-demand tasking collection
- Gaofen-3 and Superview-1 that deliver 1/3m InSAR data for land subsidence and other geological disasters monitoring, city risk control, etc.
- raw data or finished products (like DSM, DEM, DOM, orthomosaic, 3D models) available upon request
- professional software to deal with multi-source data from optical satellites, radar satellites, etc.

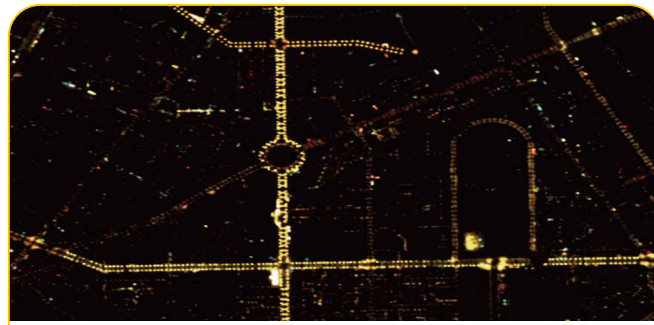


## Cloud-based Satellite Image Basemap

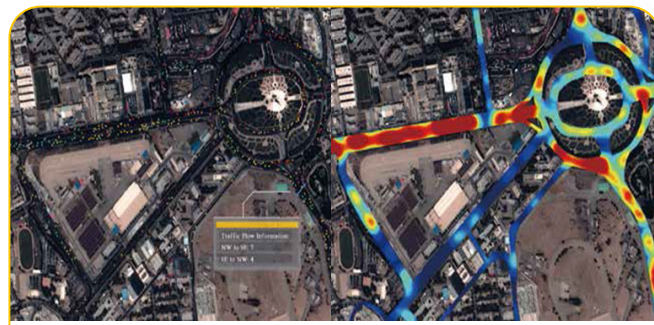
- high-resolution orthophoto map could be obtained directly through satellite imagery web base
- L4 orthorectified imagery (based on DEM correction and bundle adjustment with GCPs) and L5 orthomosaic (based on seamless mosaicking and color unification)
- Map4Latest and Map4Tasking available, ground resolution up to 0.3 m
- Complies with analysis-ready data in terms of radiometric and geometric rectifications, color and mosaic correction, etc.
- Yearly global sub-meter coverage, monthly land surface change detection, and weekly or even daily monitoring







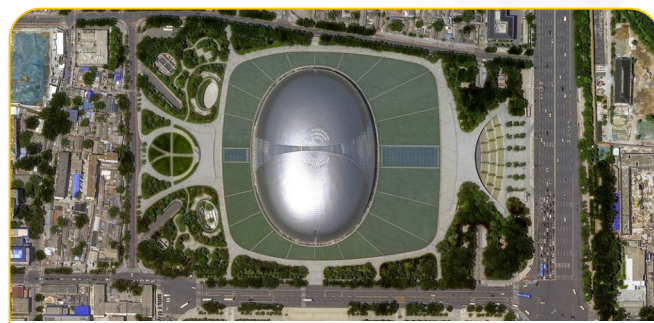
night-lighting imagery



traffic flow study



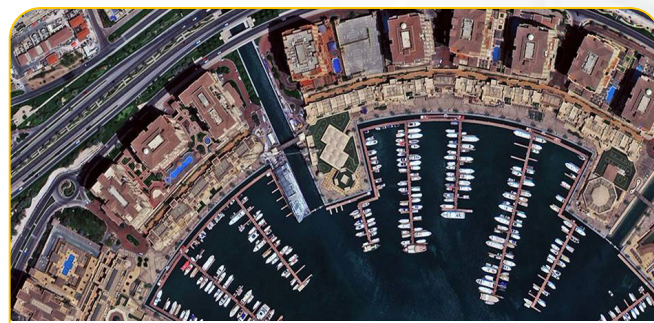
raw imagery 30cm resolution



raw imagery 30cm resolution



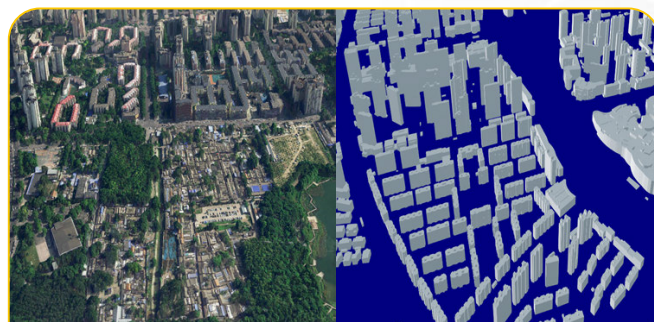
dam overview



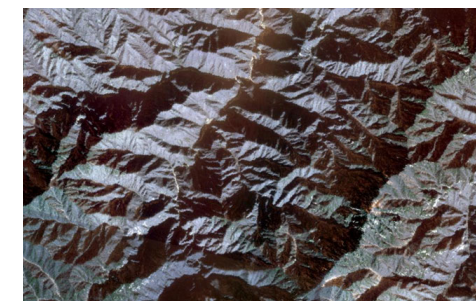
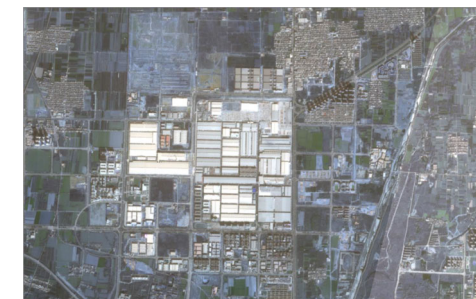
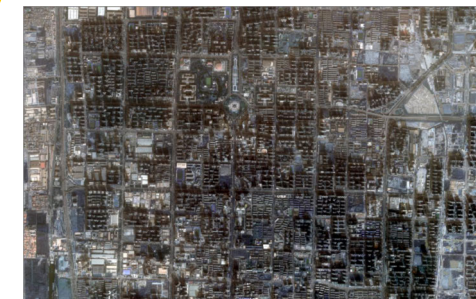
harbor overview



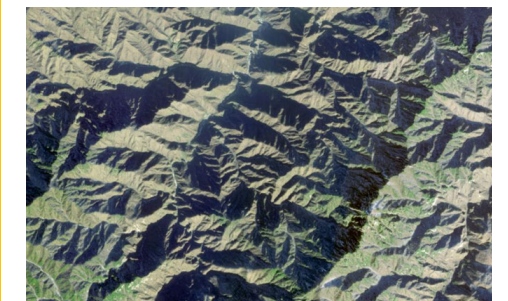
3D mesh processed from stereo mapping



3D mesh and building clay model



raw imagery, 50cm ground resolution

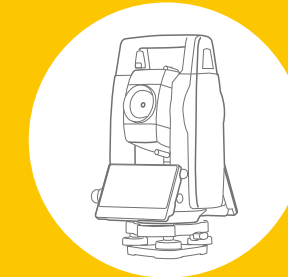


final product, true DOM, more impressive



*Stay Strong. Be Tough.*

10



## CONSTRUCTION

### Robotic Total Station

- 10.1 NS10
- 10.1 NS30
- 10.1 AMTS Outdoor Mate Intelli-Cover

### Total Station

- 10.3 Navi Station
- 10.3 N1
- 10.3 A1
- 10.5 N7/N9
- 10.5 N40
- 10.7 N8
- 10.7 N6+
- 10.7 N3
- 10.7 NTS-332R10

### 10.9 Equipment List

- 10.11 Accessories for Total Station

### Theodolite

- 10.13 NT-023
- 10.13 ET Series

### Digital Level /Auto Level

- 10.15 DL-2003A
- 10.15 DL Series
- 10.15 DSZ Series
- 10.17 NL Series
- 10.17 ALTAS

### Plumb Laser

- 10.17 ML-401/ML-402



## NS10 Robotic Total Station



- High-speed ultrasonic motor built in, fully robotic with automatic search
- Powerful tracking engine to automatically keep tracking prisms in target areas
- Ultralong range Bluetooth to connect with data controller for better flexibility
- Long range measurement with prism, 6000m; reflectorless, 1000m
- Android 9.0 OS, superior performance with full graphics and high-resolution touch display
- Data storage either on board or in removable flash drive, data transfer via Bluetooth or Wi-Fi



## NS30 Robotic Total Station



- Hyperdrive engine, powered by worm and gear technology
- Long range measurement with prism, 3500m; reflectorless, 1000m
- Reliable prism search within 300m, and auto prism recognition up to 1200m
- LocknTRack function and user-friendly software Survey Star on board
- Stable remote control connection within 450m enabled by Zigbee technology
- Data transfer via USB OTG, TF card and Bluetooth, optional



## Intelli-Cover II AMTS Outdoor Mate

- Setup within minutes, unattended operation with fully automated covering/uncovering by time-program commands
- Rugged and durable, designed to withstand nearly all-weather conditions
- More economical and time-saving compared with concrete shelter establishment
- Compatible with the robotic total station of all major brands on the market
- Able to work with rain gauge, tilt sensor, etc. to trigger retraction in case of bad conditions





## Navi Station

Total Station Integrated with GNSS



- A total station fully integrated with GNSS receiver and antenna on top
- Set up station location anywhere, no known points needed
- An incredibly powerful EDM, reflectorless range up to 2000m
- Bluetooth 4.0, cable free operation
- Android 6 OS, smart workflow enabled



## N1

Android Total Station



- Android 11 OS, amazing user experience
- 5.5-inch color touchscreen and EDM trigger key available
- Intuitive software Survey Star on board
- Enjoys greater convenience compared to conventional total station survey
- Best for topography and construction stake-out
- Simple, fast, and flexible data transfer



## A1

Android Total Station



- World's first Android total station, built for developer
- Iconic onboard software with abundant applications, simple but not simplistic
- Bluetooth/Wi-Fi/USB/Hotspot optional for transfer, auto height available
- Bright and sharp guide light (as option) for target aiming



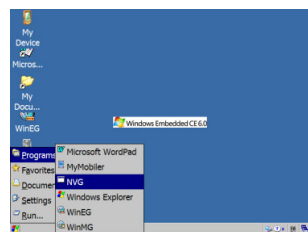


# N7/N9 Series Win-CE Total Station

- World's first dual-laser EDM model
- 1" (N9) and 2" (N7) angle accuracy
- Reflectorless range up to 2000m
- Smaller laser spot for minimal measuring error
- Windows CE 6.0 OS, with software WinTS, WinEG, WinMG on board, featuring field-to-office programs like COGO, Road, Resection, Stake-out, Construction Deformation, Mapping & Drawing, etc.



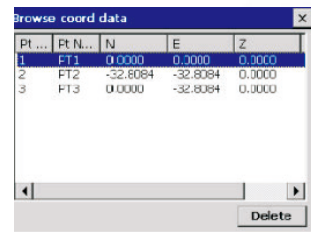
## Onboard Software – WinTS, WinEG, WinMG



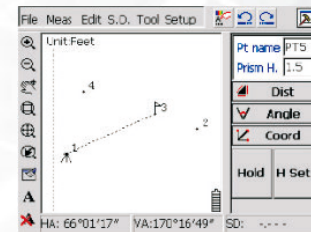
► Windows CE 6.0, fully open platform



WinTS (standard survey)



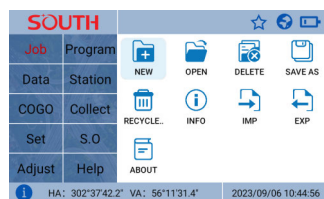
WinEG (professional survey)



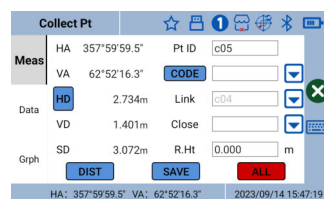
WinMG (professional mapping)

# N40 Graphic Total Station

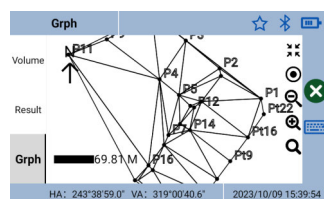
- Auto instrument height and guide light on board
- Customized camera for target collimation
- Ultra-large 4-inch color touch screen
- Intuitive graphic display to increase job efficiency
- Flexible data transfer via USB, Bluetooth or even email



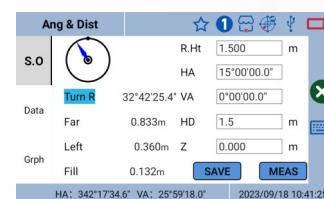
► Main Menu  
Icon menu, intuitive and impressive



Basic Measurement  
Nearly all settings to complete in one page



Graphic Display  
Measure, link automatically, then generate a sketch

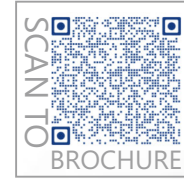


Stake-out  
Electronic compass available. All stake-out types included



## N8 Series Dual-laser Total Station

- World's first dual-laser EDM total station
- 2" accuracy, reflectorless range up to 2000m
- Incredibly fast measurement within 0.3 sec
- 2.7-inch bright screen, easy to read
- Cable free connection



2000m



## N6+ Series Best-selling Total Station

- 2" and 5" angle accuracy
- Reflector range up to 5000m and reflectorless, 1000/1500m
- Trigger key and hot key for fast operation
- Battery endurance up to 10 hours
- Bigger internal memory, 96,000 data blocks to save



## N3 Total Station with Auto Height

- 2" angle accuracy, 1000m reflectorless EDM
- 3-inch display, large and high resolution
- Quick and Easy trigger key available
- Auto instrument height function on board
- Built-in guide light for easier stake-out



## NTS-332R10 Entry-level Total Station

- 2" angle accuracy, 1000m reflectorless EDM
- Simple and practical onboard software
- Auto instrument height function as an option
- Arctic exclusive, NTS-332RT for low temperature (-35°C)





Hardware		NS10	NS30	NAVI/N1	N7/N9	N8	N6+	A1	N40	N3	332R10
APR		√	√	×	×	×	×	×	×	×	×
Prism Search		√	√	×	×	×	×	×	×	×	×
LocknTrack		√	√	×	×	×	×	×	×	×	×
Remote Control		√	√	×	×	×	×	×	×	×	×
Accuracy	0.5"	√	√	×	×	×	×	×	×	×	×
	1"	√	√	×	√	×	×	√	√	×	×
	2"	×	×	√	√	√	√	√	√	√	√
	5"	×	×	×	×	×	√	×	×	×	×
Distance Measurement	With Reflector	√	√	√	√	√	√	√	√	√	√
	Without Reflector	√	√	√	√	√	√	√	√	√	√
Reflectorless Range	600m	×	×	×	×	×	×	×	×	×	√
	1000m	√	√	○	√	√	√	√	√	√	×
	1500m	×	×	○	○	○	○	×	×	×	×
	2000m	×	×	○	○	○	×	×	×	×	×
EDM Laser Level (IEC 60825)	Class 3R	√	√	√	√	√	√	√	√	√	√
	Class 1	×	×	×	×	×	○	×	×	×	×
EDM Trigger Key		√	×	√	×	×	√	√	√	√	√
Plummet	Laser	√	√	√	√	√	√	√	√	√	√
	Optics	×	×	×	○	○	○	○	○	○	○
Auto Instrument Height		○	×	×	×	×	×	○	○	○	○
Full Numeric Keyboard		×	×	×	√	√	√	×	√	√	√
Color Screen		√	√	√	√	√	×	√	√	√	×
Touch Display		√	√	√	√	×	×	√	√	√	×
Camera <sup>*1</sup>		√	×	×	×	×	×	×	○	×	×
WLAN		√	√	×	√	×	×	√	×	×	×
Bluetooth		√	√	√	√	√	√	√	√	√	√
Communication Port	RS-232	√	√	√	√	√	√	√	√	×	×
	Mini USB	×	×	×	√	√	√	×	√	×	×
	Micro USB	√	×	×	×	×	×	√	×	×	×
	USB Memory Stick	√	○	○	√	×	×	√	√	√	√
	SD Card	×	×	×	√	√	√	×	√	×	×
	TF Card	×	√	√	√	×	×	×	×	×	○
Low-Temperature Version (-35°C)		×	×	×	×	×	×	×	×	×	

Program		NS10	NS30	NAVI/N1	N7/N9	N8	N6+	A1	N40	N3	332R10
Basic Survey	Angle/Distance/Coordinate	√	√	√	√	√	√	√	√	√	√
Station Setup	Resection	√	√	√	√	√	√	√	√	√	√
	Point to Line	√	√	√	×	×	×	√	√	√	×
	Backsight Check	√	√	√	√	√	√	√	√	√	×
	Height Transfer	√	√	√	√	×	×	√	√	√	×
Data Collect	Offset (Standard & Column)	√	√	√	√	√	√	√	√	√	√
	MLM / Tie Distance	√	√	√	√	√	√	√	√	√	√
	REM / Remote Height	√	√	√	√	√	√	√	√	√	√
	Radiation	√	√	√	√	×	×	√	√	×	×
Stake Out	Stake Points	√	√	√	√	√	√	√	√	√	√
	Reference Line S.O	√	√	√	√	×	×	√	√	√	×
	Alignment S.O	√	√	√	√	×	×	√	√	×	×
	Cross-section S.O	×	×	×	√	×	×	×	×	×	×
COGO	Calculator	√	√	√	√	×	×	√	√	×	×
	Inverse	√	√	√	√	×	×	√	√	√	×
	Coordinate Calculation	√	√	√	√	×	×	√	√	√	×
	Intersections	√	×	×	√	×	×	√	√	×	×
	Z Coordinate	×	×	×	×	√	√	×	×	×	√
	Point to Line Inverse	√	×	×	√	√	√	√	√	√	√
	Area & Girth	√	√	√	√	√	√	√	√	√	√ <sup>*2</sup>
	Volume	√	√	√	√	×	×	√	√	×	×
	Traverse	×	√	√	√	×	×	×	√	×	×
Program	Batter Boards	×	×	×	√	×	×	×	×	×	×
	Tape Dimensions	×	×	×	√	×	×	×	×	×	×
	Graphic Display	√	√	√	√	×	×	√	√	×	×
	Road	√	○	○	√	√	√	√	√	√	√
Program	Tunnel	×	○	○	×	×	×	×	○	×	×
	Mining	×	×	×	○	×	×	×	×	×	×

√ - Available    × - Not Available    ○ - Optional

\*1: Camera is an additional option for N41

\*2: NTS-332R10 is not able to calculate girth.



## Accessories

## Power Supply

Battery	LB-01	Li-ion battery, grey color, 7.4V, 3100mAh, 23Wh, rechargeable for N6/N7/N8/N9/N1/Navi Station
	LI-39	Li-ion battery, black color, 7.4V, 3900mAh, 29Wh, rechargeable for A1/N4
	LI-30	Li-ion battery, black color, 7.4V, 3000mAh, 22Wh, rechargeable for N3/NTS-332R6
Charger	LC-10	Charger for LB-01, including power adapter
	NC-3	Charger for LI-39 and LI-30, including power adapter

## Cables

Y-Cable	Serial data cable, connects 6-pin connector to PC (9-pin RS-232 serial) and USB A
Mini USB	Data transfer cable, connects TS to PC, USB mini connector to USB A
Micro USB	Data transfer cable, connects A1 total station to PC, USB micro connector to USB A
OTG Cable	Data transfer cable, connects N7/N9 total station to memory stick

## Eyepiece

NE-20	Diagonal eyepiece, for N6/N7/N8/N9 series total station and ET series theodolite
DFT-2RT	Diagonal eyepiece, for N4/N3/A1 series total station

## Solar Filter

NF-20	Objective solar filter for total station
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## Carry Case

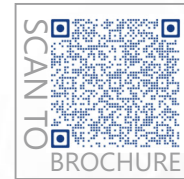
T5 Case	Red color, for N7/N8/N9 total station
T9 Case	Red color, for N6 total station
RD-1 Case	Yellow color, for A1/N4/N3/NTS-332R6 total station





## NT-02D Pipe Jacking Theodolite

- Extreme long-range laser, 1000m
- 1000m visible pointer and pinpoint accuracy  $\leq 4\text{cm}/1000\text{m}$
- Angular accuracy up to 2"
- Clear and large LCD display
- Designed for pipe jacking in sewer construction



## NT-023 Multi-functional Theodolite

- 2" angular accuracy
- Distance measurement up to 300m
- Numeric keypad with 2.7-inch screen
- Angle, distance, axis programs on board



## ET Series Most Classic and Best-selling Theodolite

- 2" and 5" angular accuracy
- Laser pointer model, ET-02L/05L; movable tribrach model, ET-05F/05F
- Best interprets reliability and durability
- Unbeatable cost-performance and market-proven quality
- More than 1,000,000 units sold worldwide





## DL-2003A High-accuracy Digital Level

- Amazing accuracy performance
- Height, 0.3mm; Distance, D\*0.001mm
- Dual-bubble compensator
- 3-inch color touch screen
- Stable Bluetooth remote control



## DL Series Cost-performance Digital Level

- 2 models available, DL-202 and DL-2007
- One-key operation
- Enjoys high accuracy and efficiency both
- Automatic saving data while reading
- Speedy data transfer after fieldwork



### DL-202

- Height: 1.5mm;
- Distance: D≤10m:10mm; D>10m:D\*0.001
- 2-Line LCD screen with illumination

### DL-2007

- Height: 0.7mm;
- Distance: D≤10m:10mm; D>10m:D\*0.001
- 4-Line LCD screen with illumination



## DSZ Series Classic Automatic Level

### DSZ2

- High resolution 32X telescope
- ±0.3" compensator accuracy
- Standard deviation 1.0mm
- IP65 rating, superior waterproof and dustproof

### DSZ3

- High resolution 28X telescope
- ±0.4" compensator accuracy
- Standard deviation 1.5mm
- IP65 rating, superior waterproof and dustproof



DSZ2



DSZ3



DSZ2 + FS1

### DSZ2 + FS1 (micrometer)

- Extremely high accuracy up to 0.5mm



## NL Series Entry-level Automatic Level

- Reliable and durable optical devices
- 3 classic types available
- 20X/24X/28X/32X magnification as option
- Stable and accurate compensator on board
- Standard 3-in-1 package ALTAS available



NL G style



NL-C32



NL-A32

### NL G style

- 20X/24X/28X/32X magnification as option
- Magnetic damping compensator
- Metal housing

### NL-C32

- 32X telescope
- Air damping compensator
- Lightweight yet durable housing

### NL-A32

- 32X telescope
- Magnetic damping compensator
- Quick response for leveling

## ALTAS 3-in-1 Levelling Set

### Auto Level

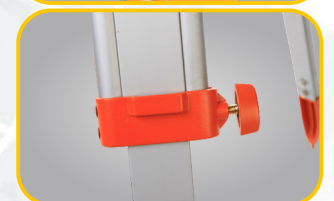
- 20X/24X/28X/32X optional

### Tripod

- 5/8 thread, flat head, twist lock
- Lightweight but durable, supplied with carrying strap
- Long-lasting painting
- No shrinking or swelling in touch conditions

### Aluminum Staff

- 5m, 5 sections
- ABS buckle and levelling bubble for precise operation
- Free extension with comfort, and stable structure



## ML-401/ML-402 Classic Plumb Laser

- World's first dense-ball bearing
- All-weather dependability, against rainfall and drop in different environments
- Laser pointer (working range 250m) to increase efficiency
- 360° encoder to eliminate errors by dual side measurement
- 2 nos. AA Alkaline battery, power saving tech for longer endurance



ML-401



ML-402





*A Full Line of Supplies*

11



## SURVEY ACCESSORIES

### **Prism System**

- 11.1 Prism System
- 11.3 Prism Set
- 11.5 Mini Prism System
- 11.7 Prism
- 11.8 Tribrach
- 11.9 Adapter

### **Pole**

- 11.10 Prism Pole
- 11.12 Range Pole
- 11.13 **Staff**
- 11.14 **Tripod**
- 11.17 **Bipod & Tripod for Poles**



TPS11



- A 64mm prism TY01 assembly with yellow ABS canister
- This kit comes with a fixed adapter TL10 with optical plummet and plate vial
- Also included a yellow tribrach TJ13, which features three-screw leveling with center line and a 10' bubble
- Included hard shell case AX05

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0001	64mm	0/-30mm	5/8	140*140mm	1.85kg	Yellow

TPS16



- A 65mm prism CPR1 with copper coated
- This kit comes with a fixed adapter CRT-10
- Also included is a green tribrach TJ10, which features three-screw leveling with optical plummet and a 10' bubble
- Included hard shell case AX02

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0011	65mm	-34.4mm	stub fitting	180*168mm	1.65kg	Red

TPS17



- A 64mm prism TY01 assembly with red ABS canister
- This kit comes with a fixed adapter TL10 with optical plummet and plate vial
- Also included is a gray tribrach TJ13, which features three-screw leveling with a 10' bubble
- Included hard shell case AX05

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0004	64mm	0/-30mm	5/8	200*160mm	1.8kg	Yellow

TPS21



- A 64mm prism TY02 assembly with red ABS canister and black pressing-ring
- This kit comes with a fixed adapter TL10 with optical plummet
- Also included is a gray tribrach TJ13, which features three-screw leveling with center line and a 10' bubble
- Included hard shell case

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0007	64mm	0/-30mm	5/8	180*140mm	1.8kg	Yellow

TPS26



- A 65mm prism CPR1 assembly with cooper coated and metal canister
- This kit comes with a fixed adapter TL10L with optical plummet and plate vial
- Also included is a green tribrach TJ10, which features three-screw leveling with a 10' bubble
- Included hard shell case AX02
- Erect image

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0003	65mm	-34.4mm	stub fitting	180*168mm	1.8kg	Red

TPS27



- A 64mm prism TY06 assembly with red ABS canister
- This kit comes with a fixed adapter TL10 with optical plummet
- Also included is a gray tribrach TJ13, which features three-screw leveling with center line and a 10' bubble
- Included hard shell case AX02

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0008	64mm	-30/-40mm	5/8	200*185mm	1.8kg	Red

TPS30



- Includes three sealed 64mm prisms TY01 in red ABS canister
- Tilting holder is constructed by aluminum-alloy and holds one to three prisms, compatible with most screw-in prisms
- Fixed adapter and tribrach features 10' sensitivity for compensation, with optical plummet
- Included hard shell case AX05

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0012	64mm	0/-30mm	5/8	None	1.95kg	Yellow

TPS49



- A 64mm prism TY01 assembly with red ABS canister
- This kit comes with a fixed adapter TL10 with optical plummet and plate vial
- Also included is a gray tribrach TJ13, which features three-screw leveling with a 10' bubble
- Included hard shell case AX05

PN	Diameter	Offset	Adapter	Target	Wt.	Case
AD0010	64mm	0/-30mm	5/8	175*140mm	1.8kg	Yellow



TK10T



- Features a 30mm offset and a 64mm prism TY01, with accuracy of <5 seconds, sealed in red canister made by durable ABS
- Mounting base features standard female 5/8 thread with Zinc-aluminum + ABS holder Tk10
- Included carry bag AB14

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0004	64mm	0/-30mm	Zinc-aluminum+ABS	200*170mm	0.51kg	77mm

TK11T



- Features a -30mm offset and a 64mm prism TY01, with accuracy of <5 seconds, sealed in yellow canister made by durable ABS
- Mounting base features standard female 5/8 thread with Zinc-aluminum holder TK11
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0005	64mm	0/-30mm	Zinc-aluminum	140*140mm	0.68kg	77mm

TK16T



- Features a -34.4mm offset and a 65mm copper-coated prism CPH1
- Tilt holder is constructed by polycarbonate with an easy-locked thread
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0007	65mm	-34.4mm	ABS	180*168mm	0.53kg	87mm

TK17T



- Features 0mm/-30mm offset and a 64mm prism TY01, with accuracy of <5 seconds, sealed in red canister made by durable ABS
- Mounting base features standard female 5/8 thread with Zinc-aluminum+ABS holder
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0008	64mm	0/-30mm	Zinc-aluminum+ABS	200*160mm	0.68kg	77mm

TK21T



- Features 0/30mm offset and a 64mm prism TY02, with accuracy of <5 seconds, light but durable ABS canister with a black pressing ring to prevent water and dust from getting inside
- Mounting base features standard female 5/8 thread with Zinc-aluminum holder
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0011	64mm	0/-30mm	Zinc-aluminum	180*140mm	0.67kg	77mm

TK25T



- Features 0/-30mm offset and a 64mm prism TY01, with accuracy of <5 seconds, sealed in red canister made by durable ABS
- Mounting base features standard female 5/8 thread with Zinc-aluminum holder
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0017	64mm	0/-30mm	Zinc-aluminum	175*140mm	0.64kg	77mm

TK27T



- Features -30/-40mm offset and a 64mm prism TY06, sealed in red canister made by ABS
- Mounting base features standard female 5/8 thread with ABS holder
- Included carry bag AB20

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0012	64mm	-30/-40mm	ABS	200*185mm	0.63kg	85mm





TK49T




- Features 0/-30mm offset and a 64mm prism TY01, with accuracy of <5 seconds, sealed in red canister made by durable ABS
- Mounting base features standard female 5/8 thread with Zinc-aluminum holder
- Included carry bag AB09

PN	Diameter	Offset	Holder	Target	Wt.	Center Ht
HG0014	64mm	0/-30mm	Zinc-aluminum+ABS	175*140mm	0.63kg	77mm











<p><b>TPSmini101</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm prism encased in ABS holder, 0/-30mm offset</li> <li>• Mounting base features standard 5/8 thread</li> <li>• An adjustable 30' circle vial</li> <li>• Included soft bag AB02, connector AD013 and S hook</li> <li>• Optional: U bracket</li> </ul>	<p><b>TPSmini102</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm prism encased in aluminum-alloy holder, 0/-30mm offset</li> <li>• Mounting base features standard 5/8 thread</li> <li>• An adjustable 30' circle vial</li> <li>• Included soft bag AB02, connector AD013/AD014 and S hook</li> </ul>
<p><b>TPSmini103</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm silver-coated prism encased in aluminum-alloy holder, 0mm offset</li> <li>• An adjustable 60' circle vial</li> <li>• Included soft bag AB08, cap, poles ADS103 and S hook</li> </ul> <p>▶ 60cm*3, φ10mm</p>	<p><b>TPSmini104</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm silver-coated prism encased in aluminum-alloy holder, 0/-30mm offset</li> <li>• Mounting base features standard female 5/8 thread</li> <li>• An adjustable 30' circle vial</li> <li>• Included soft bag AB03, connector AD013/AD014 and S hook</li> <li>• Optional: U bracket</li> </ul>
<p><b>TPSmini105A/105B</b></p>  <ul style="list-style-type: none"> <li>• 38mm/25.4mm silver-coated prism encased in aluminum-alloy holder, 0/-30mm offset</li> <li>• Mounting base features standard female 5/8 thread, An adjustable 30' circle vial</li> <li>• Included soft bag AB04, connector AD014, cap and poles ADS112</li> </ul> <p>▶ 30cm*4, φ12mm</p>	<p><b>TPSmini112A/112B</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm, copper-coated prism and light &amp; durable ABS holder</li> <li>• Prism constant: -17.5 for TPSmini112A, 0/-30 for TPSmini112B</li> <li>• Assembly slides up &amp; down the poles</li> <li>• An adjustable 15' circle vial</li> <li>• Included soft bag AB02 and poles ADS112</li> </ul> <p>▶ 30cm*4, φ12mm</p>
<p><b>TPSmini114A/114B</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm copper coating prism mounted in metal holder, making the waterproof and dust-proof protection</li> <li>• 3 inches L-bar for 114A 9 inches L-bar for 114B</li> <li>• Tilting screw uses an 8mm hex wrench to loosen and tighten</li> </ul>	<p><b>TPSmini114D</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm copper coating prism mounted in metal holder, making the waterproof and dust-proof protection</li> <li>• Features 3 inches L-bar</li> <li>• Tilting screw uses an 8mm hex wrench to loosen and tighten</li> </ul>

Part No.	Type	Diameter	Offset	Center Height	Wt
MN0004	TPSmini101	25.4mm	0/-30mm	50mm	0.08kg
MN0006	TPSmini102	25.4mm	0/-30mm	70mm	0.16kg
MN0008	TPSmini103	25.4mm	0mm	None	0.15kg
MN0010	TPSmini104	25.4mm	0/-30mm	70mm	0.16kg
MN0011	TPSmini105A	38mm	0/-30mm	60mm	0.29kg
MN0027	TPSmini105B	25.4mm	0/-30mm	60mm	0.25kg
MN0015	TPSmini112A	25.4mm	-17.5mm	50mm	0.11kg
MN0017	TPSmini112B	25.4mm	0/-30mm	50mm	0.11kg
MN0019/MN0021	TPSmini114A/114B	25.4mm	-25.3mm	60mm/214.6mm	0.20kg
MN0020	TPSmini114D	25.4mm	-25.3/-6.5mm	60mm	0.27kg







<p><b>TPSmini115</b></p>  <ul style="list-style-type: none"> <li>• 35mm silver coated sliding prism, 0 offset</li> <li>• Prism assembly slides up and down the poles easily by stainless screw</li> <li>• An Adjustable 30' circular vial</li> <li>• Included soft bag AB08 and poles ADS115</li> </ul> <p>▶ 30cm*5, φ9mm</p>	<p><b>TPSmini116</b></p>  <ul style="list-style-type: none"> <li>• 38mm silver coated standing prism, 0 offset, it can be disassemble and using as a sliding prism</li> <li>• Holder is constructed by aluminum alloy</li> <li>• An Adjustable 30' circular vial</li> <li>• Included soft bag AB03, poles ADS116 and stand</li> </ul> <p>▶ 55cm*3, φ9mm</p>
<p><b>TPSmini118</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm silver-coated prism encased in aluminum-alloy holder, 0/-30mm offset</li> <li>• MIO Thread</li> <li>• An adjustable 30' circle vial</li> </ul>	<p><b>TPSmini120/120C</b></p>  <ul style="list-style-type: none"> <li>• Large diameter monitoring prism ball for long-range measurement.</li> <li>• Mini120 features 25.4mm silver-coated prism</li> <li>• Mini120C features 45mm copper-coated prism, encased in a heavy-duty canister with a rain/snow cover</li> </ul>
<p><b>TPSmini122</b></p>  <ul style="list-style-type: none"> <li>• 39mm silver-coated prism encased in a heavy-duty canister, -17.5mm offset</li> <li>• Mounting base features M6 thread</li> <li>• Accuracy achieved &gt;0.1mm</li> <li>• Coincide accuracy between optical center and structure center &lt;0.3mm</li> </ul>	<p><b>TPSmini128</b></p>  <ul style="list-style-type: none"> <li>• 25.4mm silver-coated prism ball encased in a heavy-duty canister, -17.5mm offset</li> <li>• Magnetic prism with Φ12mm connector</li> <li>• Effective magnetism: 35kg</li> <li>• Accuracy achieved ±0.3mm</li> </ul>
<p><b>TPS107</b></p>  <ul style="list-style-type: none"> <li>• 360° silver-coated prism makes the reflector to be positioned quickly on land survey. It allows for various measurement in different height</li> <li>• Prism offset 9.4mm, diameter: 16mm</li> <li>• Replaceable aluminum alloy top cover and stainless steel point</li> <li>• It can be assembly slides on 9mm poles</li> </ul>	<p><b>TPS360</b></p>  <ul style="list-style-type: none"> <li>• 360° copper-coated prism suitable for robotic total station, performed with a pin pole</li> <li>• Features trigonal prism with the diameter: 48*19.6mm, -10mm offset</li> <li>• Light but durable aluminum alloy holder with improved locking thumb screw</li> </ul>

Part No.	Type	Diameter	Offset	Center Height	Wt
MN0022	TPSmini115	35mm	0mm	None (with poles)	0.10kg
MN0024	TPSmini116	38mm	0mm	None (with poles)	0.26kg
MN0001	TPSmini118	25.4mm	-17.5mm	30mm	0.1kg
MN0028	TPSmini120	25.4mm	-17mm	25mm	0.13kg
MN0029	TPSmini120C	45mm	-17mm	22.5mm	0.18kg
MN0030	TPSmini122	39mm	-17.5mm	40mm	0.23kg
MN0002	TPSmini128	25.4mm	-17.5mm	None	0.40kg
MN0013	TPS107	16mm	9.4mm	None (with poles)	0.23kg
JT0016	TPS360	48*19.6mm	-10mm	83.5mm/97mm	0.28kg



<p><b>TY01</b></p>  <ul style="list-style-type: none"> <li>• 64mm prism with ABS canister</li> <li>• Features &lt;5" accuracy</li> <li>• Optional in red and yellow</li> <li>• Compatible with TK10T, TK17T, TK25T, TK49T, etc.</li> </ul>	<p><b>TY02</b></p>  <ul style="list-style-type: none"> <li>• 64mm prism with ABS canister, black pressing ring</li> <li>• Features &lt;5" accuracy</li> <li>• Optional in red and yellow</li> <li>• Compatible with TK21T, etc.</li> </ul>
<p><b>TY03</b></p>  <ul style="list-style-type: none"> <li>• 64mm prism with sealed canister, black pressing ring</li> <li>• Features &lt;5" accuracy</li> <li>• Optional in red and yellow</li> <li>• Compatible with TK20T, etc.</li> </ul>	<p><b>TY06</b></p>  <ul style="list-style-type: none"> <li>• 64mm prism with ABS canister</li> <li>• Features &lt;5" accuracy</li> <li>• Red color</li> <li>• Compatible with TK27T, etc.</li> </ul>
<p><b>CPR1</b></p>  <ul style="list-style-type: none"> <li>• 65mm copper-coated prism with polycarbonate canister</li> <li>• Compatible with TK16T</li> </ul>	<p><b>TYmini25</b></p>  <ul style="list-style-type: none"> <li>• 25mm mini prism in metal canister</li> <li>• Non-coated, copper-coated or silver coated</li> <li>• Compatible with TPSmini101/102/103/104 /105B/112A/112B, etc.</li> </ul>
<p><b>TYmini35</b></p>  <ul style="list-style-type: none"> <li>• 35mm mini prism in metal canister</li> <li>• Non-coated, copper-coated or silver coated</li> <li>• Compatible with TPSmini115, etc.</li> </ul>	<p><b>TYmini38</b></p>  <ul style="list-style-type: none"> <li>• 38mm mini prism in metal canister</li> <li>• Non-coated, copper-coated or silver coated</li> <li>• Compatible with TPSmini105A/116, etc.</li> </ul>

Part No.	Type	Diameter	Coating	Canister	Standard	
JT0006	TY01-RED	64mm	None	ABS Plastic	TPS17, TPS30, TPS49	
JT0019	TY01-YOW				TPS11	
JT0007	TY02-RED				TPS21	
JT0017	TY02-YOW	64mm	None	ABS Plastic	-	
JT0008	TY03-RED				TPS20	
JT0018	TY03-YOW				-	
JT0010	TY06	64mm	None	ABS Plastic	TPS27	
JT0013	CPR1	25.4mm	Copper-coated	ABS Plastic	TPS16	
JT0019	TYmini25-0		None	ABS Plastic	TPSmini101	
JT0020	TYmini25-1		None	Metal	TPSmini102, TPSmini103,	
JT0021	TYmini25-2		Copper-coated	Metal	TPSmini104, TPSmini105B,	
JT0001	TYmini25-3		Silver-coated	Metal		
JT0002	TYmini35-1		35mm	None	Metal	TPSmini115
JT0022	TYmini35-2			Copper-coated	Metal	
JT0023	TYmini35-3	Silver-coated		Metal		
JT0024	TYmini38-1	38mm	None	Metal	TPSmini105A,	
JT0003	TYmini38-2		Copper-coated	Metal	TPSmini116	
JT0005	TYmini38-3		Silver-coated	Metal		

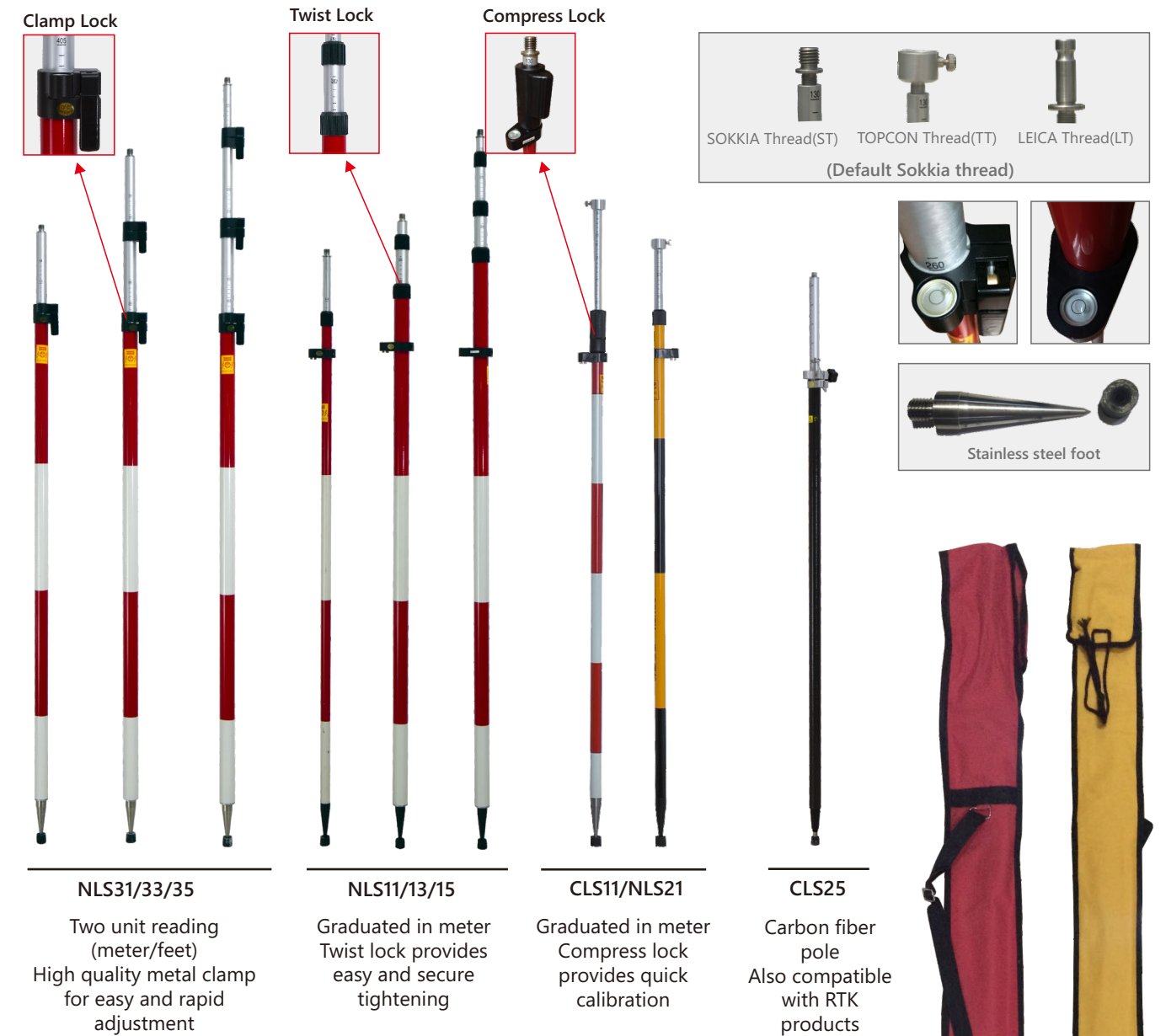
<p><b>TJ10</b></p> <ul style="list-style-type: none"> <li>• The tribrach and optical plummet are robust construction and suitable for long period exposure on the field</li> <li>• Available in yellow, gray, camel, green and black</li> <li>• Circular vial: 10'</li> <li>• Weight: 0.84kg</li> </ul> 	<p><b>TJ13</b></p> <ul style="list-style-type: none"> <li>• A cost effective tribrach suitable for use.</li> <li>• Copper footscrews</li> <li>• Features locking forced-centering knob and a 10' circular vial</li> <li>• Available in yellow, gray, camel, green and black</li> <li>• Weight: 0.67kg</li> </ul> 
<p><b>TJ13L</b></p> <ul style="list-style-type: none"> <li>• A cost effective tribrach, suitable for the adapters with laser plummet</li> <li>• Features a 10' circular vial</li> <li>• Green color</li> <li>• Weight: 0.67kg</li> </ul> 	<p><b>TJ16</b></p> <ul style="list-style-type: none"> <li>• High-precision tribrach with laser plummet, suitable for robust construction</li> <li>• Bright 650nm focused laser dot.</li> <li>• Circular vial: 10'</li> <li>• Weight: 0.80kg</li> </ul> 
<p><b>TJ19</b></p> <ul style="list-style-type: none"> <li>• Tribrach for optical plummet adjustment</li> <li>• Weight: 1.52kg</li> </ul> 	<p><b>TJ23</b></p> <ul style="list-style-type: none"> <li>• Features locking forced-centering knob and a 10' circular vial.</li> <li>• Weight: 0.70kg</li> </ul> 

Part No.	Type	Color	Diameter	Leveling Screw	Bubble	Weight
JZ0006	TJ10-YOW	Yellow	Foot $\phi$ 13mm	Copper Screw	10'	0.84kg
JZ0004	TJ10-GRY	Gray	Clutch-system $\phi$ 80mm			
JZ0015	TJ10-CAL	Camel				
JZ0007	TJ10-GRE	Green				
JZ0005	TJ10-BLK	Black	Foot $\phi$ 13mm Clutch-system $\phi$ 80mm	Aluminum Screw	10'	0.67kg
JZ0003	TJ13-YOW	Yellow				
JZ0001	TJ13-GRY	Gray				
JZ0016	TJ13-CAL	Camel				
JZ0017	TJ13-GRE	Green	Foot $\phi$ 13mm Clutch-system $\phi$ 80mm	Copper Screw	10'	0.80kg
JZ0002	TJ13-BLK	Black				
JZ0011	TJ15-CAL	Camel				
JZ0012	TJ15-YOW	Yellow				
JZ0018	TJ16-YOW	Yellow	Foot $\phi$ 13mm Clutch-system $\phi$ 80mm	Copper Screw	10'	1.52kg
JZ0013	TJ16-GRY	Gray				
JZ0019	TJ16-CAL	Camel				
JZ0020	TJ16-GRE	Green				
JZ0021	TJ16-BLK	Black				
JZ0010	TJ19	Black&Yellow	Foot $\phi$ 13mm Clutch-system $\phi$ 80mm	Copper Screw	10'	0.70kg
JZ0014	TJ23	Yellow	Clutch-system $\phi$ 80mm	Copper Screw	10'	0.70kg



<p><b>TL10</b></p>  <ul style="list-style-type: none"> <li>Fixed adapter, available in camel, green, yellow, black and gray</li> <li>Plate vial: 60"</li> <li>Erect image</li> </ul>	<p><b>TL10L</b></p>  <ul style="list-style-type: none"> <li>Fixed green adapter, suitable for reflectors with stub fitting</li> <li>Plate vial: 60"</li> </ul>
<p><b>TL13</b></p>  <ul style="list-style-type: none"> <li>Fixed adapter, available in yellow, gray and camel</li> <li>Plate vial: 60"</li> </ul>	<p><b>TL14</b></p>  <ul style="list-style-type: none"> <li>Non-rotatable adapter with 5/8 thread for GNSS receiver</li> <li>Clutch-system <math>\phi</math> 80mm</li> </ul>
<p><b>TL15</b></p>  <ul style="list-style-type: none"> <li>Includes rotating screw with 5/8 thread for GNSS receiver</li> <li>Clutch-system <math>\phi</math> 80mm</li> </ul>	<p><b>TL16</b></p>  <ul style="list-style-type: none"> <li>Fixed adapter with laser plummet, available in camel, black, yellow, gray</li> <li>Plate vial: 60"</li> </ul>
<p><b>TL23</b></p>  <ul style="list-style-type: none"> <li>Simple adapter for use</li> <li>Suitable for GPS carrier with 5/8 thread</li> </ul>	<p><b>TL23LG</b></p>  <ul style="list-style-type: none"> <li>Socket adapter</li> <li>Suitable for reflectors with direct fitting</li> </ul>
<p><b>CRT10</b></p>  <ul style="list-style-type: none"> <li>Simple adapter for use</li> <li>Suitable for reflectors with direct fitting</li> </ul>	<p><b>CRT11</b></p>  <ul style="list-style-type: none"> <li>Simple adapter for use</li> <li>Suitable for reflectors with direct fitting</li> </ul>

Part No.	Type	Color	Clutch-system	Material	Bubble	Weight
AL0008	TL10-YOW	Yellow	80mm	Zinc-aluminum Alloy	60"	0.50kg
AL0009	TL10-GRY	Gray				
AL0010	TL10-CAL	Camel				
AL0011	TL10-GRE	Green				
AL0012	TL10-BLK	Black				
AL0013	TL10L	Green	80mm	Zinc-aluminum Alloy	60"	0.57kg
AL0014	TL13-YOW	Yellow	80mm	Zinc-aluminum Alloy	60"	0.49kg
AL0015	TL13-GRY	Gray		Zinc-aluminum Alloy		
AL0016	TL13-CAL	Camel		Zinc-aluminum Alloy		
AL0017	TL14	Black		Zinc-aluminum Alloy		
AL0001	TL15	Black	80mm	Zinc-aluminum Alloy	None	0.32kg
AL0018	TL23	Yellow	80mm	Zinc-aluminum Alloy	None	0.44kg
AL0020	TL23LG	Yellow	80mm	Zinc-aluminum Alloy	None	0.5kg
AL0021	CRT10	Green	80mm	Zinc-aluminum Alloy	None	0.28kg
AL0002	CRT11	Green	80mm	Zinc-aluminum Alloy	None	0.42kg



Clamp Lock      Twist Lock      Compress Lock

SOKKIA Thread(ST)    TOPCON Thread(TT)    LEICA Thread(LT)  
(Default Sokkia thread)

Stainless steel foot

**NLS31/33/35**  
Two unit reading (meter/feet)  
High quality metal clamp for easy and rapid adjustment

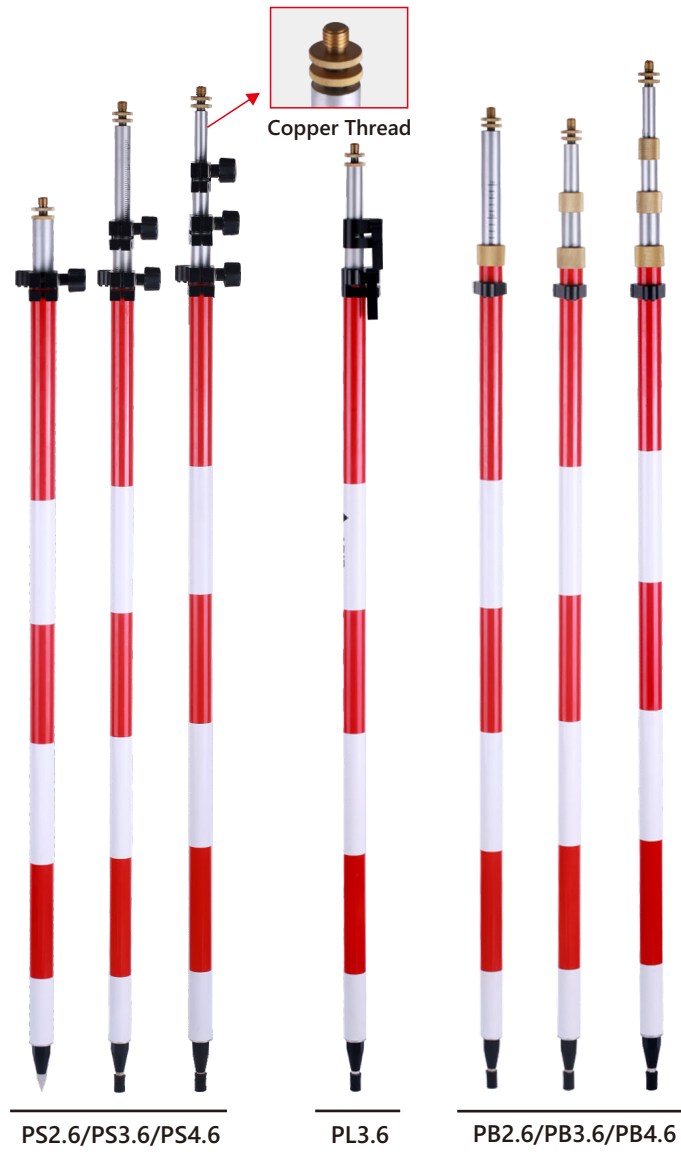
**NLS11/13/15**  
Graduated in meter  
Twist lock provides easy and secure tightening

**CLS11/NLS21**  
Graduated in meter  
Compress lock provides quick calibration

**CLS25**  
Carbon fiber pole  
Also compatible with RTK products

Model	PN	Pole $\Phi$	Sections	Full length	Min. Length	Lock Type	Net. Wt
CLS11	18.13.001	25mm	2 sections	2150mm	1300mm	Compress	1.4kg
NLS11	18.13.004	24mm	2 sections	2500mm	1370mm	Twist	1.3kg
NLS13	18.13.005	36mm	3 sections	3600mm	1550mm	Twist	2.0kg
NLS15	18.13.006	36mm	4 sections	5000mm	1700mm	Twist	2.3kg
NLS21	18.13.002	24mm	2 sections	2150mm	1300mm	Twist	1.1kg
NLS31	18.13.007	32mm	2 sections	2500mm	1370mm	Clamp	1.8kg
NLS33	18.13.009	36mm	3 sections	3600mm	1600mm	Clamp	2.3kg
NLS35	18.13.011	36mm	4 sections	5000mm	1700mm	Clamp	2.7kg
CLS25	18.13.015	30mm	2 sections	2250mm	1275mm	Side twist	1.0kg





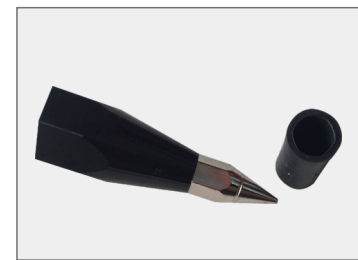
**Side Twist**  
The soft rubber knob is easy for tighten and loosen



**Clamp Lock**  
Quick-release clamp lock allows for a simple and fast setup

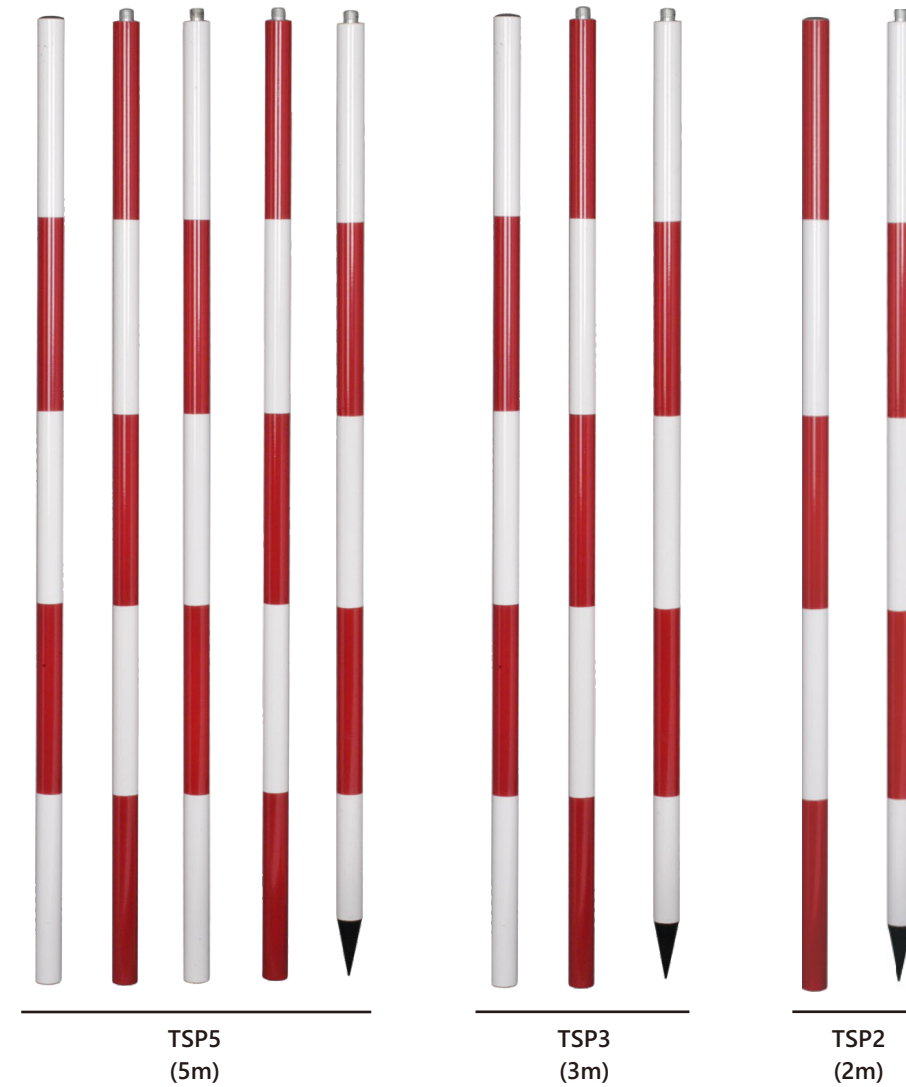


**Twist Lock**  
Constructed of sturdy copper locking mechanism



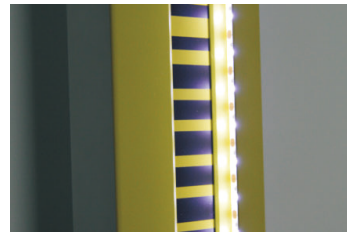
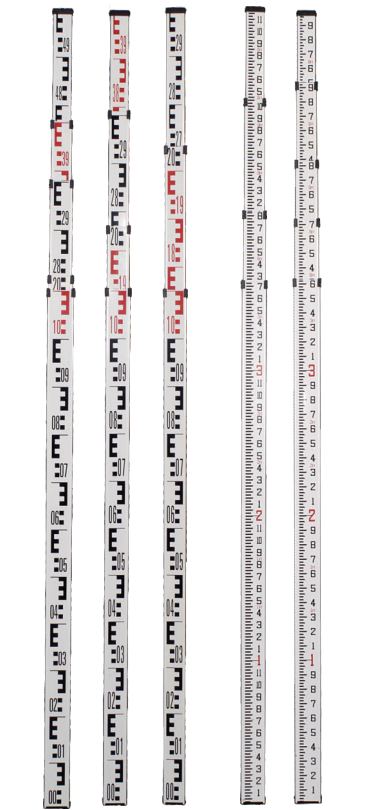
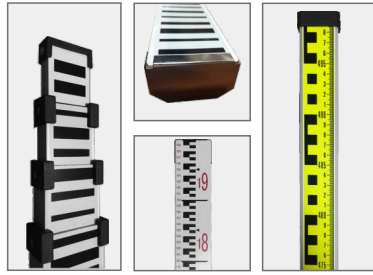
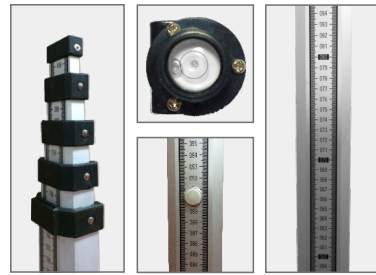
**Adjustable Tip**  
Features an anodized aluminum body with an easy-to-replace steel point

Model	PN	Pole Φ	Sections	Grads	Full length	Min. Length	Lock Type	Net. Wt
PS2.6	19.01.001	35mm	2 sections	Dual	2600mm	1470mm	Side Twist	1.45kg
PS3.6	19.01.002	35mm	3 sections	Dual	3600mm	1520mm	Side Twist	1.84kg
PS4.6	19.01.003	35mm	4 sections	Dual	4650mm	1570mm	Side Twist	2.30kg
PL2.6	19.01.004	35mm	2 sections	Dual	2600mm	1470mm	Clamp	1.47kg
PL3.6	19.01.005	35mm	3 sections	Dual	3600mm	1520mm	Clamp	1.89kg
PL4.6	19.01.006	35mm	4 sections	Dual	4650mm	1570mm	Clamp	2.25kg
PB2.6	19.01.007	35mm	2 sections	Dual	2600mm	1470mm	Twist	1.37kg
PB3.6	19.01.008	35mm	3 sections	Dual	3600mm	1520mm	Twist	1.86kg
PB4.6	19.01.009	35mm	4 sections	Dual	4650mm	1570mm	Twist	2.14kg



Model	PN	Each Stripe	Overall length deviation	Each meter deviation	Interval deviation	Net. Wt
TSP2	21.13.0010	20cm	±2mm	±1mm	±2mm	0.5kg
TSP3	21.13.0011	20cm	±3mm	±1mm	±3mm	0.8kg
TSP5	21.13.0012	20cm	±3mm	±1mm	±4mm	1.4kg
ESP2	21.13.0007	20cm	±2mm	±1mm	±2mm	0.5kg
ESP3	21.13.0008	20cm	±3mm	±1mm	±2mm	0.8kg
ESP5	21.13.0009	20cm	±4mm	±1mm	±2mm	1.3kg





LED illumination optional



Rechargeable by USB



Precised circle bubble



Humanized handle design

AGR3/4/5  
(3m/4m/5m Telescopic Staff)

NSA-50M/SSI-2M  
(5m/2m Code Staff)

SI-2M  
(2m Invar Staff)

Model	PN	Material	Sections	Overall length deviation	Each meter deviation
AGR3	21.13.0001	Aluminum	3m, 3 sections	±2mm	±0.5mm
AGR4	21.13.0002	Aluminum	4m, 4 sections	±3mm	±0.5mm
AGR5	21.13.0003	Aluminum	5m, 5 sections	±3mm	±0.5mm
AGR7	21.13.0005	Aluminum	7m, 5 sections	±3mm	±0.5mm
NSA-50M	1.08.003.0014	Aluminum	5m, 5 sections	±1.2mm	±0.35mm
SSI-2M	6.07.314.0001	Fiber Glass	2m, 1 section	±1mm	±0.35mm

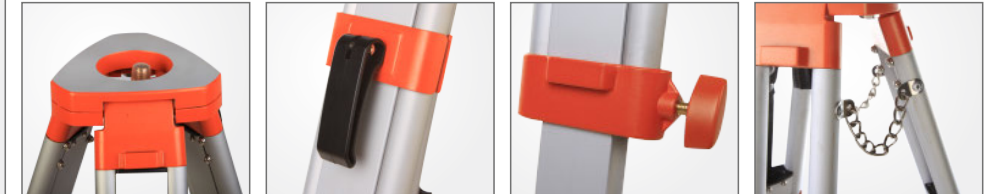
Invar Staff Specification		
Circle Bubble		≤12' /2mm
Surface curvature distinction		≤4mm
Vertical of central axis and underside		≤5'
Tolerance of zero point		≤0.05mm
Barcode graduation tolerance	Deviation	≤0.02mm
	Standard Deviation	≤0.013mm
Interval tolerance		≤0.04mm
PN		6.07.181.0001

Aluminum Tripod



Aluminum tripod with carrying straps and side optional screws

- Light-weight and durable aluminium design
- No shrinking or swelling in tough conditions
- Flat head; Tripod thread: 5/8" M16
- Decorative chain is optional



Model	PN	Full Length	Min.Length	Lock	Head (Outer)	Head (Inner)	Leg	Weight
ATS-1	20.13.0001	1650mm	970mm	Twist	158mm	66mm	Quadrate	3.5kg
	Clamp							
ATS-3	20.13.0005	1700mm	1000mm	Twist	158mm	66mm	Round	3.7kg
	Clamp							
ATS-5	20.13.0007	1600mm	970mm	Twist	120mm	45mm	Round	3.0kg
	Clamp							
ATS-JP1	20.18.0001	1645mm	1030mm	Clamp	160mm	67.5mm	Round	4.0kg
ATS-JP2	20.18.0002	1655mm	1030mm	Twist	160mm	67.5mm	Round	4.0kg
ATS-JP3	20.18.0003	1645mm	1030mm	Twist & Clamp	160mm	67.5mm	Round	4.2kg
NAT-81CT	20.13.0015	1700mm	1000mm	Twist & Clamp	158mm	66mm	Quadrate	5.0kg

Wooden Tripod



Wooden tripod with long lasting coat of painting, widely used for Total Station/ GPS System

- Joints and shoe points made by stable metal.
- Extra stability due to double banded legs
- Supplied with shoulder strap
- Round head optional for ATS-MR3



Model	PN	Full Length	Min.Length	Lock	Head (Outer)	Head (Inner)	Weight
ATS-MP1	20.18.0004	1755mm	1090mm	Clamp	160mm	67.5mm	7.5kg
ATS-MP2	20.18.0005	1780mm	1090mm	Twist	160mm	67.5mm	7.5kg
ATS-MP3	20.18.0006	1755mm	1090mm	Twist & Clamp	160mm	67.5mm	7.5kg
ATS-MR3	20.18.0007	1755mm	1090mm	Twist & Clamp	167mm	68.5mm	8.4kg



### Fiberglass Tripod



Fiberglass tripod provide the excellent stability and strong resistance in tough conditions

- Long-lasting coated for hardware
- Quick and easy release for extended height
- Flat head



ATS-4B

ATS-6B



Model	PN	Full Length	Min.Length	Lock	Head (Outer)	Head (Inner)	Weight
ATS-2B	20.18.0041	1800mm	1080mm	Twist	158mm	66mm	5.88kg
ATS-4B	20.18.0042	1630mm	970mm	Twist	158mm	66mm	4.5kg
ATS-6B	20.18.0043	1550mm	940mm	Twist	120mm	45mm	3.5kg
ATS-FP1	20.18.0008	1755mm	1090mm	Clamp	160mm	67.5mm	8.2kg
ATS-FP2	20.18.0009	1780mm	1090mm	Twist	160mm	67.5mm	8.0kg
ATS-FP3	20.18.0010	1755mm	1090mm	Twist&Clamp	160mm	67.5mm	8.5kg

### Heavy-Duty Tripod



ATS-20

Heavy duty tripod with side twist lock

- Use for Total Station/ GPS System
- Proven long-life, twist-proof and excellent vibration characteristics
- Including heavy-duty shoulder trap for easier carrying



ATS-22

ATS-24



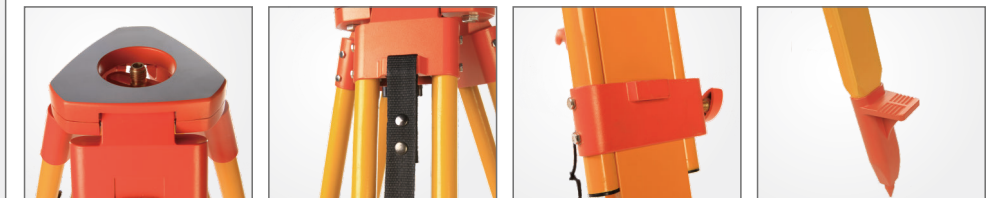
Model	PN	Full Length	Min.Length	Lock	Head (Outer)	Head (Inner)	Weight
ATS-20	20.13.0028	1700mm	1000mm	Twist	158mm	66mm	6.0kg
ATS-22	20.13.0029	1700mm	1090mm	Twist	160mm	66mm	7.0kg
ATS-24	20.13.0030	1700mm	1000mm	Twist&Clamp	160mm	66mm	7.0kg

### Fiberglass-Wooden Tripod



Fiber-Wood hybrid tripod, the legs made by fiberglass and wood

- Large aluminum head and leg hinges provide stable mounting base
- Long-lasting coated for metal parts.
- Aluminum shoe with hardened metal points.



Model	PN	Full Length	Min.Length	Lock	Head (Outer)	Head (Inner)	Weight
ATS-BP1	20.20.0001	1760mm	1090mm	Clamp	160mm	67.5mm	7.5kg
ATS-BP2	20.20.0002	1760mm	1090mm	Twist	160mm	67.5mm	7.5kg
ATS-BP3	20.20.0003	1760mm	1090mm	Twist&Clamp	160mm	67.5mm	7.5kg

### Elevator Tripod



Aluminum elevator tripod provide an adjustable and smooth mounting base

- EATS is a kind of light weight elevator tripod which features a flat in 124mm head and an elevator column extends to 110 cm
- A gear box controls the lift and descent of the flat
- Widely used in leveling and scanning



Model	PN	Full Length	Min.Length	Lock	Screw	Weight
EATS	20.13.0045	3000mm	1100mm	Twist	5/8"	5.8kg



## Set-up a free-standing prism pole or GNSS antenna pole

### ADS22 – Thumb Release Bipod

- This open-clamp head bipod features the soft-touch sponge handle.
- Quick-levelling bipod with thumb release legs.
- 21mm to 36mm diameter poles attach easily through its open clamp.
- Extended to 1855mm in maximum.
- Leg snap into the clip making the poles convenient for transport or storage.
- Easy carry with carry bag
- Weight 1.96kgs



### ADS33 – Thumb Release Tripod

- Quick-released tripod creates free-standing GNSS antenna poles or prism poles.
- Soft-touch sponge handle with thumb lock design for easier setup.
- Rubber locking knob.
- 21mm to 36mm diameter poles can be loaded through the top.
- Extended to 1855mm in maximum.
- Easy carry with carry bag
- Weight 2.60 kgs



### GSR23 – Aluminum Clamp Release Tripod

- This tripod features a smooth and round head.
- Quick release with clamp
- Full-metal tiptoe for stable standing.
- 22mm to 36mm diameter poles can be loaded through the top.
- Extended to 1835mm in maximum.
- Easy carry with carry bag
- Weight 1.28kgs



### ADS115 – Alligator Clamp Prism Pole Tripod

- This tripod features a ball-and-socket head with powder-coated aluminum.
- Alligator clamp with rubber jaws, hold a pole (less than 25mm) firmly in place
- Extended to 1250mm in maximum.
- Weight 1.28kgs



Model	Full Length	Min.Length	Lock	Features	Weight
ADS22	1855mm	1120mm	Thumb Release	Works with poles from φ21-36mm	1.96kgs
ADS33	1855mm	1120mm	Thumb Release	Works with poles from φ21-36mm	2.80kgs
GSR23	1835mm	1210mm	Compress Lock	Works with poles from φ21-36mm	2.60kgs
ADS115	1250mm	775mm	Clamp Lock	Works with poles less than φ25mm	1.28kgs