LiGrip H120

Handheld Rotating Laser Scanner

H120 (Ver A.10) is the upgraded product of GVI'S LiGrip H120 handheld series. This product inherits the simplicity style of LiGrip series, featuring a compact design, lightweight, easy-to-hold, ease of use, and flexible installation.With a variety of sensors, it can quickly capture a wide range of scene data.H120 supports multi-mode perations through handheld, backpack, and vehicle-mounted latforms. In addition, it supports high-precision mapping methods such as PPK-SLAM, RTK-SLAM and pure SLAM, to quickly obtain point cloud data with absolute coordinates. Coupled with the iDAR360 and LiDAR360MLS, GVI'S proprietary software, the H120 can solve the last mile problem in mapping, mining, forestry, and road survey.

Product Highlights

Multi-sensor

Integrating Multi-sensor high-performance laser, panoramic camera and other multi-sensors, the self-developed control system can quickly collect high-precision point clouds, and also quickly obtain image information for color rendering to the point clouds, which can truly restore multiple information on the scene.

Multiple Mapping Methods

Three high-precision mapping methods are available: **RTK-SLAM**, **PPK-SLAM**, and **SLAM**. The surveying scenes become unlimited.

Multi-platform

The H120 meets the needs of different data collection scenes by supporting handheld, backpack and vehicle-mounted platforms. The operational efficiency is further enhanced.

Real-time Processing

Data processing is in progress during scanning. LAS results are exported for immediate use. In the case of RTK, the point cloud with absolute coordinates can be obtained directly.

Waterproof, Dust-proof, and Shock-proof

With IP54 protection, the system is resilient against dripping water and dust in challenging environments such as roadways and tunnels, ensuring reliable operations.

High Compatibility

H120 supports GVI's one-stop software solutions, for data pre-processing and post-processing. The solution can be implemented conveniently.

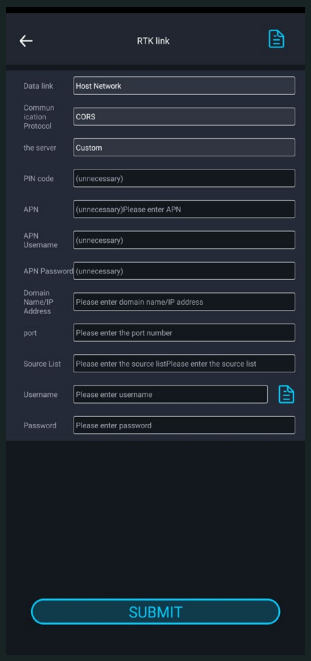
More Convenient Work

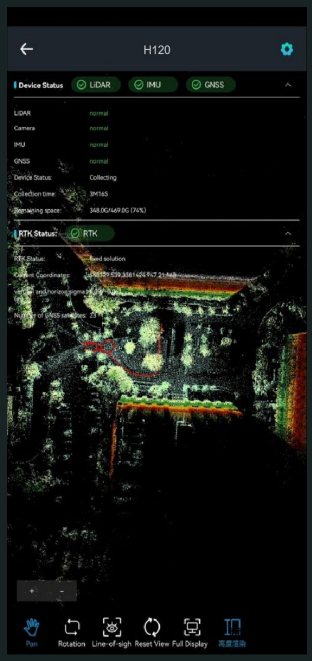
Add equipment status indicator lights and built-in leveling bubble in the base, easy to operate.

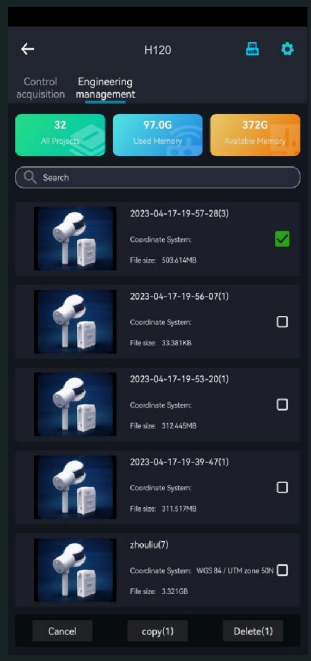
Collection and Processing

Acquisition and control

GreenValley APP offers comprehensive features such as device management, collection control, real-time point cloud display, project management, RTK settings, virtual base station, coordinate system settings, and data copying.







Mobile SLAM Measurement Data Fusion

Based on LiDAR360MLS, a mobile SLAM measurement data fusion and 3D elements intelligent extraction and analysis software developed by GreenValley.

It supports PPK-SLAM, RTK-SLAM, SLAM processing, control point-based adjustments, point cloud accuracy improvement, seamless multi-project data stitching, point cloud and panoramic image generation, LAS/LAZ data export, orthophoto, and planimetric map export. The processing speed of indoor and outdoor operations can reach a ratio of 1:2 (with color correction). It supports camera calibration, data measurement (length, area, volume), and panoramic-based measurement.

Data Post-processing and Applications

H120 supports GreenValley's LiDAR 360 and LiDAR 360 MLS. Data can be imported by pressing one key. It can be applied to mapping, road surveys, mining, and forestry, solving the last mile problem of your data application.

Product Specifications

System Parameters			
Dimensions	204×130×385 mm	Voltage	15.2 V
Battery Pack Dimensions	134×64.6×167 mm	Storage	256 GB
Handheld Weight	1.83 kg (including GCP base and camera)	Battery Capacity	5870 mAh
IP Rating	IP54	Single Battery Life	240 mins
Ports	USB, Ethernet	Applicable Environment	Indoor, Outdoor, Multi-scenario
Continuous Operation Time per Sortie	Max 55 mins	Operating Temperature	-20°C ~40°C
Equipment Storage Temperature	-40°C ~70°C	Battery Storage Temperature	Recommended Storage Temperature 22°C ~30°C [1]
LiDAR Sensor Parameters			
Scan Rate	320,000 pts/s	Detection Range	120 m
Range Accuracy	1 cm	FOV	280° (Horizontal)x360° (Vertical)
Camera Parameters			
Camera Type	360° panoramic lens combinations	Image Resolution	6080×3040 (2 : 1)
Data Format	MP4 INSV	Video Resolution	5760×2880 @ 30 fps
Dimensions	72×48×43 mm (including heat dissipation structure)		
RTK Module[2]			
Satellite System	GPS+BDS+Glonass+Galileo+QZSS. Support 5 satellites and 16 frequencies		
RTK Accuracy	1 cm+1 ppm	RTK Protocol	NTRIP
Dimension	97×71×30 mm	Weight	190 g
RTK Data Format	.rtk	GNSS Raw Data Format	.log
Compatible With	LiGrip H300, and LiGrip H120.		
Mapping Method			
Mapping Principle	RTK-SLAM, PPK-SLAM, SLAM	Real-time Processing	Support
Data Results			
Relative Accuracy	≤1 cm	Absolute Accuracy	≤5 cm[3]
Point Cloud Format	LAZ (real-time processing), LiData (post-processing)		

[1] B58 battery storage temperature: Recommended storage temperature 22°C ~30°C ; 20°C ~50°C less than 1 month; -20°C ~40°C less than 3 months; -20°C ~20°C less than 12 months;
[2] indicates that it needs to be purchased separately;
[3]The greater the number of feature points in the scanned scene, the better the feature quality, and the higher the point cloud accuracy. It is recommended to follow the recommended operating methods to obtain high-precision point cloud results.

Adaptation kit

Backpack Kit

The GreenValley's backpack kit is a versatile accessory designed for handheld 3D LiDAR SLAM systems. Featuring an ergonomic design for comfortable wear, it is lightweight and easy to assemble and disassemble. With an integrated GNSS antenna, it supports PPK and RTK (requires separate purchase of RTK moudle) and directly outputs point cloud data with absolute positioning. This saves time and improves your operational efficiency. The integrated backpack frees up your hands, making work more comfortable and efficient. It is suitable for applications in surveying, forestry, stockpiles, powerline scanning, mining, and more.

Light and Small

Minimalist shape, greatly reducing the size and weight of the equipment

High Efficiency

Hands-free, collect as you go

Easy to Disassemble

Minimalist design, easy disassembly and assembly, easy to use, assembly time is less than 1 minute

High Precision

Combine GNSS and LiDAR SLAM algorithms to obtain point cloud data with absolute coordinate positions

Weather-Resistant Design

With an IP54 protection rating, the LiGrip is rugged and resistant to rain and dust

High Compatibility

Compatible with a variety of Greenvalley Intemational products, supporting one-stop software solutions

Vehicle-Mounted Kit

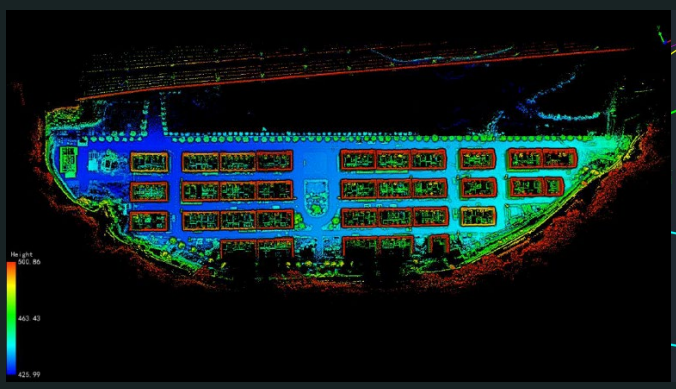
It supports PPK and RTK (separate purchase of GNSS module required), providing a direct output of point cloud data with absolute positioning. Suitable for large-scale, strip-shaped terrain and facade data collection, saving time and effort.

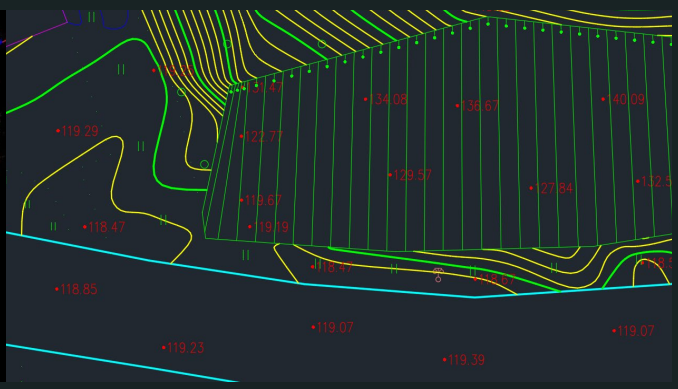
Backpack Kit System Parameters		Vehicle-Mounted Kit System Parameters	
Dimensions	760×500×270 mm (folded) 1100×500×270 mm (expanded)	Supported Vehicle Types	Sedan, SUV
Material	Aluminum Alloy + Carbon Fiber	Weight	3.6 kg
Weight	3.2 kg	Dimensions	340×305×360 mm
Compatible with handheld models	H300, H120	Mounting Method	Suction Cup + Safety Rope
Absolute Accuracy	≤5 cm	Maximum Vehicle Speed	40 km/h
*In areas with no GPS coverage or weak signals, we recommend using the handheld mode for higher efficiency.			

Industry-Specific Solutions

Topographic Mapping

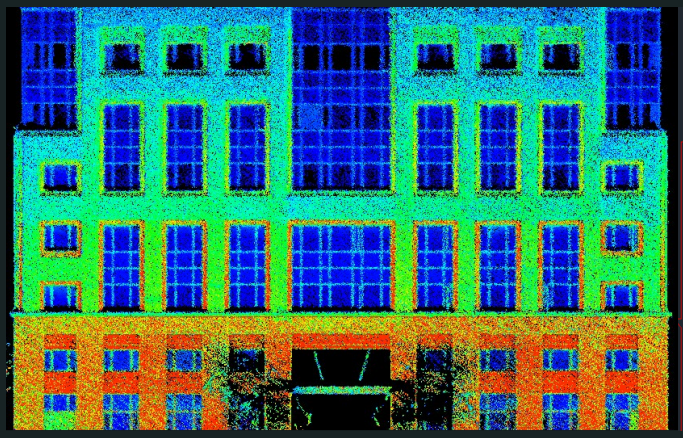
Use RTK-SLAM with CORS to obtain point cloud data with absolute coordinates. In areas without CORS coverage, PPK-SLAM technology can achieve the same accuracy, meeting 1:500 topographic map requirements. Paired with a high-resolution panoramic camera, it provides auxiliary object attribute judgment. Using vehicle-mounted kits, large-scale topographic mapping data can be collected in one go.

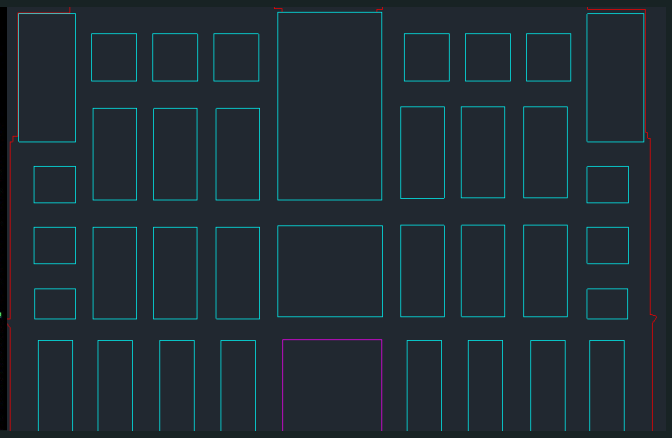




Facade Measurement

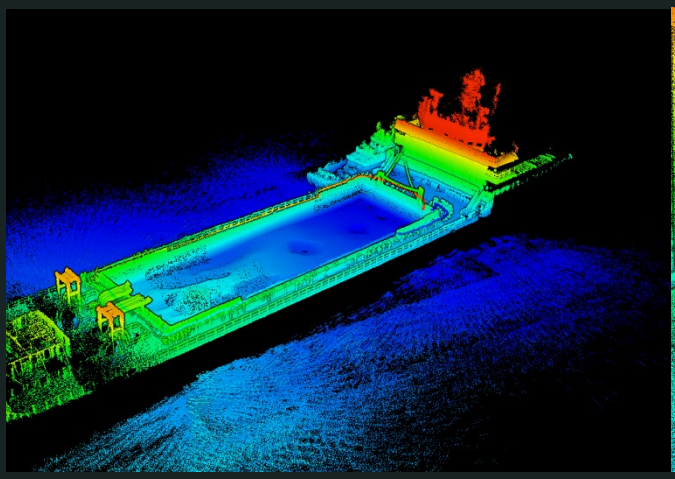
The H120 can quickly measure building point clouds, and with the backpack kit and vehicle kit, it can easily complete facade scanning scenes in large areas; with the LiDAR 360 MLS facade module, it can draw facade data based on point clouds/ panoramas, which is fast and efficient.

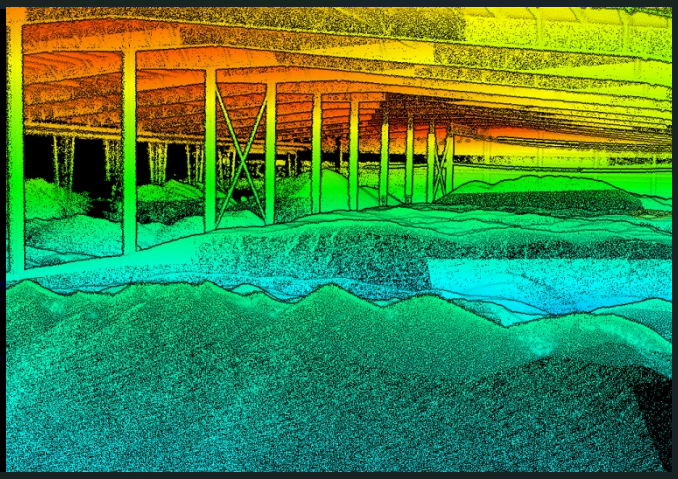




Volume Measurement

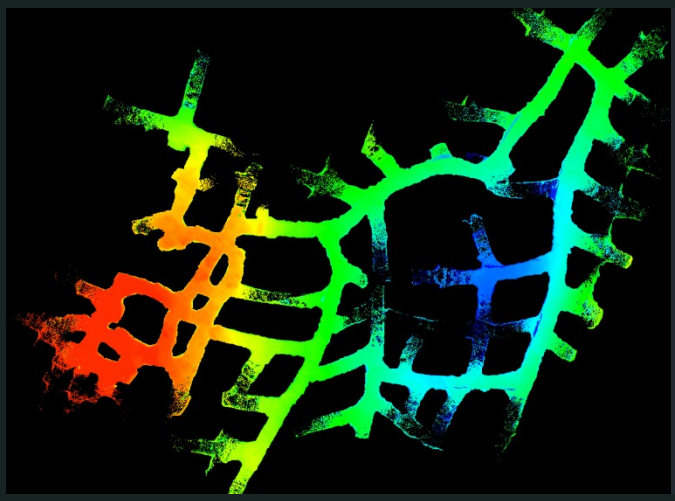
Whether indoors, outdoors, or in mines, the H120 can easily and accurately obtain point cloud data for volumes, with an accuracy of up to 1%.

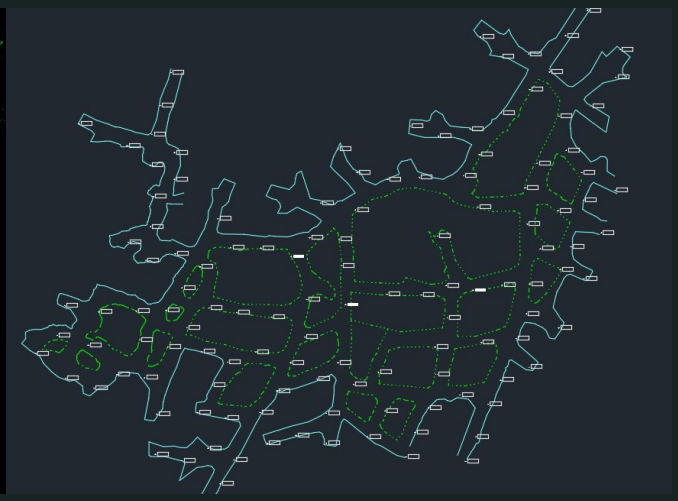




Mining

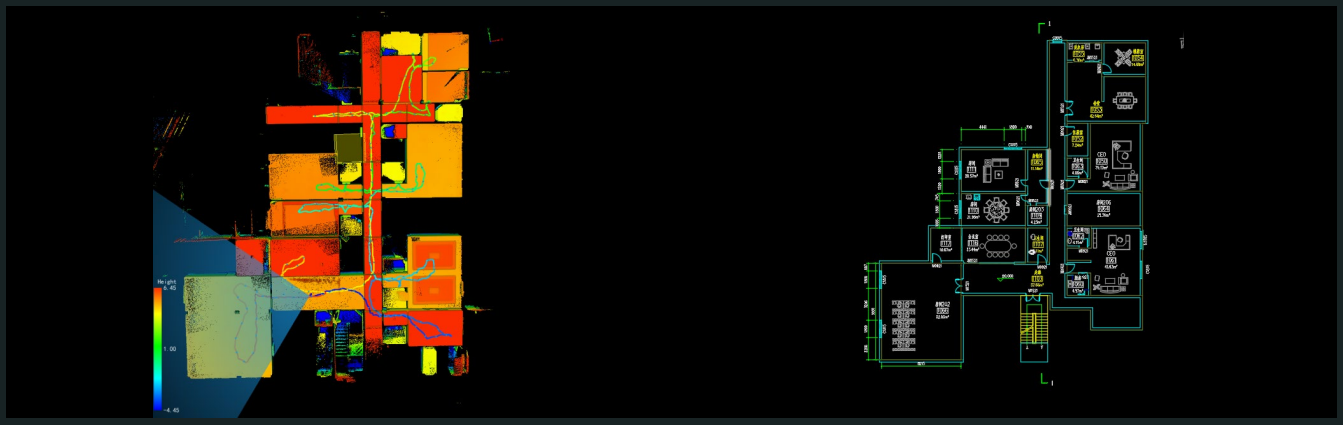
Suitable for open-pit mine stockpile volume, mine area topographic mapping, underground mining area plan, cross-section, volume measurement, and slope line extraction.





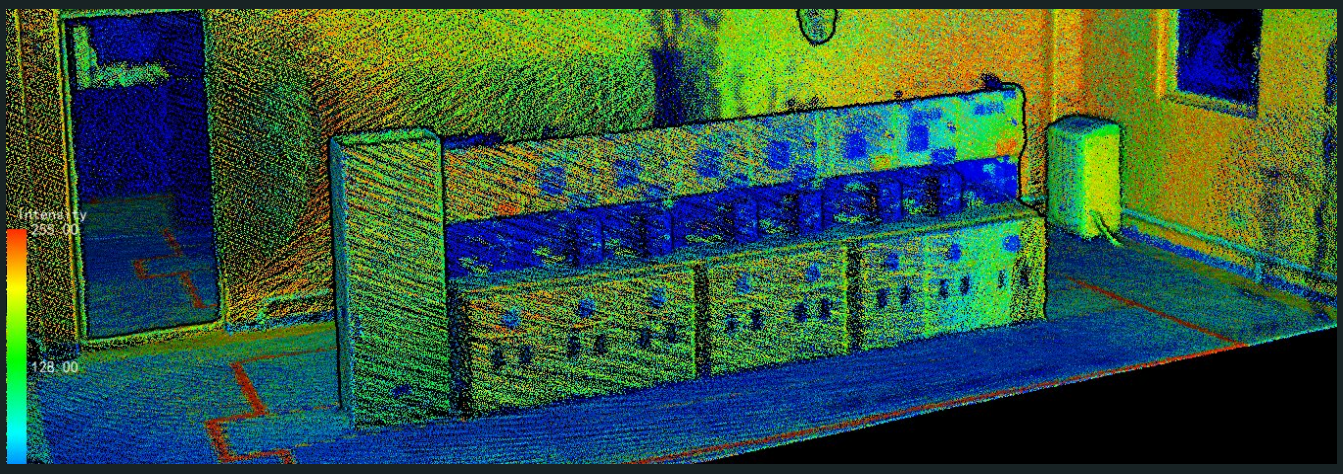
Property Surveying

The H120 handheld SLAM scanner's convenience and accuracy make it widely applicable for property surveying, asset inspection, and engineering auditing, with measurement efficiency 10 times that of traditional manual methods.



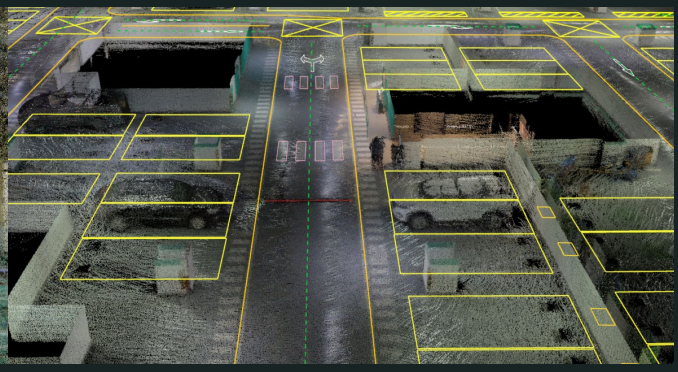
3D Modeling / Digital Archiving

Handheld measurements for interior structures and exteriors, along with aerial measurements for rooftops and high-rise building sections, provide a comprehensive point cloud for both the inside and outside of objects. This data serves as a foundation for the preservation of historic architecture, reverse modeling and digital conservation.



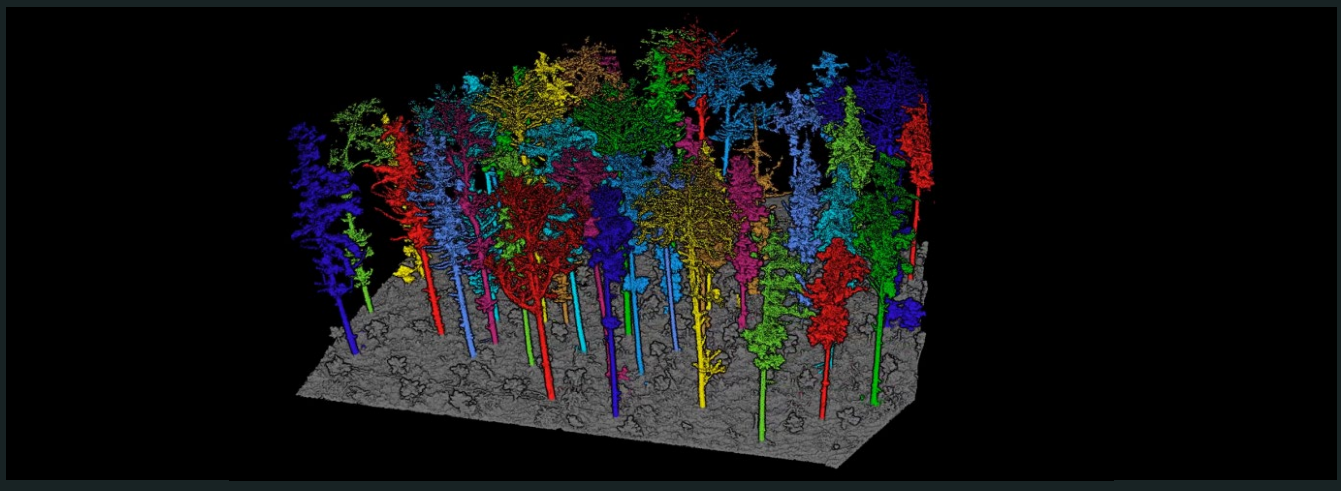
Underground Spaces

Our solution is applicable to the measurement of enclosed areas such as underground parking lots, electrical corridors, air-raid shelters, and shopping malls. It's suitable for underground space surveying, scanning, and providing navigation maps for precision inspection robots.

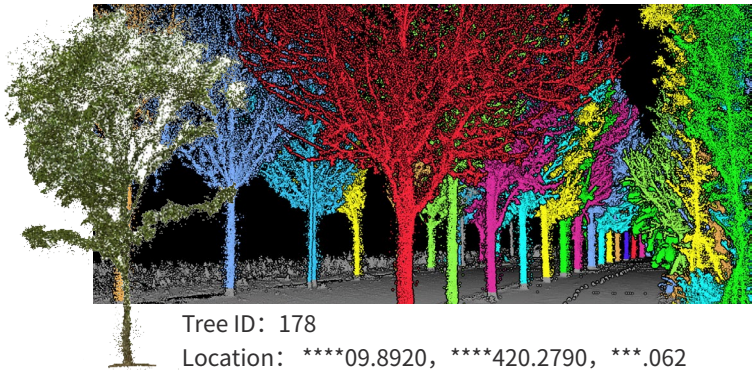


Forestry

Handheld scanning of forest stands and large forested areas is possible with GreenValley's LiDAR 360 Forestry Module. Quickly gather statistics on the number of trees in forest stands or vast forested areas, individual tree locations, tree height, crown width, DBH, and tree species (when combined with panoramic imagery).



Tree Height (m)	9.1
DBH (cm)	14.3
Crown Diameter (m)	5.2
Crown Diameter E-W (m)	4.5
Crown Diameter N-S (m)	4.8
Crown Area (sqm)	18.3
Crown Volume (cu.m)	53.2
CBH (m)	4.895
Trunk Volume (m)	1.536
Tree Species	Balsam fir
Slope	15°
Slope Direction	221°



Tree ID：178

Location： ****09.8920，****420.2790，***.062

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