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ASI

ROBUST® Surveying Instruments



Versatile Mobile LiDAR Scanner

TSR120

Multifunctional Mobile LiDAR Scanning Platform

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TSR120 Versatile Mobile LiDAR Scanner

The TSR120 is ROBUST multifunctional mobile LiDAR scanning platform. With a 360° rotating pan-tilt, it covers 270° × 360° point clouds. Using advanced SLAM technology, it captures high-detail 3D data without relying on GNSS signals. It features integrated control and storage, a replaceable battery, dual 48MP RGB cameras and a 1MP visual SLAM camera. With a maximum range of 120m and support for handheld, backpack, airborne and vehicle-mounted operations, it provides a versatile solution for 3D surveying and mapping.

CHARACTERISTIC

High-precision & Multi-mode Mapping

The TSR120 integrates a high-precision positioning and attitude system with multi-constellation GNSS (GPS, GLONASS, Galileo, BeiDou) and supports three mapping modes: SLAM, RTK-SLAM, and PPK-SLAM. It enables precise mapping in both GNSS-available and GNSS-denied environments. The system achieves absolute accuracy ⩽ 5cm and relative accuracy ⩽1cm, meeting the requirements of professional surveying applications.

Long-range & High-density Scanning

The TSR120 features a 16-channel LiDAR with a maximum range of 120m and a point rate of 640,000 pts/s. It captures high-density point clouds to provide detailed 3D spatial information for surveying and mapping in various environments.

Multi-platform Adaptability

Weighing 2.1kg, the TSR120 supports multiple mounting options, including handheld, backpack, airborne, and vehicle-mounted configurations. Its versatile adaptability improves equipment utilization and supports a wide range of surveying applications.

True-color Point Cloud

The TSR120 is equipped with dual 48MP RGB cameras and a 1MP visual SLAM camera, supporting detailed visual data capture and true-color point cloud generation. This enhances feature recognition and improves the visual clarity of 3D mapping results.

All-in-One Solution

The TSR120's self-developed SLAM algorithm requires no deliberate loop closure — stop scanning and power off. The integrated workflow: pre-scan (app preview, RTK setup), during-scan (real-time point cloud, one-tap anchors, auto-save), and post-scan (one-click PointCloudCreator for denoising, smoothing, densification, dynamic object removal, and true-color generation) — all without third-party tools.

TSR120 Versatile Mobile LiDAR Scanner

Multifunctional Mobile LiDAR Scanning Platform

Weight: **2.1kg**
Dimensions: **15.3*9.3*39.4cm**

Ultra-long Range
120m range
640,000 pts/s (Point Rate)

Multiple Mapping Mode
SLAM; RTK-SLAM; PPK-SLAM;
GNSS; INS

Centimeter-Level
⩽**1cm**(Relative)
⩽**5cm**(Absolute)

Time-synchronized Scanning
2 × 48 MP RGB Cameras + 1 MP
Visual SLAM Camera

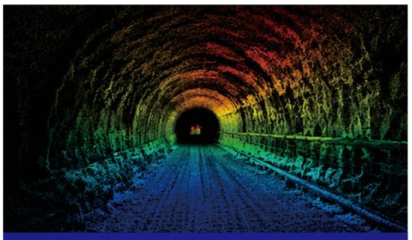
128GB MicroSD Card



Structure and Parts

01. GNSS Antenna
02. Power button
03. USB-A port
04. USB-C port
05. TF card slot /microSD card slot
06. Handle battery charging port
07. LiDAR
08. Camera
09. Handle battery

Application Scenarios



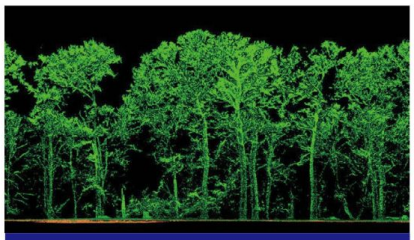
Underground & Enclosed Spaces



Large-scale Earthworks & Engineering Surveying



Long-distance Linear Projects



Forestry & Agricultural Surveys



3D Modeling of Complex Environments



Infrastructure Inspection

SPECIFICATION

SYSTEM SPECS	
Accuracy	⩽1cm(Relative), ⩽5cm(Absolute)
Voltage Range	12-18V
Dimensions	15.3*9.3*39.4cm
Weight	2.1kg
Operating Temperature	-20°C-55°C
Nominal Voltage	14.6V
System Consumption	25W
Storage	128GB SD Card
Carrying Platform	Handheld / Backpack / Airborne / Vehicle-mounted
Battery	51.1 Wh
Operating time	2h

POS SPECS	
GNSS System	GPS L1/L2/L5; GLONASS L1/L2; BDS B1c/B1/B2/B2a/B2b/B3; Galileo E1/E5b/E5a
Positioning Accuracy	Horizontal: ±0.02m Vertical: ±0.03m
Pitch Accuracy	0.015°
Heading Accuracy	0.040°
Roll Accuracy	0.015°

LASER SPECS	
Range	120m
Channels	16
FOV	270° * 360°
Point Rate	640,000/pts
Range Accuracy	±1 cm

CAMERA SPECS	
Actual effective pixels	2 × 48 MP RGB Cameras + 1 MP Visual SLAM Camera
Shooting Mode	Interval shooting / Equal time-interval shooting

MAPPING	
Mapping Mode	SLAM; RTK-SLAM; PPK-SLAM

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Manufacturers may update parameters at any time, please refer to the latest product information.

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