

ModeXion

Model Solutions

SPATIAL MEASURE

ModeXion Technology is a smart hardware manufacturer that focuses on innovation in the spatial measurement and digital twin industries. Relying on LiDAR and multi-dimensional vision fusion technology, it provides customers with integrated solutions for high-precision 3D measurement and AI intelligent detection.



Precision
Measurement



System
Integration



Handheld SLAM 3D Spatial Measurement Scanner

Full line of LiDAR scanners + 12 MP HD camera • Proprietary algorithms • Industry-leading 3D modeling

Four Core Advantages



Fast Capture

Capture spatial data in minutes



High Accuracy

Millimeter-level precision measurement



Broad Coverage

Fully adaptable to indoor and outdoor environments



High Reliability

Dependable all-weather operation

End-to-End Integration

Easy to use—learn it fast

Surveying

Modeling

Analysis

Applications

Simple to operate—ready right away



Empowering Industries



Building
Surveying



Engineering
Surveying



Building
Surveying



Security
Monitoring



Public
Safety



Entertainment
& Film

Specifications

Pentra

Performance

Laser Unit
Mid-360 LIVOX

Repeatability
2 cm (Livox standard)

Angular Accuracy
0.015°

Field of View (FOV)
360° × 59°

Camera Resolution
12 MP

Laser Class
905 nm / Class 1 laser

Absolute Accuracy
3 cm

Range
40 m @ 10% reflectivity; 70 m @ 80% reflectivity

Measurement Rate
200,000 pts/s

Dimensions
138 × 85 × 285 mm

Hardware

Power Input
14–24 V
(18 V standard battery, expandable capacity)

Weight
1.2 kg (including battery)

System Storage
eMMC 32 GB (system only)

Operating Temperature
-20°C to 50°C

Housing Material
Aerospace-grade aluminum, engineering plastic

Power
15 W

Data Interface
CFexpress card (128 GB standard;
expandable to 1 TB; read/write >500 MB/s)

Wireless
Wi- Fi

Protection Rating
IP54

Battery Life
2.0 hours (30 Wh battery)



Data Storage & Post-Processing

STORAGE FORMAT

*.bag
Data package is partially open-source;
selected parameters are available upon
request.

PROCESSING METHOD

Real-time processing (point-cloud preview)
and post-processing

SOFTWARE ECOSYSTEM

Post-processing software
Supports colored poin

t-cloud output

Calibration

Pentra undergoes a 48-hour calibration cycle in
our precision facility before shipment, ensuring a
0.015° angular-accuracy benchmark across the full
operating temperature range.

| Radix



Performance

Laser Unit

XT16/32 HESAI

Repeatability

1 cm (Livox standard)

Angular Accuracy

0.18°

Field of View (FOV)

360° × 31°

Camera Resolution

12 MP

Laser Class

905 nm / Class 1 laser

Absolute Accuracy

3 cm

Range

0.05–120 m

Measurement Rate

640,000 pts/s

Dimensions

138 × 100 × 335 mm



Hardware

Power Input

14–24 V

(18 V standard battery, expandable capacity)

Weight

1.8 kg (including battery)

System Storage

eMMC 32 GB (system only)

Operating Temperature

-20°C to 50°C

Housing Material

Aerospace-grade aluminum, engineering plastic

Power

30 W

Data Interface

CFexpress card (128 GB standard;
expandable to 1 TB; read/write >500 MB/s)

Wireless

Wi- Fi

Protection Rating

IP54

Battery Life

1.0 hour (30 Wh battery)

Data Storage & Post-Processing

STORAGE FORMAT

*.bag

Data package is partially open-source;
selected parameters are available upon
request.

PROCESSING METHOD

Real-time processing (point-cloud preview)
and post-processing

SOFTWARE ECOSYSTEM

Post-processing software

VISUAL OUTPUT

Supports colorized point-cloud output

Calibration

The Radix model delivers 1 cm repeatability and 3 cm
absolute accuracy. Designed for reliability, it features
a 32-channel array for comprehensive 360° spatial
data capture.

| Staris



Performance

Laser Unit Avia-LIVOX

Repeatability
2 cm (Livox standard)

Angular Accuracy
0.015°

Field of View (FOV)
Non-repetitive scan: 70.4° × 31°

Camera Resolution
12 MP

Laser Class
905 nm / Class 1 laser

Absolute Accuracy
3 cm

Range
450 m @ 80% reflectivity

Measurement Rate
240,000 pts/s

Dimensions
138 × 85 × 285 mm



Hardware

Power Input
14–24 V (18 V standard battery, expandable capacity)

Weight
1.3 kg (including battery)

System Storage
eMMC 32 GB (system only)

Operating Temperature
-20°C to 50°C

Housing Material
6061 aerospace-grade aluminum,
engineering plastic (ABS)

Power
15 W

Data Interface
CFexpress card (128 GB standard;
expandable to 1 TB; read/write >500 MB/s)

Wireless
2.4G/5G Wi-Fi, Bluetooth

Protection Rating
IP54

Battery Life - 45 Wh single-battery mode
Continuous 2.5 hours

Data Storage & Post-Processing

STORAGE FORMAT Single-package mode

Data package is partially open-source;
selected parameters are available upon
request.

PROCESSING METHOD
Post-processing software

SOFTWARE ECOSYSTEM
Dedicated software required

VISUAL OUTPUT
Supports colored point-cloud output

Calibration

Each Staris system is factory-calibrated
to achieve sub-centimeter geometric accuracy. The
integrated 40-channel LiDAR array maintains 2 cm
repeatability across a wide range of industrial surfaces.

| Product Features

Engineered for exceptional ergonomics, the handle closely matches the contours of the human palm to reduce pressure concentration, maintaining outstanding comfort even during extended operation.



Ergonomic Comfortable Grip

A non-slip handle shaped to fit the hand, with balanced weight distribution for stable, low-fatigue handheld use over extended periods.



Industrial Design, Flexible Mounting

Compact and rugged, with a professional industrial design that supports flexible deployment and mounting options.



Modular Design, Strong Expandability

The main unit, handle, and battery can be detached for easier integration and deployment across a wide range of scenarios.



Supports Custom Development & Access

Partially open data packages make custom development easier and unlock additional application potential.



Thoughtful Craftsmanship

“Not just a tool, but a deep understanding of professional operating environments.”



| Product Features



Motion-Based Gravity Calibration

Using advanced Kalman filtering, the system completes gravity calibration during normal motion. Users do not need to leave the device stationary on the ground for long periods—simply power it on, wait until the system status is normal, and start recording data.



High-Precision Inter-Frame Color Fusion

Spatially aligns 3D points and pixel data collected across consecutive sensor frames. By combining information from multiple frames with an adaptive weighted-fusion strategy, it delivers globally consistent, evenly colored, true-color 3D point clouds with no temporal flicker.



Hardware-Free Time Synchronization

This approach does not rely on time-sync encoders. The IMU and LiDAR are rigidly mounted and rotate coaxially. Through online time-offset estimation, inter-frame interpolation, and motion compensation, multi-sensor data are aligned to a unified internal timeline, preventing synchronization drift over long-term use.



Deep Learning Data Optimization

Machine-learning models more accurately identify and process outliers, missing values, and noise in point clouds, enabling high-precision, accurately colored true-color point-cloud data even in complex environments and under asynchronous multi-sensor acquisition conditions.

Processing Capabilities

Covers the complete workflow from on-site capture and real-time preview to post-processing output, balancing operational efficiency, data compatibility, and reliable deliverables in complex environments.

01

Data Workflow



End-to-end data capture and processing ensure seamless handoff from fieldwork to final delivery, with millisecond-level timestamp alignment.

- Capture:** multi-sensor fusion for raw-data acquisition with real-time point-cloud display
- Export:** CFexpress card — 1 GB/s write, 1.1 GB/s read
- Process:** proprietary SLAM algorithm with 1:4 rapid data processing

02

Software Output Capabilities



Supports highly compatible point-cloud output. The post-processing engine is deeply optimized for massive datasets.

- LAS/LAZ/PLY/PCD/E57**
Point Cloud Formats
- CSV/TXT**
Coordinates
- BAG/PCD**
Raw Data
- DB/DXF**
Data Maps
- OBJ**
Mesh Model
- PLY**
3D Gaussian

Accuracy Standard

0.5 cm

RELATIVE ACCURACY

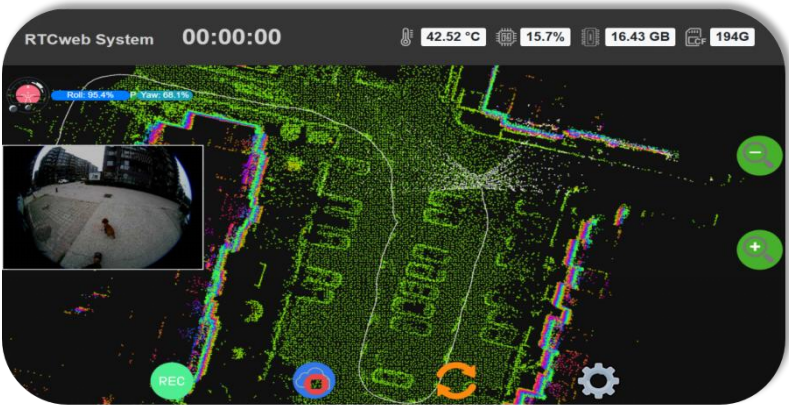
Precision Measurement Benchmark
High-performance Operating Standard

03

Human-Machine Interaction & Management



- 5-inch AMOLED display—no phone WiFi connection required.
- Deeply optimized touch interface designed for field workflows.
- Supports intuitive task management and real-time preview.
- Manage data across multiple projects.



04

Technical & Service Advantages



The modular architecture allows core sensors to be upgraded independently, while local R&D enables fast-response service support.

- Modular Design**
- Rapid Iteration**
- Localized Service**

I Industry Applications

Widely used in engineering surveying, volume calculation, VR, AR, and other advanced technology fields—redefining the boundaries of spatial perception.



High-Precision Surveying



Delivers industrial-grade geospatial data capture for demanding engineering-survey needs

Augmented Reality (AR)



Seamlessly integrates virtual information with real space, providing foundational support for digital-twin applications

Unmanned Systems

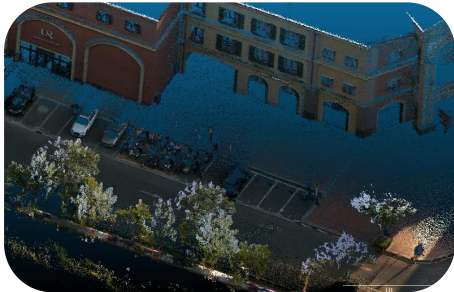


Supports real-time obstacle avoidance, path planning, and environment modeling for robots and autonomous aircraft

Application Areas

Building Surveying

- 3D modeling and precise measurement support design and construction, reducing rework costs
- 3D scanning of indoor and outdoor environments optimizes space planning
- Accurate 3D data support final acceptance and quality inspection



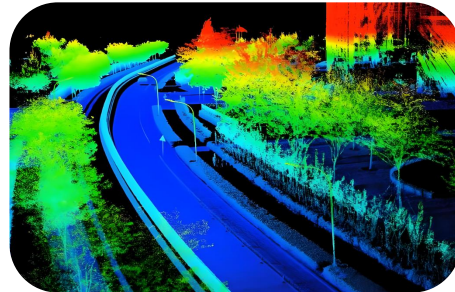
Archaeological Survey

- Precisely records the form of artifacts and sites to support conservation and restoration
- High-precision site modeling facilitates archaeological research and presentation of results
- Efficient field surveying preserves site details and changes



Autonomous Driving

- Real-time environment perception assists path planning and obstacle detection
- Builds high-precision maps for reliable navigation data
- Dynamic environment perception supports intelligent vehicle decision-making



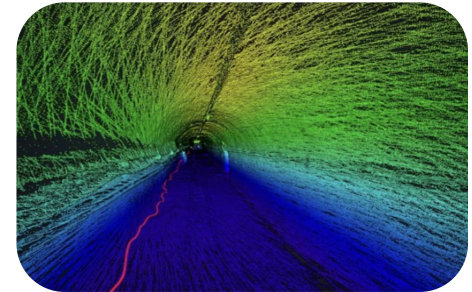
Security Monitoring

- Builds high-precision 3D monitored environments to enhance security capabilities
- Rapid emergency scanning provides data support for decision-making
- Regular inspection scans identify anomalies in time and reduce safety risks



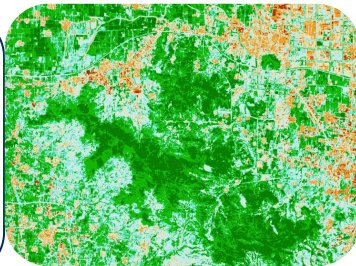
Engineering Surveying

- Supports the construction and maintenance of bridges, tunnels, roads, and other infrastructure
- Quickly captures terrain data to generate 3D topographic maps
- Real-time structural deformation monitoring helps ensure engineering safety



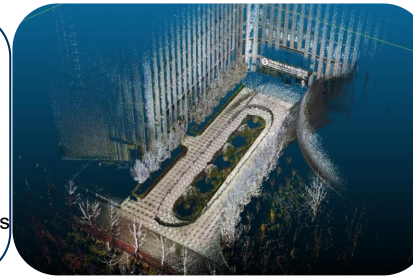
Smart Agriculture

- 3D data support farmland planning and improve land-use efficiency
- Crop-growth monitoring enables precision agriculture
- Optimized irrigation design improves water efficiency



Public Safety

- Rapid post-disaster 3D scanning assists damage assessment and rescue
- 3D city modeling optimizes urban planning and resource allocation
- Traffic-environment perception helps ease congestion and reduce accidents



Entertainment & Film

- Real-world scene reconstruction and real-time rendering to reduce on-location shooting costs
- Fast production of immersive VR/AR content with seamless virtual-real interaction
- Generation of high-fidelity assets for video game environment design

