DJI ENTERPRISE

DJI L1

Instant Clarity, Superior Accuracy

A Lidar + RGB Solution for Aerial Surveying

The Zenmuse L1 integrates a Livox Lidar module, a high-accuracy IMU, and a camera with a 1-inch CMOS on a 3-axis stabilized gimbal. When used with Matrice 300 RTK and DJI Terra, the L1 forms a complete solution that gives you real-time 3D data throughout the day, efficiently capturing the details of complex structures and delivering highly accurate reconstructed models.

Integrates a Lidar module, an RGB camera, and a high-accuracy IMU

High Efficiency 2 km^2 covered in a single flight[1]

High Accuracy Vertical Accuracy: 5 cm / Horizontal Accuracy: 10 cm[2]

Point Rate: 240,000pts/s

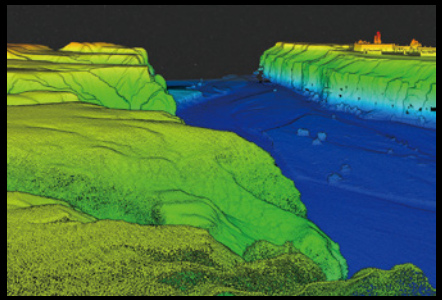
Supports 3 Returns[3]

Detection Range: 450 m (80% reflectivity, 0 klx)

IP44 Ingress Protection Level

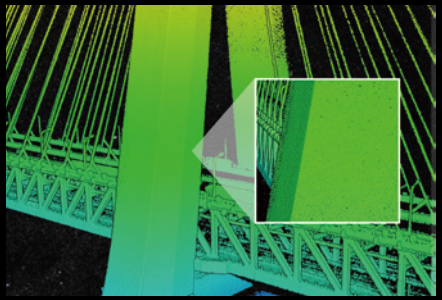
Point Cloud LiveView

Digitize without Compromise



Exceptional Efficiency

Generate true-color point cloud models in real time, or acquire 2 km^2 of point cloud data in a single flight[1] using the Livox frame Lidar module with a 70° FOV and a visible light camera with a 1-inch sensor.



Unparalleled Accuracy

Render centimeter-accurate reconstructions thanks to the high-accuracy IMU, a vision sensor for positioning accuracy, and the incorporation of GNSS data.

Ready When You Are

The IP44 rating allows the L1 to be operated in rainy or foggy environments. The Lidar module's active scanning method enables you to fly at night.

Visualize Data as You Fly

Livox Lidar Module

- Frame Lidar with up to 100% effective point cloud results
- Detection Range: 450 m (80% reflectivity, 0 klx) / 190 m (10% reflectivity, 100 klx)
- Effective Point Rate: 240,000 pts/s
- Supports 3 Returns[3]
- Line Scan Mode and Non-repetitive Petal Scan Mode

Everything in View

RGB Camera

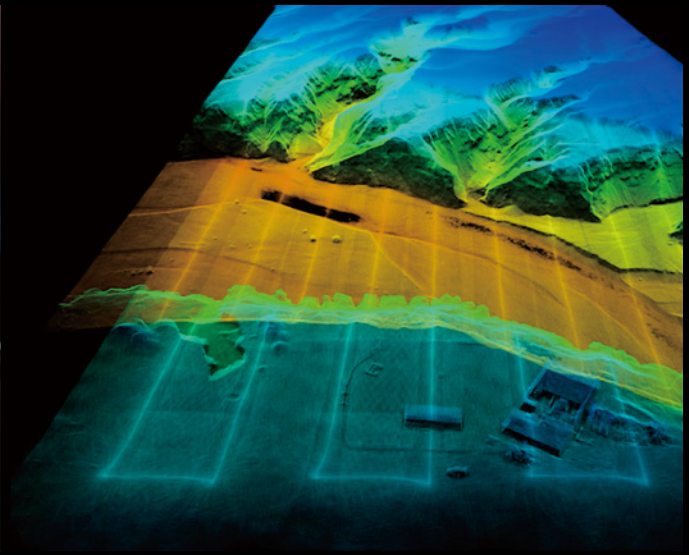
- 20MP
- 1-inch CMOS
- Mechanical Shutter

Accurate Details at Your Disposal

High-accuracy IMU

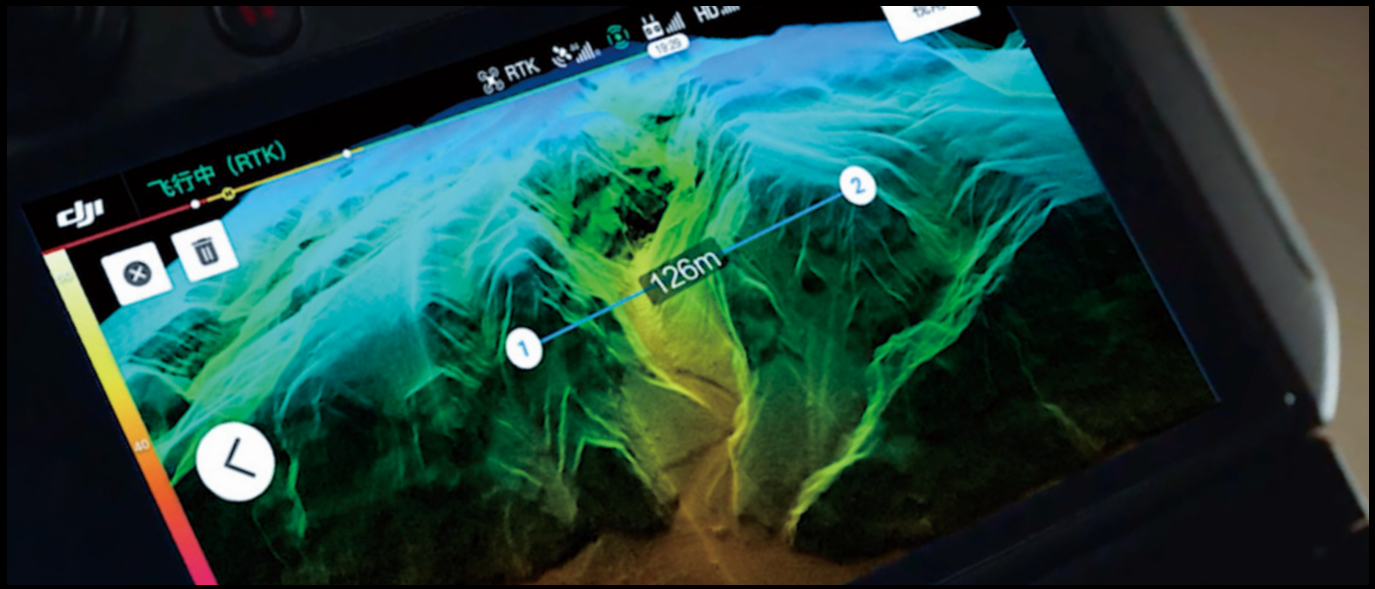
- Accuracy: 0.025° (roll/pitch) / 0.08° (yaw)
- Vision Sensor for Positioning Accuracy
- GNSS, IMU, RGB Data Fusion

Recreate the World in 3D Point Clouds



Point Cloud LiveView

Real-time point clouds provide immediate insights onsite, so operators are informed to make critical decisions quickly. You can also verify fieldwork quality by checking point cloud data immediately after each flight.



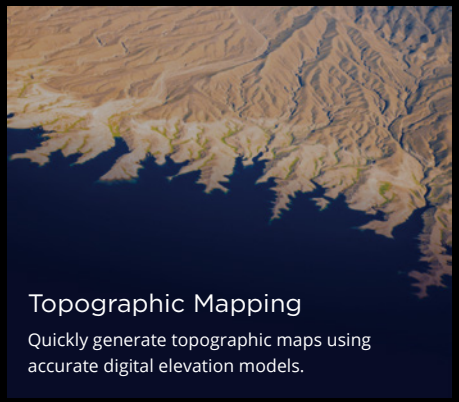
Measurement and Annotation

Acquire and communicate critical dimensions on the point cloud model using measurements and annotations.

One-stop Post-processing

DJI Terra fuses the IMU and GNSS data for point cloud and visible light calculations, in addition to conducting POS data calculations so you can effortlessly generate reconstructed models and accuracy reports.

Application Scenarios



Topographic Mapping

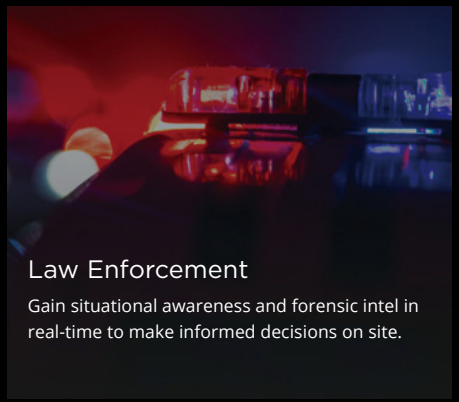
Quickly generate topographic maps using accurate digital elevation models.

AEC and Surveying

Manage the full project lifecycle using highly accurate point clouds and 3D models.

Emergency Response

Any time of the day, gather critical insights in real-time using true-color point clouds.



Law Enforcement

Gain situational awareness and forensic intel in real-time to make informed decisions on site.

Energy and Infrastructure

Model sparse or complex structures in detail to manage them efficiently and safely.

Agriculture and Forestry Management

Gain insight into vegetation density, area, stock volume, canopy width, and growth trends.

Specifications

General

Dimensions	152×110×169 mm
Weight	Approx. 900 g
Power	30 W
IP Rating	IP44
Supported Aircraft	Matrice 300 RTK
Operating Temperature Range	-20° to 50° C (-4° to 122° F)
Storage Temperature Range	-20° to 60° C (-4° to 140° F)

System Performance

Detection Range	450 m @ 80% reflectivity, 0 klx; 190 m @ 20% reflectivity, 100 klx
Point Rate	Single return: 240,000 pts/s; Multiple return: 480,000 pts/s
System Accuracy	Horizontal: 10 cm @ 50 m; Vertical: 5 cm @ 50 m
Real-time Point Cloud Coloring Modes	True color; coloring by reflectivity; coloring by elevation

Lidar

Ranging Accuracy	3 cm @ 100 m
Maximum Returns Supported	3
Scan Modes	Repetitive line scan mode, non-repetitive petal scan mode
FOV	Repetitive line scan: 70.4° × 4.5°; Non-repetitive petal scan: 70.4° × 77.2°
Laser Safety	Class 1

Inertial Navigation System

IMU Update Frequency	200 Hz
Accelerometer Range	±8 g
Angular Velocity Meter Range	±2000 dps
Yaw Accuracy	Real-time: 0.18°, Post-processing: 0.08°
Pitch / Roll Accuracy	Real-time: 0.03°, Post-processing: 0.025°

Auxiliary Positioning Vision Sensor

Resolution	1280×960
FOV	95°

RGB Mapping Camera

Sensor Size	1 inch
Effective Pixels	20 MP
Photo Size	4864×3648 (4:3); 5472×3648 (3:2)
Focal Length	8.8 mm / 24 mm (Equivalent)
Shutter Speed	Mechanical Shutter Speed: 1/2000 - 8 s Electronic Shutter Speed: 1/8000 - 8 s
ISO	Video: 100 – 3200 (Auto), 100 – 6400 (Manual) Photo: 100 - 3200 (Auto), 100 - 12800 (Manual)
Aperture Range	f/2.8 - f/11

Gimbal

Stabilized System	3-axis (tilt, roll, pan)
Angular Vibration Range	0.01°
Mount	Detachable DJI SKYPORT
Mechanical Range	Tilt: -120° to +30°; Pan: ±320°
Operation Modes	Follow/Free/Re-center

Data Storage

Raw Data Storage	Photo/IMU/Point cloud data storage
Point Cloud Data Storage	Real-time modeling data storage
Supported microSD Cards	microSD: Class 10 or UHS-1 rating or above; Max capacity: 256 GB

Post-processing Software

Supported Software	DJI Terra
Data Format	DJI Terra supports exporting standard format point cloud models: Point cloud format: PNTS/LAS/PLY/PCD/S3MB format Reconstruction model format: B3DM/OSGB/PLY/OBJ/S3MB format

[1] Over 30 minutes, at a speed of 10 m/s, a flight altitude of 100 m, with a side overlap rate of 20%, point cloud density > 200 points/m^2.
[2] Flight altitude: 50 m
[3] In operations with two or three returns, the point rate is 480,000 pts/s

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