

Specs

System Specifications

Product Name	Zenmuse L3
Point Cloud System Accuracy	At 120m Flight Altitude: Vertical Accuracy: 3 cm (RMSE) Horizontal Accuracy: 4 cm (RMSE) At 300m Flight Altitude: Vertical Accuracy 5 cm (RMSE) Horizontal Accuracy: 7.5 cm (RMSE) Measured under the following conditions in a DJI laboratory environment: 1. The field contained objects with obvious angular features. DJI Matrice 400 was linked to a position-calibrated D-RTK 3 Multifunctional Station. The flight route was planned using DJI Pilot 2's Area Route (with Calibrate IMU enabled) with Linear scanning. The flight speed was set to 15 m/s, gimbal pitch to -90°, and each straight segment of the flight route was less than 3300 m. 2. Using exposed hard ground checkpoints that conformed to the diffuse reflection model. 3. DJI Terra was used for post-processing with Optimize Point Cloud Accuracy enabled.
Point Cloud Thickness	1.2 cm@1σ (120m nadir flight altitude) 2 cm@1σ (300m nadir flight altitude) Measured in Linear scanning mode, using check points on 80% reflectivity objects, with neither point cloud optimization nor downsampling enabled in DJI Terra. For 6σ, multiply the listed thickness by 6.
Combined Horizontal FOV (Dual RGB Mapping Cameras)	107° Composed by merging images from two cameras with a 45° optical axis angle between them.
RGB Ground Sampling Distance (GSD)	Average Value: 3 cm (300m nadir flight altitude) For detailed calculation methods, refer to the user manual available on the Downloads page of the official DJI Zenmuse L3 webpage.
Weight	1.60 kg (without single gimbal connector) The Zenmuse L3 single gimbal connector weighs 145 g.
Dimensions	192×162×202 mm (L×W×H) Measured in the default stabilized state after power-on with non-orthogonal gimbal design.
Power	64 W (typical) 100 W (max)
Supported Aircraft	DJI Matrice 400 (requires the Zenmuse L3 single gimbal connector)
Ingress Protection Rating	IP54
Operating Temperature	-20° to 50° C (-4° to 122° F)
Storage Temperature	-40° to 70° C (-40° to 158° F)

LiDAR

Laser Wavelength	1535 nm
Laser Beam Divergence	0.25 mrad (1/e²)



Laser Spot Size	Φ 41 mm@120 m (1/e²) Φ 86 mm@300 m (1/e²)
Detection Range	700 m@10% reflectivity, 350 kHz 950 m@10% reflectivity, 100 kHz 2000 m@80% reflectivity, 100 kHz 1. Range Definition: The range is defined as the distance at which 50% of the emitted laser pulses are detected. If a laser beam hits more than one subject, the total laser transmitter power is split and the achievable range is reduced. 2. Test Conditions: 100 klx ambient light, within the central area of the FOV, using a flat subject with a size larger than the laser beam diameter, a perpendicular angle of incidence, and an atmospheric visibility of 23 km. 3. The maximum detection range is 900 m by default. For a longer range, contact DJI support or an authorized dealer.
Wire Detection Range	21.6mm Steel Core Aluminum Stranded Wire: 300 m@100 klx, 350 kHz 18.4mm Black PVC Insulated Wire: 100 m@100 klx, 350 kHz 1. Range Definition: The distance at which a fully scanned section of wire in mapping achieves a point density of 4 points per meter. 2. Test Conditions: 100 klx ambient light, 23km atmospheric visibility, LiDAR center FOV perpendicular to the wire, Non-Repetitive scanning mode, drone flying along the wire at 15 m/s, and the wire is clean and not aged.
Ranging Accuracy	Absolute Accuracy: ±10 mm Repeatability: < 5 mm (1σ) The above specifications can be met under test conditions of 25° C (77° F) ambient temperature, 350 kHz pulse rate, 80% object reflectivity, and distances of 120 m and 300 m. The actual environment may differ from the testing environment. The figure listed is for reference only.
Minimum Effective Detection Distance	10 m
Laser Pulse Emission Frequency	100 kHz, recommended flight altitude < 500 m 350 kHz, recommended flight altitude < 300 m 1000 kHz, recommended flight altitude < 100 m 2000 kHz, recommended flight altitude < 50 m
Number of Returns	4, 8, 16 returns (100 kHz, 350 kHz) 4, 8 returns (1000 kHz) 4 returns (2000 kHz)
Cross-Cycle Calculation	7 times
Scanning Mode and FOV	Linear Scanning Mode: Horizontal 80°, vertical 3° Star-Shaped Scanning Mode: Horizontal 80°, vertical 80° Non-Repetitive Scanning Mode: Horizontal 80°, vertical 80°
Laser Safety Classification	Class 1 (IEC 60825-1:2014)

RGB Mapping Camera

Sensor	4/3 CMOS
Lens	Equivalent Focal Length: 28 mm FOV: 73.3° (diagonal), 62° (horizontal), 41.2° (vertical) Aperture: f/2.0-f/11
Shutter	Mechanical Shutter: 2-1/1500 s (f/2.0), 2-1/2000 s (f/2.8-f/11) Shutter Count: 500,000 Electronic Shutter: 2-1/16000 s
Photo Size	100 MP: 12288×8192 25 MP: 6144×4096
Minimum Photo Interval	JPEG: 25 MP: 0.5 s 100 MP: 1 s RAW or JPEG + RAW: 1.2 s

Video Specification	Video Format: MP4 (MPEG-4 HEVC/H.265) Resolution: 4K: 3840×2160@30fps FHD: 1920×1080@30fps
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Position and Orientation System (POS)

GNSS Update Rate	5 Hz
POS Update Rate	200 Hz
Attitude Error	Yaw Angle: 0.02° (post-processed, 1σ) Pitch/Roll Angle: 0.01° (post-processed, 1σ)
Positioning Accuracy	Horizontal Accuracy: 1.0 cm + 1 ppm (RTK fix) Vertical Accuracy: 1.5 cm + 1 ppm (RTK fix)
Supported PPK Differential Data Formats	DAT: Generated in Base Station Mode by D-RTK 3 Multifunctional Station and D-RTK 2 RINEX: v2.1x, v3.0x RTCM: v3.0, v3.1, v3.2, v3.3 (protocols: MSM3, MSM4, MSM5, MSM6, MSM7) OEM: OEM4, OEM6 For field operation, ensure the distance between the Multifunctional Station and the aircraft does not exceed 15 km, and the Multifunctional Station supports satellite observation with more than two GNSS constellations.

Gimbal

Degrees of Freedom	3-axis (pitch, roll, yaw)
Angular Accuracy	±0.01°
Mechanical Range	Pitch: -135° to +73° Roll: -90° to +60° Yaw: -105° to +105° Structural limit, not controllable range.
Controllable Range	Pitch: -120° to +60° Yaw: -80° to +80° Roll is uncontrollable, for stabilization only.
Self-Check Method	Roll Axis: Self-check not required Yaw Axis: Checks using limit stop Pitch Axis: Self-check not required
Mounting Method	Detachable DJI SKYPORT (Zenmuse L3 single gimbal connector)

Data Storage

Raw Data Storage	Photo/IMU/Point cloud/GNSS/Calibration files
Standard Memory Card	CFexpress™ Type B Memory Card, sequential write speed 1500 MB/s
Standard Card Reader	Read/write speed > 900 MB/s

Software Ecosystem

Data Collection	DJI Pilot 2
Data Processing	DJI Terra
Data Application	DJI Modify



Data Format

DJI Terra supports exporting point cloud models in the following formats:
Standard Point Cloud Format: PNTS/LAS/LAZ/PLY/PCD/S3MB

DJI Modify supports importing point cloud models in the following formats:
Standard Point Cloud Format: LAS

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