ENTERPRISE DATA SHEET

ZENMUSE L3

See Through, Far and True

DJI's next-generation high-accuracy aerial LiDAR system features a long-range LiDAR capable of reaching up to 950 m even on objects with just 10% reflectivity.

Dual 100MP RGB mapping cameras and a high-precision POS system accelerate geospatial data acquisition, enabling daily coverage of up to 100 km².

GENERAL

Dimensions:	192×162×202 mm (L×W×H)	Weight:	1.60 kg (without single gimbal connector)
Environmental Protection:	IP54		
Supported Aircraft:	Matrice 400	Power:	64 W (typical) | 100 W (max.)
Operating Temperature:	-20° to 50° C	Storage Temperature:	-40° to 70° C

SYSTEM PERFORMANCE

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)
Point Cloud Thickness:	1.2 cm@1σ (120m nadir flight altitude)	2 cm@1σ (300m nadir flight altitude)

Combined Horizontal FOV (Dual RGB Mapping Cameras): 107°

RGB Ground Sampling Distance (GSD): Average 3 cm (300m nadir flight altitude)

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)	Ranging Accuracy:	±10 mm Absolute Accuracy < 5 mm (1σ) Repeatability
Detection Range:	700 m@10% reflectivity, 350 kHz 950 m@10% reflectivity, 100 kHz 2000 m@80% reflectivity, 100 kHz	Wire Detection Range:	300 m@100 klx, 350 kHz (21.6mm STD Steel Core Alu Wire) 100 m@100 klx, 350 kHz (18.4mm Black PVC Insulated Wire)
Min Detection Range:	10 m	Cross-Cycle Calculation:	300 m@100 klx, 350 kHz

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)

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)

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RGB MAPPING CAMERA

Sensor:	4/3 CMOS		Photo Size	100 MP: 12288×8192 25 MP: 6144×4096
Lens	Equivalent Focal Length:	28 mm		
	FOV:	73.3° (dia), 62° (hor), 41.2° (vert)		
	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		
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		

POSITIONING AND ORIENTATION (POS)

GNSS Update Rate:		5 Hz	POS Update Rate:	200 Hz
Attitude Error	Yaw Angle:	0.02° (post-processed, 1σ)	Positioning Accuracy	Hor: 1.0 cm + 1 ppm (RTK fix)
	Pitch/Roll Angle:	0.01° (post-processed, 1σ)		Vert: 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

GIMBAL

Degrees of Freedom:		3-axis (pitch, roll, yaw)	Angular Accuracy:	±0.01°
Mechanical Range	Pitch:	-135° to +73°	Controllable Range:	Pitch: -120° to +60°
	Roll:	-90° to +60°		Yaw: -80° to +80°
	Yaw:	-105° to +105°		
Self-Check Method	Roll Axis:	Self-check not required	Mounting Method:	Detachable DJI SKYPORT (Zenmuse L3 single gimbal connector)
	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	Cloud Application:	DJI FlightHub 2

Data Application

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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