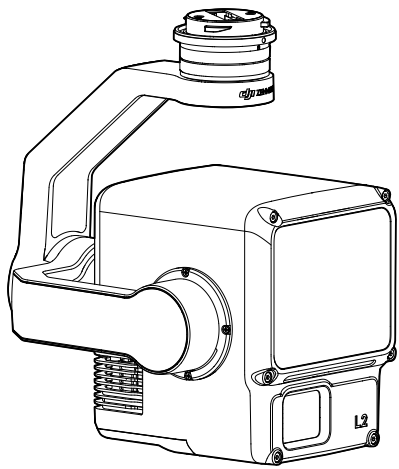
ZENMUSE L2

SCHEDA TECNICA



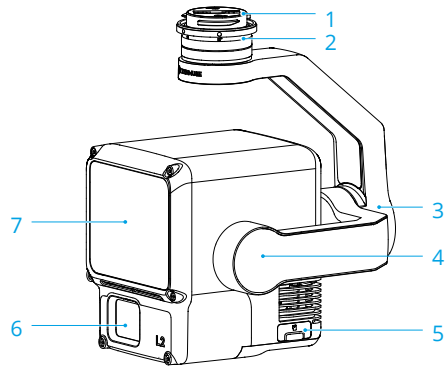
Product Profile

Introduction

The ZENMUSE™ L2 integrates a LiDAR module, a high-accuracy IMU, and an RGB mapping camera on a 3-axis stabilized gimbal, which can be used with specified compatible DJI™ aircraft. With Point Cloud LiveView, users can take a quick view of the 3D point cloud effect in the DJI PILOT™ 2 app. When used with DJI TERRA™, the L2 offers a complete solution that generates point cloud output and extracts ground points to generate DEM results, which efficiently completes highly accurate reconstructed models of complex structures.

Overview

1. Gimbal Connector
2. Pan Motor
3. Roll Motor
4. Tilt Motor
5. microSD Card Slot
6. RGB Mapping Camera
7. LiDAR



Specifications

General	
Dimensions	155×128×176 mm
Weight	905±5 g
Power	28 W (typical), 58 W (max.)
IP Rating	IP54
Operating Temperature	-20° to 50° C (-4° to 122° F)
Storage Temperature	-20° to 60° C (-4° to 140° F)
Supported Aircraft	Matrice 350 RTK Matrice 300 RTK (requires DJI RC Plus)
System Performance	
Detection Range [1]	450m @50% reflectivity, 0klx 250m @10% reflectivity, 100klx
Point Cloud Rate	Single return: max. 240,000 pts/s Multiple returns: max. 1,200,000 pts/s
System Accuracy [2]	Horizontal: 5 cm @ 150 m Vertical: 4 cm @ 150 m
Real-Time Point Cloud Coloring Coding	Reflectivity, Height, Distance, RGB
LiDAR	
Ranging Accuracy (RMS 1σ) [3]	2 cm @ 150 m
Maximum Returns Supported	5
Scanning Modes	Non-repetitive scanning pattern, Repetitive scanning pattern
FOV	Repetitive scanning pattern: 70°×3° Non-repetitive scanning pattern: 70°×75°
Minimum Detection Range	3 m
Laser Beam Divergence	0.6 mrad×0.2 mrad
Laser Wavelength	905 nm
Laser Spot Size	Horizontal 4 cm, vertical 12 cm @ 100 m (FWHM)
Laser Pulse Emission Frequency	240 kHz
Laser Safety	Class 1 (IEC 60825-1:2014)
Accessible Emission Limit (AEL)	233.59 nJ
Reference Aperture	Effective Aperture: 23.85 mm (equivalent to circular)
Max Laser Pulse Emission Power Within 5 Nanoseconds	46.718 W
Inertial Navigation System	
IMU Update Frequency	200 Hz

Accelerometer Range	±6 g
Angular Velocity Meter Range	±300 dps
Yaw Accuracy (RMS 1σ) [4]	Real-time: 0.2°, Post-processing: 0.05°
Pitch/Roll Accuracy (RMS 1σ) [4]	Real-time: 0.05°, Post-processing: 0.025°
Positioning Accuracy (RTK FIX)	Horizontal: 1 cm + 1 ppm Vertical: 1.5 cm + 1 ppm
RGB Mapping Camera	
Sensor	4/3 CMOS, Effective Pixels: 20 MP
Lens	FOV: 84° Format Equivalent: 24 mm Aperture: f/2.8-f/11 Focus Points: 1 m to ∞ (with autofocus)
Shutter Speed	Mechanical Shutter: 2-1/2000 s Electronic Shutter: 2-1/8000 s
Shutter Count	200,000
Photo Size	5280×3956 (4:3)
Still Photography Modes	Single shot: 20 MP Timed: 20 MP JPEG Timed Interval: 0.7/1/2/3/5/7/10/15/20/30/60 s RAW/JPEG + RAW Timed Interval: 2/3/5/7/10/15/20/30/60 s
ISO	Video: 100-6400 Photo: 100-6400
Video Codec and Resolution	H.264 4K: 3840×2160 @30fps FHD: 1920×1080 @30fps
Video Bitrate	4K: 85Mbps FHD: 30Mbps
Supported File System	exFAT
Photo Format	JPEG/DNG (RAW)
Video Format	MP4 (MPEG-4 AVC/H.264)
Gimbal	
Stabilization System	3-axis (tilt, roll, pan)
Angular Vibration Range	0.01°
Mounting	Detachable DJI SKYPORT
Mechanical Range	Tilt: -143° to +43° Pan: ±105°
Controllable Range	Tilt: -120° to +30° Pan: ±90°
Operation Mode	Follow/Free/Re-center
Data Storage [5]	
Raw Data Storage	Photo/IMU/Point cloud/GNSS/Calibration files

Point Cloud Data Storage	Real-time modeling data storage
Supported microSD Cards	microSD: sequential writing speed 50 MB/s or above and UHS-I Speed Grade 3 rating or above; Max capacity: 256 GB. Use the recommended microSD cards.
Recommended microSD Cards	Lexar 1066x 64GB U3 A2 V30 microSDXC Lexar 1066x 128GB U3 A2 V30 microSDXC Kingston Canvas Go! Plus 128GB U3 A2 V30 microSDXC Lexar 1066x 256GB U3 A2 V30 microSDXC
Post-Processing Software	
Supported Software	DJI Terra
Data Format	DJI Terra supports exporting point cloud models in the following formats: Point cloud format: PNTS/LAS/PLY/PCD/S3MB Trajectory file format: sbet.out/sbet.txt

[1] Measured using a flat subject with a size larger than the laser beam diameter, perpendicular angle of incidence, and an atmospheric visibility of 23 km. In low-light environments, the laser beams can achieve the optimal detection range. If a laser beam hits more than one subject, the total laser transmitter power is split, and the achievable range is reduced. The maximum detection range is 500 m.

[2] Measured under the following conditions in a DJI laboratory environment: Zenmuse L2 mounted on a Matrice 350 RTK and powered up. Using DJI Pilot 2's Area Route to plan the flight route (with IMU Calibration enabled). Using repetitive scanning with the RTK in the FIX status. The relative altitude was set to 150 m, flight speed to 15 m/s, gimbal pitch to -90°, and each straight segment of the flight route was less than 1500 m. The field contained objects with obvious angular features, and used exposed hard-ground check points that conformed to the diffuse reflection model. DJI Terra was used for post-processing with Optimize Point Cloud Accuracy enabled. Under the same conditions with Optimize Point Cloud Accuracy not enabled, the vertical accuracy is 4 cm and the horizontal accuracy is 8 cm.

[3] Measured in an environment of 25° C (77° F) with a subject of 80% reflectivity at a distance of 150 m. The actual environment may differ from the testing environment. The result listed is for reference only.

[4] Measured under the following conditions in a DJI laboratory environment: Zenmuse L2 mounted on a Matrice 350 RTK and powered up. Using DJI Pilot 2's Area Route to plan the flight route (with IMU Calibration enabled). RTK in the FIX status. The relative altitude was set to 150 m, flight speed to 15 m/s, gimbal pitch to -90°, and each straight segment of the flight route was less than 1500 m.

[5] Zenmuse L2 supports the Security Code function. Go to Data and Privacy in DJI Pilot 2 and set the code to encrypt the microSD card installed on the camera. Download DJI Decrypt Tool from the DJI official website to decrypt the microSD card on a Windows computer and access the microSD card content.