

# Clifton Cameras Product Specification

## DJI Zenmuse L1 Full Spec

### General

- **Product Name**
- Zenmuse L1
  
- **Dimensions**
- 152×110×169 mm
  
- **Weight**
- 930±10 g
  
- **Power**
- Typical: 30 W; Max: 60 W
  
- **IP Rating**
- IP54
  
- **Supported Aircraft**
- Matrice 300 RTK
  
- **Operating Temperature Range**
- -20° to 50° C (-4° to 122° F)  
0° to 50° C (32° to 122° F) (when using RGB mapping camera)
  
- **Storage Temperature Range**
- -20° to 60° C (-4° to 140° F)

### System Performance

- **Detection Range**
- 450 m @ 80% reflectivity, 0 klx ;  
190 m @ 10% reflectivity, 100 klx
  
- **Point Rate**
- Single return: max. 240,000 pts/s ;  
Multiple return: max. 480,000 pts/s
  
- **System Accuracy(RMS 1 $\sigma$ )<sup>1</sup>**
- Horizontal: 10 cm @ 50 m;  
Vertical: 5 cm @ 50 m
  
- **Real-time Point Cloud Coloring Modes**
- Reflectivity, Height, Distance, RGB

### Lidar



- **Ranging Accuracy (RMS 1 $\sigma$ )<sup>2</sup>**
- 3 cm @ 100 m
  
- **Maximum Returns Supported**
- 3
  
- **Scan Modes**
- Non-repetitive scanning pattern, Repetitive scanning pattern
  
- **FOV**
- Non-repetitive scanning pattern: 70.4° (horizontal) × 77.2° (vertical) ;  
Repetitive scanning pattern: 70.4° (horizontal) × 4.5° (vertical)
  
- **Laser Safety**
- Class 1 (IEC 60825-1:2014) (Eye Safety)

#### **Inertial Navigation System**

- **IMU Update Frequency**
- 200 Hz
  
- **Accelerometer Range**
- $\pm 8$  g
  
- **Angular Velocity Meter Range**
- $\pm 2000$  dps
  
- **Yaw Accuracy (RMS 1 $\sigma$ )<sup>1</sup>**
- Real-time: 0.3°, Post-processing: 0.15°
  
- **Pitch / Roll Accuracy (RMS 1 $\sigma$ )<sup>1</sup>**
- Real-time: 0.05°, 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**
- 5472×3078 (16:9); 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
  
- **Supported File System**
- FAT ( $\leq 32$  GB); exFAT ( $> 32$  GB)
  
- **Photo Format**
- JPEG
  
- **Video Format**
- MOV, MP4
  
- **Video Resolution**
- H.264, 4K: 3840x2160 30p

#### Gimbal

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

#### Data Storage

- **Raw Data Storage**
- Photo/IMU/Point cloud data storage/GNSS/Calibration files
  
- **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
  
- **Recommended microSD Cards<sup>3</sup>**



- SanDisk Extreme 128GB UHS-I Speed Grade 3
- SanDisk Extreme 64GB UHS-I Speed Grade 3
- SanDisk Extreme 32GB UHS-I Speed Grade 3
- SanDisk Extreme 16GB UHS-I Speed Grade 3
- Lexar 1066x 128GB U3
- Samsung EVO Plus 128GB

#### **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

#### **Notes**

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- 1. The accuracy was measured under the following conditions in a DJI laboratory environment: after a 5-minute warm up, using Mapping Mission with Calibration Flight enabled in DJI Pilot, and with the RTK in FIX status. The relative altitude was set to 50 m, flight speed to 10 m/s, gimbal pitch to -90°, and each straight segment of the flight route was less than 1000 m. DJI Terra was used for post-processing.
- 2. Measured in an environment of 25°C with a target (80% reflectivity) 100 meters away. The result may vary under different test conditions.
- 3. The recommended microSD cards may be updated in future. Visit the DJI official website for the latest information.