

UAS Comparison

Our drone experienced an unintentional hard landing in October during a training mission.

DJI Mavic 2 Enterprise Dual (Current Aircraft)

The drone we own, DJI Mavic 2 Enterprise Dual, has reached end of life and is no longer in production. This aircraft was purchased in 2019. It may be repairable: no guarantee how long parts will be available in the future. Repair costs are in the ballpark of \$1000, not including replacing the damaged battery or replacing the battery in the controller that is weak. This aircraft has a flight time of 17-20 minutes.

Matric 30T

Another option is the Matric 30. The Matric 30 has a 46-minute flight time, a 1 mile zoom camera and an infrared camera 17x better than the camera on the current aircraft. With IP55 protection, the M30 can easily handle adverse weather and temperatures ranging from -4F to 122F. The drones come in a kit, which includes, case, video monitor viewable in sunlight conditions, battery charger, spare props, etc.

Specs Aircraft Matric 30T

- **Dimensions**
(unfolded, excl. propellers)
 - 470×585×215 mm (L×W×H)
- **Dimensions (folded)**
 - 365×215×195 mm (L×W×H)
- **Diagonal Wheelbase**
 - 668 mm
- **Weight (incl. two batteries)**
 - 3770 ± 10 g
- **Max Takeoff Weight**
 - 3998 g
- **Operation Frequency^[1]**
 - 2.4000-2.4835 GHz; 5.725-5.850 GHz
- **Transmitter Power (EIRP)**
 - 2.4 GHz: <33 dBm (FCC); <20 dBm (CE/SRRC/MIC)
 - 5.8 GHz: <33 dBm (FCC/SRRC); <14 dBm (CE)
- **Hovering Accuracy**
(windless or breezy)
 - Vertical: ±0.1 m (Vision System enabled); ±0.5 m (N-mode with GPS); ±0.1 m (RTK)
 - Horizontal: ±0.3 m (Vision System enabled); ±1.5 m (N-mode with GPS); ±0.1 m (RTK)
- **RTK Positioning Accuracy**
(fixed RTK enabled)
 - 1 cm+1 ppm (horizontal)
 - 1.5 cm+1 ppm (vertical)
- **Max Angular Velocity**
 - Pitch: 150°/sec.; Yaw: 100°/sec.
- **Max Tilt Angle**
 - 35° (N-mode and Forward Vision System enabled: 25°)
- **Max Ascent/Descent Speed**
 - 6 m/s, 5 m/s
- **Max Tilt Descent Speed**
 - 7 m/s

- **Max Horizontal Speed**
 - 23 m/s
- **Max Service Ceiling Above Sea Level (without other payload)**
 - 5,000 m (with 1671 propellers)
 - 7,000 m (with 1676 propellers)
- **Max Wind Resistance**
 - 15 m/s
 - 12 m/s during taking off and landing
- **Max Hover Time ^[2]**
 - 36 min
- **Max Flight Time^[2]**
 - 41 min
- **Motor Model**
 - 3511
- **Propeller Model**
 - 1671
 - 1676 High Altitude (not included)
- **Ingress Protection Rating^[3]**
 - IP55
- **GNSS**
 - GPS+Galileo+BeiDou+GLONASS
 - (GLONASS is supported only when RTK module is enabled)
- **Operating Temperature**
 - -20° to 50° C (-4° to 122° F)

Gimbal

- **Angular Vibration Range**
 - $\pm 0.01^\circ$
- **Controllable Range**
 - Pan: $\pm 90^\circ$
 - Tilt: -120° to $+45^\circ$
- **Mechanical Range**
 - Pan: $\pm 105^\circ$
 - Tilt: -135° to $+60^\circ$
 - Roll: $\pm 45^\circ$

Zoom Camera

- **Sensor**
 - 1/2" CMOS, Effective pixels: 48M
- **Lens**
 - Focal length: 21-75 mm (equivalent: 113-405 mm)
Aperture: f/2.8-f/4.2
Focus: 5 m to ∞
- **Exposure Compensation**
 - ± 3 ev (using 1/3 ev as step length)
- **Electronic Shutter Speed**
 - Auto Mode:
Photo: 1/8000-1/2 s
Video: 1/8000-1/30 s
M Mode:
Photo: 1/8000-8 s
Video: 1/8000 -1/30 s
- **ISO Range**
 - 100-25600
- **Max. Video Resolution**
 - 3840×2160
- **Max Photo Size**
 - 8000×6000

Wide Camera

- **Sensor**
 - 1/2" CMOS, Effective pixels: 12M
- **Lens**
 - DFOV: 84°
Focal length: 4.5 mm (equivalent: 24 mm)
Aperture: f/2.8
Focus: 1 m to ∞
- **Exposure Compensation**
 - ± 3 ev (using 1/3 ev as step length)

- **Electronic Shutter Speed**

- Auto Mode:

Video:

1/8000-1/2 s

Video: 1/8000-1/30 s

M Mode:

Photo: 1/8000-8 s

Photo: 1/8000-1/30 s

- **ISO Range**

- 100-25600

- **Max. Video Resolution**

- 3840×2160

- **Photo Size**

- 4000×3000

Thermal Camera

- **Thermal Imager**

- Uncooled VOx Microbolometer

- **Lens**

- DFOV: 61°

Focal length: 9.1 mm (equivalent: 40 mm)

Aperture: f/1.0

Focus: 5 m to ∞

- **Infrared Temperature Measurement Accuracy^[4]**

- ±2°C or ±2% (using the larger value)

- **Video Resolution**

- Infrared Image Super-resolution Mode: 1280×1024

Normal Mode: 640×512

- **Photo Size**

- Infrared Image Super-resolution Mode: 1280×1024

Normal Mode: 640×512

- **Pixel Pitch**

- 12 μm

- **Temperature Measurement Method**

- Spot Meter, Area Measurement
- **Temperature Measurement Range**
 - High Gain Mode: -20° to 150° C (-4° to 302° F)
 - Low Gain Mode: 0° to 500° C (32° to 932° F)
- **Temperature Alert**
 - Supported
- **Palette**
 - White Hot/Black Hot/Tint/Iron Red/Hot
Iron/Arctic/Medical/Fulgurite/Rainbow 1/Rainbow 2

FPV Camera

- **Resolution**
 - 1920×1080
- **DFOV**
 - 161°
- **Frame Rate**
 - 30 fps

Laser Module

- **Wavelength**
 - 905 nm
- **Max Laser Power**
 - 3.5 mW
- **Single Pulse Width**
 - 6 ns
- **Measurement Accuracy**
 - $\pm (0.2 \text{ m} + D \times 0.15\%)$
D is the distance to a vertical surface
- **Measuring Range**
 - 3-1,200 m (0.5×12 m vertical surface with 20% reflectivity)

Vision Systems

- **Obstacle Sensing Range**

- Forward: 0.6-38 m
- Upward/Downward/Backward/Sideward: 0.5-33 m
- **FOV**
 - 65° (H), 50° (V)
- **Operating Environment**
 - Surfaces with clear patterns and adequate lighting (> 15 lux)

Infrared Sensing Systems

- **Obstacle Sensing Range**
 - 0.1 to 10 m
- **FOV**
 - 30°
- **Operating Environment**
 - Large, diffuse, and reflective obstacles (reflectivity >10%)

TB30 Intelligent Flight Battery

- **Capacity**
 - 5880 mAh
- **Voltage**
 - 26.1 V
- **Battery Type**
 - Li-ion 6S
- **Energy**
 - 131.6 Wh
- **Net Weight**
 - Approx. 685 g
- **Operating Temperature**
 - -20° to 50° C (-4° to 122° F)
- **Storage Temperature**
 - 20° to 30° C (68° to 86° F)
- **Charging Temperature**
 - -20° to 40° C (-4° to 104° F)

(When the temperature is lower than 10° C (50° F), the self-heating function

will be automatically enabled. Charging in a low temperature may shorten the lifetime of the battery)

- **Chemical System**

- LiNiMnCoO₂

Auxiliary Lights

- **Effective Illumination Distance**

- 5 m

- **Illumination Type**

- 60 Hz, solid glow

Remote Controller

- **Screen**

- 7.02 inch LCD touchscreen, with a resolution of 1920×1200 pixels, and high brightness of 1200 cd/m²

- **Internal Battery**

- Type: Li-ion (6500 mAh @ 7.2 V)
Charge Type: Supports battery station or USB-C charger maximum rated power 65W (max voltage of 20V)
Charge Time: 2 hours
Chemical System: LiNiCoAlO₂

- **External Battery(WB37 Intelligent Battery)**

- Capacity: 4920 mAh
Voltage: 7.6 V
Battery Type: Li-ion
Energy: 37.39 Wh
Chemical System: LiCoO₂

- **Operating Time^[5]**

- Internal Battery: Approx. 3 hours 18 min
Internal Battery + External Battery: Approx. 6 hours

- **Ingress Protection Rating^[3]**

- IP54

- **GNSS**

- GPS+Galileo+BeiDou

- **Operating Temperature**
 - -20° to 50° C (-4° to 122° F)

O3 Enterprise

- **Operating Frequency^[1]**
 - 2.4000-2.4835 GHz, 5.725-5.850 GHz
- **Max Transmission Distance (unobstructed, free of interference)**
 - 15 km (FCC); 8 km (CE/SRRC/MIC)
- **Max Transmission Distance (with interference)**
 - Strong Interference (urban landscape, limited line of sight, many competing signals): 1.5-3 km (FCC/CE/SRRC/MIC)
 - Medium Interference (suburban landscape, open line of sight, some competing signals): 3-9 km (FCC); 3-6 km (CE/SRRC/MIC)
 - Weak Interference (open landscape abundant line of sight, few competing signals): 9-15 km (FCC); 6-8 km (CE/SRRC/MIC)
- **Transmitter Power (EIRP)**
 - 2.4 GHz: <33 dBm (FCC); <20 dBm (CE/SRRC/MIC)
 - 5.8 GHz: <33 dBm (FCC); <14 dBm (CE); <23 dBm (SRRC)

Wi-Fi

- **Protocol**
 - Wi-Fi 6
- **Operating Frequency^[1]**
 - 2.4000-2.4835 GHz; 5.150-5.250 GHz; 5.725-5.850 GHz
- **Transmitter Power (EIRP)**
 - 2.4 GHz: <26 dBm (FCC); <20 dBm (CE/ SRRC/MIC)
 - 5.1 GHz: <26 dBm (FCC); <23 dBm (CE/ SRRC/MIC)
 - 5.8 GHz: <26 dBm (FCC/SRRC); <14 dBm(CE)

Bluetooth

- **Protocol**
 - Bluetooth 5.1
 -

- **Operating Frequency**
 - 2.4000-2.4835 GHz
- **Transmitter Power (EIRP)**
 - <10 dBm

BS30 Intelligent Battery Station

- **Dimensions**
 - 353×267×148 mm
- **Net Weight**
 - 3.95 kg
- **Compatible Battery Type**
 - TB30 Intelligent Flight Battery
 - WB37 Intelligent Battery
- **Input**
 - 100-240 VAC, 50/60 Hz
- **Output**
 - TB30 Battery Port: 26.1 V, 8.9 A (supported up to two outputs simultaneously)
 - WB37 Intelligent Battery: 8.7 V, 6 A
- **Output Power**
 - 525 W
- **USB-C port**
 - Max. output power of 65 W
- **USB-A port**
 - Max. output power of 10 W (5 V, 2 A)
- **Power Consumption (when not charging battery)**
 - < 8 W
- **Output Power (when warming up battery)**
 - Approx. 30 W
- **Operating Temperature**
 - -20° to 40° C (-4° to 104° F)
- **Ingress Protection Rating^[3]**
 - IP55 (with the cover closed properly)
- **Charging Time^[6]**
 - **Approx. 30 min (charging two TB30 batteries from 20% to 90%)**
 - Approx. 50 min (charging two TB30 batteries from 0% to 100%)

- **Protection Features**

- Anti-Backflow Protection
- Short Circuit Protection
- Over Voltage Protection
- Over Current Protection
- Temperature Protection

Other

- **Footnotes**

- [1] 5.8 and 5.1GHz frequencies are prohibited in some countries. In some countries, the 5.1GHz frequency is only allowed for use indoors.
- [2] The maximum flight time and the hover time were tested in a lab environment and is for reference only.
- [3] This protection rating is not permanent and may reduce over time after long-term use.
- [4] Infrared temperature measurement accuracy was tested in a lab environment and is for reference only.
- [5] The maximum operating time was tested in a lab environment and is for reference only.
- [6] The charging time was tested in a lab environment at room temperature. The value provided should be used for reference only.