



User manual

X30TL

30x Zoom IR Laser Night Vision Object Tracking Gimbal Camera

Compatible with DJI M200/M210/M210RTK and V2 series



Images are for reference only, please subject to the actual product.

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X30TL High-precision Camera

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Camera Introduction

X30TL is a 3-axis high stabilized gimbal with a 30x optical zoom camera and a 500 meters laser supplement. The 3-axis gimbal based on FOC motor control technology, adopts pinpoint-precision encoder in each motor. It's developed based on DJI PSDK, compatible with DJI drones M200 / M210 / M210RTK. Controlled by APP "DJI Pilot" it can fulfill many powerful functions, such as: shoots or records with 30 times optical zoom, object tracking, IR laser night vision and so on. Moreover, the laser supplement supports people to observe even at pitch night, engineering for night surveillance and search. All parameters have been perfectly set, you just need to install the gimbal camera to UAV, then ready to fly.

Camera Description



Caution! Laser radiation, don't stare at laser light with naked eye, In case any harm.



Please make sure that the motor is not stopped by any object during the rotation, if the gimbal is blocked during rotation, please remove the obstruction immediately.

Mechanics@Electronic Characteristics

| | | | |
|-----------------|---------------|--------------------------|-------------|
| Input voltage | 3S~4S | Idle current | 800mA@12V |
| Dynamic current | 1000mA@12V | Working environment temp | -40℃ ~ +60℃ |
| Size | 178*160*153mm | Weight | 770g |

Pitch/Tilt: Pitch angle range of action : $\pm 90^\circ$

Roll: Roll angle range of action : $\pm 85^\circ$

Yaw/Pan: Yaw angle range of action : $\pm 360^\circ$

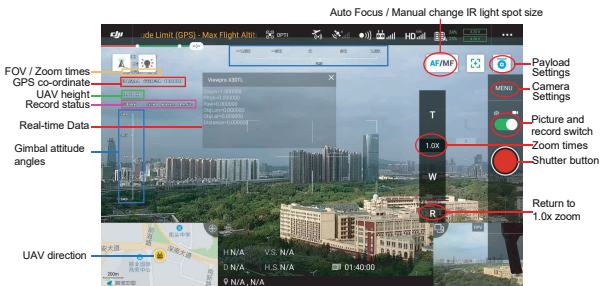
Vibration angle: Pitch/Roll: $\pm 0.02^\circ$, Yaw: $\pm 0.03^\circ$

Application Description

DJI Pilot

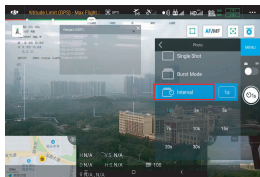
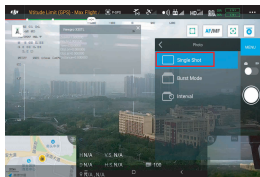
After mounting X30TL on DJI drone and connecting with remote control, you can operate the gimbal camera via APP DJI Pilot. The gimbal attitude angels (tilt and pan) can be controlled by DJI remote control. Control method please refer to DJI related user manual.

1. Menu instruction

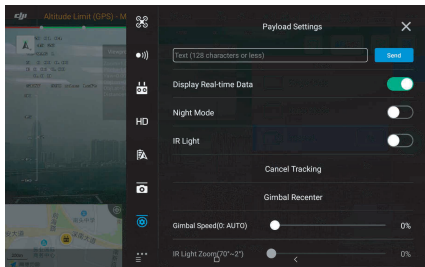


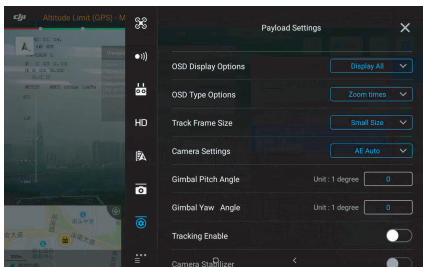
1.1 Camera settings - Photo mode settings:

You can choose single shot, burst mode or interval mode.



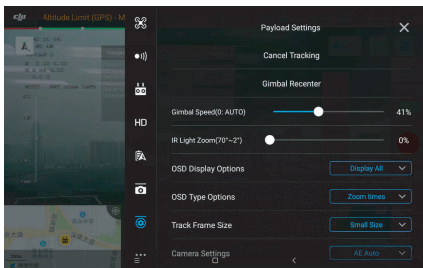
1.2 Payload Settings:





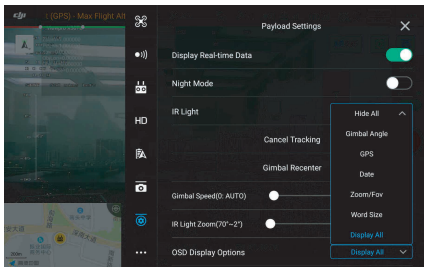
Gimbal Speed:

Gimbal speed is adjustable. When it's 0%, the speed will be adjust automatically, quick speed for wide end, slow speed for tele end. When you adjust it to 1% manually, the speed will be low even in wide end. The high the percentage is, the quicker the speed will be.

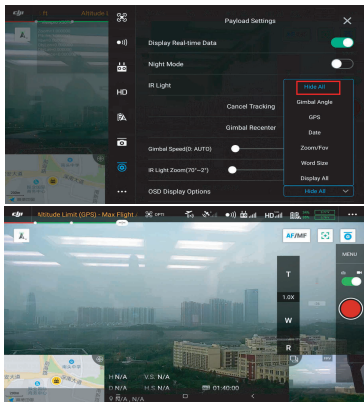


OSD Display Options:

You can DIY you on-screen-display (OSD). Choose Hide All, then you can choose to display the items you want only.

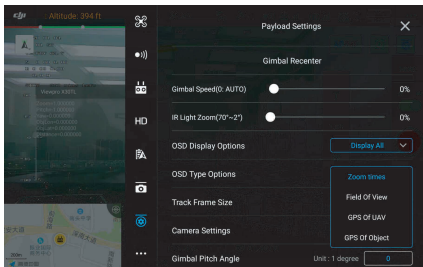


Hide All:



OSD Type Options:

You can choose to display FOV (Field of View) or Zoom times on the OSD, GPS co-ordinate of UAV or the object (estimate).



Digital Zoom Options:

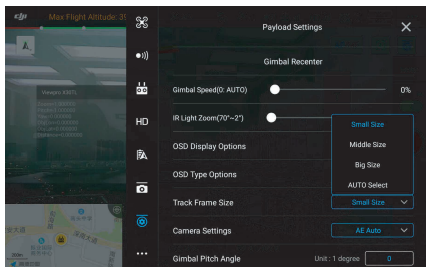
The EO camera of X30TL has 12 times digital zoom. Press T continually will get digital zoom automatically after 30x full optical zoom. The zoom times number will become blue when it's in digital zoom status.





Track Frame Size:

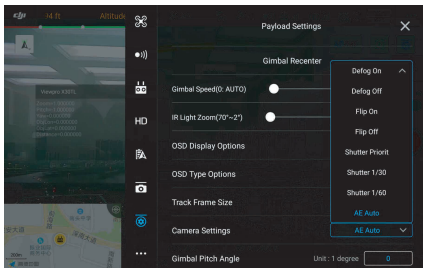
The object tracking pixels size can be chosen, Small Size, Middle Size, Big Size and AUTO Select. Choose according to the target object size. The more accurate size, the better tracking performance.



Camera Settings:

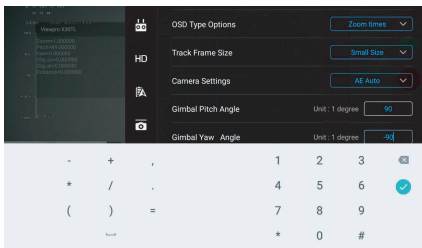
The camera provides more options to adapt various applications better. Choose defog on to have better penetrability view in fog environment. Select flip on when you mount the gimbal camera upset down.

Select Shutter Priority (stabilization priority) or AE Auto (Auto Exposure, picture quality priority) according to your application. For Shutter priority, you have 2 options. 1/30 is quicker than 1/60. Click Shutter Priority first, then choose 1/30 or 1/60 to enable this function.



Gimbal Pitch / Yaw Angle Settings:

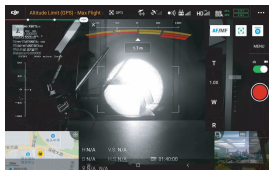
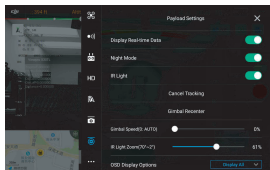
Input the pitch / yaw angle degrees to get exact attitude angles directly.



2. Main functions instruction

2.2 IR laser light for Night Mode

X30TL can let you see clearly even in a pitch-dark environment with an invisible light. Switch on IR light (then Night Mode will be turned on automatically), you will see a laser light spot on the target directly. The spot size is adjustable. Large size for wide end and small size for tele end automatically. You can adjust the light beam size manually from Payload Settings, then zoom to see clearly.

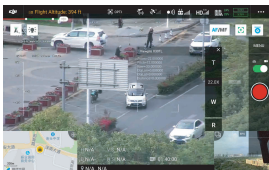
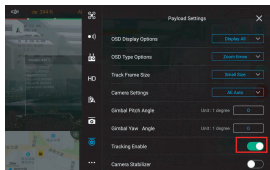


2.2 Object tracking

Start tracking: Enable tracking function, then single touch on the screen to pick tracking object.

Stop tracking: Payload Settings --CANCEL TRACKING

*Note: the gimbal will follow the object automatically after object is chosen, to control the gimbal manually please cancel tracking first.



Specification

Hardware Parameter

| | |
|---------------------------|--|
| Working voltage | 14V ~ 16V |
| Input voltage | 4S |
| Output voltage | 5V (connect with PWM) |
| Dynamic current | 1000mA @ 12V |
| Idle current | 800mA @ 12V |
| Power consumption | ≤ 12W |
| Working environment temp. | -40℃ ~ +60℃ |
| Output | Skyport |
| Local-storage | SD card (Up to 128G, class 10, FAT32 or ex FAT format) |
| Control method | DJI Pilot |

Gimbal Spec

| | |
|-------------------|---------------------------------|
| Pitch/Tilt | ±90° |
| Roll | ±85° |
| Yaw/Pan | ±360°N |
| Vibration angle | Pitch/Roll: ±0.02°, Yaw: ±0.03° |
| One-key to center | √ |

Camera Spec

| | |
|--------------------------|---|
| Imager Sensor | SONY 1/2.8" "Exmor R" CMOS |
| Picture quality | Full HD 1080 (1920*1080) |
| Effective pixel | 2.13MP |
| Lens optical zoom | 30x, F=4.3~129mm |
| Digital zoom | 12x (360x with optical zoom) |
| Min object distance | 10mm(wide end) to 1200mm(tele end). Default 300mm |
| Horizontal viewing angle | 1080p mode: 63.7°(wide end) ~ 2.3°(tele end) |
| | 720p mode: 63.7°(wide end) ~ 2.3°(tele end) |
| | SD: 47.8°(wide end) ~ 1.7°(tele end) |
| Sync system | Internal |
| S/N ratio | more than 50dB |
| Min illumination | Color 0.01lux@F1.6, AGC on, 1/30s |
| Exposure control | Auto, Manual, Priority mode(shutter priority & iris priority), Bright, EV compensation, Slow AE |
| Gain | Auto/Manual 0dB to 50.0dB(0 to 28 steps + 2 setep/ total 15 steps) Max.Gain Limit 10.7 dB to 50.0dB (6 to 28 steps + 2 step/ total 12 steps) |
| White balance | Auto, ATW, Indoor, Outdoor, Outdoor Auto, Sodium Vapor Lamp (Fix/Auto/Outdoor Auto), One-push, Manual |
| Shutter speed | 1/1s to 1/10,000s, 22 steps |
| Backlight compensation | Yes |
| Aperture control | 16 steps |
| Defog | Yes |
| OSD | Yes |
| Fotoformate | JPEG |
| Videoformate | MP4 |

| Camera Object Tracking | |
|---|---|
| Update rate of deviation pixel | 50Hz |
| Output delay of deviation pixel | <15ms |
| Minimum object contrast | 5% |
| SNR | 4 |
| Minimum object size | 16*16 pixel |
| Maximum object size | 160*160 pixel |
| Tracking speed | ±32 pixel/frame |
| Object memory time | 100 frames (4s) |
| The mean square root values of pulse noise in the object position | < 0.5 pixel |
| Laser Light Supplement | |
| Effective range | 500 meters |
| Light wave length | 850 ± 10nm (940nm, 980nm) |
| Illumination angle | power zoom synchronously, 70°~2.0° adjustable |
| Zoom time | 2s (wide end - tele end) |
| Power consumption of laser chipset | 2 ± 0.2W |
| Illumination angle | Tele end 2.0°: effective range 500 meters, spot diameter < 20 meters Wide end 70°: effective range > 40 meters |
| Working voltage | DC12V ± 10% |
| Power consumption in total | < 11W |
| Control system | PWM/TTL |
| Communication system | UART_TTL |
| Communication protocol | PELCO-D (default baud rate 9600bps) |
| Packing Information | |
| N.W. | 770g |
| Product meas. | 178*160*153mm |
| Accessories | 1pc gimbal camera device / High quality plastic box with foam cushion |