



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



To avoid mis-focus, the camera is set to not focus within 7 meters.



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



Please make sure that the motor is not blocked 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 C ~ +60 C
Size	178*160*153mm	Weight	770g

Pitch/Tilt: Pitch angle range of action : ± 90

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

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

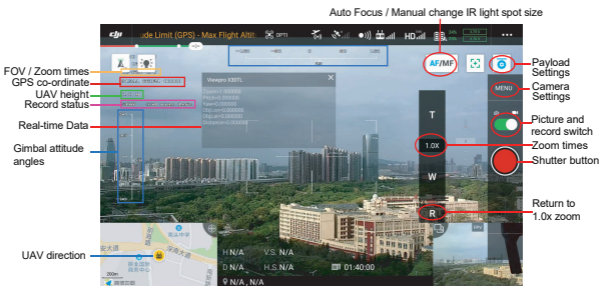
Vibration angle: Pitch/Roll: $\pm 0.02^{\circ}$, Yaw: $\pm 0.03^{\circ}$

Application Description

DJI Pilot

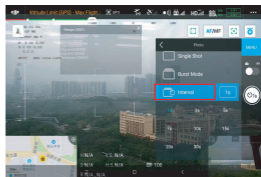
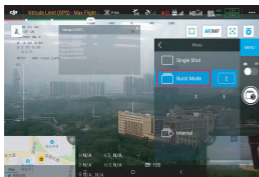
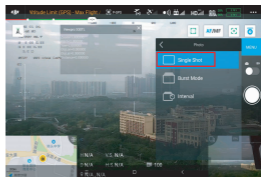
After mounting X30TL on DJI drone and connecting with remote control, you can operate the gimbal camera via APP DJI Pilot. The gimbal attitude angels (tilt and pan) can be controlled by DJI remote control. Control method please refer to DJI related user manual.

1. Menu instruction

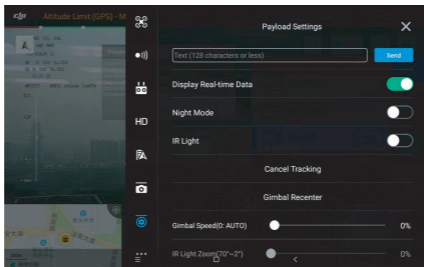


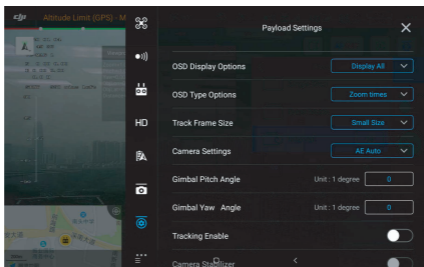
1.1 Camera settings - Photo mode settings:

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



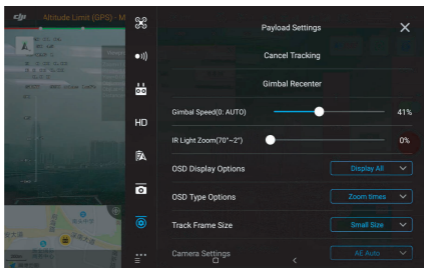
1.2 Payload Settings:





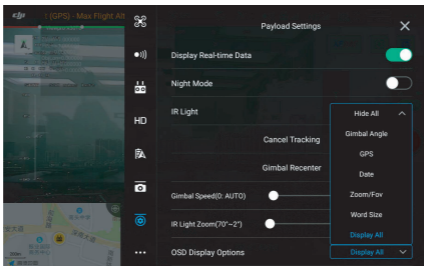
Gimbal Speed:

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.

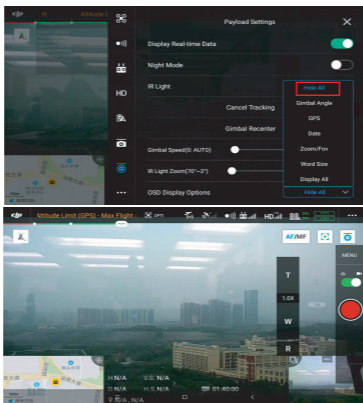


OSD Display Options:

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

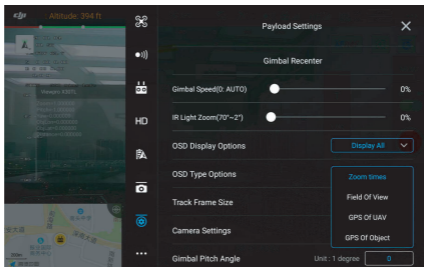


Hide All:



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:

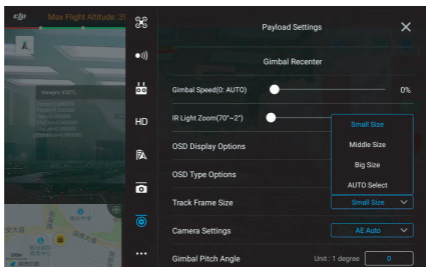
The EO camera of X30TL has 12 times digital zoom. Press T continually will get digital zoom automatically after 30x full optical zoom. The zoom times number will become blue when it's in digital zoom status.





Track Frame Size:

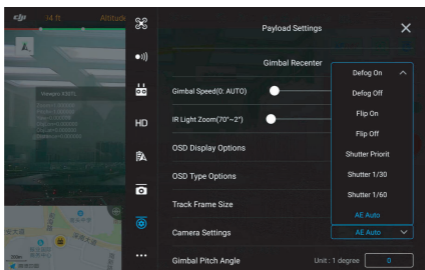
The object tracking pixels size can be chosen, Small Size, Middle Size, Big Size and AUTO Select. Choose according to the target object size. The more accurate size, the better tracking performance.



Camera Settings:

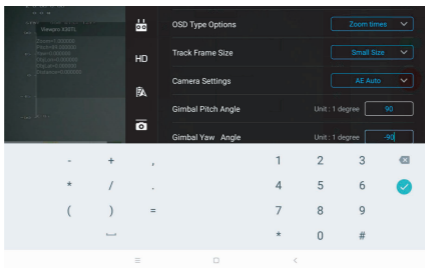
The camera provides more options to adapt various applications better. Choose defog on to have better penetrability view in fog environment. Select flip on when you mount the gimbal camera upset down.

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



Gimbal Pitch / Yaw Angle Settings:

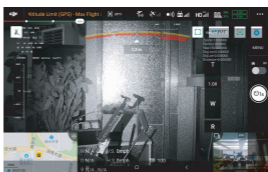
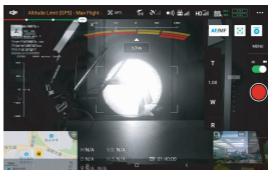
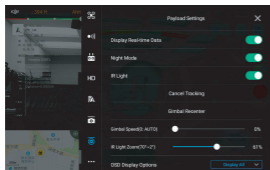
Input the pitch / yaw angle degrees to get exact attitude angles directly.



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.

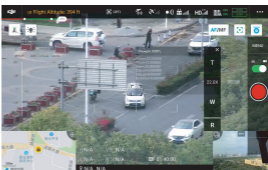
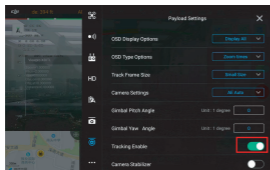


2.2 Object tracking

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