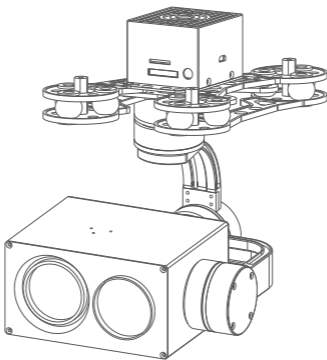




User manual

Z12TL

12x Zoom Laser Night Vision Object Tracking Camera Gimbal



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

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Z12TL Pinpoint-precision Gimbal

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Z12TL Network Camera

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Gimbal Introduction

Z12TL is a pinpoint-precision professional 3-axis gimbal with a 12x full 1080P optical starlight zoom network camera which based on FOC motor control technology, adopts pinpoint-precision encoder in each motor. Z10TL can achieve aerial remote distance or zoom night recording, it is designed for various fields like public security, fire fighting, electric power system and rescue etc.

The speed of Z12TL gimbal is adjustable, LOW speed mode is used for large zoom range, the control will be more accurate; Fast speed mode is used for small zooming range, which makes the gimbal control sensitive and quick. Also the one-key to center function will allow the gimbal return to initial position automatically and rapidly.

Z12TL supports PWM and serial command control, suitable for close range remote control or remote data command control.

Object Tracking Function

1. Function description

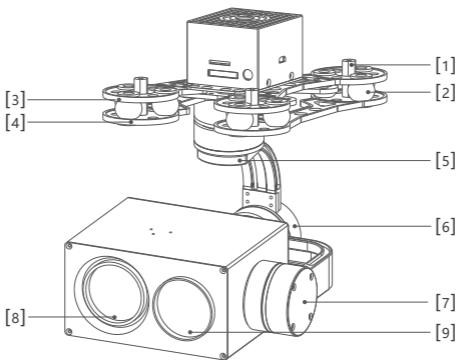
Build-in normalization, cross-correlation and tracking algorithm, combining with object missing recapture algorithm, achieve stable track of the target.

Support custom characters of user OSD, adaptive gate, cross cursor, tracking information display.

2. Tracking Performance

- 1) Update rate of deviation pixel 50Hz
- 2) Output delay of deviation pixel <15ms
- 3) Minimum object contrast 5%
- 4) The minimal signal-to-noise ratio (SNR) 4
- 5) Minimum object size 16*16 pixel
- 6) Maximum object size 160*160 pixel
- 7) Tracking speed 32 pixel/frame
- 8) The mean square root values of pulse noise in the object position <0.5 pixel

Gimbal Description



[1] Gimbal fixed copper cylinder

[2] Damping balls

[3] Upper damping board

[4] Lower damping board

[5] YAW axis motor

[6] Roll axis motor

[7] Pitch axis motor

[8] Light supplement

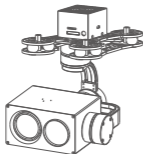
[9] HD zoom network camera



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.

Packing list

Gimbal*1



Screw pack*1

Screw pack*1
(M3*5mm button head hexagon screw*12)

Copper cylinders*4

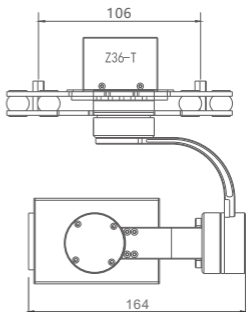
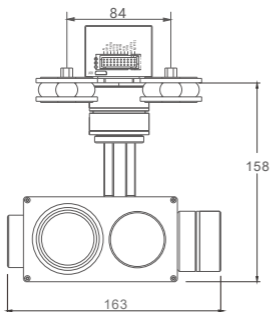


Damping balls*12

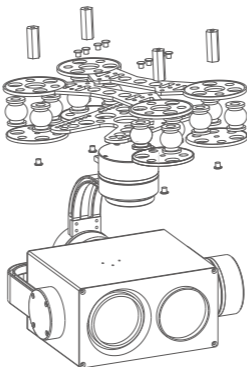


Gimbal Dimension

Unit : mm



Installing



Mechanics@Electronic Characteristics

Input voltage	3S~ 4S	Idle current	800mA@12V
Dynamic current	450mA@12V	Working environment temp	-20 C ~ +80 C
Size	L163*W 164*H158mm	Weight	1265g

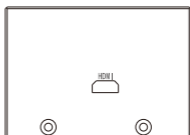
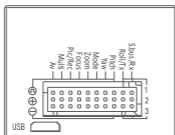
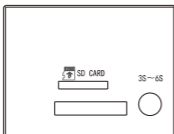
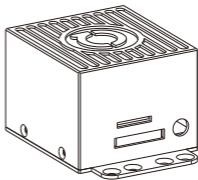
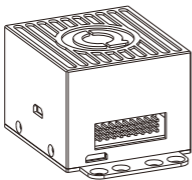
Working Characteristics

Pitch/Tilt: Pitch angle range of action : ± 90
Roll: Roll angle range of action : $\pm 85^{\circ}$
Yaw/Pan: Yaw angle range of action : $\pm 150^{\circ}$
Vibration angle: Pitch/Roll: $\pm 0.02^{\circ}$, Yaw: $\pm 0.03^{\circ}$

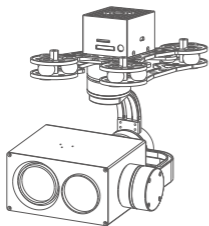
Gimbal's Signal Wire Box

Size:49*45.4*35.7

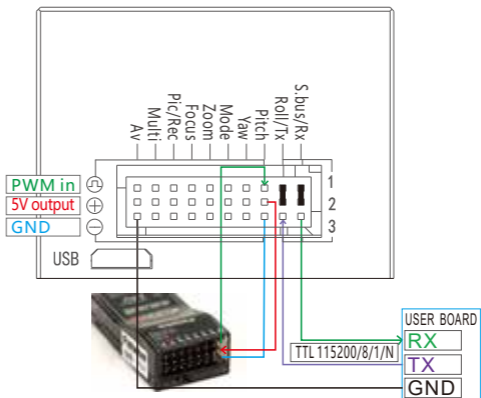
Unit : mm



Connection of Control Box and Wiring Instruction



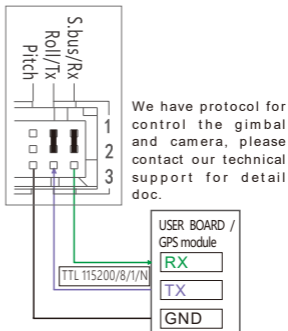
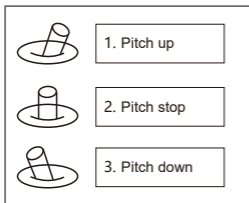
HDMI: micro HDMI OUTPUT
1080P 60fps default
SD card: max 128G, class10
FAT32 or exFAT format



S.bus/Rx: connect to Rx2 for track function.

Roll/ Tx: connect to Tx2 for track function.

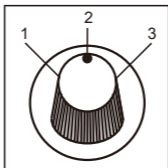
Pitch: PWM in, pitch control



Yaw: PWM in, Yaw control



Mode: Change the speed / home position



Position 1: Lowest speed for pitch and yaw.

Position 2: Middle speed for pitch and yaw.

Position 3: Highest speed for pitch and yaw. The speed is continuously quickly from 1 to 3.

One click: Home position.

Two click: Look down.

Three click: Yaw not followed by frame.

Four click: Yaw followed by frame.

Five click: Restore the factory settings.

(Click = from 2 to 3 and back to 2 quickly)

ZOOM: Zoom the camera

Focus: Focus the camera



1. Zoom tele



2. Stop zoom



3. Zoom wide



1 Zoom laser light tele

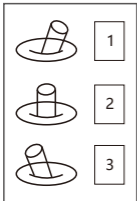


2 Stop zoom laser



3 Zoom laser light

Pic /Rec picture / Start record, stop record

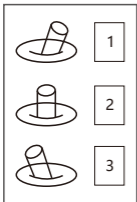


Switch 2 to 1: Start record / stop record. start record, the OSD display rec hh:mm:ss ; stop record, the OSD display STBY.

Switch 2 to 3: Take a picture.

OSD display ' REC IMG' a second.

Multi: Tracking control / camera ICR on, laser on/ camera ICR off, laser off



1. Tracking start

2. Stop tracking.

From 2 to 3: Camera ICR on, laser on.

(ICR on = Camera night mode), use 'focus' can zoom laser.

From 2 to 3 again: Camera ICR off, laser off

(ICR off = Camera day mode)

AV: NO AV output this model.

Camera Characteristics

- 1080p (1920 x 1080) HD image quality
- IMX185-1/1.9" high-performance CMOS sensor, 2MP pixel, high picture quality and high sensitivity
- Powerful Digital zoom -12x optical zoom, 12x digital zoom, excellent autofocus Performance: fixed aperture is F1.5~1.9 with a focal length range of 7.0-84mm
- Video output pixel (H) x (V) : 1920 x 1080
- Video output: 1080p/25, 1080p/30
- Day/night function (on, off, automatic)
- Multiple white balance models
- Powerful low noise effect and excellent noise reduction performance
- Support for ultra-low illumination: 0.05Lux@F1.6 (color), 0.01Lux@F1.6 (black) White), 0Lux (IR)
- S/N ratio more than 55dB
- Image effects (e-flip, black and white, mirror, image GAMMA, e-mist, Numbers) Wide dynamic
- Design for UAV aerial photography, according to aerial characteristics, using fast focus algorithm, focus time <1s.

Mult interface, analog video output, RJ45 port 1080p@25fps HD video output, SD card photo

Film, video storage, or PWM to control the camera to zoom, manual focusing, recording, video, support serial port control camera functions, set camera parameters.

Light Supplement Characteristics

Effective range	300 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 range	Tele end 2.0°: effective range 300 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)
Working temp	-20℃~+80℃
Environment temp	-40℃~+80℃