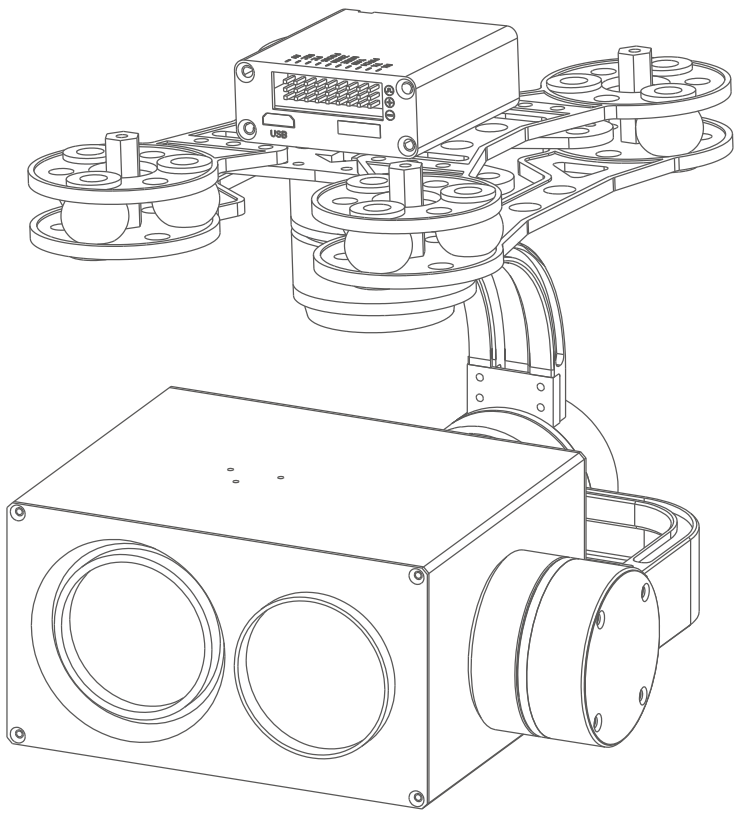
FOXTECH

Zoom camera for UAV, See details clearly far away

User manual

FH312 Night Vision 12X Optical Zoom Camera with 3-axis Gimbal



Contents

High-precision gimbal

Network camera

Gimbal introduction

FH312 uses professional three axis stabilized zoom gimbal, adopt high precision encoder FOC control scheme, mount 12 times optical zoom, 1080p Full HD night vision network camera, Realize long-distance zoom night aerial photography in the air, designed for public security, fire protection, electricity, etc.

Gimbal characteristics:

1)The speed of gimbal is adjustable: At large times of the camera,adjust to slow speed,control is more accurate ;and at small times of the camera, use fast speed, control is more sensitive and faster.

2)The function of one button back to home position: return initial position automatically and rapidly by one button.

3)Support PWM control and serial command control, suit for close distance remote control or remote data transferring command control gimbal and camera.

Object tracking function(optional)

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,trace information display.

2、Tracking performance

1)Update rate of deviation pixel 50Hz

2)Output delay of deviation pixel <15ms

3)Minimum target contrast 5%

4)the minimal signal-to-noise ratio (SNR) 4

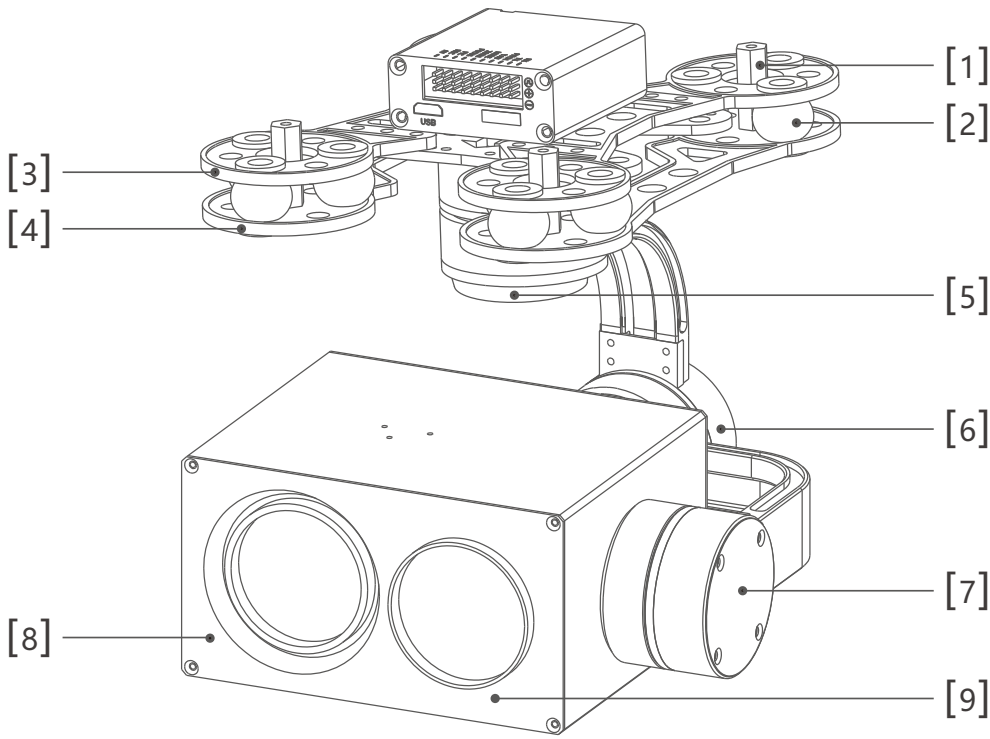
5)Minimum target size 16*16 pixel

6)Maximum target size 160*160 pixel

7)Tracking speed 32 pixel/frame

8)The mean square root values of pulse noise in the target position<0.5 pixel

Gimbal description



[1]Gimbal fixed copper pillar

[2]Damping sphere

[3]Upper plate of gimbal board

[4]Under plate of gimbal board

[5]YAW axis motor

[6]Roll axis motor

[7]Pitch axis motor

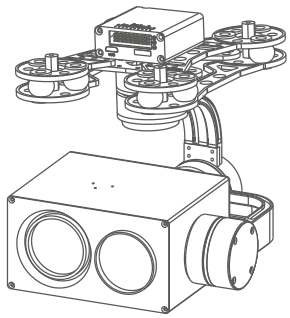
[8]Lighting device

[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

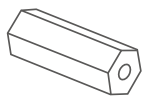
Gimbal*1



Screw pack*1

M3*5mm half round inner six angle screw*12
(fixed copper pillar and damping plate)

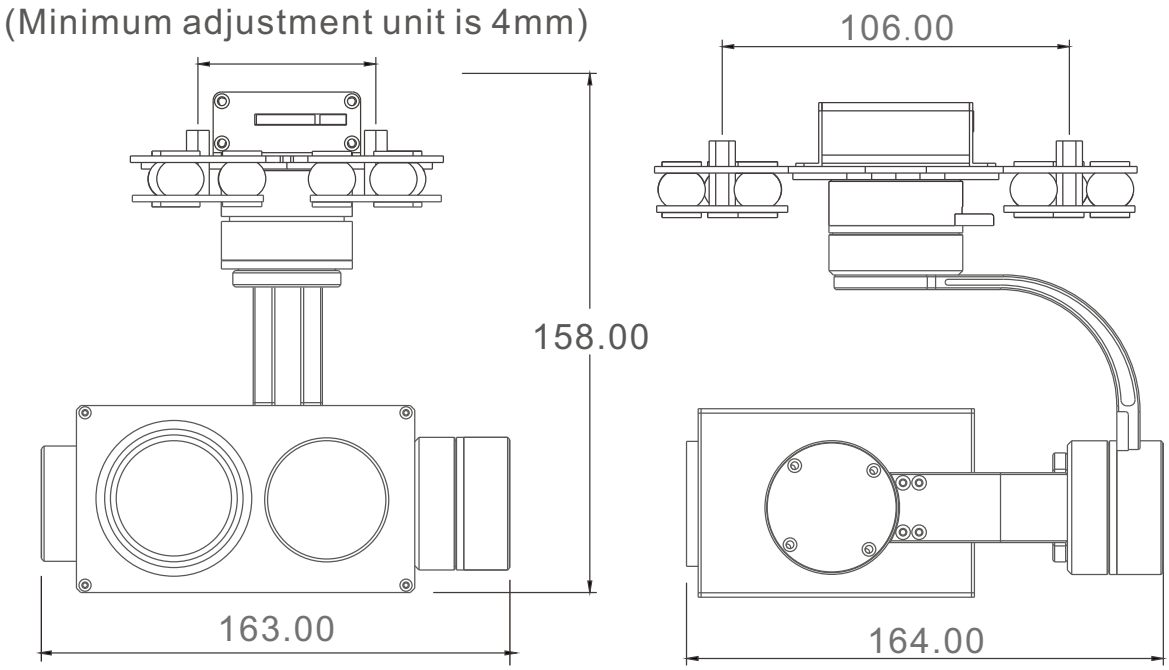
Copper pillar*4



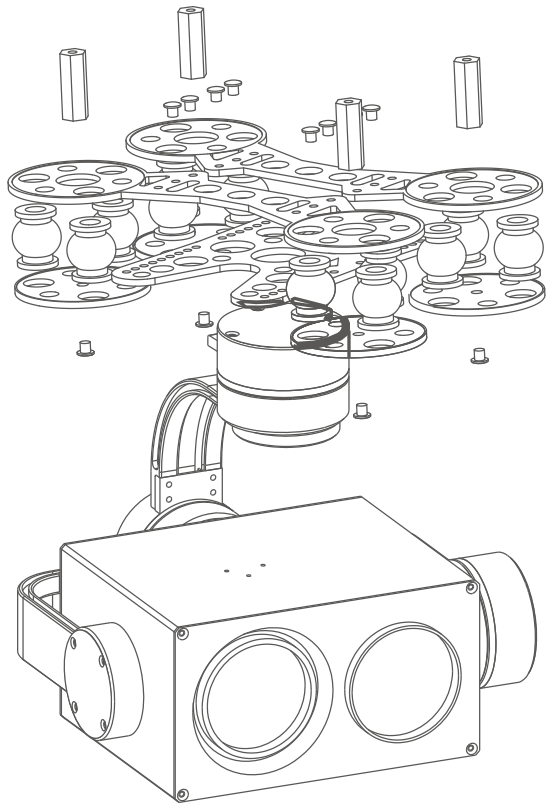
Damping sphere*12

Mounting plate dimension drawing

unit:mm



Installing



Mechanics@Electronic characteristics

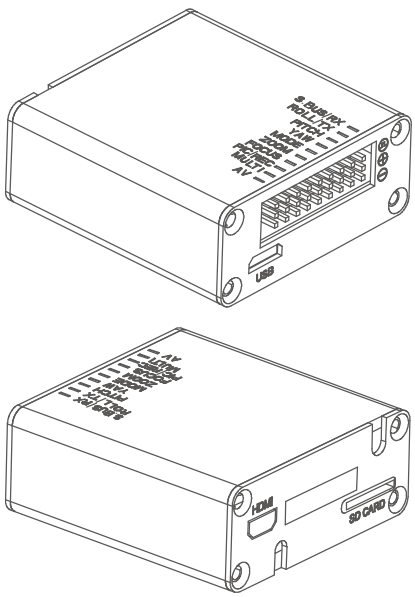
Voltage	3S~6S(12V)	Quiescent current	330mA@12V
Working current	450mA@12V	Work environment	-20°~+80°
Size	L163*W164*H158mm	Weight	1265g

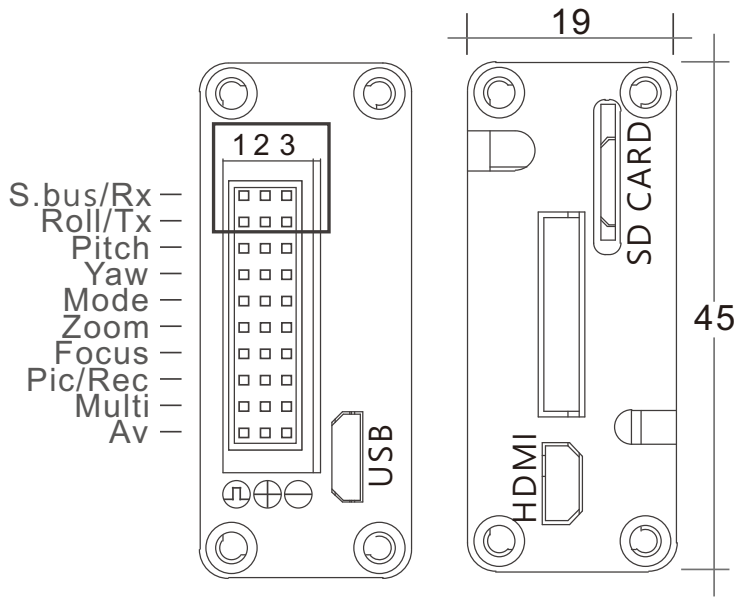
Working characteristics

Pitch angle range of action:-90°~+90°
Roll angle range of action:-85°~+85°
Yaw angle range of action:-150°~+150°
Angle jitter:pitch and roll direction±0.02° ,horizontal direction ±0.03°

Gimbal signal wire box

unit:mm





Note: This product has internet access output and no HDMI output, SD CARD at the tail of camera

Connection of control box and wiring instructions

1、Camera control line

Zoom: camera zoom control line, connect PWM receiver on third gear, or rocker.

Focus: camera manual focus control line, connect receiver on third gear, or rocker. If not connect, the camera will focus automatically after zooming.

Pic/Rec: photography/video, mode switching, video and photography control, connect receiver on third gear.

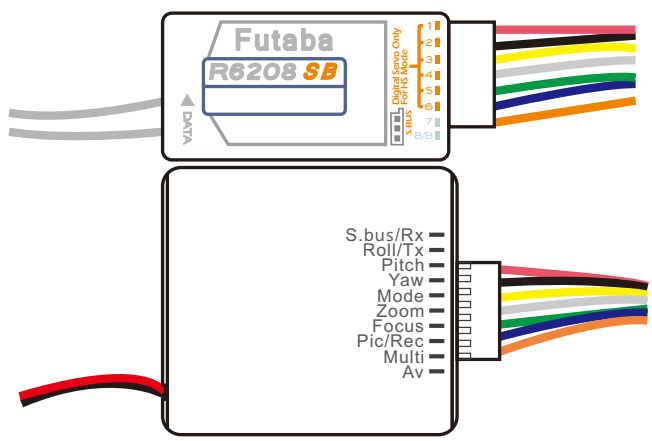
Switch to high:

Start video, REC ON display

Switch to middle :

Stop recording, STBY display

Switch to low: Take photos, SNAP display



Multi: Night view mode on / off, Laser on / off

Switch from middle to high: camera night feel infrared mode (black and white mode)

Switch from middle to high again: Camera color mode

Switch from middle to low; Turn on the laser in the camera night sensitive infrared mode(pay special attention to safety!!! High-power laser

You can't look straight into your eyes, or face consequence!!!)

Switch from middle to low again :Turn off the laser

AV: analog output signal

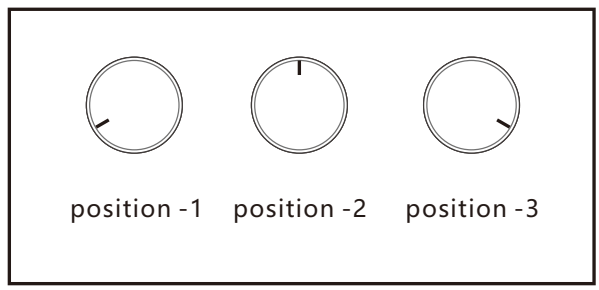
GImbal PWM signal instructions:

YAW directional channel: speed mode ,connect rocker channel, (or third gear switch channel, stopping need third gear to middle position.)

PITCH Pitch channel：speed mode ,connect rocker channel, (or third gear switch channel, stopping need third gear to middle position.)

MODE gimbal one button back and speed adjustment：angle mode, A knob or a thirt gear channel switch.

Functional descriptions of mode (regard the third switch channel mode as the example)



Turn the knob to the three position: Low speed & not follow yaw mode, at this moment, the joystick controls YAW and PITCH, gimbal has the lowest speed of movement, its yaw does not follow the rotation of the aircraft ;

Turn the knob to any position above three:variable speed & following mode, at this moment, the joystick controls YAW and PITCH, The movement speed of gimbal rises(Speed varies with position) ,gimbal works in follow yaw mode.

Turn the knob to the one position : gimbal returns to the home position;

Toggle switches one time between position -2 and -1 rapidly, gimbal returns to the home position;

Toggle switches two times between position -2 and -1, gimbal use speed mode (profile 1)

Toggle switches three times between position -2 and -1, gimbal use angle mode (profile 2);

Toggle switches four times between position -2 and -1, calibrate the accelerator.

Toggle switches five times between position -2 and -1, calibrate the gyroscope

Note: GImbal turns on in the static state, and the gyroscope is automatically calibrated ;The working mode of gImbal at the next boot time is the mode used last time, factory mode is speed mode.

Camera characteristics

- 1080(1920*1080)HD image quality.
- IMX185-1/1.9 high performance CMOS sensor, 2 million pixels, high picture quality and high sensitivity.
- Powerful zoom ability 12 times optical zoom, 12X digital zoom, excellent autofocus performance, aperture range of F1.5~F1.9, focal length range of 7.0~84mm.
- Video output pixel (H) * (V): 1920*1080.
- Video formats 1080p/25, 1080p/30
- Daily / night function (on, off, automatic)
- Multiple white balance modes
- Powerful low noise effect and excellent noise reduction performance
- Support starlight class ultra low illumination: 0.005Lux@F1.5 (color), 0.0005Lux@F1.5 (black and white), 0Lux (IR)
- The signal-to-noise ratio>55dB
- Picture special effects (electronic flip, black and white, mirror image, image GAMMA, electronic fog, digital wide dynamic)

Speed autofocus, focusing speed <1s, designed for UAVs.
Rich interface, analog video output, Network port 1080p@25fps HD video output, SD card photos and video storage, Client or use the PWM to control the camera zoom autofocus. Manual focus, camera, video, support serial control camera functions, set the camera parameters.

Lighting device characteristics

- Valid distance: ≥500m
- Lighting wavelength: 85010nm(940nm,980nm)
- Lighting angle: Electric continuous zoom ,continuously adjust
- Zoom time: 2s (Near angle, far angle)
- Laser chip power : 2±0.2W
- Lighting angle:
  Far angle : Finite distance , spot diameter < 20m
  Near angle , Finite distance>40m
- Working voltage: DC12V±10%
- Total power consumption: < 11W
- Control mode: PWM/TTL command control
- Communication mode: UART_TTL
- Communication protocol: Pelco_D protocol (9600bps)
- Working temperature: -20℃~+80℃
- Storage temperature: -40℃~+80℃