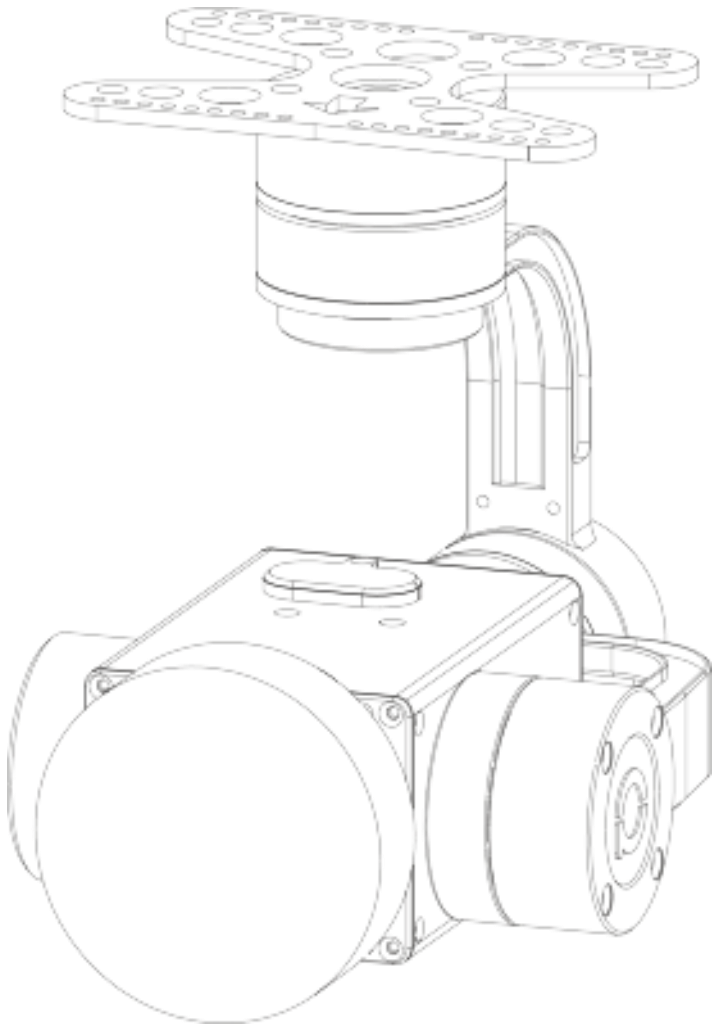
Z-IR50 Gimbal

IRSEEN



Content

Z-IR50

50mm Thermal Camera

Graph of GPS Data and Serial Port Wires

Brief Introduction

Z-IR50 is a high-precision single light gimbal at tri-axis stabilization structure. With FOC controlling technique, Z-IR50 achieves high stabilization in a small housing, light in weight as well as low in power consumption.

1) Adjustable moving speed: lower speed for short focus and higher speed for long focus

2) Resume to the center of FOV by one click

3) Support both PWM, S.BUS and serial port command control that are feasible for short range remote control as well as long distance data transmission control

Target Tracking (Standard Configuration)

1. Description

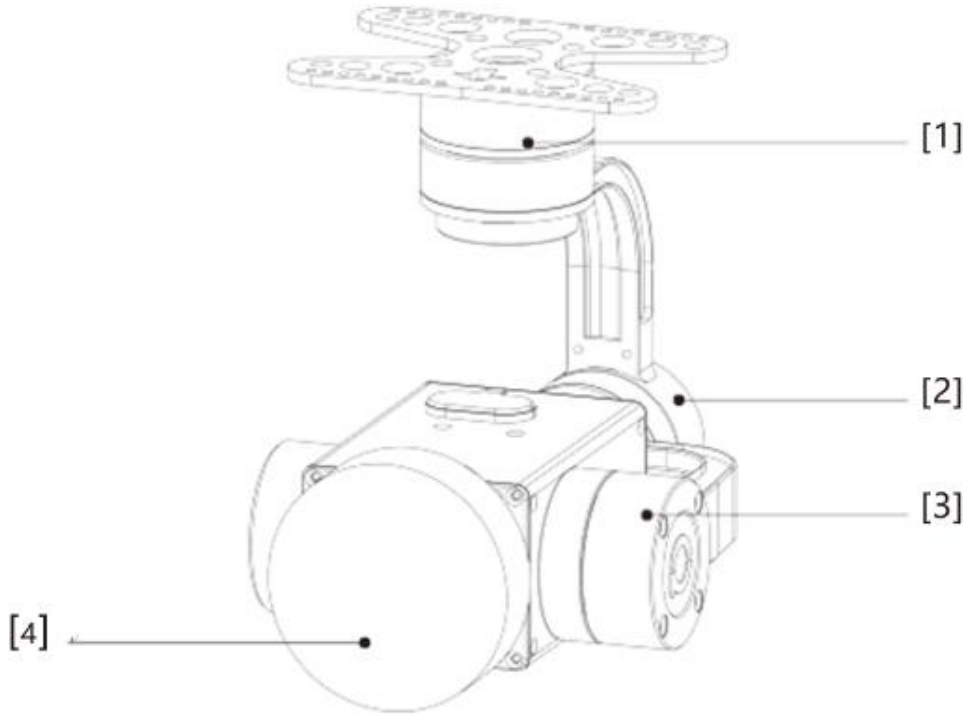
Imbedded normalization cross correlation and target relocking algorithms, the gimbal could track a target stably and steadily.

Support to display characters customized by users, adaptive gate and display of cross hair and tracking information.

2. Tracking Performance

1) Data refresh rate 50Hz
2) Image delay < 15ms
3) Minimum target contrast 5%
4) Minimum SNR 4
5) Minimum target size 16*16 pixels
6) Maximum target size 160*160 pixels
7) Tracking speed ± 32 pixels/frame
8) Root mean square of noise at the target position < 0.5 pixel
9) Target memory time: 100 frames

Description



[1] Electrical Machine at Azimuth Direction

[2] Electrical Machine at Rolling Direction

[3] Electrical Machine at Pitching Direction

[4] 50mm 640*480 Thermal Camera

Please make sure that nothing is blocking the electrical machine during operation.

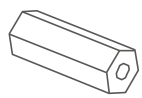
Package List

Gimbal*1

Package of Screws*1

M3*5mm hexagon socket head cap screw*4(for fixing copper cylinder and shock absorption boards)

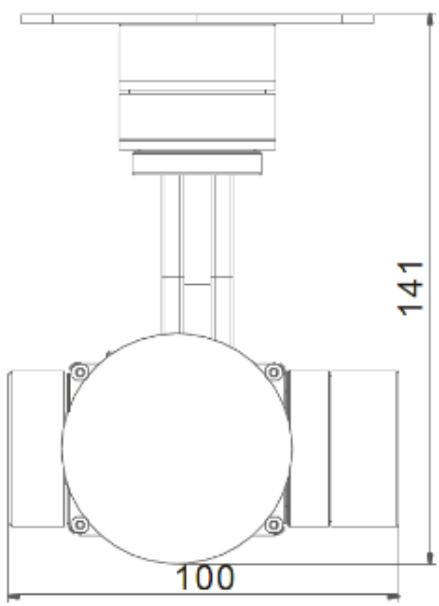
Copper Cylinder*4

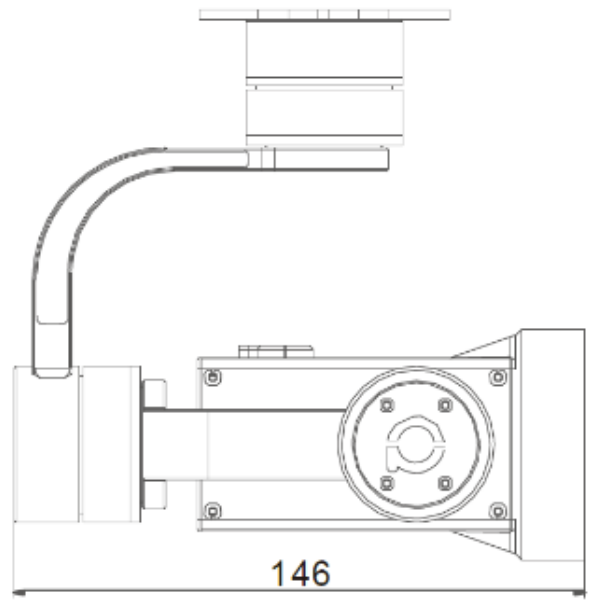


Shock Absorption Board*12

Payload Board Dimension

Unit: mm





Installation

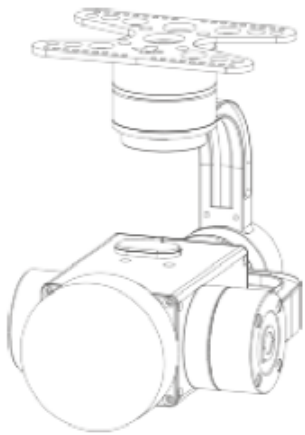
Electronic Features

Working Current: quiescent current: 400mA(@12V) dynamic current: 500mA(@12V)	
Input Voltage: 3S~4S	Working Temperature: -20° C ~ 80° C
Size: L 100mm*W146mm*H141mm	Weight: 1210g

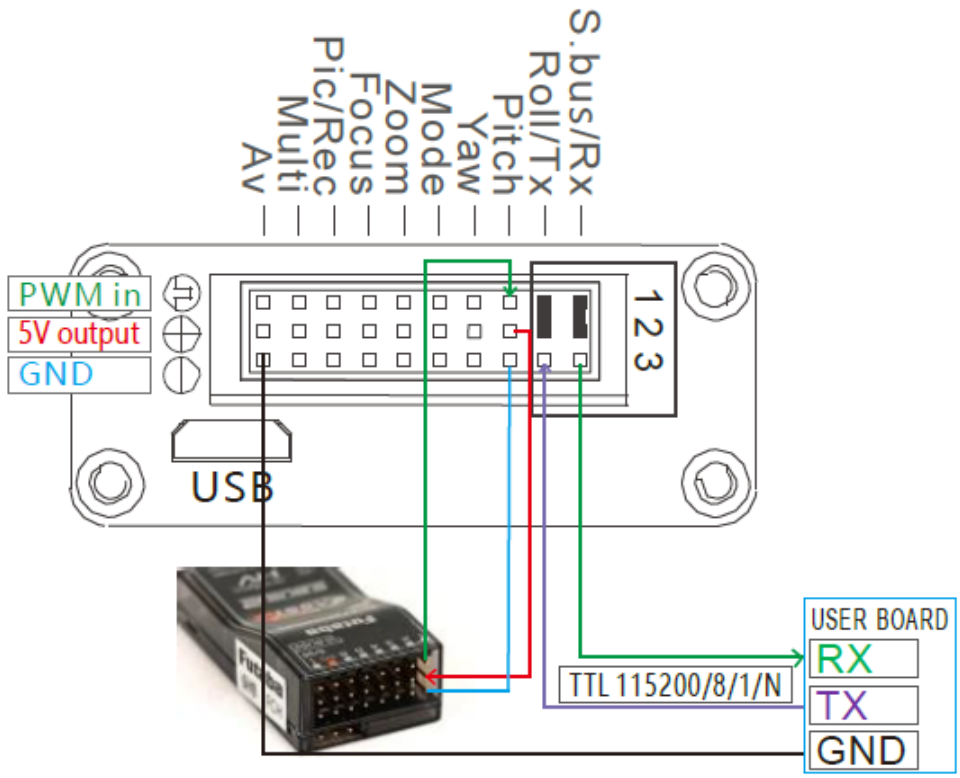
Working Index

Pitching Range: ±90°	Rolling Range: ±85°	Azimuth Range: ±170°
Shaking: pitch & roll: ±0.01°	horizontal: ±0.01°	

Connection



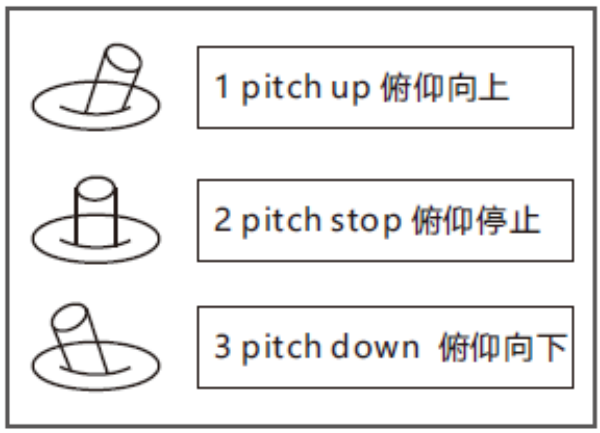
HDMI : micro HDMI OUTPUT
1080P 60fps default
SD card: max 128G ,class10
FAT32 or exFAT format
HDMI : HDMI 输出，micro HDMI 接口
高清输出 1080P 60fps
SD card: 最大支持 128G 卡，class10 高速卡 格式化为 FAT32 or exFAT 格式

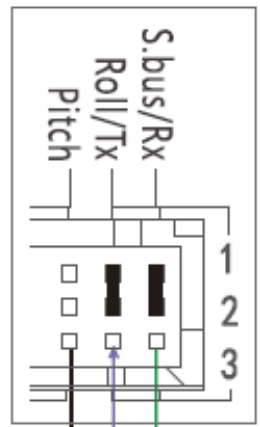


S.bus/Rx:connect to Rx2 for track function.（S.bus/Rx 用户不可用，默认出厂与RX2连接，用做跟踪功能）

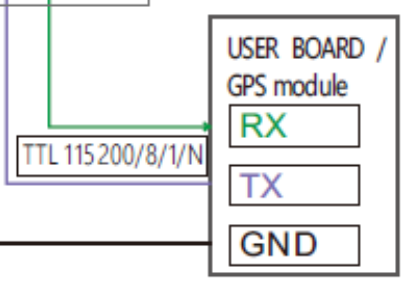
Roll/ Tx:connect to Tx2 for track function.（Roll/ Tx 用户不可用，默认出厂与TX2连接，用做跟踪功能）

Pitch:PWM in, pitch control（俯仰控制，PWM 输入）



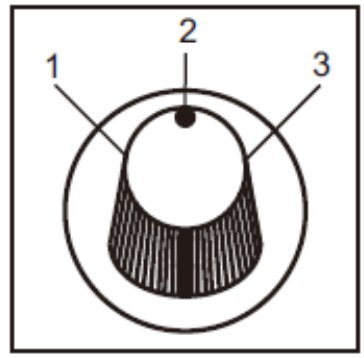


We have protocol for control the gimbal and camera, please contact our technical support for detail doc.



Yaw:PWM in, Yaw control(指向控制，PWM 输入)

Mode:change the speed / home position (调整云台控制速度/一键回中)



Position 1: lowest speed for pitch and yaw.(云台低速)
Position 2: middle speed for pitch and yaw.(云台中速)
Position 3: highest speed for pitch and yaw. the speed is continuously quickly from 1 to 3. (云台高速)
Click = from 2 to 3 and back to 2 quickly. (切一次的动作是指 从中到高，再快速回到中)
One click : home position(切1次回中)
Two click: look down(切2次俯仰垂直向下)
Three click: Yaw not followed by frame(切3次锁头模式，飞机转，云台不跟随)
Four click : Yaw followed by frame(切4次，跟随模式，云台指向跟随飞机转动而转动)
Five click : restore the factory settings(切5次，恢复出厂设置)

ZOOM: zoom the camera (放大，缩小)


1 zoom tele 放大


2 stop zoom 停止


3 zoom wide 缩小

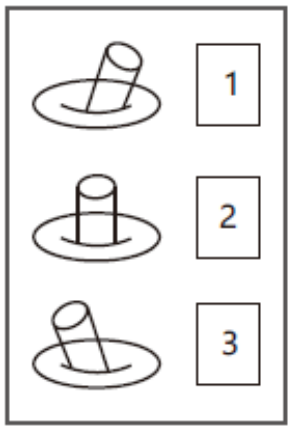
focus : focus the camera (手动调焦，默认自动对焦模式)


1 Switch 2 to 1: IR color,white hot,black hot,pseudo color . (连续从2切到1，热像仪色板 白热，黑热，铁红三种模式循环)


2 Switch 2 to 3: picture in Picture. EO+IR , IR+EO, EO only, IR only. (连续从 2 切到 3,画中画循环显示，可见光+热红外，热红外+可见光， 单可见光，单热红外)

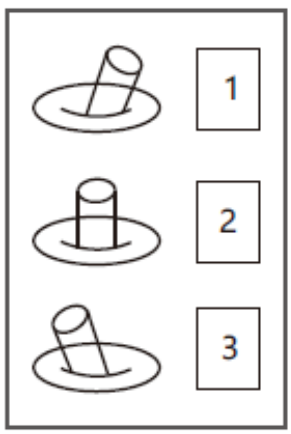

3

Pic/Rec:picture / start record，stop record（拍照，开始录像，停止录像）



Switch 2 to 1:
start record / stop record.(从2 切到 1 ,开始录像，再切一次， 停止录像)
start record, the OSD display rec hh:mm:ss ; (录像开始后，会显示录像时间)
stop record, the OSD display STBY. (录像停止后，显示STBY)
Switch 2 to 3:
take a picture . (从2 切到 3,拍一张照片)
OSD display' REC IMG' a second. (拍照会显示 REC IMG 几秒钟)

Multi: tracking control (跟踪控制)



Position 1: exit the tracking (退出跟踪模式)
Switch 1 to 2: display the cross cursor. Adjust the object to the cross cursor. (调出十字标，调整目标到十字)
Switch 2 to 3: start tracking. (开始跟踪， 右下角显示偏移量)
Change the object during tracking (二次跟踪: 跟踪过程中，微调跟踪的目标)
Switch 3 to 2: display the cross cursor, use Pitch/Yaw to adjust the cross cursor. (调出十字标，用俯仰，航向通道调整十字标到新的目标位置)
Switch 2 to 3: start tracking. (开始跟踪，右下角显示偏移量)

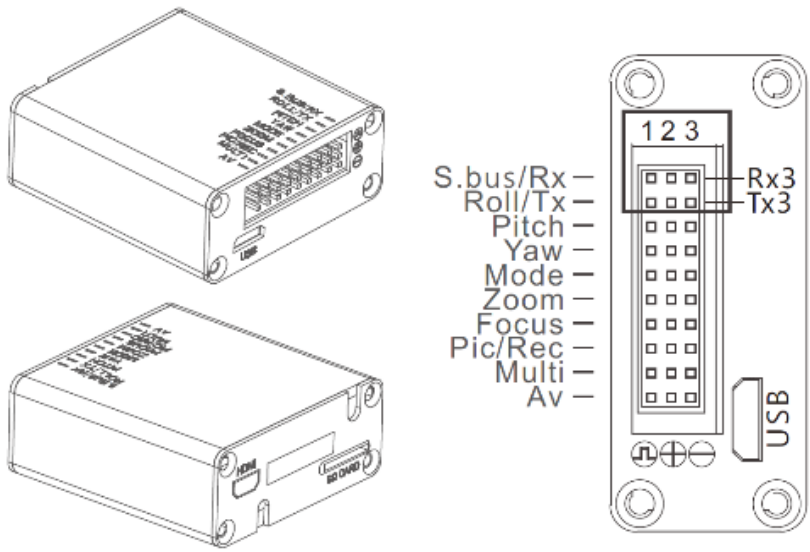
AV: NO AV output this model。 （本型号没有AV 输出）

Thermal Camera

Horizontal FOV(°)水平	12.4
Vertical FOV(°)垂直视场	9.3
Diagonal FOV(°)对角	15.5
Detective Distance(Man:1.8x0.5m)探测距离	1471
Recognize Distance(Man:1.8x0.5m)识别距离	368
Verified Distance(Man:1.8x0.5m) 验证距离	184
Detective Distance(Car:4.2x1.8m)探测距离	4510
Recognize Distance(Car:4.2x1.8m)识别距离	1127
Verified Distance(Car:4.2x1.8m)验证距离	564

Imaging and temperature measuring index	Working system	Un-cooled long wave(8μm ~ 14μm)
	Pixels of detector	640×480
	Size of pixel	17μm
	Focusing	Athermalizing
	Emissivity correction	Emissivity 0.01~1 adjustable
	NETD	≤50mK（@25℃）
	MRTD	≤650mK
	Imaging enhancement	Automatically adjusts image brightness and contrast
	Color palette	Black hot, white hot, pseudo color
	Automatic non-uniformity correction function	Yes(No shutter)
	Synchronization time function	Yes
	Temperature measuring mode	Temperature bar(pseudo display)HT LT field center temperature
	Temperature warning	Warning temperature -20℃ ~ 120℃
Tracking index	Data refresh rate	25Hz
	Output time lag	< 3ms
	Tracking speed	±32 pixels/frame
	Target effective memory	4s
	Size of target	16x16 ~ 128x128 pixels

Graph GPS Data and Serial Port Wires



Please connect RX1 and RX2, TX1 and TX2 via jumper cap if you'd like to execute serial port.

External serial port TX should connect to TX3 while RX to RX3 and GND of external serial port connects to that of junction box

Note: Signals from the black box marked above are all coming from TTL, please do NOT connect 5V, GND to interface of serial port

One stream of serial port (TTL 3.3v) commands that coming out of data transfer station is used for moving the gimbal and camera, including the control and angle output of pitching as well as azimuth, speed and angle settings, and stop & resume home position; the moving of camera includes zooming, focusing, start & stop video recording, taking picture and switching between imaging and recording, output of the times of zooming. You need to input checking command to the gimbal for operation status when the controlling module offers no feedback after receiving commands.

Serial port: Baud rate 115200, 8-bit as data bits, 1-bit as stop bit, no parity, HEX
Please contact technical support for protocols.