SKYDROID 云卓

Skydroid C12 用户手册

V1.0

小型高清三轴双光云台

泉州云卓科技有限公司

建议：在您阅读本用户手册时，边阅读边操作。您在阅读这些说明时，如遇到困难请查阅**本用户手册**或致电我们售后（ 400-6996-520 ）及云卓微信公众平台，云卓官方群：318480806 查看相关问题问答。

云卓官方群2群

云卓微信公众平台

售后服务条款

1.本条款仅适用于泉州云卓科技有限公司所生产的产品，云卓授权经销商销售的产品亦适用本条款。

2.本公司产品自购买之日起，一周内经我司核实为非人为造成的质量问题，由云卓承担返修产品的往返快递费，购买云卓产品一周以上一年以内经我司核实为质量问题，用户和云卓各自承担寄出返修产品的快递费。

3.返修时需提供购买凭证和保修卡或网络平台交易记录。

4.云卓产品自购买之日起七天内，在正常使用情况下出现非人为造成的质量问题，外观无损坏，凭保修卡及购机凭证在经销商处协商可以免费更换同型号产品；经销商在收到更换产品时烦请第一时间通知云卓公司予以备案更换。

5.云卓产品将由泉州云卓科技有限公司提供终身售后服务， 属于非人为造成的质量问题，一年内免费保修；对于自购买之日起人为的损坏、改装、拆机及超过一年免费保修期的，用户须支付往返邮费及维修费用。

6.为确保您的权益受到保护，并能及时有效的为您服务，请在购买云卓产品时完整填写好保修卡及索要购机凭证。用户享受本售后服务条款必须提供保修卡及购机凭证。

7.返修产品将于云卓公司收到后的 15 个工作日内寄回给顾客，并附上维修报告。

8.以上售后服务条款仅限于中国大陆销售的云卓产品。

港澳台及海外客户的售后问题发至邮箱 sales01@skydroid.xin，具体售后细则视情况而定。

目录

警告和免责申明

本文所提及的内容关系到您的安全以及合法权益与责任。使用本产品之前，请仔细阅读本文以确保已对产品进行正确的设置，不遵守和不按照本文的说明与警告来操作可能会给您和周围的人带来伤害，损坏本产品或其他周围的物品。本文档及所有相关的文档最终解释权归云卓科技所有。如有更新，恕不另行通知。请访问http://www.skydroid.xin/官方网站以获取最新的产品信息。

C12云台出厂前已根据其所搭载的相机和镜头完成调试，切勿自行调整云台或者改变其机械机构，也不要为云台增加其他外接设备。云台结构精密，请勿自行对C12作任何拆装，否则将会导致云台相机工作异常。

为了您和他人的安全，请确保云台调试时，飞行器处于安全的状态，不在易燃易爆及有儿童的环境下通电调试，强烈建议您在调试前取下飞行器的螺旋桨。

A) 环境温度:-10°C～+60°C

B) 贮存温度：-25°C～+60°C

C) 大气压力:86kPa~106kPa

D) 使用地点不允许有爆炸危险的介质，周围介质中不应含有腐蚀金属和破坏绝缘的气体及导电介

质 ,不允许充满水蒸气及有严重的霉菌存在。

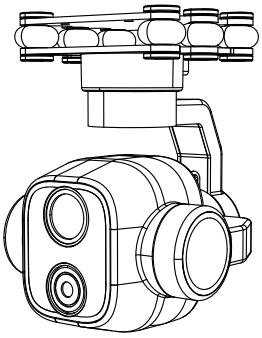
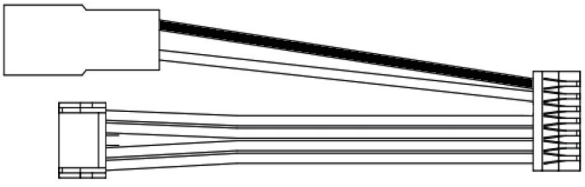
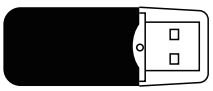
E) 使用地点应具有防御雨、雪、风、沙、灰的设施。

由于我公司无法控制用户的具体使用、安装、改装以及使用不当等情况。由以上所造成的直接、间接损失或损伤，我公司将不承担相应的损失及赔偿责任。如使用、安装、组装云卓科技产品，相应的结果由用户承担。因使用本产品而造成的间接或直接损失与伤害，我公司概不负责。

一、产品简介

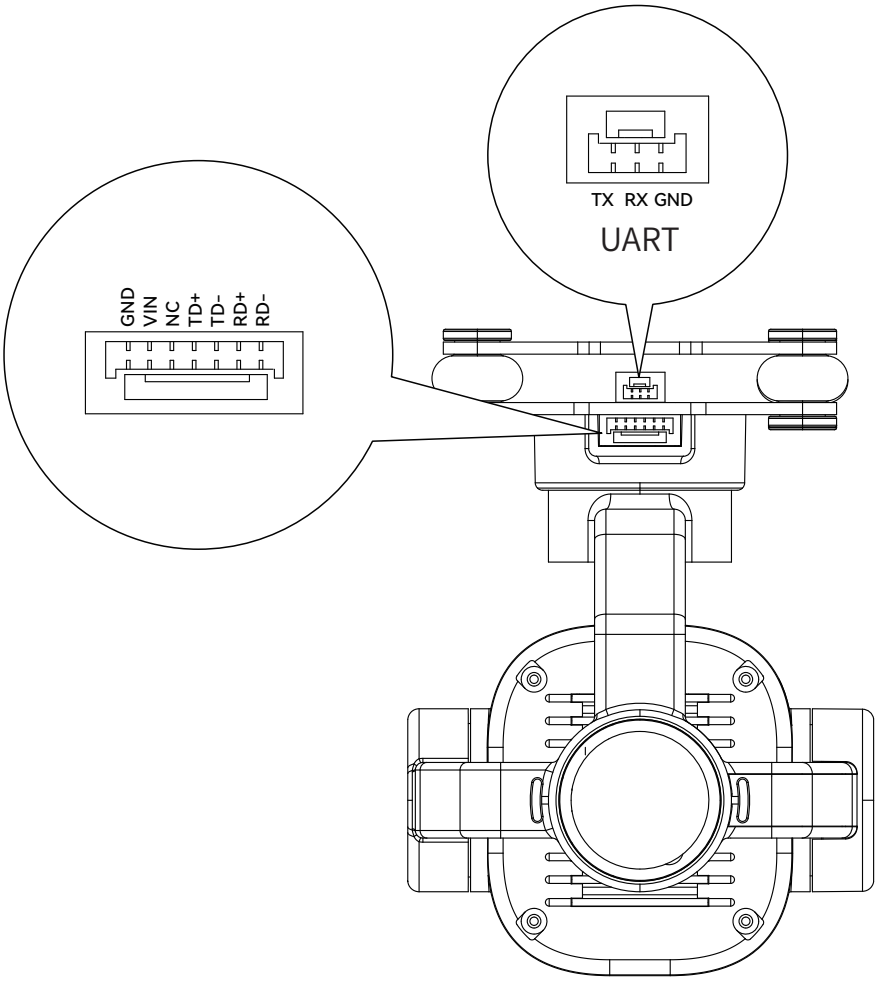
C12是一款小型高清双光吊舱，使用新一代影像芯片，搭配高清无畸变摄像头，有效像素达到500万，拥有强悍的2K视频录制和拍照能力，支持数字变倍，随时随地捕捉清晰的图像，让远处美景近在眼前。搭载高分辨率热成像摄像头，视野开阔，画面清晰，可远距离观测各种热源。使用工业级三轴增稳结构，大幅降低画面抖动，使画面始终处于平稳状态。可用于消防救援、动物保护、安全监控等领域。

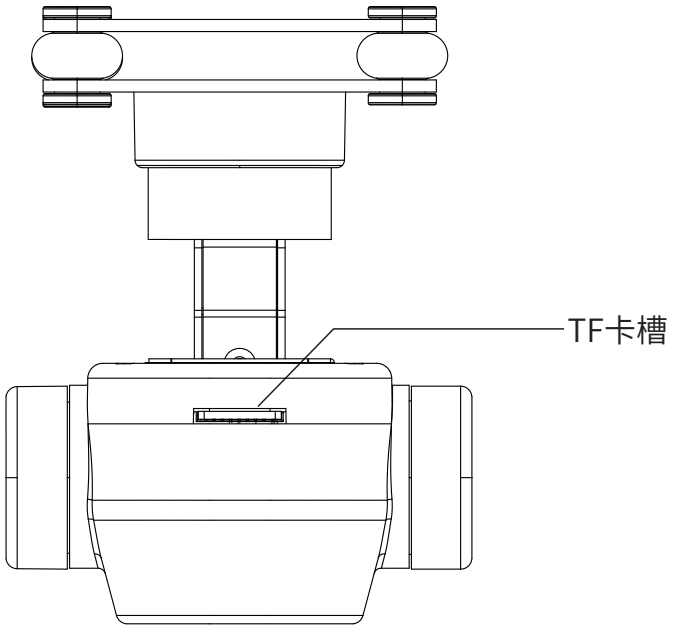
二、产品清单

C12主体×1	
云台固定螺丝(M2.5*6) ×4	
网口电源线×1	
32G金士顿内存卡×1 (已安装)	
读卡器×1	

三、产品概览

接口及定义说明





镜头朝下

四、产品参数

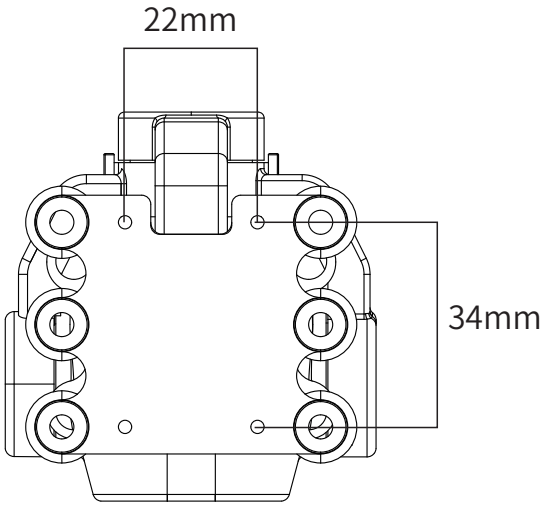
C12整体参数	
视频输出信号接口	网口
控制信号输入接口	网口
工作电压	7.2V~72V
工作电流	210mA 12V
工作环境温度	-10°C~+50°C
重量	117g
外形尺寸	62mm(长)*65mm(宽)*86mm(高)
可控角度范围	-90°~+10°(俯仰轴);-90°~+90°(方向轴);-45°~+45°(横滚轴)
吊装/倒装模式	支持
全局回中/一键向下/偏航回中	支持

C12可见光相机参数	
镜头像素	500万
图像传感器	1/2.7
镜头焦距	f=3.1mm
光圈	F2.0
HFOV / VFOV / DFOV	100° / 52° / 122°
变焦倍数	30倍电子变倍
图传分辨率	1280*720 30fps
卡录视频分辨率	2880*1620 30fps
视频存储格式	H265
拍照分辨率	2880*1620
照片存储格式	JEPG
支持存储卡类型	支持MicroSD存储(最大256G)
支持文件系统	FAT32

C12热成像相机参数	
分辨率	384*288
帧频	≤25Hz
热时间常数	＜10ms
焦距	7mm
光圈	F1.0
HFOV/VFOV	24.8°*18.7°
像元间距	12μm
光谱范围	8~14μm

五、安装与调试

5.1 螺丝孔位与间距示意图如下：



注：用于云台的螺丝规格为 M2.5*6，用量4。

云台不使用时请勿悬挂于飞行器上，长期悬挂会加速避震球变形导致避震效果下降出现果冻现象。

云台安装时减震板之间必须保持相互间的绝对垂直与平行，不正确的安装将引起避震球变形导致避震效果下降和无法自检。

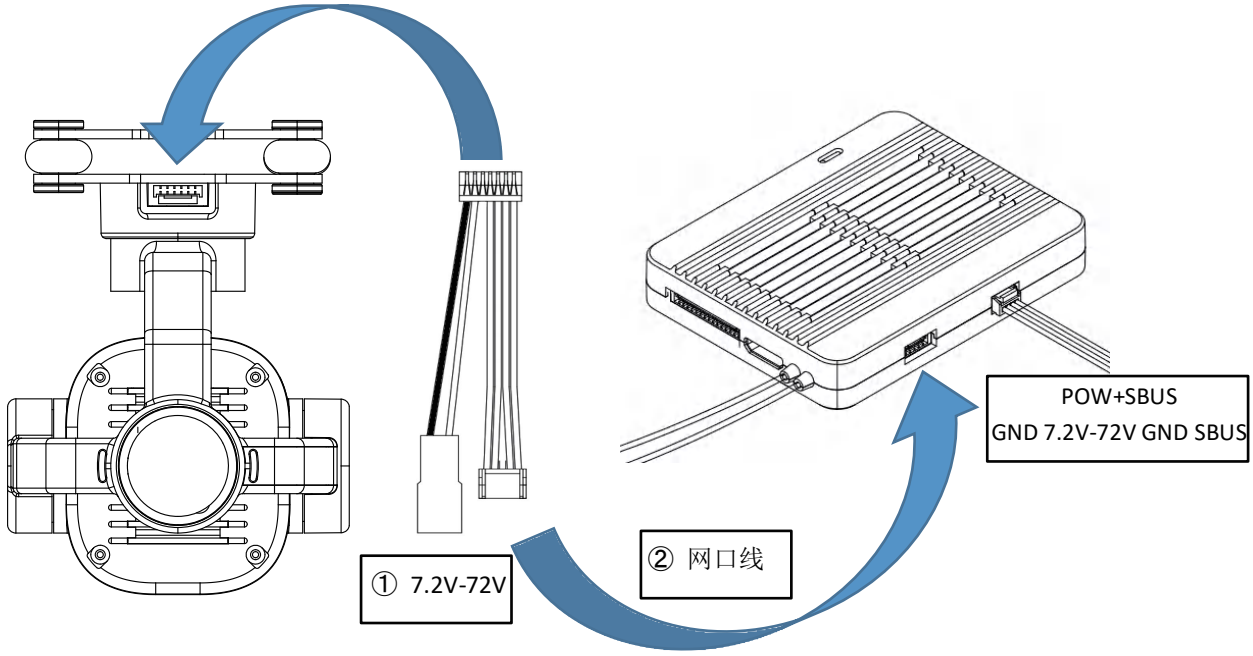
5.2 云台工作模式

可在云台FPV设置吊装模式或者倒装模式

注：出场默认吊装模式，请勿倒装上电；

请根据工作模式将云台正确的放置，错误的放置方式将会导致云台电机损坏。

5.3 云台线路连接图及说明



①电源	红色JST-2P公头，供电电源:7.2V-72V (直流电源或者锂电池)	
②网口线 **(信号传输)**	网络IP信号	RX-：网络IP信号 RX+：网络IP信号 TX-：网络IP信号 TX+：网络IP信号
视频传输	可见光视频输出 RTSP码流rtsp://192.168.144.108:554/stream=1	
	热成像视频输出 RTSP码流rtsp://192.168.144.108:555/stream=2	

5.4 C12的使用

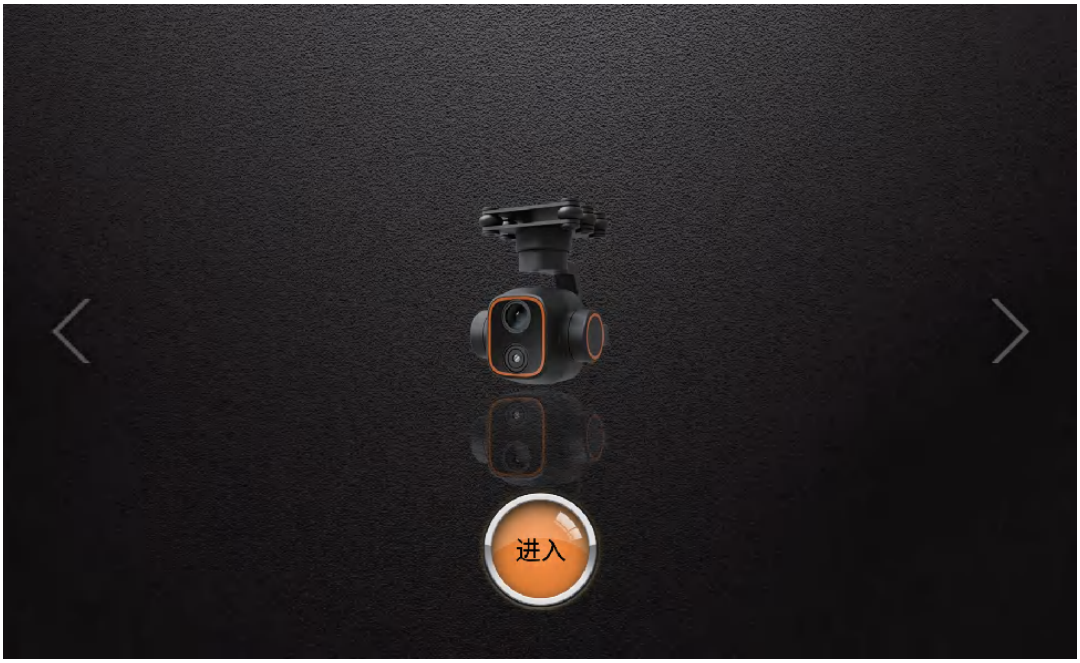
遥控器安装最新版云台FPV软件，并打开。

软件地址：http://file.skydroid.xin/SkydroidCameraFPV.apk

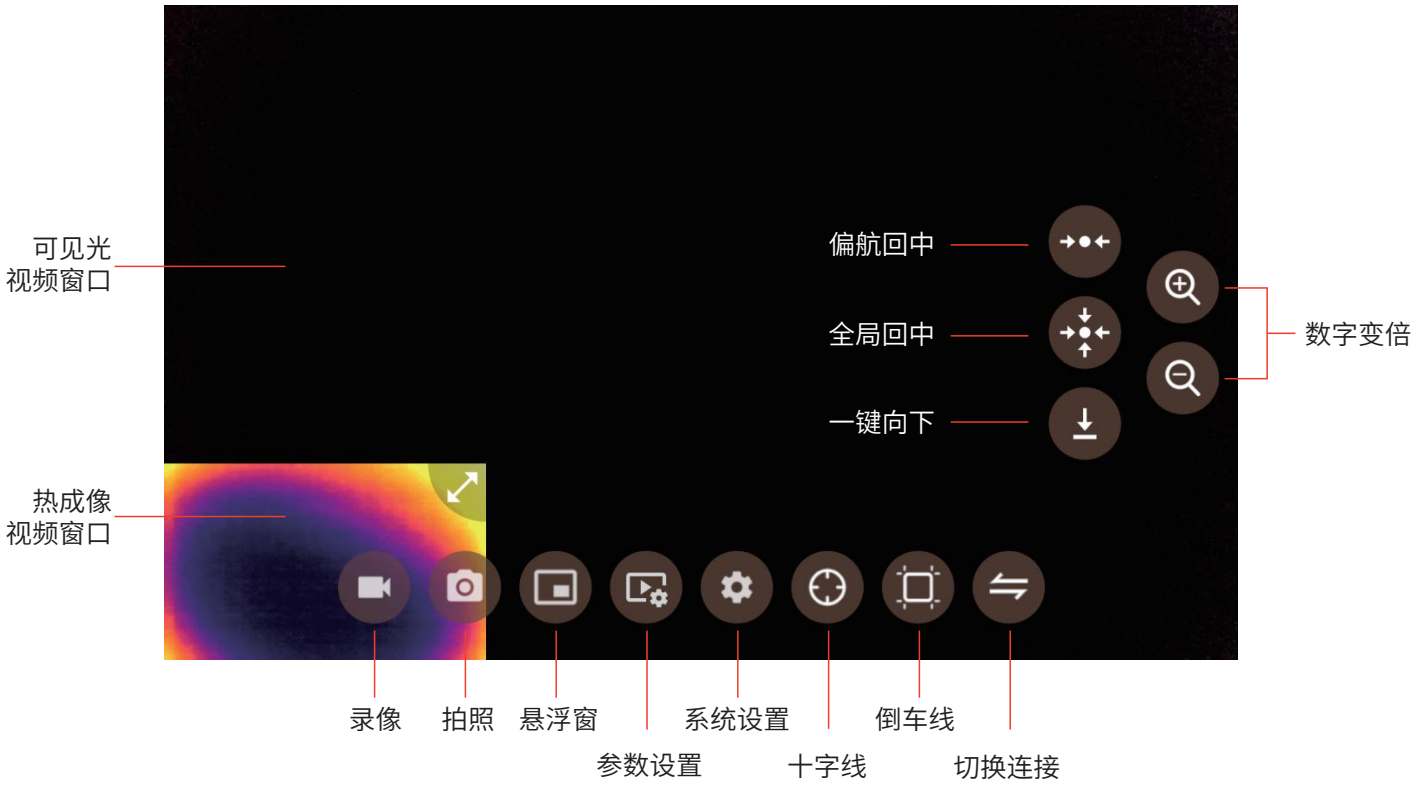
①云台启动

云台安装固定好后，供电，云台会启动，请等待启动完成。

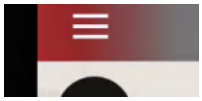
② 打开云台FPV，选择C12连接方式，点击进入。



③云台FPV主页介绍



④FLY GCS画面设置

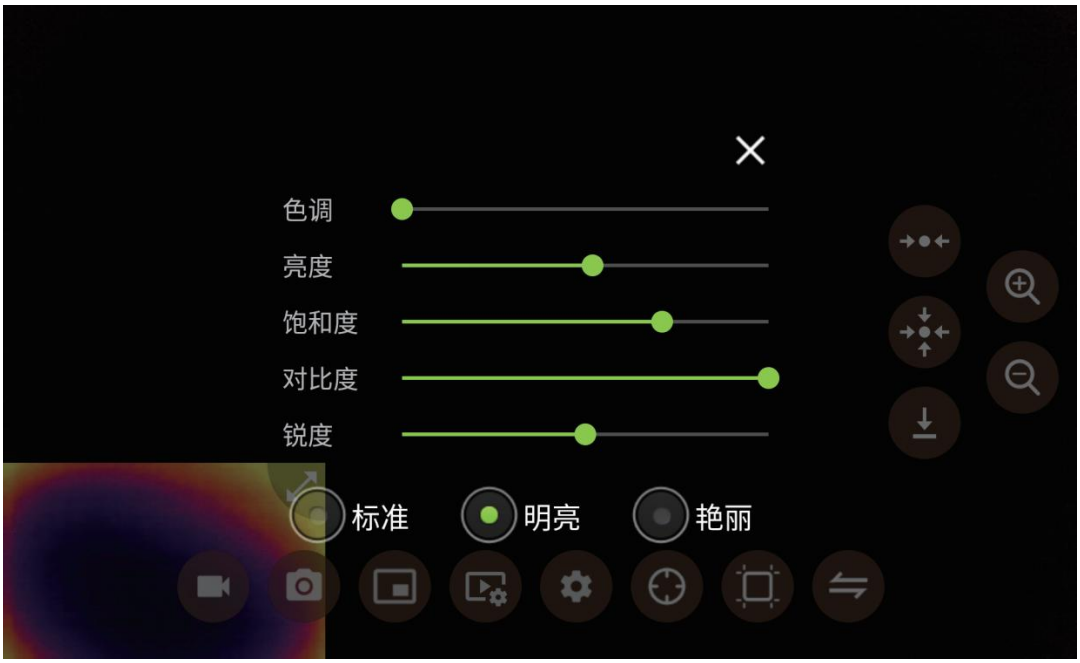
APP首页左上角  ->常用设置->其他设置->用户界面->视频窗口->C12

注:C12为双光云台相机需要两个视频窗口都设置

5.5 云台的参数设置

参数设置里可以设置图象参数以及调色板、校准等功能。

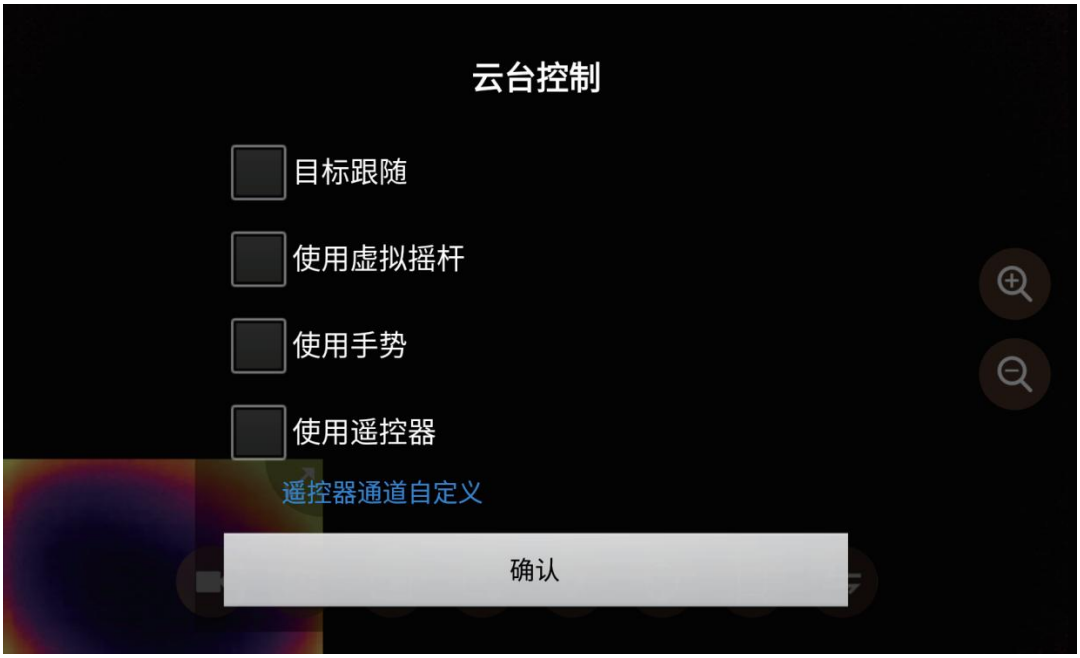
5.5.1 图象参数



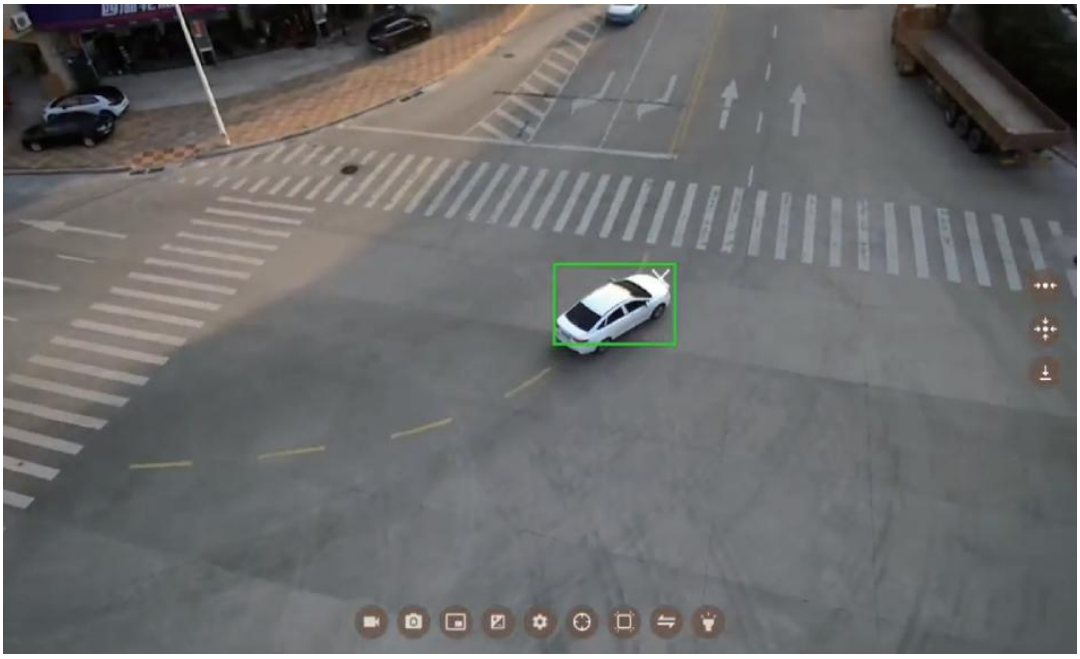
可设置一些相关的相机画面参数。

5.5.2 云台控制

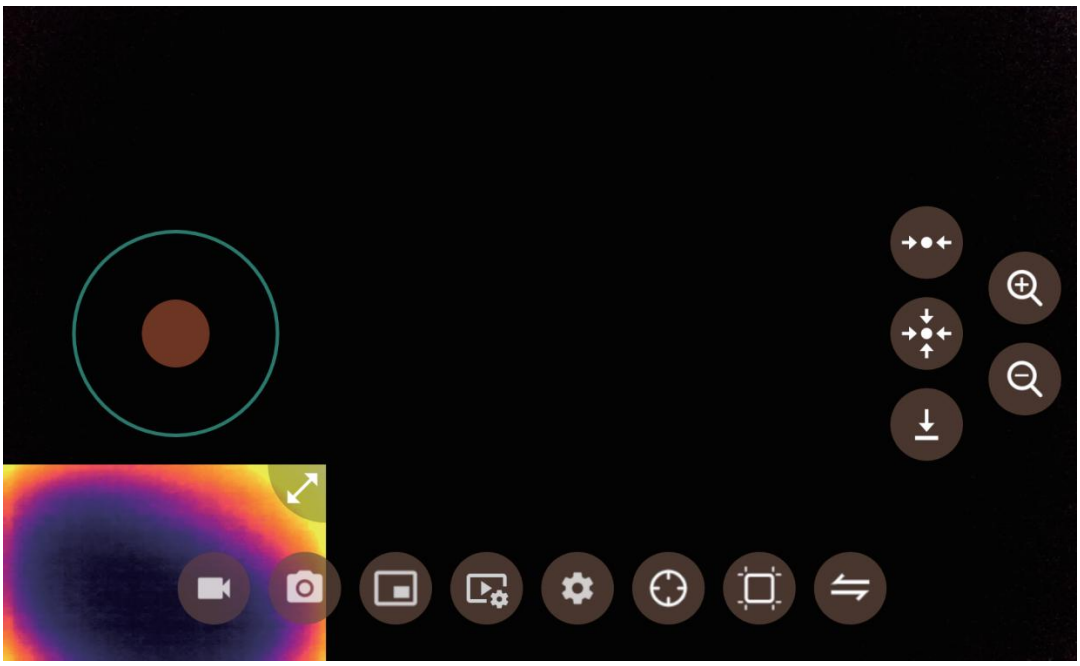
点击参数设置->云台控制，有目标跟随和三种控制方式可供选择，可同时勾选多种方式。（目标跟随不能和手势控制同时使用）



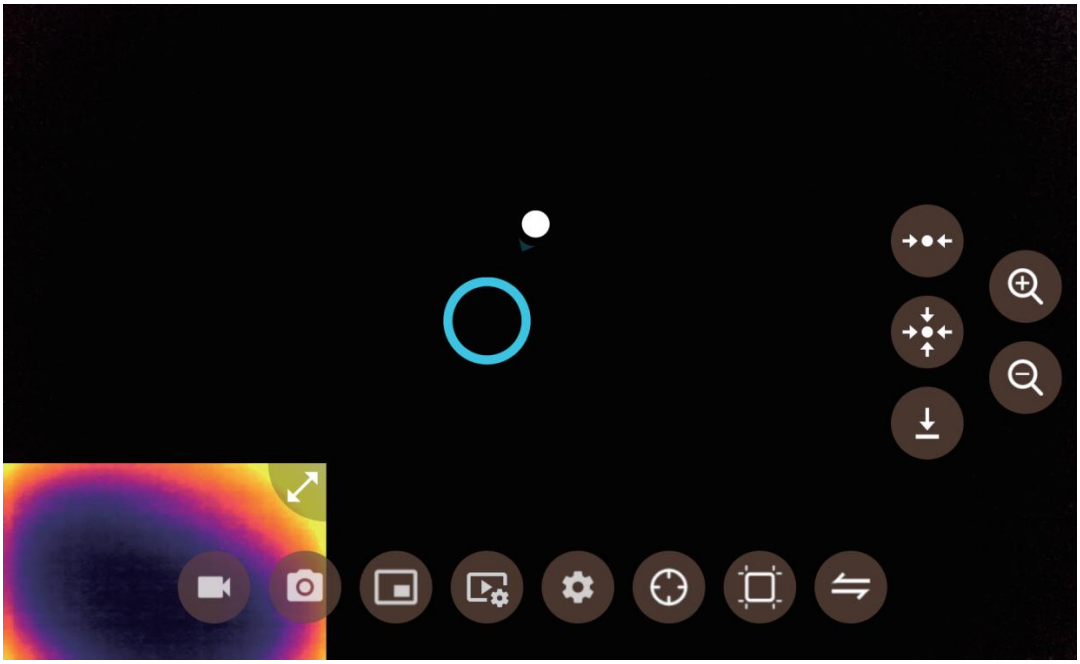
①云台目标跟随，框选跟随目标后，C12将自动追踪目标



②虚拟摇杆控制，可通过虚拟摇杆控制云台转向和俯仰，且支持一键回中等功能。

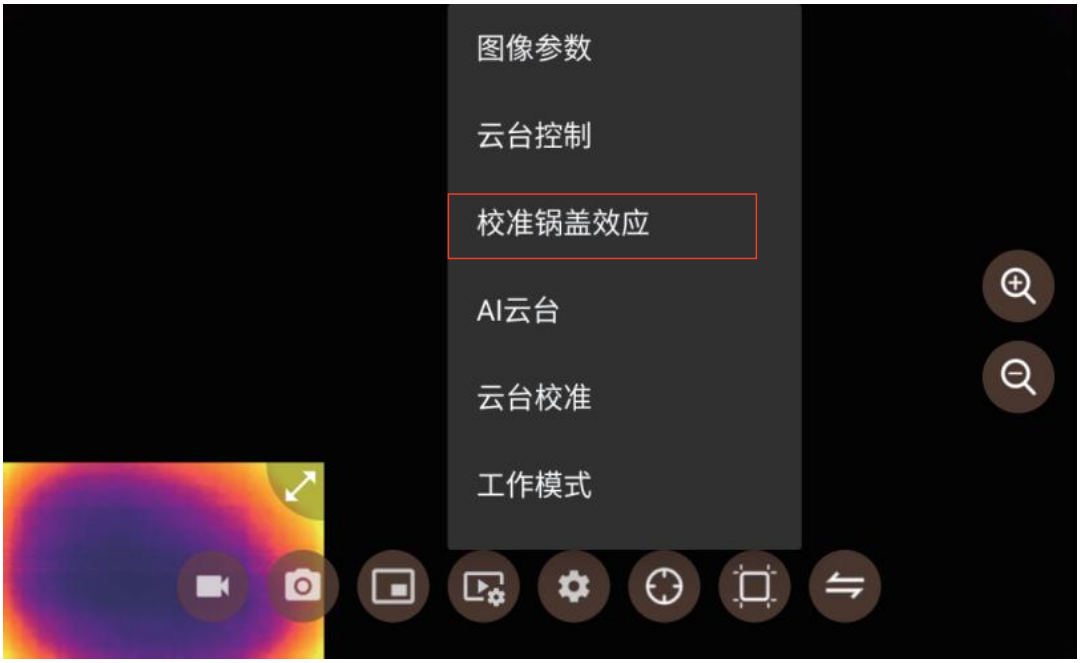


③手势控制，通过滑动屏幕控制云台转向和俯仰。



④遥控器通道控制,通过自定义遥控器通道控制云台转向和俯仰，以及拍照录像等功能。(遥控器通道可通过遥控器助手->舵量查看查询)

5.5.3校准锅盖效应



注:锅盖效应出场已经校准,因校准方式特殊,若无必要,请勿自己校准,校准前请联系云卓相关技术人员确认。

校准方法:

①C12调色板设置铁红,通电预热五分钟以上,热成像画面四周出现一圈红色热源。

②选择一块表面平整、温度均匀、磨砂均匀、反光率低的面板。

③移动C12靠近但不接触靶面,靶面的成像覆盖全部视场无杂散光进入为最佳。

④点击校准锅盖效应,校准成功后热成像画面四周的红色热源将消失。

锅盖标定靶面示意图

校准锅盖效应示意图

5.5.4 云台校准

温度校准：校准云台工作时的温度，以免因环境温度与IMU工作温度差异过大导致云台无法正常工作。

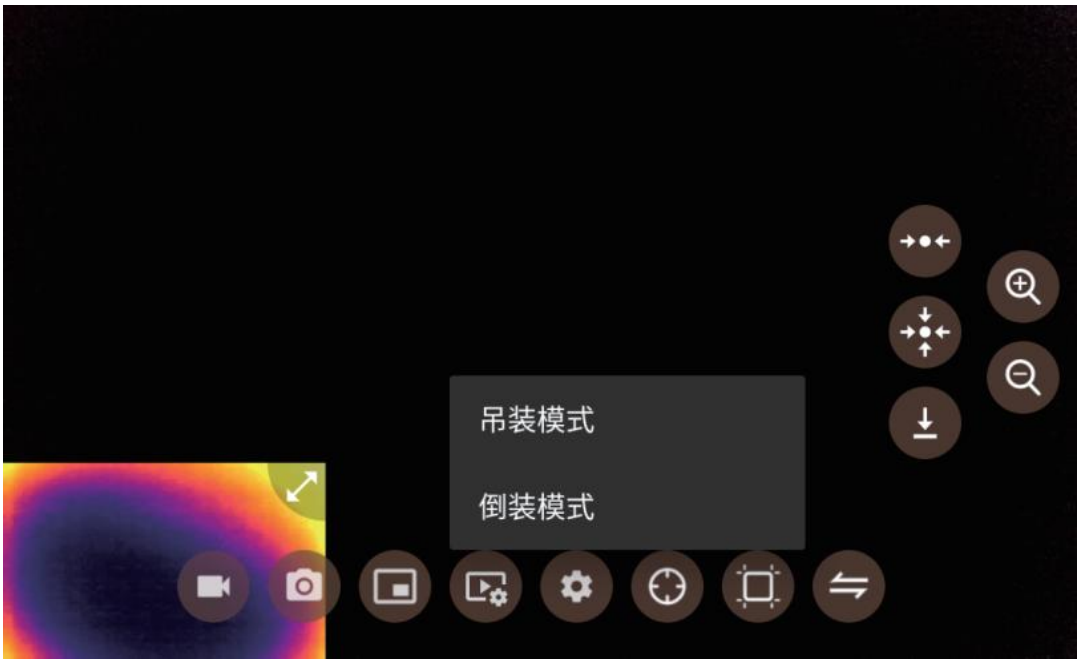
水平校准：请将云台放置在水平平面上且确保云台处于静止状态，且不要触碰或者晃动云台。

垂直校准：水平较准完成后，云台将会自动俯仰朝下，确保云台处于静止状态，且不要触碰或者晃动云台，点击校准即可。

云台微调：微调云台的水平轴与俯仰轴。

注：出厂已做好云台校准，若无出现云台问题，请勿点击。

5.5.5 工作模式



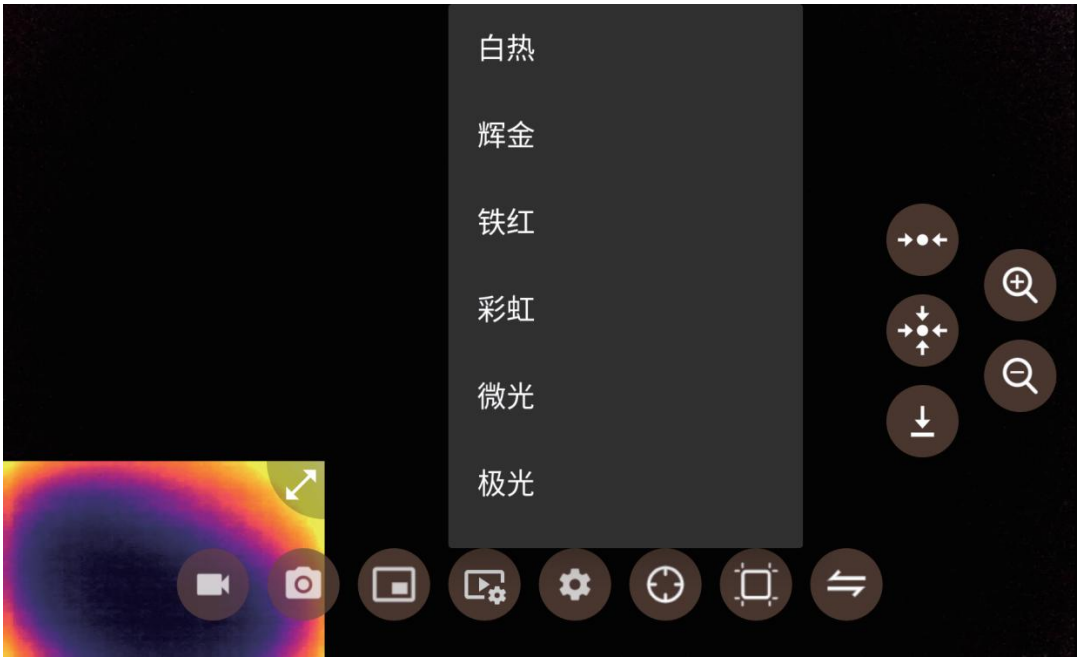
可设置云台为吊装还是倒装。

注：请根据工作模式将云台正确的放置，错误的放置方式将会导致云台电机损坏。

5.5.6 云台速度

云台的控制速度有匀速模式和变速模式。

5.5.7 调色板



可调热成像相机的成像效果，共有十一种可选。

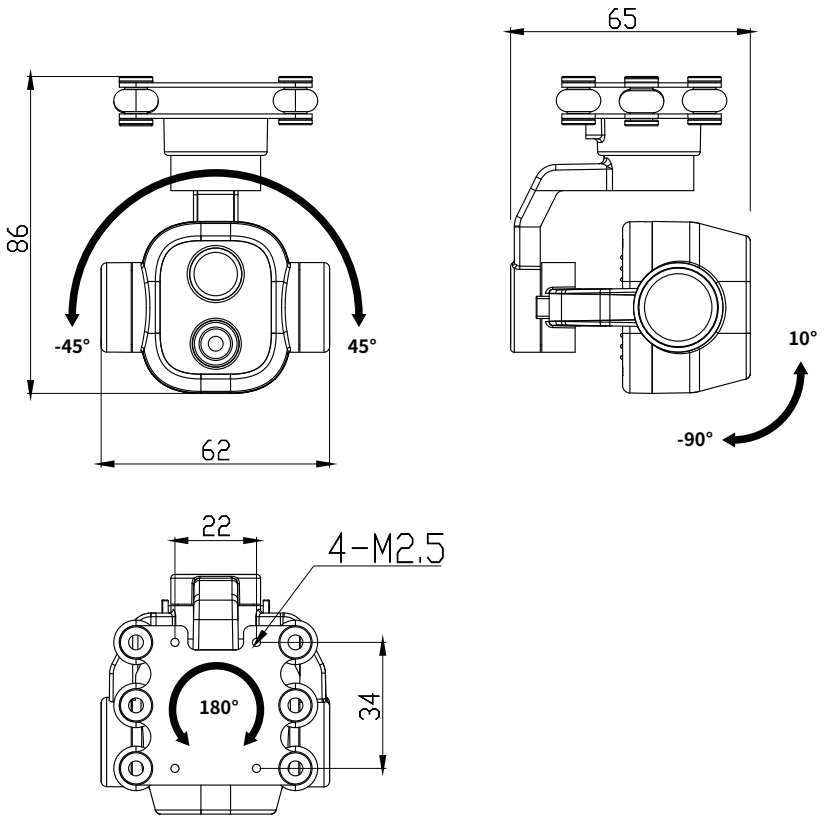
5.6 设置编码模式

可设置画面翻转、查看相机版本号以及OSD显示。

5.7 固件升级

可升级云台固件和相机固件升，级过程中请勿断电或者退出升级界面。(升级相机固件时C12必须插TF卡)

六、云台尺寸，角度标注



因版本演进及客户需求变更,相应命令及控制会有所变更. 请联系云卓科技有限公司, 来获取最新资讯及技术支持.因产品更新升级，尺寸重量等参数可能会有变化，敬请谅解。

七、注意事项

为保护您和他人免受伤害或保护您的设备免于损坏，请阅读以下全部信息后再使用您的设备。

1.请勿将组件直视太阳等高强度辐射源；

2.理想使用环境温度为-10°C~60°C；

3.请勿用湿手触摸设备和线缆；

4.请勿弯折或损坏各连接线缆；

5.请勿用稀释剂擦洗您的设备；

6.请勿在未断开电源的情况下拔插其他电缆；

7.请勿接错附带的连接线缆，以免损坏设备；

8.请注意防止静电；

9. 请勿拆卸设备，如有故障请与本公司联系，由专业人员进行维修

因版本演进及客户需求变更,相应命令及控制会有所变更. 请联系云卓科技有限公司, 来获取最新资讯及技术支持.因产品更新升级，尺寸重量等参数可能会有变化，敬请谅解。

温馨提示:使用前请仔细阅读操作说明书!

微信公众号

泉州云卓科技全国服务热线

400-6996-520

产品名称:C12
制造商:泉州云卓科技有限公司
地址:福建省泉州市高新产业园区海西育成基地A幢2楼
邮箱:sales01@skydroid.xin
www.skydroid.xin

SKYDROID 云卓

Skydroid C12 User Manual

V1.0

Small high-definition 3-axis dual beam gimbal

Skydroid Co., Ltd

Suggestion: When you read this User Manual, you should read and operate at the same time. When reading these instructions, if you encounter difficulties, please refer to this user manual or call our after-sales service (400-6996-520) or visit our official QQ chat group: 318480806 to view the relevant questions and answers.

Skydroid official group No.2

Skydroid Wechat group

After sales service terms

1. This clause is only applicable to the products produced by Skydroid, and the products sold by Skydroid authorized dealers are also applicable to this clause.
2. As of the date of purchase, if the product of our company is verified by our technicians as a quality problem caused by non-human factors within one week, Skydroid shall afford the shipping fee for the repaired product. If the Skydroid product is verified as a quality problem by our technicians within one week and one year after purchase, the user and Skydroid shall afford the shipping fee for sending the repaired product respectively.
3. Purchase voucher and warranty card or on-line transaction record shall be provided when repairing.
4. Within 7 days from the date of purchase, Skydroid products have quality problems that are not caused by human activities under normal use, and the appearance is not damaged. With the warranty card and purchase proof, the users can negotiate to replace products of the same model for free from our local dealers; When receiving the replacement product, the dealer is kindly requested to inform Skydroid of the replacement at the first time.
5. Skydroid will provide lifelong after-sales service for Skydroid products. If the quality problem is caused by non-human factors, it will be guaranteed free of charge within one year; The user shall pay the round-trip shipping and maintenance fees for man-made damage, modification, dismantling and exceeding the one-year free warranty period from the date of purchase.
6. To ensure your rights and interests are protected and that you can be served in a timely and effective manner, please complete the warranty card and ask for the purchase voucher when purchasing Skydroid products. Users shall provide warranty card and purchase certificate to enjoy the after-sales service terms.
7. The repaired products will be sent back to the customer within 15 working days after receiving by Skydroid, and the repair report will be enclosed.
8.The above after-sales service terms are limited to Skydroid products sold in Chinese Mainland. Send the after-sales problems of Hong Kong, Macao, Taiwan and overseas customers to the email: sales01@skydroid.xin
The specific after-sales rules depend on the situations.

Contents

Warnings and Disclaimers

The content mentioned in this article relates to your safety, legal rights and responsibilities. Before using this product, please read this manual carefully to ensure that the product has been correctly set. Failure to observe and operate in accordance with the instructions and warnings in this document may cause harm to you and the people around you, and damage this product or other surrounding objects. The right of final interpretation of this document and all relevant documents belongs to Skydroid. It is subject to update without notice. Please visit: http://www.skydroid.xin/ Official website to obtain the latest product information.

C12 gimbal has been commissioned according to the camera and lens it carries before deliver out the factory. Do not adjust the gimbal or change its mechanical mechanism, nor add other external equipment to the C12. The structure of the C12 is precise. Do not disassemble the C12 by yourself, or it will cause the gimbal working abnormally.

For the safety of you and others, please ensure that the drone is in a safe state during the gimbal commissioning and is not energized for commissioning in a flammable, explosive and children's environment. It is strongly recommended that you remove the propellers of the drone before commissioning

A) Working temperature: -10°C～+60°C

B) Storage temperature: -25°C～+60°C。

C) Atmospheric pressure: 86kPa~106kPa

D) The place of use shall not have explosive media, the surrounding media shall not contain gases and conductive media that corrode metals and damage insulation, and shall not be filled with water vapor or have serious mold.

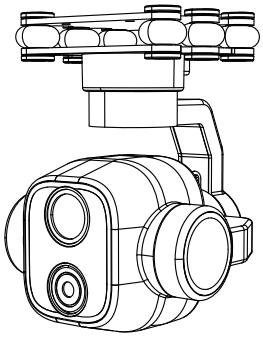
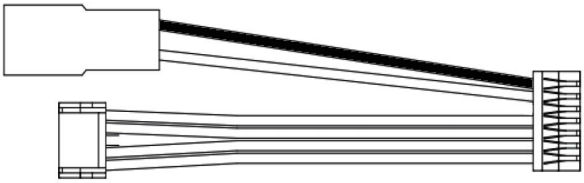
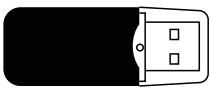
E) The place of use shall be equipped with facilities to prevent rain, snow, wind, sand and ash.

Because our company cannot control the specific use, installation, modification and improper use of users. For the direct and indirect loss or damage caused by the above, our company will not bear the corresponding loss and compensation liability. If you use, install, and assemble Skydroid products, the corresponding results will be borne by the user. Our company is not responsible for indirect or direct losses and injuries caused by the use of this product.

1.Product introduction

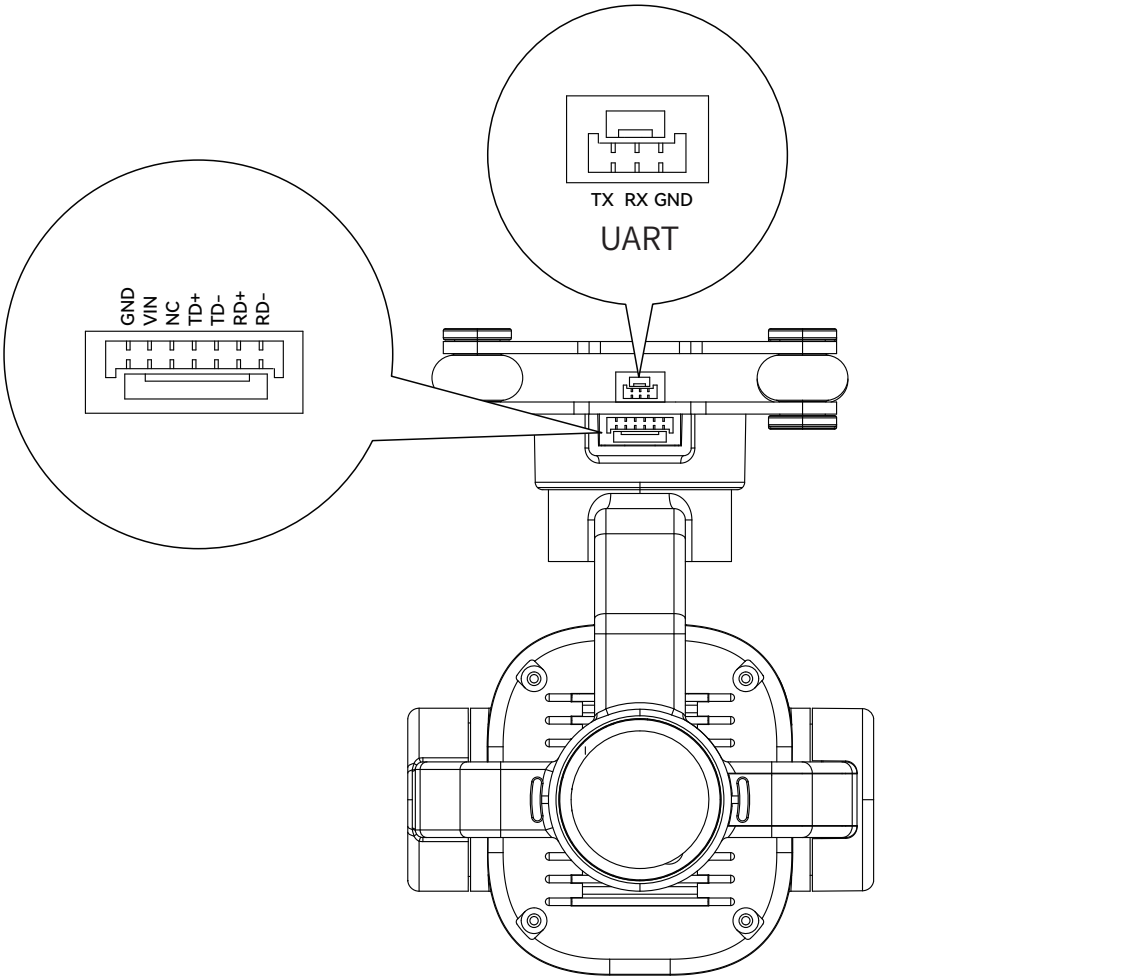
C12 is a small high-definition dual light gimbal that uses a new generation imaging chip and a high-definition distortion free camera, with effective pixels reaching 5 million. It has powerful 2K video recording and photography capabilities, supports digital zoom, and captures clear images anytime, anywhere, making distant scenery closer to you. Equipped with a high-resolution thermal imaging camera, it has a wide field of view, clear images, and can observe various heat sources from a long distance. Using an industrial grade 3-axis stabilization structure, it significantly reduces image jitter and keeps the image in a stable state. Can be used in fields such as fire rescue, animal protection, and safety monitoring.

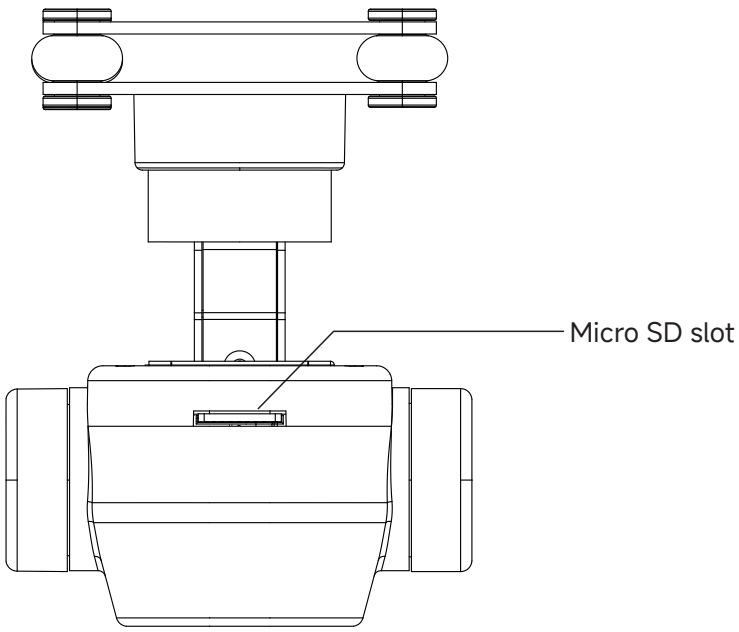
2. Product packing List

C12 gimbal*1	
Fixing screw(M2.5*6) ×4	
Ethernet power cable*1	
32G Kingston memory card*1	
Card reader*1	

3. Overview of C12

C12 ports introduction





Lens Down

4.Product specifications

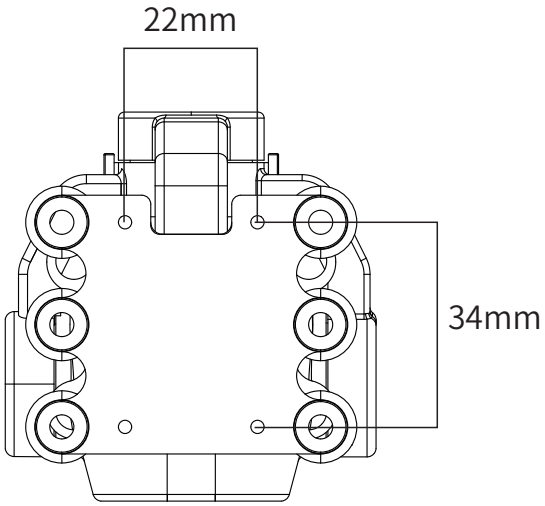
C12 gimbal parameters	
Video output signal interface	LAN port
Control signal input interface	LAN port
Working voltage	7.2V~72V
Working current	210mA 12V
Working temperature	-10°C~+50°C
Weight (includes quick disassemble shock absorber plate)	117g
Size (includes quick disassemble shock absorber plate)	62mm(L)*65mm(W)*86mm(H)
Controllable angle range	-90°~+10°(Pitch)； -90°~+90°(Direction);-45°~+45°(Roll)
Hoist mode/ Upside down mode	support
One click back/One click down/One click head up	support

C12 visible light camera parameters	
Lens resolution	5M
Sensor Size	1/2.7
Focal length	f=3.1mm
Aperture	F2.0
HFOV / VFOV / DFOV	100° / 52° / 122°
Zoom magnification	30x Electron magnification
Image transmission resolution	1280*720 30fps
Video record resolution	2880*1620 30fps
Video storage format	H265
Photography resolution	2880*1620
Photo storage format	JEPG
Supports storage card types	Supports Micro SD storage (up to 256GB)
Support file system	FAT32

C12 thermal imaging camera parameters	
Resolution	384*288
Frame rate	≤25Hz
Thermal time constant	< 10ms
Focal length	7mm
Aperture	F1.0
HFOV/VFOV	24.8°*18.7°
Pixel spacing	12μm
Spectral range	8~14μm

5.Installation and debugging

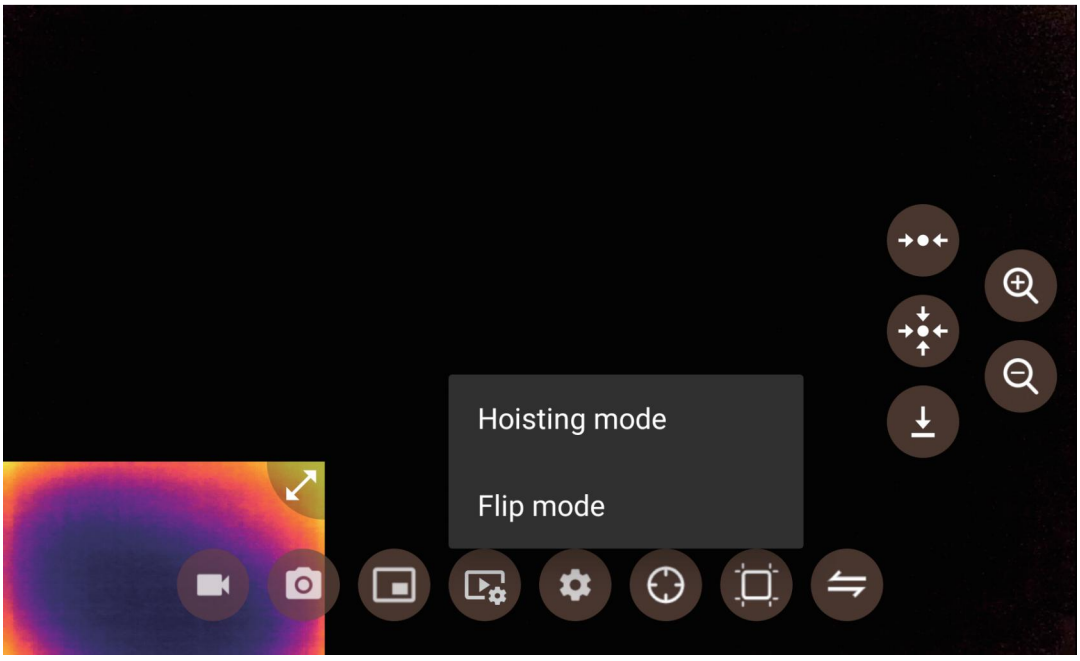
5.1 The schematic diagram of the screw hole position and spacing is as follows:



Note: The screw size used to fix the shock absorber plate is M3 * 8, with a quantity of 4 pieces.

When the gimbal is not in use, do not hang it on the drone. Long time suspension will accelerate the deformation of the shock-absorbing ball, leading to a decrease in shock-absorbing effect and jelly phenomenon. When installing the gimbal, the shock absorption plates shall be kept absolutely perpendicular and parallel to each other. Incorrect installation will cause deformation of the shock absorption ball, resulting in a decrease in shock absorption effect and inability to self check.

5.2 Gimbal working mode

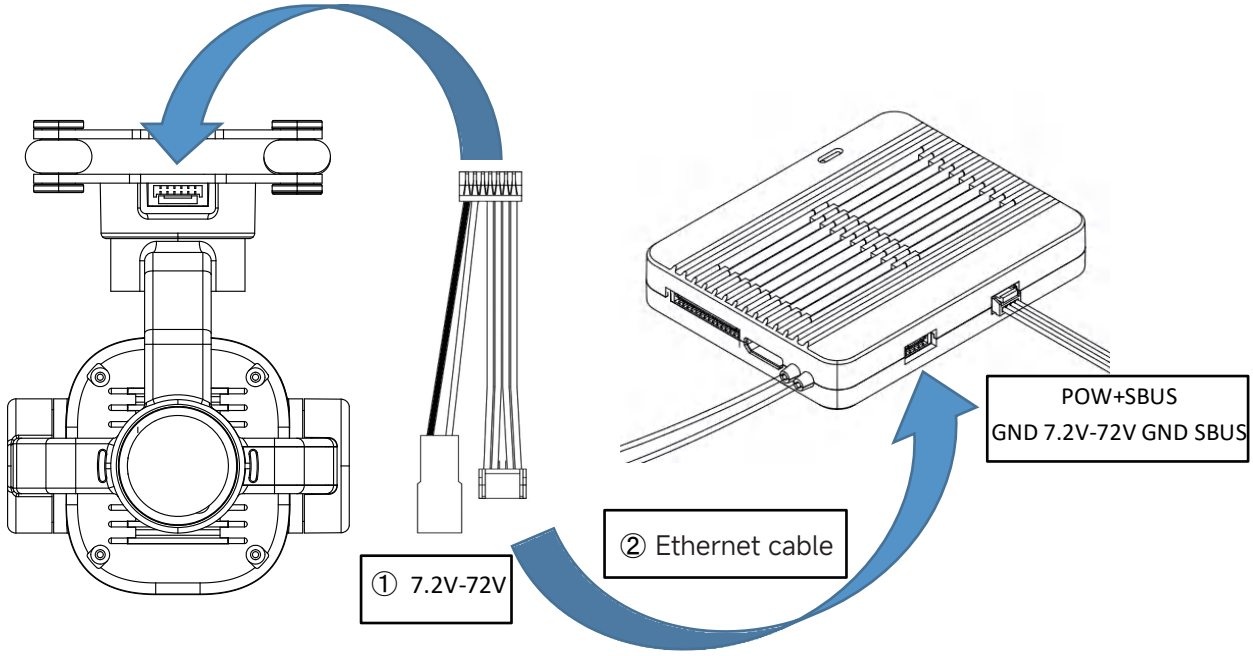


The hoist mode or upside down mode can be set on the FPV App

Note: The default hoist mode is set before shipping, please do not invert and power on;

Please place the gimbal correctly according to the working mode. Incorrect placement may cause damage to the gimbal motor.

5.3 Gimbal cable connection diagram and explanation



①Power supply	Red JST-2P male port,Power supply: 7.2V-72V (DC power supply or lithium battery)	
②Ethernet cable (signal transmission)	Network IP signal	RX-: Network IP signal RX+: Network IP signal TX-: Network IP signal TX+: Network IP signal
Video transmission	Visible light video output RTSP stream rtsp://192.168.144.108:554/stream=1	
	Thermal imaging video output RTSP stream rtsp://192.168.144.108:555/stream=2	

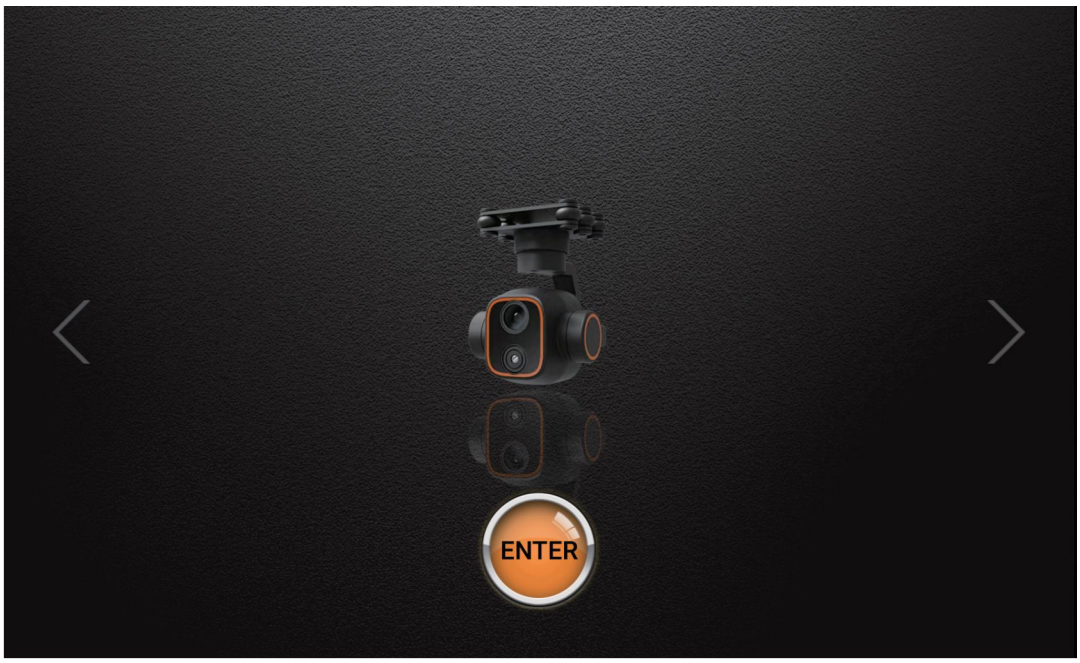
5.4 Use of C12

Install the latest version of gimbal FPV software on the remote control and open it.
Software download address: http://file.skydroid.xin/SkydroidCameraFPV.apk

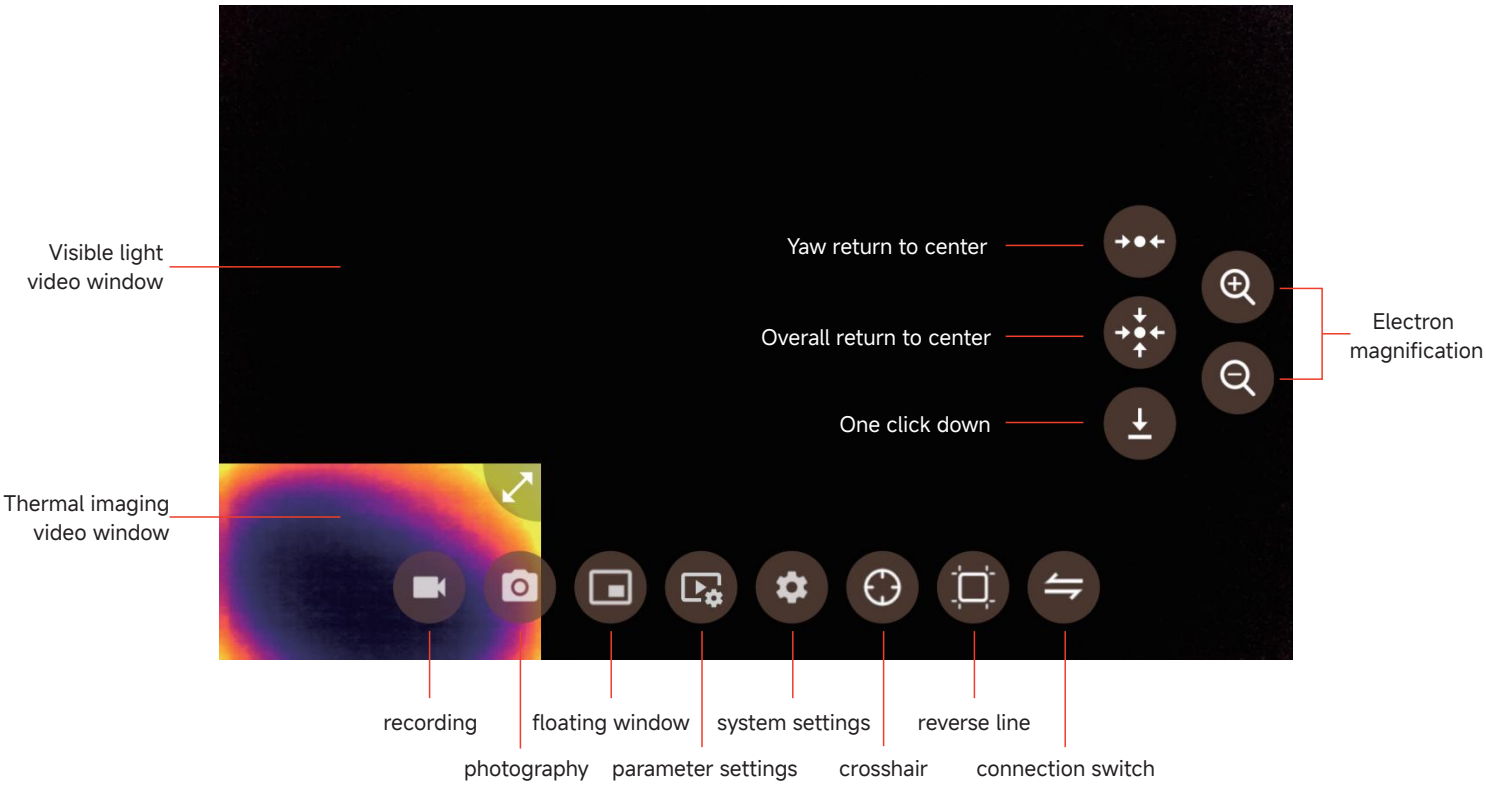
① Power on it

After the installation of the gimbal is fixed, power on it .Please wait for power on to complete.

② Open the gimbal FPV, select the C12 connection, and click to enter.



③ Introduction to the homepage of gimbal FPV

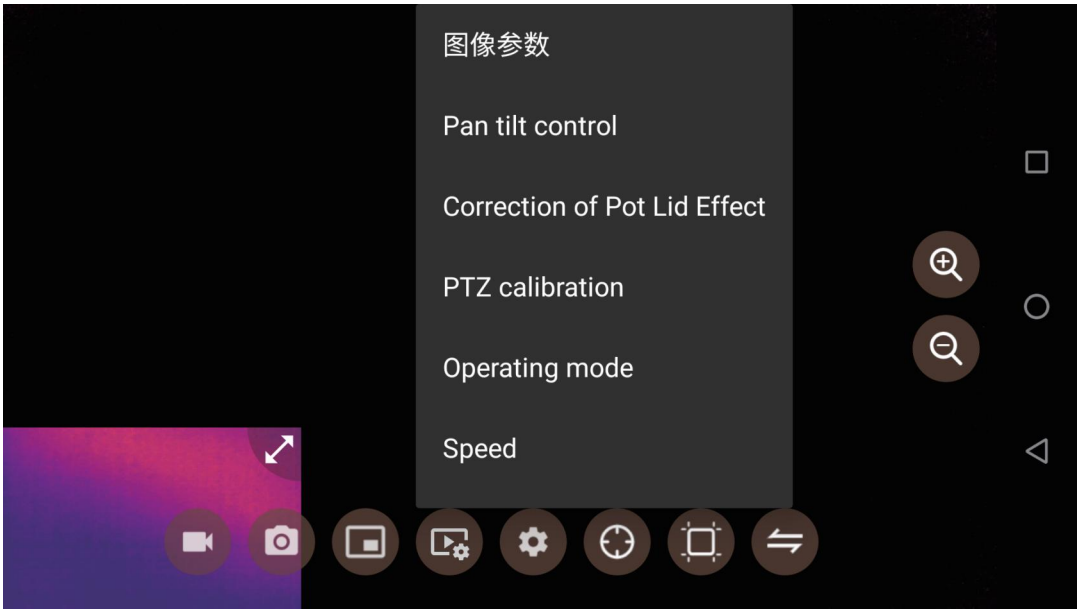


④FFLY GCS settings

APP homepage top left corner  ->Common settings ->Other settings ->User interface ->Video window ->C12

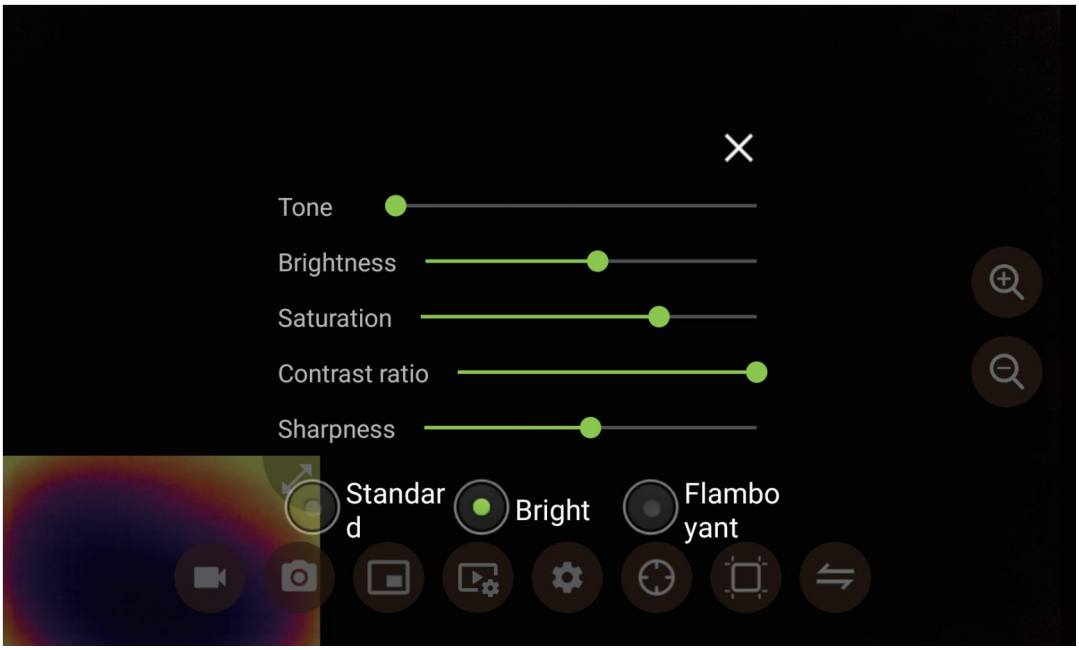
Note: C12 is a dual beam gimbal that requires both video windows to be set

5.5 Parameter settings for C12



In the parameter settings, camera parameters and functions such as calibrating and upgrading the firmware can be set.

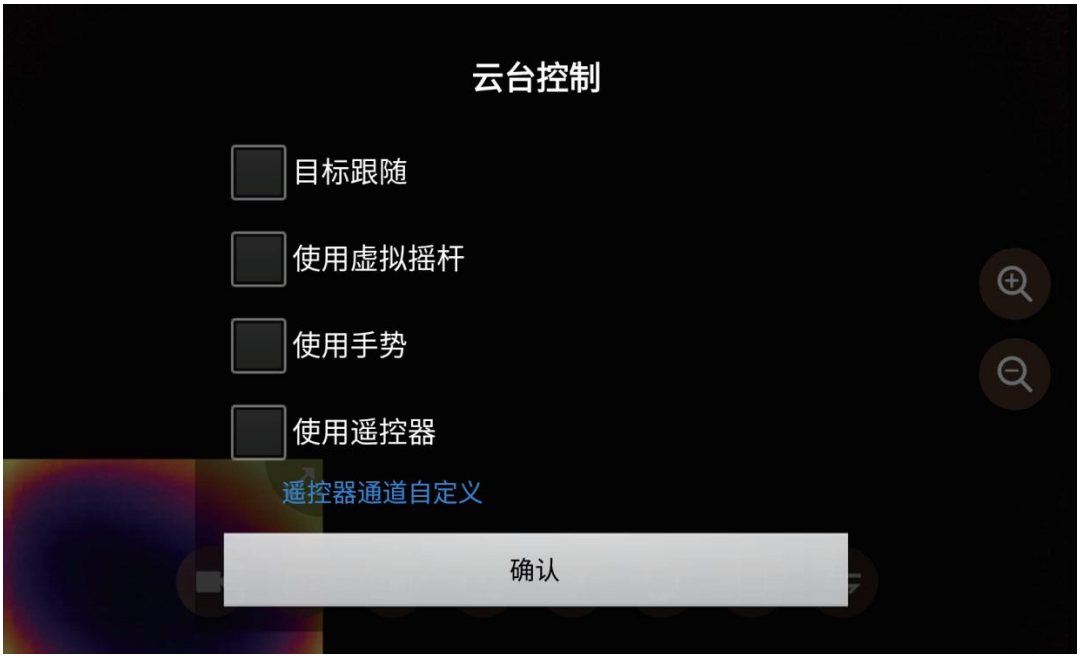
5.5.1 Image parameters



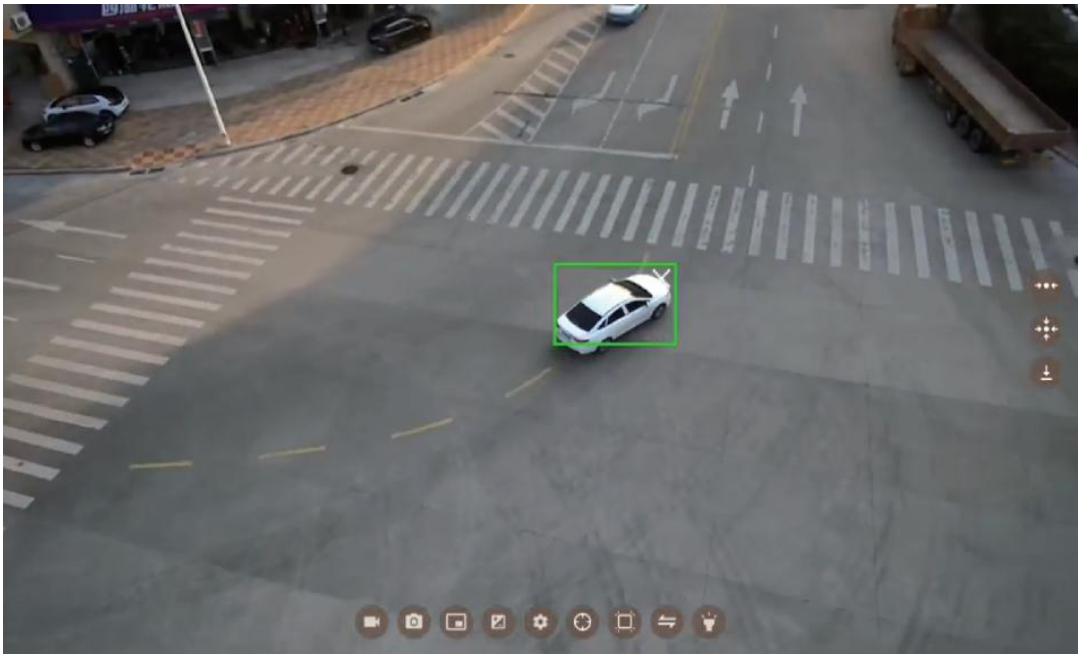
You can set some relevant camera parameters

5.5.2 Gimbal control.

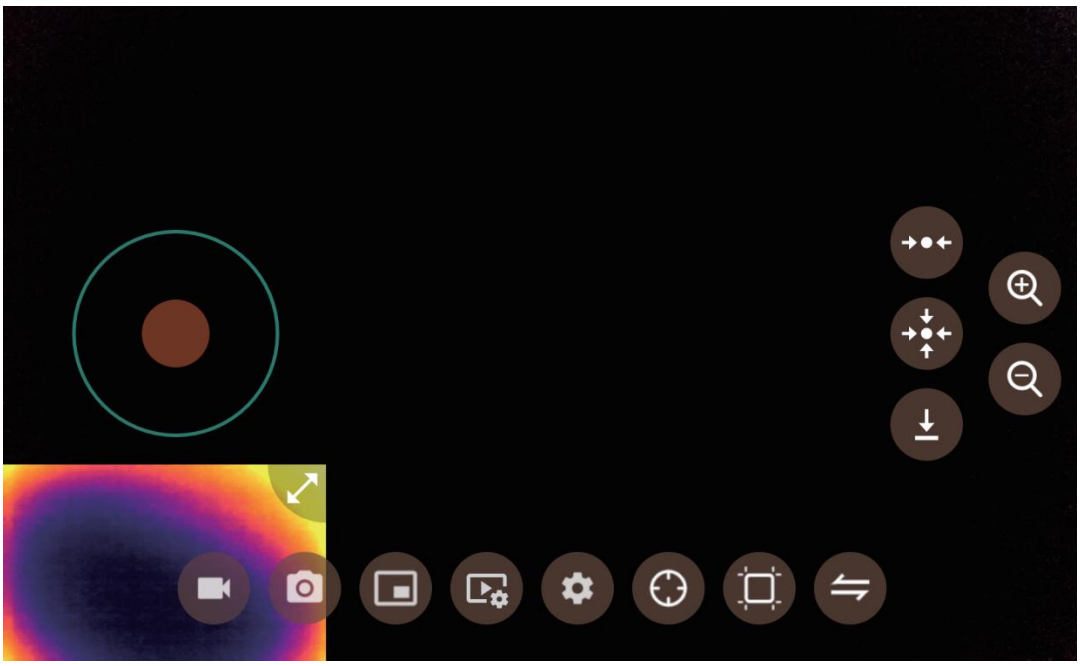
Click on parameter settings ->gimbal control, there are target tracking and other three control ways to choose, which can be chosen simultaneously. （Target tracking can be used simultaneously with gesture control）.



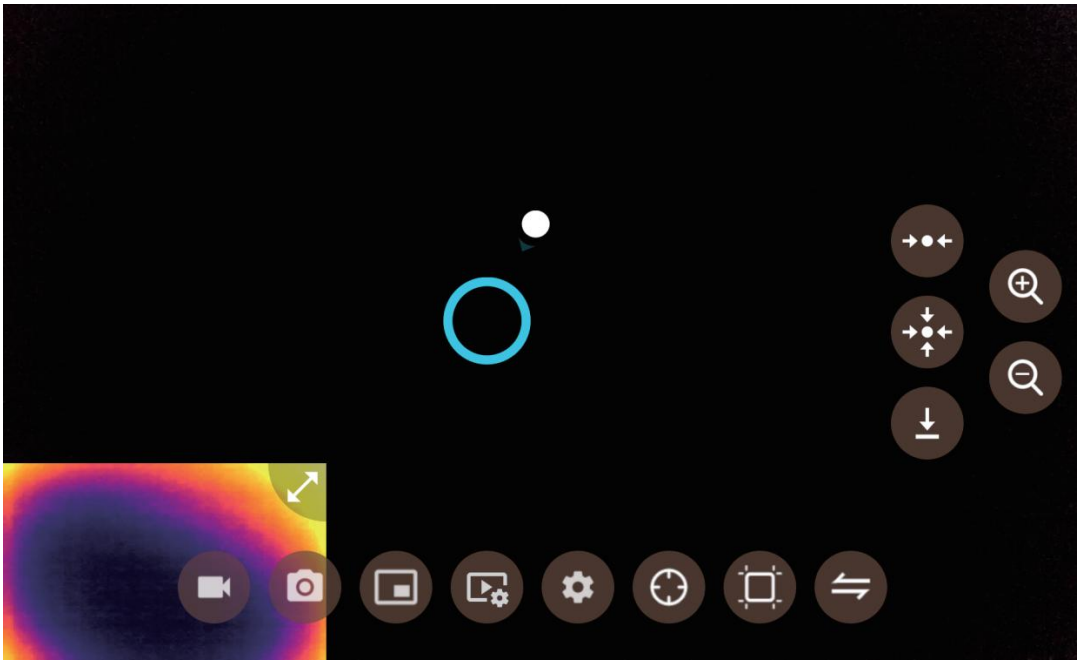
①C12‘s’ target tracking, after selecting this function, C12 will automatically track the target



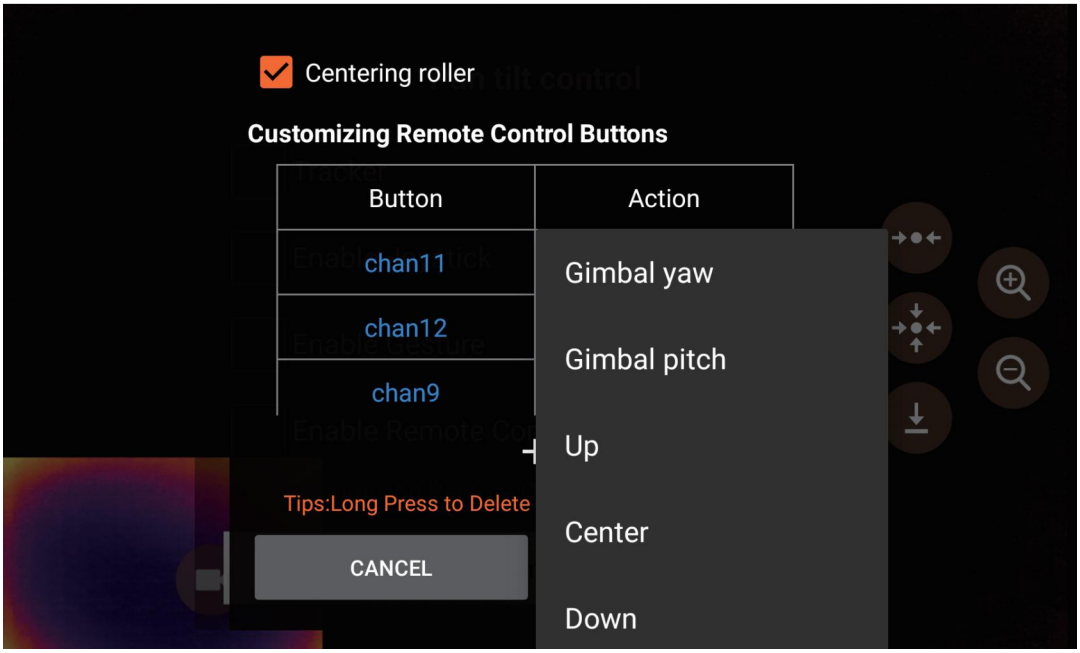
② Virtual joystick control, which can control C12 tilt through it, and supports one click return to center function.



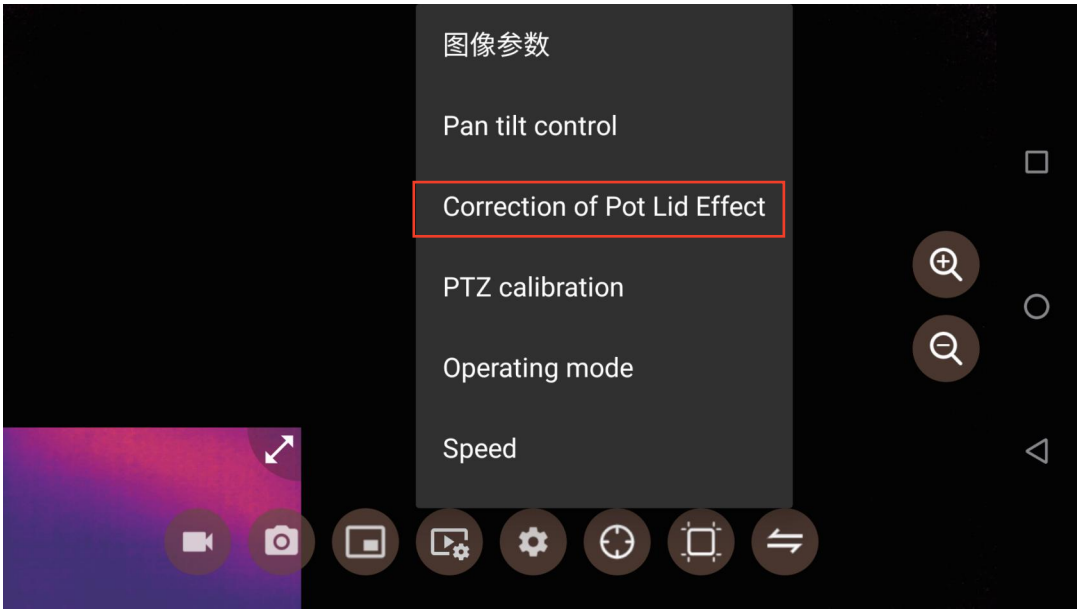
③ Gesture control, controlling C12 tilt by sliding the screen.



④ Use remote control channel to control it, using custom remote control channels to control C12, as well as functions such as photography and video recording. (The remote control channel can be viewed and queried through the Remote Control Assistant ->Rudder View)



5.5.3 Calibration of lid effect

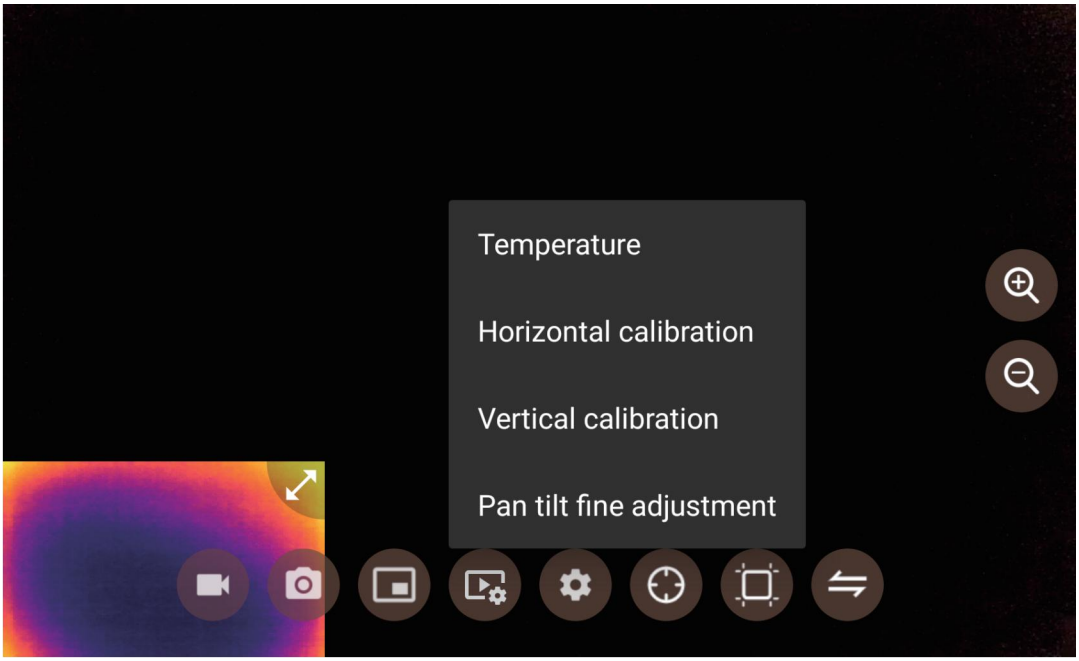


Note: The lid effect has been calibrated before shipping. Due to the special calibration method, please do not calibrate it yourself if it is not necessary. Please contact the relevant technical of Skydroid for confirmation before calibration.
Calibration method:
① Set the C12 color palette to iron red, preheat it for more than five minutes when powered on, and a red heat source will appear around the thermal imaging image.
② Choose a panel with a flat surface, uniform temperature, even frosting, and low reflectivity.
③ The best approach is to move C12 close to but not in touch with the target surface, and the imaging of the target surface covers the entire field of view without stray light entering.
④ Click to calibrate the lid effect. After successful calibration, the red heat sources around the thermal imaging screen will disappear.

Schematic diagram of lid calibration target surface

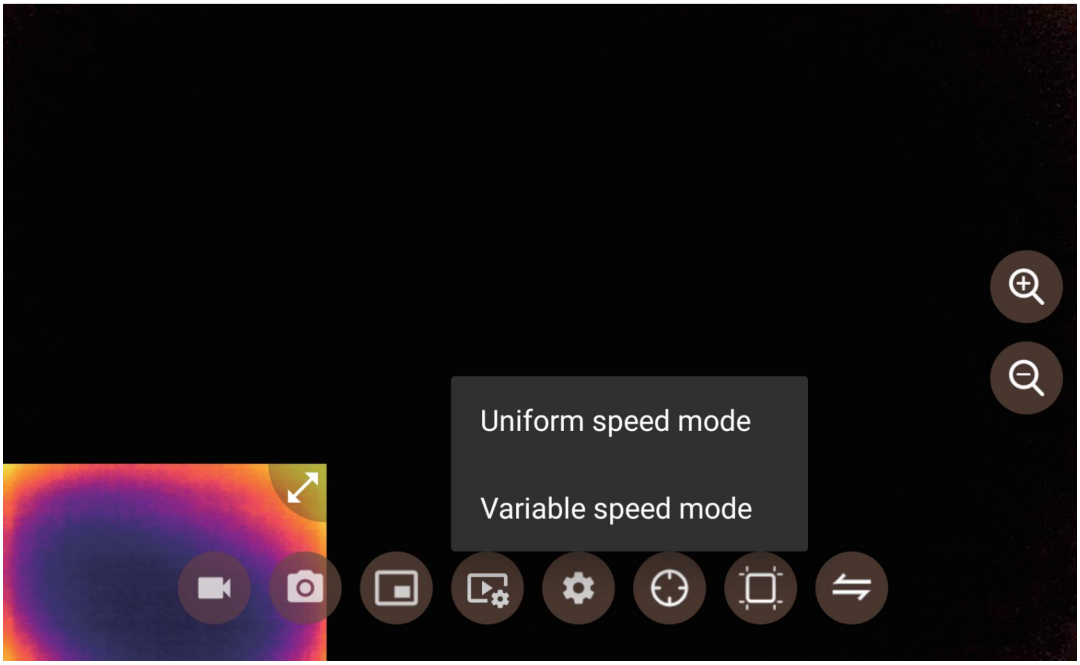
Diagram of Calibration the Lid Effect

5.5.4 Gimbal calibration



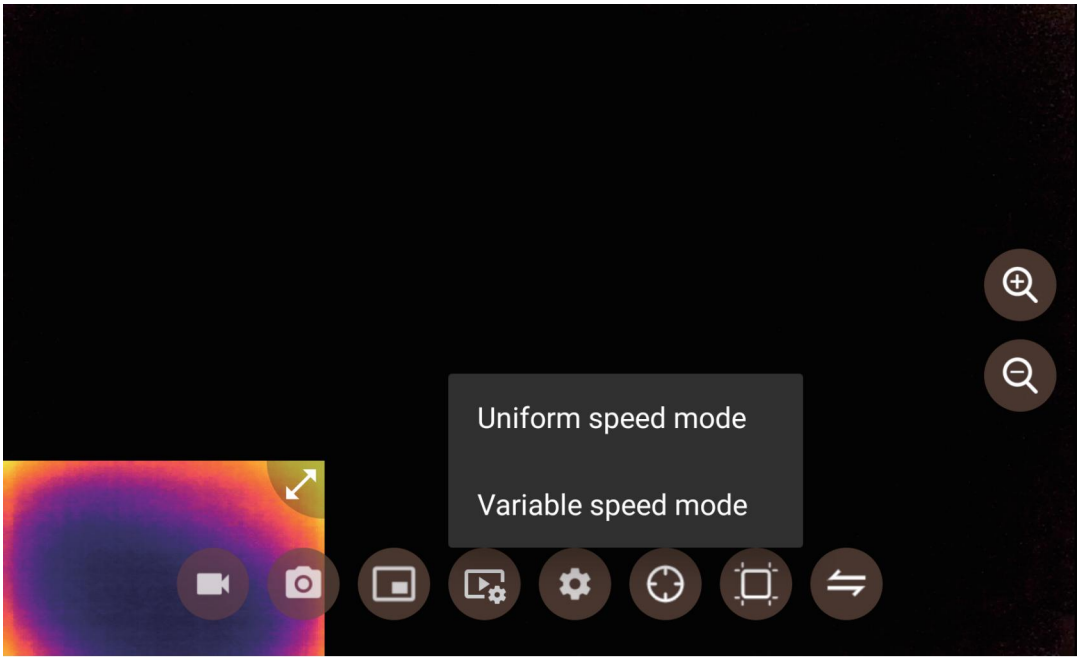
Temperature calibration: Calibrate the temperature of the C20 during use to avoid the inability of C20 due to significant differences between the ambient temperature and the operating temperature of the IMU.
Horizontal calibration: Please place the gimbal on a horizontal plane and ensure that it is in a stationary state, and do not touch or shake the gimbal.
Vertical calibration: After the horizontal calibration is completed, the gimbal will automatically pitch downwards, ensuring that the gimbal is in a stationary state and not touching or shaking the gimbal. And then, do calibration is OK.
C20 fine adjustment: Fine adjust the horizontal and pitch axes of the gimbal.
Note: The gimbal calibration has been completed at the factory before shipping. If there are no pan tilt issues, please do not click.

5.5.5 Gimbal working mode



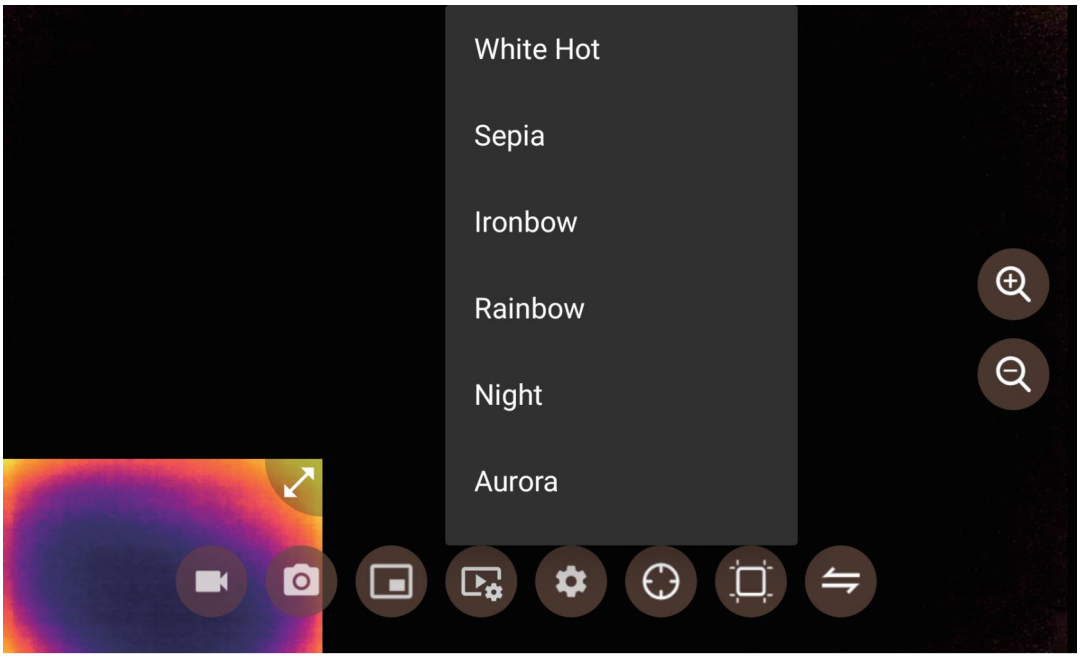
Can set the C12 Pro in hoist mode or upside down mode
Note: Please place the gimbal correctly according to the working mode. Incorrect placement may cause damage to the gimbal motor.

5.5.6 Gimbal speed



The control speed of the gimbal includes constant speed mode and variable speed mode.

5.5.7 Color palette

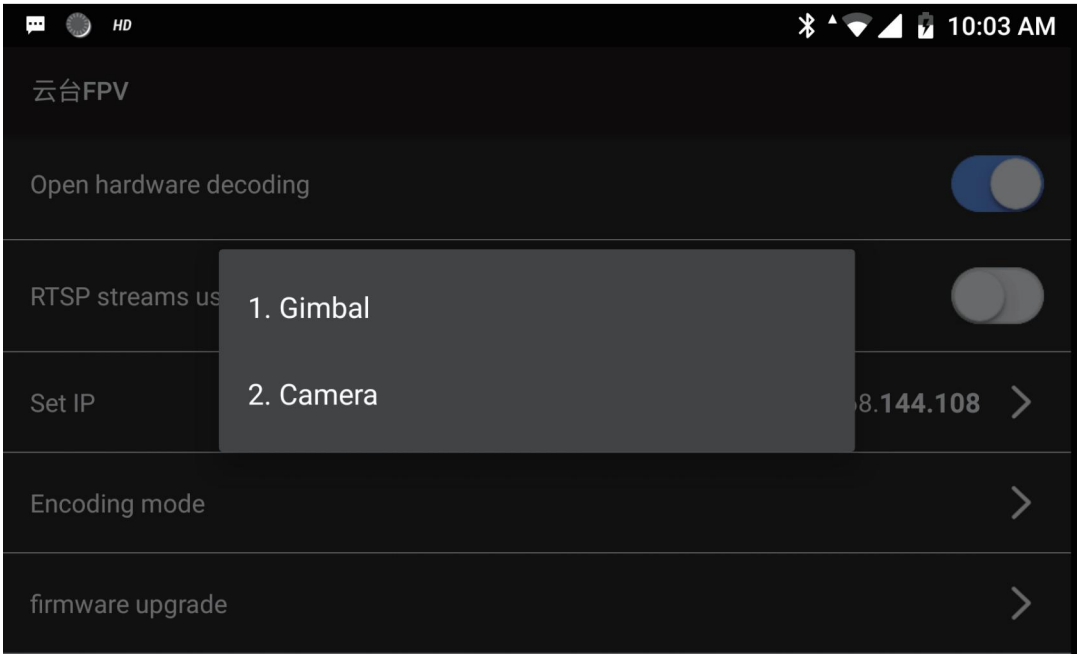


There are eleven optional imaging effects for adjustable thermal imaging cameras.

5.6 Setting Encoding Mode

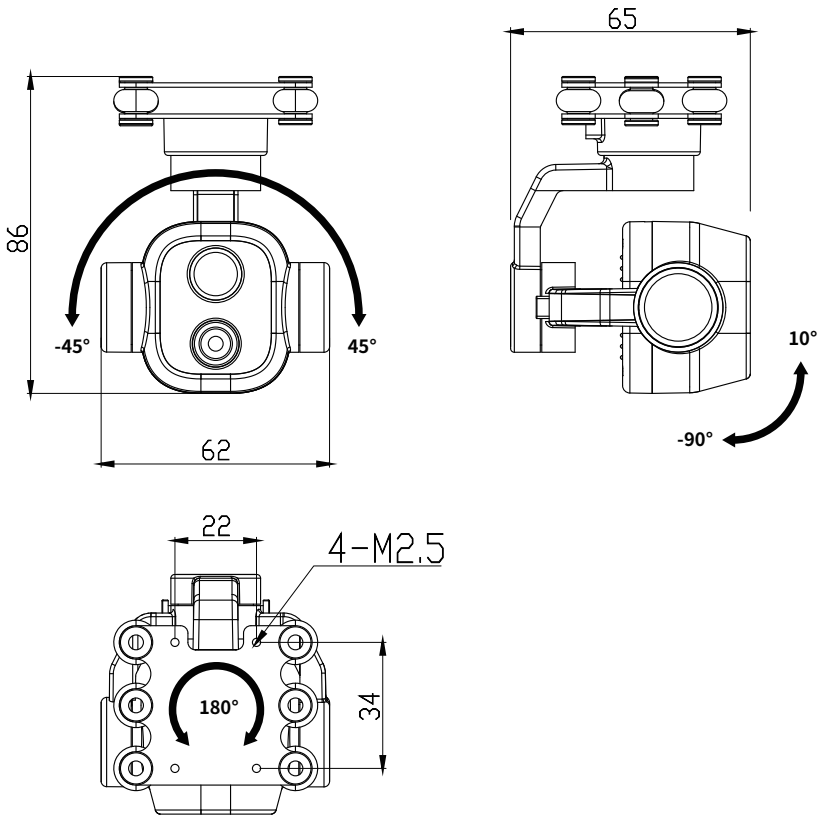
You can set the screen to flip, view the camera firmware version, and display OSD.

5.7 Firmware Upgrade



Upgradeable the C12 firmware and camera firmware. Please do not power off or exit the upgrade interface during the upgrade process. (When upgrading camera firmware, C12 shall with a TF card inserted)

6.C12 size, angle annotation



Due to version evolution and changes in customer requirements, corresponding commands and controls may change. Please contact Skydroid Co., Ltd. for the latest information and technical support. Due to product updates and upgrades, parameters such as size and weight may change. We apologize for any inconvenience caused by this.

7.Precautions

To prevent you and others from harm or damage or protect your device, please read all the following information before using your device.

1.Do not put the components directly at high-intensity radiation sources such as the sun;

2.The ideal operating environment temperature is -10 °C~60 °C;

3.Do not touch the device and cables with wet hands;

4.Do not bend or damage the connecting cables;

5.Do not use diluents to scrub your equipment;

6.Do not plug or unplug cables without disconnecting the power supply;

7.Do not connect the attached cables incorrectly to avoid damaging the equipment;

8.Please pay attention to preventing static electricity;

9. Please do not disassemble the equipment. If there is a malfunction, please contact our company for professional repair.

Tips: Please read the user manual carefully before use!

Skydroid after-sales service hot line:

400-6996-520

Product name：C12
Manufacture: Skydroid Co.,Ltd
2nd/F, Building A, Haixi Yucheng Basement, High-tech Industrial Park, Quanzhou, Fujian,China
E-mail：sales01@skydroid.xin