Skydroid C12PRO

User Manual



Small HD three-axis dual-light gimbal

V1.0

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.

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After sales service terms

1. This clause is only applicable to the products produced by Skydroid, and the products sold by Sky-droid 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 online 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 Sky-droid 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.

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Warnings and Disclaimers

The content mentioned in this document is related to your safety, legitimate rights, interests, and responsibilities. Before using this product, please read this document carefully to ensure that the product has been correctly set up. Failure to comply with and operate according to the instructions and warnings in this document may cause harm to you and people around you, and may damage this product or other surrounding items. Skydroid Technology reserves the final right to interpret this document and all related documents. Updates will be made without prior notice.

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Please visit the official website at http://www.skydroid.xin/ for the latest product information.
The C12PRO gimbal has been debugged according to the camera and lens it is equipped with before leaving the factory. Do not adjust the gimbal or change its mechanical structure on your own, and do not add other external devices to the gimbal. The gimbal has a precise structure. Do not disassemble or assemble the C12PRO by yourself, otherwise it may cause abnormal operation of the gimbal camera.
For the safety of you and others, please ensure that the aircraft is in a safe state during the gimbal debugging. Do not power on and debug in an environment with flammable, explosive substances or in the presence of children. It is highly recommended that you remove the aircraft's propellers before debugging.

A) Ambient temperature: -10°C to +50°C
B) Storage temperature: -20°C to +50°C
C) Atmospheric pressure: 86 kPa to 106 kPa
D) The use location should not have explosive media. The surrounding media should not contain gases that corrode metals and damage insulation, nor conductive media. The presence of excessive water vapor and severe mold is not allowed.
E) The use location should be equipped with facilities to protect against rain, snow, wind, sand, and dust.

Since our company has no control over specific user usage, installation, modification, and misuse, etc. We shall not be liable for any direct or indirect losses or damages caused by the aforesaid circumstances. Example: When the working mode is suspension mounting, powering on the gimbal while placed upside down for a long time will result in failure of gimbal motor self-check and damage caused by self-excitation. Do not keep the device powered on for an extended time, and place it with correct installation method.
Our company shall not assume corresponding liability for losses and compensation. If you use, install or assemble Skydroid products, the user shall bear all relevant consequences. Our company shall not be responsible for any direct or indirect losses or injuries incurred from the use of this product.

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Ⅰ、Product Introduction

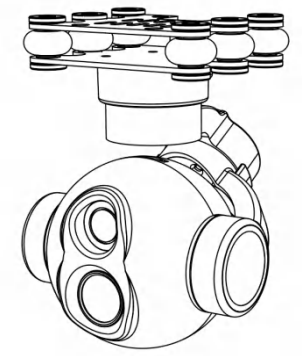
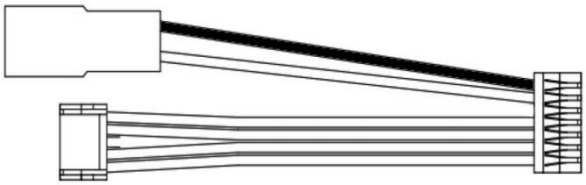
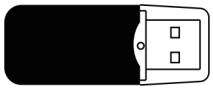
The C12PRO is a compact HD dual-light gimbal pod. Adopting a new-generation image processor paired with HD distortion-free cameras, it delivers an effective pixel count of 8 million. It features powerful 4K video recording and photography capabilities and supports 30× digital zoom, capturing sharp images anytime and anywhere to bring distant scenes into clear view.

It is equipped with a thermal imaging camera with 512*384 resolution, offering a wide field of view and crisp imagery for detection of various heat sources. The housing is upgraded with industrial-grade CNC material for enhanced durability. The high-precision 3-axis mechanical system limits hovering jitter to ±0.01° and flight jitter to ±0.02°, delivering stable and smooth video output. It supports RTSP video transmission and UDP control protocol, compatible with LAN port access of UAV receivers.

Weighing only 140g, the lightweight body fits multiple UAV platforms and can be applied in scenarios including fire rescue, patrol inspection, search and rescue, security monitoring and more.

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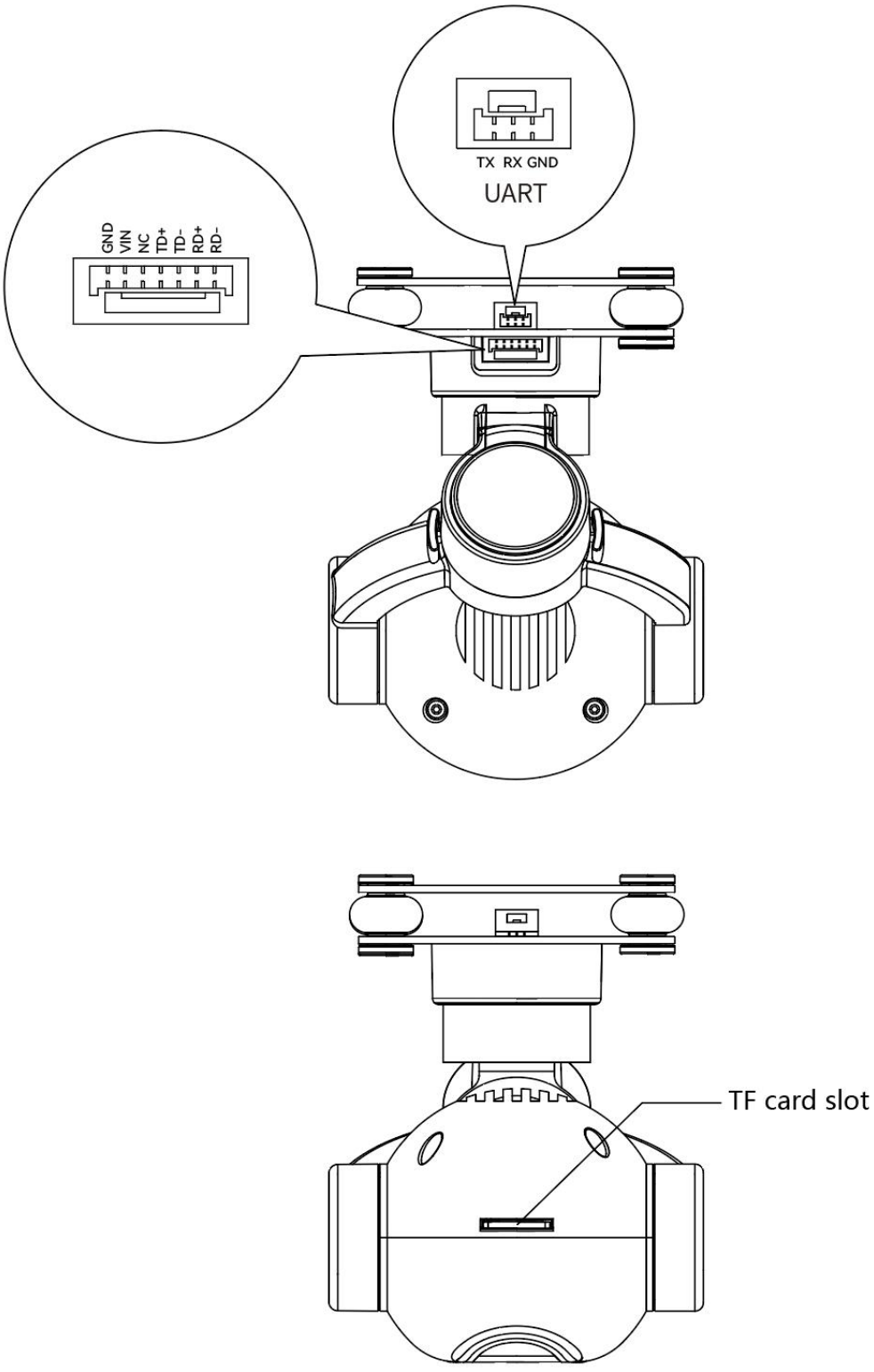
Ⅱ、 Product List

C12PRO Main Body ×1	
Gimbal fixing screws (M2.5*6) ×4	
LAN port power cable ×1	
Memory Card × 1 (Already installed)	
Card reader×1	

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Ⅲ、 Product Overview

Interface and Definition Instructions



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IV、 Product Parameters

C12 PRO Parameters	
Video output signal interface	LAN Port
Control signal input interface	LAN Port
Operating Voltage	15V~80V
Operating Current	15V 310mA
Operating Temperature	-10℃~+50℃
Storage Temperature	-20℃~+50℃
Weight	140g
Dimensions	61.6mm (Length) × 63.8mm (Width) × 84.2mm (Height)
Controllable angle range	-90° to +60° (Pitch axis); -100° to +100° (Yaw axis); -40° to +40° (Roll axis)
Ceiling-mounted/Inverted-mounted mode	Supported
Global centering/One-key downward/Yaw centering	Supported

C12PRO Visible Light Camera Specifications	
Lens Pixel	8MP
CMOS size	1/2.7"
Lens Focal Length	f=3.0mm
Aperture	F2.0
HFOV / VFOV / DFOV	105°/58°/122°
Zoom Ratio	30x Digital Zoom
Video Transmission Resolution	1280×720
Video Resolution for Card Recording	3840×2160
Video storage format	H265
Photograph resolution	3840×2160

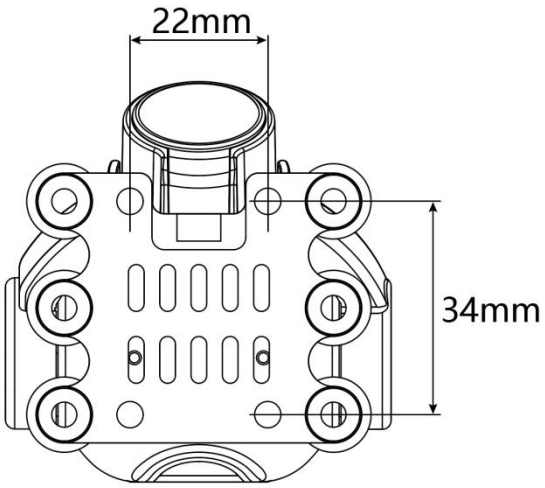
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Image storage format	JPEG
Supported Memory Card Type	MicroSD Card (Max. 256GB)
Supported File System	FAT32

C12PRO Thermal Imaging Camera Specifications	
Resolution	512*384
Frame Rate	≤25Hz
Thermal Time Constant	<10ms
Focal Length	7mm
Aperture	F1.0
HFOV/VFOV	24.8°*18.7°
Pixel Pitch	12μm
Spectral Range	8~14μm

V、Installation and Debugging

5.1 The schematic diagram of screw holes and their spacing is as follows:



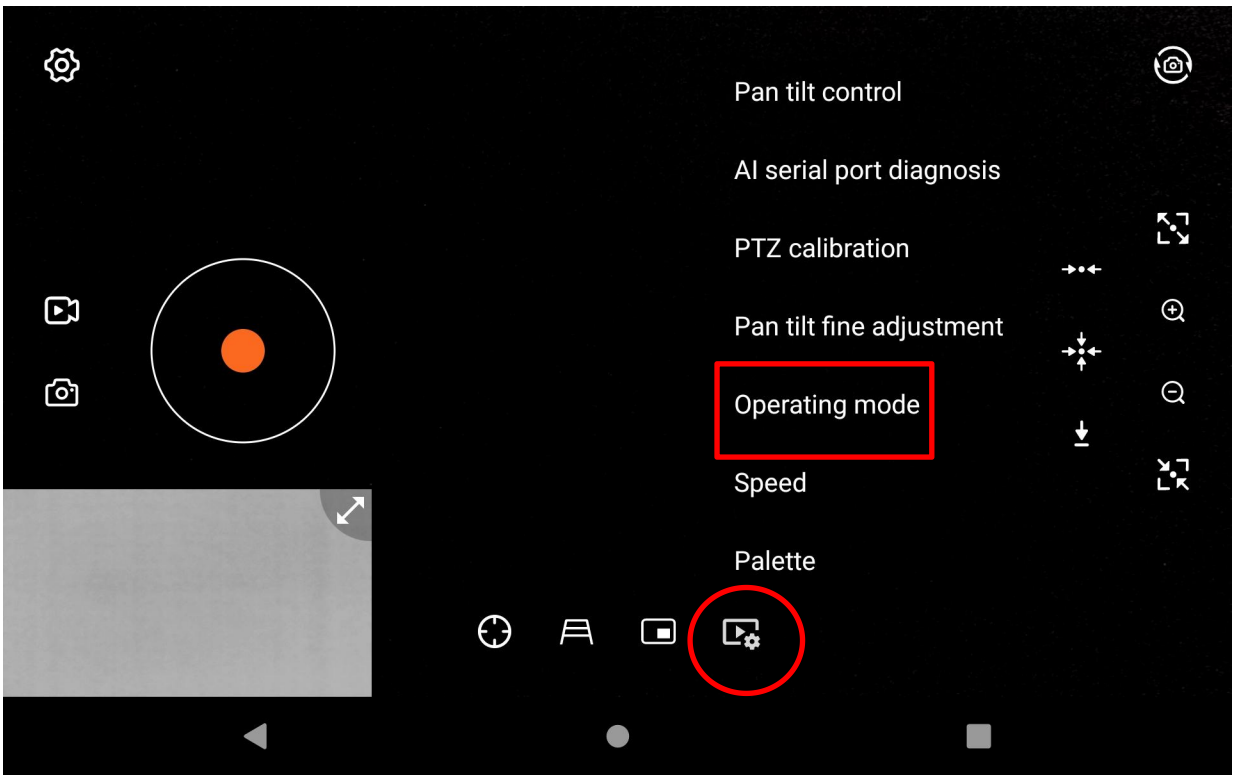
Note: The screw specifications for the pan - tilt are M2.5*6, and the quantity is 4. Do not hang the gimbal on the aircraft when it is not in use. Long - term hanging

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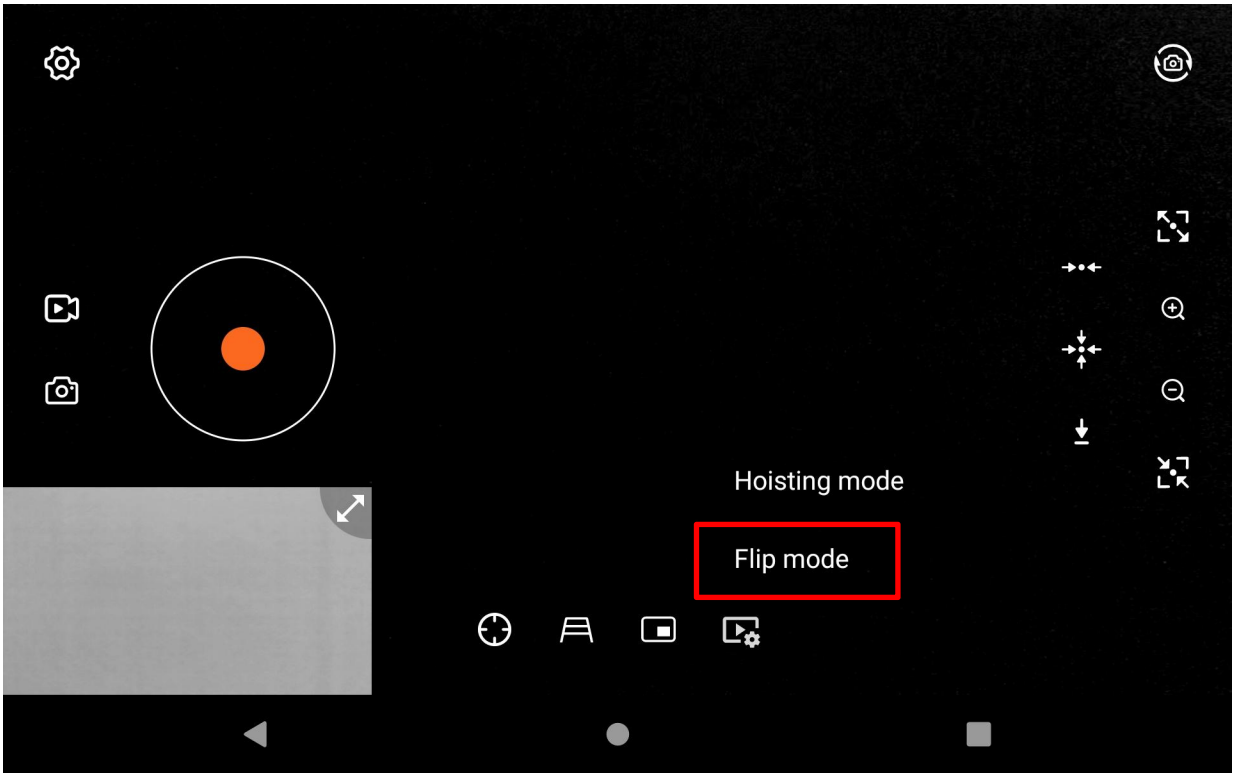
will accelerate the deformation of the shock - absorbing balls, resulting in a decline in shock - absorbing performance and the appearance of the "jello" effect.

When installing the gimbal, the shock - absorbing plates must be kept absolutely perpendicular and parallel to each other. Incorrect installation will cause the shock - absorbing balls to deform, leading to a decrease in shock - absorbing performance and failure of self - inspection.

5.2 Gimbal Working Modes



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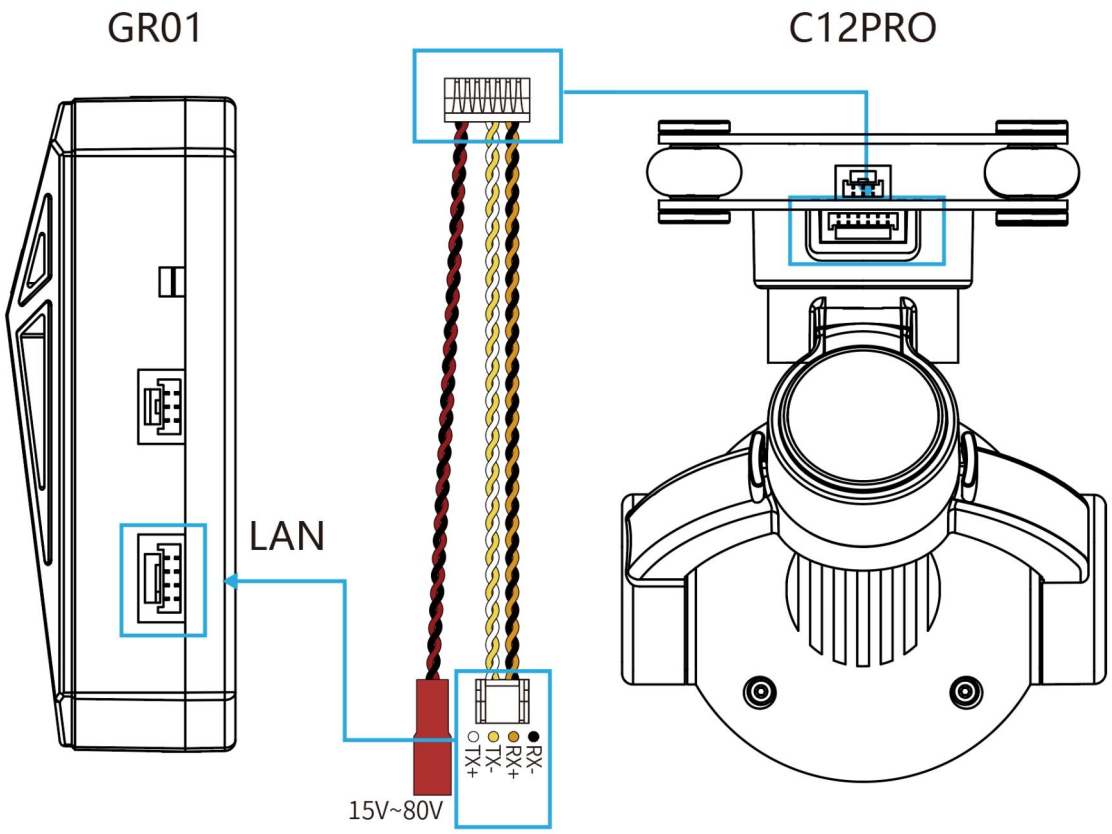
You can set the gimbal to the hoisting mode or the flip mode in the FPV settings.

Note: The hoisting mode is the default setting at the factory. Do not power on when it is installed in an inverted way. If upside-down mounting is required, complete self-check under suspension mode first, then switch the operating mode to upside-down mode before installing or placing it upside down.

Set the gimbal orientation according to the operating mode. Wrong placement leads to self-check failure. Long-term self-excitation may damage gimbal motors.

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5.3 Gimbal Wiring Diagram and Explanation



Power	Red JST - 2P male connector. Power supply: 15V - 80V (DC power supply or 4S-18S lithium battery)	
LAN Port Cable (For 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	

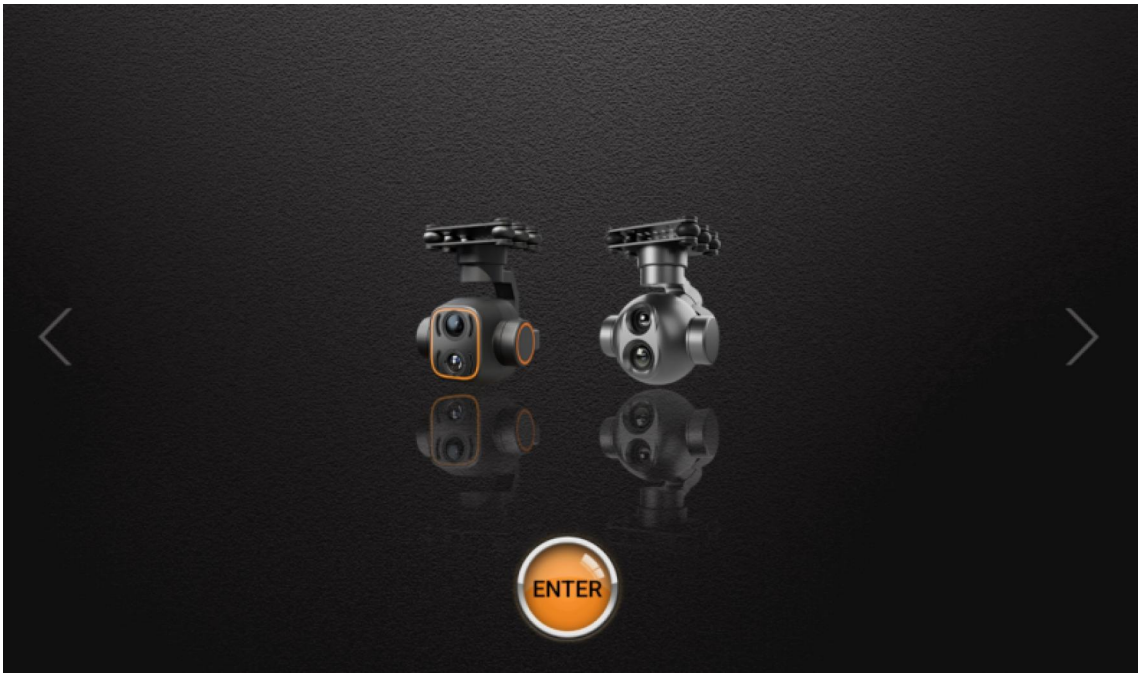
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5.4 Usage of C12PRO

Install and open the latest version of the Gimbal FPV software on the remote controller.

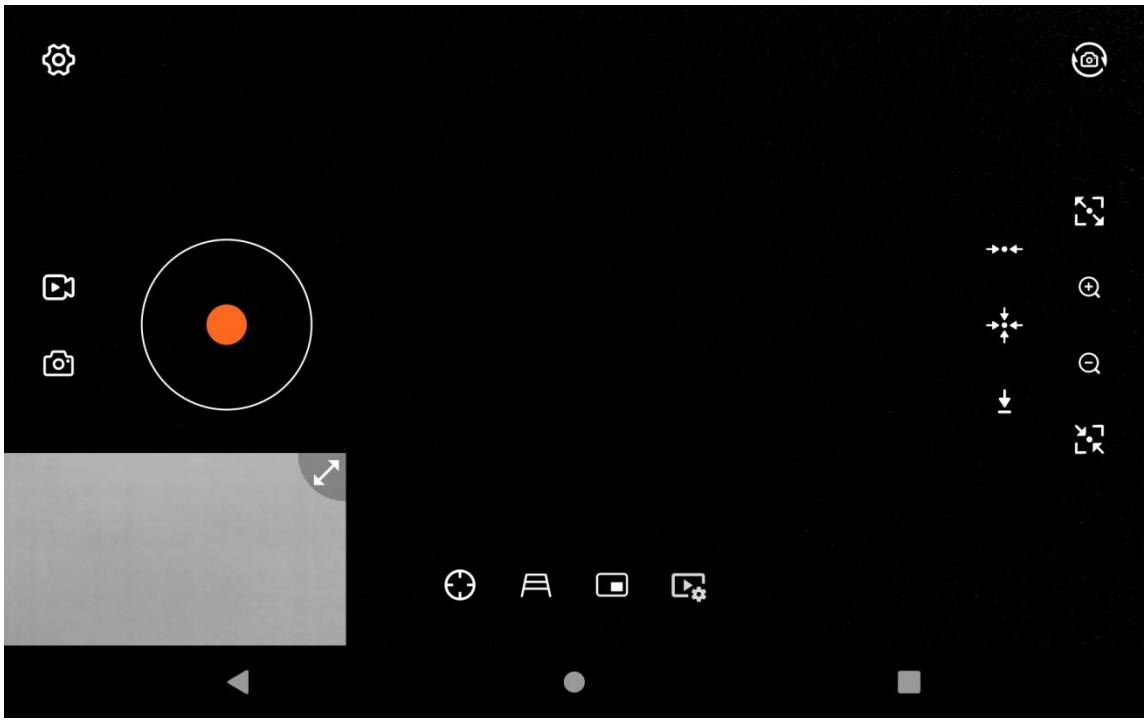
Software download address: http://file.skydroid.xin/SkydroidCameraFPV.apk 

① Gimbal startup
After the gimbal is properly installed and fixed, power it on. The gimbal will start up. Please wait until the startup is complete.
② Open the Gimbal FPV software, select the C12PRO, and click to enter.



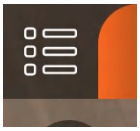
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③FPV Gimbal Homepage Introduction

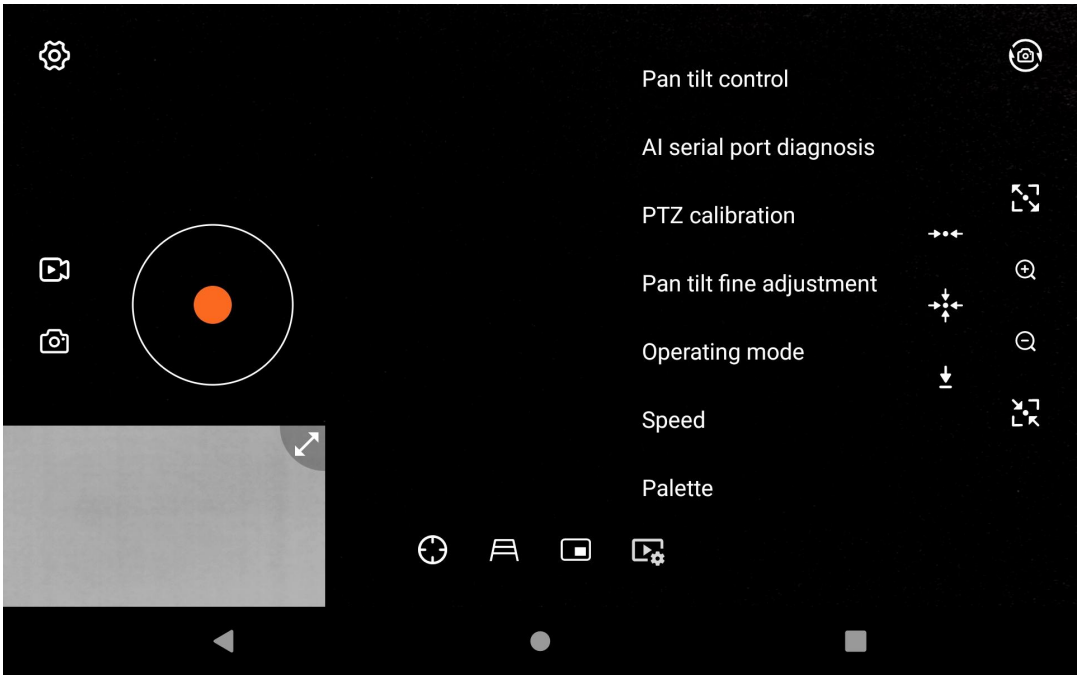


FLY GCS Screen Settings

Skydroid FLY Download Link: http://file.skydroid.xin/SkydroidFly.apk

On the top-left corner of the APP’ s homepage  ->  ->Tap to open the left window and set it to C12/C12PRO.

5.5 Gimbal Parameter Settings

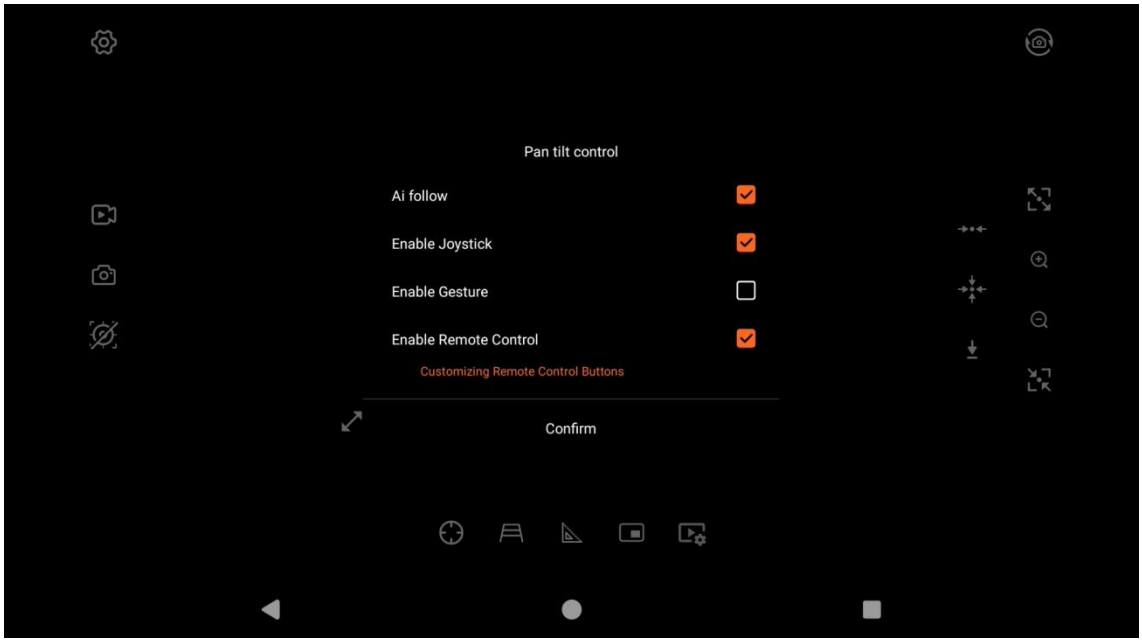


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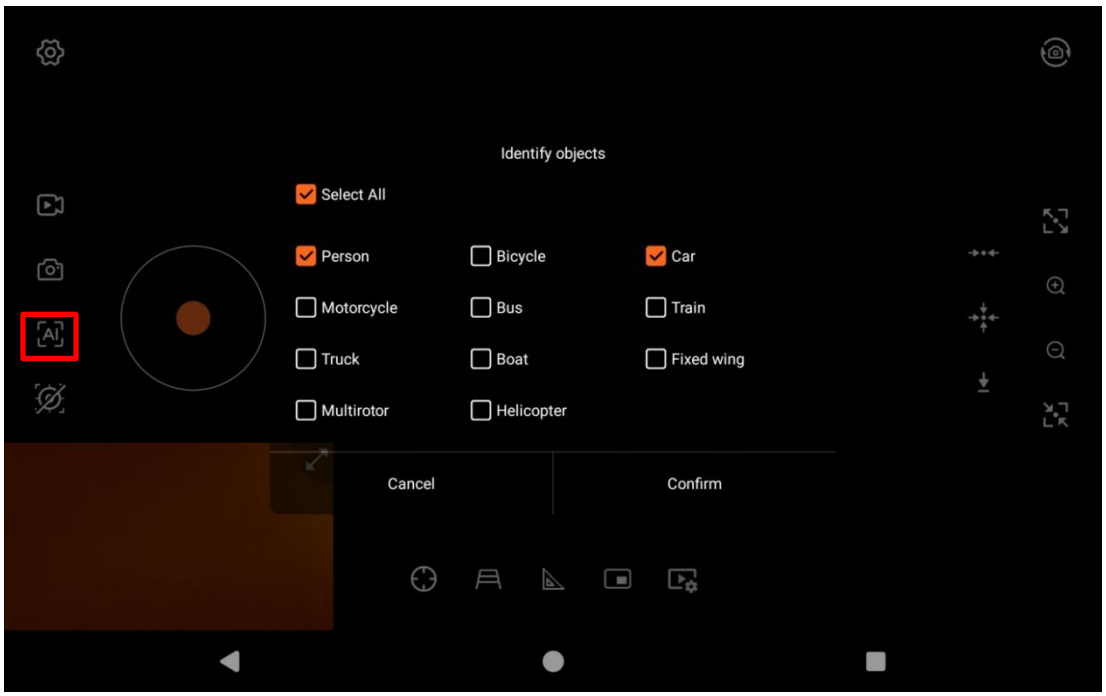
Functions including gimbal control, calibration, fine-tuning, operating mode, speed and color palette can be configured in parameter settings.

5.5.1 Gimbal Control

Click Parameter Settings -> Pan-tilt Control, there are target following and three control methods to choose from, and multiple methods can be selected simultaneously. (Target following cannot be used simultaneously with gesture control.)

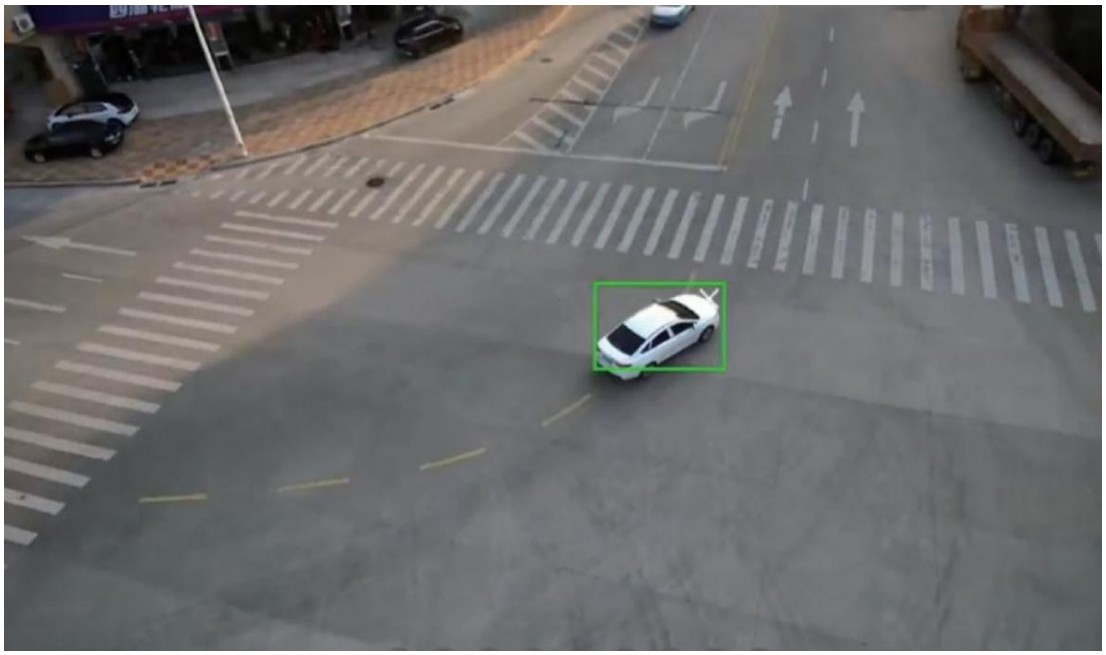


① Gimbal AI Object Tracking, tap the AI icon to select single, multiple or all targets for automatic identification and tracking.



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C12PRO will identify objects automatically (marked with green frames for detected targets).

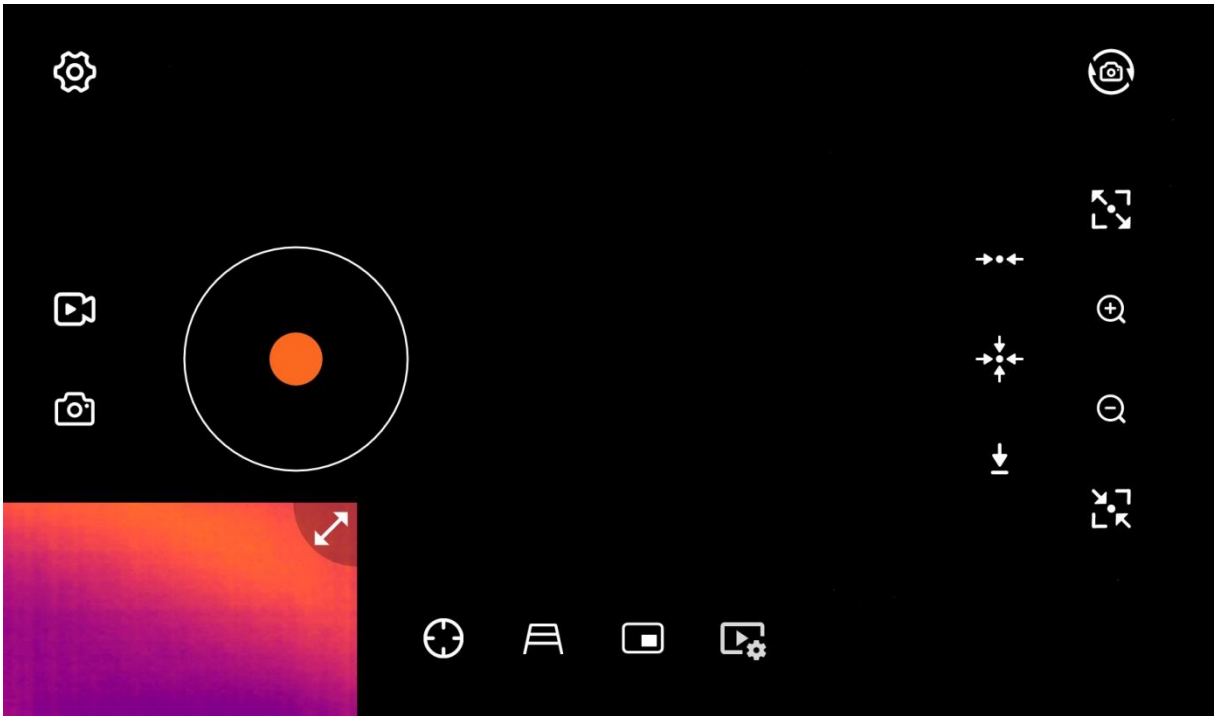


Tap the target inside the frame to lock it (the frame will turn white). The C12PRO will then track the target autonomously.

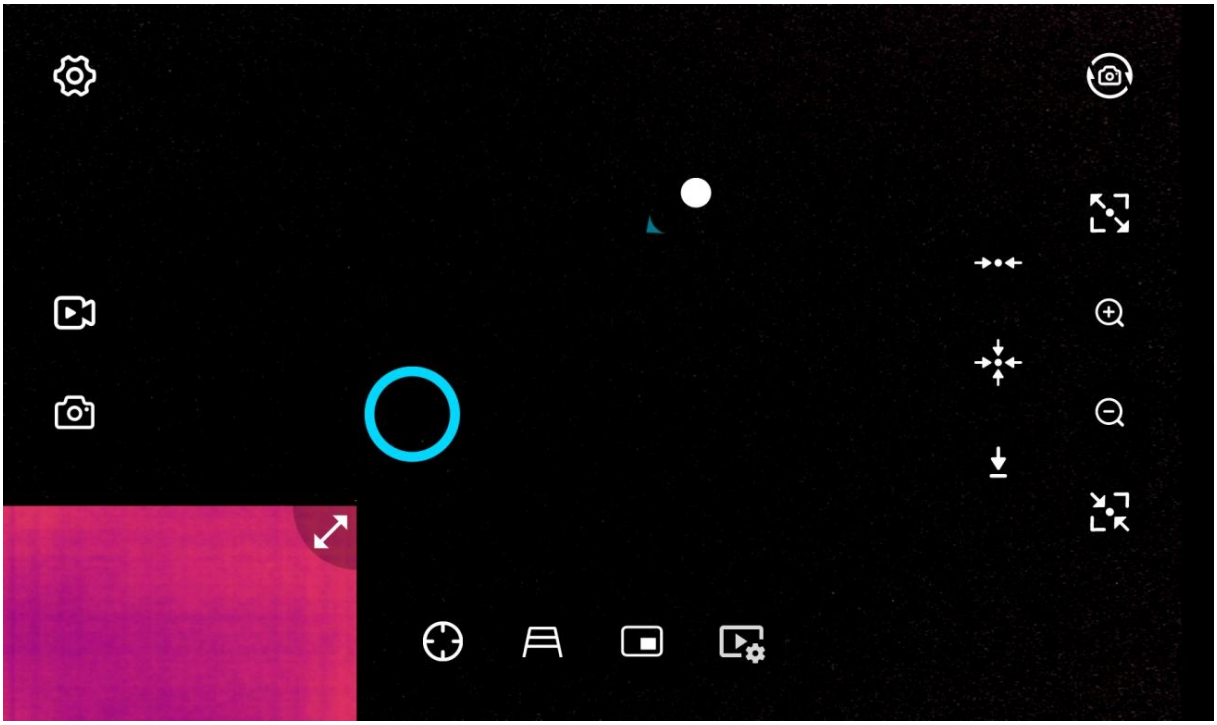


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② Virtual joystick control: You can use the virtual joystick to control the pan and tilt of the gimbal. It also supports functions such as one - key return to the center.

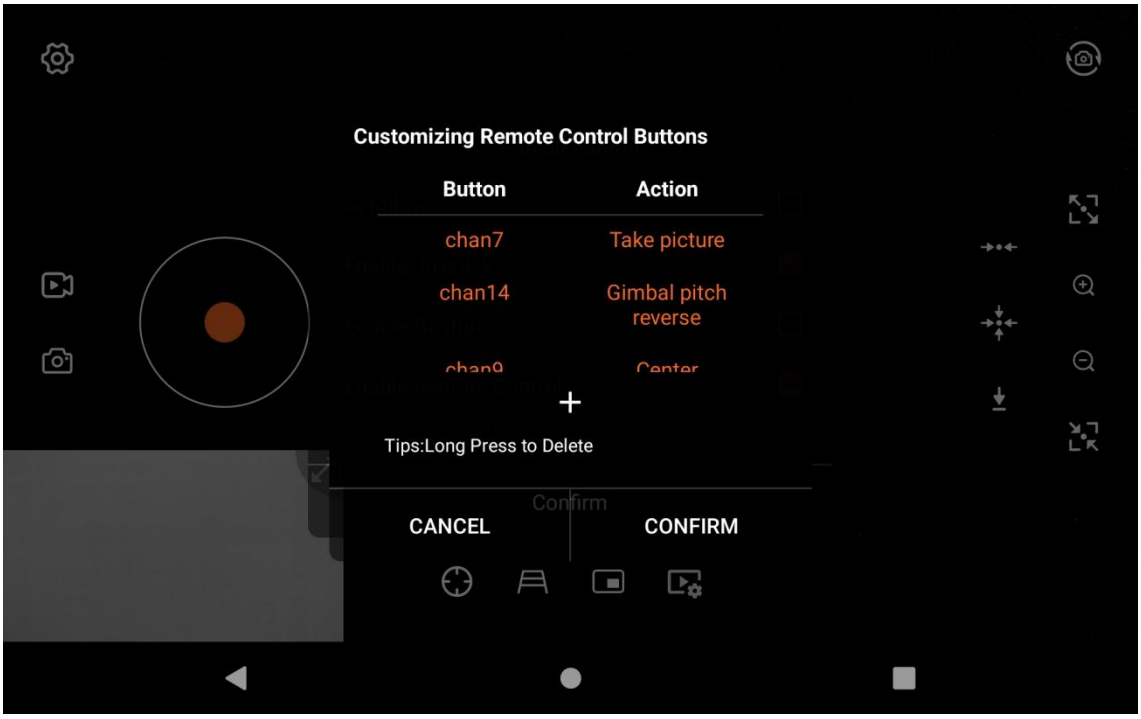


③Gesture Control: Control gimbal pan and tilt by sliding the screen.

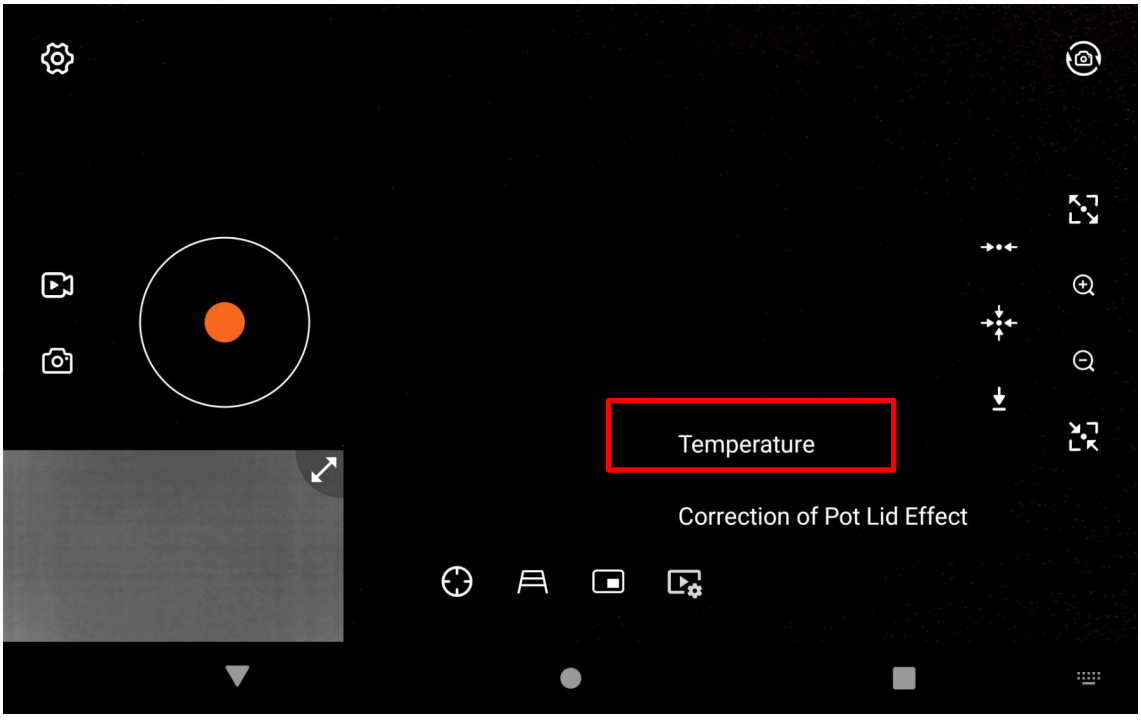


④Remote Controller Channel Control: Custom remote controller channels can be configured to control gimbal pan and tilt, as well as photo capture, video recording and other functions. (Remote controller channel values can be checked via Device Assistant -> Servo Value Monitor

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5.5.2 Gimbal Calibration

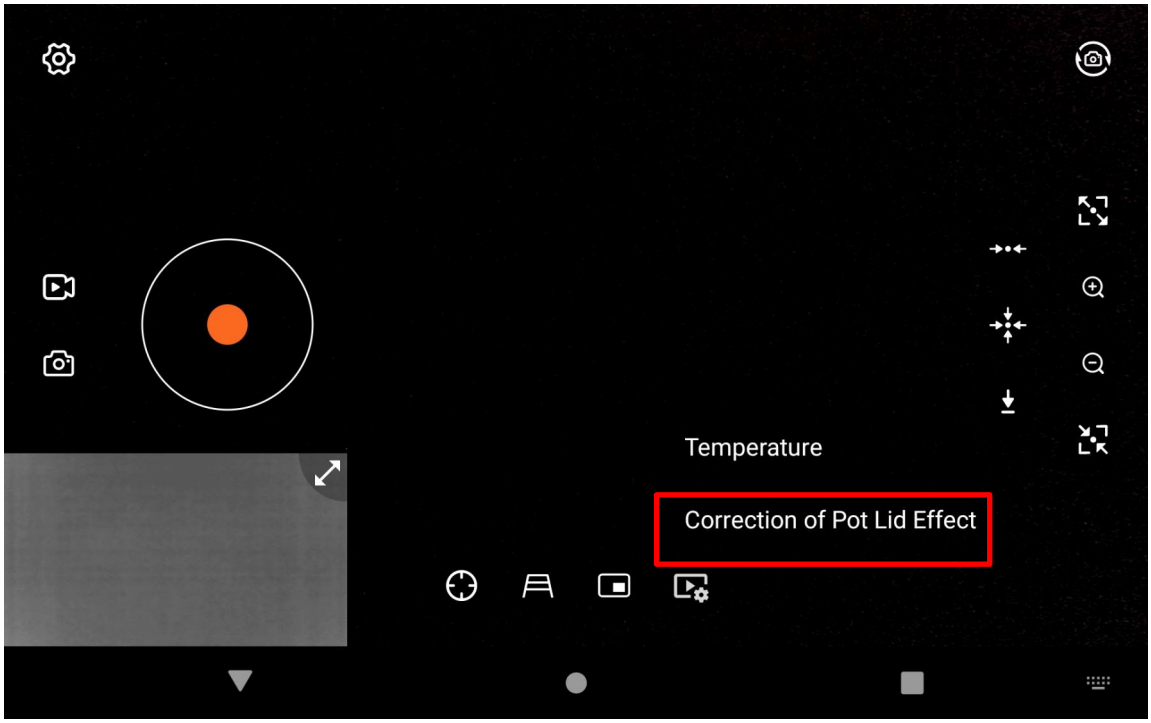


Temperature Calibration: Calibrate the temperature of the gimbal during operation to prevent malfunction caused by excessive temperature differences between the ambient environment and the IMU’ s operating temperature.

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Temperature calibration is finished during production. User calibration is not required under normal circumstances. Kindly contact Skydroid technical support for verification and the calibration password prior to performing calibration.

5.5.3 Correction of Pot Lid Effect



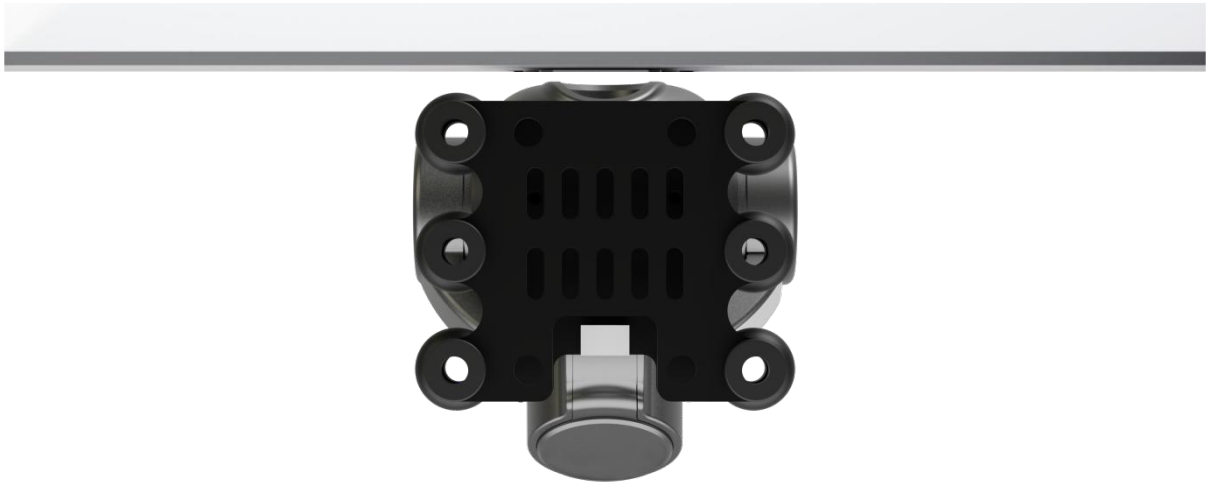
Note: The lid effect has been calibrated upon delivery. Due to the special calibration method, do not calibrate it yourself unless necessary. Before calibration, please contact the relevant technicians from Skydroid for confirmation.

Calibration method:
① Power on the C12PRO and let it preheat for more than five minutes.
② Select a panel with a flat surface, uniform temperature, even frosting, and low reflectivity.
③ Move the C12PRO close to and make contact with the target surface. It is optimal when the imaging of the target surface covers the entire field of view without any stray light entering.
④ Click "Calibrate the Lid Effect", and the calibration is successful when the screen turns into a uniform gray.

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Schematic diagram of the calibration target surface for the lid - like effect



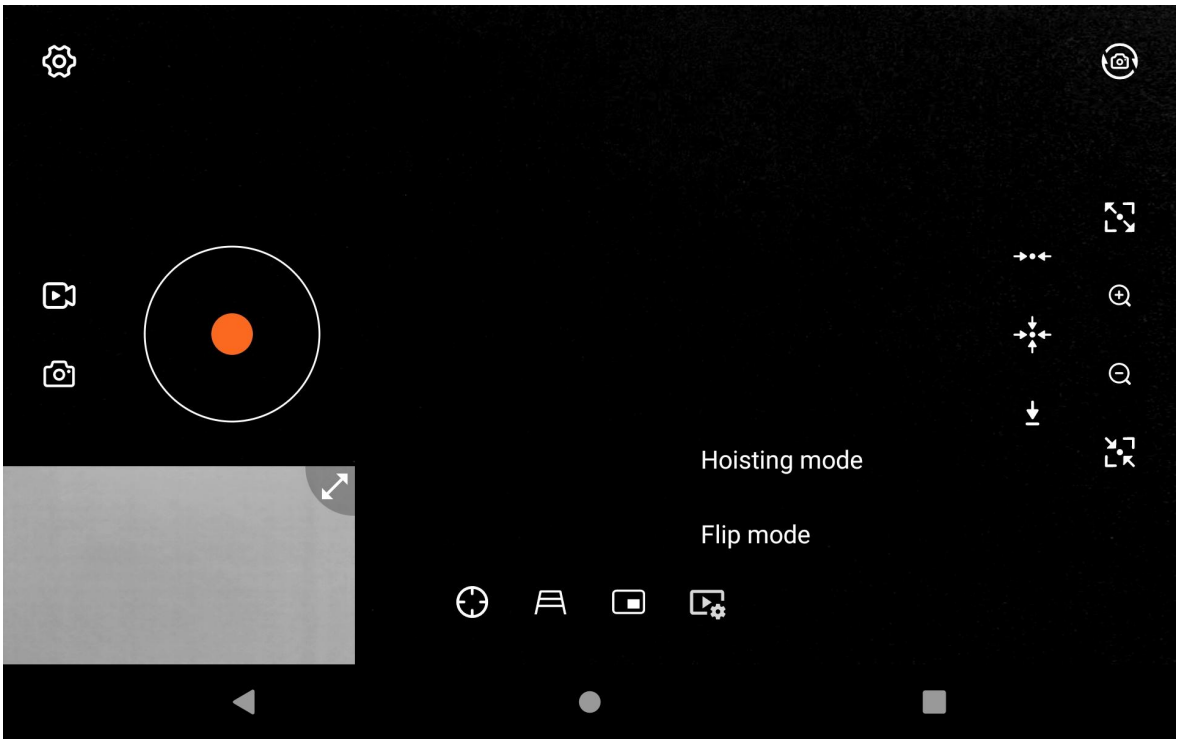
Schematic diagram of calibrating the lid effect

Gimbal Fine-Tuning: Fine-tune the gimbal’ s horizontal and pitch axes.

Note: The gimbal is factory-calibrated. Do not perform this operation unless gimbal malfunctions occur.

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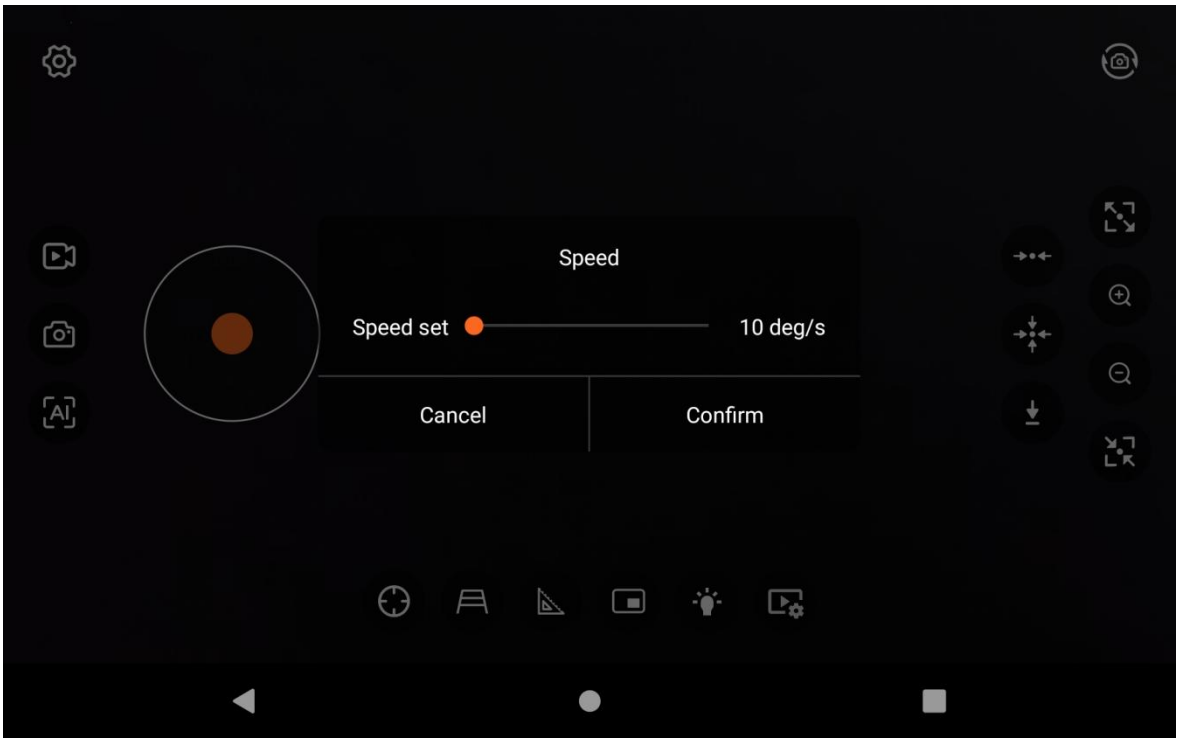
5.5.4 Operating Modes



The gimbal can be set to either top-mounted or inverted-mounted mode.

Note: Please mount the gimbal correctly according to the operating mode. Incorrect mounting will cause damage to the gimbal motor.

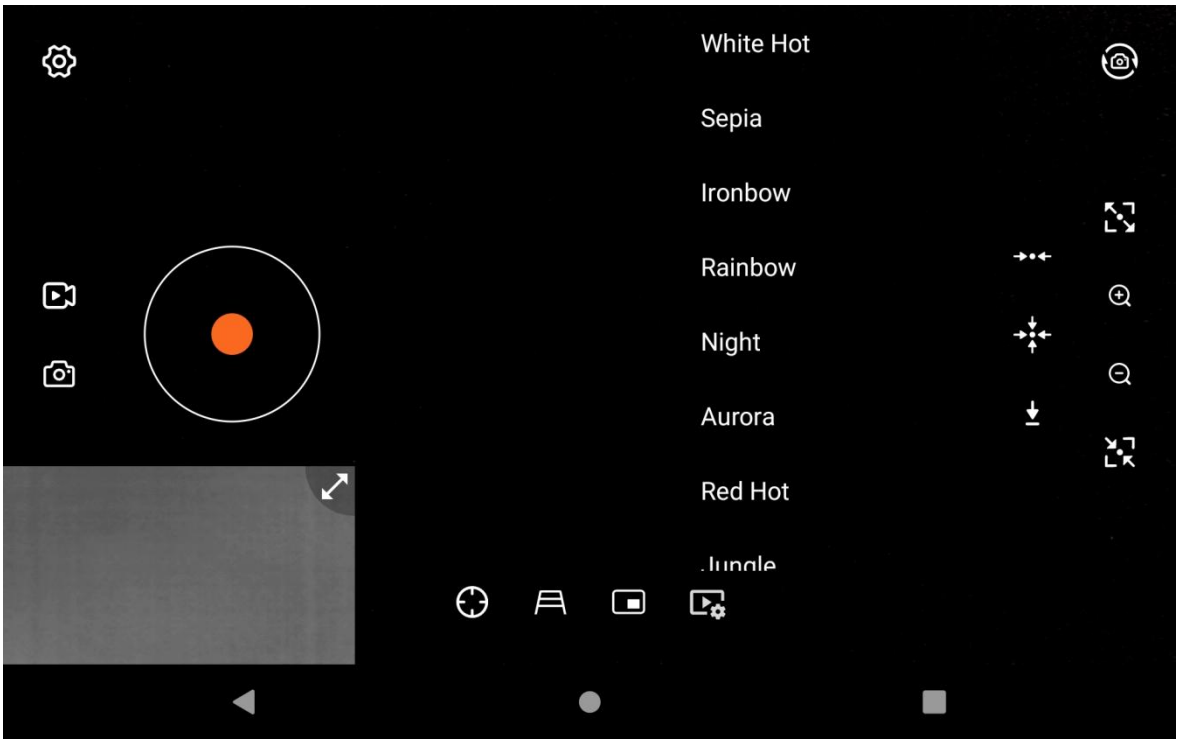
5.5.5 Gimbal Speed



Gimbal control speed can be configured.

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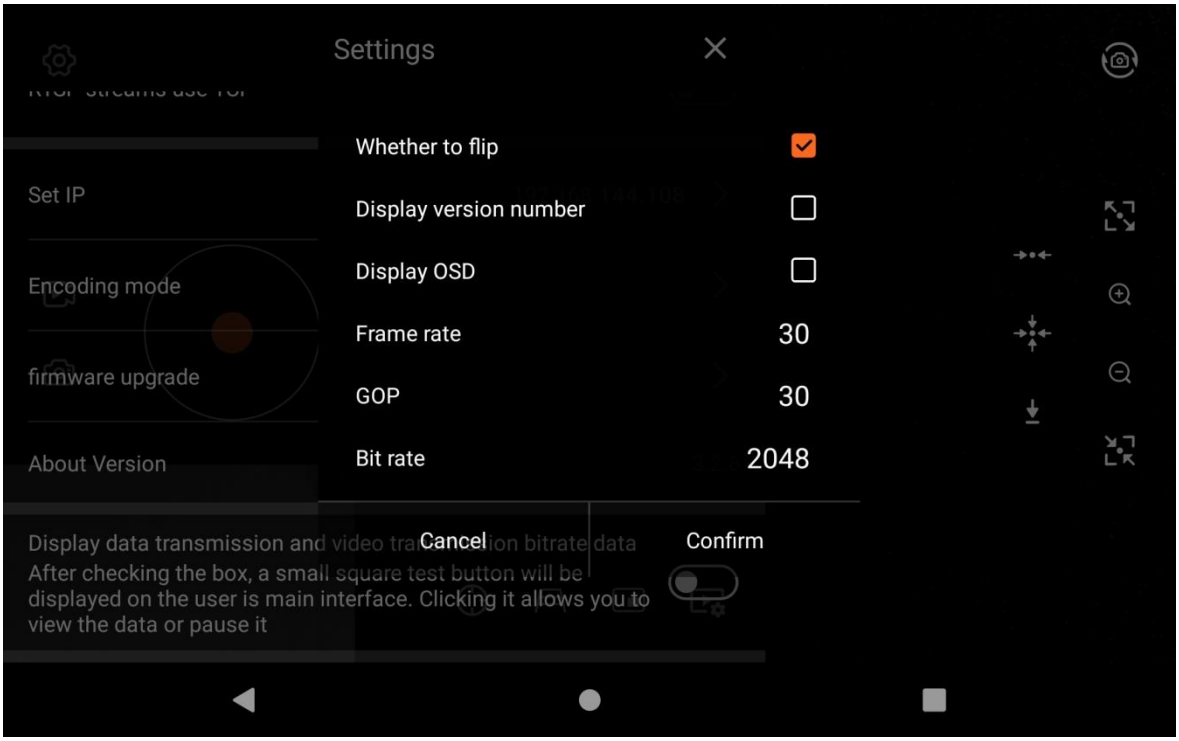
5.5.6 False Color Mode



It is used to adjust the imaging effect of the thermal imaging camera, with eleven optional modes available.

5.6 Set Encoding Mode

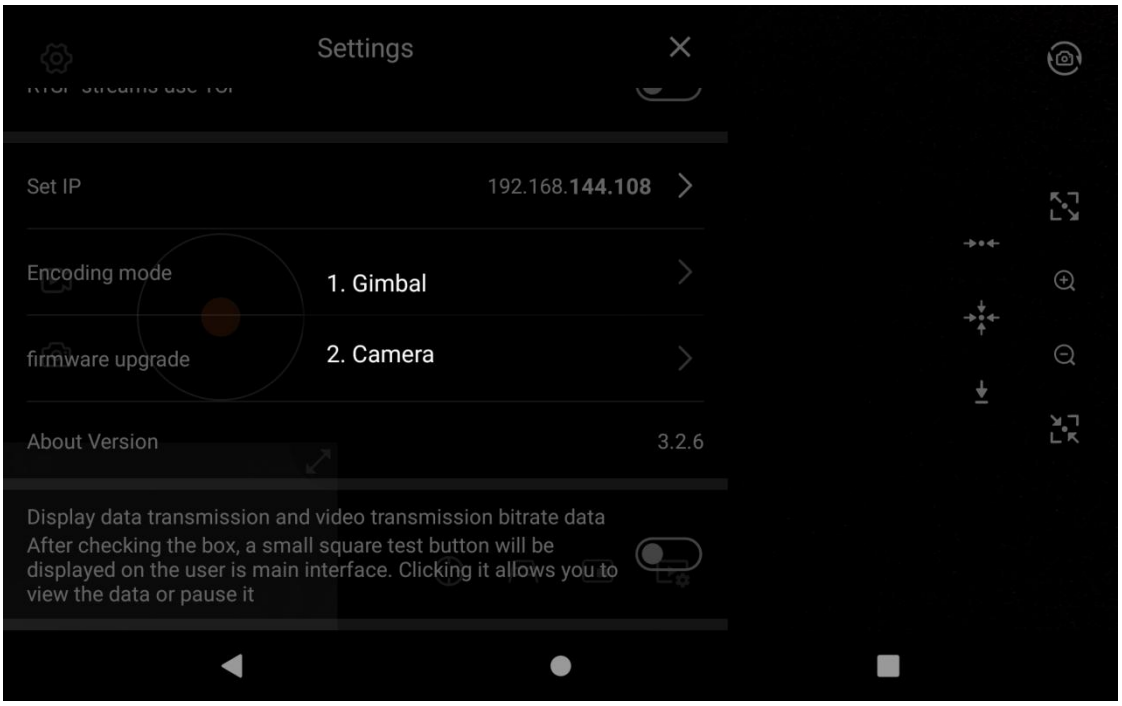
Click the gear icon -> Encoding Mode Settings



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Supports image flip, camera version number checking and OSD display configuration.

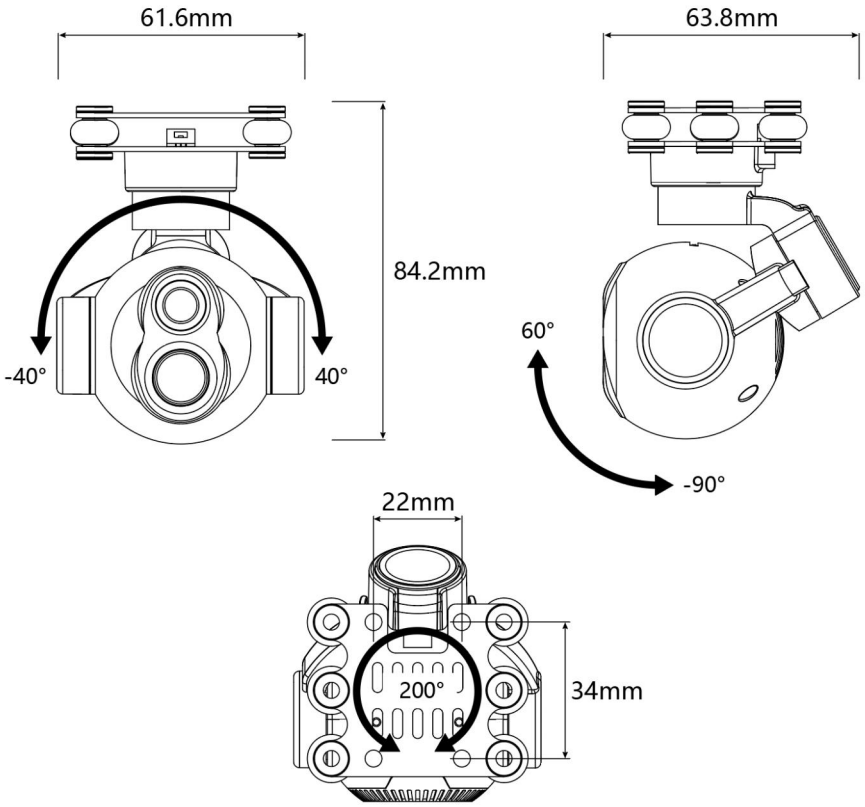
5.7 Firmware Upgrade



You can upgrade the gimbal firmware and camera firmware. Do not cut off the power or exit the upgrade interface during the upgrade process. (When upgrading the camera firmware, a TF card must be inserted into the C12PRO.)

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Ⅵ、 Gimbal Dimensions and Angle Markings



Ⅶ、 Precautions

To protect you, others from harm and safeguard your device from damage, please read all the follow-ing information before using your device.

1.Do not direct components to high - intensity radiation sources such as the sun;

2.The ideal operating ambient temperature ranges from -10℃ to 60℃;

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

4.Do not bend or damage the connecting wires;

5.Do not clean your device with thinner;

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

7.Do not misconnect the attached cables to avoid damaging the device;

8.Be careful to prevent static electricity;

9. Do not disassemble the device. If there is a malfunction, please contact our company and let professionals carry out the repair.

Due to version evolution and changes in customer requirements, relevant commands and controls may be subject to alteration. Please contact Skydroid

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Technology Co., Ltd. to obtain the latest information and technical support. As the product is updated and upgraded, parameters such as dimensions and weight may change. Your understanding is highly appreciated.

Warm reminder: Please read the operation manual carefully before use!

Wechat Official Account

The latest version of this manual is available for download at Skydroid Official Website Download Center > Resource Documents:
https://www.skydroid.xin/#/serviceSupport/downloadCenter

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