SKYDROID 云卓

Skydroid C13 User Manual

V1.0

Small high-definition three-axis three-light gimbal

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.

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.

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. Please visit the official website at http://www.skydroid.xin/ for the latest product information.

The C13 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 C13 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 +60°C

B) Storage temperature: -25°C to +60°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., our company will not assume liability for any direct or indirect losses or damages caused thereby. If users install, assemble or use Skydroid Technology products, they shall bear the corresponding consequences. Our company will not be held responsible for any direct or indirect losses or damages caused by the use of this product.

Contents

Contents 1

I. Product Introduction 2

II. Product List 2

III. Product Overview 3

IV. Product Parameters 4

V. Installation and Debugging 5

5.1 Schematic Diagram of Screw Hole Positions and Spacing 5

5.2 Gimbal Working Modes 5

5.3 Gimbal Wiring Diagram and Explanation 6

5.4 Usage of C13 7

5.5 Gimbal Parameter Settings 8

5.6 Setting the Coding Mode 15

5.7 Firmware Upgrade 16

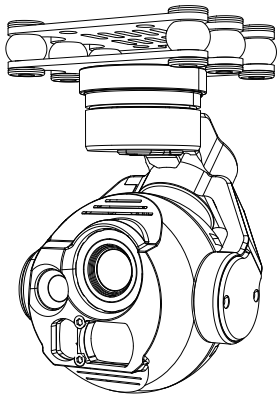
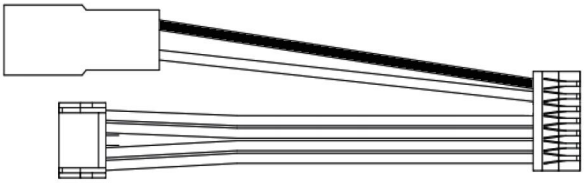
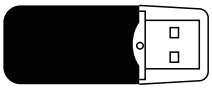
VI. Gimbal Dimensions and Angle Markings 16

VII. Precautions 17

I. Product Introduction

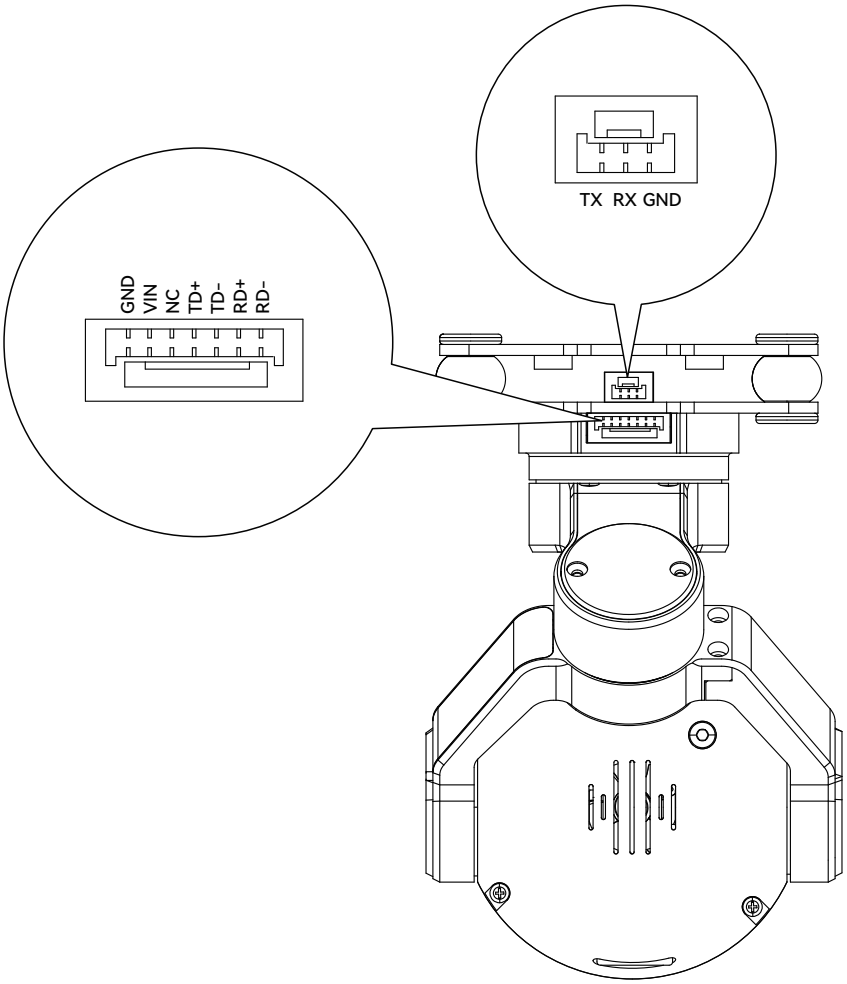
The C13 is a compact high - definition three - light gimbal. It utilizes a new - generation imaging chip and is paired with a high - definition distortion - free camera. With an effective pixel count of 5 million, it boasts robust 2K video recording and photo - taking capabilities. It supports 30 - times digital zoom, bringing distant beautiful sceneries up close. Equipped with a thermal imaging camera with a resolution of 640×512, it offers a wide field of view and clear images, enabling long - distance observation of various heat sources. In combination with the laser ranging module, the effective ranging distance can reach up to 1 kilometer. The industrial - grade three - axis stabilization structure is adopted, which significantly reduces picture jitter, keeping the image in a stable state at all times. It can be applied in fields such as fire rescue, animal protection, and security monitoring.

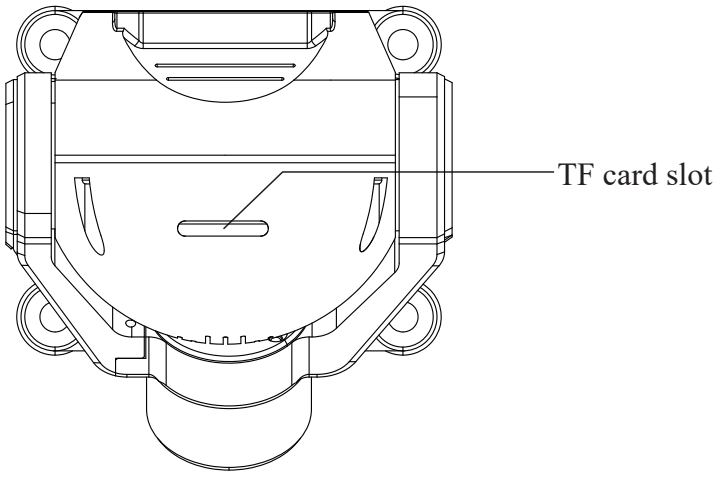
II. Product List

C13 Main Body × 1	
Gimbal fixing screws (M2.5×6) × 4	
Ethernet port power cable×1	
32G Kingston Memory Card × 1 (Already installed)	
Card reader×1	

III. Product Overview

Interface and Definition Instructions





Bottom of the gimbal

IV. Product Parameters

C13 Parameter	
Video output signal interface	Network port
Control signal input interface	Network port
Operating voltage	7.2V~72V
Operating current	12V 334mA
Operating ambient temperature	-10℃~+50℃
Weight	176g
Dimensions	59mm (Length) × 61mm (Width) × 92mm (Height)
Controllable angle range	-90° to +10° (Pitch axis); -90° to +90° (Yaw axis); -45° to +45° (Roll axis)
Ceiling-mounted/Inverted-mounted mode	supported
Global centering/One-key downward/ Yaw centering	supported

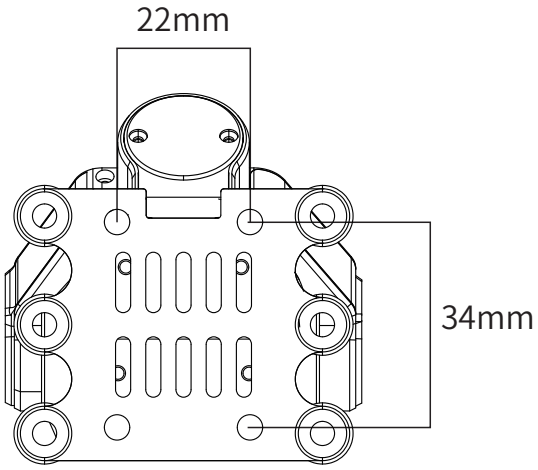
C13 Visible Light Camera Parameters			
Lens pixel	5million	Video resolution for card recording	2880*1620 30FPS
CMOS size	1/2.8 inch	Video storage format	TS
Aperture	2.2	Photograph resolution	2880*1620
HFOV / VFOV / DFOV	77.4° /48.8° /85.6°	Photograph storage format	JEPG
Zoom ratio	30x Digital Zoom	Supported memory card types	Supports MicroSD storage (up to 128GB)
Video transmission resolution	1280*720 30FPS	Supported file systems	FAT32

C13 Thermal Imaging Camera			
Resolution	640*512 30FPS	Pixel pitch	12μm
Focal length	9.1mm	Response band	8~14μm
Aperture	F=1.0	Field of view angle	48.7°x38.6°
Frame rate	30Hz	Detection range	1.1KM
Thermal time constant	＜10ms		

C13 Laser Ranging Parameters			
Human eye safety level	Class 1	Detection range	5M~1000M
wavelength	905nm	Ranging Accuracy	±1m
Laser divergence angle	5mrad	Measurement Frequency	1~5Hz
Transmitting Aperture	10x7.5mm	Accuracy rate	≥98%
Receiving Aperture	15x10mm	False Alarm Rate	≤1%

V. Installation and Debugging

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

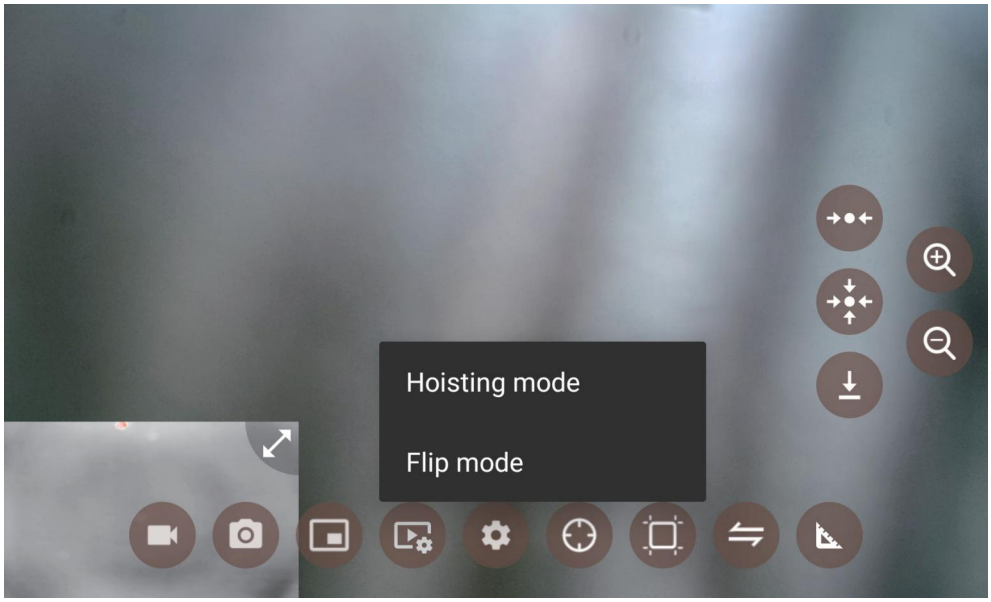


Note: The screw specifications for the pan - tilt are M2.5*6, and the quantity is 4.

Do not hang the gimbal on the aircraft when it is not in use. Long - term hanging 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

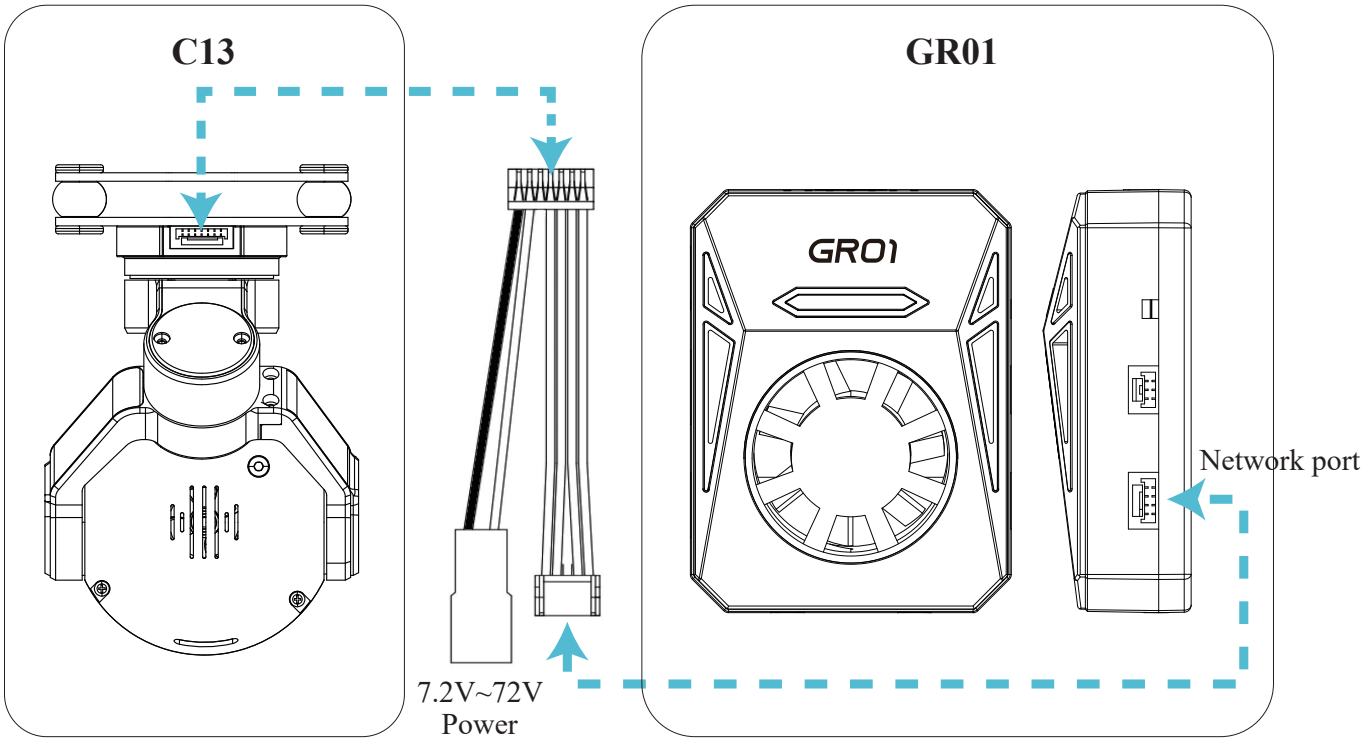


You can set the gimbal to the hoisting mode or the filp mode in the FPV settings.

Note: The hoisting mode is the default setting at the factory. Do not power on when it is installed in an inverted way.

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

5.3 Gimbal Wiring Diagram and Explanation



①power	Red JST - 2P male connector. Power supply: 7.2V - 72V (DC power supply or lithium - battery)	
②Ethernet 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	

5.4 Usage of C13

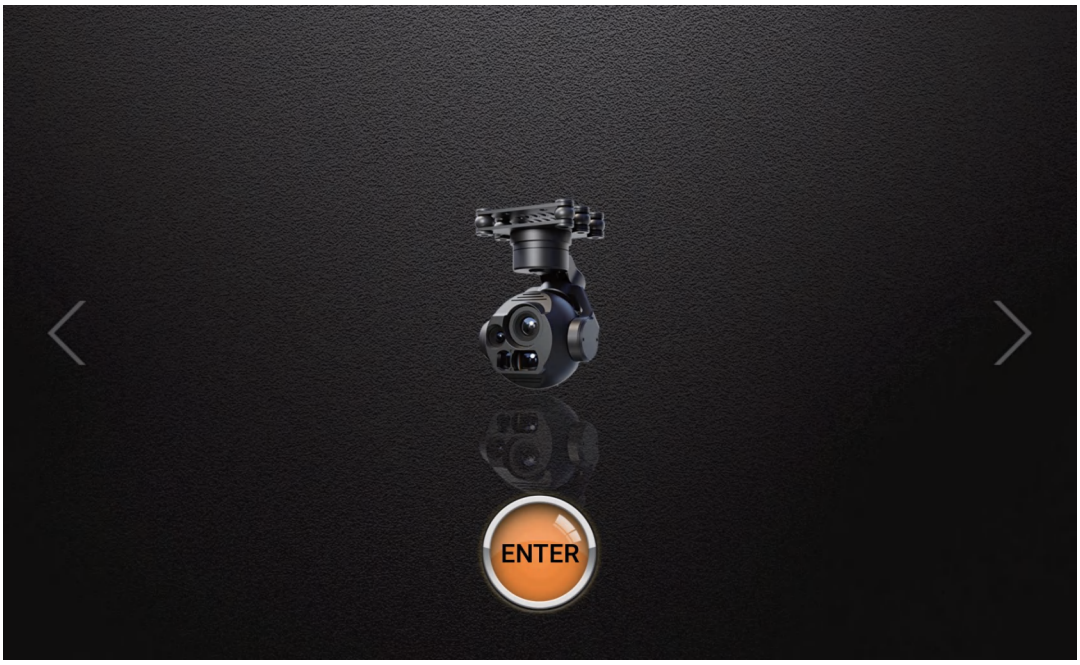
nstall and open the latest version of the Gimbal FPV software on the remote control.

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

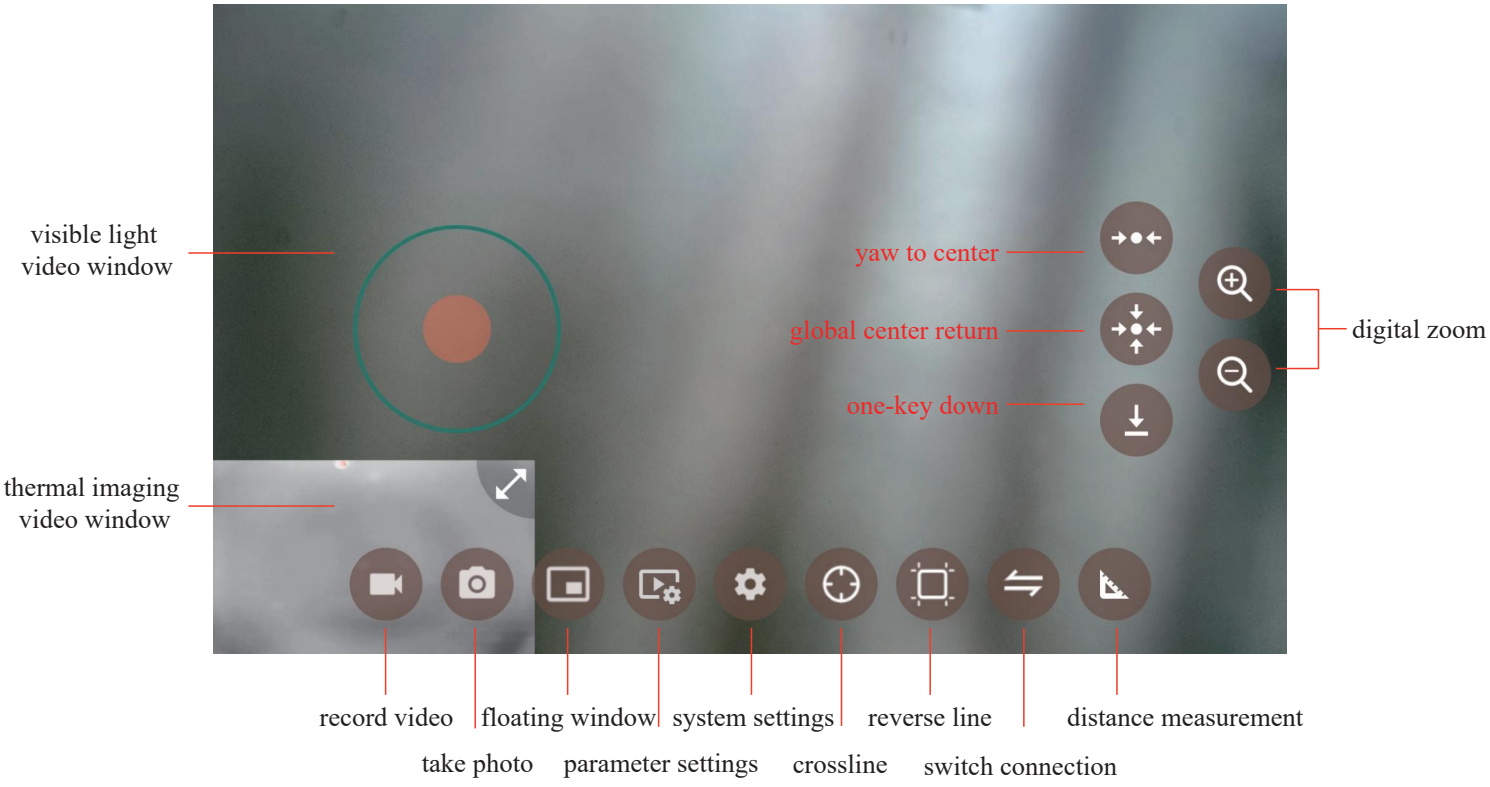
① Gimbal startup

After the gimbal is properly installed and fixed, power it on. The gimbal will start up. Please wait until the startup is complete.

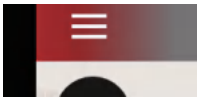
② Open the Gimbal FPV software, select the C13, and click to enter.



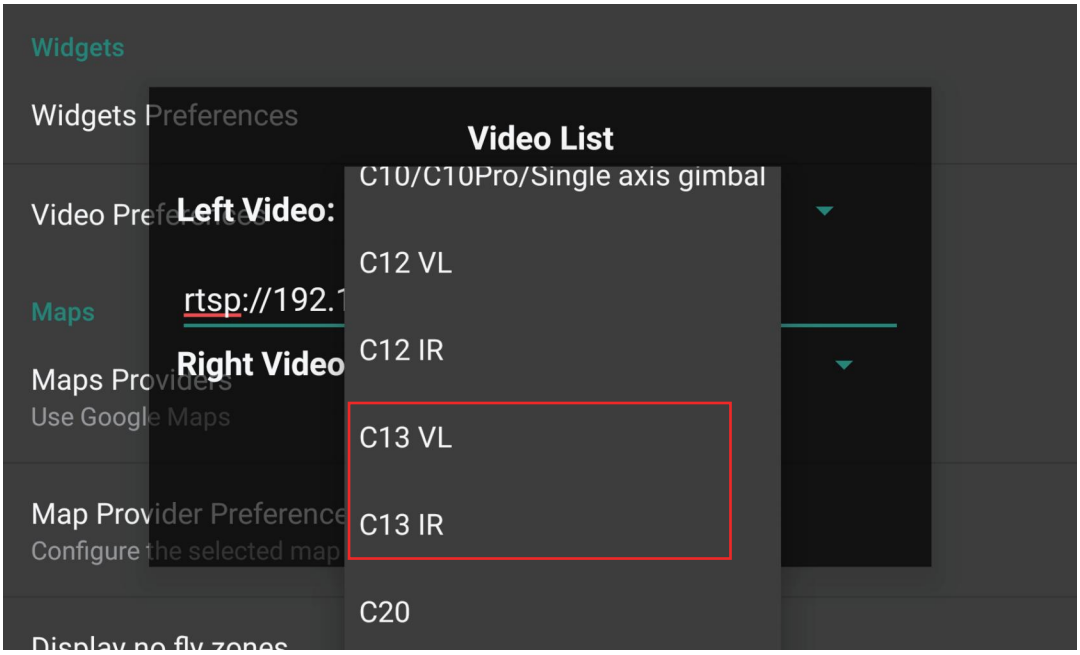
③ Introduction to the Home Page of the Gimbal FPV



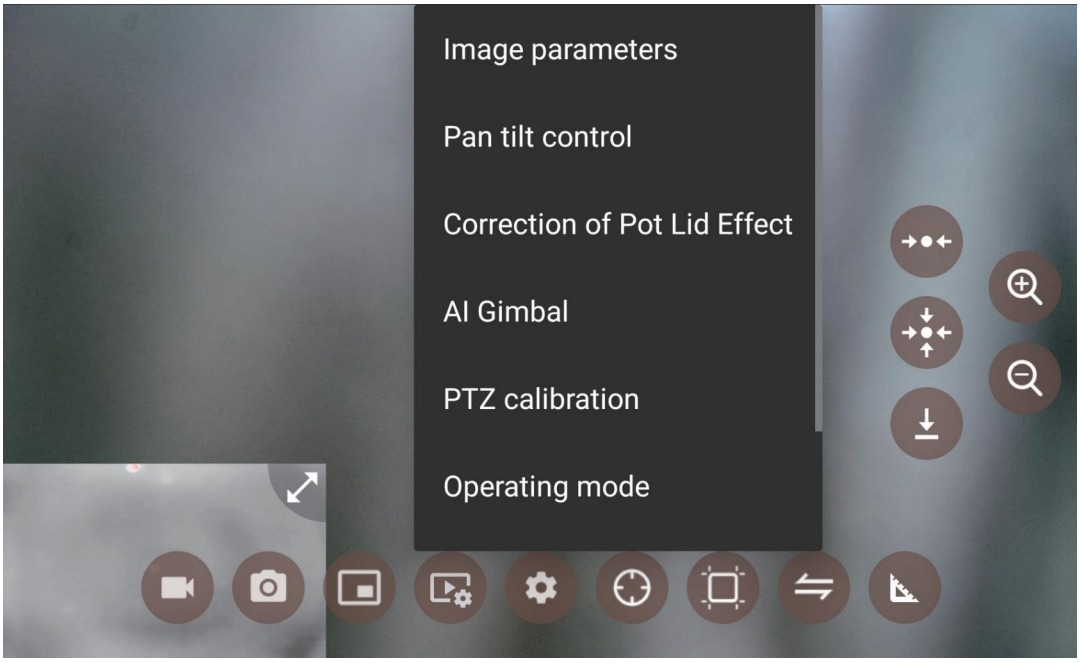
④ FLY GCS Screen Settings

On the top - left corner of the APP's home page  -> Common Settings -> Other Settings -> User Interface -> Video Window -> C13

Note: C13 is dual gimbal camera, both video windows need to be set.



5.5 Gimbal Parameter Settings



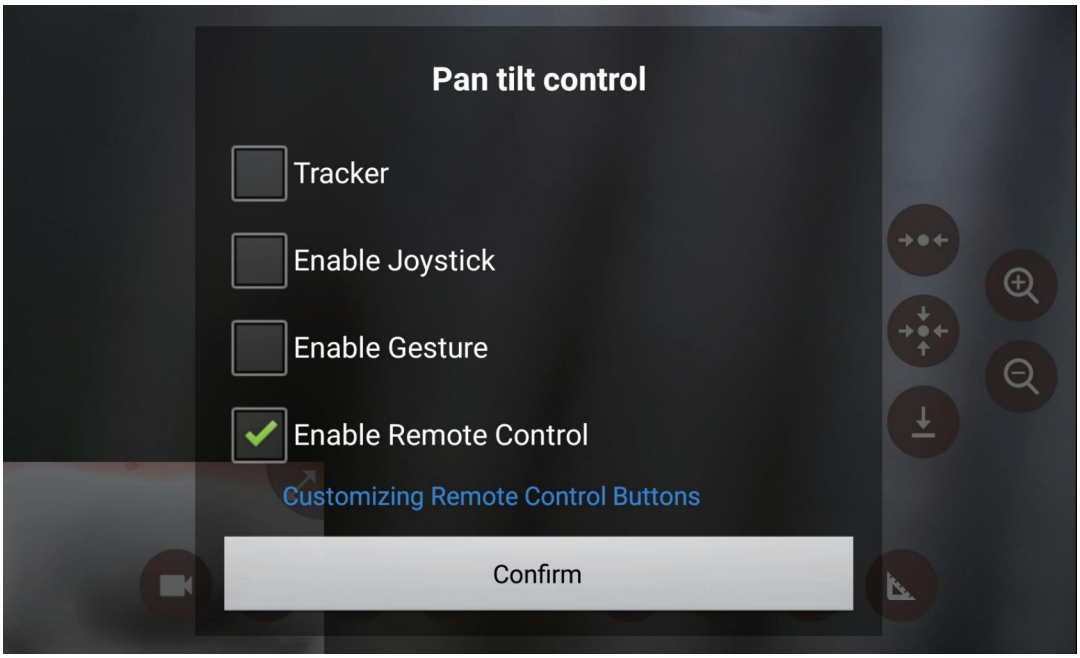
In the parameter settings, functions such as image parameters, color palette, and calibration can be configured.

5.5.1 Image Parameters

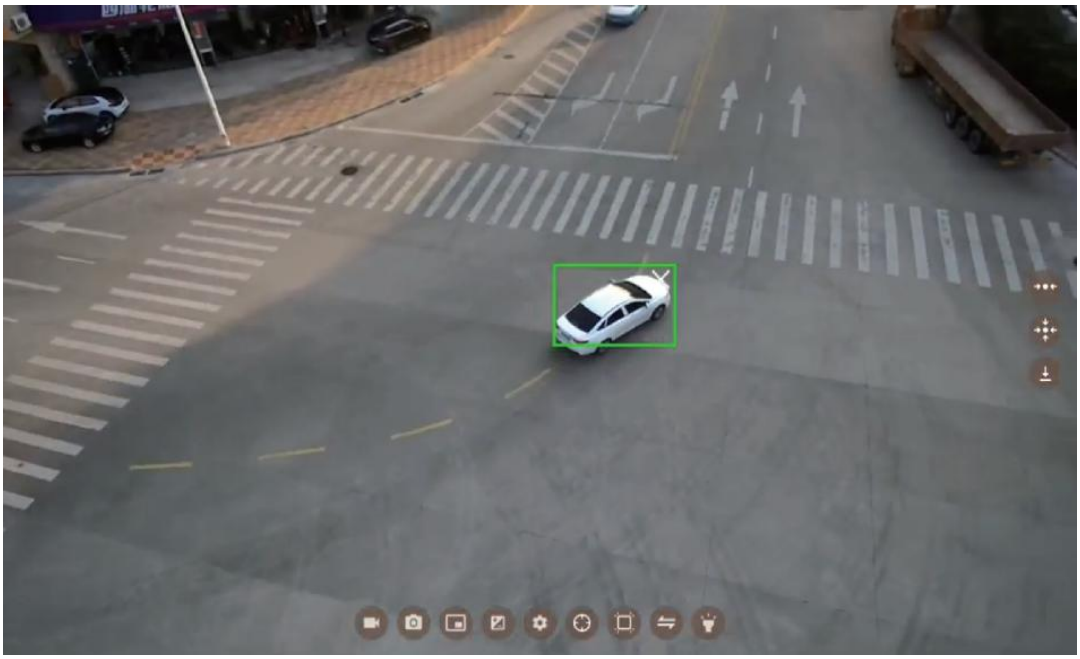
Some relevant camera picture parameters can be set.

5.5.2 Pan tilt Control

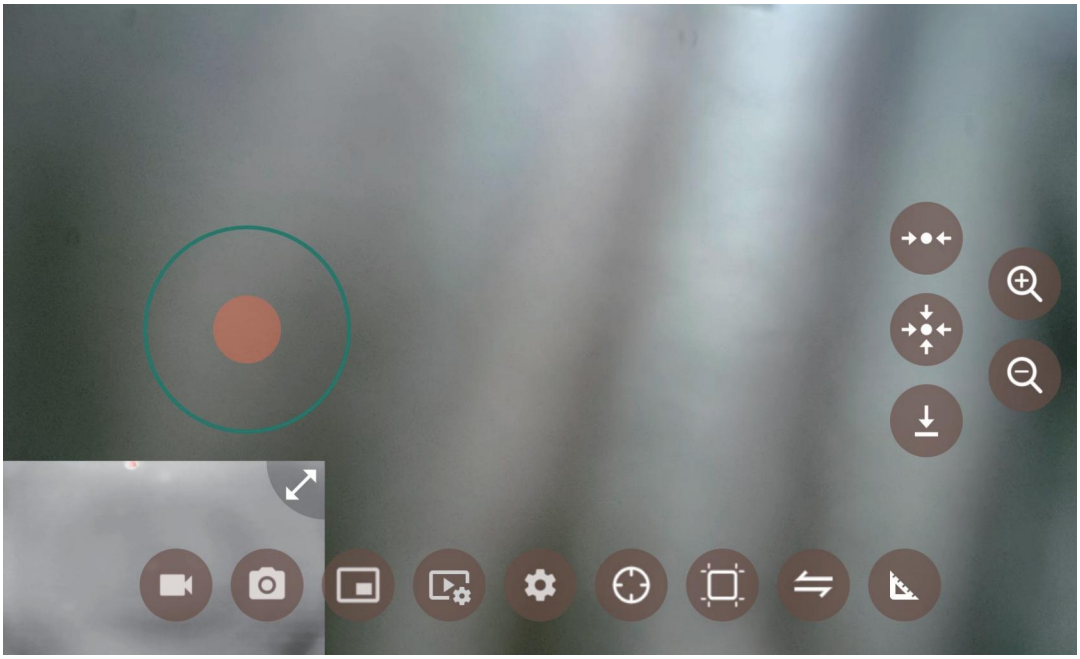
Click Parameter Settings -> Pan-tilt Control, there are target following and three control methods to choose from, and multiple methods can be selected simultaneously. (Target following cannot be used simultaneously with gesture control.)



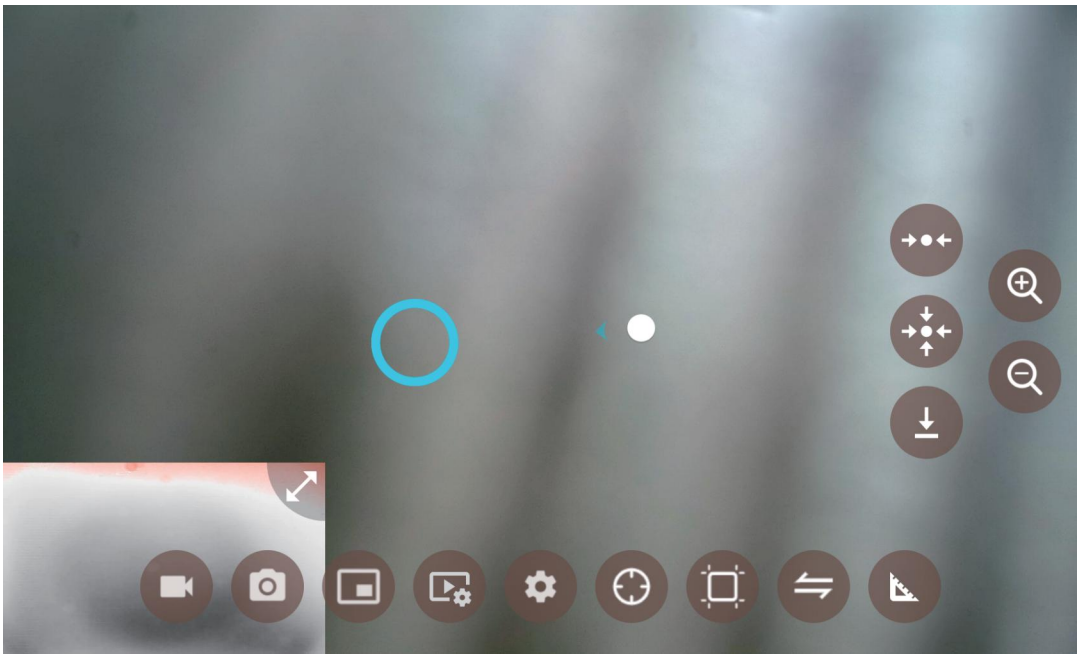
①Gimbal target following: After selecting the target to follow, the C13 will automatically track the target.



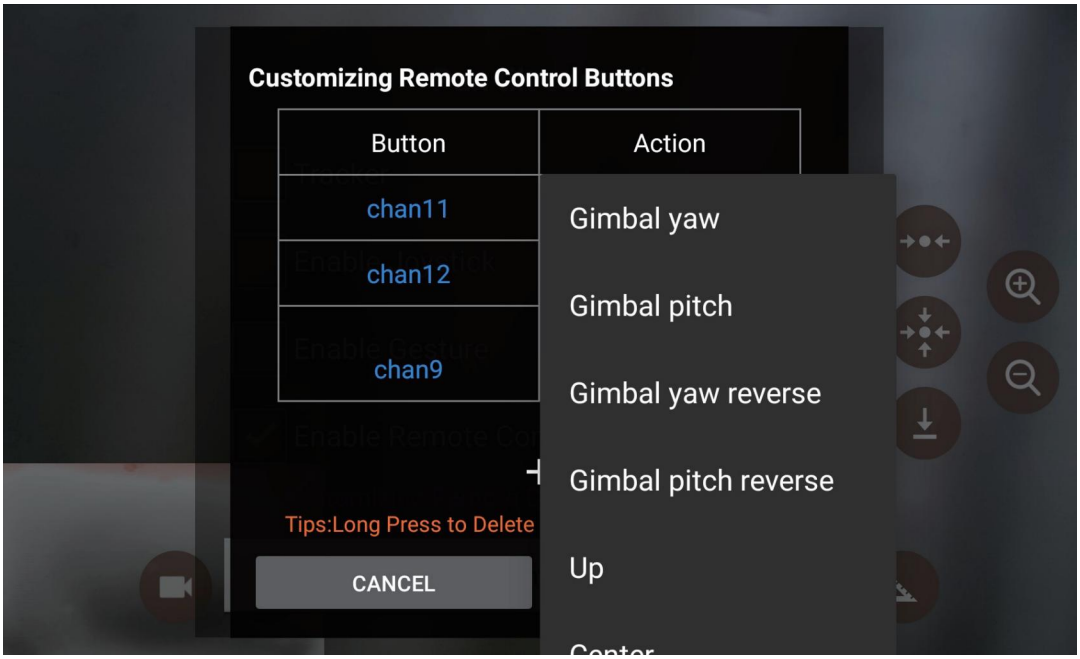
②Virtual joystick control: You can use the virtual joystick to control the pan and tilt of the gimbal. It also supports functions such as one - key return to the center.



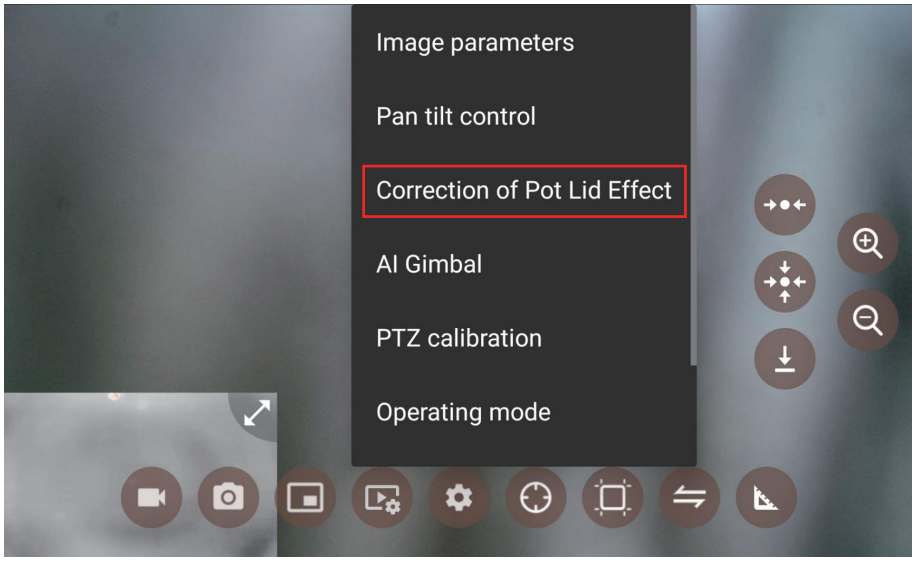
③Gesture control: Control the pan and tilt of the gimbal by swiping the screen.



④ Remote control channel control: Control the pan and tilt of the gimbal, as well as functions like taking photos and recording videos through customizing the remote control channels. (The remote control channels can be checked through the Remote Control Assistant -> Rudder Volume View.)



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 C13 and let it preheat for more than five minutes.

② Select a panel with a flat surface, uniform temperature, even frosting, and low reflectivity.

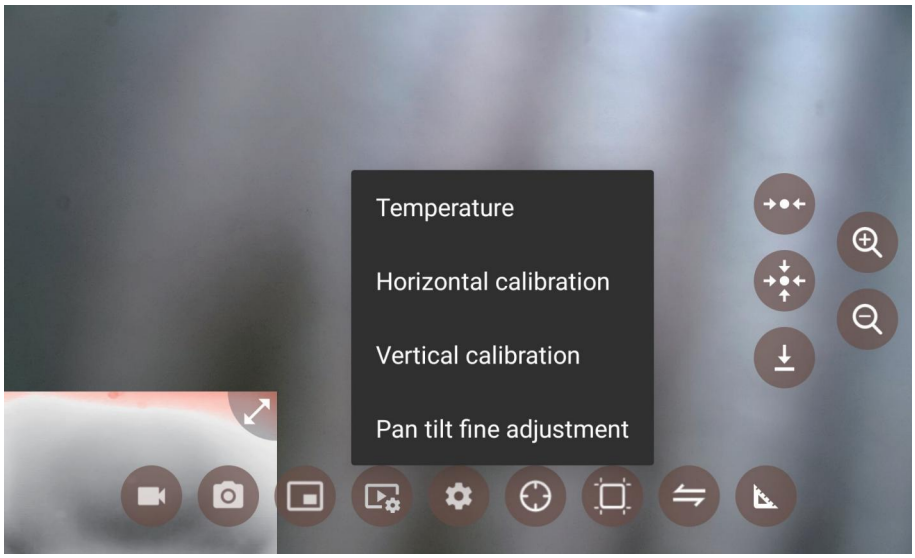
③ Move the C13 close to and make contact with the target surface. It is optimal when the imaging of the target surface covers the entire field of view without any stray light entering.

④ Click "Calibrate the Lid Effect", and the calibration is successful when the screen turns into a uniform gray.

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

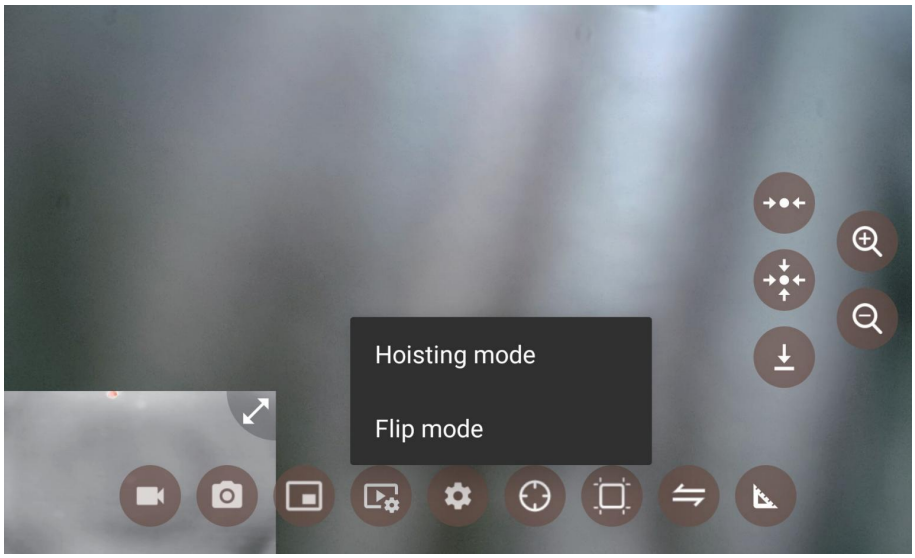
Schematic diagram of calibrating the lid effect

5.5.4 Gimbal Calibration



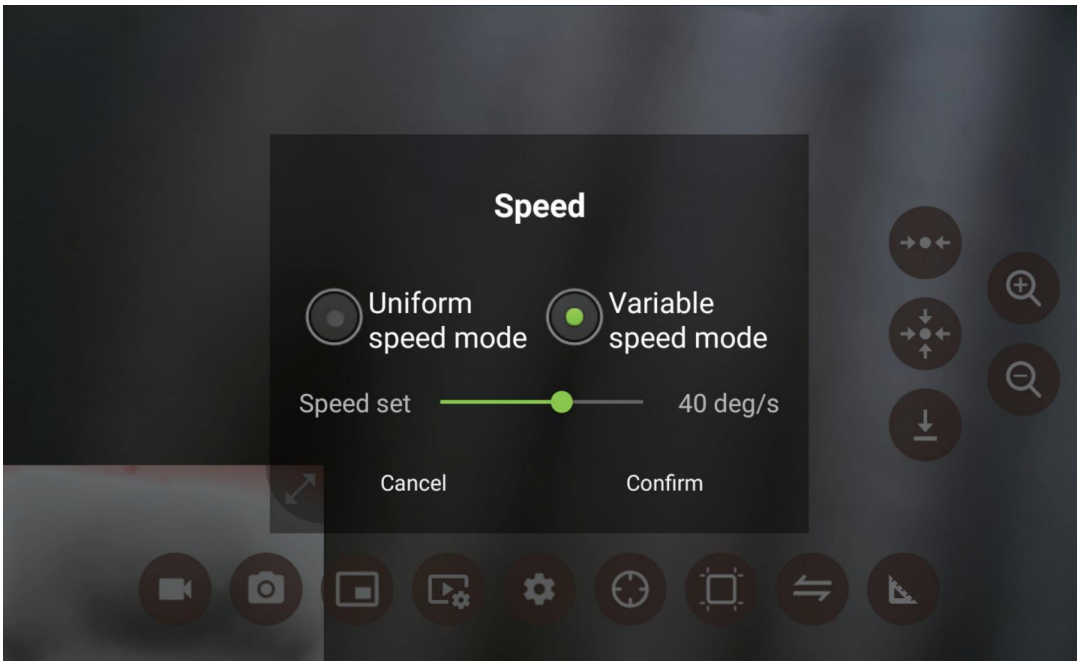
Temperature Calibration: Calibrate the temperature of the pan - tilt during operation to prevent abnormal operation caused by a significant difference between the ambient temperature and the operating temperature of the Inertial Measurement Unit (IMU).
Horizontal Calibration: Place the pan - tilt on a horizontal plane and ensure it is in a stationary state. Do not touch or shake the pan - tilt.
Vertical Calibration: After the horizontal calibration is completed, the pan - tilt will automatically pitch downwards. Ensure the pan - tilt is in a stationary state, do not touch or shake it, and then click "Calibrate".
Pan - tilt Fine - tuning: Fine - tune the horizontal and pitch axes of the pan - tilt.
Note: The pan - tilt calibration has been completed before leaving the factory.
Do not click the calibration options unless there are problems with the pan - tilt.

5.5.5 Working Modes



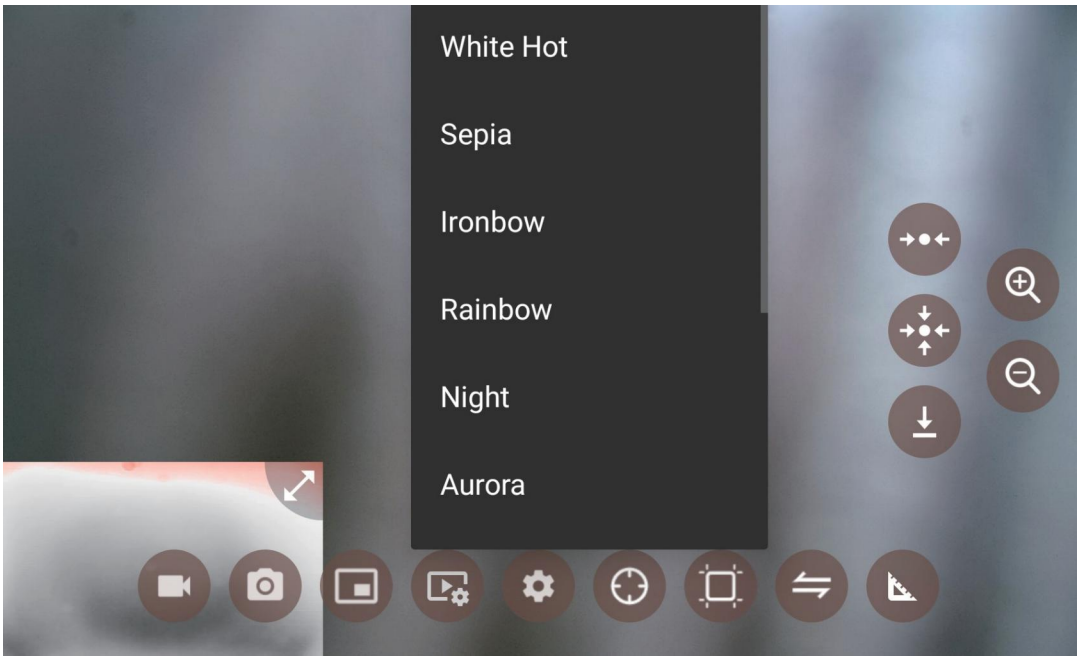
You can set the gimbal to be hoisting mode or flip mode.
Note: Place the gimbal correctly according to the working mode. Incorrect placement may damage the gimbal motor.

5.5.6 Gimbal Speed



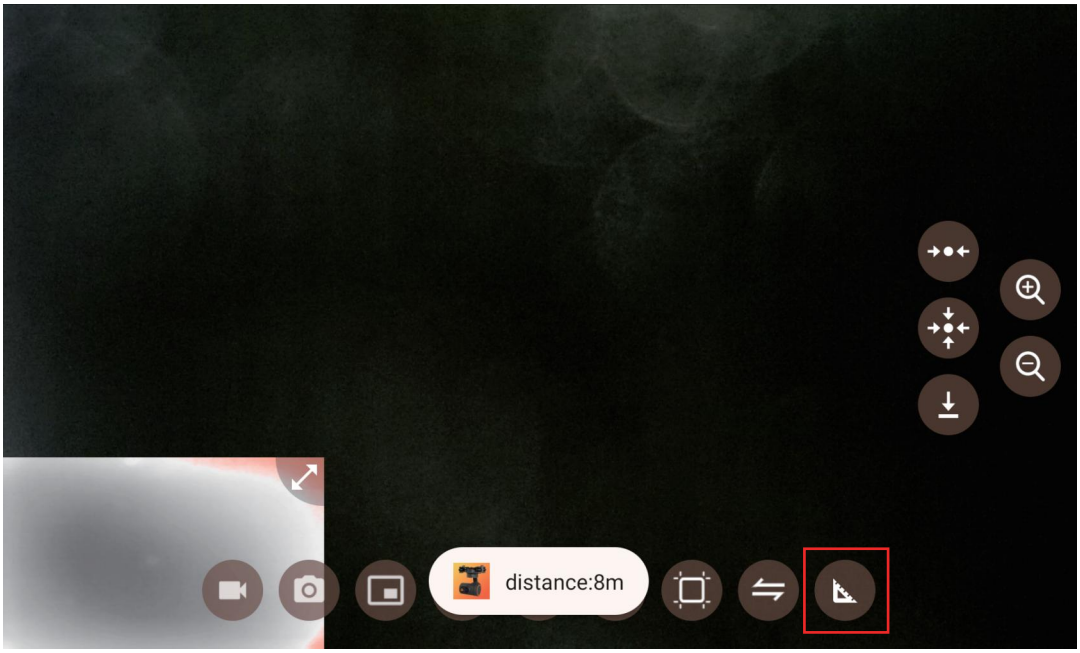
The control speed of the gimbal has two modes: constant - speed mode and variable - speed mode.

5.5.7 Color Palette



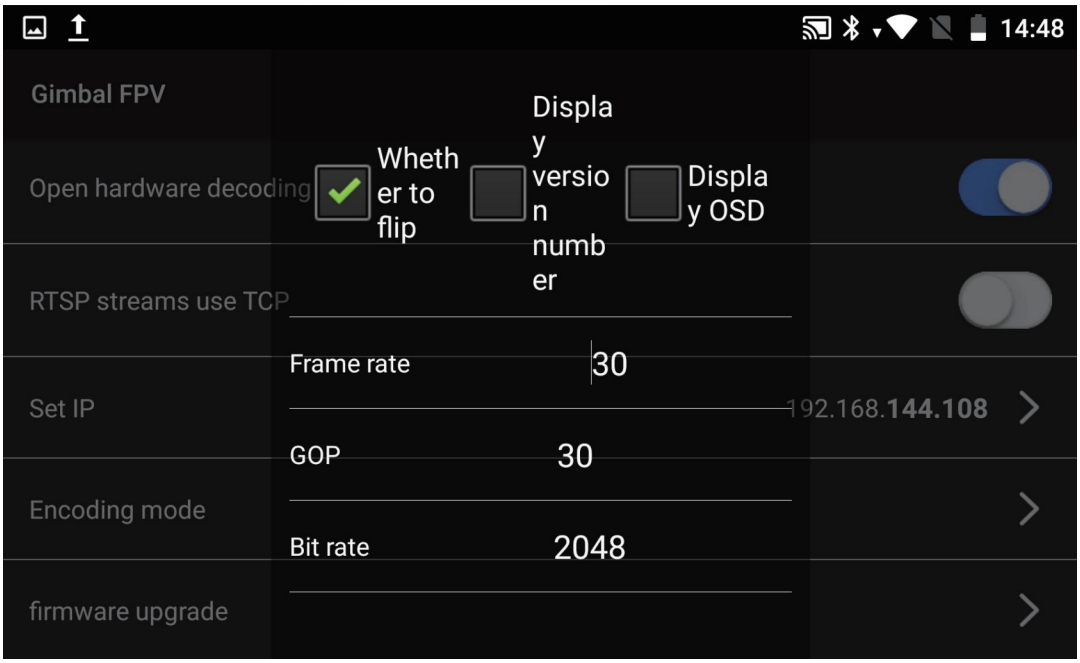
It is possible to adjust the imaging effect of the thermal imaging camera, with a total of eleven options available.

5.5.8 Laser Ranging



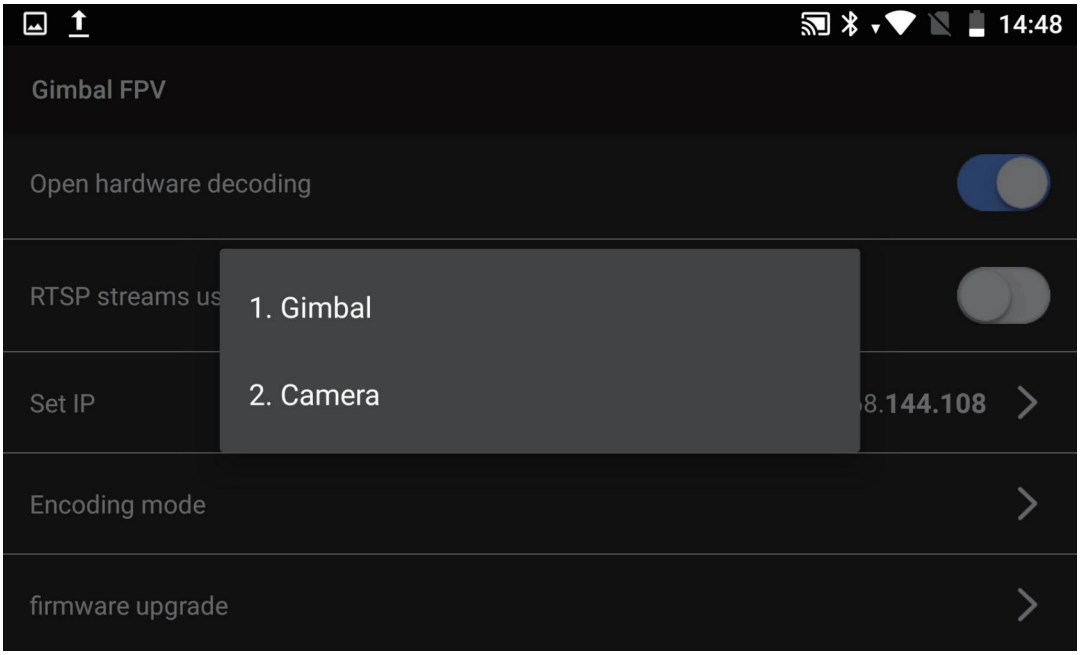
Click the ranging button to perform a single laser ranging. The effective ranging range is 5m to 1 km.

5.6 Set Encoding Mode



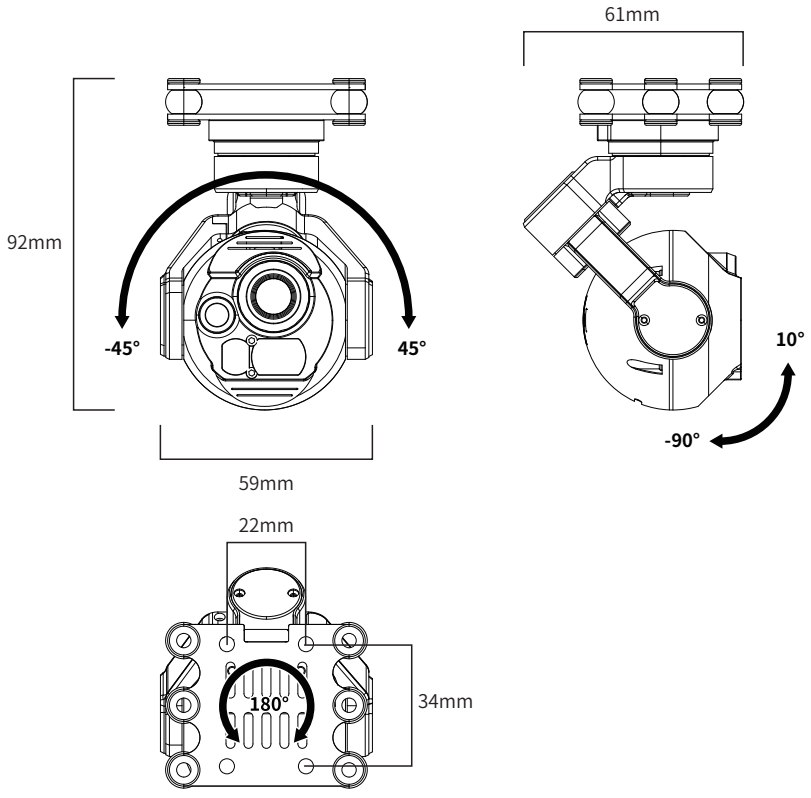
You can set screen flipping, view the camera version number, and set OSD display.

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 C13.)

VI. Gimbal Dimensions and Angle Markings



VII. Precautions

To protect you, others from harm and safeguard your device from damage, please read all the following 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.

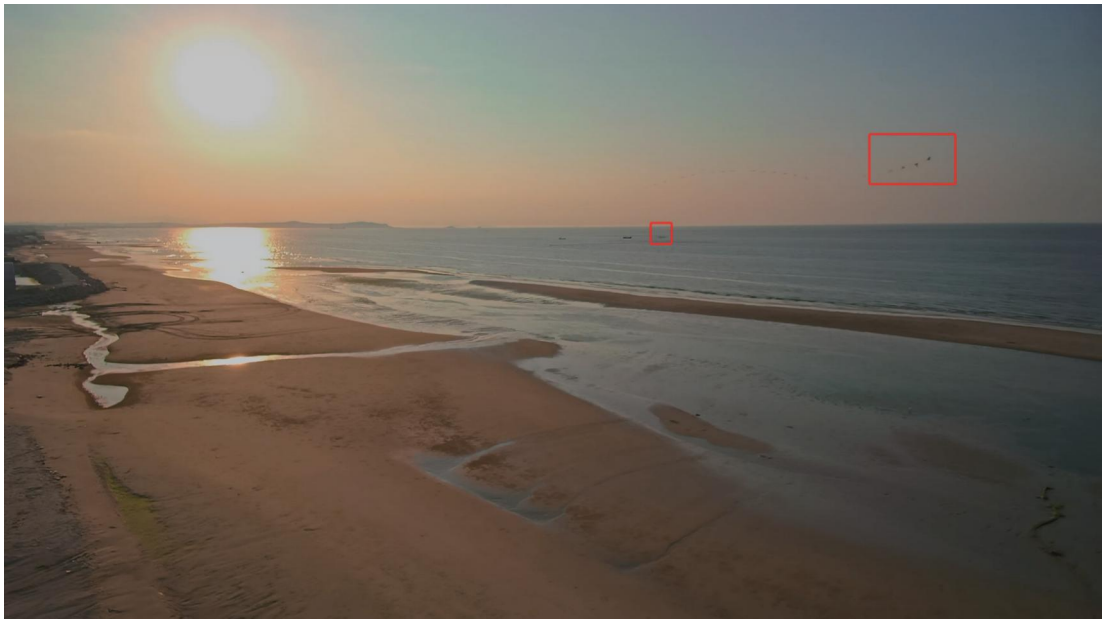
8.Be careful to prevent static electricity.

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

10.Explanation of the smearing phenomenon in C13 video recording:

This phenomenon mainly stems from two reasons: First, when the pattern details in the picture are relatively small, they will be optimized during the encoding process, and only updated when the I-frame is refreshed.

Second, in the ISP (Image Signal Processing) stage, such small pattern details may also be mistakenly judged as noise and processed, which in turn leads to the occurrence of smearing.



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

Quanzhou Skydroid Technology National Service Hotline:

400-6996-520

Product Name: C13
Manufacturer: Quanzhou Skydroid Technology Co., Ltd.
Address: 2nd Floor, Building A, Haixi Incubation Base, High-tech Industrial Park, Quanzhou City, Fujian Province
Email: sales01@skydroid.xin www.skydroid.xin