H16 users manual

Writing time :2020/8/20

Note

This product uses the following terms to classify the potential hazards that may be caused by improper operation.

Note: If you operate incorrectly, it may cause property damage, major accidents and serious injuries.

Warning: After reading the entire user manual, familiarize yourself with the functions of the product before proceeding. If the product is not operated correctly, it may cause serious injury to yourself or others, or cause product damage and property loss. This product is relatively complicated, it takes a period of familiarity before it can be used safely, and it needs to have some basic common sense before it can be operated. If there is no strong safety awareness, no, proper operation may lead to product damage and property loss, or even to yourself Or others cause serious injury.

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H16 remote control accessories list

(1) Pixhack/V5 version

H16 remote controller accessories list(Pixhack/V5 version)

H16 remote controller *1	H16 sky terminal *1	The charger *1	MIPI camera*1

Storage Box*1

H16-Pixhack series Flight controller data cable*1

Pow+Sbus Signal line*1

Lanyard*1

Antenna fixing sleeve*1

Network port line*1

Type-C line*1

(2) V5+/V5 Nano version

H16 remote controller accessories list (V5+/V5　Nano version)

H16 remote controller *1	H16 sky terminal *1	The charger *1	MIPI camera*1

Storage Box*1

H16-X7/V5series Flight controller data cable*1

Pow+Sbus Signal line*1

Lanyard*1

Antenna fixing sleeve*1

Network port line*1

Type-C line*1

(3) Pixhawk version

H16 remote controller accessories list(Pixhawk version)

H16 remote controller *1	H16 sky terminal *1	The charger *1	MIPI camera*1

Storage Box*1

H16-wk series Flight controller data cable*1

Pow+Sbus Signal line*1

Lanyard*1

Antenna fixing sleeve*1

Network port line*1

Type-C line*1

(3) X7 (Pro)/Nora version

H16 remote controller accessories list (X7(Pro)/Nora version)

H16 remote controller *1 H16 sky terminal *1 The charger *1 MIPI camera*1

Storage Box*1

H16-X7/V5series Flight
controller data cable*1

Pow+Sbus Signal
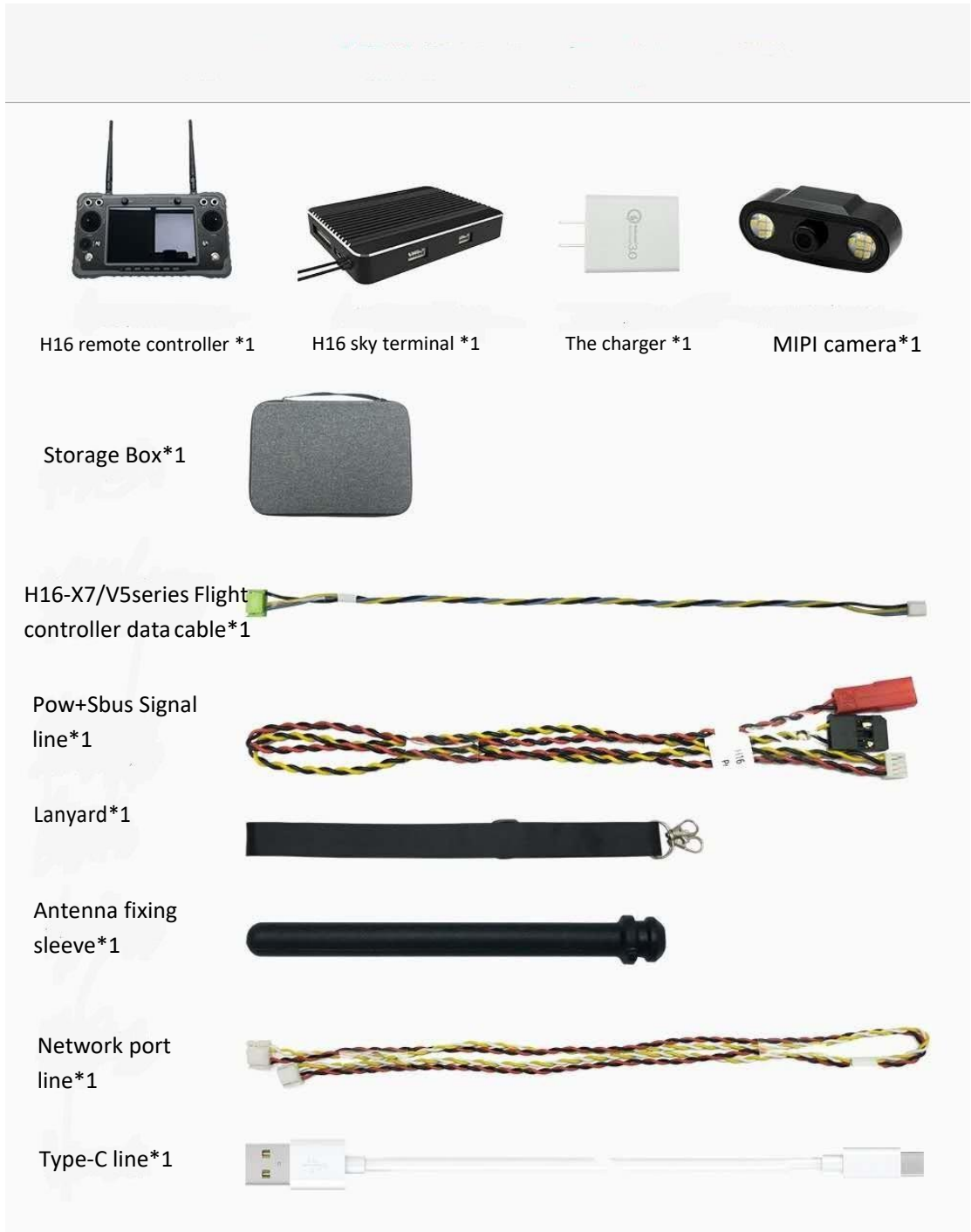line*1

Lanyard*1

Antenna fixing
sleeve*1

Network port
line*1

Type-C line*1

Product Features

① The H16 series uses a brand-new Surging processor, equipped with an Android embedded system, uses advanced sdr technology, and a super protocol stack to make the video clearer, lower latency, longer distance, and stronger anti-interference, whether it is a drone , Robots, industrial control equipment, etc. can be applied .

② Support HDMI , network port , sensor interface , dual serial port transparent transmission , SBUS and other rich interfaces , aerial photography , FPV security , fire protection , electricity , surveying and mapping robots , border defense, etc. can be handy , such as on-site experience .

③ The use of IP67 grade waterproof, dust-proof and drop-proof materials and structure ensure not only good hand feeling, but also durability .

④ Benitez liquid crystal display H16 7-inch HD highlight display, the sun is still clearly the real-time information display supports 1080p high-definition digital video transmission. Dual antenna signals complement each other, super strong signal, super long distance, with algorithm control and out-of-step frequency hopping algorithm, greatly increase the weak signal communication ability. The transmission distance of H16 can reach 10 kilometers, and the transmission distance of H16 pro can reach 30 kilometers .

⑤ high-energy density lithium-ion battery, support for 18w fast charge, full power can work 8-15 hours, always thinking of wilderness survival equipment reliability give you no care .

⑥ H16 / H16 Pro supports rich interfaces such as HDMI, network port, sensor interface, dual serial port transparent transmission, sbus, etc. And supports more cameras, pan-tilts, pods and other video equipment. Development kit , SDK and technical support , support support video suspension , support the mainstream flight control ground station , support QGC RTSP video streaming and wireless sharing .

⑦ The use of weather silica gel, frosted rubber, stainless steel, and aviation aluminum alloy make it have the ultimate hand feeling, but also meet the harsh conditions of outdoor use of drones. The H16 is dust-proof on the fuselage, control switches, and peripheral interfaces. , Water splash and other protective measures to ensure the stable and smooth operation of the equipment in harsh environments .

⑧ Abundant ground interfaces, coach PPM input + output, RJ45 network interface, long-distance connection to the intranet, Type-c Android high-speed USB interface, OTG interface can be connected to U disk, network card, etc., expand TF card slot .

⑨ independent 2-dimensional gimbal control levers make gimbal flying handy, like a fish in water.

Main purpose

It is used to remotely operate helicopters,Plane,copter, vtol, rover, etc. for video video transmission, data transmission, and control drone flight .

Data sheet

Remote controller parameters			
Processor	Pinecone S1	**Transmission distance**	10KM(H16);30km(H16 pro)
Working frequency	2.400~2.483GHZ	**Receiver sensitivity**	20DB@CE/23DB@FCC
Operating voltage	4.2 V	**Bandwidth**	20M
Duration	6~20h	**Frequency hopping**	Brand new FHSS
Install app	support	**QGC version**	Official Universal Edition
Material	plastic	**Screen size**	7inch
Screen type	LCD	**Resolution**	1920*1200
Brightness	2000nit	**Battery**	20000mah
Upgrade	Online upgrade	**Weight**	1034 g
Dimensions	272*183*94mm	**Operating temperature**	−10℃~+55℃
Working environment	Working temperature: -10℃~+55℃; working humidity does not exceed 85%; atmospheric pressure: 86kPa~106kPa		
Applications	Helicopters, plane, copter, vtol		
Receiver parameters			
RC output	16 channel sbus	**Receiver sensitivity**	20DB@CE/23DB@FCC
Operating voltage	7.2-72 V	**Power consumption**	2.4W
Dimensions	76*59*11 mm	**Weight**	90g
Material	plastic	**Antenna type**	Whip antenna
Operating	−10℃~+55℃		

temperature			
Ml PI camera			
Sensors	OV4689	**Pixel**	400 thousand
Operating voltage	14-72V	**Working current (on light)**	140 mA
Operating temperature	−10℃~+55℃	**Working current (no lights on)**	14 mA
Dimensions	102. 1*42. 6*36. 5 mm	**Weight**	55 g

Hardware interface

1. Introduction to the remote control interface
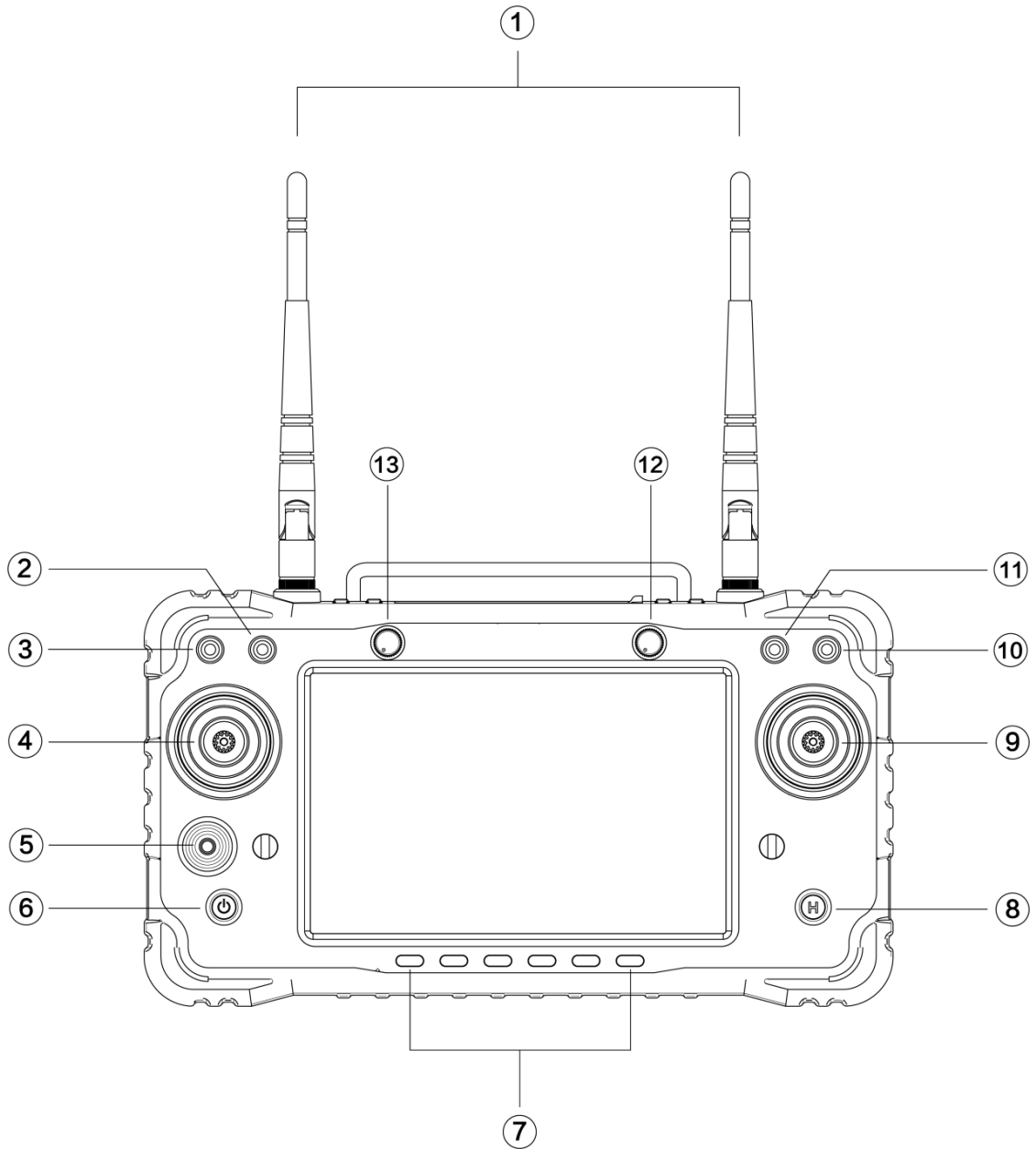
Serial number	annotation	Serial number	annotation
1	2.4G 3DB antenna	10	The three gear switch SW4
2	Three gear switch SW2	11	The three gear switch SW3
3	Three gear switch SW1	12	Knob assist 2
4	Left Joystick x1、y1	13	Knob assist 1

5	Gimbal Joystick x3、y3		
6	Power switch		
7	Six-position switch		
8	button		
9	Right joystick x2 、y2		

2. Receiver interface introduction (physical picture)

1.MIPI   2.HDMI   3.Antenna   6.Type-C   7. TF Card   8.SET Button
4.Network Port   5.POW+SBUS   9.Serial 0 10. Serial 1   11.LED
(BATA+SBUS)

Network Port

TD- TD+ GND RD- RD+

BATA+SBUS

GND VCC GND SBUS

Button　　Serial 0　　Serial 1

GND TXD RXD　　GND TX1 RX1
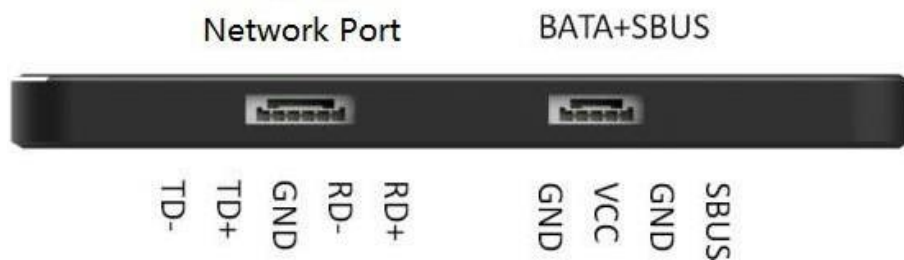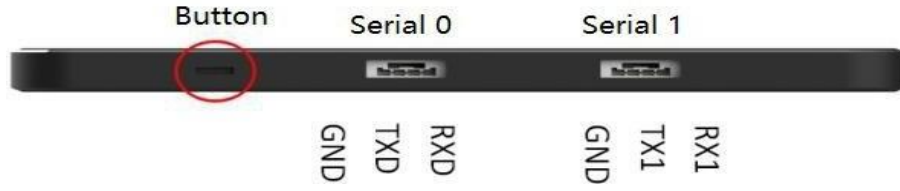
3. Receiver interface introduction (simplified diagram)

SET　UART0　UART1

MIPI　HDMI　ANT

LAN　POW+SBUS

Type-C　TF

⑨　⑧

①　　　　　　　⑦

②　　　　　　　⑥

　　　　　　　　⑤

③　④

11
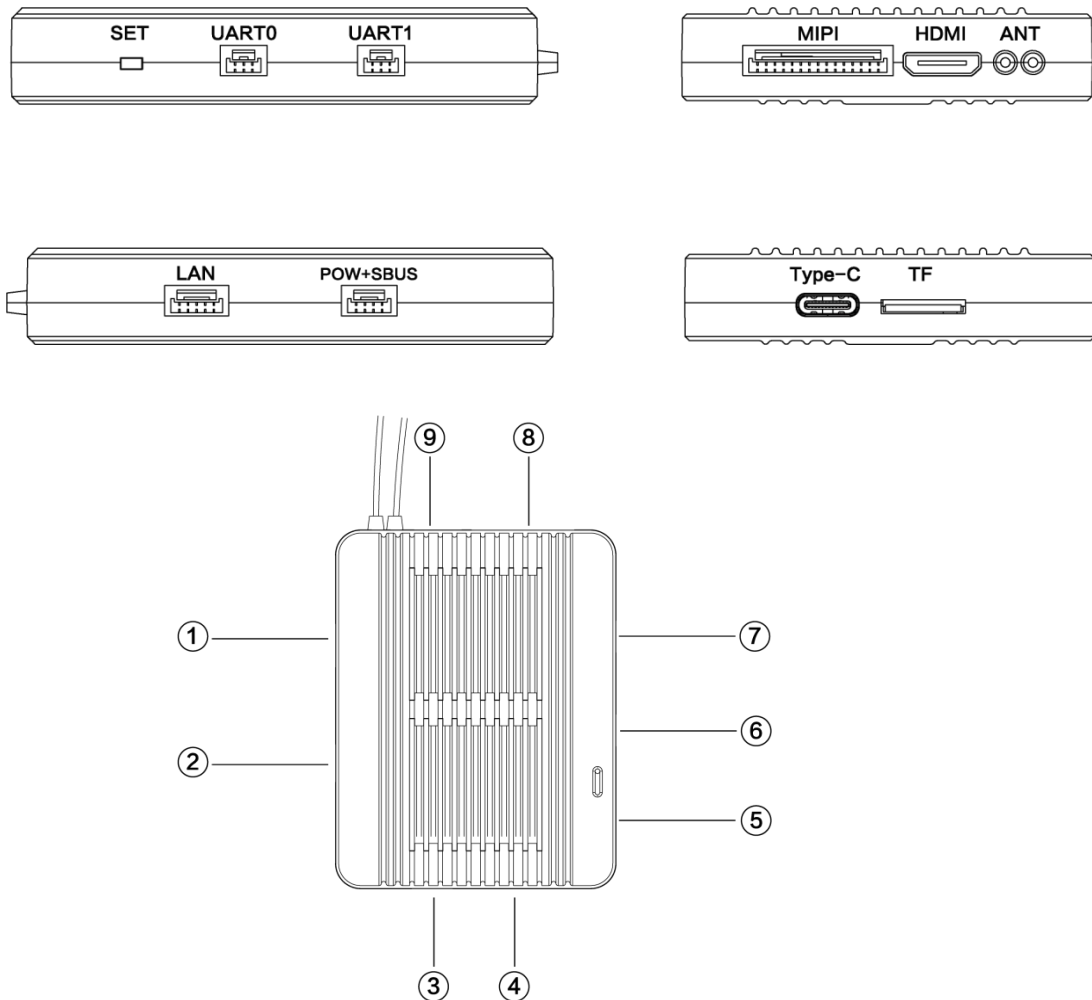
Serial number	annotation	Serial number	annotation
1	Network port	6	Serial 0
2	Power and SBUS input	7	Serial port 1
3	Type C interface	8	MIPI camera interface
4	TF card interface	9	HDMI input
5	Link button		

Environmental conditions

Environment temperature: -10℃ ~ +55℃ .

Storage temperature: -25℃ ~ +70℃ .

Relative humidity: no more than 85%.

Atmospheric pressure: 86kPa ~ 106kPa.

Note: The H16 series adopts built-in lithium-ion battery , and the charging port is compatible with micro USB 5 V chargers (such as mobile phones, digital cameras, USB chargers) . If there is smoke, heat or unusual smells, please stop charging the controller immediately, and as soon as possible Return to our company for repair. Do not let the product be operated when it is not saturated and charged .

Do not leave the product where children can reach. The working environment should not be in containing or likely to cause any interference with

the operation of the product corrosive explosive substances and harmful gases of masking work place to prevent rain , snow , wind , sand and dust pollution.

Security

Do not charge when the room temperature exceeds 60 ℃ .

Beginners should pay attention to the following points! Please read carefully!

① Don't fly under the influence of material, or fly when tired !

② Do not fly in strong wind and rain!

③ Don't be close to transmission towers, communication stations and crowded areas !

④ Do not fly in the vicinity of airports and other prohibited areas!

⑤ Do not fly around people or animals, or damage property wherever possible A. Check the equipment before each flight, and perform maintenance and repairs as needed.

⑥ Use a certified charger to charge the battery.

Maintenance and storage

1) Store the remote control in a dry and ventilated place, and reduce direct sunlight to prevent the battery from overheating. If it needs to be stored for more than three months, the recommended storage temperature range is 22 degrees Celsius to 28 degrees Celsius. Do not store the battery in places lower than minus 20 degrees Celsius or higher than 45 degrees Celsius.

2) Do not immerse the remote control in water. If it does, please wipe it with a soft dry cloth and turn off the power immediately.

3) ban locking mechanical impact, crush, puncture, drop the battery is prohibited.
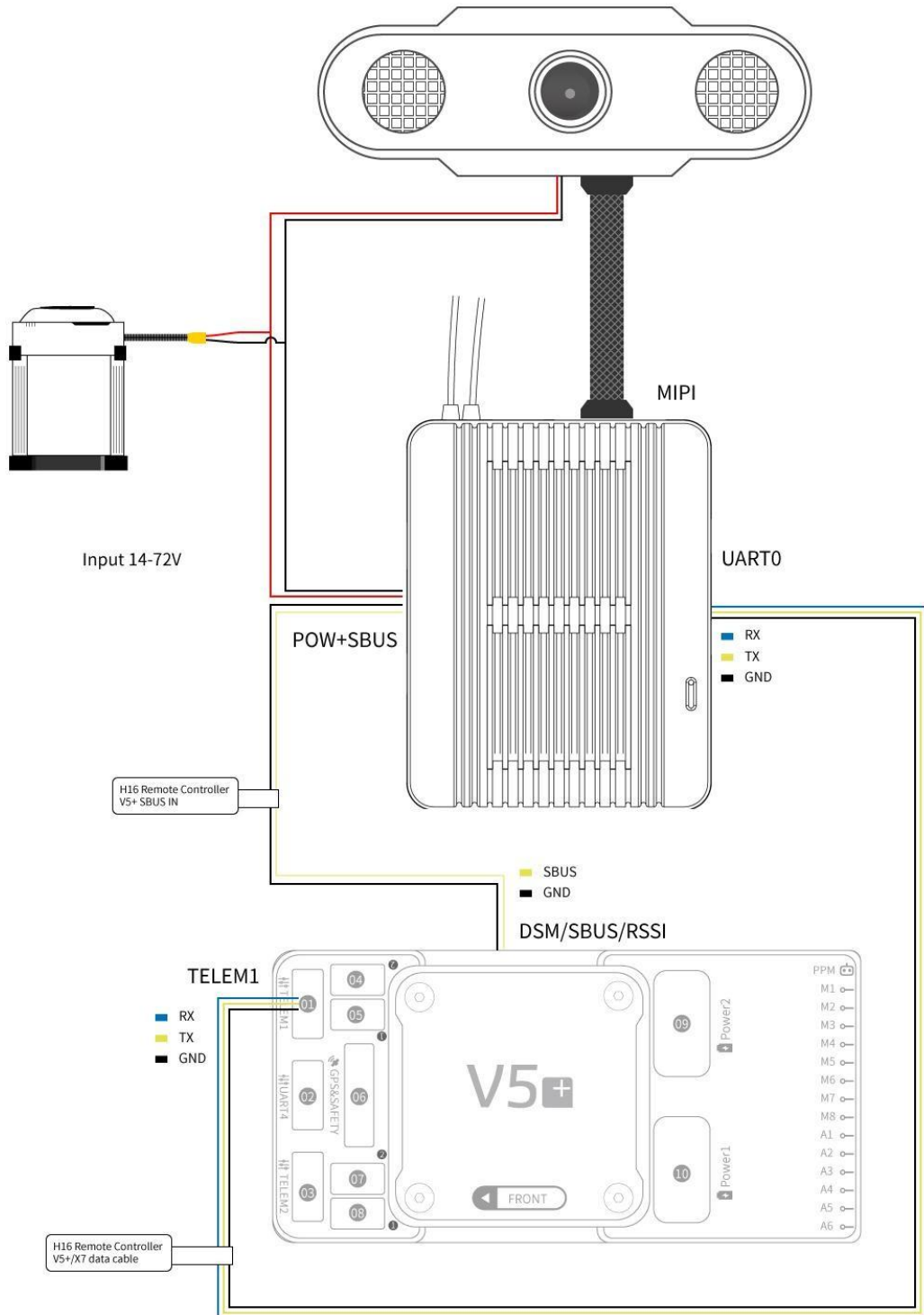
Connection and installation

Use wiring diagram

Take the V5+ flight control wiring as an example:

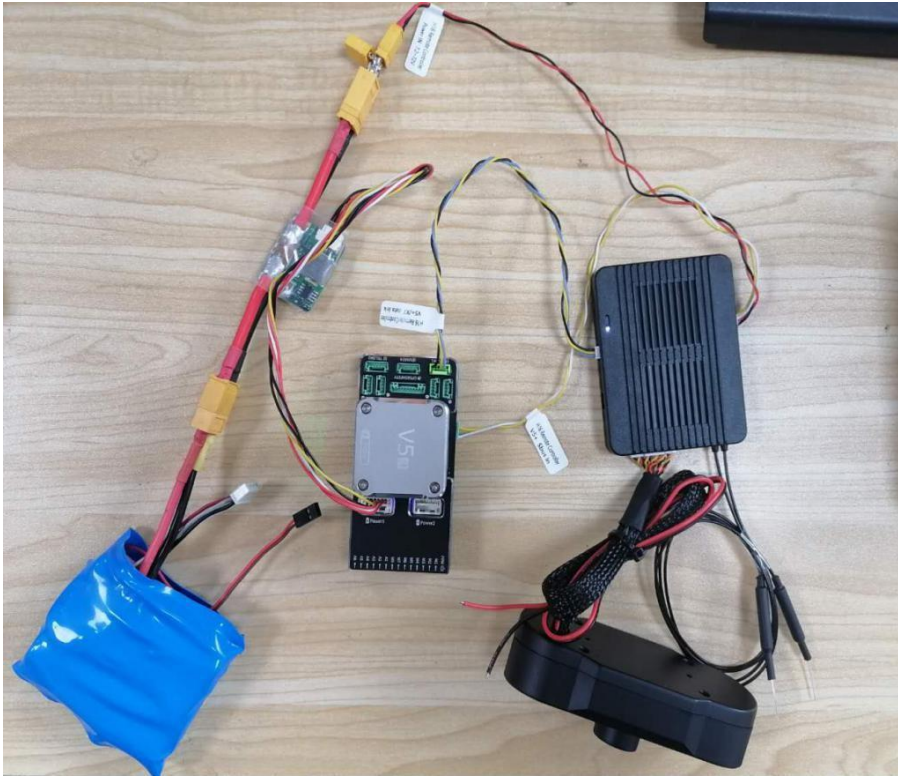- The UART 0 Interface connection to the V5 + TELEM1 interfaces; ;

-The power supply range of high-brightness LED night vision light and sky terminal is 14-72V ;

- The SBUS line is connected to the V5+ sbus interface; the power line is connected to the power supply; the other end is connected to the POW+SBUS interface of the sky terminal
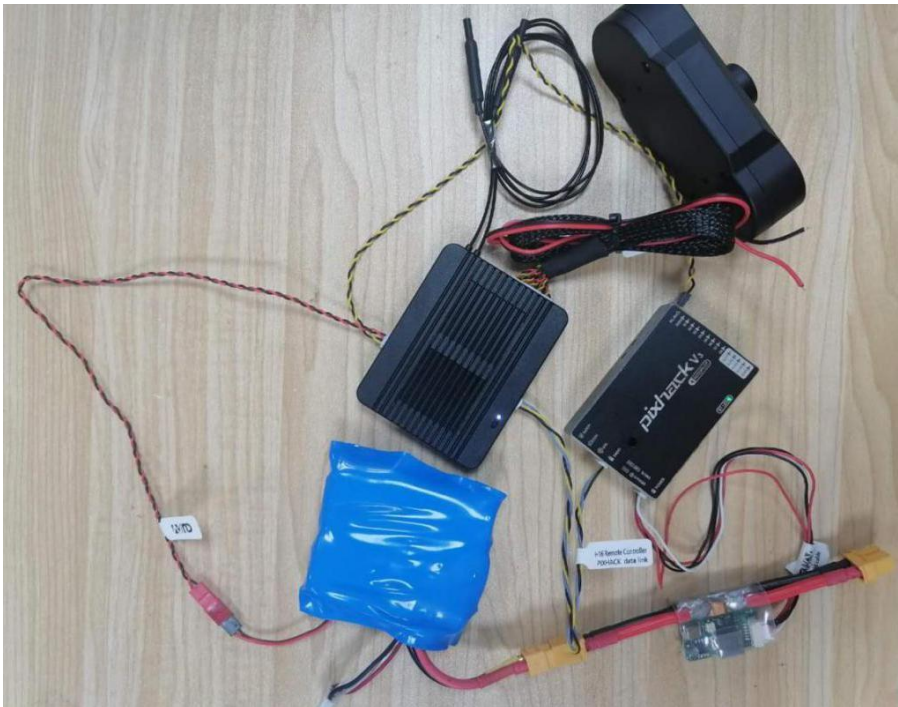
- Connect the camera's data line to the MIPI port on the sky.

MIPI

Input 14-72V

UART0

POW+SBUS

- RX
- TX
- GND

H16 Remote Controller
V5+ SBUS IN

- SBUS
- GND

DSM/SBUS/RSSI

TELEM1

- RX
- TX
- GND

H16 Remote Controller
V5+/X7 data cable

**V5+ physical connection**

Pixhack physical connection

Preparation and inspection before use

① Check the H16 battery level.

② Check the position of the antenna to achieve better performance.

③ Make sure the firmware is the latest version.
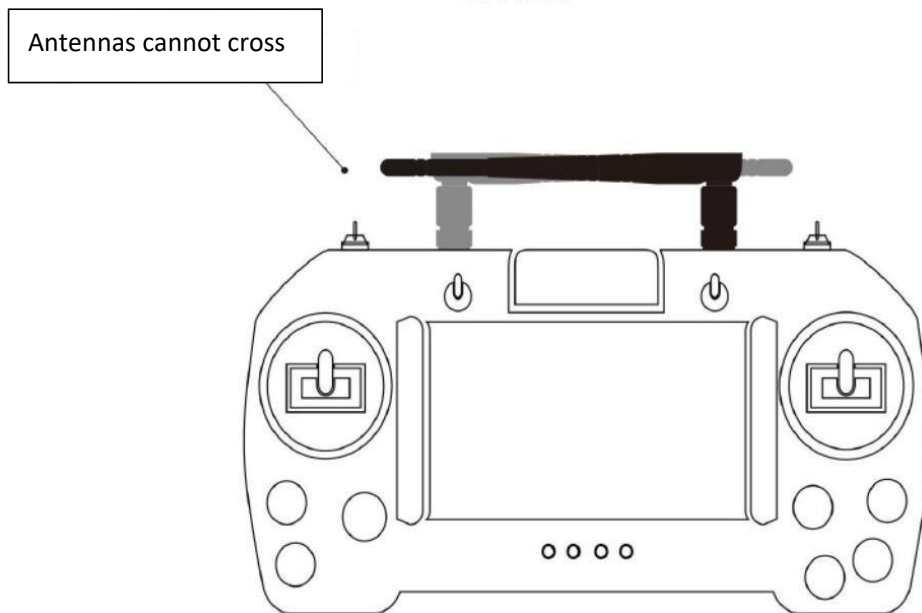
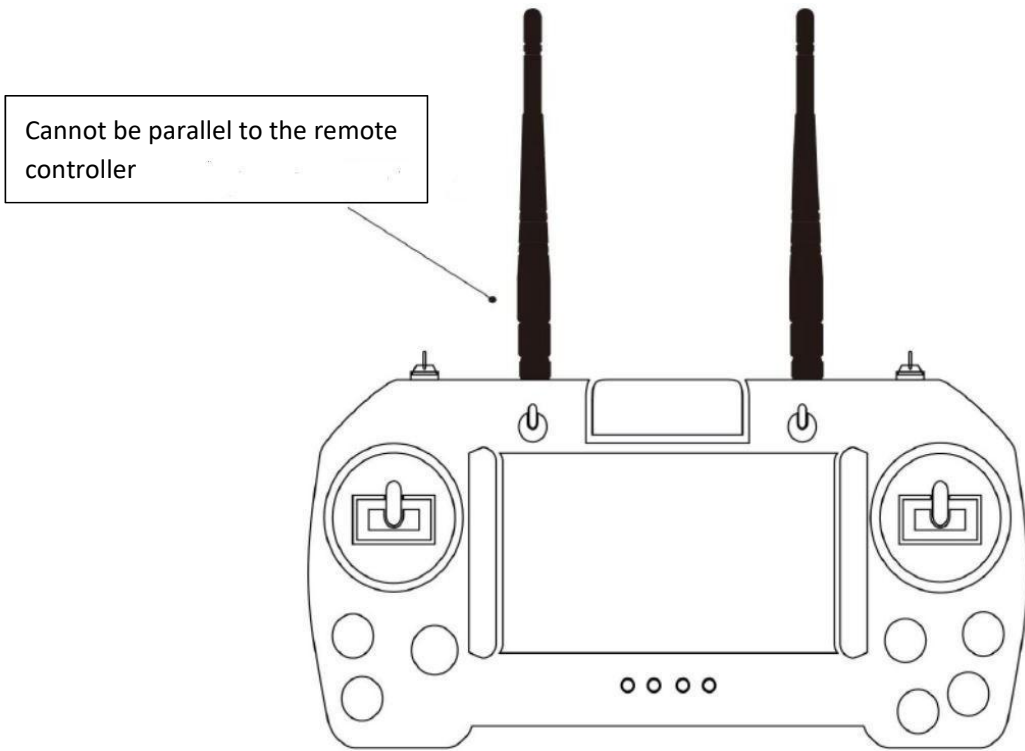④ Do not operate under the influence of alcohol or drugs.

The following is a schematic diagram of the remote control and a brief description of the use of the drone:

When the remote antennas to be used to expand vertically upwards, parallel with the remote controller or not folded antenna; UAV must meet consumer method.

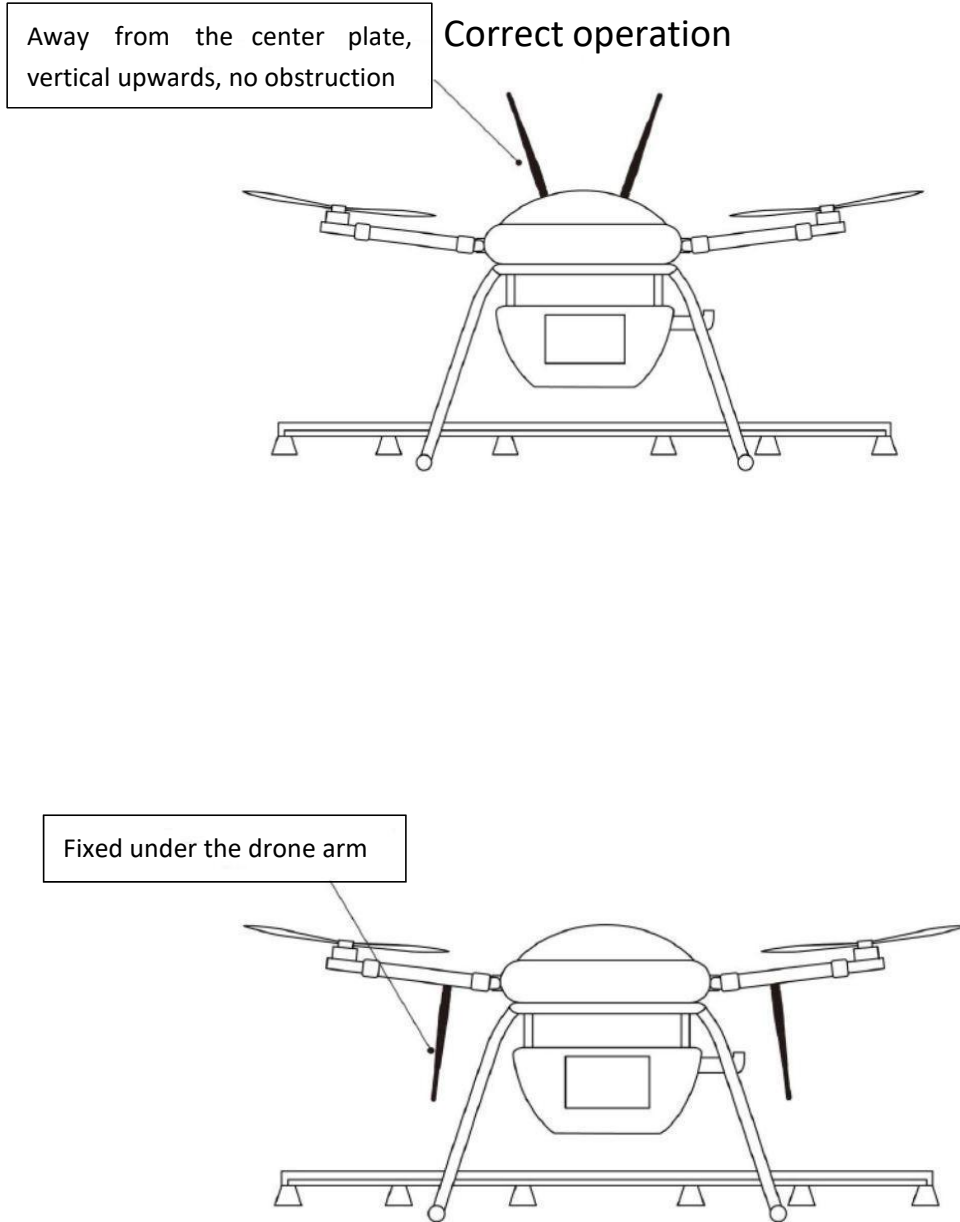1. A brief schematic diagram of correct operation during use:

Expand and vertically upward
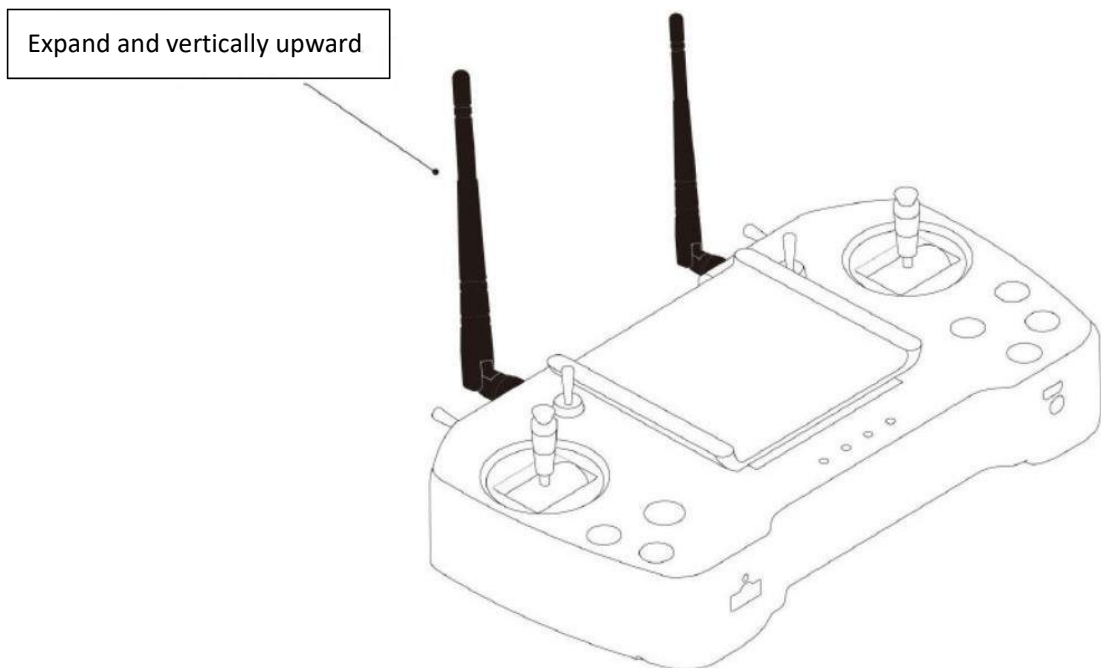
2. A brief schematic diagram of incorrect operation during use:

Cannot be parallel to the remote controller

Antennas cannot cross

1. Antenna installation

(1) Diagram of correct operation

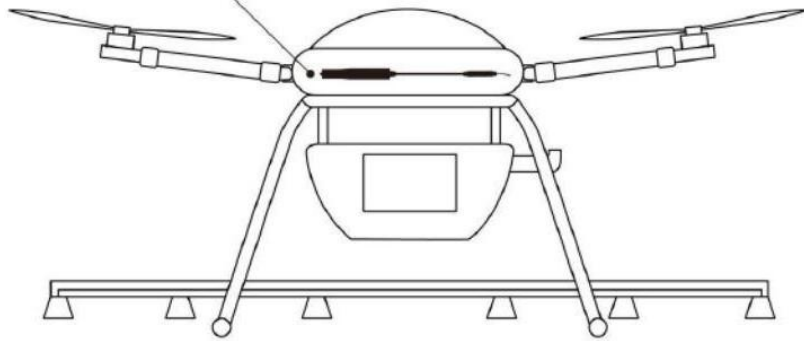Away from the center plate, vertical upwards, no obstruction
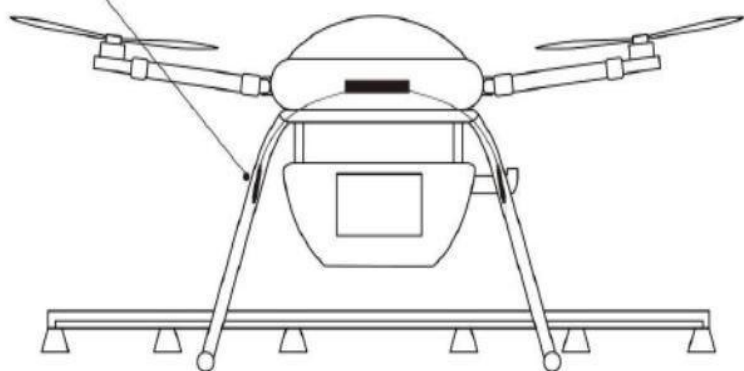
Correct operation

Fixed under the drone arm

⑵ Diagram of wrong operation

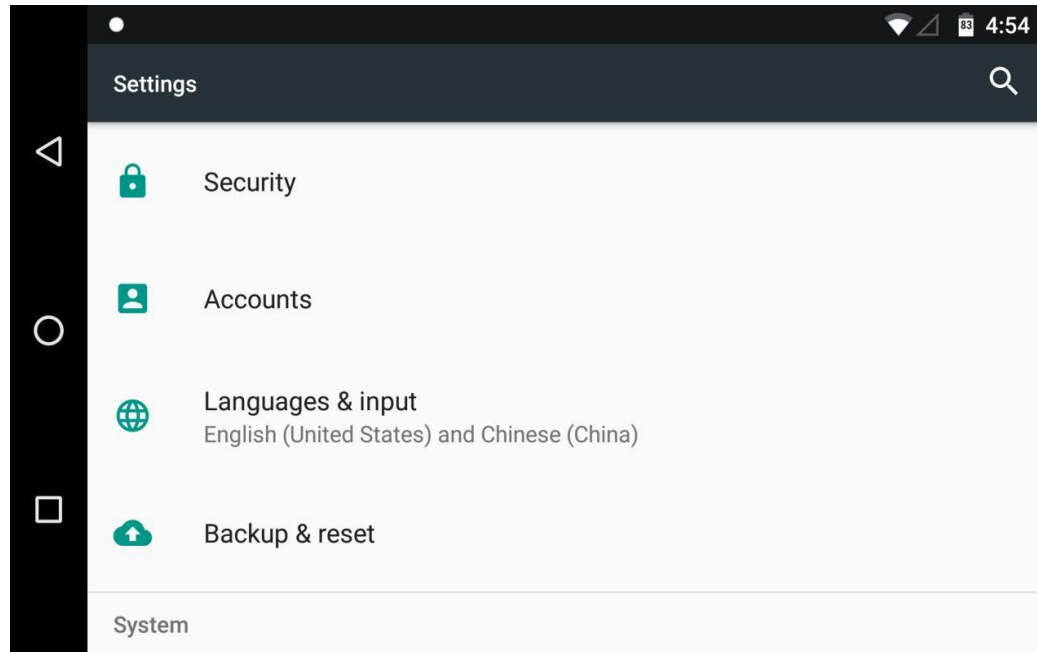Do not install inside the frame

Wrong operation

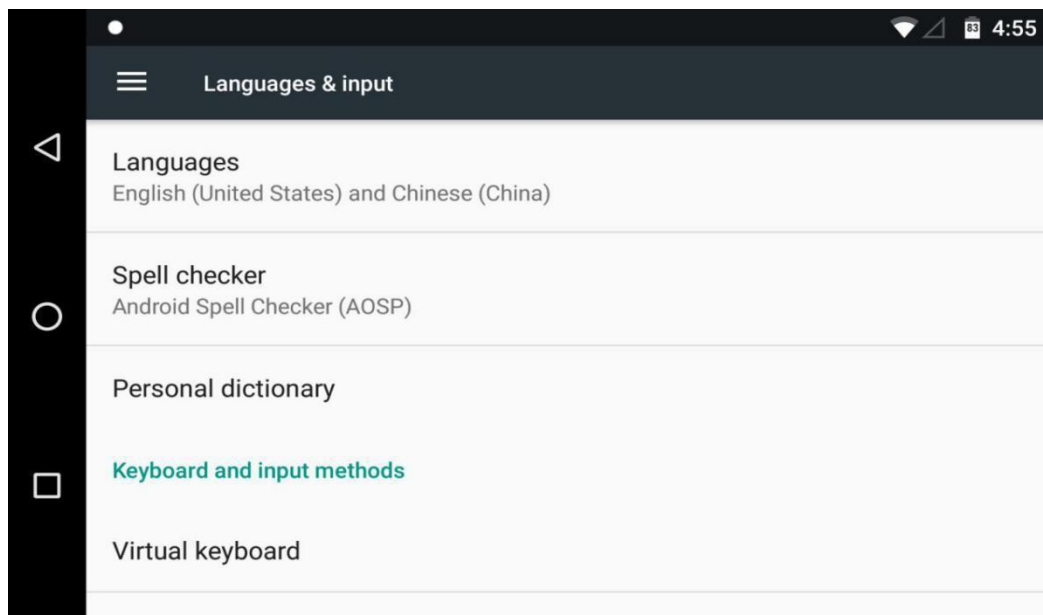The antenna body cannot be close to carbon fiber and metal

Remote control settings

Set department language

①Enter the system settings, select language and input method.

②After entering the language and input method, click on the language to switch, add, and delete languages .

Status bar

①Identify the successful networking through the network port and USB.

② Signal strength identification of the remote control and receiver (the receiver is not connected in the picture).

③Power display.

④Time display.

⑤Back button.

⑥Back to the main key surface button.

⑦Background task management/split screen button.

H16 assistant introduction
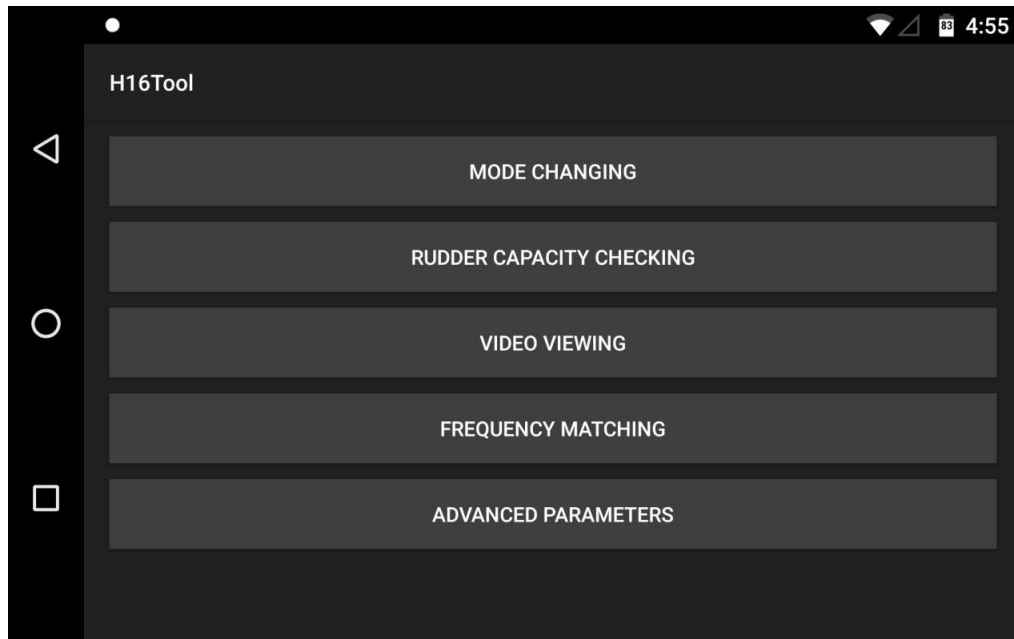
①Switch the joystick operation mode of the remote control.

②Check whether the values   of each channel of the remote control are normal.

③You can view MIPI, HDMI, UART video and other RTSP videos (details are introduced below).

④ Link the remote control with other receivers (the method of linking is described below).

⑤ In the advanced parameters, you can adjust the channel, upgrade the firmware of the joystick, and modify the baud rate of the receiver serial port (the password needs to be asked by the technician).

Frequency matching operation
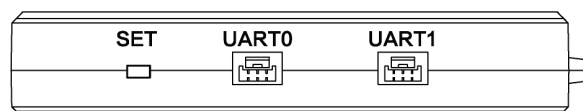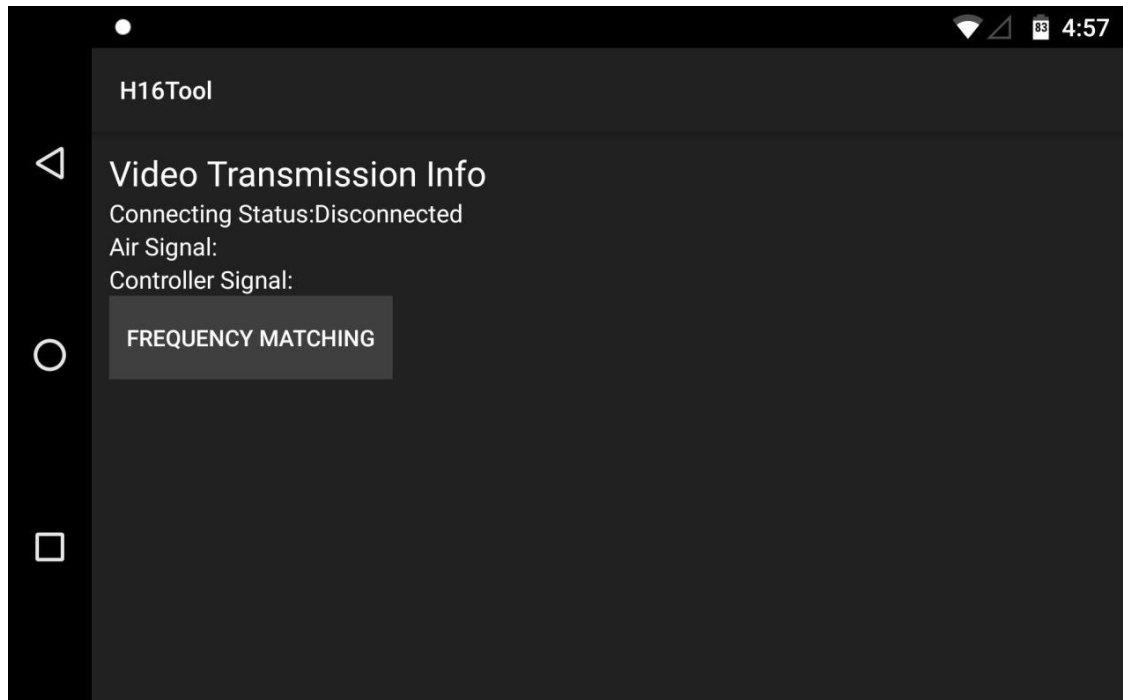
① After the receiver waits for 3-5 seconds after power press receiver on the frequency setting key , release the white light flashes when the hand .

② enter H16 assistant, click on the frequency, click on the frequency (connected to the frequency will be displayed after successful).

Video connection and settings

③ The factory default setting is HDMI/MIPI mode, which is used to display the video transmitted through MIPI/HDMI at the receiver .

④ UART video mode, to display single-axis PTZ, mini camera videos (need to connect the conversion board).

⑤ Custom mode, this mode displays videos transmitted through the network port of the sky terminal .
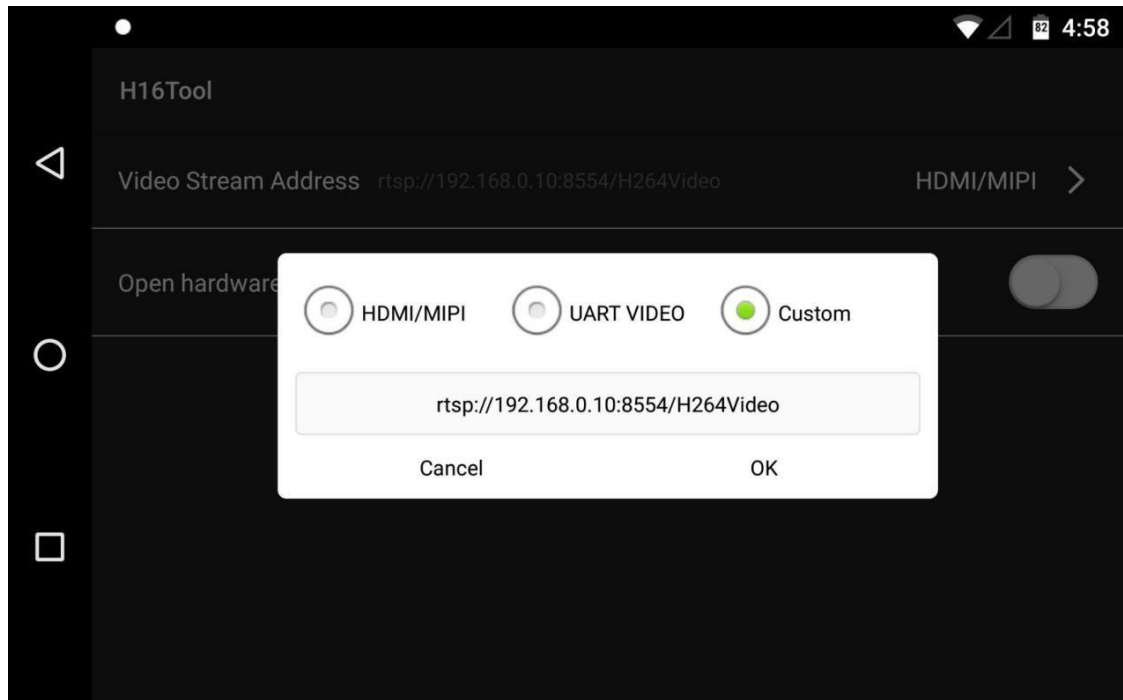
Joystick calibration

Click on the rudder amount in the H16 assistant to view and calibrate with reference to the value :

① When the remote control is completely off the screen, center the knob. Long press the c and d keys in the six-position switch, then wake up the screen and slide the screen up .

② Release the c and d keys and long press the d key .

③ After reaching the maximum and minimum values of the left joystick, right joystick, small joystick and knob on the remote control , press to exit the calibration mode .
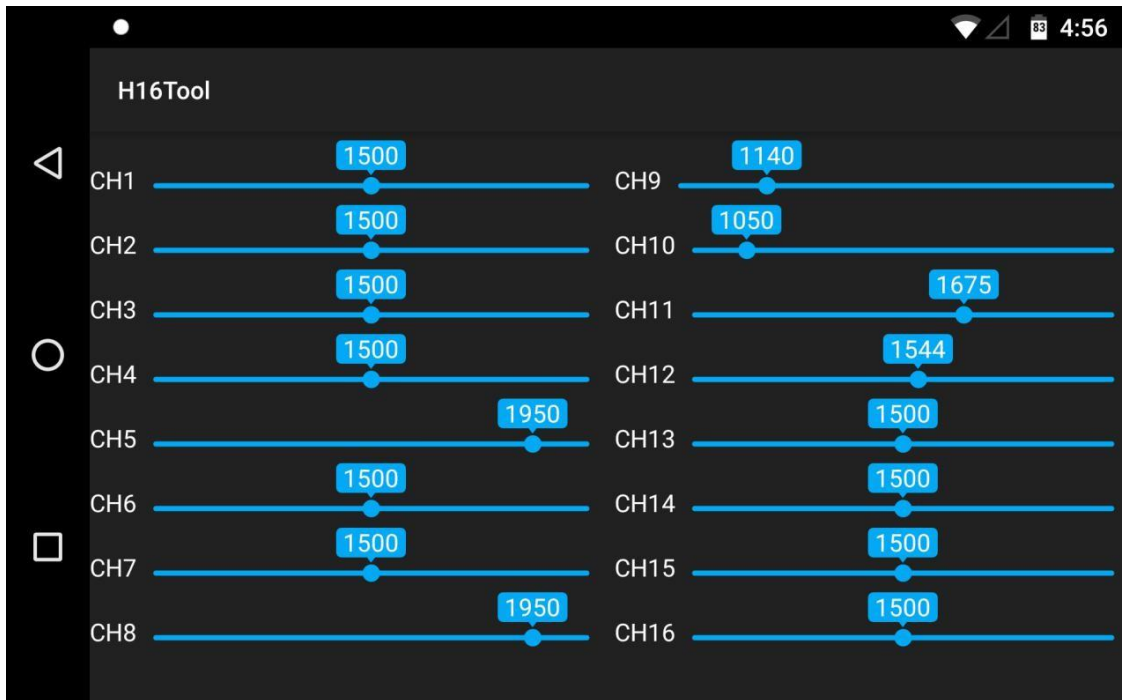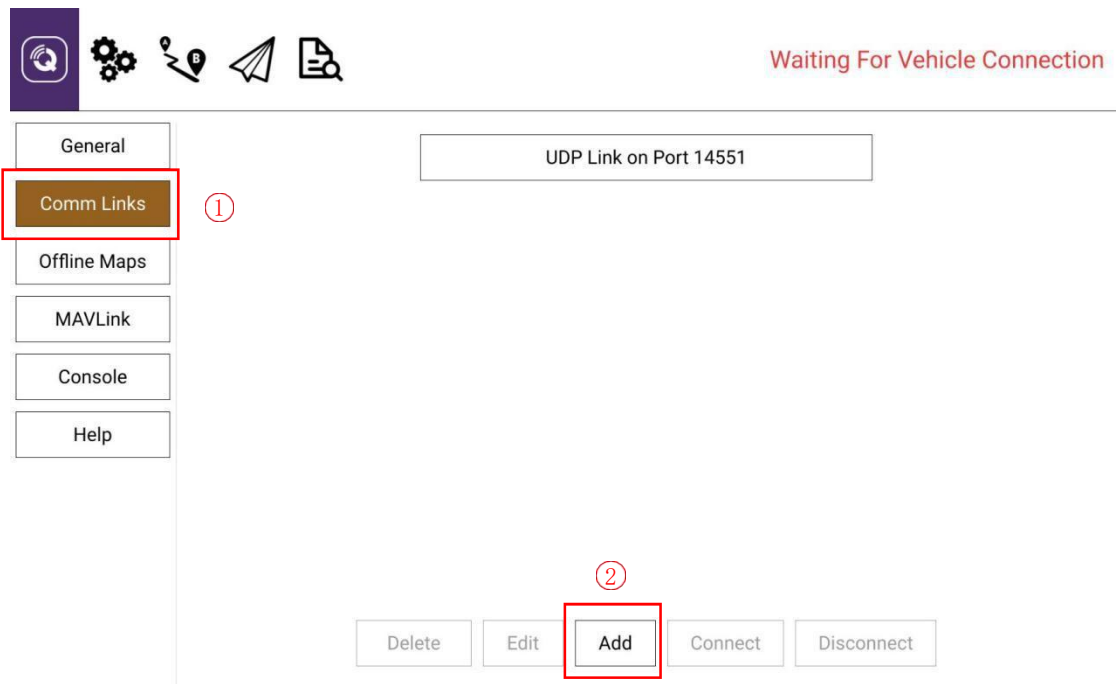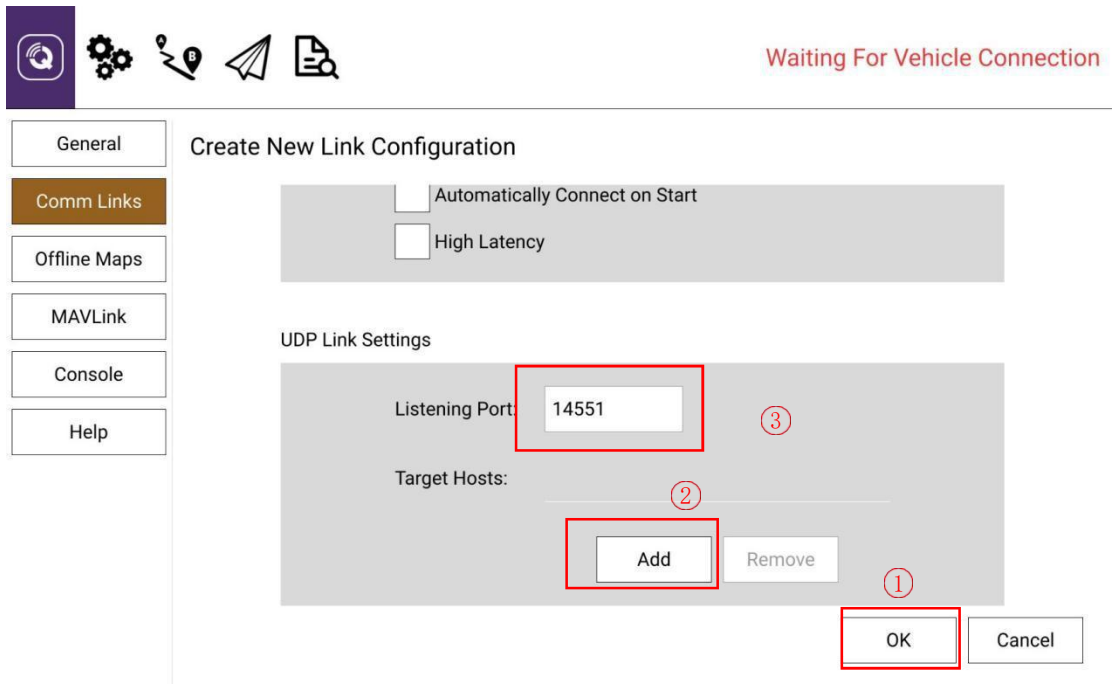
Ground station to acquire video

How to display the digital video transmission on the ground station , take the

QGC ground station as the column for reference :
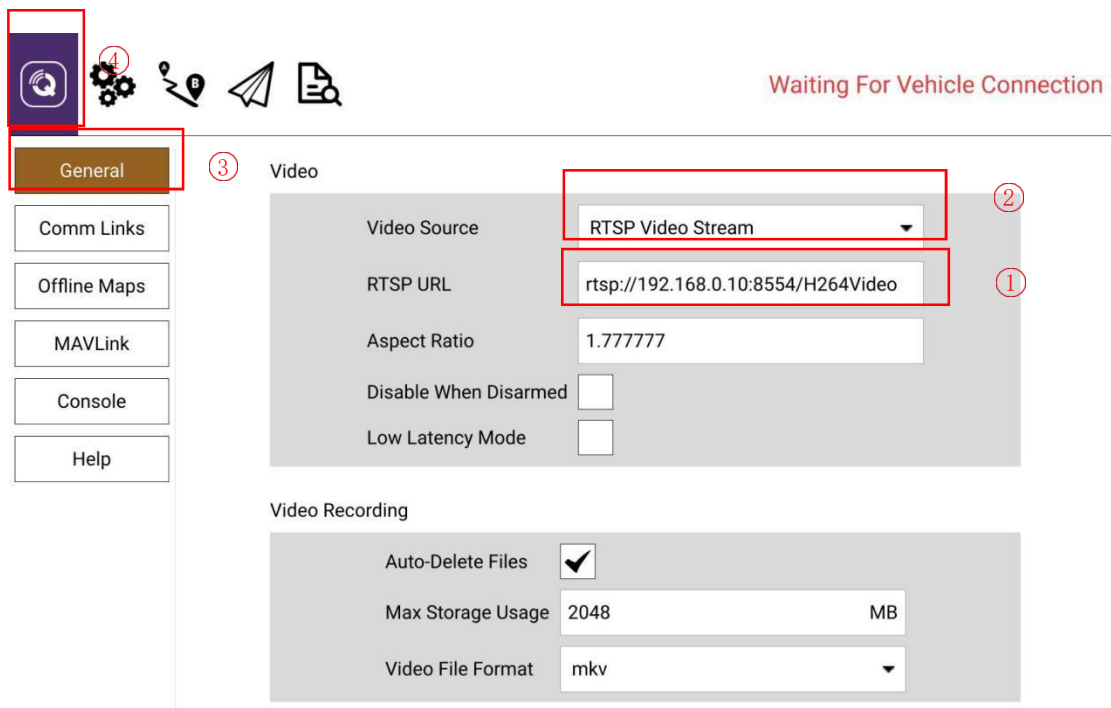
① Click the system setting logo in QGC .

② Click General .

③ Change the video source to RTSP Video Stresm .

④ in the RTSP URL or fill up fill write video in the RTSP address .

Data transmission configuration

⑤ Click the comm links .

⑥ Click Add .

⑦ Change the type to UDP and the listening port to 14551 .

⑧ Click OK to save .

Share videos and data

Network Transparent data transmission

The default IP address of Receiver is 192.168.144.10, and the default IP address of

Remote controller parameters is 192.168.144.11.

The receiver and the remotely connected device must be in the same network

section.It should be configured as 192.168.144.xxx.

Take the receiver's network port connected to an IPC camera as an example,

assuming that the IPC address is set to 192.168.144.108.H16，The h16 application can

get the 192.168.144.108 video stream（Please consult the corresponding IPC

equipment manufacturer for the rtsp video stream address）。You

can also connect other devices to the remote control to get the

receiver's video. The device ip should be set to 192.168.144.xxx.

Use WIFI

Please open the H16 WIFI sharing first, and the client connects to the H16 WIFI.

Video：

H16 remote control video stream acquisition address：rtsp://127.0.0.1:8554/fpv_stream

The client obtains the video stream address：

rtsp://192.168.43.1:8554/fpv_stream .

192.168.43.1 is the H16 wifi address

Data interface

UART0:

Client binds local UDP port 14550 to get data

UART1：

Client binds local UDP port 13550 to monitor data

Get videos and data from other apps （Mission Planner and vlc as examples）

1. OPen H16 remote control WiFi ;PC connected to this wifi.

2. Open　Mission Planne，Set the connection method to UDP, click "Connect", set the

port to 14550, click "ok"
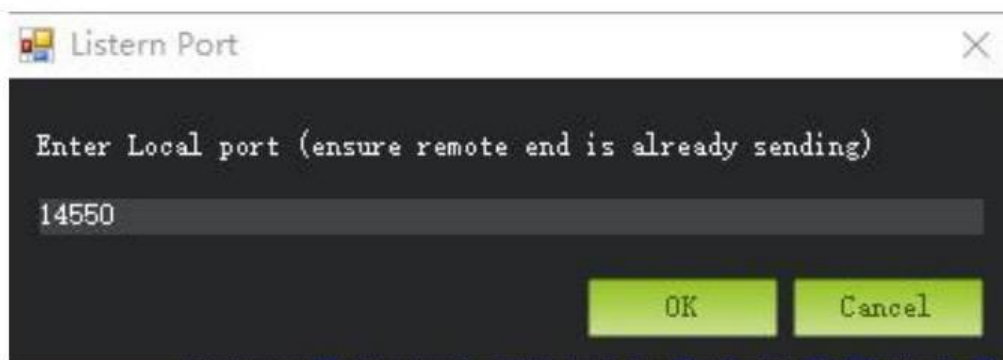
3. Open the H16 Video Share Enabled option, open the VLC player, select Media" to open

the network streaming, enter rtsp://192.168.43.1:8554/fpv_stream, select "Play"
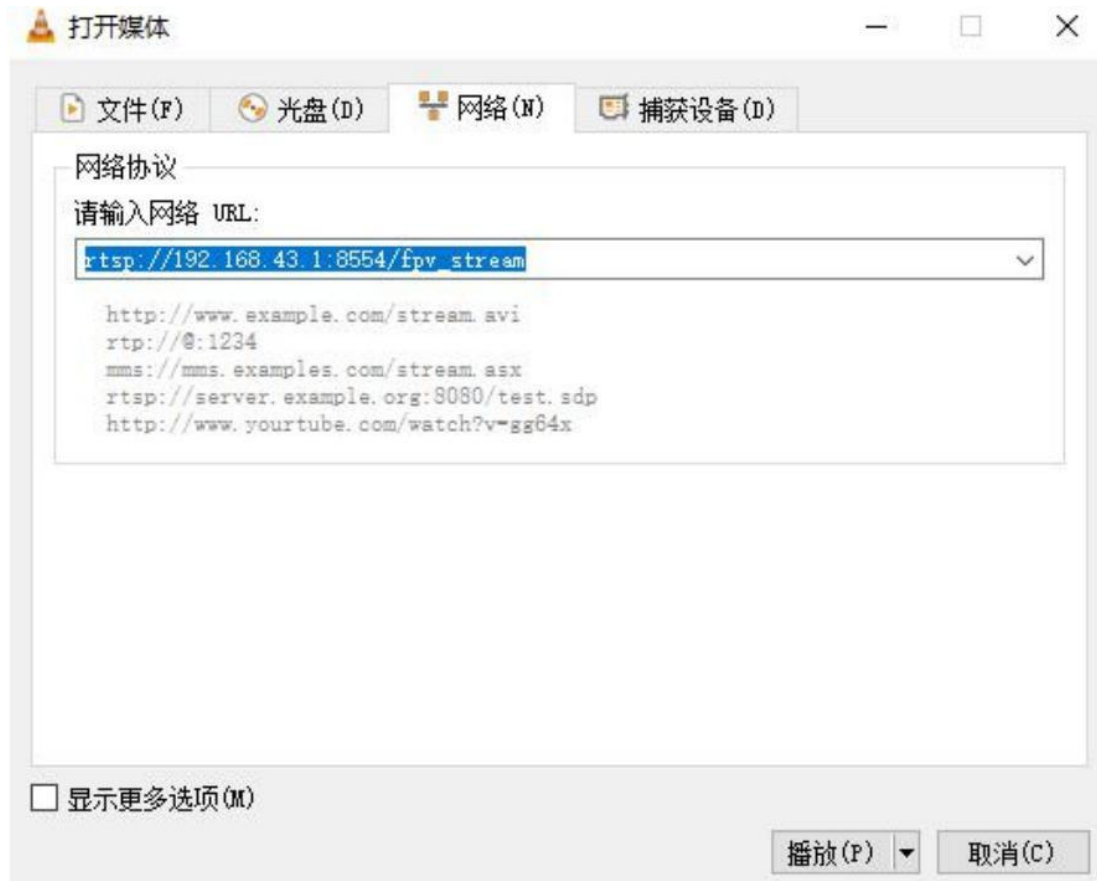
Common problems and solutions

1. Can the remote control install other applications?

The permissions of the remote control are all open, and there is no special software or

restricted software installation and uninstallation .

2. How does the remote control enter the fast charge mode?

You must use a dedicated charger to enter the fast charge mode, and there is a text prompt on

the lock screen interface .

3. How to get the RTSP address when using MIPI or HDMI camera ?

Open the H16 assistant, open the video to view, click on the settings (virtual button), click on the video stream address, click on custom to copy the link below that starts with RTSP. Then paste it .

4. Data transmission cannot be connected ?

Check the surface station is added UDP port to connect to a remote controller, whether the listening port 14551 , check the baud rate is normal ,

Check if RX and TX are connected in reverse (correct connection method RX to TX , TX to RX) .

5. Cannot display videos after connecting to the webcam ?

The video transmitted through the network port has a dedicated RTSP address. Not compatible with MIPI/HDMI. This RTSP address should be consulted with the webcam manufacturer .

6. Can't access the Internet after the remote control's network port is connected ?

Turn off the Wifi before connecting the 4g network card and the network port .

7. The remote control cannot connect to wifi ?

The remote control can only connect to the 5g band wifi, and the mobile phone hotspot can be changed to a 5g band hotspot .