

SKYDROID 云卓

云卓科技（福建）有限公司



云卓-H12PRO

使用说明书

V1.0

注意

本产品使用以下词条因操作不当可能带来的潜在危险加以分级说明。

注意: 如果不遵循说明进行操作,可能会导致财产损失、重大事故和严重伤害。

警告: 通过阅读整个用户手册,熟悉产品的功能之后再进行操作。如果没有正确操作本产品可能会对自身或他人造成严重伤害,或者导致产品损坏和财产损失。本产品较为复杂,需要经过一段时间熟悉后才能安全使用,并且需要具备一些基本常识后才能进行操作,如果没有强烈的安全意识,不恰当的操作可能会导致产品损坏和财产损失,甚至对自身或他人造成严重伤害。本产品不适合儿童使用。切勿使用非云卓提供或建议的部件,必须严格遵守云卓的指引来使用产品。

一、概述

1、产品特性

- ① H12PRO系列采用高通骁龙625处理器,搭载安卓嵌入式系统,采用先进的SDR技术,和超级协议栈,让图像更加清晰,延迟更低,距离更远,抗干扰性更强,无论是无人机,机器人,工控设备等都可以应用。
- ② 为串口透传、sbus等丰富的接口提供开发包、SDK和技术支持, TPYE-C 3.0接口,拓展SIM插槽。
- ③ 1920*1080分辨率高亮显示屏,超大的屏占比,在阳光环境下依然可以清晰查看实时显示信息。
- ④ 2T2R双天线信号互相补充,超高灵敏度、超远距离、配合先进跳频算法,大大增加了弱信号通讯能力。
- ⑤ Skydroid Fly APP基于TOWER进行了大量优化,更好的交互界面,更大的地图视野可控制飞行器实现智能航点规划,自动执行,一键回家,大幅提高工作效率。

2、主要用途及适用范围

H12PRO适用于对直升机、固定翼、多旋翼、车、船等无人设备的视频图像传输(需选配摄像头)、数据传输和操控。

3、品种、规格

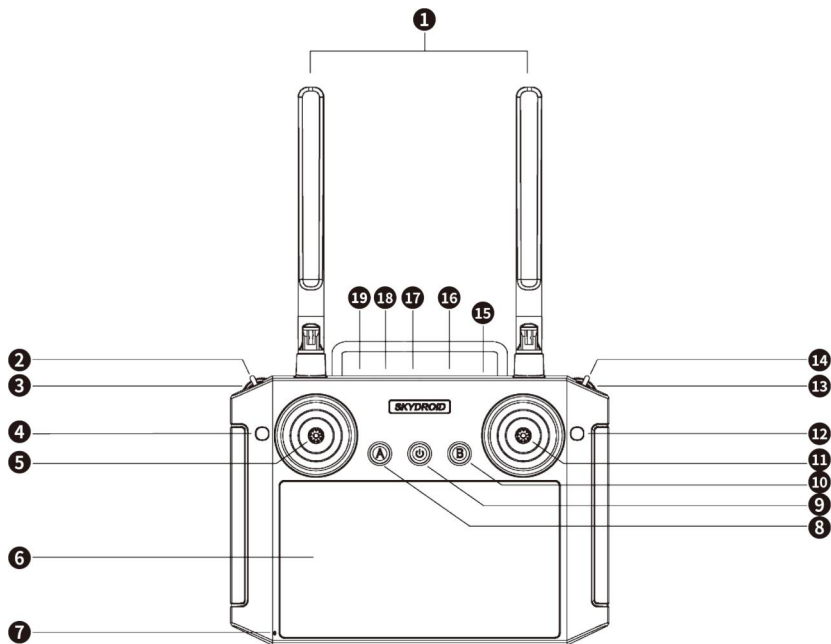
产品参数

遥控器参数			
型号	H12PRO	通道数	12
工作电压	4.2V	射频功率	17.5dBm
频段	2.400-2.483GHz	跳频	OFDM跳频
升级	APP在线升级	重量	660克
尺寸	190*152*94毫米	电池	10000mA/H
续航时间	6-20小时	充电接口	TYPE-C
调制方式	CCK,DQPSK,DBPSK	传输速率	6.5-144Mbps
发射功率	2.4G: 16.0±1.5dBm&<-15dB@11b 11Mbps;14.0±1.5dBm&<-25dB@11g 54Mbps13.0±1.5dBm&<-28dB@11n-HT20-2.4G-MCS7;13.0±1.5dBm&<-28dB@11n-HT40-2.4G-MCS7		
接收机灵敏度	2.4G:1Mbps:-94dBm@PER<8%;11Mbps:-85dBm@PER<8% 54Mbps:-70dBm@PER<10%;HT40-MCS7-2.4G:65dBm@PER<10%		
传输距离	9km		

接收机参数			
型号	R12PRO	通道数	12
工作电压	4.5-5.5V	工作电流	300mA~800mA@5V
尺寸	51*41*13毫米	重量	14克

4、型号的组成及其代表的意义

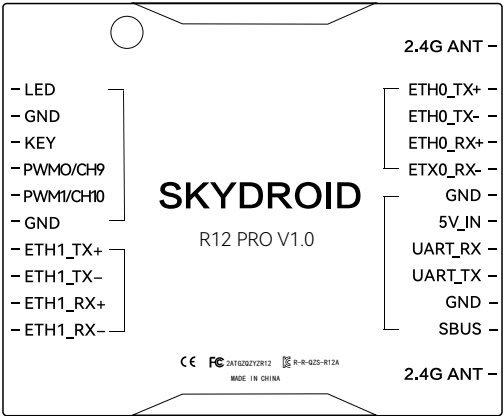
H12PRO遥控器



序号	注解	序号	注解
①	2.4G 4dBm天线	⑪	右摇杆X2、Y2
②	拨动三段开关/飞行模式	⑫	按键D (暂无功能)
③	波轮G (暂无功能)	⑬	波轮H (暂无功能)
④	按键C (暂无功能)	⑭	拨动三段开关 (暂无功能)
⑤	左摇杆X1、Y1	⑮	防尘塞
⑥	显示屏	⑯	SIM卡接插口
⑦	喊话MIC	⑰	Type-C充电口
⑧	按键A (暂无功能)	⑱	4pin网口
⑨	开关机按键		暂无功能
⑩	按键B (暂无功能)		

备注：⑥ 触摸显示屏：可点击屏幕进行操作，使用时请注意为屏幕防水(如下雨天时避免雨水落到屏幕)，以免进水导致屏幕损坏。

接收机



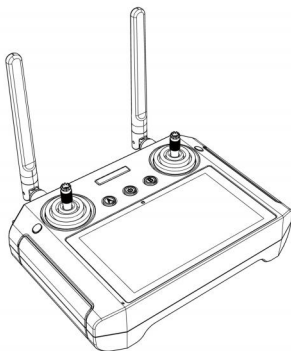
名称	注解	名称	注解
		2.4 ANT	天线
LED	对频指示灯	ETH0_TX+	网口0
GND	地线	ETH0_TX-	
KEY	对频按键	ETH0_RX+	
PWM0/CH9	PWM0口	ETH0_RX-	数传口
PWM1/CH10	PWM1口	GND	
GND	地线	5V_IN	
ETH1_TX+	网口1	UART_RX	
ETH1_TX-		UART_TX	SBUS接口
ETH1_RX+		GND	
ETH1_RX-		SBUS	
		2.4G ANT	天线

***注意:** 两路PWM功能调试中,后续可通过OTA升级固件支持。
H12PRO遥控器不能边充电边使用

遥控器天线角度

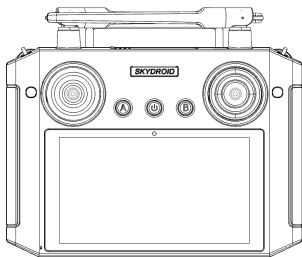
- (1)调整遥控器天线角度, 尽量正对飞行器飞行方向;
- (2)天线相互不要形成遮挡, 交叉。

正确操作

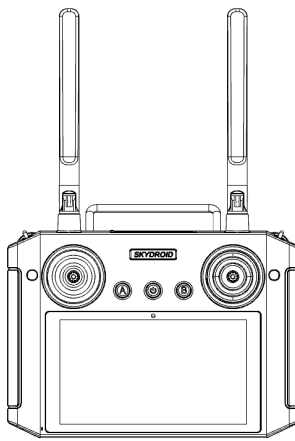


天线展开并垂直向上

错误操作



天线不能交叉



天线不能与遥控器平行

5、使用环境条件

注意

- A) 环境温度:-10°C~+55°C。
- B) 相对湿度:Not exceed 85%。
- 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。

6、工作条件

供电方式和注意事项

H12系列地面端内置一体式可充电锂电池,兼容市场标准TYPE-C接口,9v-2A规格的电源适配器(例如手机、相机等数码产品USB充电器)进行充电。

如在地面端充电时遇到冒烟、有异味、漏液的情况下时,请勿继续给地面端充电,请移送至本公司进行维修。

请勿在婴儿触碰区域给本产品进行充电,以免发生触电危险。请勿在超过60°C的环境下对本产品进行充电。

7、安全

警告

初学者请特别注意以下安全事项!请细读!

禁止在疲劳、醉酒等身体状态不佳时飞行!

- ⊗ 禁止在下雨、强风等恶劣天气时飞行!
- ⊗ 禁止在接近高压线、通信基站、有人聚集或者活动的场所飞行!
- ⊗ 禁止在机场和其他明令禁飞区飞行!
- ⊗ 禁止在人群集中的地方、停车区域或者其他可能造成财产损失或者人身伤害的区域操控飞行模型
- ⊗ 飞行前,做好飞行器的设备检测,检查收发系统与飞行器是否正常;
- ⚠ 请使用有保障的专业充电器为电池充电。
- ⚠ 本产品天线为脆弱部件,避免受力过度破坏。
- ⚠

二、使用、操作

1、使用前的准备和检查

注意

- ① 使用前务必先检查遥控器电量是否充足。
- ② 使用前请检查天线是否按要求摆放, 已获得最佳效果。
- ③ 首次使用请确保固件已经升级至最新版本。
- ④ 用户应确保自己不在醉酒、药物影响下操作使用。

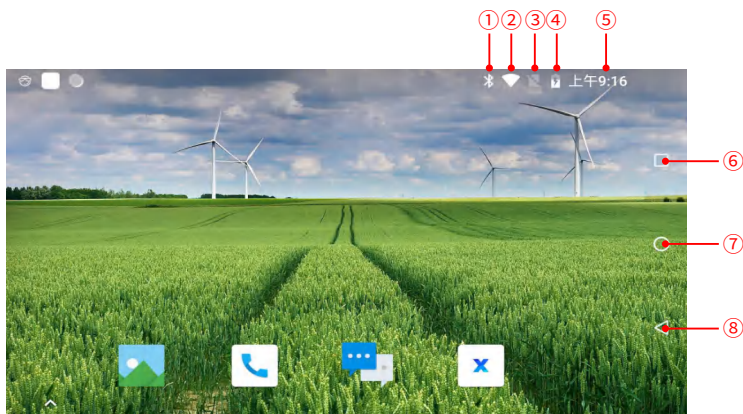
2、使用方法

语言设置



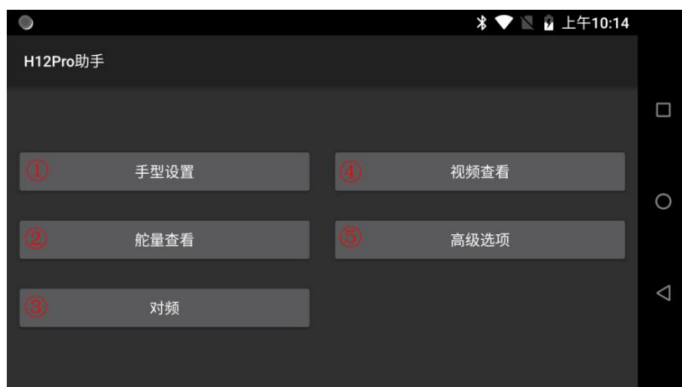
点击设置、系统、语言和输入法中可更改语言。

状态栏提示



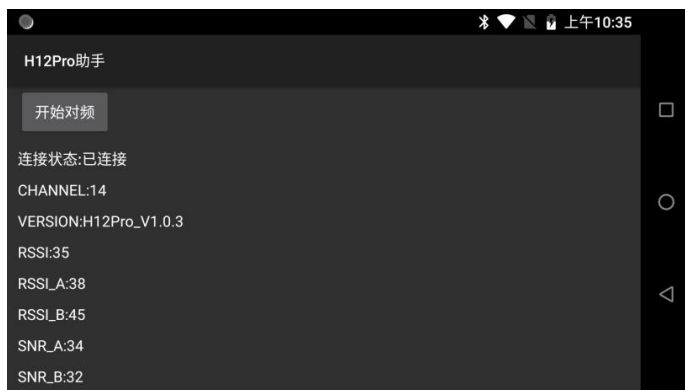
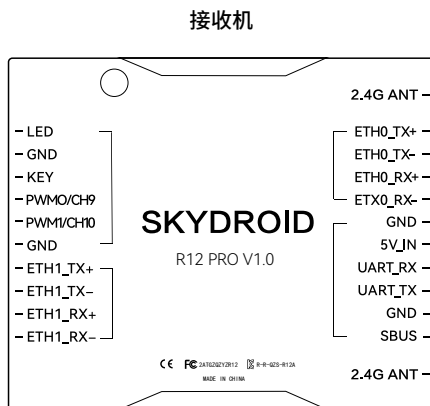
- ① 蓝牙开启提示
- ② 无线WIFI信号强度
- ③ SIM卡提示窗 (图中未插入SIM卡状态)
- ④ 电量显示 (图中为充电状态)
- ⑤ 时间显示
- ⑥ 后台进程查看
- ⑦ 返回主页面
- ⑧ 返回上一步操作

H12PRO助手介绍



- ① 用于飞行手型切换。
- ② 用于查看遥控器舵量值。
- ③ 将遥控器与其他接收机进行对频(对频方法在下方介绍)。
- ④ 用于查看摄像头传回来的图像。
- ⑤ 高级选项里可以调整通道、升级摇杆固件、查看信号强度、修改接收机串口波特率(密码为999)。

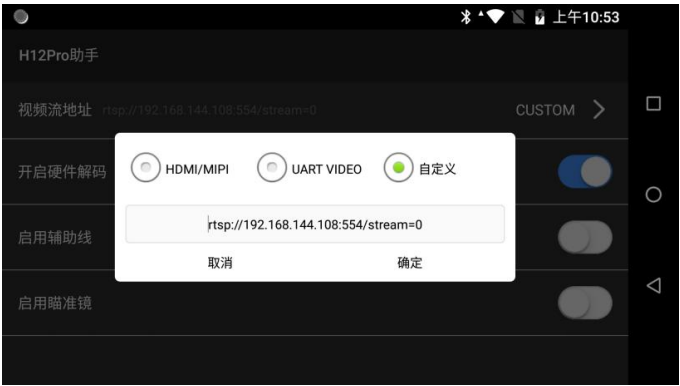
3、对频操作



- ①接收机通电,红灯常亮,大约10s后蓝灯慢闪。
- ②蓝灯慢闪后在等待约20s,短接GND和KEY,直到蓝灯快速闪烁后松开。
- ③打开遥控器上的H12PRO助手,点击对频、开始对频,等待显示对频成功。
- ④接收机指示灯将会持续闪烁两分钟后变为蓝灯常亮。

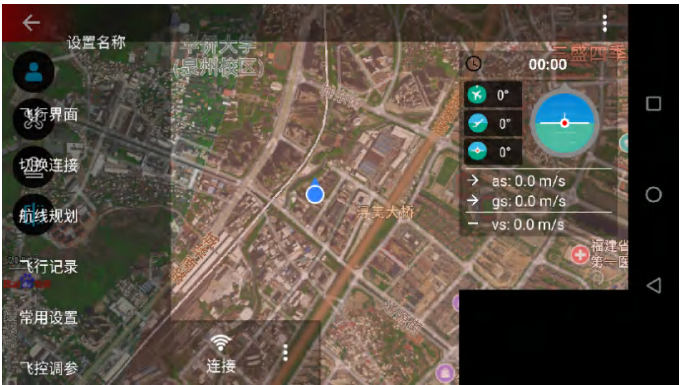
注意:H12PRO遥控器不能边充电边使用

4、图像连接设置



H12Pro助手--视频查看--点击下方设置按钮--视频流地址--自定义,输入摄像头的地址。
网口摄像头网段需要提前设置为 144网段 (192.168.144.XXX)摄像头连接接收机网口 0 或网口 1。
设置:此设置显示通过天空端的网口来传输图像,显示 C10 三轴云台摄像头 (已接 C10 的情况下)
rtsp://192.168.144.108:554/stream=0
安装第三方网口吊舱相机需要询问相机厂家要 rtsp 地址。

5、H12Pro遥控器在地面站显示图传数传



打开云卓地面站, 点击左上角弹出侧边栏, 点击切换连接。

选择S1Pro/H12Pro/C10这个组合, 点击进入。



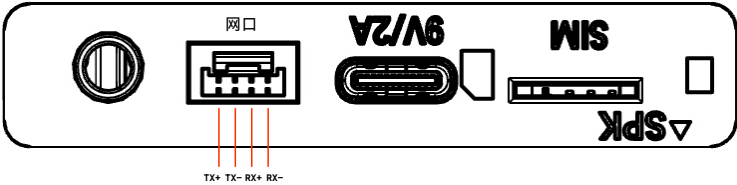
常用设置 -> 其他设置 -> 用户界面 -> 视频窗口->C10

***注意:**若为其他网口摄像头则选择自定义, 输入对应的视频流地址即可显示图像。

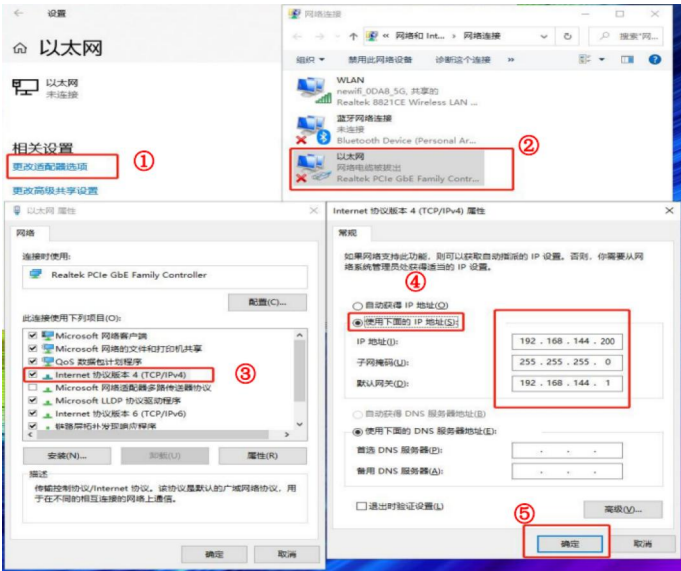
6、网口共享数传图传

6.1、共享数传

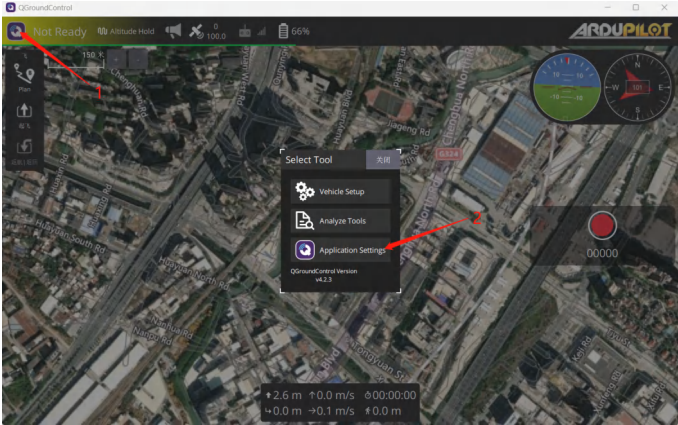
①遥控器通过网线连接电脑网口。



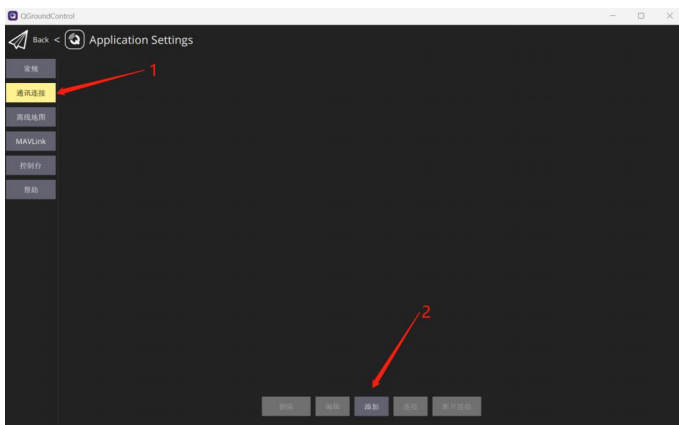
②打开电脑设置->点击适配器->选择以太网->选择IPV4协议->选择自定义IP地址->按图中的方式输入->点击确认(见下图)



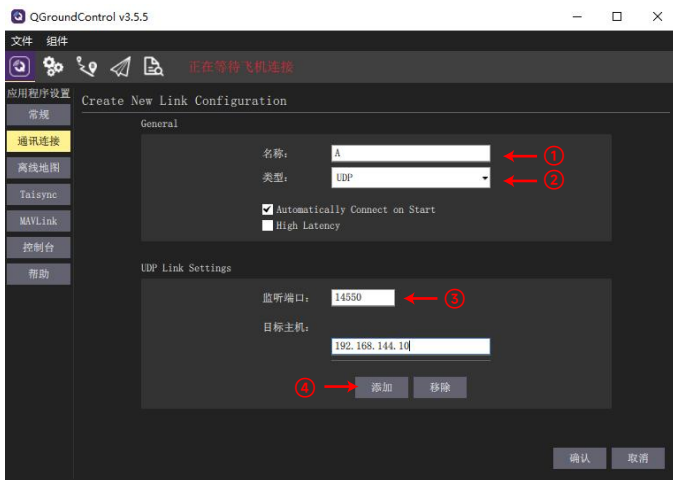
③打开电脑 QGC, 选择Application Settings



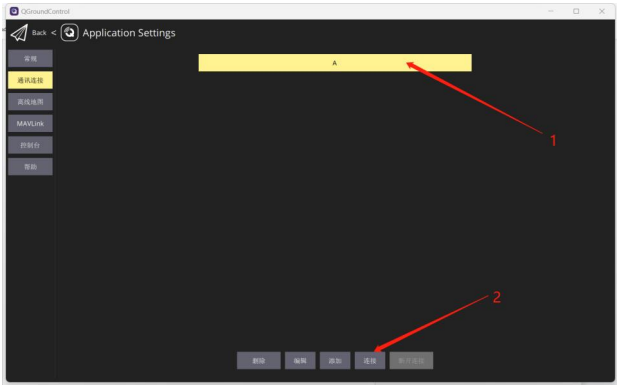
④ 选择通讯连接, 添加连接方式



⑤ 自定义名字, 选择UDP, 端口号为14550



⑥ 选择建立的连接方式，点击连接



6.2、共享图传

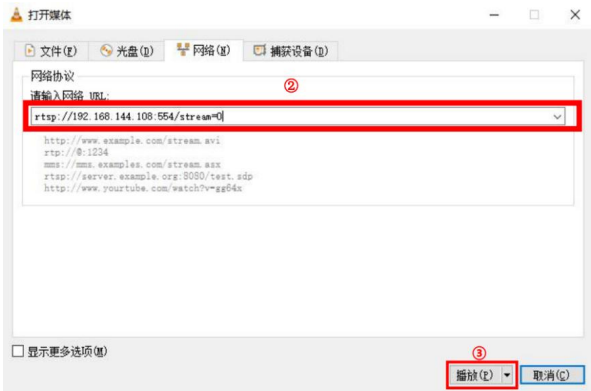
按照上述连接遥控器与电脑后，下载软件VLC 来显示图像



① 打开电脑VLC软件，在媒体中选择网络串流



② 在网络 URL 的输入栏中，输入 rtsp://192.168.144.108:554/stream=0 后点击播放



常见问题与解决办法

1、遥控器是否可以安装其他APP?

遥控器端权限完全开放, 没有任何专用软件和限制软件的安装与卸载。支持QGC软件的使用, 暂时无法使用K3A软件。

2、数传无法连接?

检查地面站是否是选对遥控器类型。检查波特率是否与飞控一致 (H12PRO助手, 高级999, 接收机设置波特率)。检查RX TX是否反接 (正确接法RX接TX TX接RX)。

3、地面站声音太低, 无法听清?

可以在设置中找到声音选项, 在声音选项中调节声音。

4、TYPE-C口除了充电还可以做什么?

TYPE-C口除了充电, 还可以与电脑连接进行文件查看。

5、遥控器有几种连接网络的方式?

可通过SIM卡、连接WIFI连接网络。

三、保养、维修

长期停放时的维护、保养

将遥控器存放于干燥通风处, 减少阳光直射以防止电池过热。若需存放超过三个月, 则推荐的存放温度区间为22摄氏度至28摄氏度。切勿将电池存在于低于零下20摄氏度或高于45摄氏度的场所。

四、运输、储存

警告

为避免可能的伤害和损失, 务必遵守以下各项:

由于线材和小零件可能对儿童造成危险, 所以务必让儿童远离遥控器的部件。

注意

- 1) 切勿让遥控器浸入水中, 若入水, 请及时用松软干布擦拭, 并立即关闭电源。
- 2) 禁止机械撞击、碾压、刺穿电池, 禁止将电池跌落。

五、其他



QQ群



微信公众号



新浪微博



优酷平台

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SKYDROID 云卓

SKYDROID TECHNOLOGY (FUJIAN) CO.,LTD



Skydroid H12 PRO

User Manual

V1.0

Attention

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

Note: If not follow the instructions, it may cause property damage, major accidents and serious injuries.

Warning: Misuse of this product may result in injury, damage or loss of property. Read the manual carefully before using this product. This item is not a toy. This item is intended for use by professional UAV operators and installers only. Donot use this product if you lack the knowledge and expertise to install and maintain UAV radio equipment. Do not use unapproved or unofficial components with this system. Operators must strictly follow the operation guides set forth in this manual. Skydroid does not accept any liability for the use or misuse of this product.

A.Overview

1.Product Features

- ① The H12 Pro series uses newest Qualcomm Snapdragon 625 processor, equipped with an Android embedded system and advanced SDR technology and super protocol stack, making the image clearer, lower the latency, longer distance, stronger anti-interference, whether it is drones, robots, industrial control equipment, etc. can be applied.
- ② We provide development kits, SDKs and technical support for digital cameras, serial transparent transmission, sbus and other rich interfaces. Equipped with Type-C 3.0 high speed interface, expanded TF card slot, etc.
- ③ The 1920 * 1080 resolution high brightness display screen, with a large proportion of screens, can still clearly view the real-time display information in a sunny environment.
- ④ The 2T2R dual antenna signals complement each other, with ultra-high sensitivity, ultra long distance, and advanced frequency hopping algorithms, greatly enhancing weak signal communication capabilities.
- ⑤ Skydroid Fly App has undergone a lot of optimization based on QGC, a better interactive interface, a larger controllable map field of viewing, the aircraft implements intelligent waypoint planning, automatic execution, automatic follow-up, and one-click home, highly provides working effectiveness in professional fields.

2.Main applications

It is used to remotely operate helicopters, fixed wings, multi-rotors, vehicles, ships, etc. for video/image transmission (camera optional), data transmission, telemetry, and control.

3.Specification

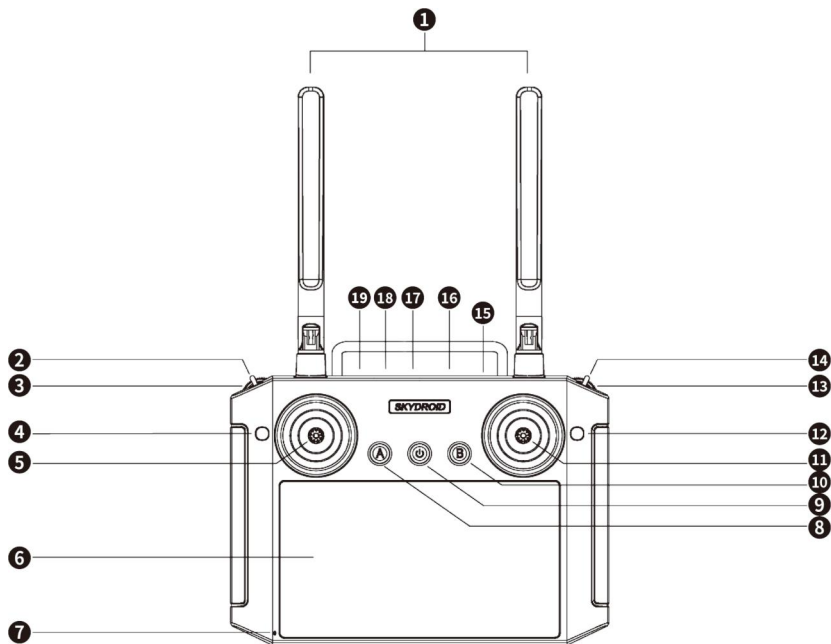
Remote Controller Specification

Remote Controller Specification			
Model No.	H12PRO	Channels	12
Working voltage	4.2V	RF Power	17.5dBm
Frequency	2.400-2.483GHz	Frequency hopping	OFDM
Update way	APP Update online	Weight	660g
Size	190*152*94mm	Battery	10000mA/H
Endurance	6-20Hrs	Charging port	TYPE-C
Modulation mode	CCK,DQPSK,DBPSK	Transmission rate	6.5-144Mbps
Transmission power	2.4G: 16.0±1.5dBm&<-15dB@11b 11Mbps;14.0±1.5dBm&<-25dB@11g 54Mbps13.0±1.5dBm&<-28dB@11n-HT20-2.4G-MCS7;13.0±1.5dBm&<-28dB@11n-HT40-2.4G-MCS7		
Receiver sensitivity	2.4G:1Mbps:-94dBm@PER<8%;11Mbps:-85dBm@PER<8% 54Mbps:-70dBm@PER<10%;HT40-MCS7-2.4G:65dBm@PER<10%		
Working Range	9KM		

Receiver Specification			
Model No.	R12PRO	Channels	12
Working Voltage	4.5-5.5V	Working current	300mA~800mA@5V
Size	51*41*13mm	Weight	14g

4.The composition of the model and its significance

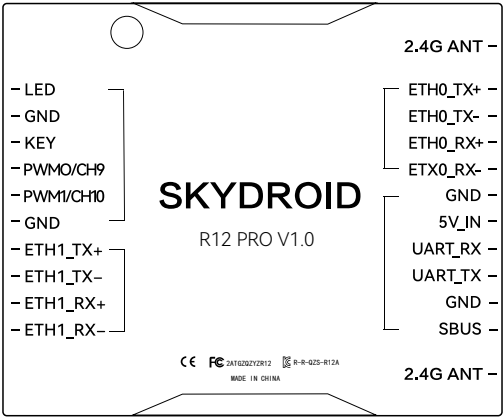
H12 Pro controller body



Number	Annotation	Number	Annotation
①	2.4G 4dB antenna	⑪	Right joystick X2、Y2
②	Toggle 3 positions switcher/ working modes	⑫	Button D (No function currently available)
③	Thumbwheel switch G (No function currently available)	⑬	humbwheel switch H (No function currently available)
④	Button C (No function currently available)	⑭	Toggle 3 positions switcher (No function currently available)
⑤	Left joystick X1、Y1	⑮	Dust plug
⑥	Display	⑯	SIM card slot
⑦	MIC	⑰	Charging port
⑧	Button A (No function currently available)	⑱	4 pin ip port
⑨	Power switcher		No function currently available
⑩	Button B (No function currently available)		

Remarks: ⑥ Touch screen, you can click the screen to operate. Please pay attention to waterproof the screen when using it (such as avoiding rain water falling on the screen in rainy days), so as to avoid damage to the screen caused by water ingress.

Receiver



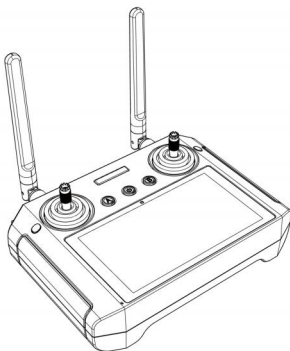
Name	Annotation	Name	注解
		2.4 ANT	Antenna
LED	Binding indicator light	ETH0_TX+	IP port 0
GND	Ground	ETH0_TX-	
KEY	Binding key	ETH0_RX+	
PWM0/CH9	PWM0	ETH0_RX-	Telemetry
PWM1/CH10	PWM1	GND	
GND	Ground	5V_IN	
ETH1_TX+	IP port 1	UART_RX	
ETH1_TX-		UART_TX	Sbus
ETH1_RX+		GND	
ETH1_RX-		SBUS	
		2.4G ANT	Antenna

Attention:Dual PWM function is under debugging , firmware support can be upgraded through OTA in the near future.
H12Pro remote control cannot be used while charging.

Remote control antenna angle

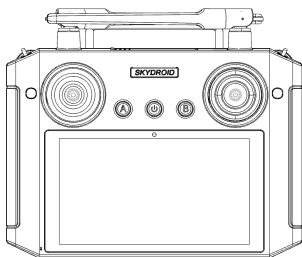
- (1) Adjust the angle of the remote control antenna to face the flight direction of the drone .
- (2) Antennas shall not form shielding or crossing with each other.

Right operation

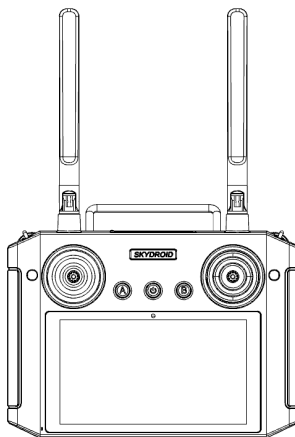


Keep the antenna extended and vertical upwards

Wrong operation



Antenna cannot cross on each other



The antenna cannot be parallel to the remote control

5.Environment conditions

Pay attention

- A) Working temperature
- B) Relative humidity: Not exceed 85%.
- C) Atmospheric pressure: 86kPa~106kPa
- D) Working environment should not contain explosive material or any corrosive or harmful gas may cause interference in the operation of the product.
- E) Always work under shelter to prevent rain, snow, wind, sand and dust contamination.

6.Working conditions

Power supply and attentions

H12Pro series uses a built in Li-ion battery. Charging port is compatible with 9V -2A Type-C chargers (such as cell phone, digital cameras' USB charger).

In case of smoke, heat or unusual smell during charging, please stop charging immediately and return to our company for servicing as soon as possible.

Do not leave the product unattended while charging. Do not leave the product in a place where children can reach. Do not charge when room temperature over 60 °C

7.Safety

Warning

Beginners should pay attention for the followings! Please read it carefully!

- ⊗ DO NOT fly under the influence of substances, or when tired!
- ⊗ DO NOT fly in strong wind and or rainy conditions!
- ⊗ DO NOT fly close to electric emission towers, communication stations and crowded area!
- ⊗ DO NOT fly nearby airports and other prohibited areas!
- ⊗ DO NOT fly around people or animals, or in any location where possible to damage property
- ⚠ Check equipment before every flight and check whether the transceiver system and the drones are normal or not
- ⚠ Please use certified chargers to charge the batteries.
- ⚠ DO NOT put unnecessary force on antennas since its weakness.

B.Operation

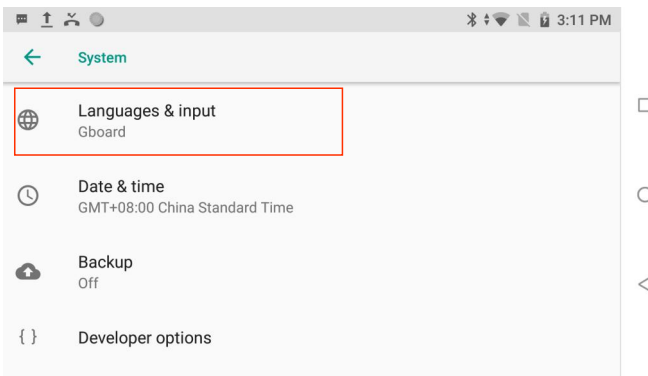
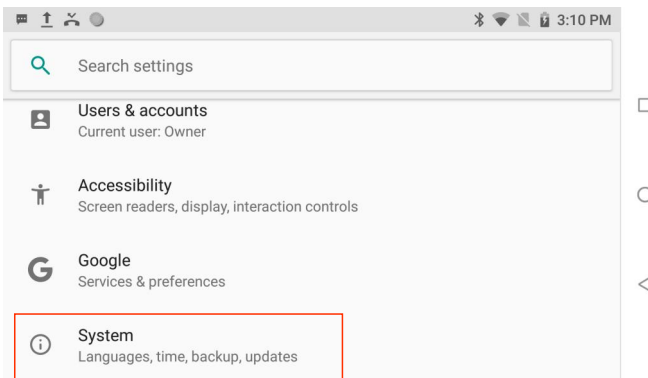
1.Preparation and pre-checking before use

Pay attention

- ① Check battery level.
- ② Check position of the antenna to get the best performance
- ③ Make sure the firmware is the latest version
- ④ DO NOT operate under the influence of alcohol or drugs

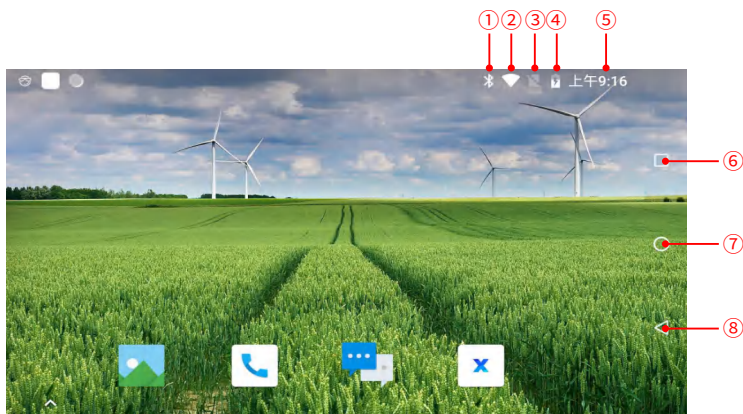
2.Operation

Language setting



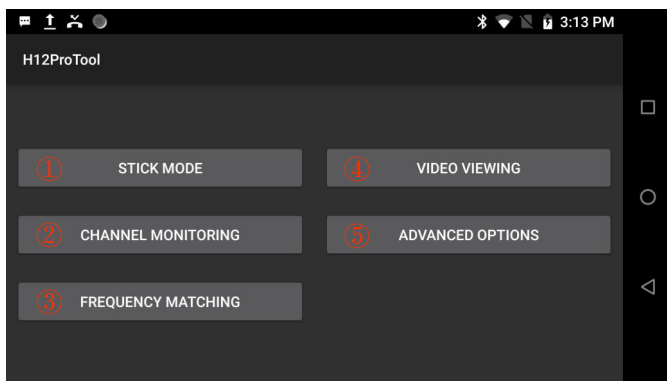
Enter setting, and then enter system, choose your language

Status bar



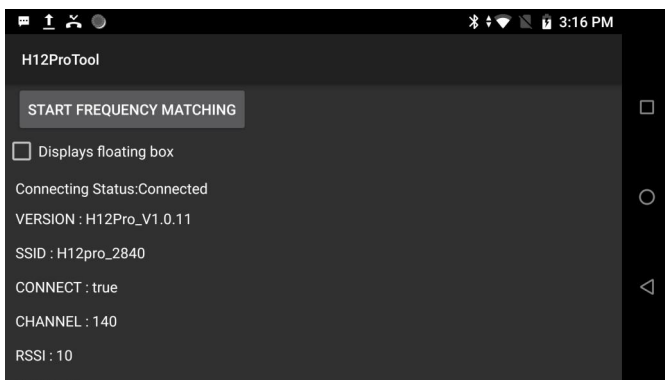
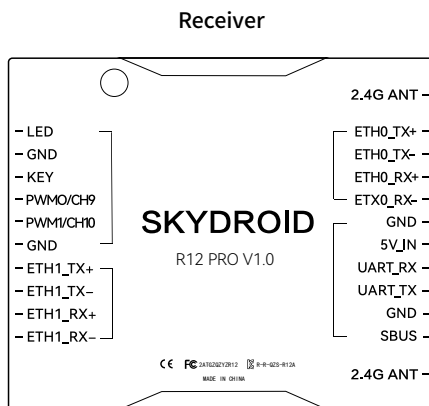
- ① Bluetooth
- ② Signal
- ③ SIM card status (without sim card in the picture)
- ④ Power lever (charging in the picture)
- ⑤ Time
- ⑥ Back ground management
- ⑦ Home
- ⑧ Return to last step

H12 Pro Assistant



- ① Mode change
- ② Rudder value
- ③ Binding the remote control with other receivers (the binding method is introduced in below)
- ④ Video/image transmission checking
- ⑤ In the advanced parameters setting, you can adjust the channel, upgrade the joystick firmware, and modify the receiver's serial port baud rate (password is:999)

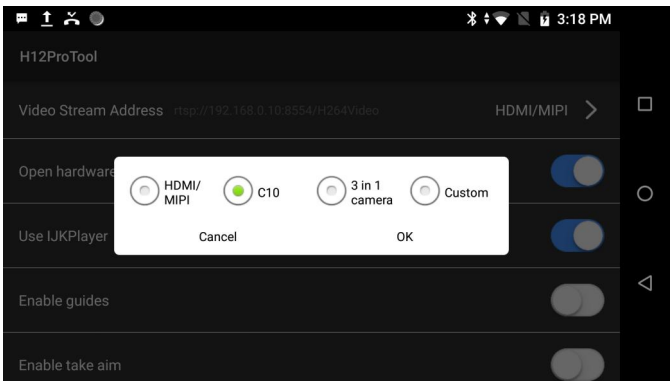
3.Binding operation



- ① Power on the receiver and the red light remains on. After around 10 seconds, the blue light flashes slowly.
- ② After the blue light flashes slowly, wait for another 20 seconds, short circuit GND and KEY until the blue light flashes quickly and then release.
- ③ Open the H12 Pro assistant on the remote control, click on “binding”, start it and wait for the display showing you “Binding successful”.
- ④ The receiver indicator light will flash continuously for two minutes before turning blue and remaining on.

Attention: H12Pro remote control cannot be used while charging

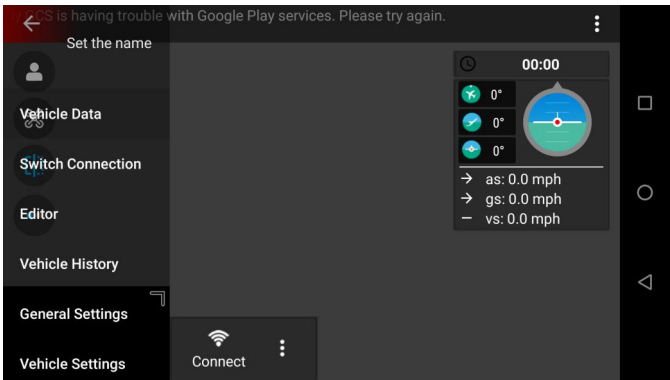
4.Image connection settings



H12Pro Assistant - Video View - Click the Settings button below - Video Stream Address - Customize, enter the camera address.

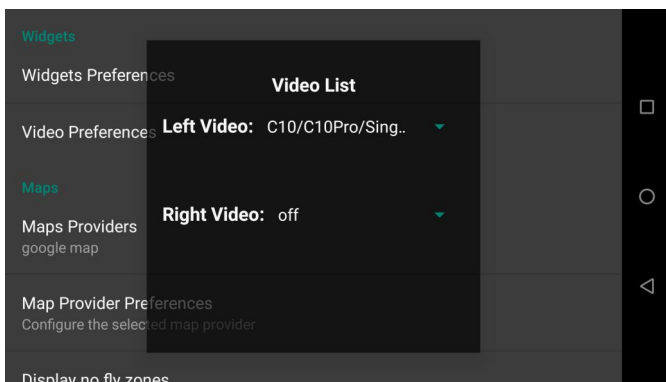
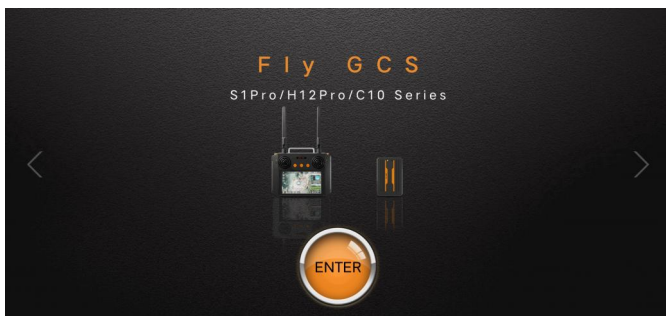
The network segment of the network camera needs to be set in advance into 144 network segment (192.168.144.XXX), and then connect the camera to the receiver ip port 0 or ip port 1. Settings: This setting displays image transmission through the ip port on the receiver, displaying C10 three-axis gimbal (when C10 is connected) rtsp://192.168.144.108:554/stream=0 To install a third-party ip camera, you need to ask the camera manufacturer for an RTSP address.

5.H12 Pro image and data transmission in ground stations APP



Open the Skydroid ground station, click on the pop-up sidebar in the upper left corner, and click on “Switch Connection”.

Select the S1Pro/H12Pro/C10 combination and click to enter.



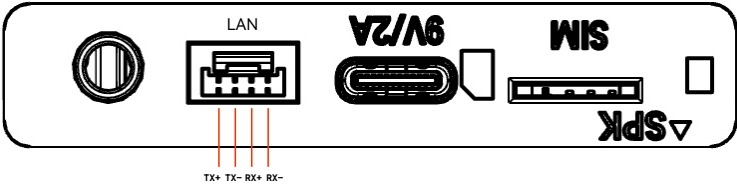
Common Settings -> Other Settings -> User Interface -> Video Window -> C10

Note: If it is a 3rd party's IP camera, select "Custom" and enter the corresponding video stream address is OK.

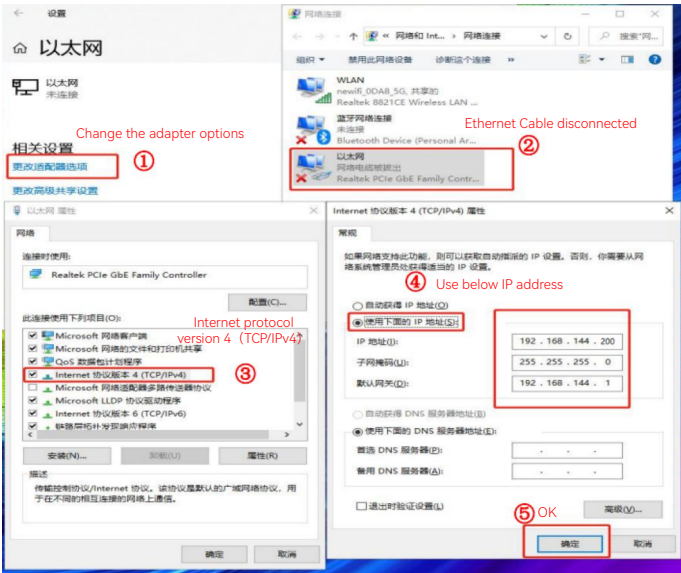
6.Video transmission/Telemetry sharing from the IP ports

6.1、Telemetry sharing

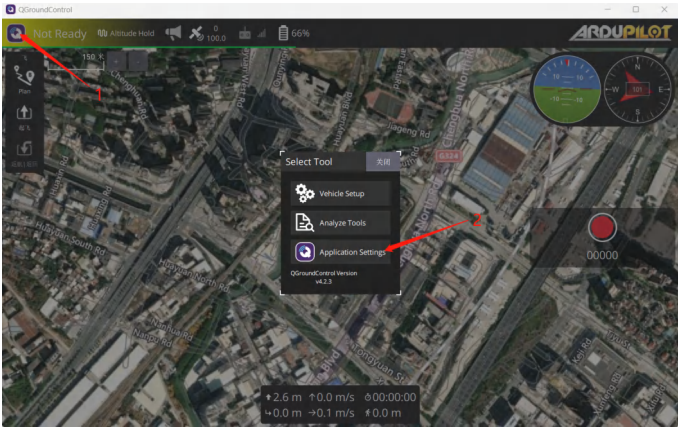
①The remote control is connected to the computer network port through an Ethernet cable



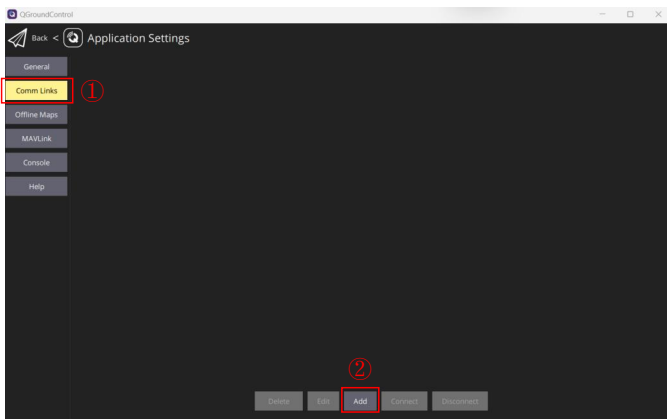
②Open computer settings ->click on adapter ->select Ethernet ->select IPV4 protocol ->select custom IP address ->enter as shown in the diagram ->click confirm (see picture below)



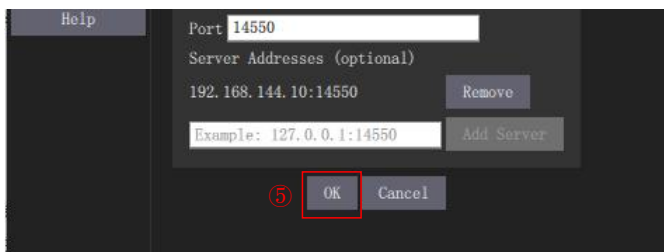
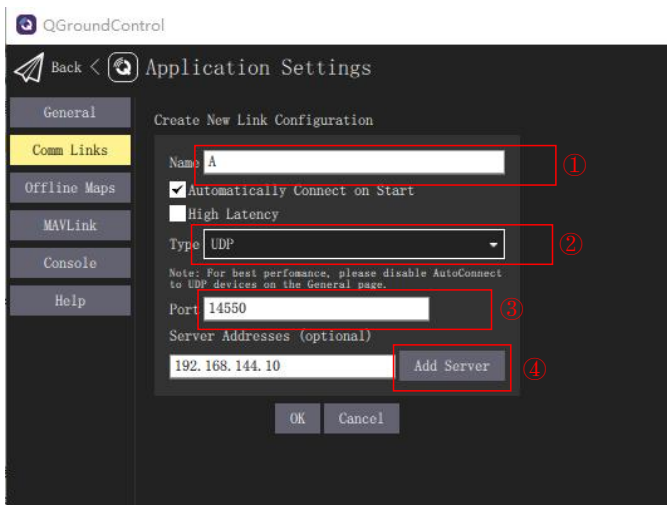
③Open the QGC in computer and select Application Settings



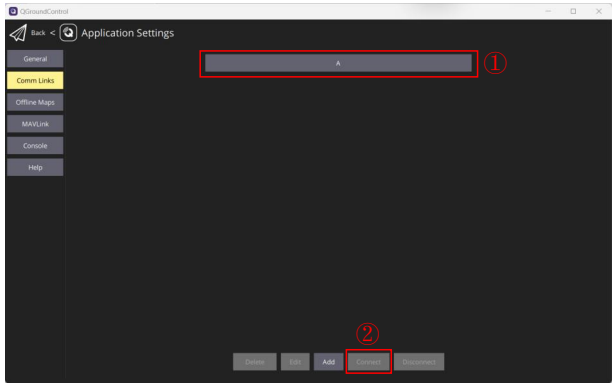
④ Select communication connection and add connection ways



⑤ Custom name, select UDP, port number is 14550



⑥Select the established connection way and click on Connect

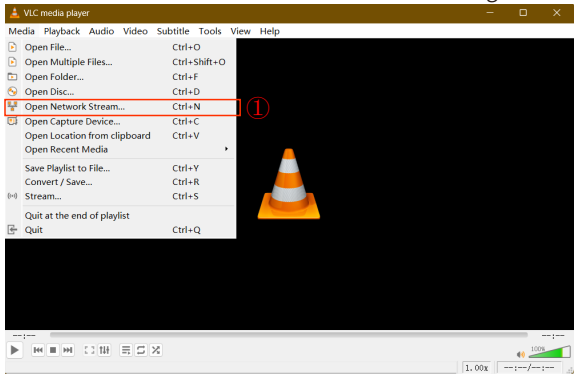


6.2、Video transmission sharing

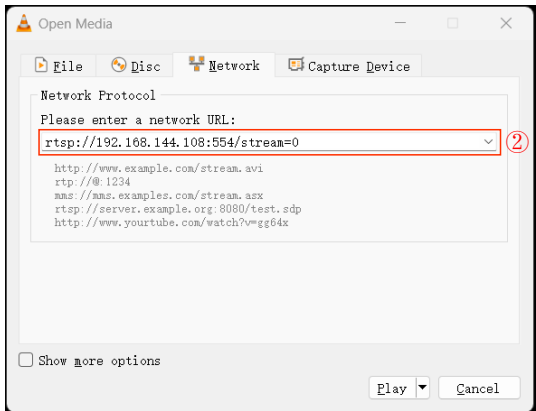
After connecting the remote control to the computer as described above, download the software “VLC” to display the image.



①Open the computer “VLC” software and select Network Streaming in the media



②In the input field of the network URL, enter `rtsp://192.168.144.108:554/stream=0` , and then click to play



Q & A

1.Can the remote control install other apps?

The permissions of the remote control are all open, and there is no special software or restricted software installation and uninstallation. Supports specialized customized QGC App to be installed, K3A App can't support now.

2.Data transmission/telemetry cannot be connected

Check whether the corresponding remote controller has been selected in the ground station App and whether the baud rate is consistent with the flight control (H12Pro helper, advanced setting, password is 999, receiver setting baud rate). Check whether RX TX is connected reversely (the right way is connect controller's RX to receiver's TX, and controller's TX to receiver's RX).

3.The remote control keeps ringing/beeping

When the remote control is not successfully connected with the receiver, the remote control will always send out a prompt alarm.

4.The QGC sound is too low to hear

Please set it in Vol+/vol- section.

5.What else can the TYPE-C port do besides charging?

In addition to charging, the TYPE-C port can also be connected to a computer for file viewing.

6.How many ways to connect the remote control to the network?

By SIM card or Wifi or smart phone's hotspot.

C.Maintenance

Storage for not using for a long period

Put H12Pro in a dry and ventilated area. No direct sun light to prevent harm to the internal li-ion battery. If store it over 3 months, it is highly recommended to put it in a room temperature between 22°C to 28 °C. DO NOT put it - 20 °C or higher than 45°C.

D.Transportation and storage

Warning

In order to prevent lost or getting hurt, please strictly follow the rules of operation as below:
Keep small parts or wire far away from children. DO NOT let children touch the small/spare parts of H12Pro

Attention

- 1) DO NOT put H12Pro into water. If it does, please switch off the power and dry it at once!
- 2) DO NOT crash the H12Pro or break and DO NOT drop the battery.