S1-PRO专业版用户手册

V1.2

多旋翼（multicopter）

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

云卓官方群2群　　　　　　　　　云卓微信公众平台
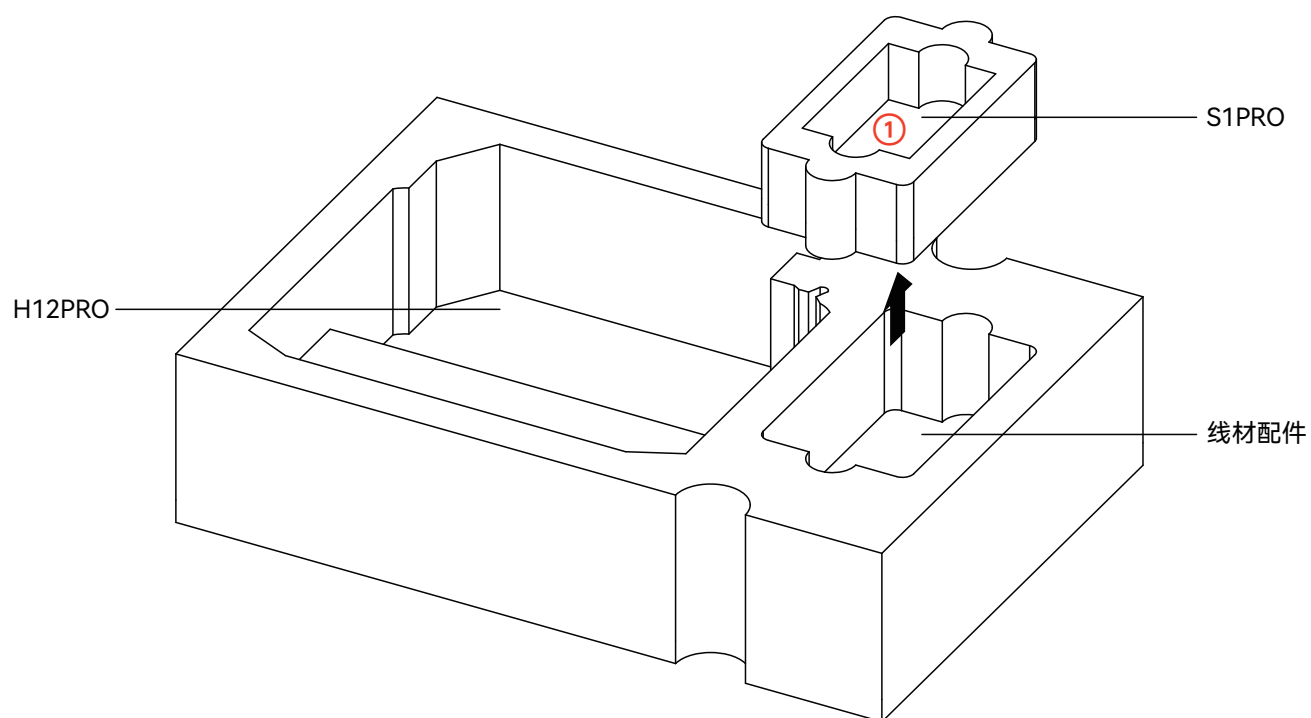
售后服务条款

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

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

3.返修时需提供购买凭证和保修卡或网络平台交易记录。

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

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

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

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

8.以上售后服务条款仅限于中国大陆销售的云卓产品。

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

目录

包装

S1PRO

H12PRO

①

线材配件

S1PRO包装上层

将①取出，可见线材配件置于底部

1、S1-PRO概览

1.1、部件

H12 PRO遥控器   S1-PRO   GPS(选配)   MK43(选配)   定向套装(选配)

鞭状天线(选配)   扁形天线(选配)   C10(选配)   三体摄像头网口版(选配)   充电器

1.2、端口和技术参数

状态灯   对频按钮

网口摄像头
TX+
TX-
RX+
RX-

CAN
CAN_L
CAN_H
5V
GND

GPS
GND
RX3
TX3
TX
RX
5V

SKYDROID S1-PRO

R
G
L
音频输出

GND
GND
VIN
VIN
CRNT
供电口

USB

−
+
S

PWM   1 2 3 4 5 6 7 8 9 10 11 12   UART

Sbus输出
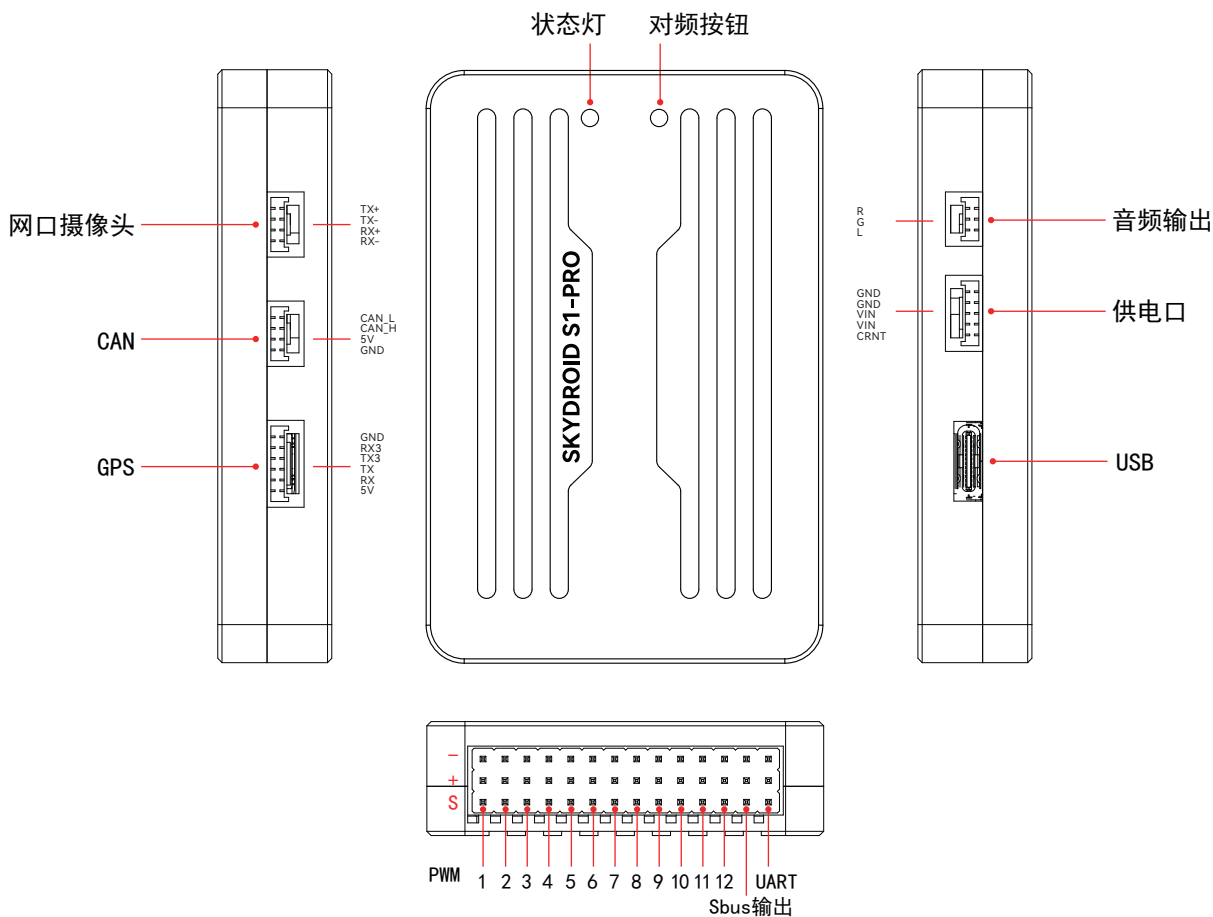
S1-PRO航电系统		
技术参数		
硬件参数	主处理器	STM32F407
	陀螺仪	BMI088
	电子罗盘	IST8310
	气压计	LPS22HB
	接口	GH1.25
	鞭状天线	默认30cm、40cm、50cm可选
	PWM输出	12 OneShot/PWM输出（可配置）
	接收机	内置R12 PRO接收机
	接收机天线增益	4dBm
	接收机射频功率	17.5dBm
	GPS	M10
	RC OUT SBUS	1
	GPS UART串口	1
	POWER电源口	1
	网口	1
	CAN接口	1
	音频输出口	1
支持机型	3-8轴	
工作环境及物理参数	POWER输入电压	2s-18s
	USB电压	5V±0.3V
	Servo电压	5V±0.3V
	工作温度	-40~80℃
重量与大小	大小	68*47*13mm
	重量	62g

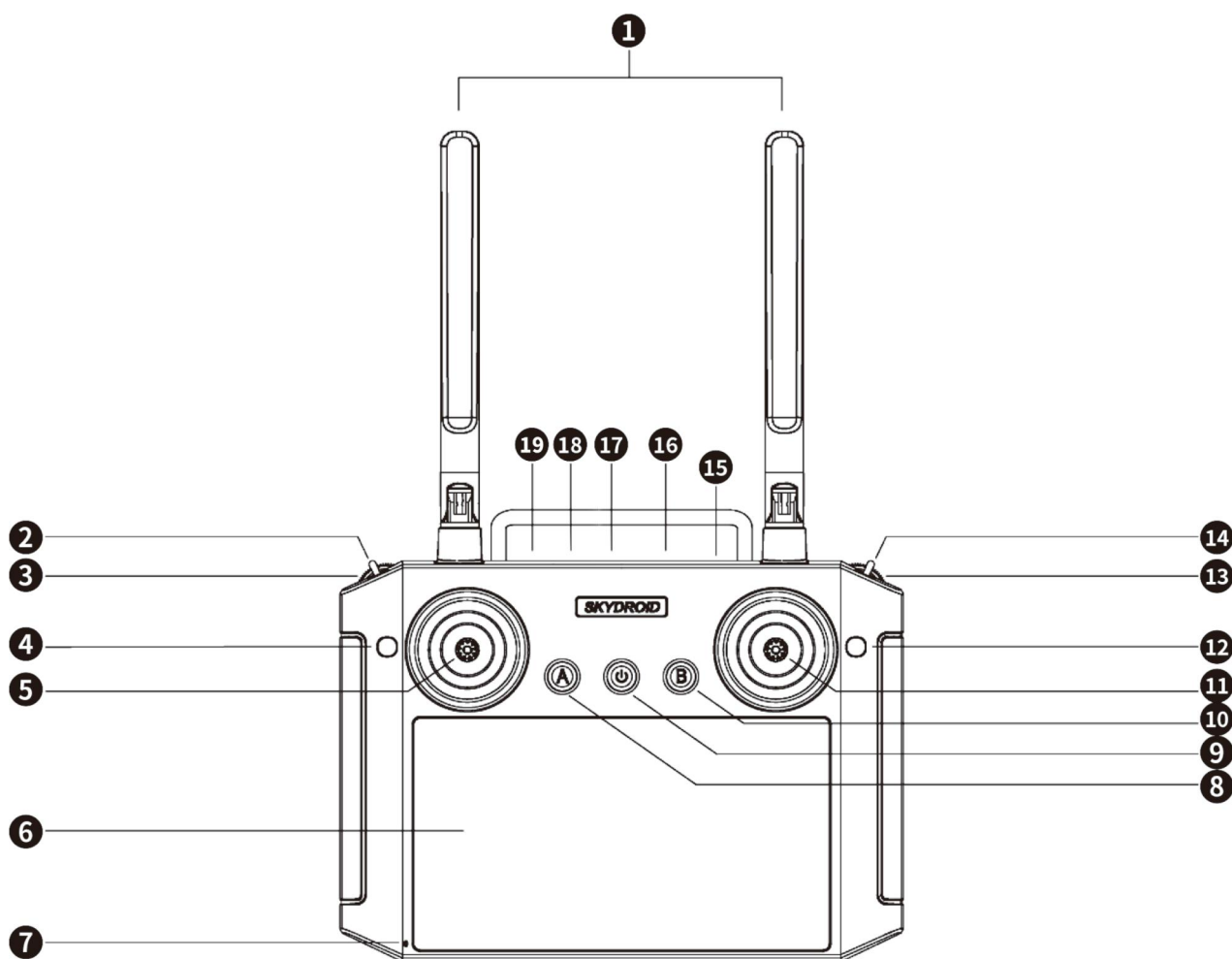| C10参数	
产品名称	C10
输入电源	7.2V~72V直流
工作电流	210mA
工作环境温度	-10℃~+60℃
重量	61g
外形尺寸(长宽高)	51mm*43.3mm*61.7mm
俯仰角度	-90°~+10°
指向轴角度	-90°~+90°
横滚轴角度	45°
像素	有效像素:400W
镜头规格	1/2.7 sensor EFL=2.4mm
输出方式	RTSP码流H265,兼容H264
图传分辨率	1080P
视频录像存储分辨率	2K
视频存储格式	H264 (可使用PotPlayer播放器或者其他支持H264格式的播放器播放)
照片存储分辨率	2K
照片存储格式	JPEG
工作模式	吊装模式(出厂默认)
	倒装模式(可自行设置)
一键回中	支持
一键向下	支持
一键仰头	支持
支持存储卡类型	目前只支持标配的闪迪16G内存卡与 金士顿64G Class 10规格的Micro SD卡
支持文件系统	FAT32

1.3、使用建议

对于初次使用 S1-PRO 飞控的用户来说，建议分步骤完成飞控的入门使用：

1、首先安装地面站控制软件，熟悉地面站界面的各个菜单功能；

2、组装飞机，完成动力套的装配；

3、遥控器连接飞控完成罗盘校准和电机校准；

4、检查各类参数设定；

5、第一次解锁起飞；

6、飞控各类高阶应用，辅助通道设置。

2、遥控器概览

2.1、遥控器（美国手模式）

序号	注解	序号	注解
❶	2.4G 4dBm天线	⓫	右摇杆X2、Y2
❷	拨动三段开关/飞行模式	⓬	按键D（暂无功能）
❸	波轮G（暂无功能）	⓭	波轮H（暂无功能）
❹	按键C（暂无功能）	⓮	拨动三段开关（暂无功能）
❺	左摇杆X1、Y1	⓯	防尘塞
❻	显示屏	⓰	SIM卡接插口
❼	喊话MIC	⓱	Type-C充电口
❽	按键A（暂无功能）	⓲	4pin网口
❾	开关机按键	⓳	暂无功能
❿	按键B（暂无功能）		

2.2、遥控器功能概述

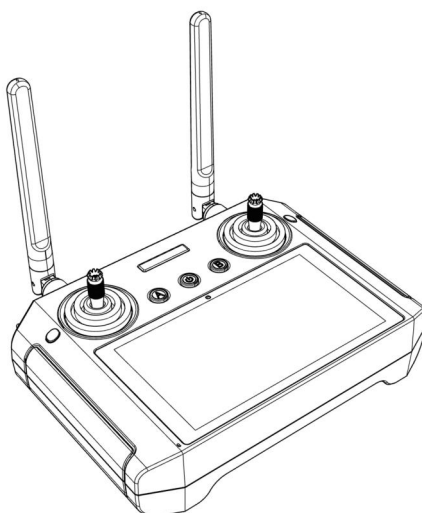| 序号	功能键	功能描述
❺	油门/转向控制杆 （美国手模式）	- 控制杆向上推、飞行器上升 - 控制杆往下拉、飞行器下降 - 控制杆往左打、飞行器往左边旋转
⓫	前进后退/侧飞控制杆 （美国手模式）	- 控制杆向上推、飞行器前进 - 控制杆往下拉、飞行器后退 - 控制杆往左打、飞行器往左边侧飞
❷	飞行模式控制	- 定高模式 - GPS模式 - 返航模式

2.3、遥控器充电

遥控器使用Type-C USB数据线充电，在编号为17的位置。

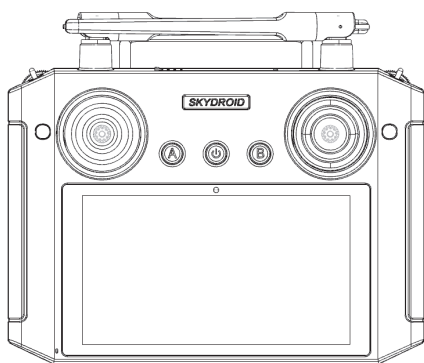遥控器充电时间约为2-4小时，充电时遥控器开机图标闪烁，充满后图标熄灭。充满电后使用时长为5-8小时左右。

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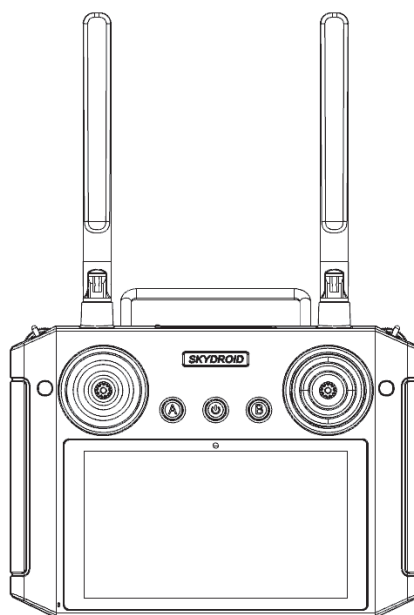
(1)调整遥控器天线角度,尽量正对飞行器飞行方向;
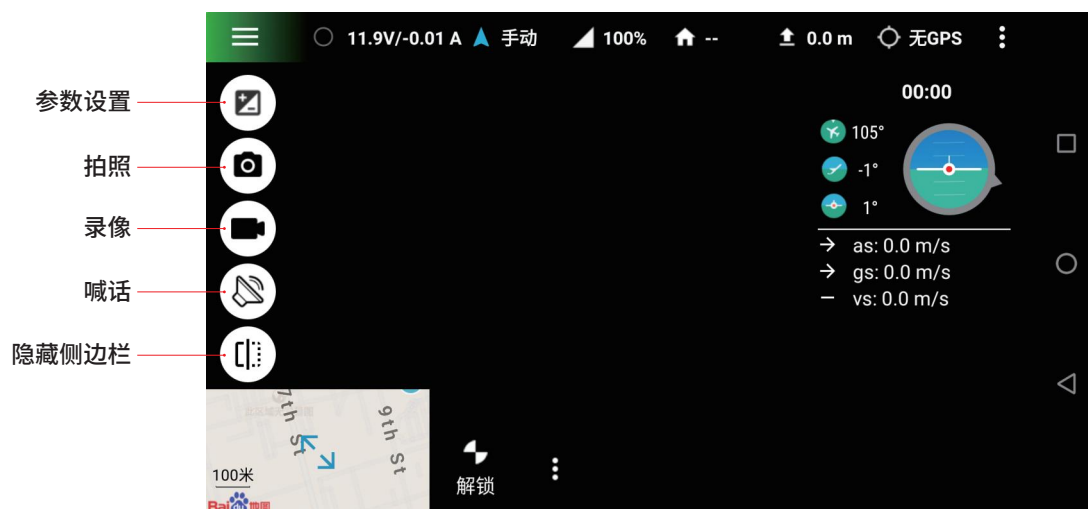
(2)天线相互不要形成遮挡,交叉。

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

3、Skydroid Fly APP

3.1、需要下载Skydroid Fly APP，请扫描二维码或登录www.skydroid.xin下载。

3.2、APP主页面：

电量显示　飞行模式　信号强度　离家距离　飞行高度　GPS卫星个数

人的位置

飞机的位置

轨迹克隆

隐藏侧边栏

飞行时间

姿态

空速
地速
爬升下降
速度

一键解锁

图像显示窗口

参数设置

拍照

录像

喊话

隐藏侧边栏

4、第一次接触准备

（1）对频

　　①S1Pro上电，对频指示灯红灯常亮，绿灯慢闪；

　　②上电后等待30s左右，长按对频按钮直到绿灯快速闪烁；

　　③打开H12Pro助手，点击对频，等待显示对频成功；

　　④对频指示灯将会持续闪烁两分钟后绿灯常亮。
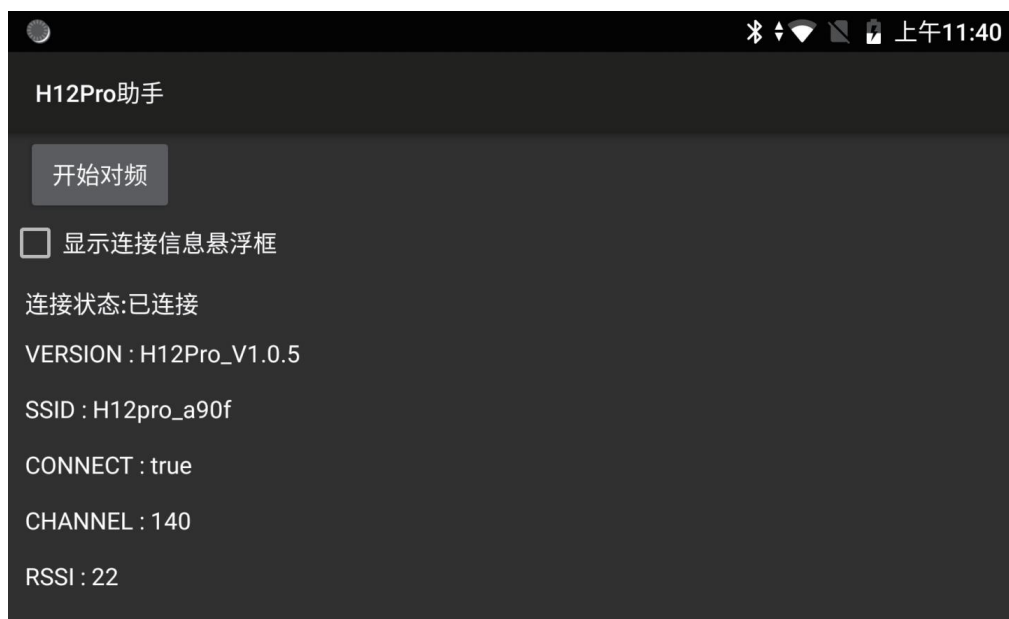
　　注意：H12PRO遥控器不能边充电边使用

（2）注册、激活

遥控器插SIM卡或者连接WIFI，打开Skydroid Fly APP 选择新用户注册
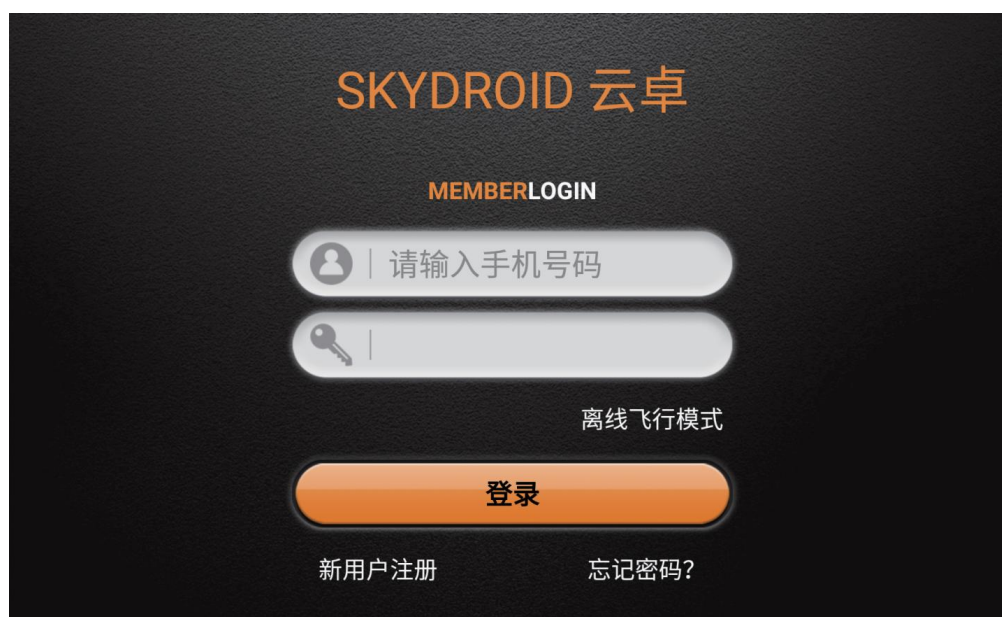
填入手机号，密码，获取验证码，验证码区分大小写，注册成功后登录

SKYDROID 云卓

Q3DX

取消   确定

注册

登陆后数传会自动连接上，此时第一次使用将会弹出激活框，请点击"立即前往"，去激活界面激活

12.1V   定高   ⊿ --   🏠 --   ⬆ -0.0 m   无GPS

00:00

359°
1°
-1°

as: 0.0 ...
qs: 0.0 ...
vs: 0.0 ...

您的机器尚未激活，请前往激活页面进行激活

海西电子信息
产业化育成基地 立即前往

20米

解锁   自拍

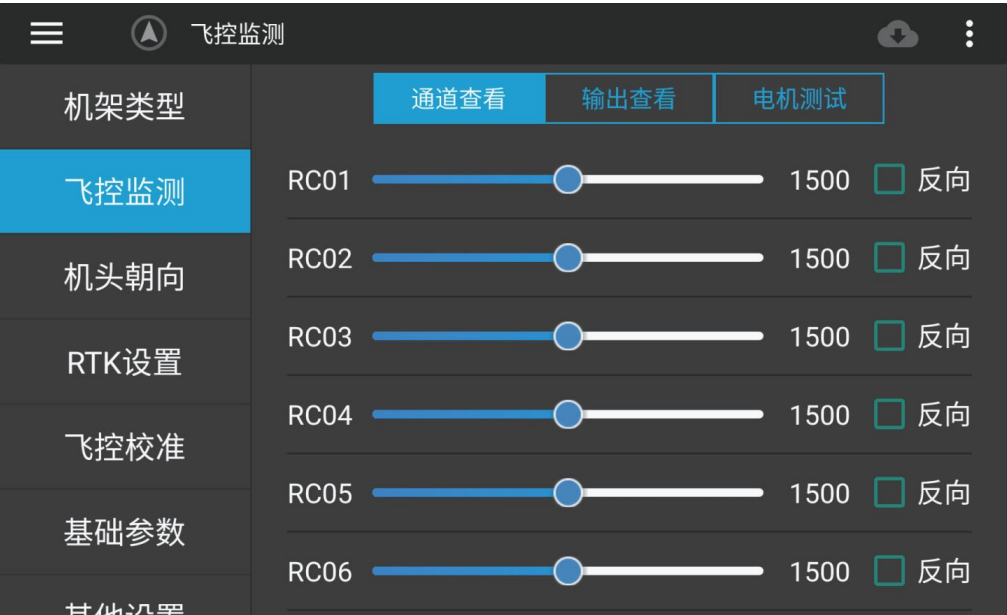初级飞控调参密码999，首次使用初级调参密码即可

4.1、机架类型选择

四轴，六轴，八轴，Y6轴，3轴点击图案即可保存机架类型。

4.2、飞控监测
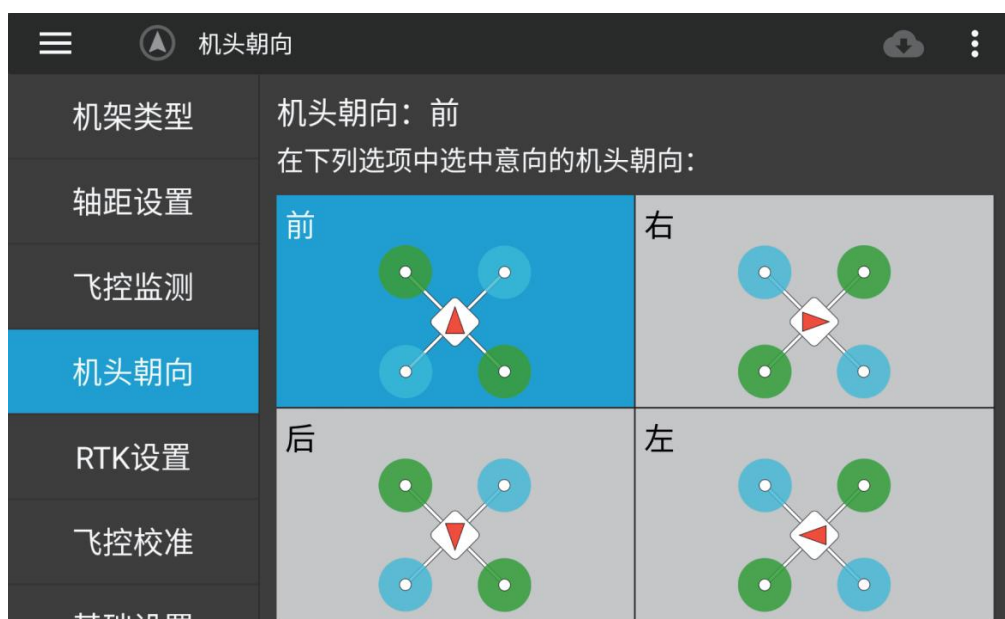

通道查看：遥控器通道输入舵量值。

输出查看：S1Pro的PWM通道输出舵量值

4.3、机头朝向

可修改飞控的安装方向，若需要修改，请联系厂家技术。

注：飞控外壳箭头方向为机头方向

4.4、RTK天线设置

使用RTK天线时勾选，使用GPS天线时则不勾选。(根据购买的是否为rtk套装勾选)

4.5、罗盘校准

对机器进行椭球校准和水平加垂直校准（详细信息可点击右边？查看）

注意：使用定向套装时不需要校准罗盘

4.6、电调校准

步骤1：连接飞行器，从机器上移除螺旋桨;

步骤2：点击【校准】;

步骤3：拔掉飞行器电池;
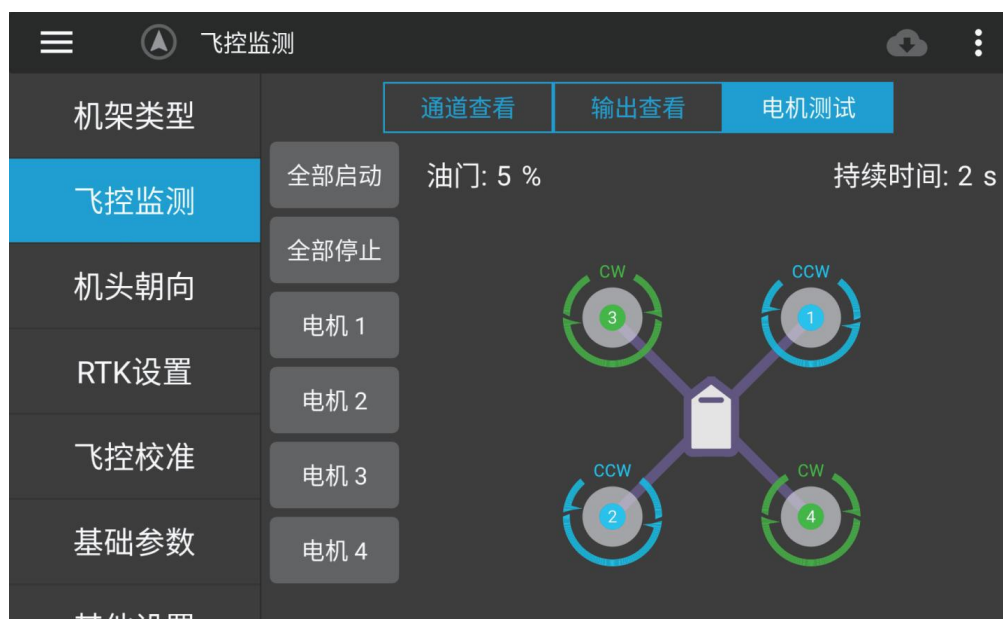
步骤4：重新插上电池;

步骤5：程序将会自动校准电调(大约15秒);

步骤6：拔下并再次插上电池，即可正常使用。

4.7、电机测试

步骤1：输入油门值，建议5%-10%（大飞机电机KV值低，可以再设置大一些）；

步骤2：输入持续时间，单位秒；

步骤3：按图片转向，电机序号测试电机旋转方向是否正确。

4.8、基础设置

4.8.1、姿态设置

调节感度与阻尼来改善飞行器的飞行姿态。（详细信息可点击旁边？）

4.8.2、刹车设置

调节刹车参数来改善飞行器的

4.8.3、导航设置

设置执行航线任务时或者是飞机处于自动模式下的一些参数。(详细信息可点击旁边？)

4.8.4、速度设置

调节飞行器的飞行速度。（详细信息可点击旁边？）

4.8.5、电量设置

低电压返航预警：达到此电压值时，APP将发出返航报警提示。

强制返航电压：达到此电压值时，飞行器将强制返航。

强制降落电压预警：达到此电压值时，APP将发出降落报警提示。

强制降落电压：达到此电压值时，飞行器将强制原地降落。

未解锁补偿电压：飞机通电保持未解锁状态，万用表测量电池当前电压，再看数传显示的电压，填入差值。

满载补偿电压：飞机需要满载载荷，悬停20秒，记录当前电压。然后立即降落，等待20秒，记录降落电压，填入差值。

注意：具体电压设置可点击旁边？进行参考

4.9、其他设置

在其他设置页面里，可设置外八电极上锁（美国手）是否开启以及外八多久上锁。

4.10、辅助设置

1.先在H12助手（设备助手）里设置好自己需要控制舵机的通道，并设置好失控保护值，失控保护值为0是保持当前状态。

2.遥控器对频连接飞控，打开飞控APP：Skydroid Fly，在飞控调参-999-辅助设置里修改自己需要的通道。

3.舵机的失控保护需要飞机解锁后才可以触发。

测试方法：飞机不装桨叶，解锁后，遥控器关控，测试舵机是否执行。

4.11、飞行模式介绍

飞行模式 （飞控判断 GPS信号， 切换相对 应的模式）	定高模式	在GPS信号差或指南针受到干扰，飞行器会进入定高模式，只支持手动飞行。定高模式下，飞行器定点异常，请尽快降落。
	GPS模式	使用GPS实现飞行器的精准悬停、稳定飞行模式等。
	返航模式	当飞行器拨到返航档位或失控，飞行器将爬升到返航高度并自动返航。

*飞行模式由遥控器序号 ❷ 的拨动三段开关设置。

飞行速度	低速	最大速度 2m/s，上升速度：1.2m/s，下降速度0.4m/s
	中速	最大速度 12m/s，上升速度：4.2m/s，下降速度2.0m/s
	高速	最大速度 17m/s，上升速度：5.1m/s，下降速度4.9m/s

*飞行速度可在APP里的-档位设置-里更改。

5、失控保护

飞行器返航方式分别为RTL返航、智能低电量返航以及失控返航。起飞时,GPS>12星,飞行器成功记录到返航点。如果是无GPS信号强制起飞,则以最新GPS>12星 时的位置记录为返航点。

|	
返航过程	1.记录返航点 2.触发返航条件 3.调整机头方向 4.按APP设置的返航高度进行返航 （1）不管飞行器目前高度,如果飞行器在水平距离5米之内,直接降落。 （2）如果飞机距离5米之外、20米之内则按当前高度返航,最低返航高度5米。 （3）20米之外,飞行器高于返航高度直接返航,不足返航高度升高到返航高度再执行返航。
一键返航	APP一键返航/遥控器按键一键返航
低电压返航	1.飞行器会根据强制返航电压自动执行低电压返航。 2.如果低电压返航时没有GPS信号或者信号不强,则自动降落。 3.起飞的时候,如果是在GPS信号不好的情况下强制起飞,则无人机会自动返航到第一次获得良好的GPS信号的地点。 4.若电量低于强制降落电压,则进入降落模式。
失联返航	当飞行器与遥控器失去连接超过2秒,飞行器自动返航。 性能要求: （1）飞行器失去控制2秒后,触发自动返航; （2）失联返航过程中,如果无人机恢复了连接,无人机将继续执行返航程序; （3）当无GPS信号或者信号不强时直接降落。

6、硬件安装

首先你要拥有一个飞行器,这里我们以 X 型四轴为例,在你拥有了一个完整安装好的多轴飞行器后,请按照以下步骤来安装你的 S1-PRO。

(1)在飞行器上安装S1-PRO,安装固定飞控在机架中心位置,并确保安装位置水平,天线在前为机头方向。

(2)遥控器对频,连接 Skydroid Fly,进行之前几步校准你的飞行器 。
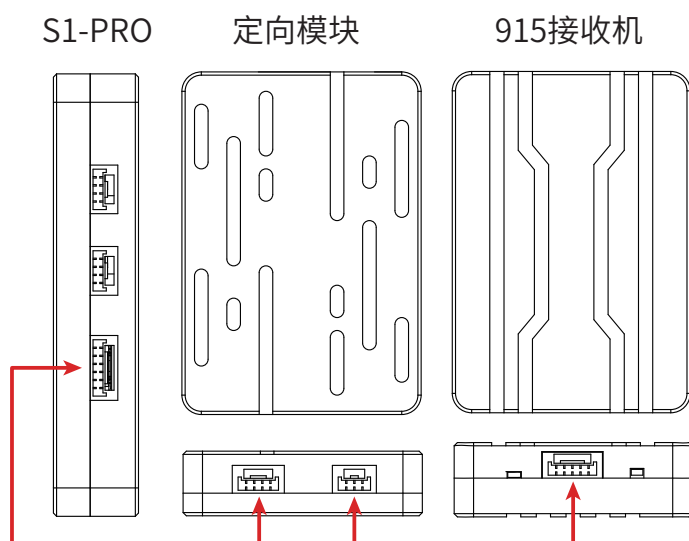
(3)遥杆内八进行解锁,如解锁正常,安装好桨后进行正常飞行;如解锁不正常,查找APP红色故障提示,进行解决 。

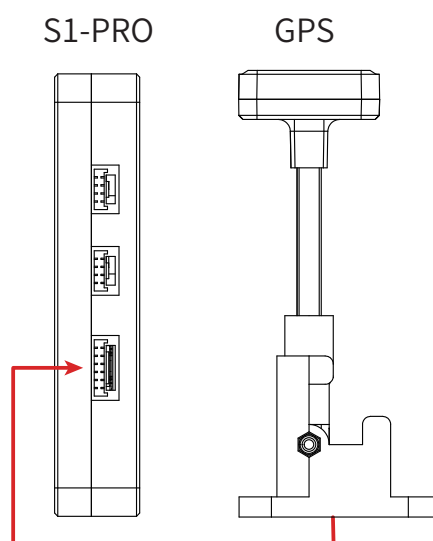## 6.1、在飞行器上安装S1-PRO

1.尽可能在靠近载具重心的位置,使用提供的泡棉安装 S1-PRO。确保飞控指向前方。

2.(选配)安装定向套装或GPS

定向套装接线图	GPS接线图

S1-PRO 定向模块 915接收机	S1-PRO GPS
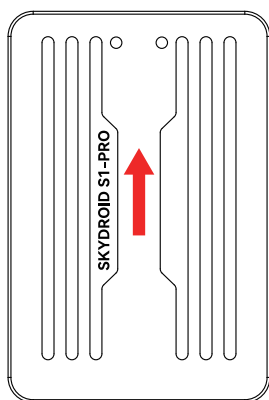
使用定向套装需要打开RTK设置,详情查看4.3　　　GPS 可不分方向,校准罗盘即可

6.2、将飞控与你的多轴连接起来

6.2.1、电机顺序转向选择

绿色 CW 顺时针转   蓝色 CCW 逆时针转
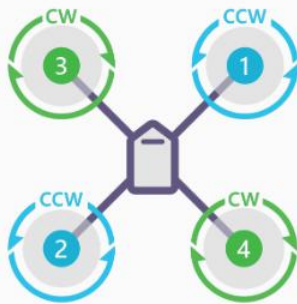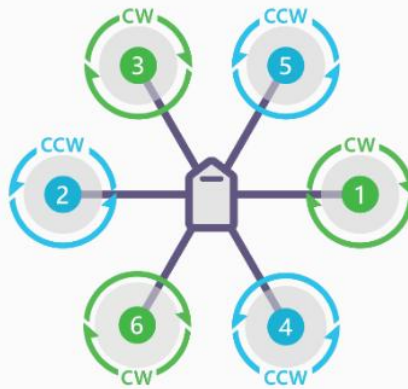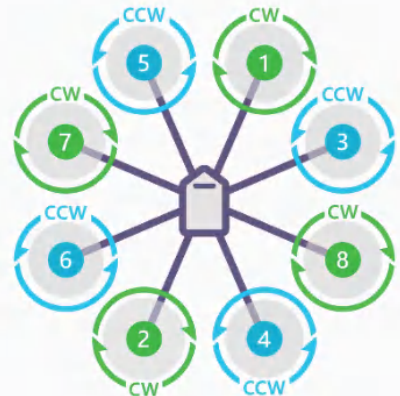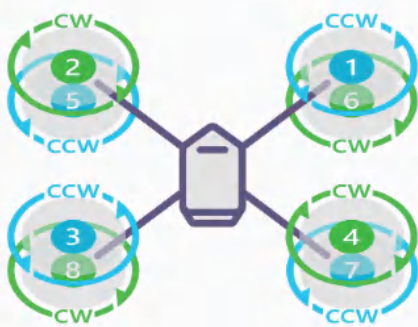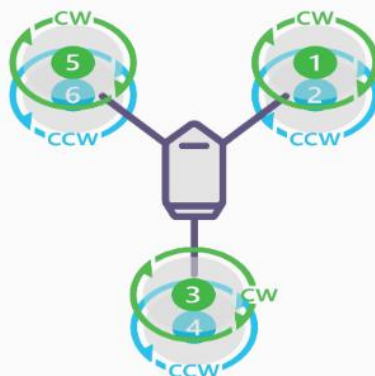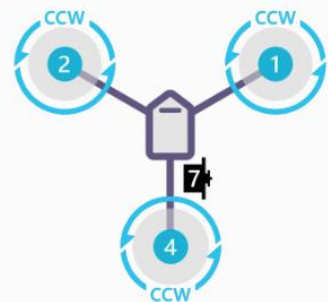
注意:因飞控无电压输出,三轴机型接舵机需要外加BEC 模块插针给舵机供电。

6.2.2、顺时针和逆时针桨的识别

顺时针方向（称为反桨）和逆时针（称为正桨）。推进器螺旋桨通常标有 P。然而并非所有的螺旋桨被标记和这两种类型通常可以在任一旋转方向。因此，按照如下桨的形状来判断是比较可靠的。你可以参考这些特征，正确的识别桨的方向。

6.2.3、配件连接

激光避障模块3P连接线插在最右侧排针位置，黑线在上。
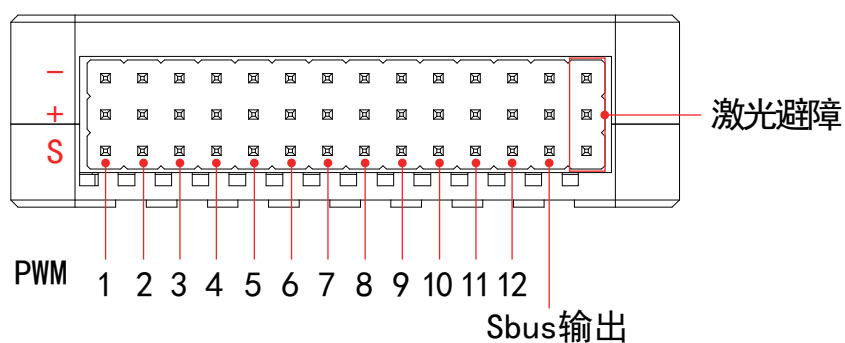
6.2.4、网口摄像头的安装
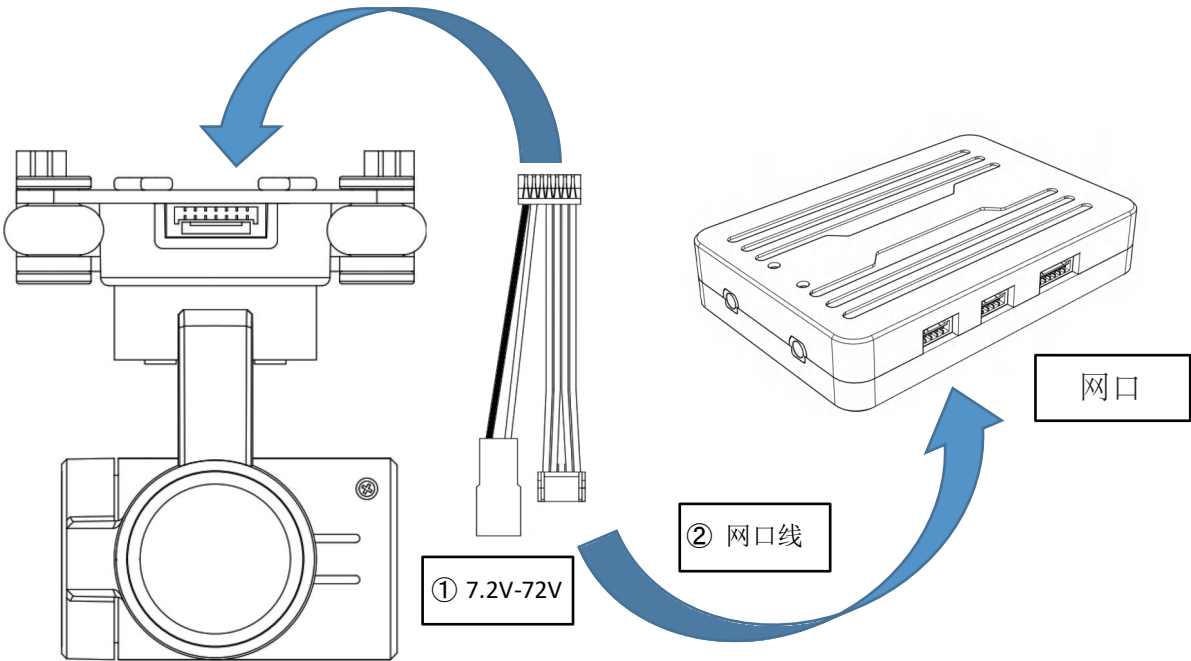
①**电源**	红色JST-2P公头,供电电源:7.2V-72V (直流电源或者锂电池)	
②**网口线** （信号传输）	网络IP信号	RX-:网络IP信号 RX+:网络IP信号 TX-:网络IP信号 TX+:网络IP信号
视频传输	网络IP高清视频输出 RTSP码流rtsp://192.168.144.108:554/stream=0	
存储卡	云台相机目前可支持最高容量为64 GB的金士顿Micro SD卡。由于云台相机要求快速读写1080P视频数据,请使用标配的闪迪16G内存卡或者另购金士顿64G Class 10规格的Micro SD卡,以保证视频正常录制。 注:请勿在录影过程中拔出Micro SD卡,否则拍摄过程中得到的影像有可能会丢失。	

注意:H12-Pro助手显示摄像头画面需要自己输入RTSP视频流地址

6.3、音频功能使用

(1)音频输出口接线定义如下图所示
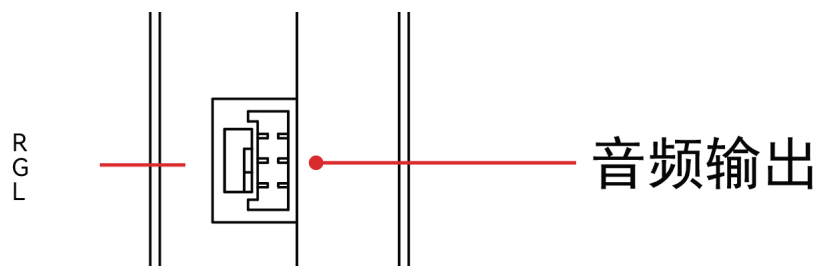
R为右声道, L为左声道, G为接地。

(2)使用接线图
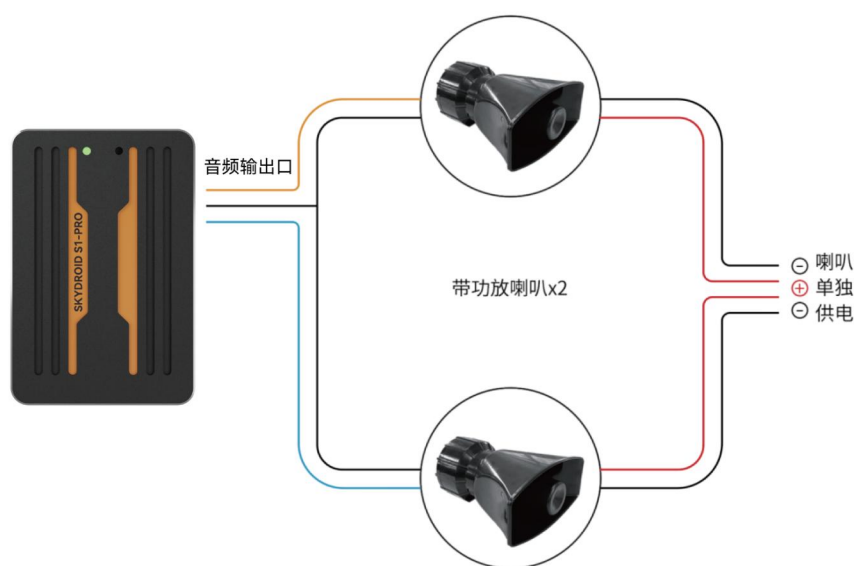
(3)使用方法

步骤一：按接线图接好线序。

步骤二：给飞控和喇叭通上电。

步骤三：地面站里点击喊话图标即可使用多种喊话功能
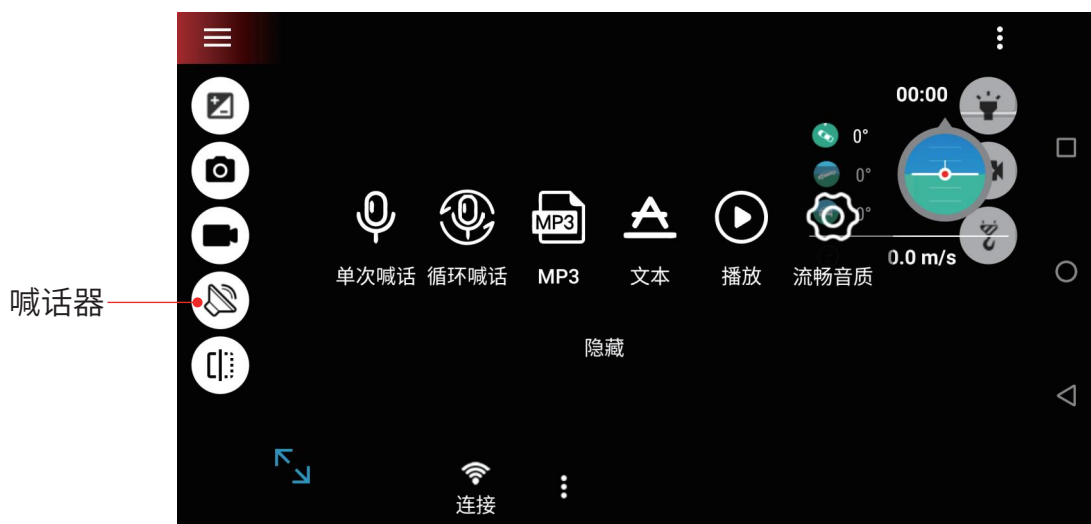
6.4、基础飞行

1.飞行前先把电池充满电。

2.把飞行器放置在平整开阔地面上，用户面朝机尾（电池尾插为机尾）。

3.正确安装螺旋桨。
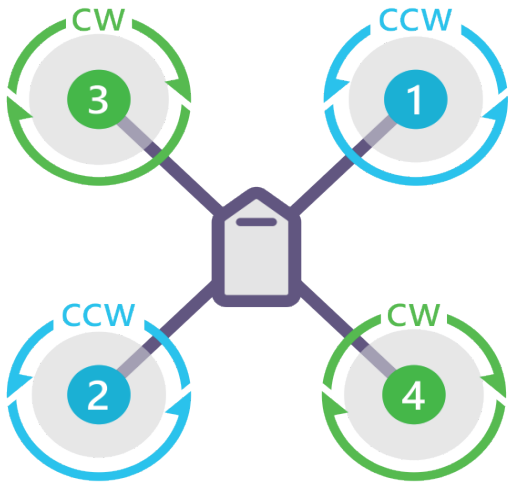
QUAD X

4.开启遥控器（长按开机按键），把电池插头插入飞机供电口中。

5. 等待飞行器电机长滴一声后自检成功。

6.打开Skydroid Fly APP，点击连接图标，即可链接数传图传，起飞模式建议为GPS模式，搜星 >12颗才能解锁起飞。

7.内八拨动摇杆，解锁飞机，往上缓慢推油门杆，让飞行器平稳起飞。

8.如大飞机晃动，需要在app里进行感度调节

9.下拉油门杆使飞行器下降。

10.落地后，将油门杆拉到最低位置并保持3秒以上直至电机停止。

11.停机后依次断开飞行器电源和遥控器电源。

6.5、地理围栏

默认关闭地理围栏，如有需要在飞控调参-地理围栏里开启。

这是一种安全保护机制，保护飞机不飞出你设定的范围，开启此机制会检测 GPS 是否定位，当没有定位无法解锁。

7、日志下载与查看

Skydroid Flyapp里飞行记录查看。

8、常见问题解答

1.遥控器无法连接。

①查看APP类型是否选对

②有无后台占用Skydroid Fly地面站

2.图像卡顿断连

①调整天线角度对准飞机,中间不要有阻挡

②更换飞行场地,请勿在高楼、信号塔附近飞行

3.飞行器悬停不稳

①更换飞行场地,请勿在高楼、信号塔附近飞行

②进行飞行器指南针校准和水平较准

③判断是否风力过大影响飞行

④微调感度

4.飞行器GPS精度不准或无法通过GPS精度测试

①在室外空旷的地方搜索GPS达11颗及以上

5.拍摄不清晰

①检查镜头部位是否有指纹、污渍,用酒精擦一下

②在光线良好环境使用

6.镜头朦胧起雾

①气候潮湿导致镜头起雾,更换飞行器储存位置

②存放时放置干燥剂

7.拍摄的图片或视频丢失

录制视频要执行结束录制操作,否则有可能导致视频损坏或者丢失。

免责免除

使用本产品时,因下列原因造成的直接或间接损害,云卓不承担赔偿责任与法律责任。

1.用户在饮酒、吸毒、药物麻醉、头晕、乏力、恶心等其他身体状况不佳或精神状况不佳的情况下,造成损害。

2.用户的主观故意或判断失误造成的人身伤害、财产损失与法律责任等。

3.因事故发生而引起的任何有关精神损害的赔偿。

4.因用户在自然保护区等法律法规禁止的飞行区域飞行造成的损害。

5.自行改装或更换非云卓生产的配件或零件,致使飞行器运行不良而造成的其它损害。

6.飞行器自然磨损(飞行时间达到100小时及以上)、腐朽、线路老化等造成飞行器本身的运行不良。

7.飞行器发出低电压报警,仍不降落,导致飞行器坠落。

8.明知飞行器处于非正常状态(如进水、油、土、沙等其它不明物质以及组装未完成,主要部件发生明显故障,配件存在显而易见的缺损或缺失),仍然强制飞行而造成的损害。

9.飞行器处于磁场干扰区、无线电干扰区(如高压电线附近、大型电力设备、广播电视发射塔、手机基站等区域)、政府规定的禁飞区域或用户视野处于背光、被障碍物遮挡、视线模糊、视力不良等不适合操控以及其它不适合操控的状况下飞行,造成的损害。

10.在恶劣天气下飞行,如雨天或刮风(超过4级)、下雪、冰雹等不良天气下飞行。

11.飞行器遭遇碰撞、倾覆、火灾、爆炸、雷击、暴风、龙卷风、暴雨、洪水、海啸、地陷、冰陷、崖崩、雪崩、雹灾、泥石流、滑坡、地震等。

12.用户使用飞行器取得的任何数据、音频或者影像资料等,因侵权而发生的损害。

13.关于电池,如因保护电路、电池组、充电器的匹配或使用不当导致的损害。

14.由于设备或配件(包括存储卡)的问题而造成的任何间接损失与法律责任,例如图像或视频无法被保存。

15.用户在未完成足够的飞行训练而鲁莽地进行不安全的飞行而造成的损失与法律责任。

16.用户未遵守云卓官方公布在云卓官网的产品说明书或用户快速入门指南里提及的使用方法以及各种注意事项造成的损失与法律责任。

17.其它不属于云卓责任范围内的损害。

建议

1.本产品与外界环境能够互相兼容，满足FCC中对无线视频方面的限定要求。

本产品遵从FCC中第15部分规定，其包含两个方面：

(1)产品工作不会对外产生有害干扰；

(2)同时产品能够承受可能会导致产品异常工作的有害干扰。

注意：对设备进行非法修改及变更所导致的任何无线及它的干扰，制造商对此类事件不负有责任。因为这些修改及变更已经超出了用户的操作权限。注意：本产品已经通过测试，并已证明符合FCC中第15部分对B类数字 产品规定要求。

这些规定是为了确保产品在安装使用时，不会对居民环境造成有害影响。本产品工作时会对外辐射射频能量，若未按指令去安装使用本产品，可能造成对无线通信的干扰。然而，在一些特定的安装使用场合，这里并不保证干扰不会产生。用户可以通过对产品的开关机，来确定一些干扰是不是由于本产品所引起。假如产品确实已经对无线及视频接收设备产生了干扰，鼓励用户对以下一些纠正措施：

√ 适当调整接收天线的方位。

√ 增加本产品与接收设备之间的距离。

√ 向经销商或有经验的无线/视频技术员寻求帮助。

2.当使用本产品时，确保产品天线离人的距离不小于20cm。遥控器内部的USB接口，以及飞机的USB接口只能与USB2.0及以上通信接口相连。禁止与USB电源接口相连。请选用正确型号的电池，使用其它型号的电池，会有爆炸的危险。同时，请按照指令正确处理使用过的电池。

因此，云卓承诺本产品符合19991/EC中规定的基本要求和其它一些相关指令要求。

3.本产品仅限个人使用用途，严禁使用本产品进行任何违反国际及当地法律法规的行为。

请勿使用本产品进行以下活动(仅为示例，不限于此)：

(1)诽谤、滥用、骚扰、跟踪、威胁或以其它方式侵犯他人的合法权利(如隐私权和公开权)；

(2)未经许可拍摄他人照片或私人区域；

(3)将本产品用于除一般商业目的之外的其它违法或不恰当的用途(如用于间谍、军事活动，或未经授权的侦查与调查等)；

(4)违反本产品使用地区的任何法律、行政法规以及相关的社会习俗。

请注意：

(1)在某些情况下,出于私人目的拍摄或者摄录表演、展会或其它商业建筑,也可能造成对他人知识产权的侵害;

(2)在某些地区和国家,小型航拍模型亦被禁止参与任何商业行为。

如果您在安装过程中遇到无法解决的问题，请与云卓正式授权的代理商或云卓技术支持取得联系。本产品及手册的知识产权为泉州云卓科技有限公司所有,未经书面许可,任何机构和个人不得以任何形式翻版、复制和发布。如引用、刊发,需注明出处为泉州云卓科技有限公司, 且不得对使用手册进行有悖原意的引用。

温馨提示：使用前请仔细阅读操作说明书！

- 充电时要随时有人照看
- 充电完成后请立即拔掉充电线
- 螺旋桨部件可能导致伤害
- 此款产品不是玩具
- 不适合14岁以下的儿童

微信公众号

泉州云卓科技全国服务热线
400-6996-520

产品名称：S1-PRO
制造商：泉州云卓科技有限公司
地址：福建省泉州市高新产业园区海西育成基地A幢2楼
邮箱：sales01@skydroid.xin

www.skydroid.xin

SKYDROID 云卓

S1-Pro User Manual

V1.0

Skydroid Co.,Ltd

Suggestion: When you read this user manual, operate it at the same time. When you read these instructions, if you encounter difficulties, please refer to this user manual or call our after-sales service (400-6996-520) or visit our WeChat public platform, also, you can visit our official QQ chat group: 318480806 to view related questions and answers.

Skydroid official QQ chat group　　　Skydroid WeChat public platform
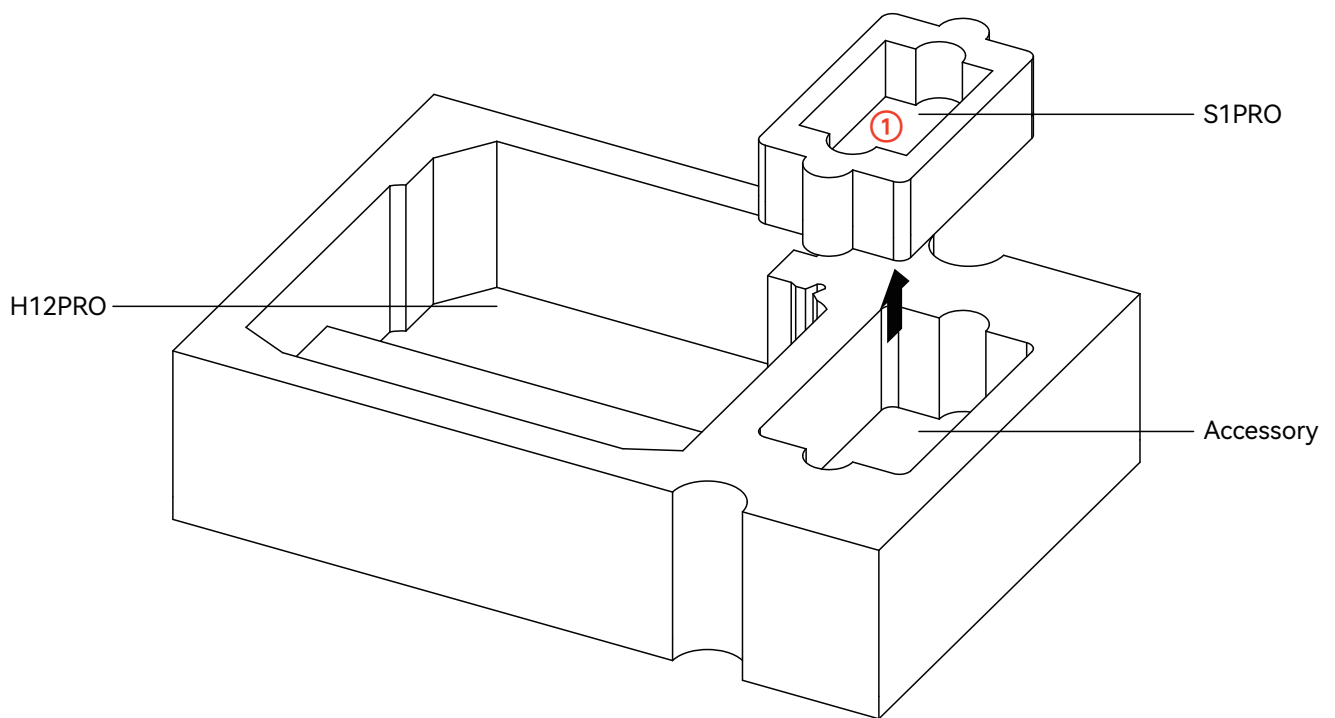
After-sales service terms

1. These terms are only applicable to the products produced by Skydroid Co., Ltd., and the products sold by authorized Skydroid distributors are also applicable to this clause.

2. From the date of purchase, our company has verified that the quality problems are not caused by human beings within one week, and Skydroid will afford the round-trip express fee for the repaired products. If you purchase Skydroid products more than one week, the quality will be verified by our company within one year. If there is any problem, the user and Skydroid each affords the courier fee for sending the repaired product.

3. Proof of purchase and warranty card or online platform transaction records are required when returning for repair.

4. Skydroid products have quality problems that are not caused by human beings under normal use within seven days from the date of purchase, and the appearance is not damaged. With the warranty card and purchase proof, you can negotiate with the dealer for a free replacement of the same model product; Once the dealer receives the replacement product, please notify Skydroid company for the record and replacement at the first time.

5. Skydroid products will be provided lifelong after-sales service by us. Quality problems that are not caused by human beings will be guaranteed for one year free of charge; for artificial damage, modification, disassembly and more than one year free warranty from the date of purchase. The user shall pay the round-trip postage and maintenance costs.

6. In order to ensure that your rights and interests are protected and to serve you in a timely and effective manner, please complete the warranty card and ask for the purchase proof when purchasing Skydroid products. To enjoy this after-sale service, users shall provide warranty card and purchase proof.

7. The repaired product will be returned to the customer within 15 working days after receipt by Skydroid, and the repair report will be attached.

8. The above after-sales service terms are limited to Skydroid products sold in China mainland.

After-sales questions from Hong Kong, Macao, Taiwan and overseas customers, please send to sales01@skydroid.xin, and the specific after-sales details will depend on the situation.

Content

Package

S1PRO

H12PRO

Accessory

S1PRO Top half of the packaging

Remove ① and place the visible accessory at the bottom.

1、Overview of S1-PRO

1.1、Compunents

H12 PRO remote control   S1-PRO   GPS(Optional)   MK43(Optional)   Directional set(Optional)

Whip antenna(Optional)   Flat antenna(Optional)   C10(Optional)   3 in 1 camera network interface version(Optional)   Charger

1.2、Ports and Technical Parameters

Status light   Binding button

Webcam

CAN

GPS

SKYDROID S1-PRO

Power Port

USB

−
+
S

PWM   1 2 3 4 5 6 7 8 9 10 11 12   UART
SBUS Output
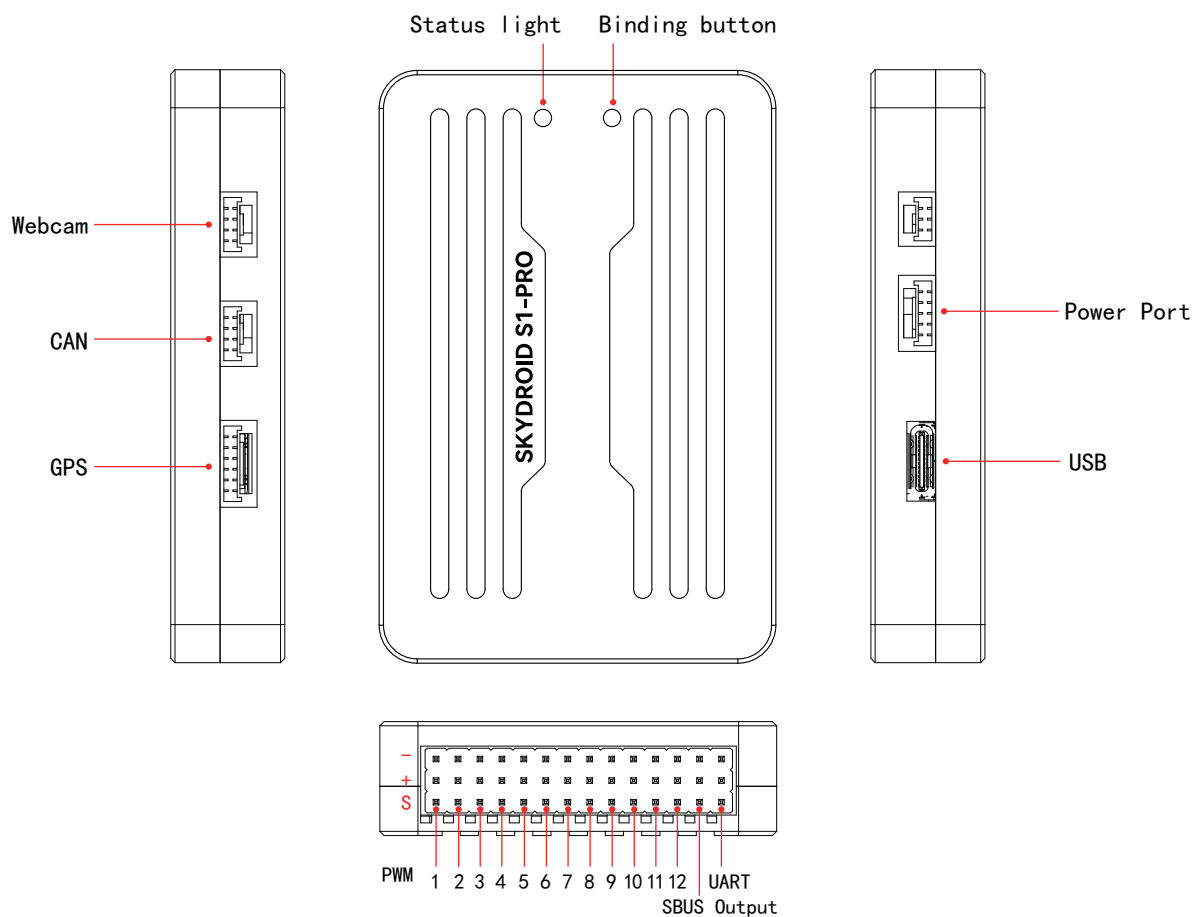
S1-PRO ECS		
Technical Parameters		
Hardware	Processor	STM32F407
	Gyro	BMI088
	Electronic compass	IST8310
	Barometer	LPS22HB
	Interface	GH1.25
	Whip antenna	30cm/40cm/50cm Optional
	PWM Output	12 OneShot/PWM Output(configurable)
	Receiver	Built-in R12 PRO
	Receiver Antenna Gain	4dBm
	Receiver Transmit Power	17.5dBm
	GPS	M10
	RC OUT SBUS	1
	GPS UART Serial Port	1
	Power Port	1
	LAN Port	1
	CAN Port	1
Supported models	3~8 Axes	
Working environment and physical parameters	Power Input Voltage	2s-18s
	USB Voltage	5V±0.3V
	Servo Voltage	5V±0.3V
	Working Temperature	-40~80℃
Size & weight	Size	68*47*13mm
	Weight	62g

| C10	
Product name	C10
Input power	7.2V~72V DC
Operating current	210mA
Working temperature	−10℃~+60℃
Weight	61g
Overall dimension (L, W, H)	51mm*43.3mm*61.7mm
Pitch angle	−90°~+10°
Pointing axis angle	−90°~+90°
Rolling angle	45°
Pixel	Effective pixel:400W
Lens specification	1/2.7 sensor EFL=2.4mm
Output mode	RTSP code stream H265，compatible with H264
Image transmission resolution	1080P
Video recording storage resolution	2K
Video storage format	H264 (can be played with the PotPlayer player or other players supporting H264 format)
Photo storage resolution	2K
Photo storage format	JPEG
Working mode	Hoist mode (factory default)
	Upside down mode (self setting)
One click back	support
One click down	support
One button head up	support
Supported memory card types	Currently, only the standard Sandisk 16G memory card and Kingston 64G Class 10 Micro SD card are supported
Support file system	FAT32

1.3、Recommendations for use

For users who are using the S1-PRO flight controller for the first time, it is recommended to complete the introductory use of the flight controller in steps:

 1. First install the ground station control app, and be familiar with the various menu functions of it;

 2. Assemble the drone and complete the assembly of the power system;

 3. Connect the remote controller to the flight controller to complete compass calibration and motor calibration;

 4. Check various parameter settings;

 5. Unlock and take off for the first time;

 6. Various high-end applications of flight control, auxiliary channel settings.

2、Overview of the remote controller

2.1、Remote control (Mode 2)
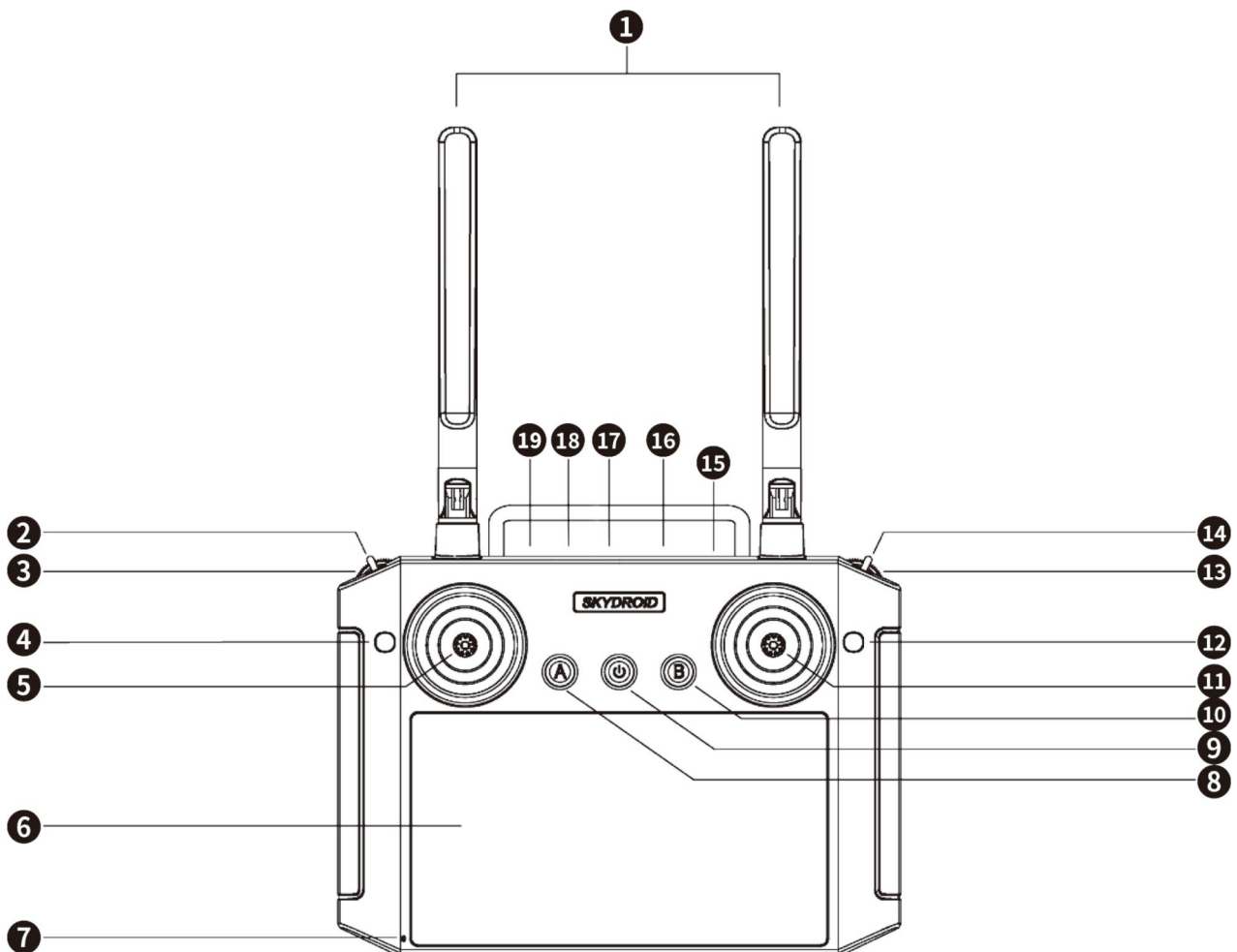
No.	Annotation	No.	Annotation
❶	2.4G 4dBm antenna	⓫	Right side Stick X2、Y2
❷	Toggle 3 positions switcher/ Flying mode	⑫	Button D (No function)
❸	Thumbwheel switch G (No function)	⑬	Thumbwheel switch H (No function)
❹	Button C (No function)	⑭	Toggle 3 positions switcher (No function)
❺	Left side Stick X1、Y1	⑮	Dust-free plug
❻	screen	⑯	SIM card slot
❼	MIC port	⑰	Charging port
❽	Button A (No function)	⑱	LAN
❾	Power switcher	⑲	PPM output/ Serial cable port
❿	Button B (No function)		

2.2、Overview of the remote control functions

| No.	Buttons	Functions description
❺	Throttle/steering control lever (American mode)	–Push the joystick up and the drone rises. –Pull down the control stick and descend the drone. –Turn the control stick to the left, and thedrone rotates to the left.
⓫	Forward/backward/ side fly control lever (American mode)	–Push the joystick up and the drone will move forward. –Pull down the control stick and make the drone back. –Press the control stick to the left, and the drone flies to the left side.
❷	Flying mode control	–Fixed height mode –GPS mode –Return home mode

2.3、Remote controller charging

he remote control is charged with a Type-C USB data cable, please see the No. 17 mark. The charging time of the remote control is about 2-4 hours. The power-on icon of the remote control flashes when charging, and the icon goes out when it is fully charged. The use time is around 5-8 hours after being fully charged.
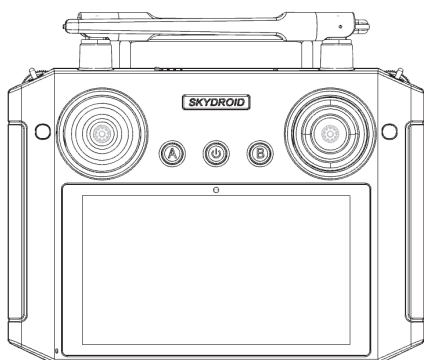
2.4、Remote control antenna angle

(1)Adjust the angle of the remote control antenna to face the drone's flight direction as much as possible;

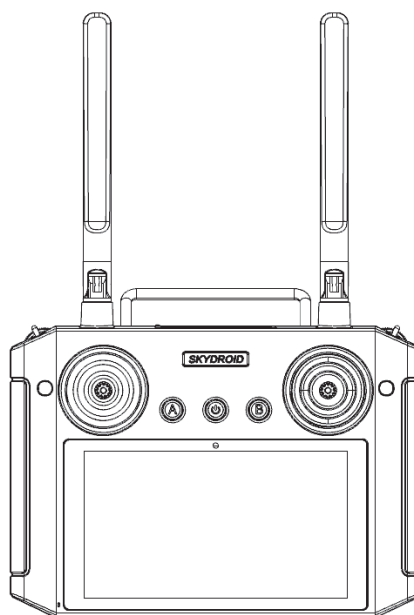(2)Antennas should not obstruct or cross with each other.

Correct operation
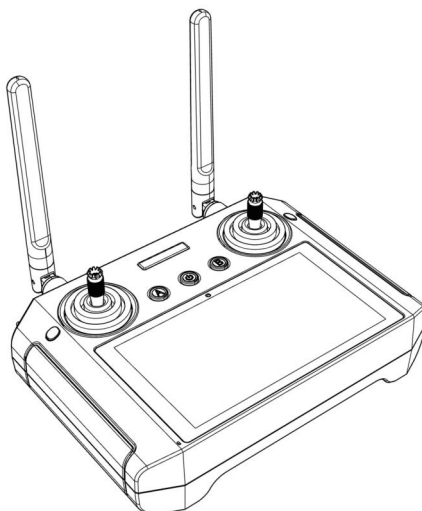
Unfold the antenna and vertically upwards
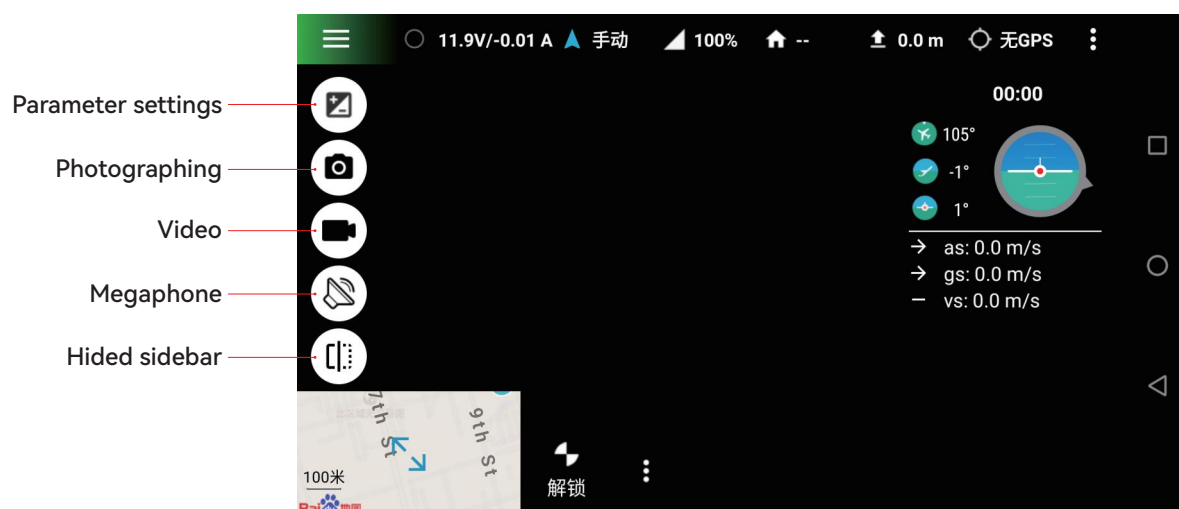
Wrong operation

Antennas cannot cross

The antenna cannot be parallel to the remote control

3、Skydroid Fly APP

3.1、Please use Skydroid Fly APP, you can download by scanning the QR code from the card in the package or from our official
website: www.skydroid.xin
3.2、App main interface

Signal strength   Flying height
Power display Flying mode   Distance from home   Numbers of GPS satellites

Pilot's position
Drone position
Trajectory cloning
Hided sidebar

Flying duration
Attitude
Airspeed
Ground speed
Climb and descent speed

One key to unlock   Video/image display

Parameter settings
Photographing
Video
Megaphone
Hided sidebar

4、Preparation for the first use

Pairing and binding

①Power on the S1Pro, and the binding indicator light is constantly red and the green light flashing slowly;

②Wait for about 30 seconds after powering on, press and hold the frequency binding button until the green light flashes quickly;

③Open the H12Pro assistant app, click on "frequency binding", and wait for the screen to show successful frequency binding;

④The frequency binding indicator light will continue to flash for around two minutes and then the green light keeps on.
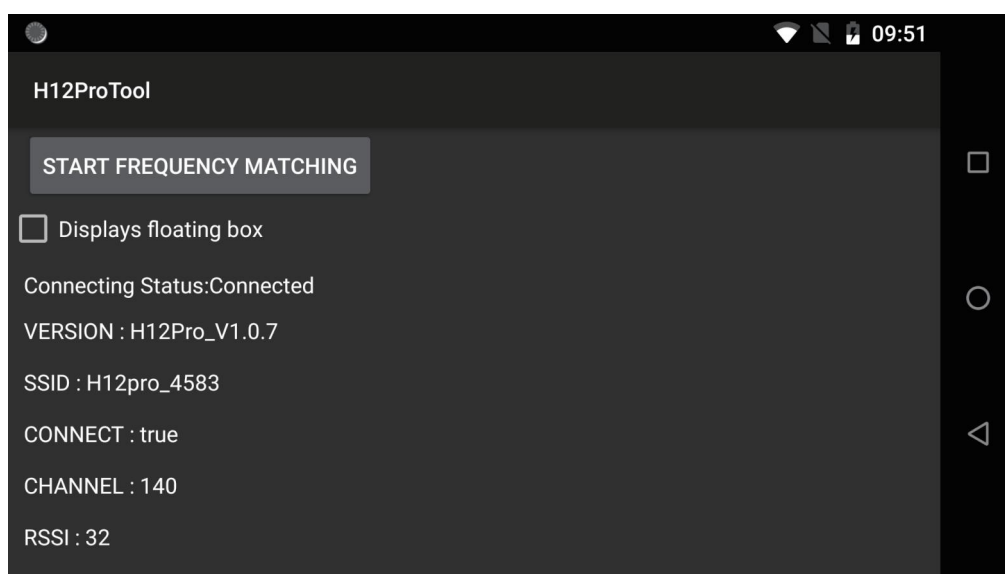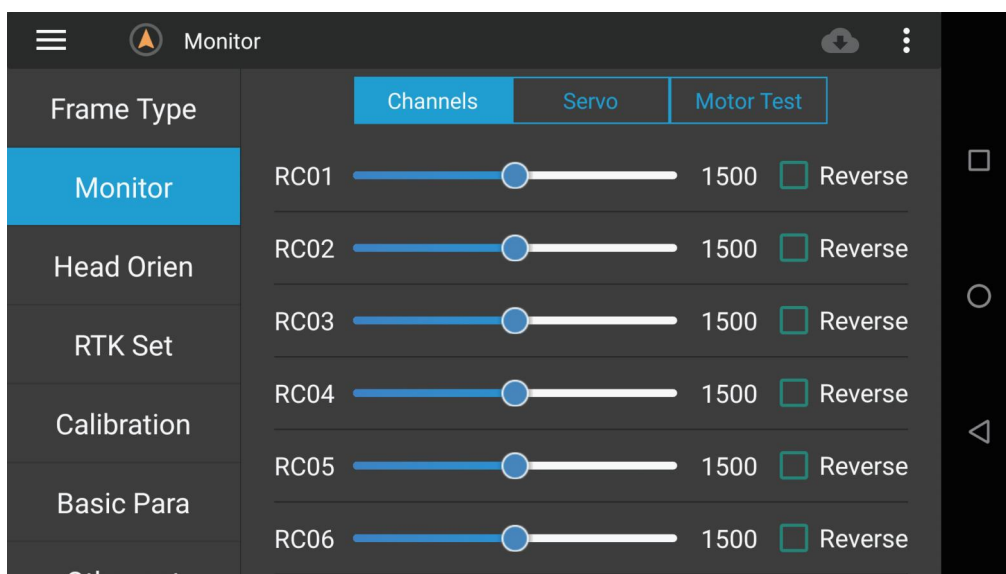

4.1、Rack Type Selection
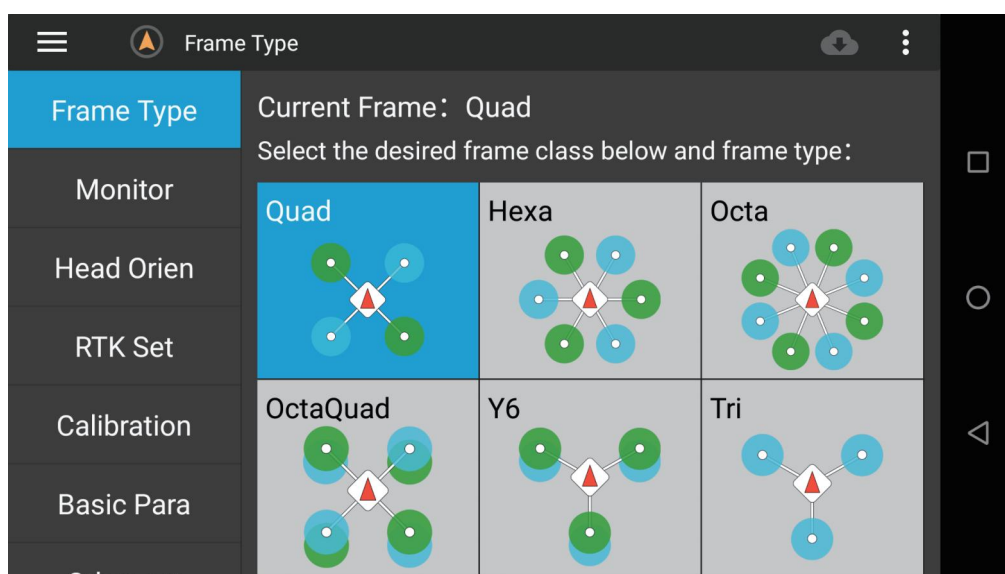
Quad, hexa, octa, Y6 axis, and triple axis, click on the pattern to save the rack type.

4.2、Flight control monitoring
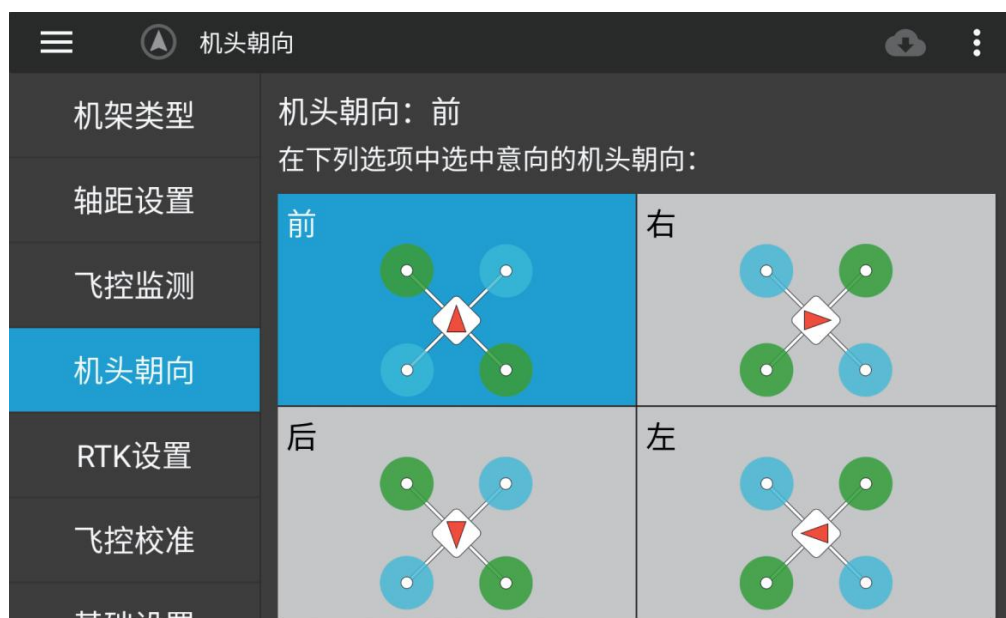

Channel check: Input the rudder value into the remote control channel.
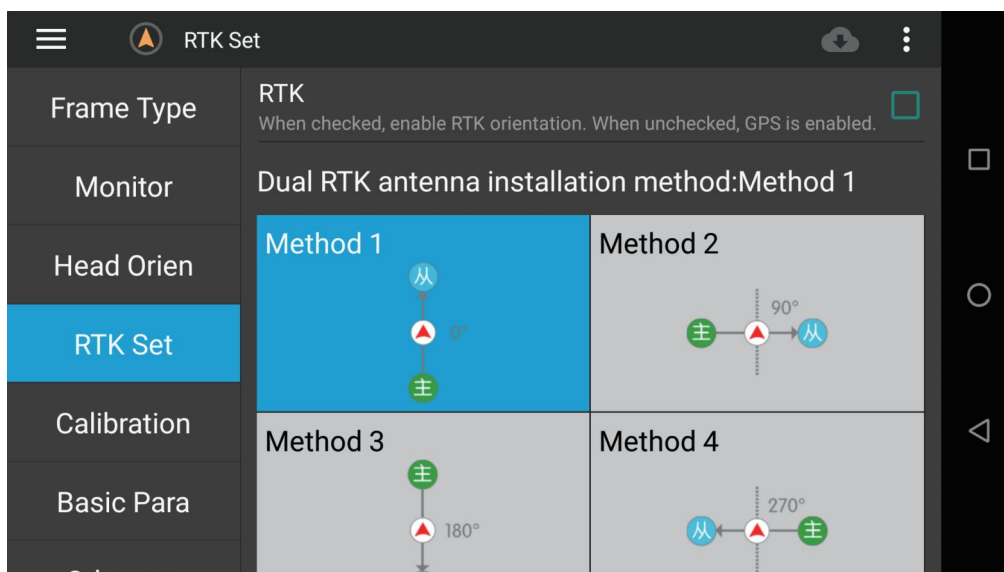Output check: PWM channel output rudder value of S1Pro.

4.3、Head Orien

The installation direction of s1pro can be modified. If it needs to be modified, please contact the manufacturer's technical personnel.
Note: The direction indicated by the arrow on the S1PRO casing is the direction of the machine head.

4.4、RTK antenna settings

Choose when using the RTK antenna, and do not choose when using the GPS antenna. (Check the purchased item is a RTK version or not)

4.5、Horizontal calibration
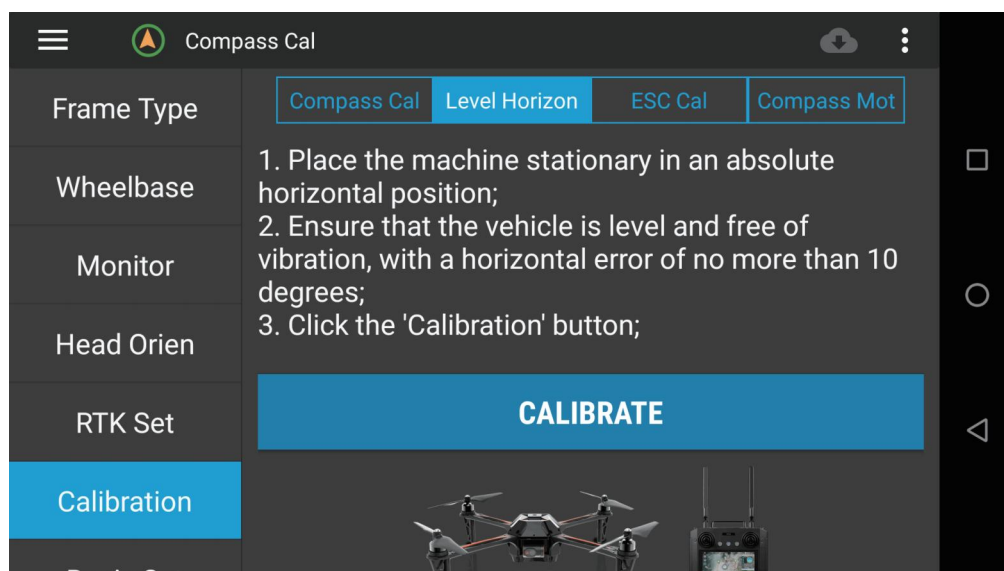
Step 1: Place the drone on a flat level ground;

Step 2: Ensure that the drone is in a flat level and free from vibration;

Step 3: Click (Calibration) to start horizontal calibration;

Step 4: Re-power on the drone.

4.6、Compass calibration

Perform ellipsoidal calibration and horizontal & vertical calibration on the drone (detailed information can be viewed by clicking on the "?")
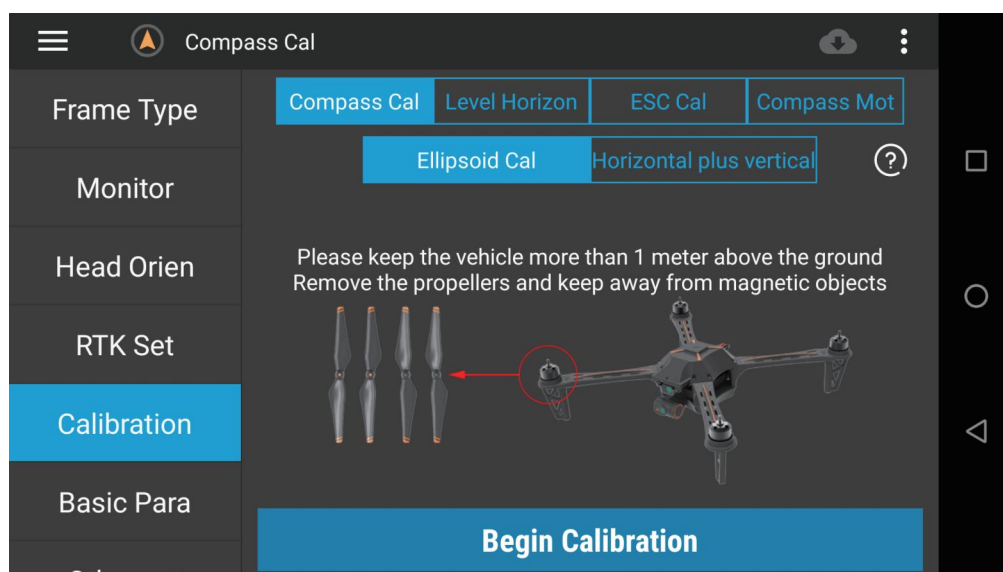Note: When using the directional version, there is no need to calibrate the compass

4.7、ESC calibration
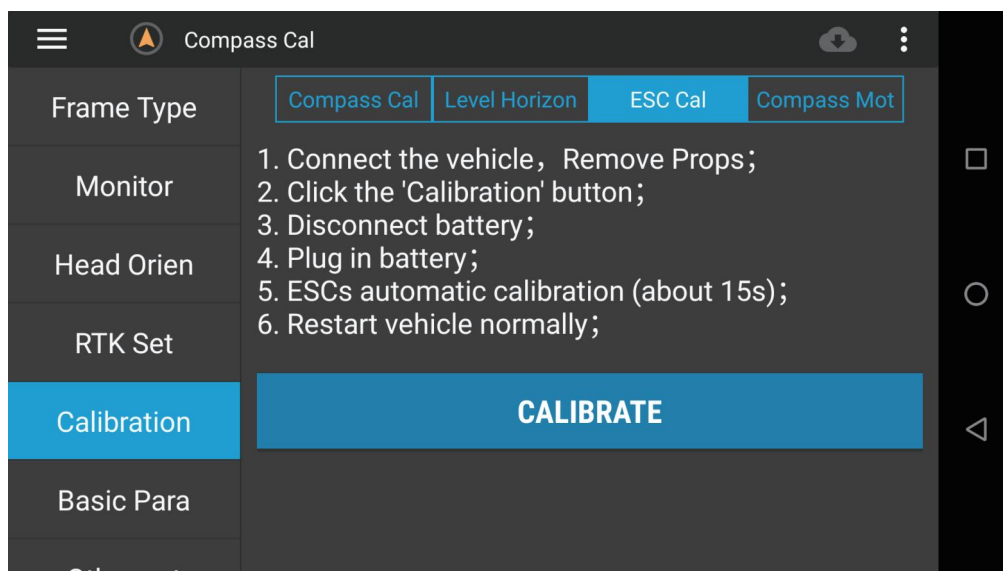
Step 1: Connect the drone and remove the propeller from the it;
Step 2: Click [Calibration];
Step 3: Power off the drone;
Step 4: Re-power on the battery;
Step 5: The program will automatically calibrate the ESC (approximately 15 seconds);
Step 6: Unplug and reinsert the battery to ensure normal use.

4.8、Motor testing
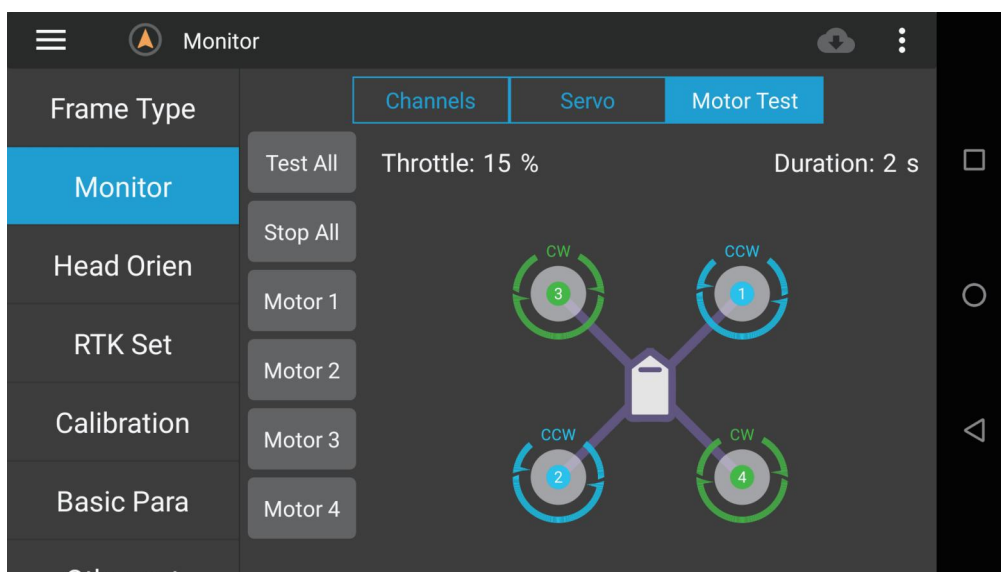
Step 1: Enter the throttle value, preferably 5% –10% (for large drone motors with low KV values, it can be set higher);
Step 2: Enter the duration in seconds;
Step 3: Rotate according to the picture, test the motor number to see if the rotation direction is correct.

4.9、Basic Settings

4.9.1、Attitude Setting
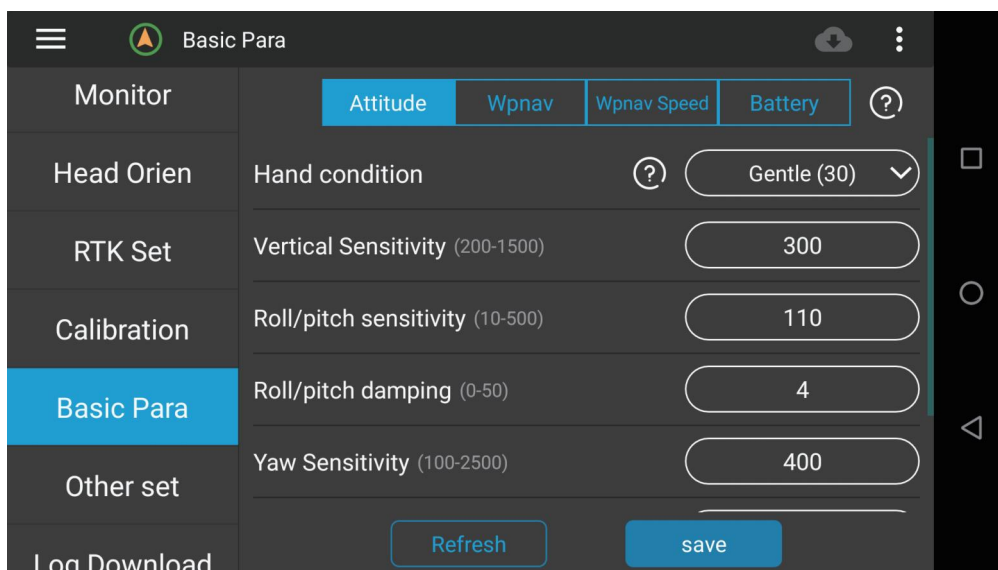
Adjust sensitivity and damping to improve the flight attitude of the drone. (For detailed information, click to "?" to check)

4.9.2、Navigation Settings

Set some parameters when executing route tasks or when the drone is in automatic mode. (For detailed information, click to "?" to check)

4.9.3、Speed Setting

Adjust the flight speed of the drone. (For detailed information, click to "?" to check)

4.9.4、Power setting
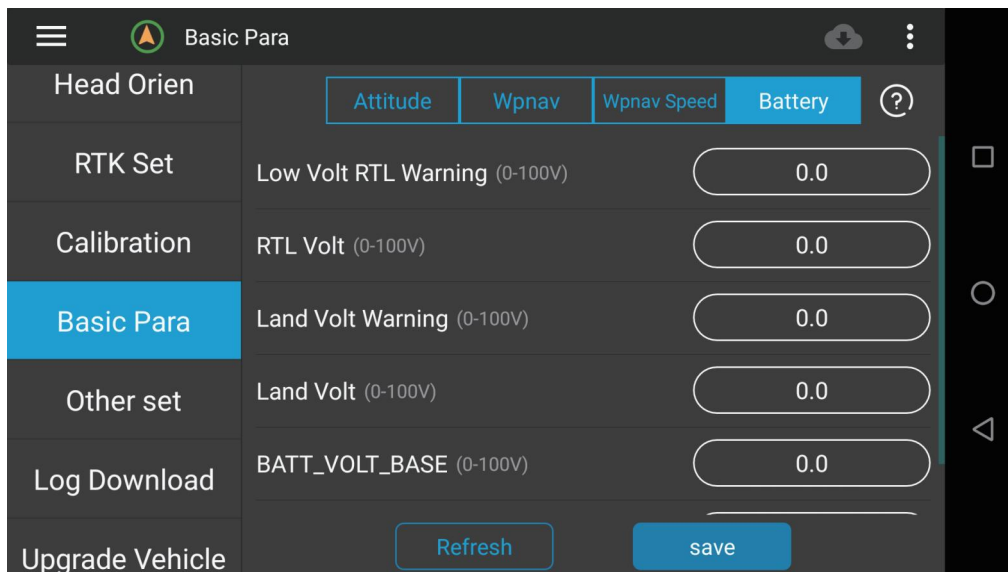
Low voltage return warning: When this voltage value is reached, the APP will send out a return warning sound.

Forced return voltage: When this voltage value is reached, the drone will forcibly return.

Forced landing voltage warning: When this voltage value is reached, the APP will send out a forced landing alarm.

Forced landing voltage: When this voltage value is reached, the drone will forcibly land off.

Ununlocked compensation voltage: When the drone is powered on and remains unlocked, measure the current voltage of the battery with a multimeter, then check the voltage displayed in the data transmission and fill in the difference.

Full load compensation voltage: The drone needs to be fully loaded, hover for 20 seconds, and record the current voltage. Then lands immediately, wait for another 20 seconds, record the landing voltage, and fill in the difference.

Note: The specific voltage settings can be clicked to "?" for referring

4.10、Other Settings
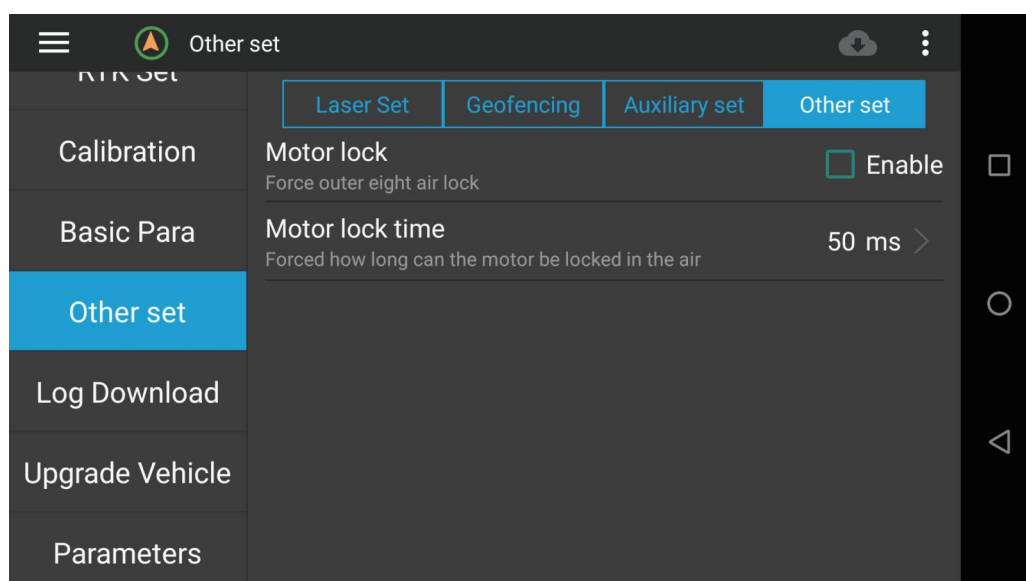
In other settings pages, you can set V mode to lock (Mode 2) and how long to be locked.

4.11、Auxiliary settings

1. First set the channel you need to control the servo in the H12 Tool App (H12 assistant), and set the fail-safe protection value. If the fail-safe protection value is 0, the current state means maintained.

The buttons on the remote control

The output rudder value after it out of control
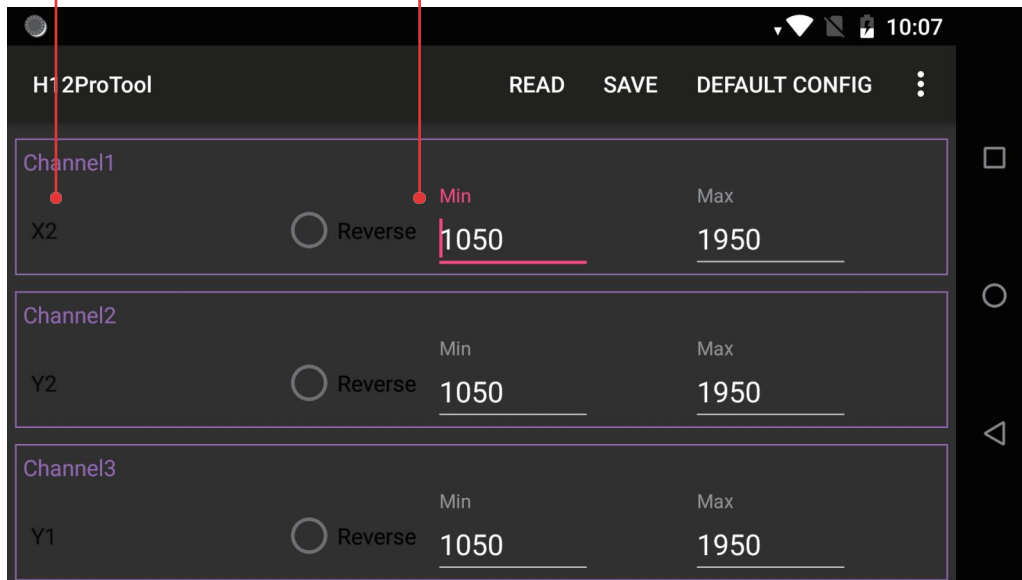
2.Connect the remote control to the flight control and open the flight control app: Skydroid Fly. Modify the desired channel in the flight control , entering password: 999-Auxiliary Settings.
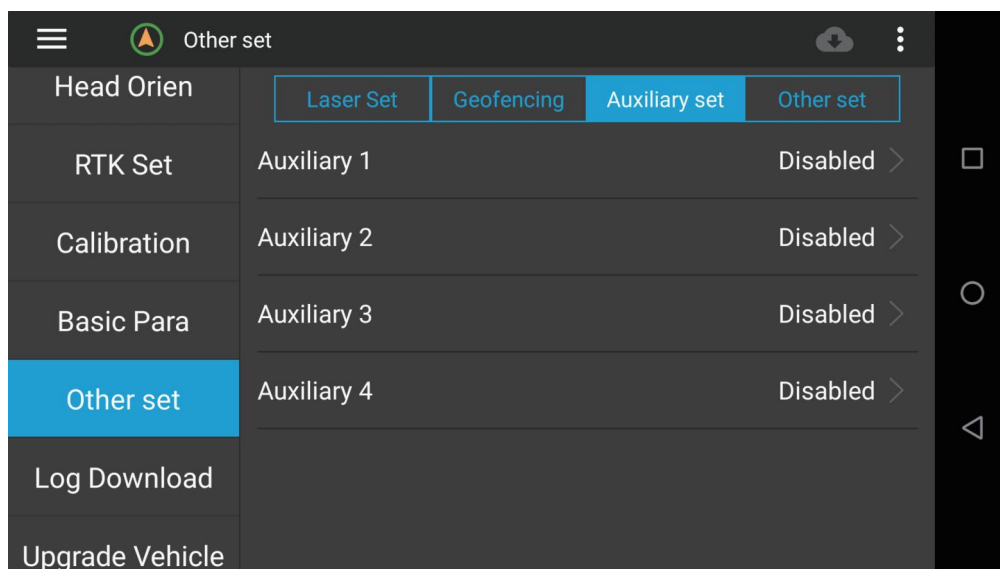
3.The loss of control protection of the servo can only be triggered after the drone is unlocked.
Test way: Unequipped the propellers on the drone, and after unlocking, turn off the remote control to test whether the servo is running or not.

4.12、Introduction of airplane modes

Flying mode (the flight controller will judge the GPS signal, please	Altitude fixed mode	When the GPS signal is poor or the compass is interfered, the drone will enter "Altitude Fixed Mode", which only supports manual flying. In the fixed altitude mode, if the fixed point of the drone is abnormal, please land as soon as possible.
	GPS mode	Use GPS to achieve precise hovering and stable flying mode of
	Return Mode	When the drone is switched to the return position or loses control, the drone will climb to the return altitude and return

The flying mode is set by the three-position switch of the serial number **❷** of the remote control.serial number 2 of the remote control.

Flying speed	Low speed	Maximum speed 2m/s, ascending speed: 1.2m/s, descending speed 0.4m/s
	Medium speed	Maximum speed 12m/s, ascending speed: 4.2m/s, descending speed 2.0m/s
	High speed	The maximum speed is 17m/s, the ascending speed: 5.1m/s, the descending speed is 4.9m/s

*The flying speed can be changed in "Gear Settings" in the APP.

4.13、Use of laser obstacle avoidance module

Laser obstacle avoidance function: only effective in drone return and automatic mode. When encountering obstacles, it stops moving forward, automatically climbs up, and after avoiding obstacles, it continues to move forward.
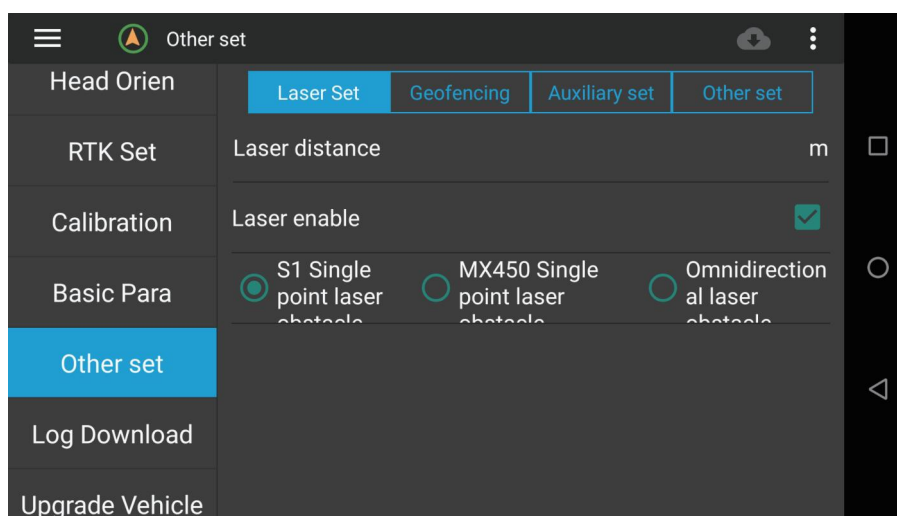
5、Out of control protection

The return methods of the drone are RTL return, smart low battery return, and lost connection return. When taking off, GPS>12 pieces, the drone will successfully record the home point. If it is forced to take off without GPS signal, the latest GPS>12 piece position will be recorded as the home point.

Return process	1. Record the home point 2. Trigger the return home condition 3. Adjust the direction of the nose 4. Return home based with the setting in the App (1) Ignore the current altitude of the drone, if the drone is within 5 meters of the horizontal distance, it will land directly. (2) If the drone is 5 meters away and within 20 meters, it will return at the current altitude, and the minimum return altitude is 5 meters. (3) At a distance of 20 meters, the drone will return directly above the return altitude. If the return altitude is less than the set return altitude, the drone will firstly ascending the return altitude and then, return home.
One key return	APP one key return home / remote control button one key return home
Return home with low batteryhome	1. The drone will automatically return to home on low battery or according to its distance to the Home point. 2. If there is no GPS signal or weak signal when returning home with low battery, it will land automatically. 3. When taking off, if it is forced to take off when the GPS signal is not good, the drone will automatically return to the place where it got a good GPS signal for the first time. 4. If the power is less than 10% or the voltage is less than 11.1V, it will enter the landing mode.
Lost connection	When the drone loses connection with the remote control for more than 2 seconds, it will return home automatically. Performance requirements: (1) After the drone loses control for 2 seconds, it will trigger automatic return home; (2) In the process of losing connection and returning to home, if the drone is connected again, the drone will continue to perform the returning procedure; (3) Land directly when there is no GPS signal or the signal is not strong.

6、Hardware installation

First of all you need to have a drone, here let's take the X-type quadcopter as an example, after you have a fully installed multicopter, please follow the steps below to install your S1-PRO.

(1) Install the S1-PRO on the drone, make sure it is installed in the center of the rack, and ensure that the installation position is horizontal, and the antenna is in the direction of the nose.

(2) Pair the remote controller, connect to Skydroid Fly, and do the previous calibration steps to calibrate your drone.

(3) Unlock the drone with joystick making as an inverted V. If the unlocking is normal, install the propellers and it can fly normally; if the unlocking is not normal, check the red fault prompt in the APP and solve it.

6.1、Install S1-PRO on the drone

Mount the S1-PRO as close to the vehicle's gravity center as possible, using the foam provided. Make sure the flight controller is pointing forward.
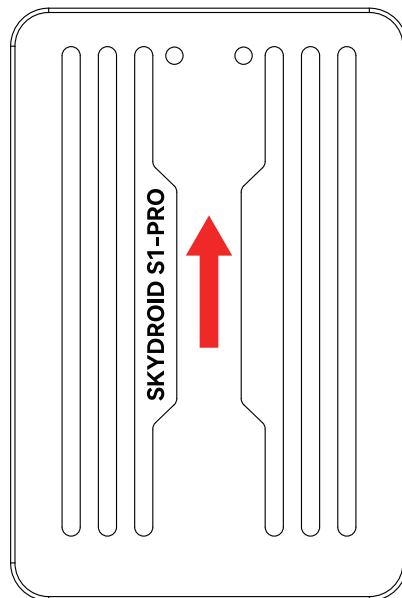
Install GPS, GPS can be regardless of direction, just calibrate the compass is OK.

6.2、Connect flight control to your multi axis system

6.2.1、Selection of motor steering sequence

Green CW rotates clockwise

Blue CCW rotates counterclockwise
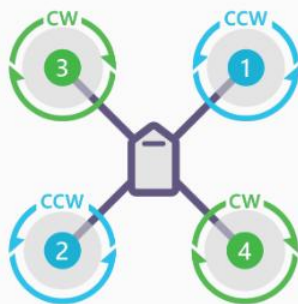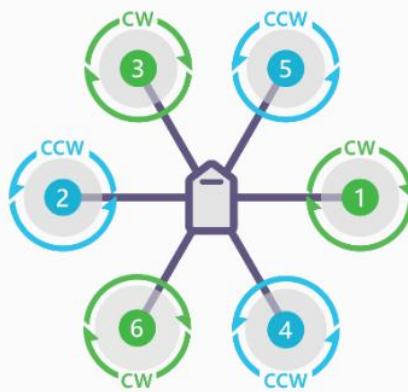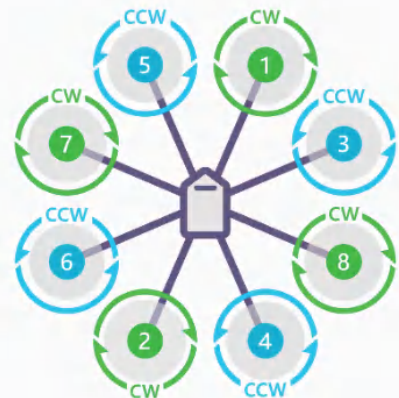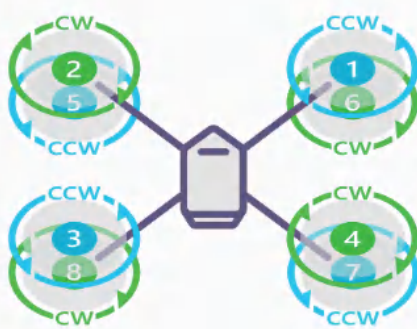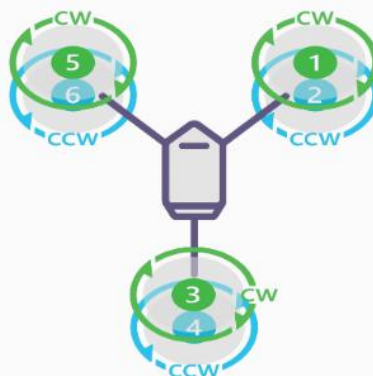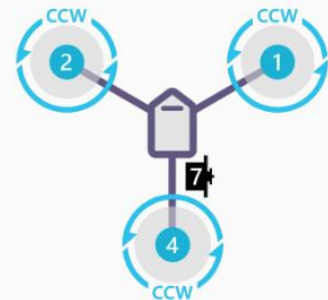
Note: Because the flight controller has no voltage output, the three-axis model drone needs to add BEC module pins to supply power to the servo.

6.2.2、Identification of clockwise and counterclockwise propellers

Clockwise (called reverse propeller) and counterclockwise (called forward propeller). Thruster propellers are usually marked with a "P". However not all propellers are marked, so both types can usually rotate in either direction. Therefore, it is more reliable to judge the propellers according to its shape. You can refer to these features to correctly identify the direction of the paddle.

6.2.3、Accessory connection

The 3P cable of the obstacle avoidance dual-axis gimbal is inserted into the pin header on the far right, with the black line on top.
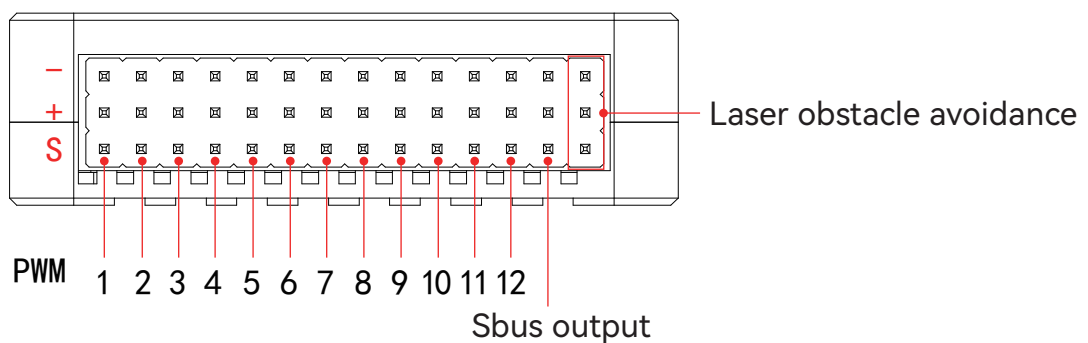
6.2.4、Installation of Webcam

①Power cable	red JST–2P male plug, power supply: 7.2V~72V (DC power supply or lithium battery)	
②Network port cable (signal transmission length 50cm)	Network IP signal	RX –: network IP signal RX+: network IP signal TX–: network IP signal TX+: network IP signal
Video transmission	Network IP HD video output RTSP code stream rtsp://192.168.144.108:554/stream=0	
The storage card	C10 can currently support a Kingston Micro SD card with a maximum capacity of 64 GB. As the C10 requires fast reading and writing of 1080Pvideo data, please use the standard Sandisk 16G memory card or purchase a Kingston 64G Class 10 Micro SD card to ensure normal video recording. Note: Please do not unplug the Micro SD card during the recording process, otherwise the video obtained during the shooting process may be lost.	

Note: The H12 Pro assistant needs to input the RTSP video stream address to display the camera contents

6.3、Basic flying

1. Fully charge the battery before flying.

2. Put the drone on a flat and open ground with the user facing the tail of the drone (the battery tail plug is the tail of the drone).

3. Install the propeller correctly.
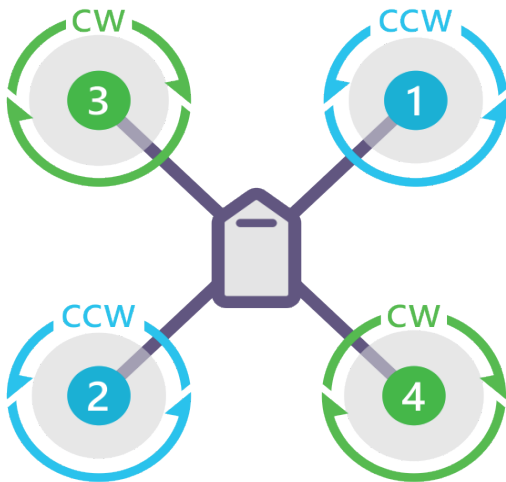
QUAD X

4. Turn on the remote control (long press the power button), and insert the battery plug into the power supply port of the drone.

5. Wait for the drone motor to make a long beep before the self-check succeeds.

6. Open the Skydroid Ground Station APP and click on the connection icon to connect to the video/image transmission. The GPS mode is recommended for take-off. It will search for satellites automatically, when the numbers of satellites more than 12 pieces, it can unlock and take-off.

7. Move the joystick upside-down "V" mode to unlock the drone, and slowly push the throttle joystick upward to let the drone take off smoothly.

8. If it is a big plane and it shakes, you need to adjust the sensitive in the app.

9.Pull down the throttle stick to land the drone.

10.After landing, pull the throttle stick to the lowest position and hold it for more than 3 seconds until the motor stops.

11. Plug out the drone battery from the drone tail and the power of the remote controller in turn after stopping.

6.4、Geo-fence

The Geo-fence is turned off default. If necessary, it can be turned on in flight control and dispatching parameter.

This is a security protection mechanism that protects the drone from flying out of the range you set. Enabling this mechanism will detect whether GPS is positioned, and it cannot be unlocked without positioning.
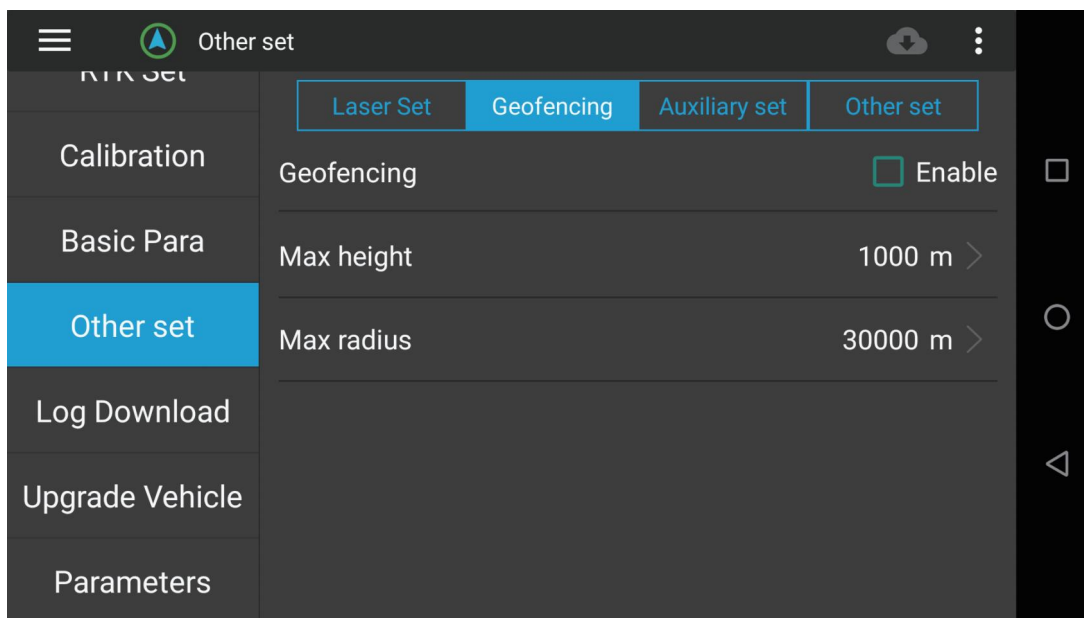
7、**Log download and checking**

Check flight records in Skydroid Fly app.
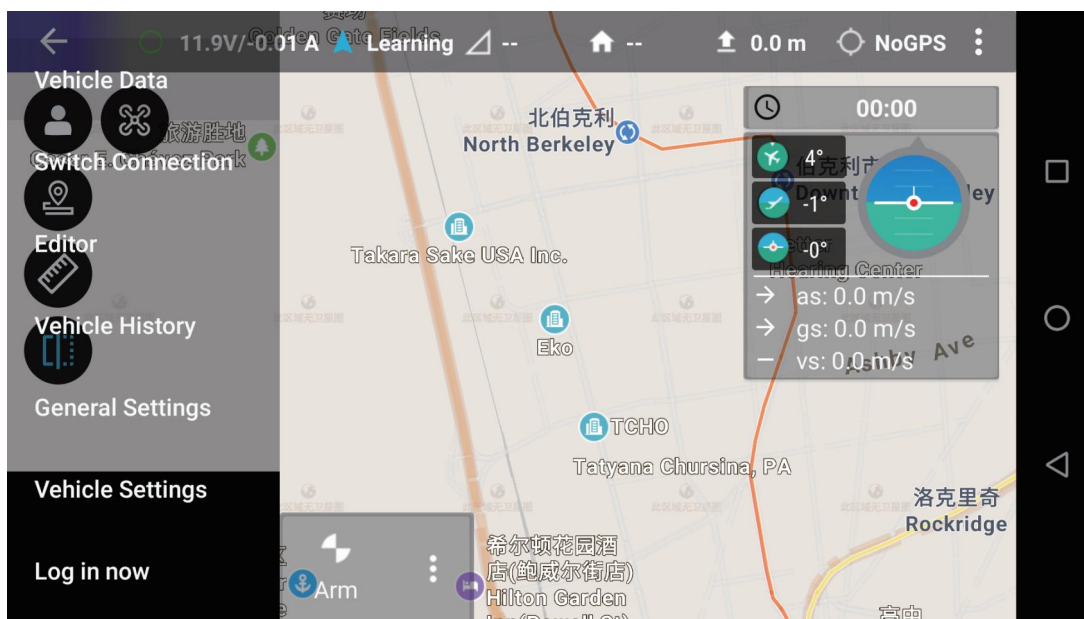
8、FAQ

1.The remote control cannot be connected.

①Check whether the APP type is correct.

②Whether the background occupies the Skydroid Fly APP or not.

2.The image is stuck and disconnected

①Adjust the angle of the antenna to aim at the drone, and there should be no obstruction in the middle.

②Change the flying field, do not fly near tall buildings or signal towers.

3.Unsteady hovering of the drone

①Change the flying field, do not fly near tall buildings or signal towers.

②Carry out drone compass calibration and level calibration.

③check whether the wind is too strong to affect the flight.

④Fine-tuning the sensitivity.

4.The GPS accuracy of the drone is inaccurate or cannot pass the GPS accuracy test.

①Search for at least 11 GPS in an open outdoor place.

5.Unclear shooting.

①Check if the protective film of the lens is removed.

②whether use in a good light environment.

6.The lens is hazy and foggy.

①The humid climate causes the lens to fog, change the storage location of the drone.

②Place desiccant when storing.

7.Lost pictures or videos taken.

When finish recording, please remember to click the "recording" icon to stop recording, otherwise the video may be damaged or lost.

Exemptions

When using this product, Skydroid shall not be liable for compensation and legal responsibility for direct or indirect damage caused by the following reasons.

1.The user has caused damage when drinking, taking drugs, drug anesthesia, dizziness, fatigue, nausea and other poor physical or mental conditions.

2 .Personal injury, property damage and legal liability caused by the user's subjective intention or misjudgment.

3.Compensation for any mental damage caused by the accident.

4.Damage caused by the user flying in a flight area prohibited by laws and regulations such as nature reserves.

5.Other damages caused by self-modification or replacement of accessories or parts not produced by Skydroid, resulting in poor operation of the drone.

6.The drone's natural wear and tear (flying time of 100 hours or more), decay, and aging of the wiring have caused the aircraft itself to operate poorly.

7.The drone issued a low-voltage alarm and did not land, causing the drone to fall or crash.

8. Knowing that the drone is in an abnormal state (such as water, oil, soil, sand and other unidentified substances, incomplete assembly, obvious failure of main components, obvious defects or missing parts), damage caused by forced flying.

9.The drone is in a magnetic field interference zone, a radio interference zone (such as near high-voltage power lines, large power equipment, radio and television transmission towers, mobile phone base stations, etc.), a no-fly zone specified by the government, or the user's field of view is in backlight, blocked by obstacles, caused by flying under conditions that are not suitable for control, such as blur, poor eyesight, and other conditions that are not suitable for control.

10.Flying in bad weather, such as rainy or windy (more than level 4), snow, hail and other bad weather.

11.The drone has encountered collisions, overturns, fires, explosions, lightning strikes, storms, tornadoes, rainstorms, floods, tsunamis, subsidence, ice sinks, cliffs, avalanches, hailstorms, mudslides, landslides, earthquakes, etc.

12.Any data, audio or image data obtained by the user using the drone is damaged due to infringement.

13.Regarding the battery, such as damage caused by the matching or improper use of the protection circuit, battery pack, and charger.

14.Any indirect losses and legal liabilities caused by problems with equipment or accessories (including memory cards), such as images or videos that cannot be saved.

15.The loss and legal liability caused by the user recklessly flying unsafe without completing sufficient flying training.

16.The user fails to comply with the use methods and various precautions mentioned in the user manual or user quick start guide of Skydroid official website and the loss and legal responsibility caused by various precautions.

17.Other damages that are not within the scope of Skydroid liability.

Suggestions

1.This product is compatible with the external environment and meets the FCC's limited requirements for wireless video.

This product complies with FCC Part 15 regulations, which contains two aspects:

(1)The work of the product will not cause harmful interference to others;

(2)At the same time, the product can withstand harmful interference that may cause the product to work abnormally.

Attentions: The manufacturer is not responsible for any wireless and other interference caused by illegal modifications and changes to the equipment. Because these modifications and changes have exceeded the user's operating authority.

Attentions: This product has passed tests and has been proven to comply with the FCC Part 15 requirements for Class B digital products.

These regulations are to ensure that the product will not cause harmful effects on the residential environment when it is installed and used. This product will radiate radio frequency energy when it is working. If the product is not installed and used in accordance with the instructions, it may cause interference to public wireless communication. However, in some specific installation and use occasions, there is no guarantee that interference will not occur. The user can check whether some interference is caused by this product by turning on and off the product. If this product has indeed caused interference to wireless and video receiving equipment, users can try to take the following corrective measures:

√ Properly adjust the position of the antenna.

√ Increase the distance between the product and the receiving device.

√ Asking for help from dealers or experienced wireless/video technicians.

2.When using this product, make sure that the product antenna is not less than 20cm away from people. The USB interface inside the remote controller and the USB interface of the drone can only be connected with the communication interface USB2.0 or above. It is forbidden to connect to the USB power interface. Please choose the correct type of battery. Using other types of batteries may cause explosion. At the same time, please follow the instructions to properly dispose of the used battery.

Therefore, we Skydroid promises that this product meets the basic requirements specified in 19991/EC and some other related directive requirements.

3.This product is for personal use only, and it is strictly forbidden to use this product for any behavior that violates international and local laws and regulations.

Do not use this product for the following activities (only examples, not limited to this):

(1) Defame, abuse, harass, stalk, threaten or other violate the legal rights of others (such as the right of privacy and publicity);

(2) Taking pictures of others or private areas without permission;

(3) Use this product for illegal or inappropriate purposes other than general commercial purposes (such as spying, military activities, or unauthorized inspections and investigations, etc.);

(4) Violate any laws, administrative regulations and related social customs in the area where this product is used.

Attentions:

(1) In some cases, shooting or recording performances, exhibitions or other commercial buildings for private purposes may also cause infringement of the intellectual property rights of others;
(2) In some regions and countries, small aerial models are also prohibited from participating in any commercial activities.
If you encounter an unsolvable problem during the installation process, please contact Skydroid officially authorized agents or Skydroid technical support. The intellectual property rights of this product and manual are owned by Skydroid Co., Ltd. Without written permission, no organization or individual may reproduce, copy and publish in any form. If quoted or published, the source should be indicated as Skydroid Co., Ltd., and the manual should not be quoted contrary to the original intent.

Reminder: Please read the user manual carefully before use!

- Always be supervised while charging
- Please unplug the charging cable immediately after charging
- Propeller components may cause injury
- This product is not a toy
- Not suitable for children under 14 years

WeChat public account

Skydroid National Service Hotline
400-6996-520

Product name: S1-PRO
Manufacturer: Skydroid Co., Ltd
Address: 2nd Floor, Building A, Haixi Yucheng Base, High-tech Industrial Park, Quanzhou City, Fujian China.
Email: sales01@skydroid.xin
Official Website: www.skydroid.xin