S1-4G用户手册

V1.1

Rover or Boat

泉州云卓科技有限公司

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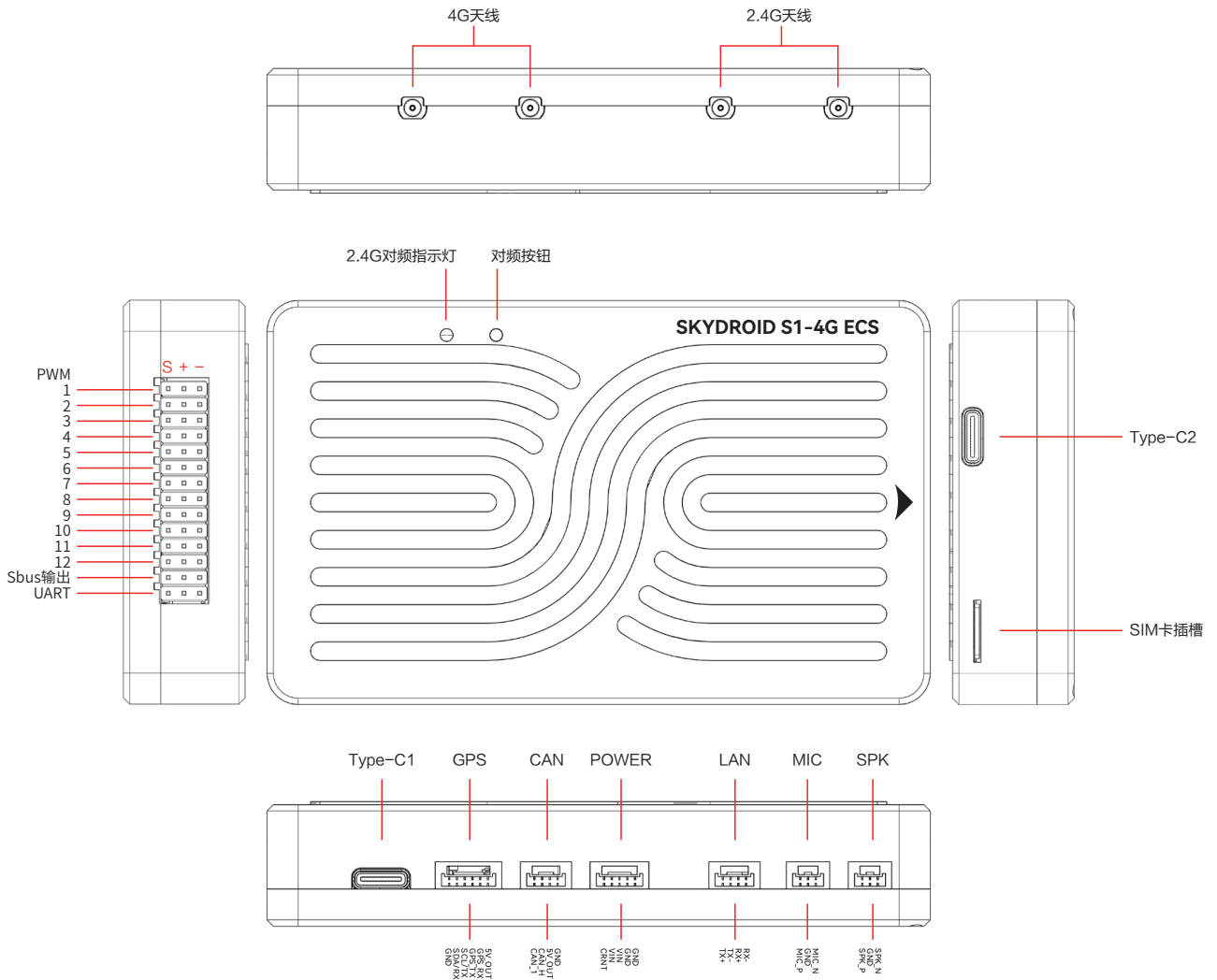
港澳台及海外客户的售后问题发至邮箱 sales01@skydroid.xin,具体售后细则视情况而定。

目录

1、S1-4G概览

1.1、部件

H12 PRO遥控器	S1-4G	GPS(选配)	MK43(选配)	定向套装(选配)
船桨天线	扁形天线	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

4G天线　　　　　　2.4G天线

2.4G对频指示灯　对频按钮

SKYDROID S1-4G ECS

PWM
S + −
1
2
3
4
5
6
7
8
9
10
11
12
Sbus输出
UART

Type-C2

SIM卡插槽

Type-C1　GPS　CAN　POWER　LAN　MIC　SPK

GND
SDA/RX
SCL/TX
GPS_RX
GPS_TX
5V OUT
GND

CAN_L
CAN_H
5V OUT

CRNT
VIN
GND
GND

TX+
RX+
RX−

MIC_P
GND
MIC_N

SPK_P
GND
SPK_N

S1-4G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
	2.4G馈线长度	30cm
	4G馈线长度	30cm
	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
	接收机发射功率	17.5dBm
	GPS	M10
	RC OUT SBUS	1
	GPS UART串口	1
	POWER电源口	1
	SPK接口	1
	LAN接口	1
	CAN接口	1
	MIC接口	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	107*65*19.5mm
	重量	200g

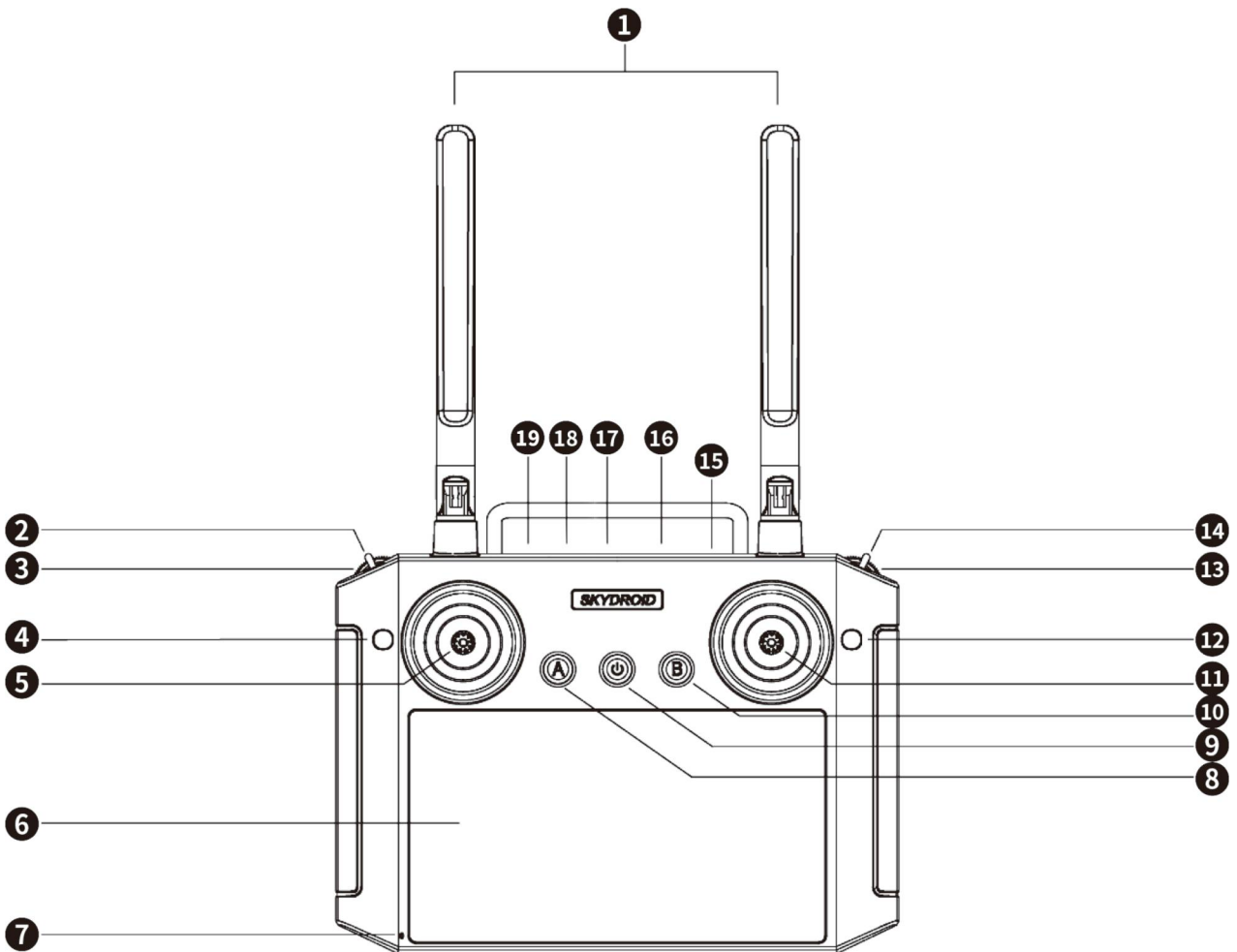| 三体摄像头网口版	
分辨率	默认1080*720
尺寸	102.1*42.6*36.5mm
工作电压	12~72V
工作电流	90mA
LED灯功率	6W

1.3、使用建议

对于初次使用 S1-4G 车控的用户来说，建议分步骤完成车控的入门使用：

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、组装机器，完成动力套的装配；

3、遥控器连接车控完成校准；

4、检查各类参数设定；

5、第一次解锁；

6、车控各类高阶应用，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（机器解锁）	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

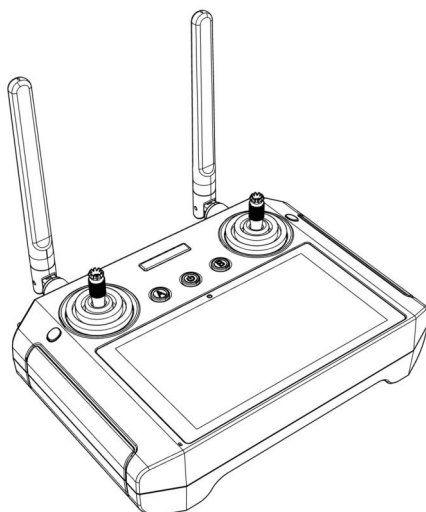| 序号	功能键	功能描述
❺	油门/转向控制杆 （美国手模式）	- 控制杆向上推、无人车前进 - 控制杆向下拉、无人车后退
⓫	前进后退/侧飞控制杆 （美国手模式）	- 控制杆向左打、无人车左转弯 - 控制杆向右打、无人车右转弯
❷	行驶模式控制	- 手动模式 - 自动模式 - 返航模式

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。

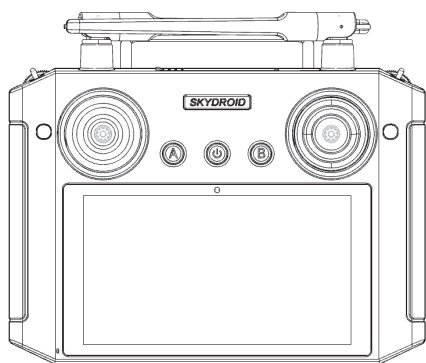## 2.4、遥控器天线角度

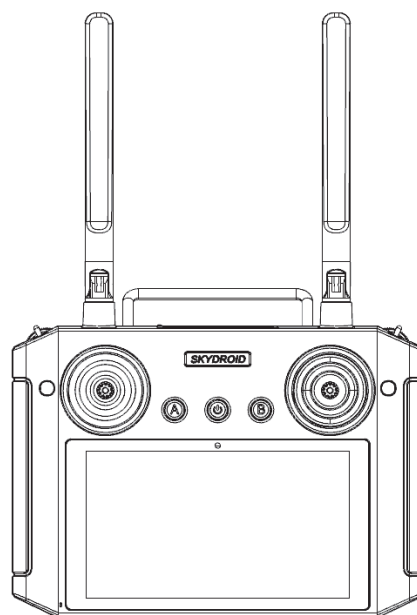(1)调整遥控器天线角度,尽量正对飞行器飞行方向;

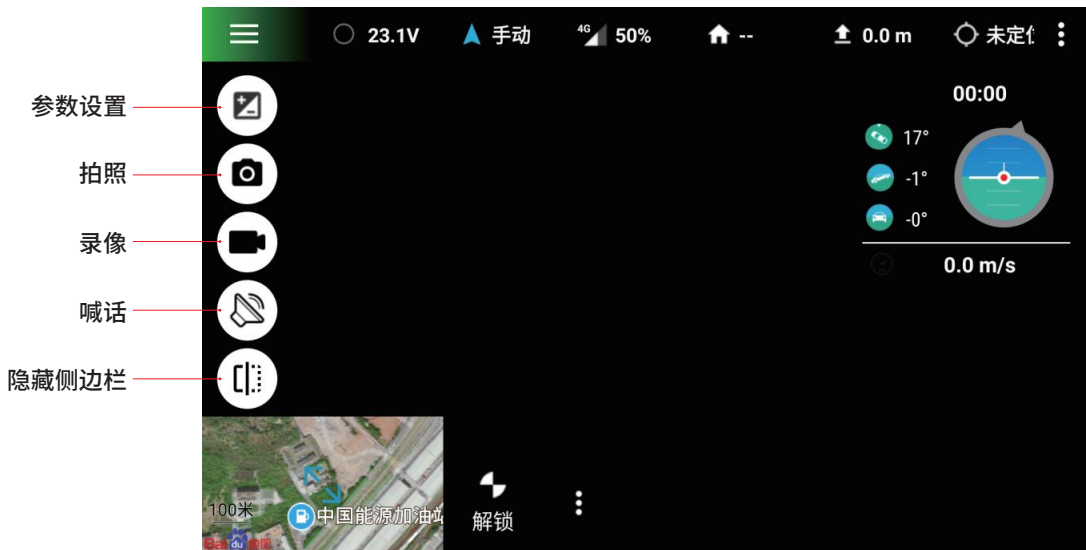(2)天线相互不要形成遮挡,交叉。

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、云卓车船 APP

3.1、需要下载云卓车船 APP，请扫描二维码或登录www.skydroid.xin下载。
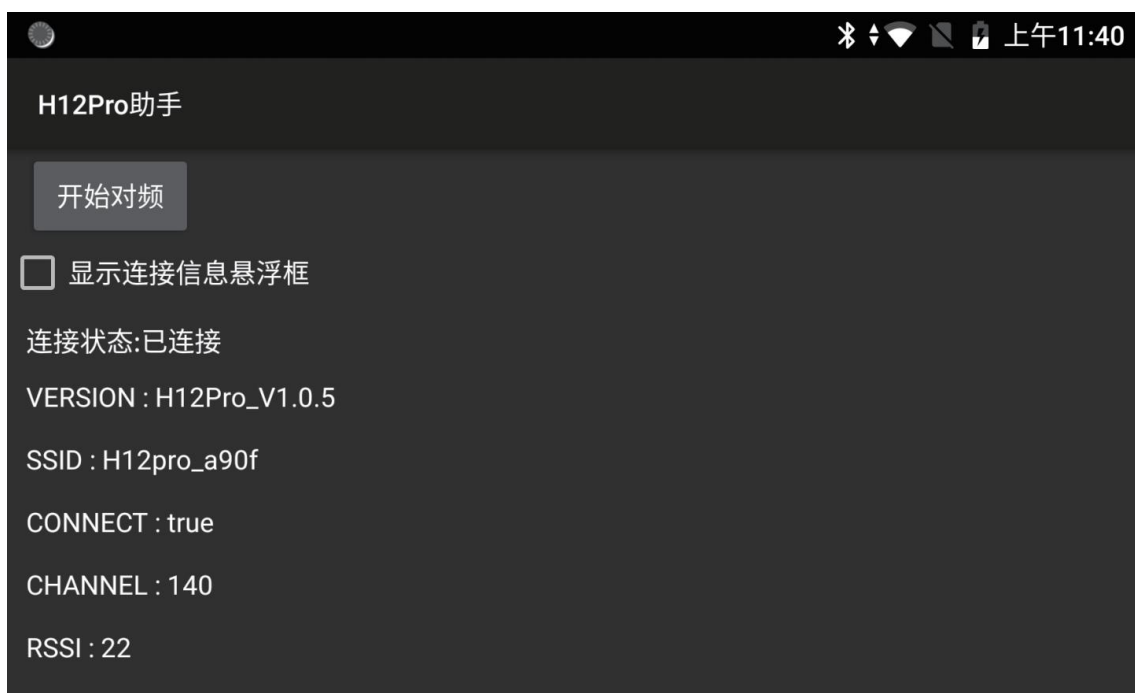
3.2、APP主页面：

电量显示　行驶模式　信号强度　离家距离　高度　GPS卫星个数

人的位置

机器的位置

隐藏侧边栏

功能拓展

行驶时间

姿态

行驶速度

图像显示窗口　一键解锁

参数设置

拍照

录像

喊话

隐藏侧边栏

4、第一次接触准备

注意：装机调试建议请用2.4G频段调试，调试成功没问题后再使用4G链路

4.1、对频操作

对频按钮

SKYDROID S1-4G ECS

H12Pro助手

开始对频

☐ 显示连接信息悬浮框

连接状态:已连接

VERSION : H12Pro_V1.0.5

SSID : H12pro_a90f

CONNECT : true

CHANNEL : 140

RSSI : 22
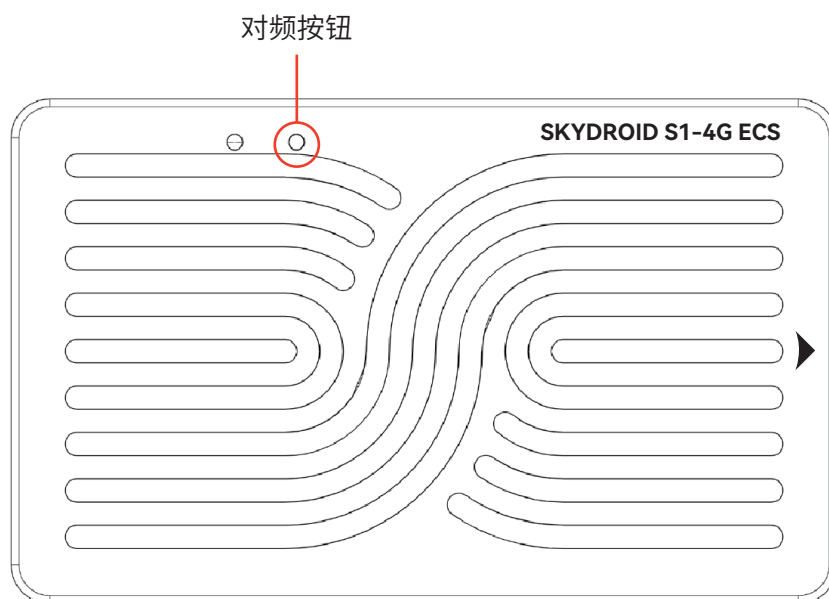
注意：H12PRO遥控器不能边充电边使用

遥控器与S1-4G整套出厂是已经对好频状态。

①S1-4G通电，红灯常亮、绿灯慢闪，等待30s后，长按对频按钮3秒后绿灯快速闪烁后松开；

②进入H12Pro助手-对频-开始对频，对频成功后遥控器会显示对频成功且S1-4G指示灯绿灯快闪2分钟后将改为常亮。

4.2、注册、激活

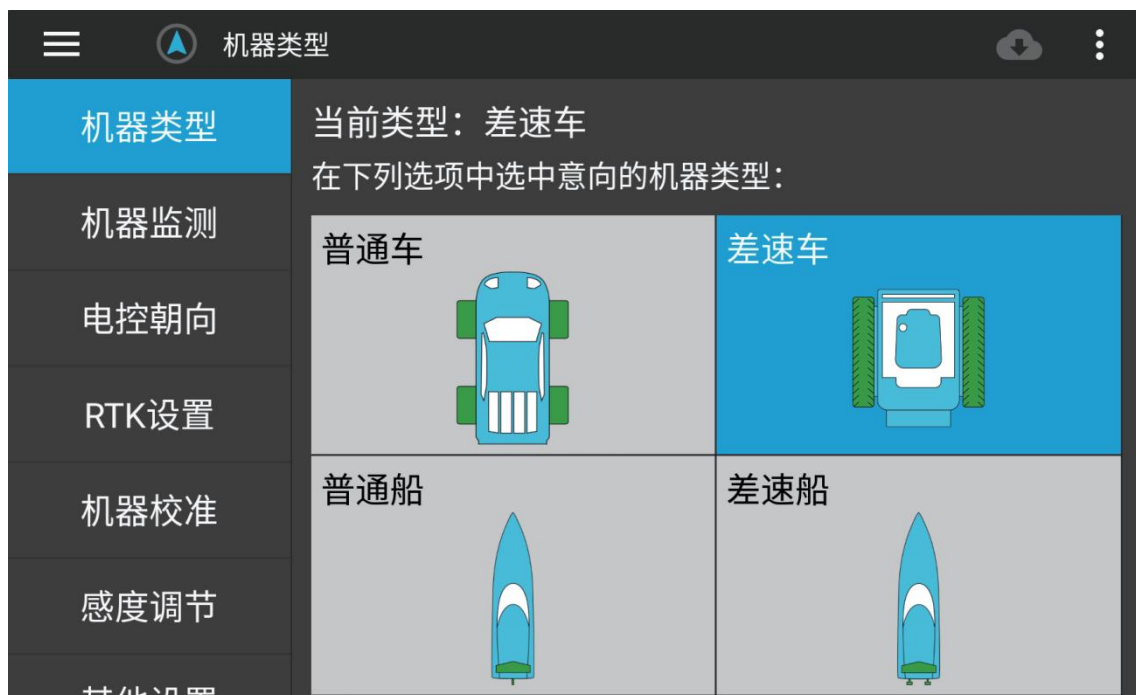遥控器插SIM卡或者连接WIFI，打开云卓车船 APP 选择新用户注册

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

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

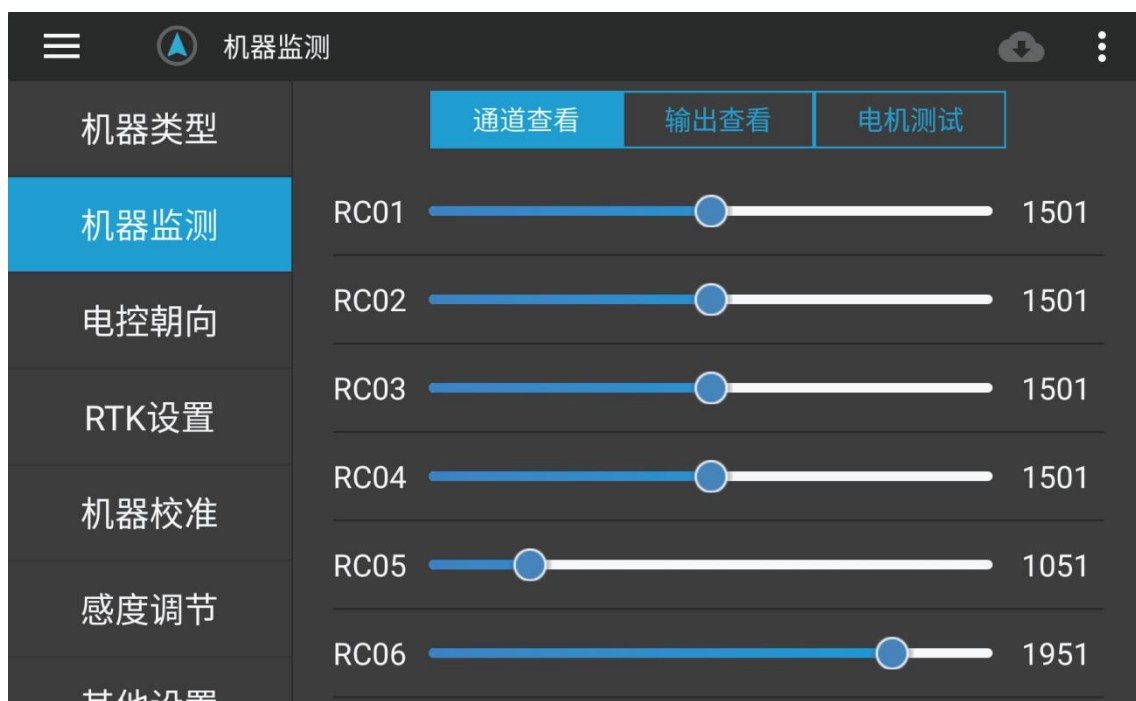初级飞控调参密码999，首次使用初级调参密码即可

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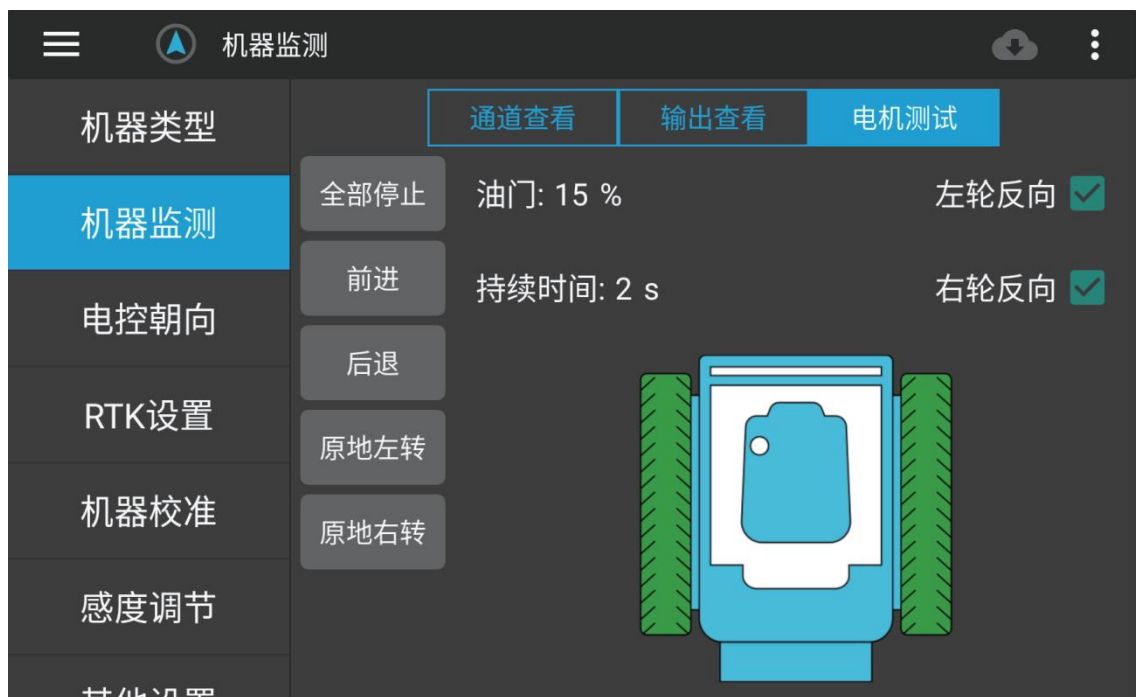## 4.3、机架类型选择

普通车，差速车，普通船，差速船点击图案即可保存机架类型。

4.4、机器监测

通道查看：遥控器通道输入舵量值。

输出查看：S1-4G的PWM通道输出舵量值

4.5、电机测试

测试机器电机转向是否和实际方向一致

4.6、电控朝向

选择S1-4G的安装朝向，点击图案即可保存，保存后需要重新进行六面校准。

4.7、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)

4.8、罗盘校准

罗盘校准有三种方式,根据机器大小选择合适的校准方式即可

椭球校准:六个面分别旋转一周,直到提示成功;

水平加垂直:机器水平旋转和机头垂直向下旋转直到提示成功;

四方位校准:机器分别朝北东南西四个方向放置采集数据,直到提示成功。

注意:使用定向套装时不需要校准罗盘

4.9、感度调节

感度调节(pid)：调节无人车在自动模式下直线行走时的状态。

P增益：P值越大，小车的转向反应越快，P值越小，小车的转向反应越慢。

I增益：如果P和D的调节不是很理想的话，可以适当调节I，I会向P的方向上加一个力，这样可以让小车更快回到目的路径。

D增益：D值约大，小车靠近直线的阻力约大。

4.10、电量设置

强制返航电压：无人车强制返航时的电压。

强制停止电压：无人车强制在原地停车的电压。

4.11、电机设置

| 电量设置 | 辅助设置 | 电机设置 | 其他设置 |

灵敏度设置　◉ 前进　　○ 后退

慢　　　　　　　　　　　　　慢

1100　　　　　　　　　　　1100

快　　　　　　　　　　　　　快
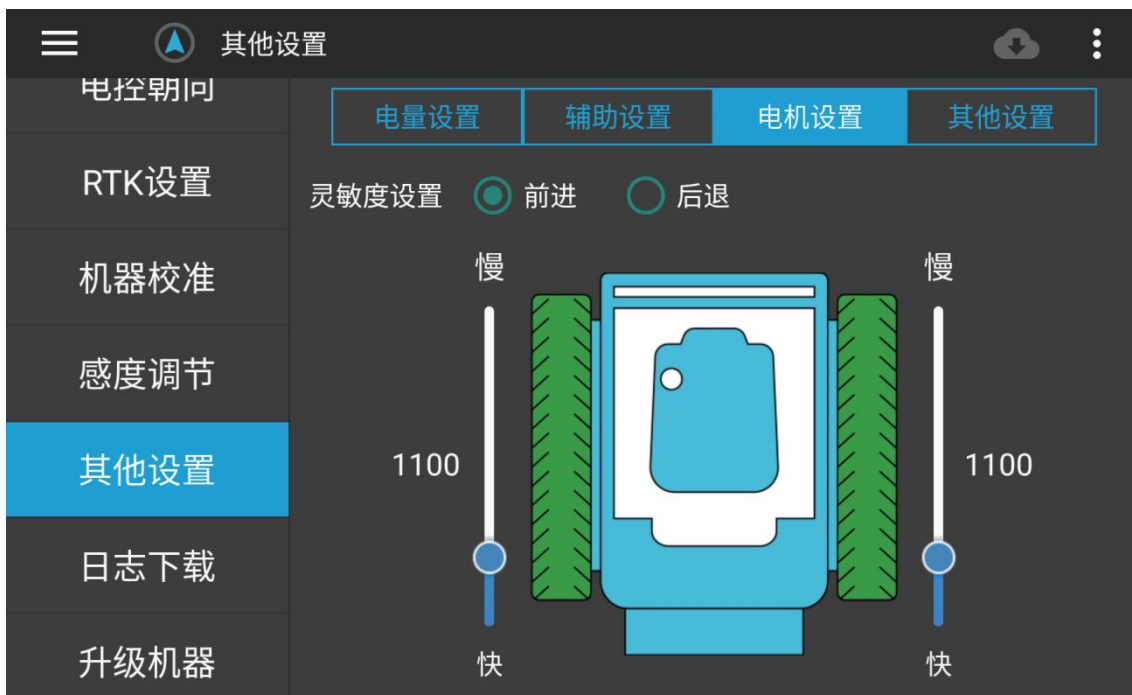
调节差速车（船）左右轮的灵敏度，及手动控制机器是否走直线。

4.12、其他设置

| 电量设置 | 辅助设置 | 电机设置 | 其他设置 |

失控保护　　　　　　　　　　⑦　(1 　　⌄)

检测机制　　　　　　　　　　⑦　(1.陆地　⌄)

失控保护：与机器失联时，机器的执行动作。

检测机制：车选择陆地；船选择水面。

4.13、日志下载

可从机器上下载日志到遥控器

*注意：下载完日志后请重启机器

4.14、辅助设置

1.先在H12Pro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.遥控器对频连接车控，打开云卓车船App，在参数设置-999-其他设置-辅助设置里修改自己需要的通道。
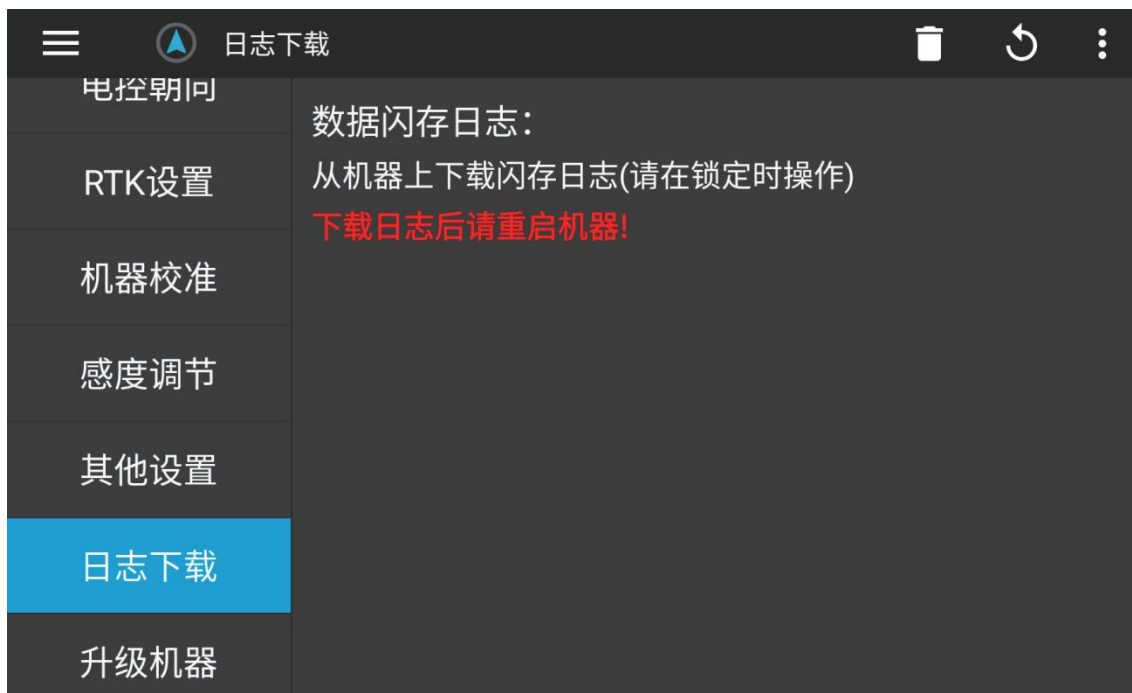
4.15、控制模式介绍

①保持模式 Hold Mode

在保持模式下，打摇杆时，无人车不会响应，并保持停止状态，车轮指向前方。

② 手动模式 Manual Mode

在手动模式下，遥控器的转向和油门杆直接控制无人车的油门和转向输出。 此模式不需要位置估计（即不需要 GPS）。建议始终将一个遥控器模式开关位置分配给该模式。

③ 自动模式 Auto Mode

在自动模式下，无人车将遵循自动驾驶仪中存储的预编程任务，该任务由导航命令（例如，航路点）和"执行"命令。 此模式要求无人车具有 GPS ，自动模式依赖于 GPS，因为任务脚本依靠GPS 获得位置信息，所 以在解锁和起飞之前必须让 GPS 先定位。

④ 返航模式 RTL Mode

切换到 RTL 模式后，无人车将转弯并尝试直接返回到上次解锁的位置（除非已通过地面站更改了起始位置）。

4.16、图像连接设置
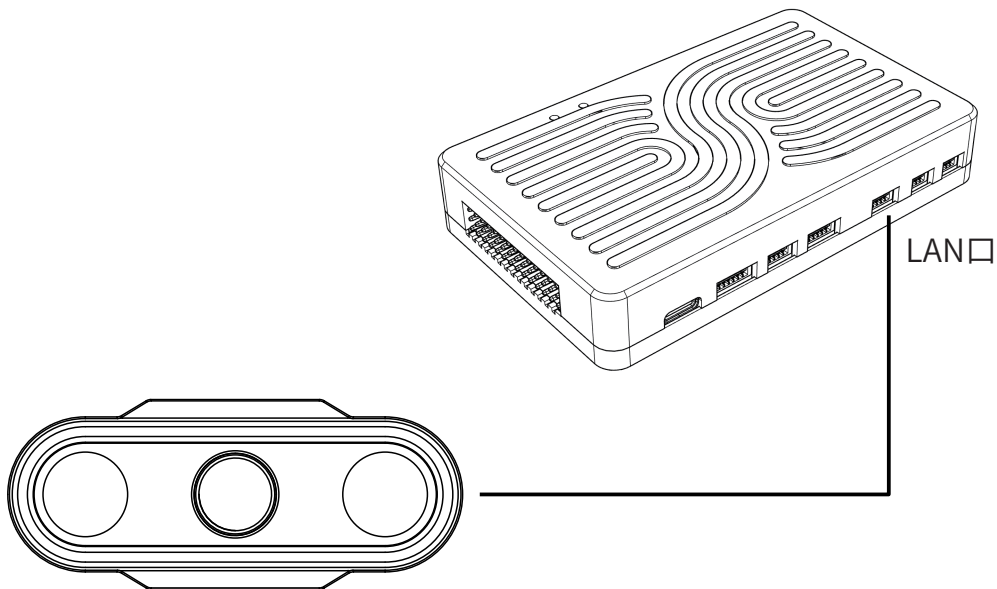
摄像头4P网口线插S1-4G的LAN口上，红黑线独立供电（12V-72V）

注意：H12Pro助手显示摄像头画面需要自己输入RTSP视频流地址

4.17、音频功能使用

(1)音频输出口接线定义如下图所示

P、N为差分信号，GND为接地。

(2)使用接线图(需带功放)

单独供电的带功放喇叭

单独供电的麦克风

S1-4G

（3）使用方法

步骤一：按图接好线序；

步骤二：给飞控、喇叭和麦克风通上电；

步骤三：地面站点击喊话图标即可实现双向喊话沟通。

5、失控保护
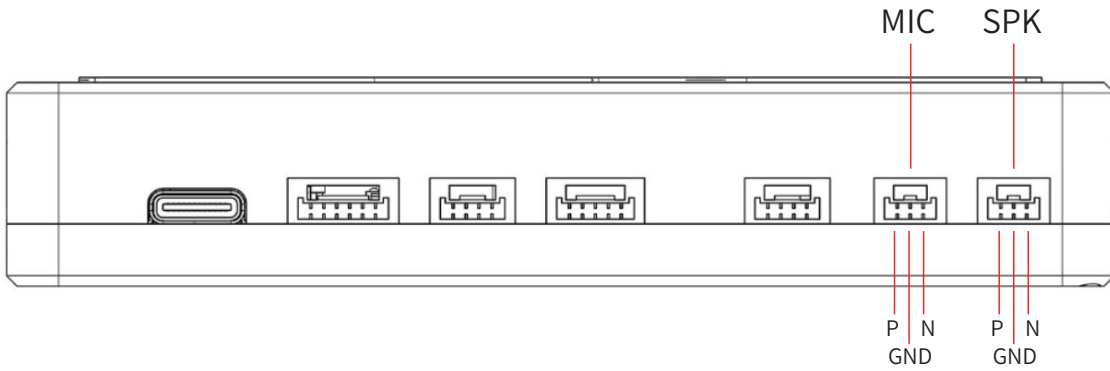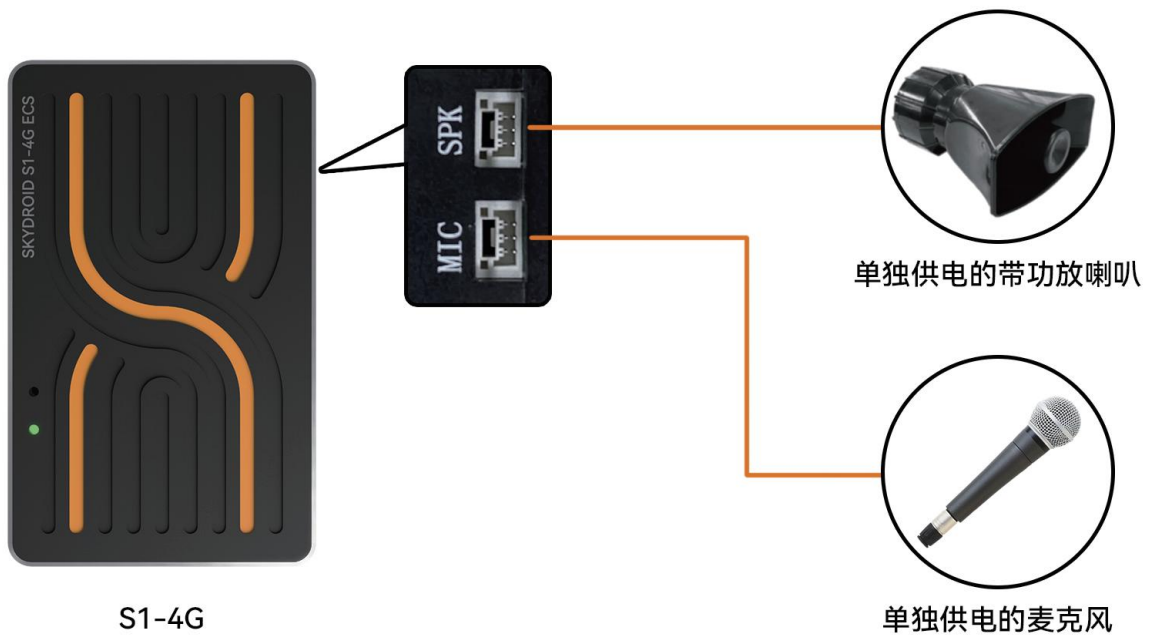
机器返航方式分别为RTL返航、强制低电量返航以及失控返航。解锁时,遥控器提示返航点已刷新则是成功记录到返航点。

1、一键返航:APP一键返航/遥控器按键一键返航。

2、低电压返航:机器将会根据用户设置的强制返航电压自动执行低电压返航。

3、失联返航:当机器与遥控器失去连接超过两秒,机器将自动返航。失联返航中,如果机器恢复了连接,机器将继续执行返航返航程序。
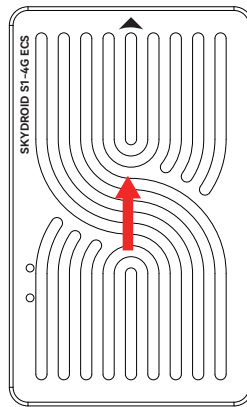
6、硬件安装

首先你要拥有一辆无人车,这里我们以差速车,在你拥有了一个完整安装好的差速车,请按照以下步骤来安装你的 S1-4G。

⑴在无人车上安装S1-4G,并确保安装位置水平,车控机头朝前。

⑵遥控器对频,连接 云卓车船,进行之前几步校准你的无人车 。

⑶按遥控器A键解锁,如解锁正常,无人车将可以正常使用;如解锁不正常,查找APP红色故障提示,进行解决

6.1、在机器上安装S1-4G

1.尽可能在靠近载具重心的位置,使用提供的泡棉安装 S1-4G,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
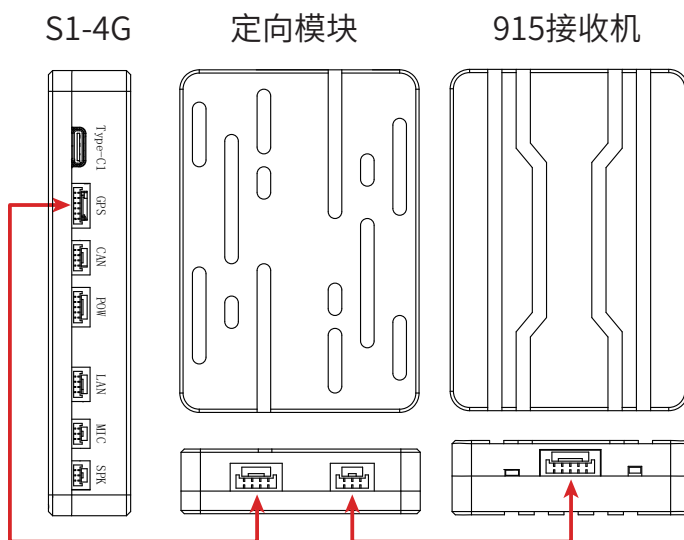
使用定向套装需要打开RTK设置,详情查看4.7   GPS 可不分方向,校准罗盘即可

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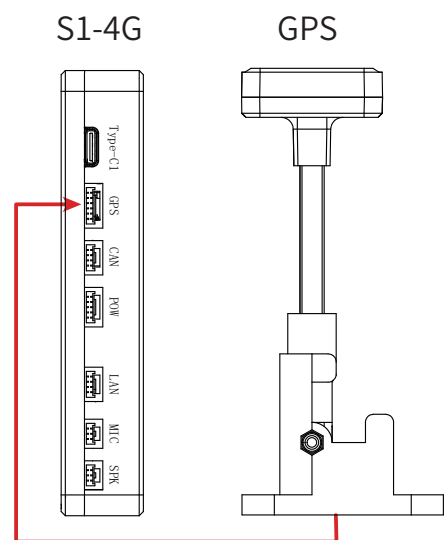
6.2、在无人车上安装S1-4G

6.2.1、普通车船

大多数遥控车就像全尺寸汽车一样，因为它们具有独立的转向和油门控制。对于这些遥控车，应将转向舵机（通常使前轮转向）连接至电控的 PWM1。电动机的 ESC（通常控制后轮的速度）应连接至电控PWM3。
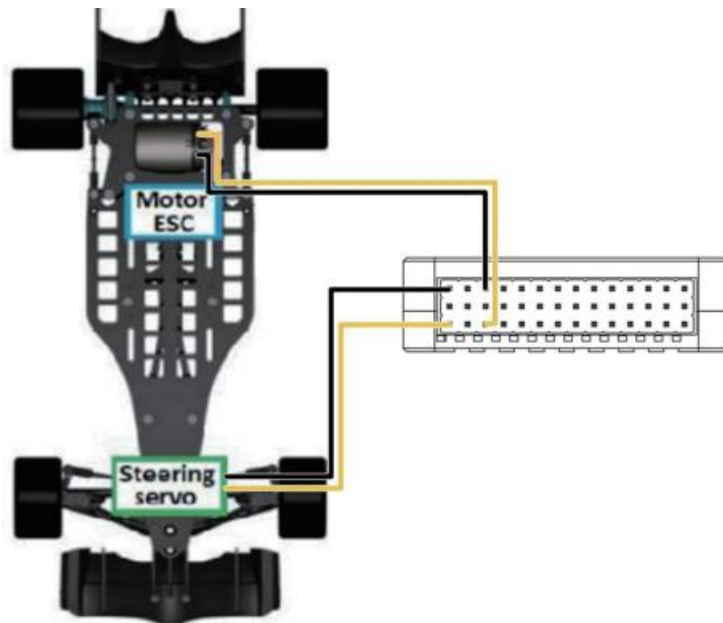
6.2.2、差速车船（如坦克）

差速车船（如坦克）通过改变两个（或多个）独立车轮的速度来控制其方向和前进/后退运动。 对于这些样式的流动车，左轮应连接到电控的 PWM1，右轮应连接到电控的 PWM3。
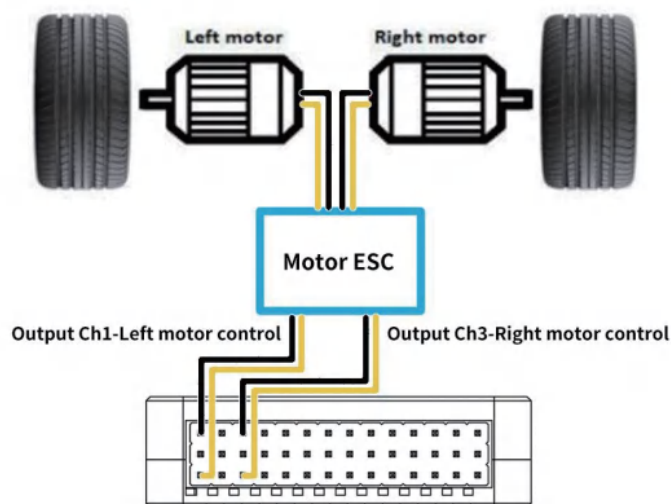
注意:

因电控无电压输出，接舵机需要外加BEC 模块插针给舵机供电。

pwm参数：

频率范围：50-400HZ

周期范围：1ms最小值 ----1.5ms中立值 ---- 2ms最大值

波形电压：0-3.3v

6.3、基础驾驶

电控每次使用首次通电时，需等待一分钟左右让飞控自动配置航向方可进行自动模式（路线规划），期间不影响手动模式控制。

1.行驶前先把电池充满电。

2.开启遥控器（长按开机按键），把电池插头插入无人车供电口中。

3.等待无人车自检成功。

4.打开云卓车船 APP，打开后将自动连接。

5.按A键，解锁无人车，默认是手动模式。

6.如自动模式下，无人车不能走直线，需要在app里进行感度调节

7.停车后依次断开无人车电源和遥控器电源。

7、轨迹克隆

长按轨迹克隆图标，在提示开始后，手动控制车辆行驶，再次长按轨迹克隆图标将会自动保存轨迹并跳转到路线规划界面，此时可点击下方路线图标设置容差（航点的密集程度），设置完成后点开右下角发送任务，拨动三段开关切换自动模式，无人车将开始执行已规划的航线。

8、日志下载与查看
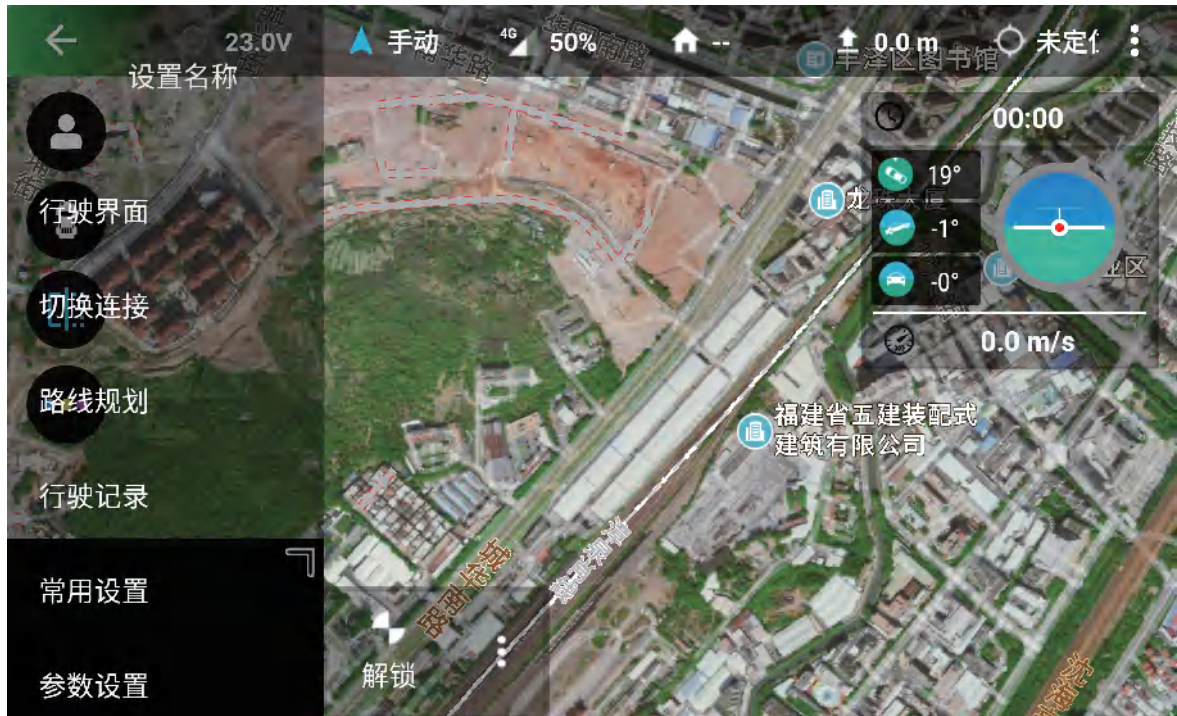
云卓车船app里行驶记录查看。

9、SIM卡的安装与4G连接操作

步骤一：插入SIM卡，如图示安装，芯片朝下，用卡针工具推压sim卡，听到咔哒一声，见sim卡完全没入卡槽，即为正确安装。

注意：请勿在S1-4G已通电下安装sim卡；

不正确的安装方式，会导致卡槽损坏。
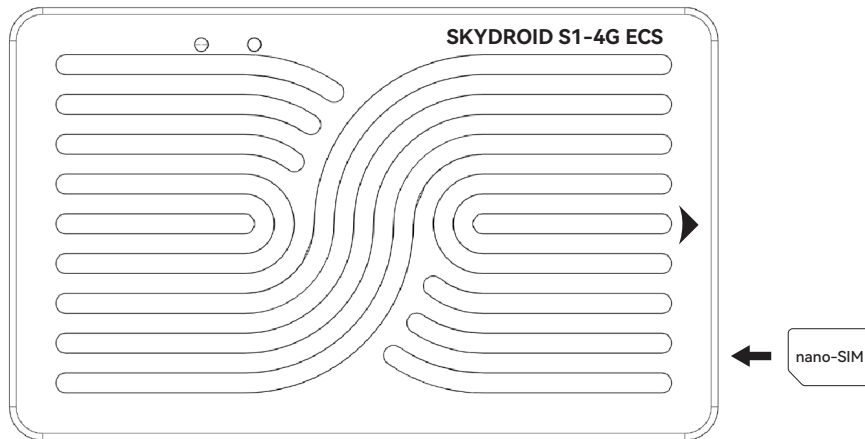
步骤二：进行2.4G对频（如已对频请跳过，未对频请看4.1）

步骤三：登录Skydroid Fly app 激活S1-4G（如已激活请跳过，未激活请看4.2)

步骤四：打开Skydroid Flyapp--首页左侧边栏--切换连接--选择S1-4G+H12Pro组合--点进入

步骤五：进入界面后点击连接将会自动进行4G绑定，绑定成功后会断开连接，在自动连接上。
（只需绑定一次，请按提示操作）

步骤六：点击顶部信号连接模式，可手动切换2.4G/4G的连接方式

10、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有无后台占用地面站

2.图像卡顿断连

①调整天线角度对准无人车，中间不要有阻挡

②更换场地，请勿在高楼、信号塔中间行。

3.镜头朦胧起雾

①气候潮湿导致镜头起雾，更换无人车储存位置

②存放时放置干燥剂

4.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, 或末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:S1-4G
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

S1 -4G User Manual

V1.1

Rover or Boat

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

1.Overview of S1-4G

1.1、Components

| H12 remote control | S1-4G | GPS（Optional） | MK43（Optional） | Directional Kit (optional) |

| Propellers | Flat antenna | C10 (optional) | 3 in 1 camera network port version(optional) | Charger |

1.2、Ports and Technical Parameters

4G antenna

2.4G antenna

2.4G binding indicate light

Binding key

SKYDROID S1-4G ECS

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

S + -

Type-C2

SIM card slot

Type-C1　GPS　CAN　POWER　LAN　MIC　SPK

5V_OUT
GPS_RX
GPS_TX
SCL/TX
SDA/RX
GND

GND
5V_OUT
CAN_1H
CAN_1

GND
GND
VIN
CRNT

RX-
RX+
TX-
TX+

MIC_N
GND
MIC_P

SPK_N
GND
SPK_P

2
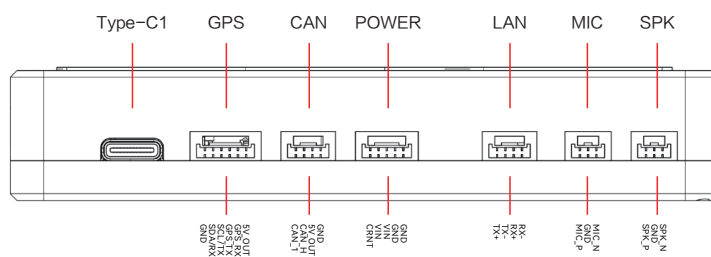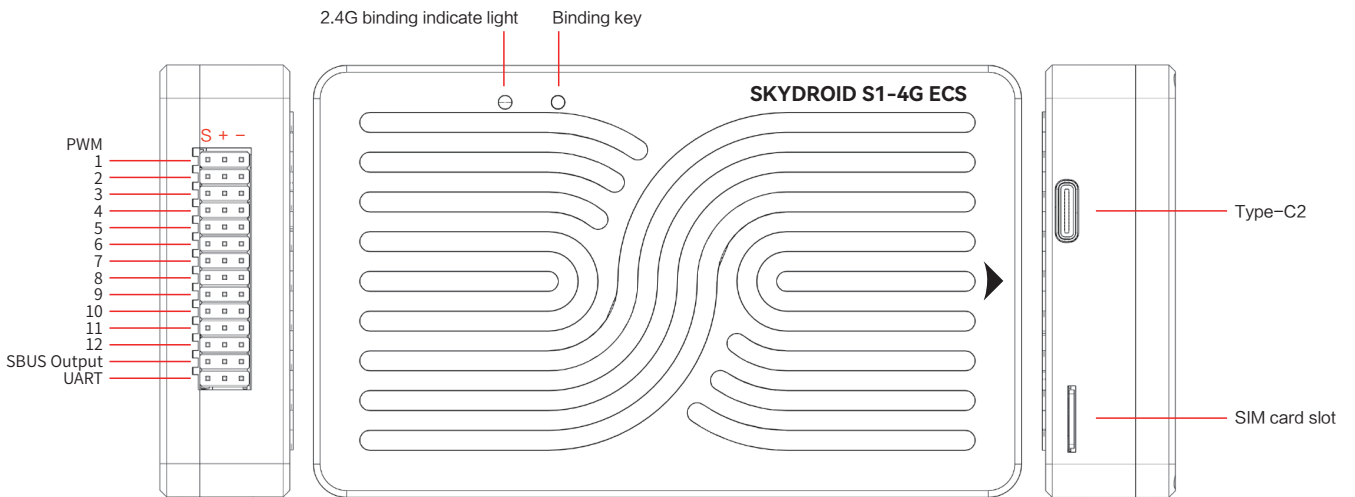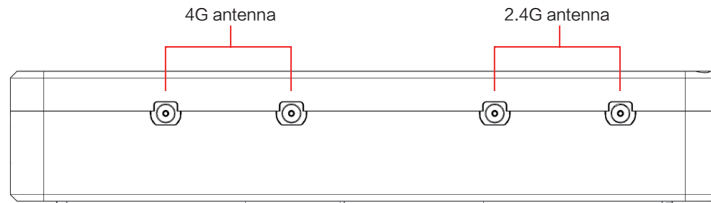
S1-4G ECS		
Technical Parameters		
Hardware	Processor	STM32F407
	Gyro	BMI088
	Electronic compass	IST8310
	Barometer	LPS22HB
	Interface	GH1.25
	2.4G feeder length	30cm
	4G feeder length	30cm
	PWM Output	12 OneShot/PWM Output (configurable)
	Receiver	Built-in R12 Pro
	Receiver antenna gain	4dBm
	Receiver transmit power	17.5dBm
	GPS	M10
	RC OUT SBUS	1
	GPS UART serial port	1
	POWER port	1
	SPK port	1
	LAN port	1
	CAN port	1
	MIC 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	107*65*19.5mm
	Weight	200g

3 in 1 IP camera(optional)	
Resolution	1080*720 default
Size	102.1*42.6*36.5mm
Working voltage	12~72V
Working current	90mA
LED power	6W

1.3、Recommendations for use

For users who are using the S1 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 rover/boat and complete the assembly of the power system;

3、Connect the remote controller to the S1-4G 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 S1-4G, auxiliary channel settings.

2、Overview of the remote controller
2.1、Remote control (Mode 2)
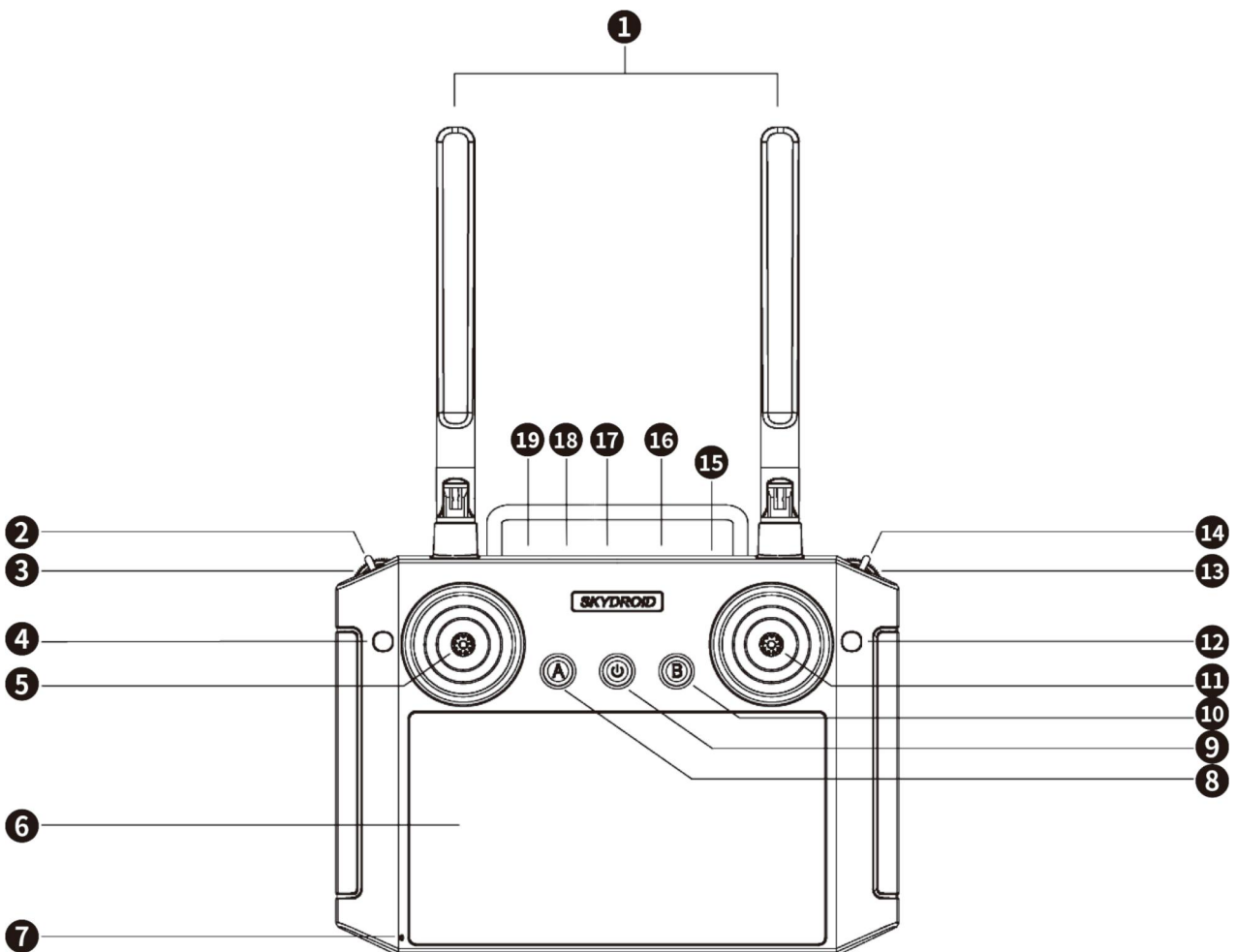
No.	Annotation	No.	Annotation
❶	2.4G 3dB antenna	⓫	Right side Stick X2、Y2
❷	Toggle 3 positions switcher/ Flying mode	⑫	Button D (No function)
❸	Thumbwheel switch G(No function)	⑬	Thumbwheel switch H(No function)
❹	Button C(No function)	⑭	Toggle 3 positions switcher(No function)
❺	Left side Stick X1、Y1	⑮	Dust-free plug
❻	5.5inch screen	⑯	SIM card slot
❼	MIC port	⑰	Type-C Charging port
❽	Button A (No function)	⑱	4 pin net port
❾	Power switcher	⑲	No function
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 the drone 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

The 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.
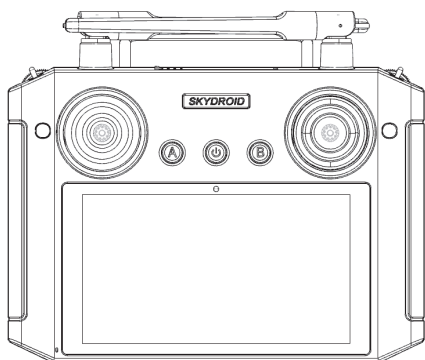
2.4、Remote control antenna angle

(1) Adjust the antenna angle of the remote control, and try to face the flying direction of the drone as much as possible;
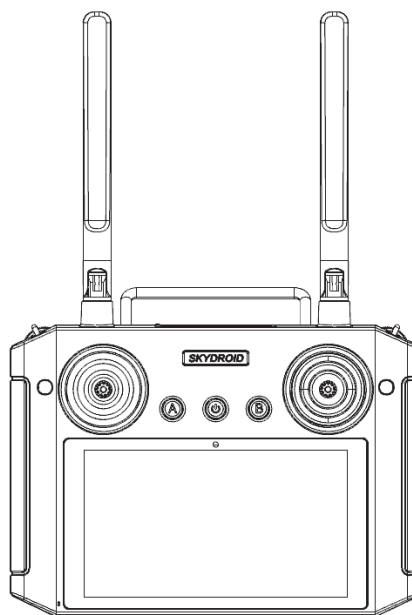
(2) Do not block or cross the antennas.

Right operation
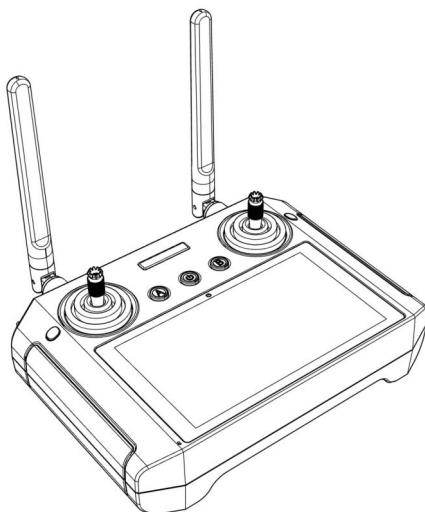
Antenna unfolded and vertically upwards

Wrong operation

Antennas cannot cross

The antenna cannot be parallel to the remote control

3.Skydroid Rover APP

3.1、Please use Skydroid Rover 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
Hided sidebar
Function expansion

Flying duration
Attitude
Airspeed
Ground speed
Climb and descent speed

Video/image display
One key to unlock

Parameter settings
Photographing
Video
Megaphone
Hided sidebar
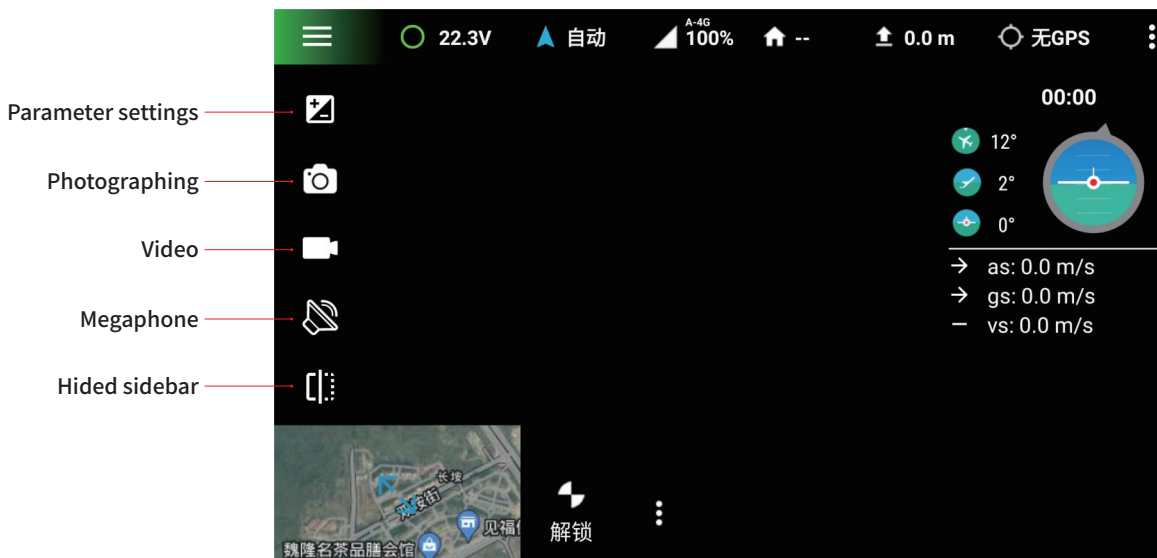
4.Preparation for the first use

Attention: It is recommended to use the 2.4G frequency band for installation and debugging. After successful debugging and flight testing without any problems, use the 4G datalink

4.1、Binding

Binding button

SKYDROID S1-4G ECS

Attention: The remote control cannot be used while charging
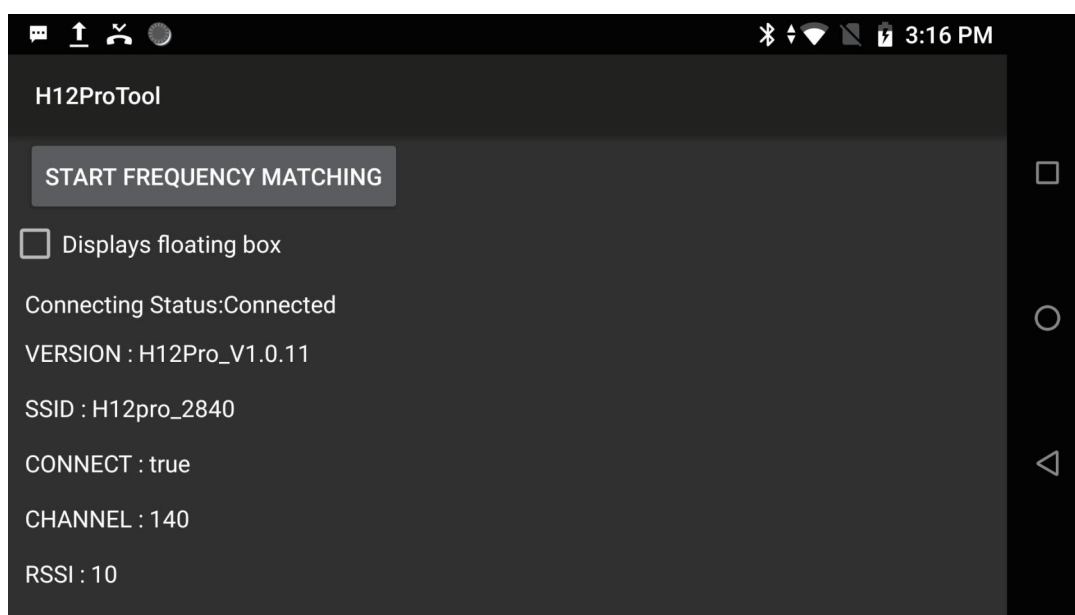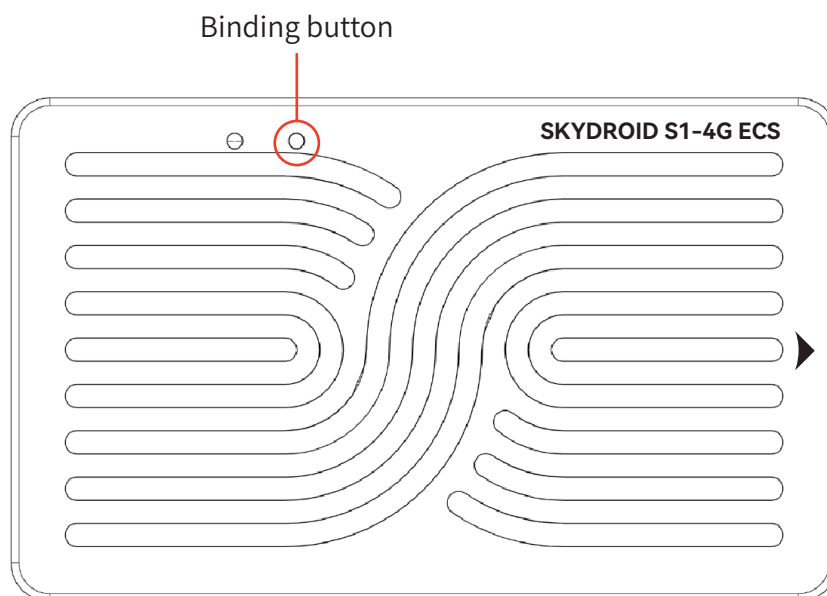
The remote control and the entire setS1-4G have already been binding before shipping.

①When powered on the S1-4G, the red light will remain on and the green light will flash slowly. After waiting 30s, press and hold the frequency button for 3 seconds, and release it when the green light flashes quickly;

②Enter the H12 pro assistant - frequency binding - start frequency matching. After successful frequency matching, the remote control will display successful frequency matching and the indicator light will flash green for 2 minutes before changing to a constant light.

4.2、Registration and activation

Insert SIM card into the remote control or connect to WiFi to open and select new user registration
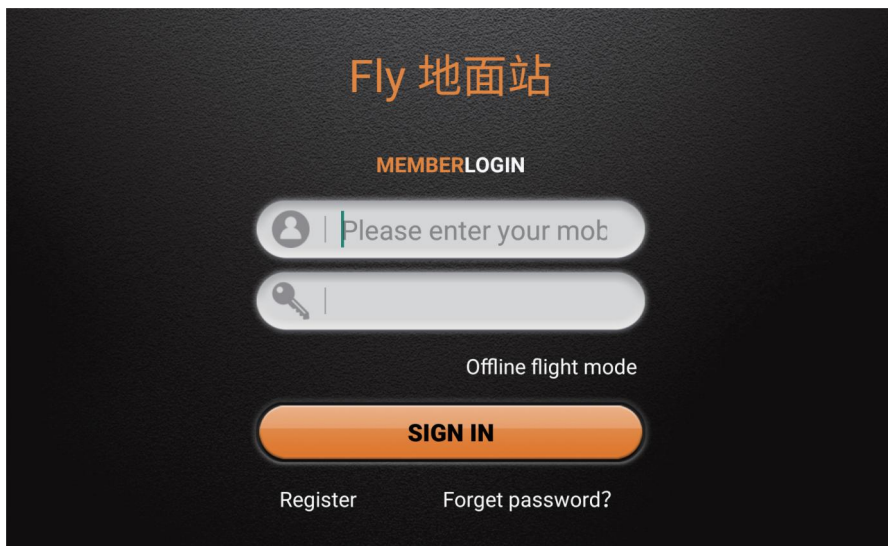
Fill in your phone number and set a password, then you can get a verification code (Pay attention to the case sensitive), After successful registration, log in
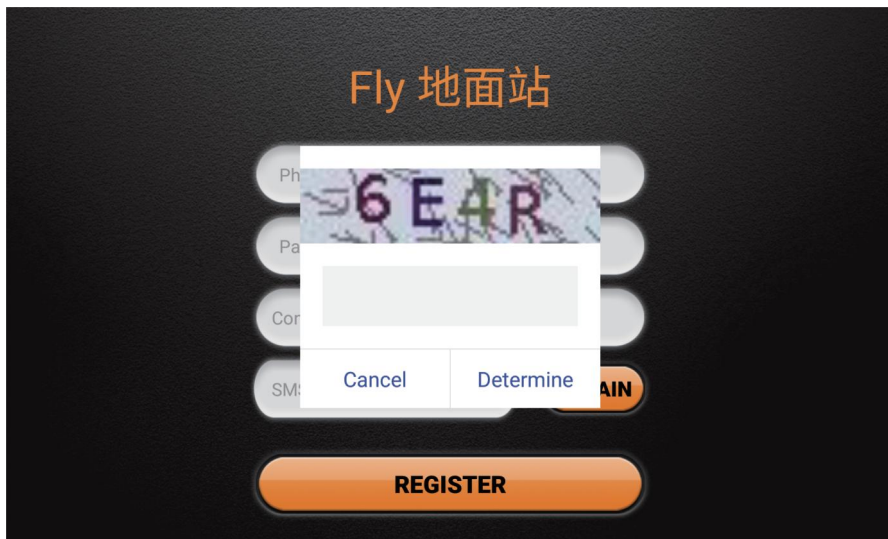
After logging in, the data transmission will automatically connect. At the first time you use it, an activation box will pop up. Please click "Go Now" to activate.
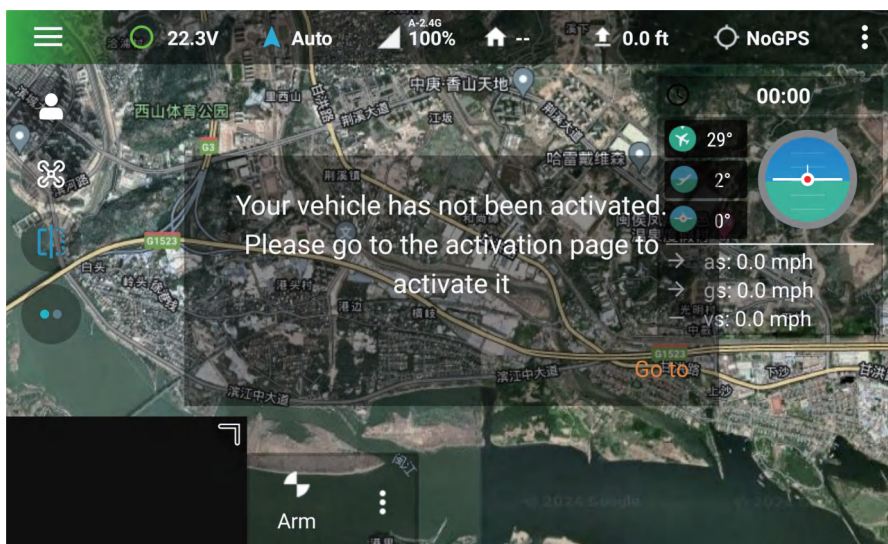
Basic flight control setting password is: 999, just use the basic setting password for the first time is OK.

4.3、Rack type selection
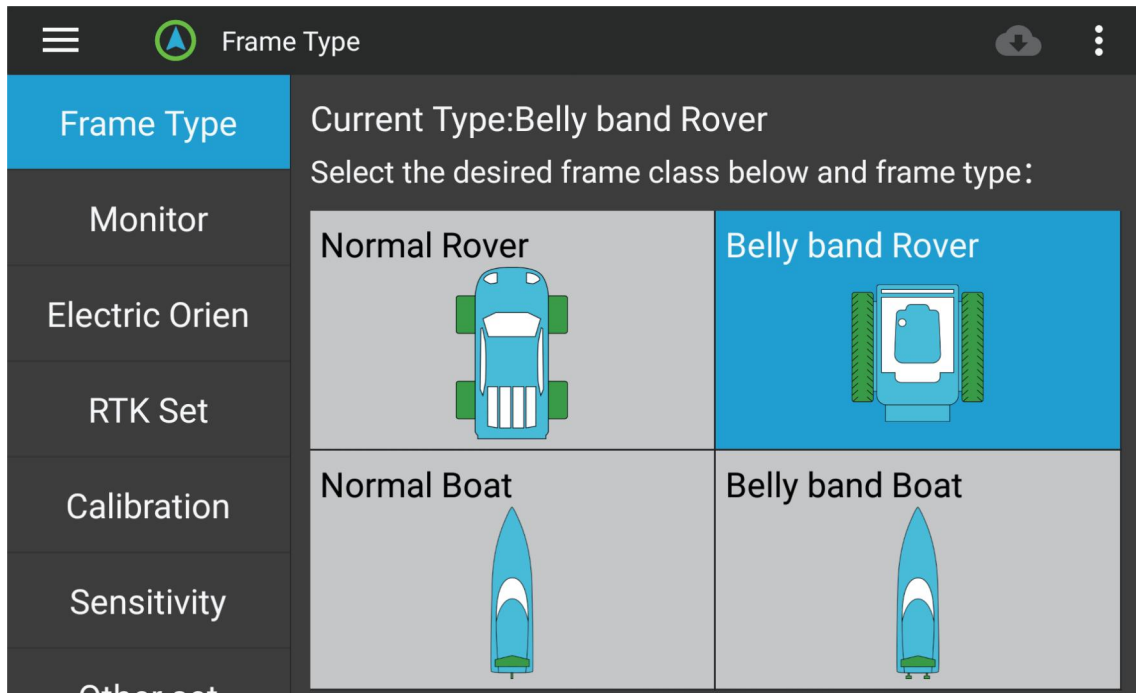
Ordinary car, differential car, ordinary boat, differential boat, Click on the pattern to save the rack type

4.4、Machine monitoring
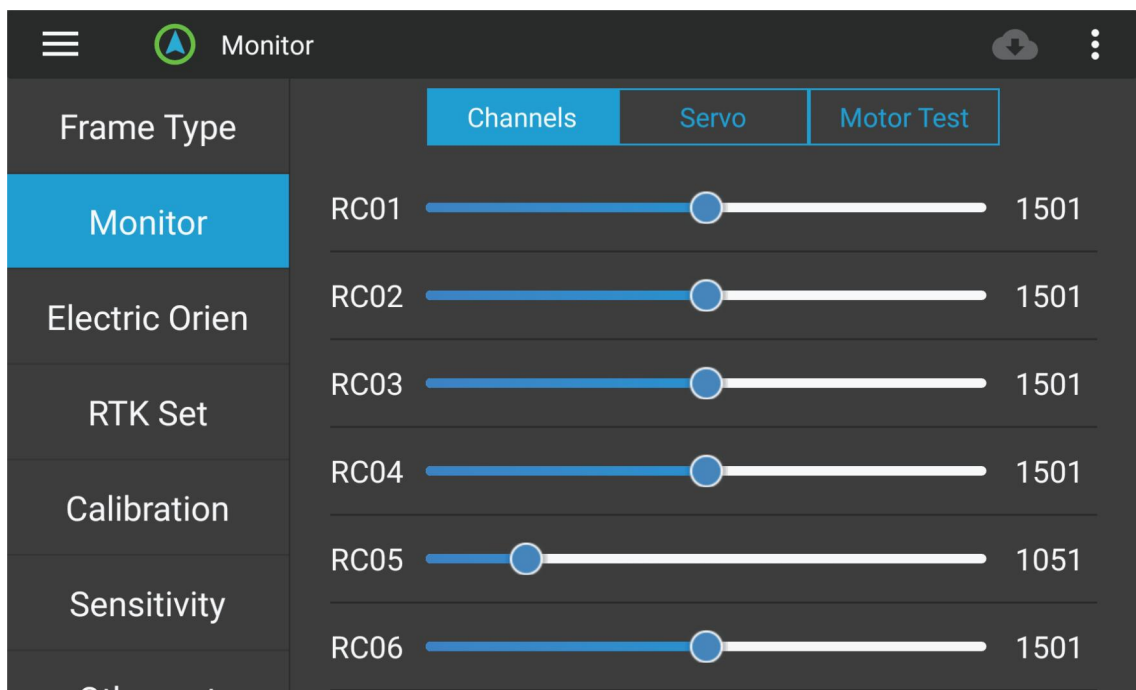
Channel view: Input rudder value in the remote control channel.
Output view: PWM channel output rudder value of S1-4G.

4.5、Motor test
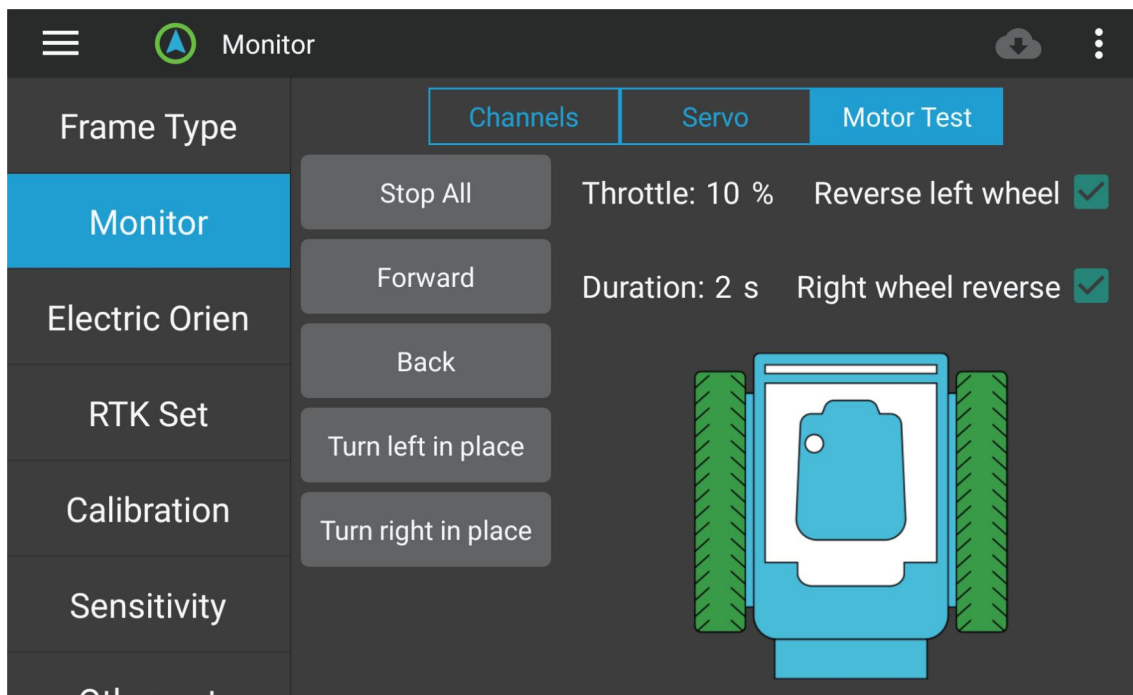
Test whether the motor direction of the machine is consistent with the actual direction

4.6、S1-4G orientation
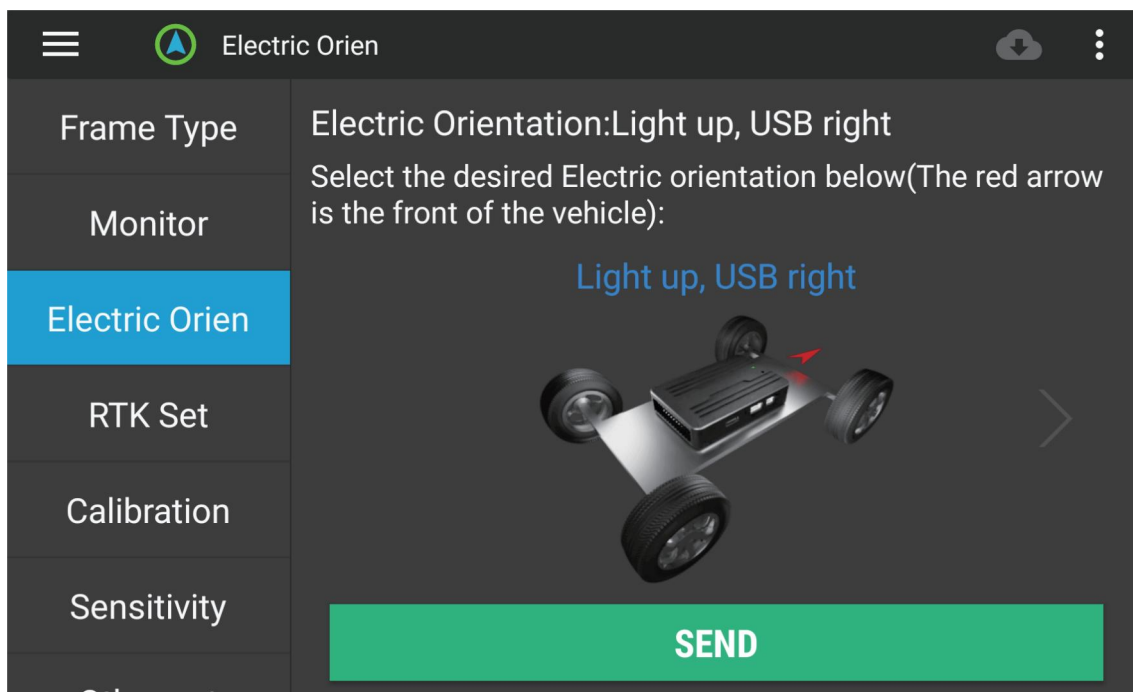
Select the installation orientation of S1-4G, click on the pattern to save it, and after saving, it is necessary to perform six sides calibration again.

4.7、RTK antenna settings
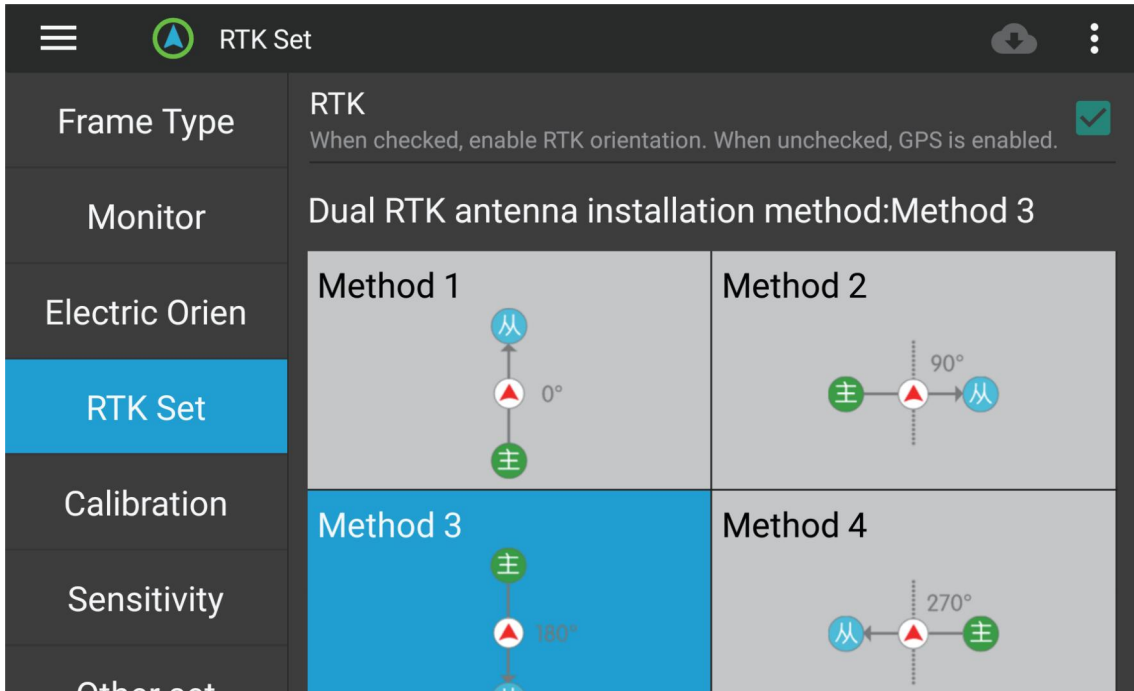
Choose when using RTK antenna, do not choose when using normal antenna. (Choose if the purchased item is a kt)

4.8、Compass calibration
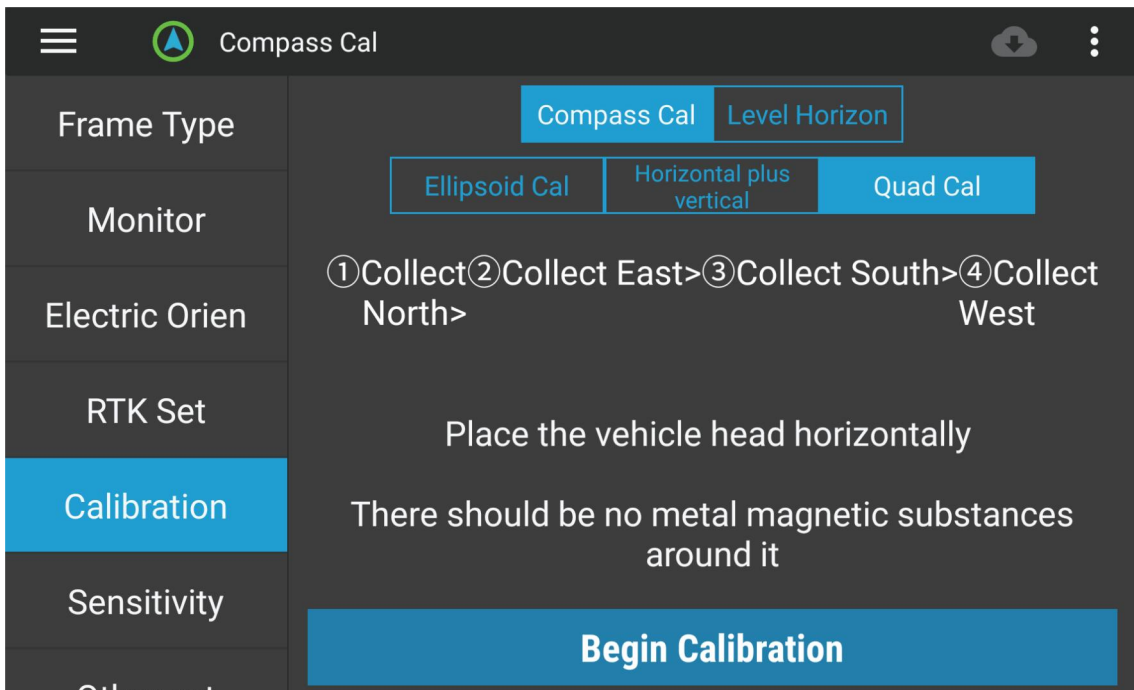
There are three ways to calibrate the compass, and you can choose the appropriate calibration method based on the size of the machine;

Ellipsoid calibration: Rotate each of the six faces once until a successful prompt appears;

Horizontal and vertical: The machine rotates horizontally and the nose rotates vertically downwards until the prompt shows successful;

Quadrilateral calibration: The machine is placed in four directions, north, south, east, and west, respectively, to collect data until a prompt shows successful.

Note: When using the directional kit, there is no need to calibrate the compass

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4.9、Sensitivity adjustment
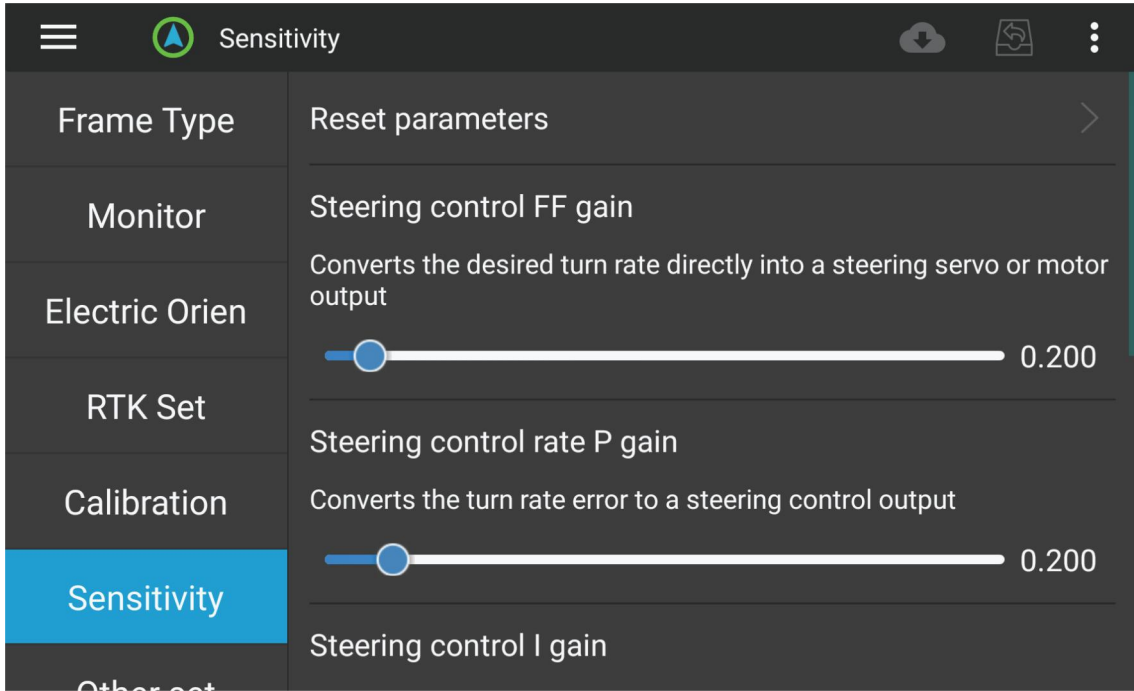
Sensitivity adjustment (pid): adjusts the state of the unmanned vehicle when traveling in a straight line in automatic mode.

P gain: The bigger the P value, the faster the steering response of the car. The smaller the P value, the slower the steering response of the car.

I Gain: If the adjustment of P and D is not ideal, I can be adjusted appropriately. I will apply a force in the direction of P, which can make the car return to its destination path faster.

D gain: If the D value is big, and the resistance of the car near the straight line is big.

4.10、Battery Setting
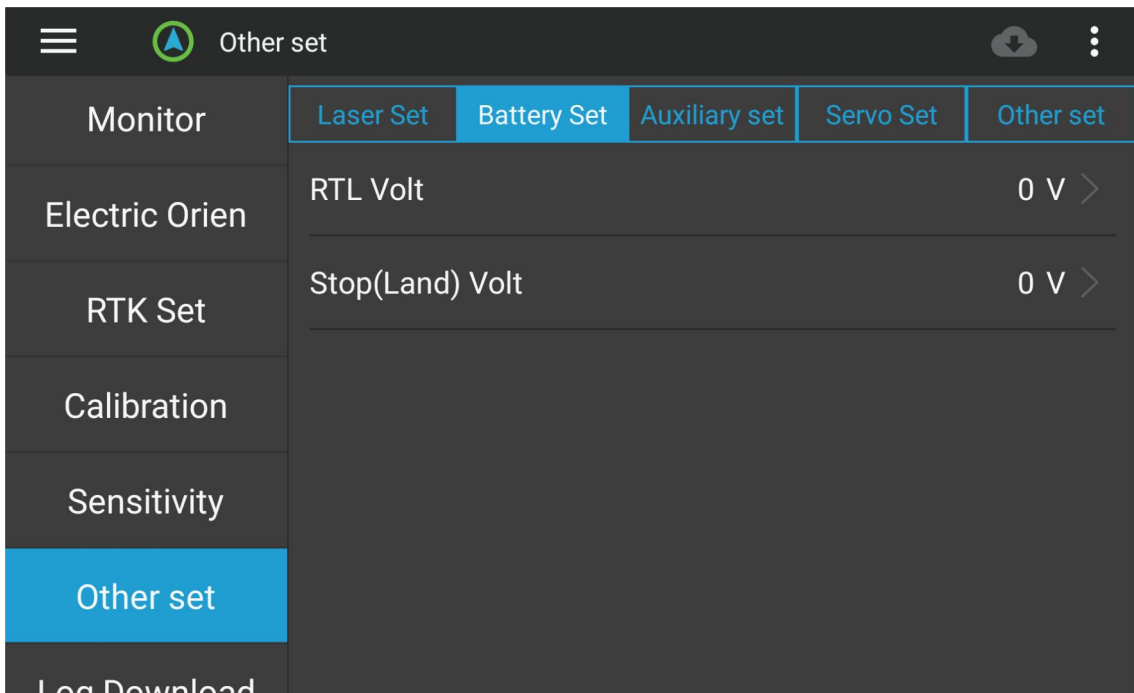
Forced return voltage: When this voltage value is reached, the rover/boat will be forced back.

Forced landing voltage: When this voltage value is reached, the rover/boat will be forced to land in place.

4.11、Motor test
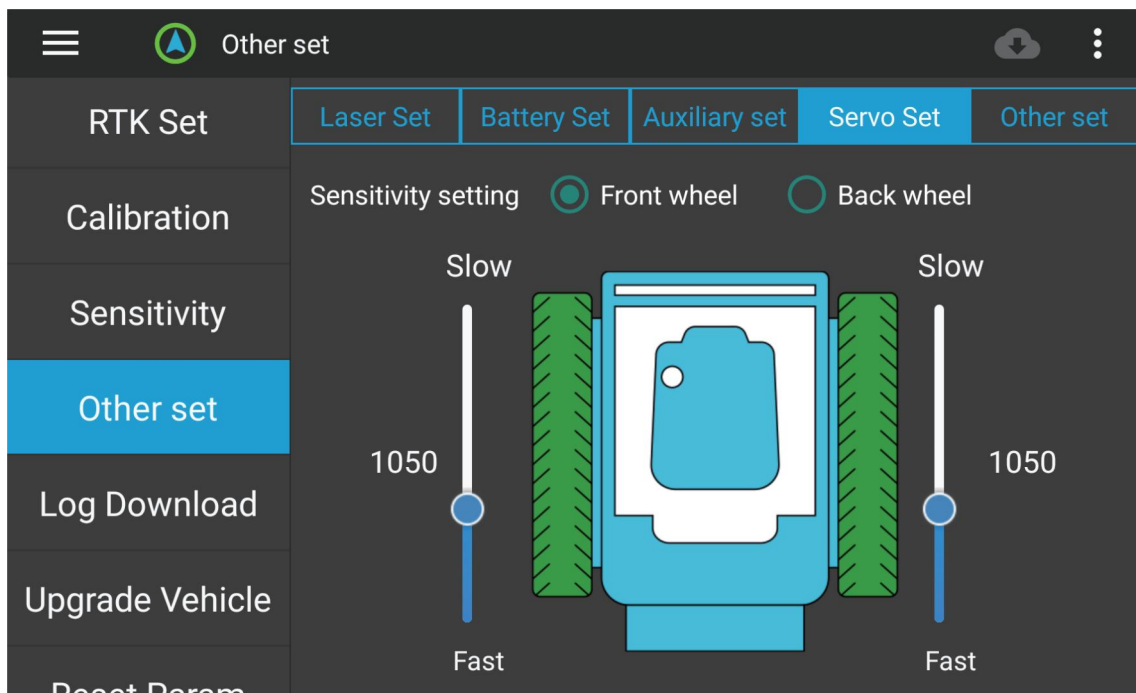
Adjust the sensitivity of the left and right wheels of the differential vehicle (boat), and manually control whether the machine runs in a straight line

4.12、Other settings
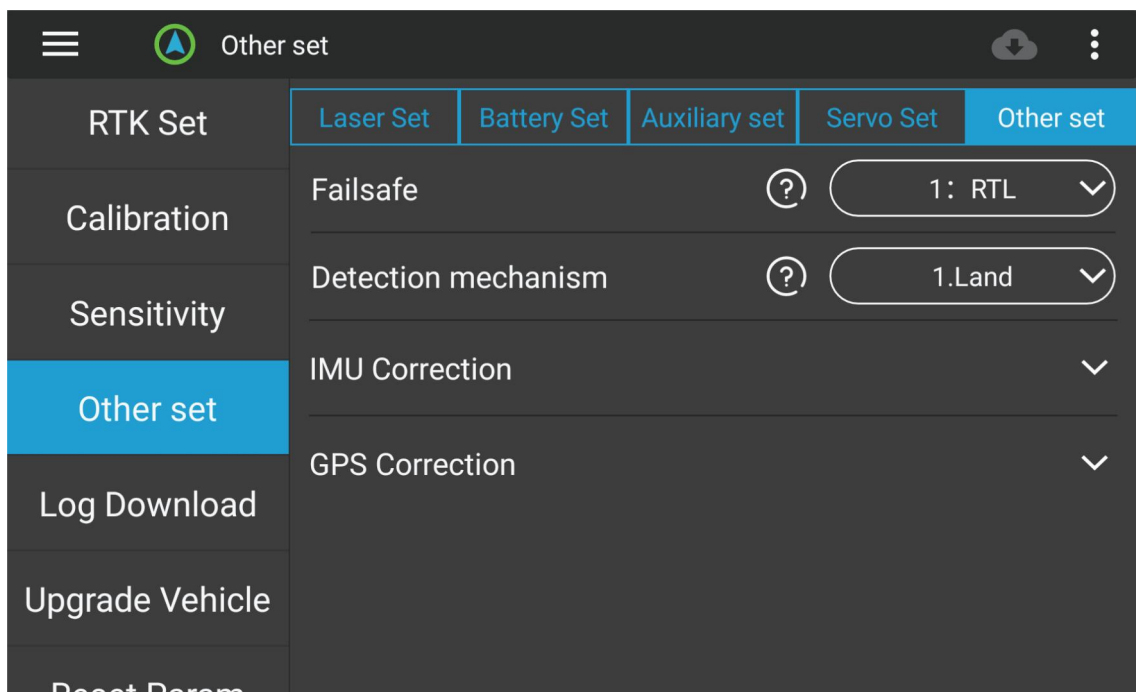
Loss of control protection: The execution action of the machine when disconnected from it.
Detection mechanism: vehicle selection on land; Ship selection water surface.

4.13、Log download
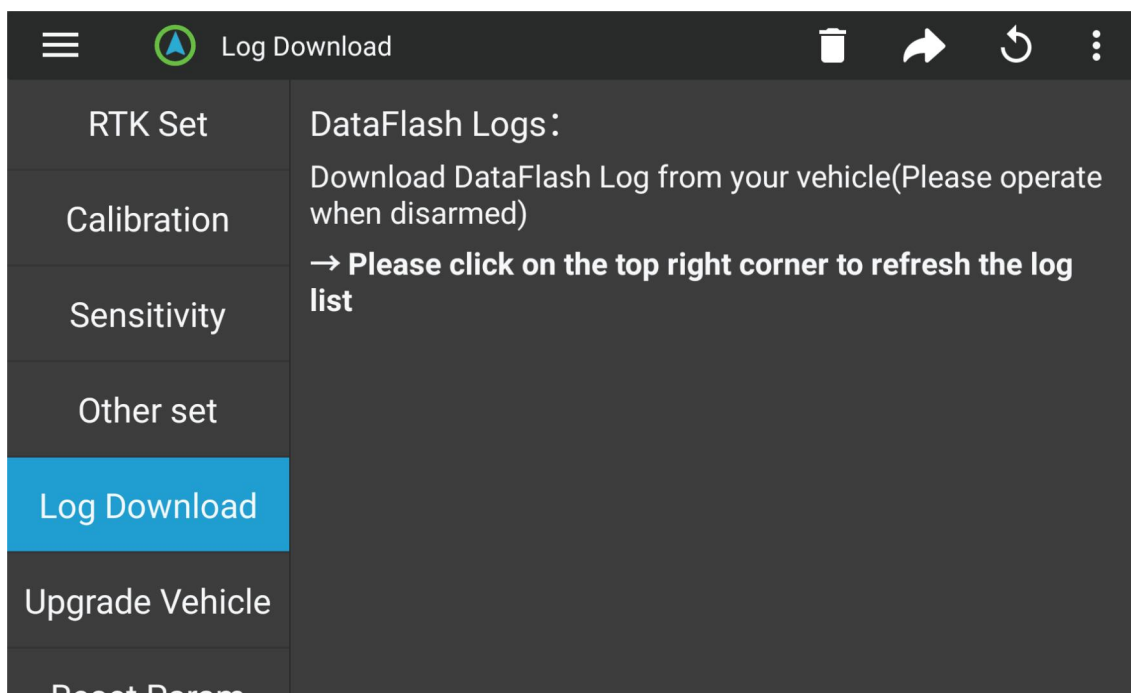
Logs can be downloaded from the machine to the remote control

Attention: Please restart the machine after downloading the logs

4.14、Auxiliary settings

1. First set the channel you need to control the servo in the H12pro Tool App (assistant), and set the fail-safe protection value. If the fail-safe protection value is 0, the current state means maintained.
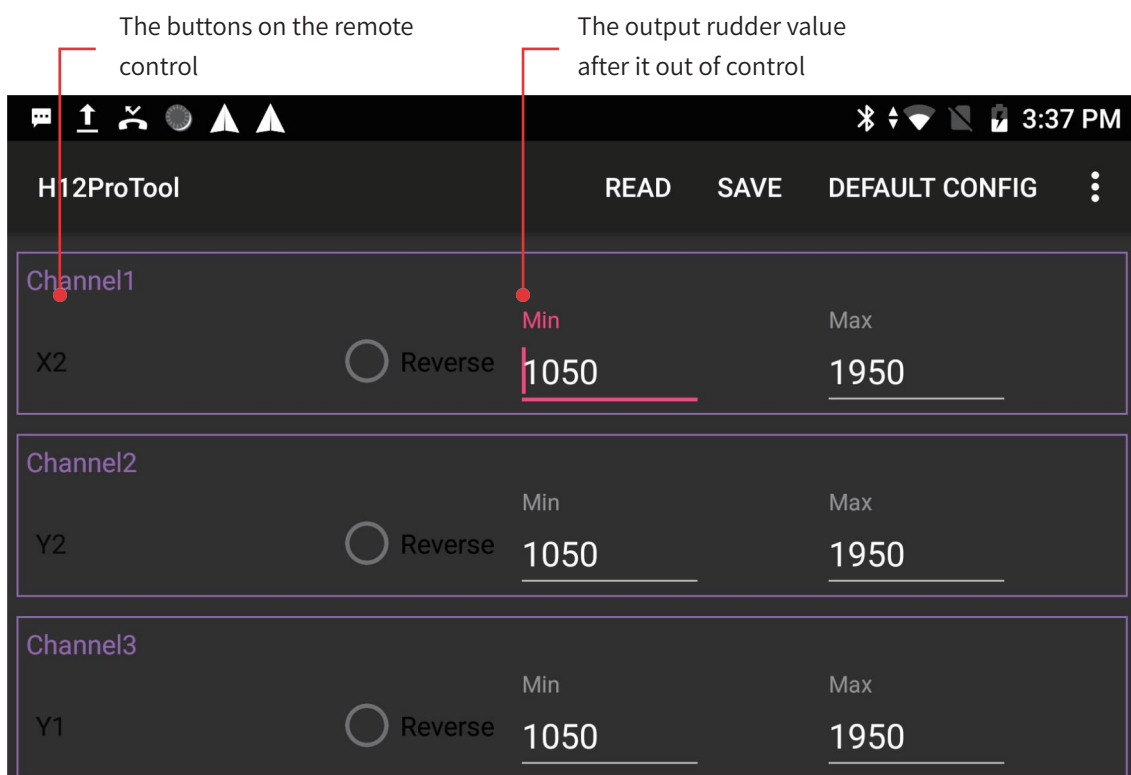
2.Binding the remote controller and the S1-4G, open the Skydroid Rover app, and modify the desired channels in the flight controller-passcode is: 999-auxiliary setting.

☰ ⓐ Other set	🔽 ⋮

RTK Set	Laser Set	Battery Set	Auxiliary set	Servo Set	Other set

Calibration

Auxiliary 1 PWM9	RC9 >

Sensitivity

Auxiliary 2 PWM10	Disabled >

Other set

Auxiliary 3 PWM11	Disabled >

Log Download

Auxiliary 4 PWM12	RC9 >

Upgrade Vehicle

Auxiliary control
Remote control output value: forward (1050), stationary (1500), backward (1950)

Reset Param
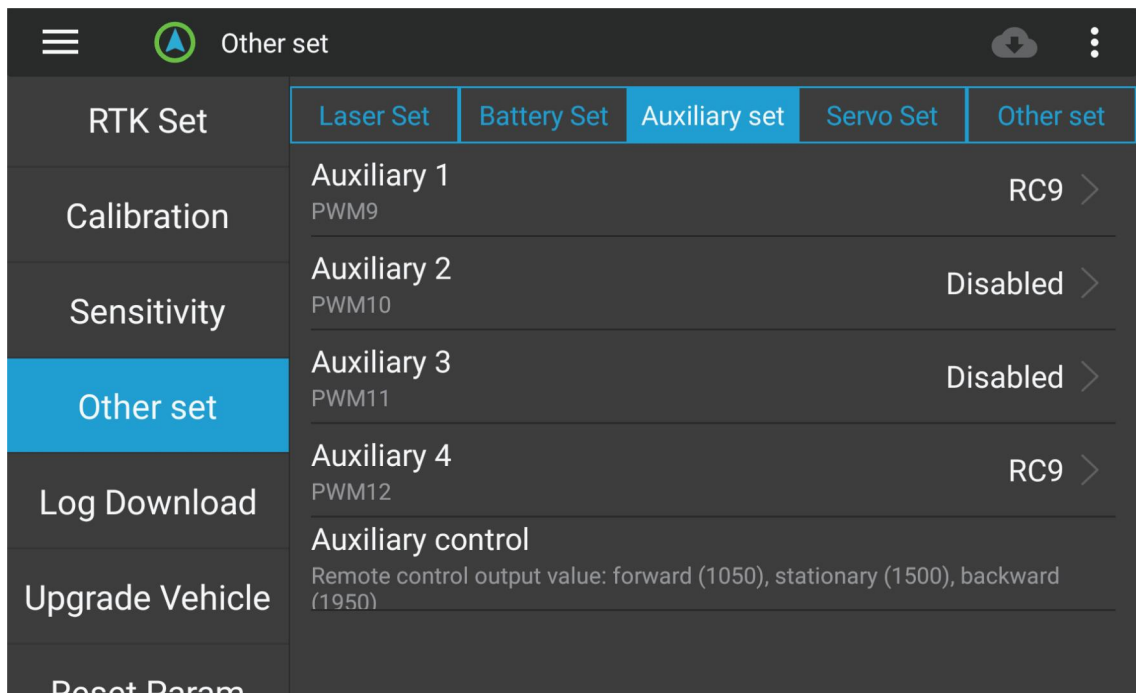
4.15、Introduction of control modes

① Hold Mode

In hold mode, when the joystick is activated, the unmanned vehicle will not respond and will remain in a stopped state with the wheels pointing forward.

② Manual Mode

In manual mode, the steering and throttle lever of the remote control directly controls the throttle and steering output of the unmanned vehicle. This mode does not require position estimation (i.e. GPS is not required). It is recommended to always assign a remote control mode switch position to this mode.

③ Auto Mode

In automatic mode, the unmanned vehicle will follow pre programmed tasks stored in the autopilot, which are controlled by navigation commands (such as waypoints) and "execute" commands. This mode requires unmanned vehicles to have GPS, and automatic mode relies on GPS because the task script relies on GPS to get location information, so GPS must be used to locate before unlocking and set out.

④ RTL Mode

After switching to RTL mode, the unmanned vehicle will turn and attempt to return directly to the last unlocked position (unless the starting position has been changed through the App).

4.16、Image connection settings

LAN
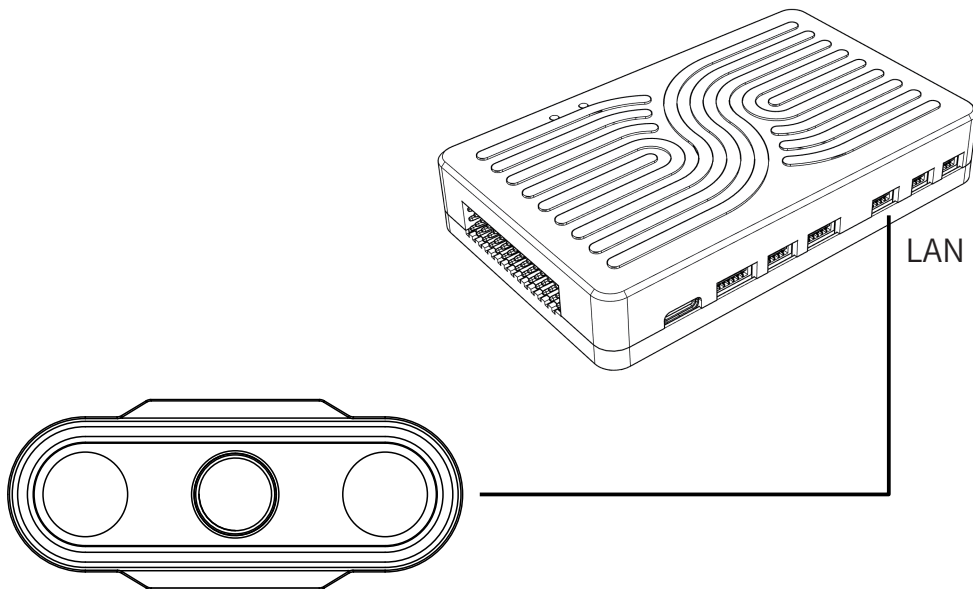
The 4P network cable of the camera is plugged into the LAN port of S1-4G, and the red and black wires are independently powered by (12V-72V)

Note: The H12Pro assistant needs to input the RTSP video stream address when displaying the camera screen

4.17、Audio function usage

(1)The definition of audio output port wiring is shown in the below

MIC SPK

P | N   P | N
GND   GND
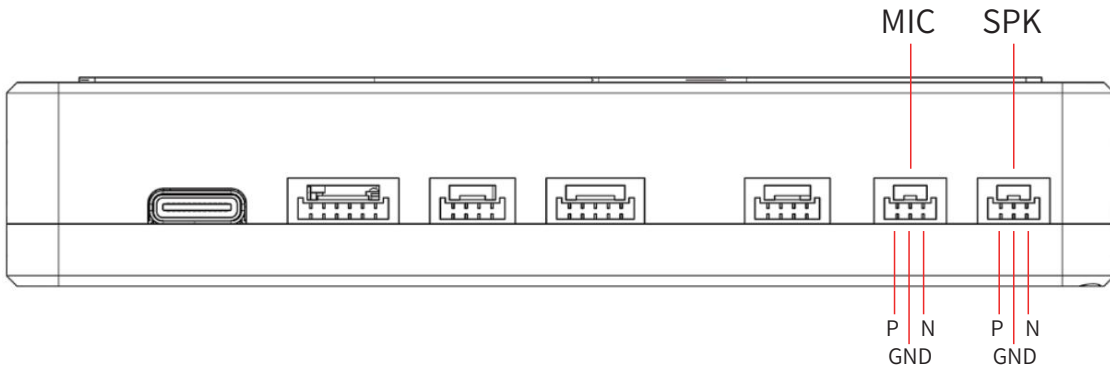
P. N is the differential signal, and GND is the ground.

(2)Use wiring diagram (with amplifier required)

SKYDROID S1-4G ECS

SPK

MIC

S1-4G

A separately powered speaker
with a power amplifier

A separately powered microphone
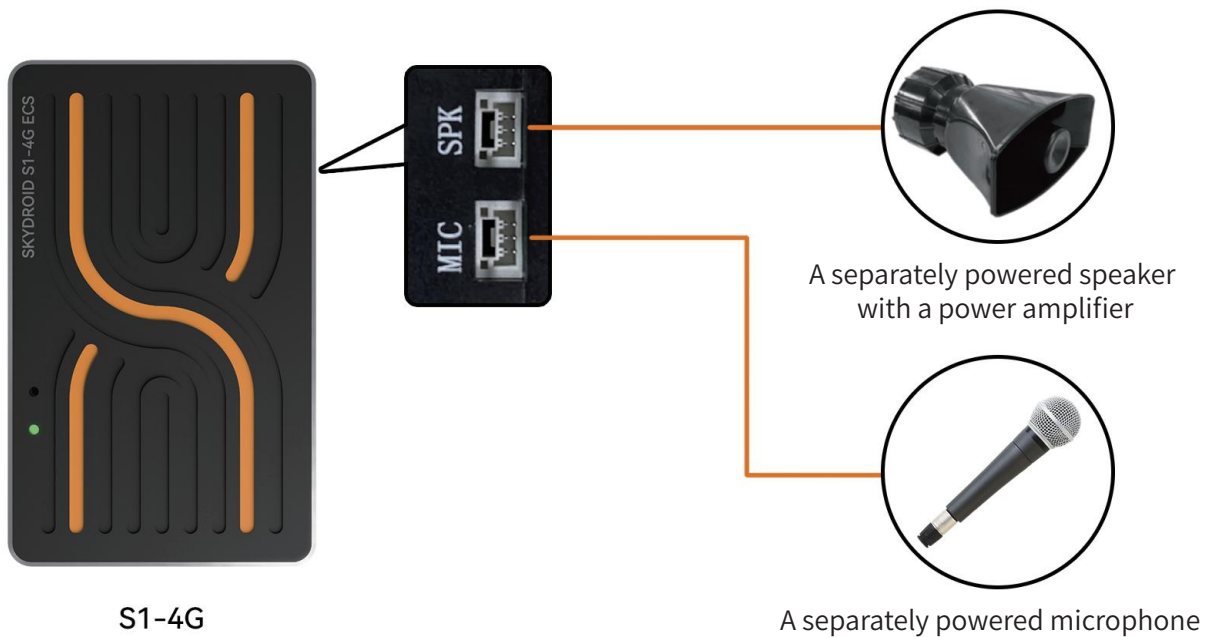
 (3) Usage

Step 1: Connect the wire sequence according to the diagram;

Step 2: Power on the flight control, speakers, and microphones;

Step 3: Click on the call icon in the app to achieve two-way call communication.

5.Out of control protection

The return methods of the rover/boat are RTL return, forced return for low battery, and lost connection return. When unlocked, if the remote control prompts that the return point has been refreshed, it indicates that the return point has been successfully recorded.

1、APP one key return home / remote control button one key return home.

2、Return home with low battery: The machine will automatically perform a low voltage return based on the forced return voltage set by the user.

3、Lost connection return: When the drone loses connection with the remote control for more than 2 seconds, it will return home automatically. In the process of losing connection and returning to home, if the rover/boat is connected again, it will continue to perform the returning procedure;

6.Hardware installation

First of all, you need to have an unmanned vehicle. Here we take a differential vehicle as an example. After you have a fully installed differential vehicle, please follow the steps below to install your S1-4G.

(1) Install S1 on the unmanned vehicle and ensure that the installation position is horizontal and the antenna side is the nose direction.

(2) Binding the S1 with the remote controller, connect to the Skydroid Rover APP, and do the previous steps to calibrate your unmanned vehicle.

(3) Press key A on the remote control to unlock. If the unlocking is normal, the unmanned vehicle will be able to use normally; If the unlocking is abnormal, check the red fault prompt on the APP and resolve it.

6.1、Install the S1-4G in your vehicle

1.Install S1-4G as close to the center of gravity of the vehicle (unmanned vessel) as possible using the foam provided. Make sure the S1-4G points forward.
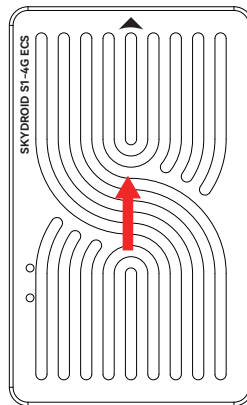
2.(Optional) Install directional kit or GPS

Orientation kit wiring diagram	GPS wiring diagram
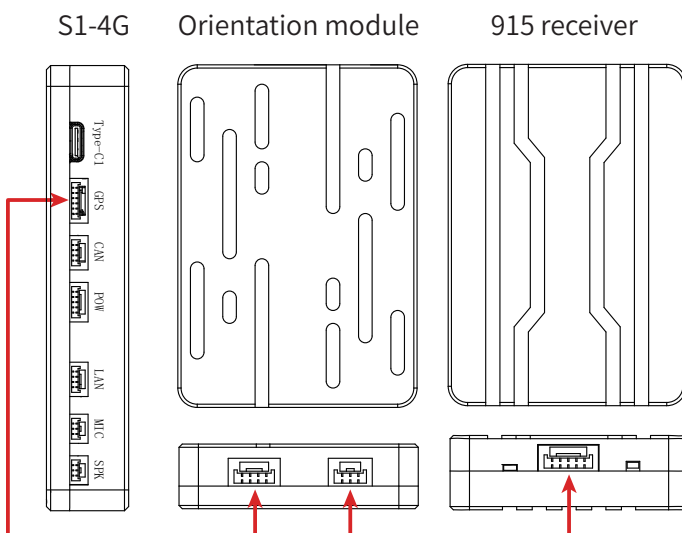
RTK settings need to be turned on to use the orientation kit, see 4.7 for details
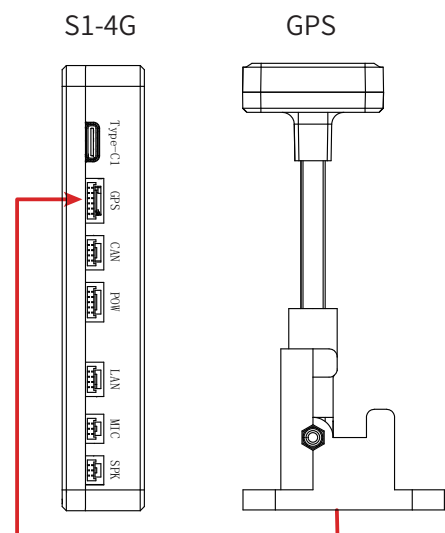
GPS can be regardless of direction, just calibrate the compass is OK.

6.2、Install the S1-4G on your unmanned vehicle

6.2.1、Ordinary vehicles and ships

Most remote controlled cars are like full size cars because they have independent servo and throttle controls. For these remote controlled vehicles, the servo (usually steering the front wheels) should be connected to the S1-4G's PWM1. The ESC of the motor (which typically controls the speed of the rear wheels) should be connected to the S1-4G's PWM3.
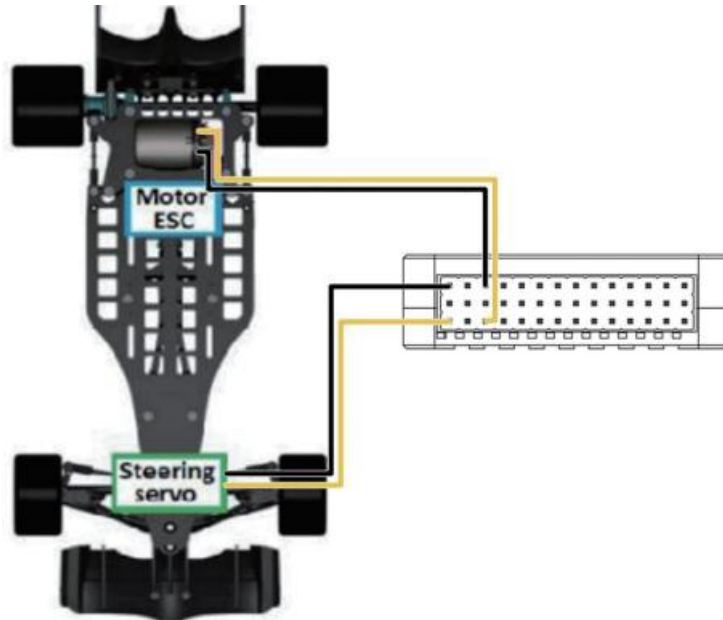
6.2.2、Differential vehicle (such as a tank)

A differential vehicle (such as a tank) controls its direction and forward/backward movement by changing the speed of two (or more) independent wheels. For these types of mobile vehicles, the left wheel should be connected to the S1-4G's PWM1 and the right wheel should be connected to the S1-4G's PWM3.
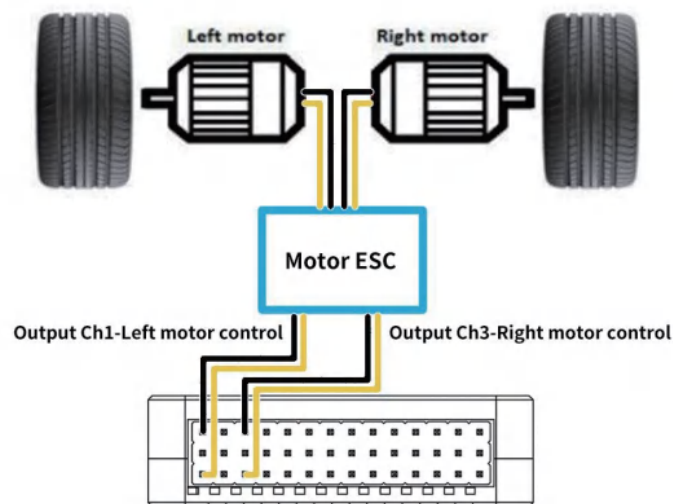

Note: Due to the lack of voltage output from the S1, connecting to the servo requires the addition of BEC module pins to supply power to the servo.

PWM parameters:

Frequency range:50-400HZ

Cycle range: 1ms min value -1.5ms neutral value -2ms max value

Waveform voltage：0-3.3v

6.3、Basic using

Note: When using S1 for the first time, it is necessary to wait for about one minute to wait the S1 to automatically configure the heading before proceeding to automatic mode (route planning), which does not affect manual mode control.

1.Fully charge the battery before driving.

2.Turn on the remote control (press and hold the power on button for a while) and insert the battery plug into the power supply port of the unmanned vehicle.

3.Wait for the unmanned vehicle self-test till succeed.

4.Open the Skydroid Rover App, which will automatically connect after opening.

5.Press the A key to unlock the unmanned vehicle. The default is manual mode.

6.If the unmanned vehicle cannot travel in a straight line in automatic mode, sensitivity adjustment needs to be performed in the app.

7.After parking, disconnect the unmanned vehicle power supply and then the remote control power supply.

7、Trajectory cloning
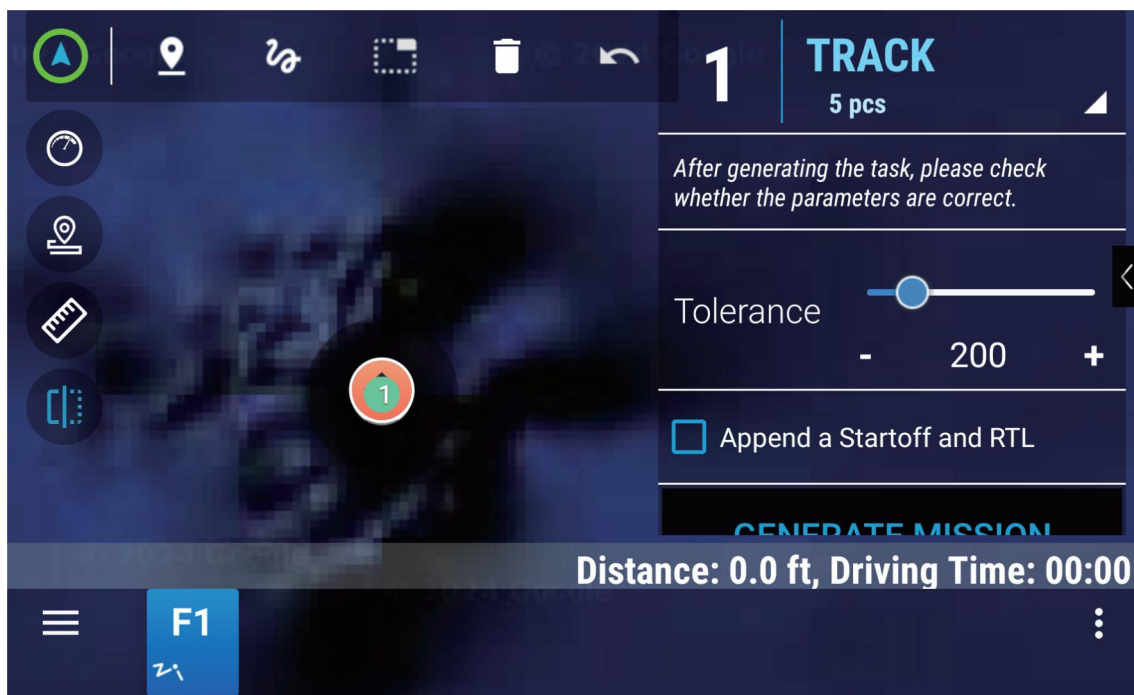
Press the track cloning icon, and after the prompt starts, manually control the vehicle's travel. And then press and hold the track cloning icon again will automatically save the track and jump to the route planning interface. At this time, you can click the route icon below to set the tolerance (density of waypoints). After the setting is completed, click the lower right corner to send the task, toggle the three-lever switch to switch to automatic mode, and the unmanned vehicle will start executing the planned route.

8、Log download and view
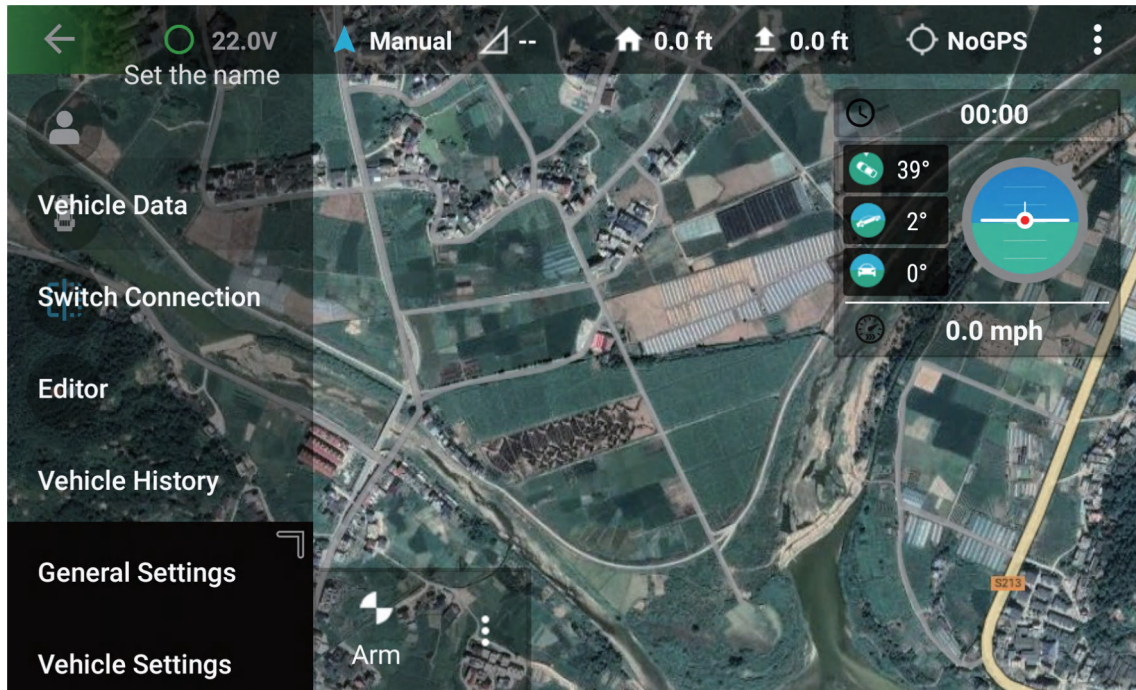
View flight records in Skydroid Rover app.

9、SIM card installation and 4G connection operation

Step 1: Insert the SIM card and install it as shown in the below diagram, with the chip facing downwards. Use a card pin tool to push and press the SIM card, and hear a "Ka" sound. The SIM card is completely inserted into the card slot, indicating correct installation.

Attention: Do not install a SIM card when S1-4G is powered on;

Incorrect installation way can cause damage to the card slot.
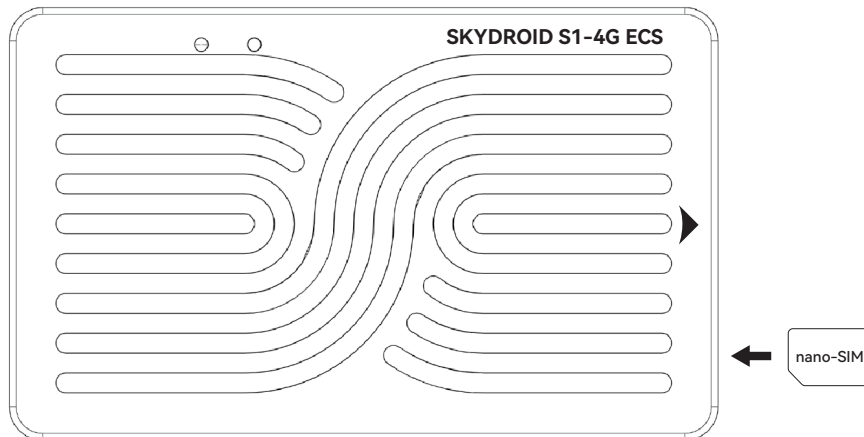
Step 2: Binding 2.4G (skip if already binding, see 4.1 if not binding)

Step 3: Log in to the Skydroid Fly app to activate S1-4G (if activated, please skip; if not activated, please refer to 4.2)

Step 4: Open the Skydroid Fly app ->Left sidebar on the homepage ->Switch connections ->Select S1-4G+H12Pro kit ->Click to enter
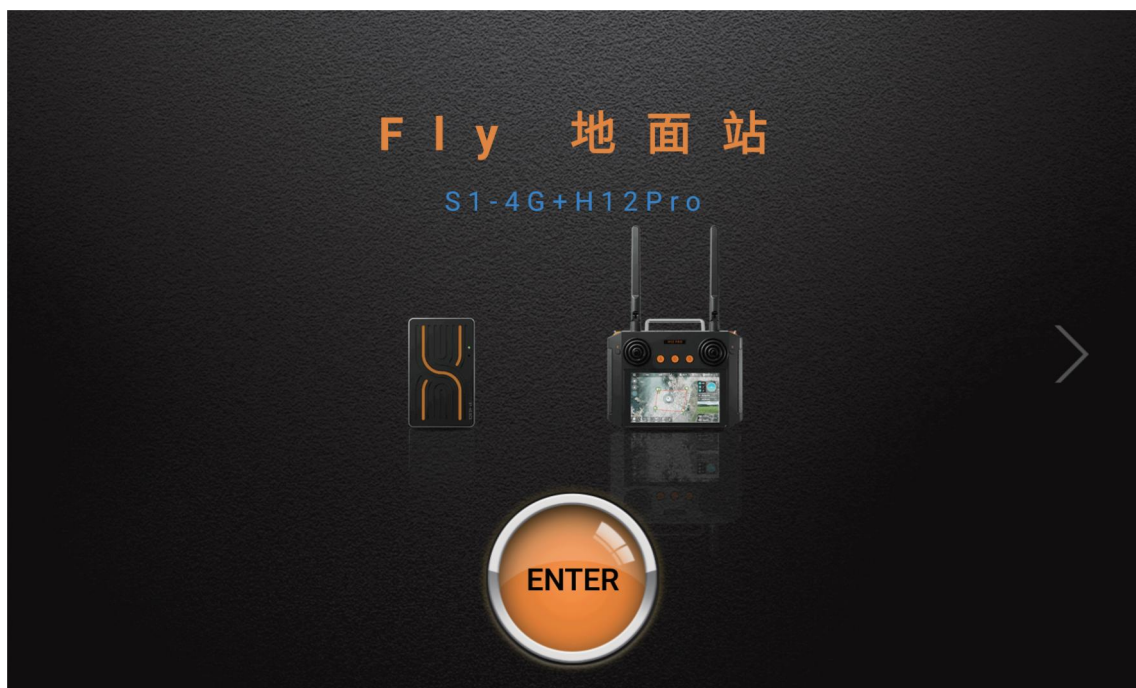
Step 5: After entering the interface, clicking "Connecting" will automatically perform 4G binding. Once the binding is successful, the connection will be disconnected, and will automatically connect again. (Only need to bind once, please follow the prompts).
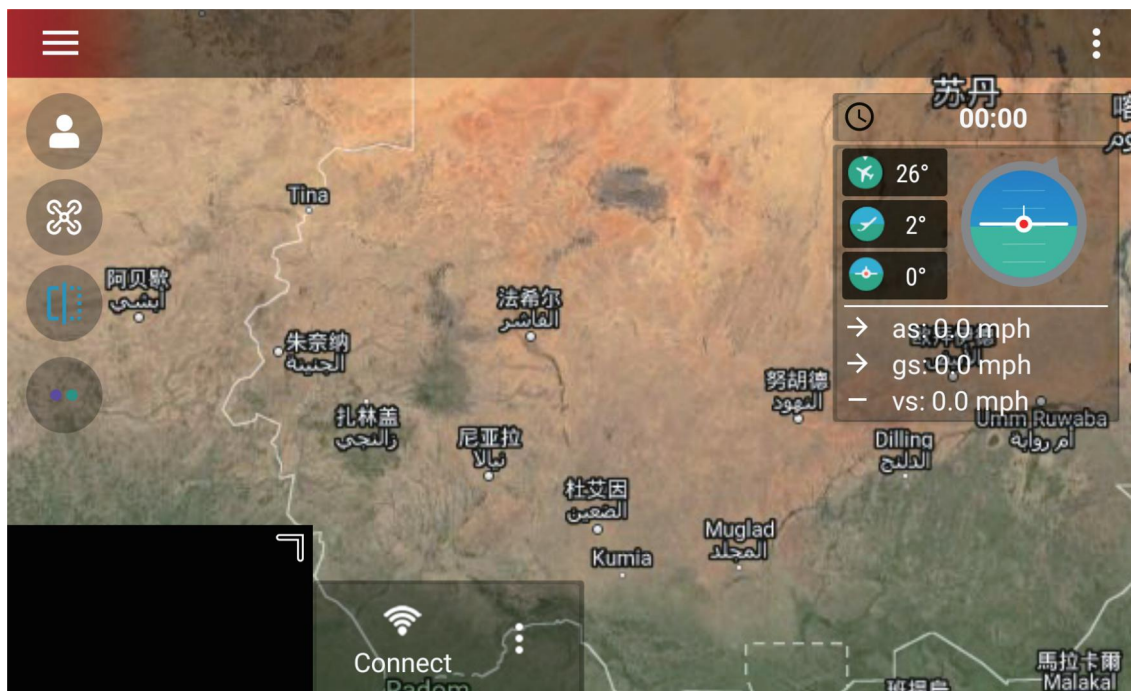
Step 6: Click on the top signal connection mode to manually switch between 2.4G/4G connection modes
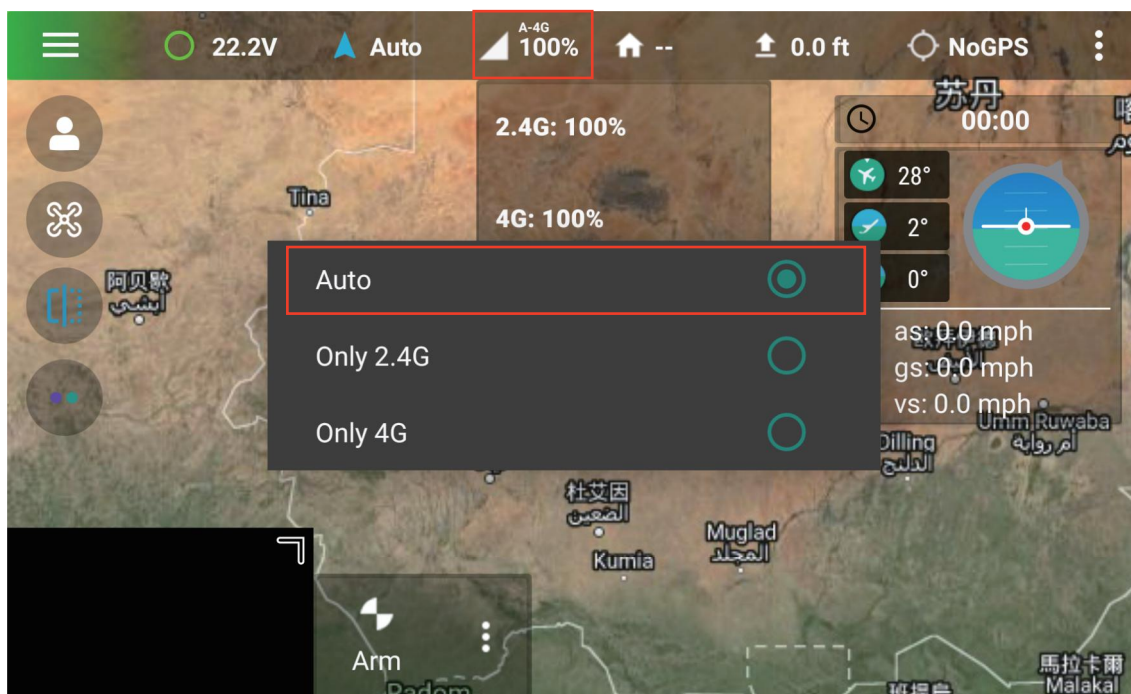
10、FAQ

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.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

4.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: S1-4G
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