

SKYDROID 云卓

云卓科技（福建）有限公司



云卓 S3 专业版用户手册

V1.0

注意

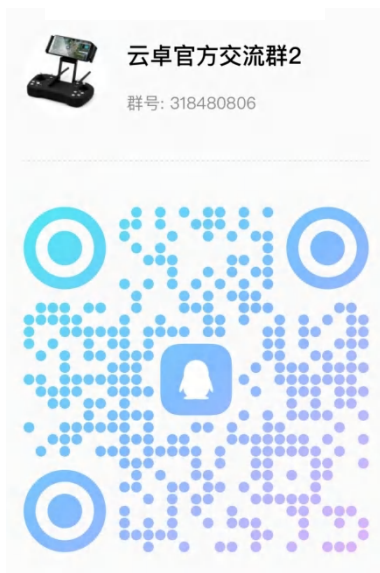
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注意：如果不遵循说明进行操作，可能会导致财产损失、重大事故和严重伤害。

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云卓官方 QQ 群



云卓官方微信群



售后服务条款

- 1.本条款仅适用于云卓科技（福建）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.云卓产品将由云卓科技（福建）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

一、S3 概览.....	1
1.1、产品特性.....	1
1.2、物品清单.....	1
1.3、端口和定义.....	2
1.4、S3 尺寸说明.....	3
1.5、技术参数.....	4
1.5、使用环境条件.....	4
1.6、使用建议.....	5
二、第一次接触准备.....	5
2.1、安装航电系统.....	5
2.2、安装 GNSS 天线.....	6
2.3 安装接收机和数传线连接.....	7
2.4 电机顺序以及旋转方向.....	8
三、Fly GCS APP 使用.....	9
3.1、注册、激活.....	9
3.2、APP 主页面.....	10
四、航电系统调参（调参界面-长按飞机图案）.....	11
4.1、机架类型选择.....	11
4.2、轴距设置.....	12
4.3、飞控监测.....	13
4.4、机头朝向.....	13
4.5、GPS 设置.....	14
4.6、RTK 定位设置.....	15
①连接云卓 RTK 基站.....	15
②网络 RTK 设置（需选配定向模块且无 915 接收机和基站）.....	17
4.7、椭圆校准.....	17
4.8、电调校准.....	18
4.9、水平校准.....	19
4.10、电机测试.....	20
4.11、基础设置.....	20
4.11.1、姿态设置.....	20
4.11.2、刹车设置.....	21

4.11.3、导航设置（需长按飞机图标）	21
4.11.4、速度设置	22
4.11.5、电量设置	22
4.12、其他设置	23
4.13、辅助设置	24
4.13、地理围栏	24
4.15、日志下载与查看	25
4.16、飞控升级	26
4.17、恢复出厂	27
五、失控保护	27
六、飞行控制	28
6.1、飞行模式介绍	28
6.2、解锁起飞	29
6.3、降落上锁	29
七、常见问题解答	30
免责声明	31

一、S3 概览

1.1、产品特性

S3 系列航电系统在设计与性能上实现了全面升级，其核心搭载了高性能的 STM32H7 系列主控芯片，为飞行控制提供了强大的运算支持。内部 IMU 采用高性能 BMI088 传感器，并经过精心减震优化设计，确保在复杂飞行环境中也能稳定、高效地采集姿态数据，极大提升了精准度与可靠性。此外，航电系统外壳特别增设了螺丝安装固定孔，不仅简化了安装流程，更确保了装配的稳固性，为无人设备的安全行驶筑起了坚实防线。

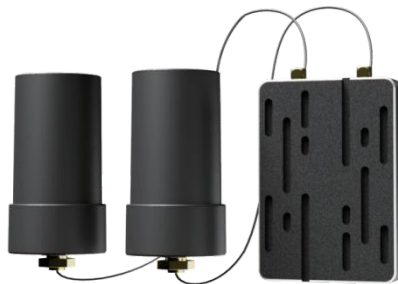
1.2、物品清单



S3

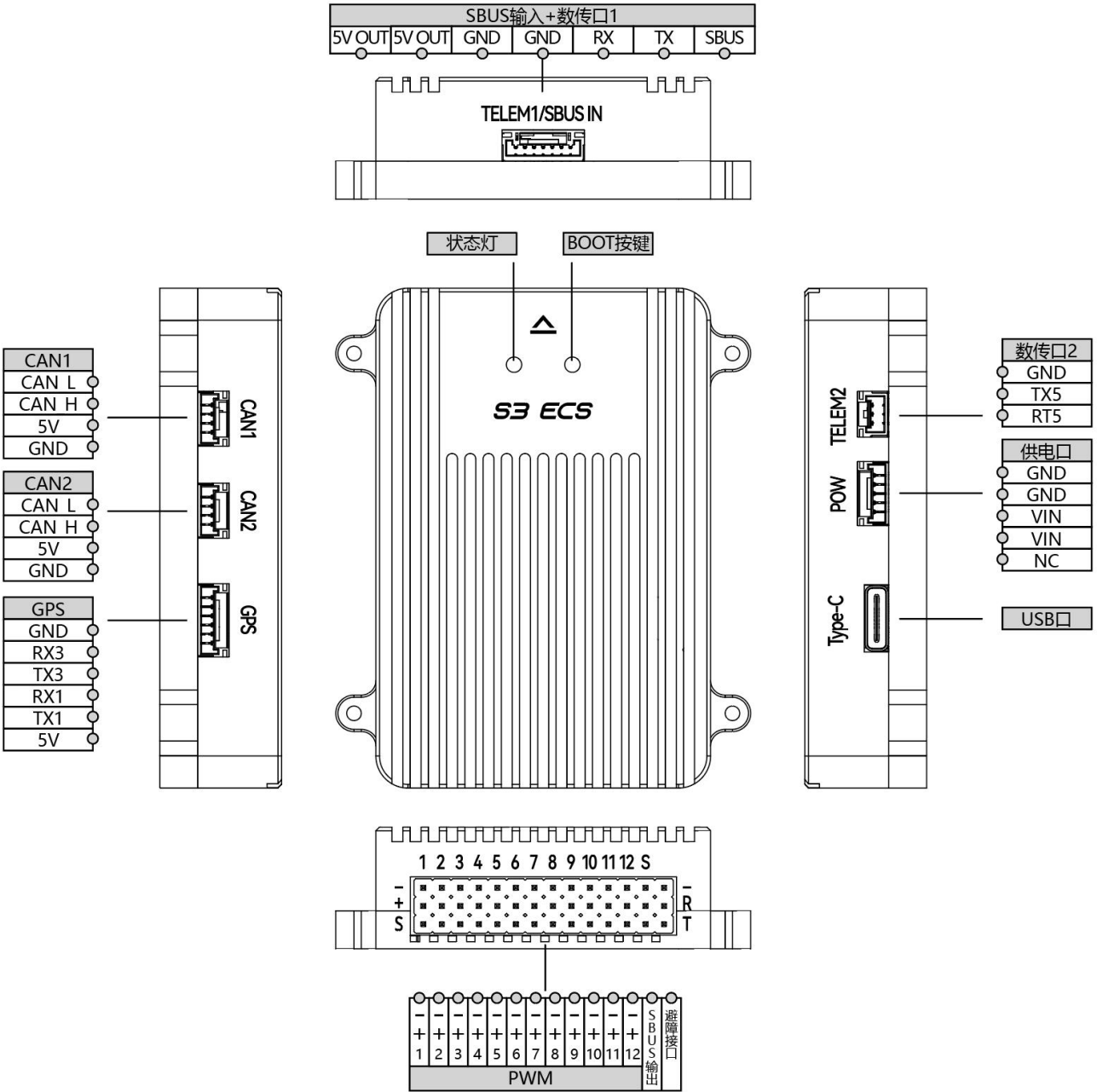


GPS(选配)



定向模块（选配）

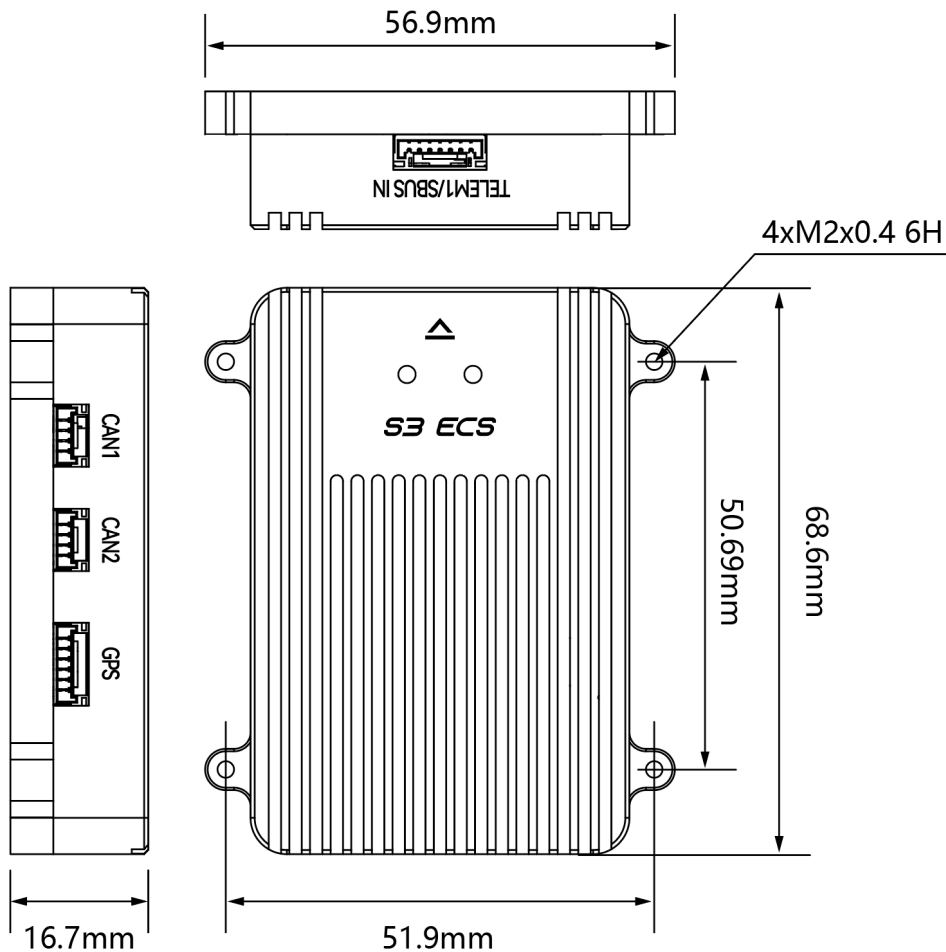
1.3、端口和定义



航电系统状态灯含义：

红蓝快速闪烁	IMU 初始化中
红蓝绿快速闪烁	电调校准模式
蓝黄交替闪烁	GPS 故障
红黄闪烁	EKF 故障
黄色闪烁	电池故障/遥控器信号丢失
绿灯常亮	解锁状态+3D 定位
蓝灯常亮	解锁状态+未定位
绿灯闪烁	未解锁状态+3D 定位
蓝灯闪烁	未解锁状态+未定位

1.4、S3 尺寸说明



1.5、技术参数

S3 航电系统		
硬件参数	主处理器	STM32H743
	陀螺仪	BMI088
	气压计	MS5611
外部接口	PWM 输出	12
	SBUS OUT	1
	GPS 串口	1
	罗盘串口	1
	POWER 电源口	1
	数传接口	2
	SBUS 输入	1
	CAN 接口	2
	避障接口	1
	TYPE-C 接口	1
支持机型	无人车、无人船、3~8 轴多旋翼	
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	-20°C~65°C
重量与大小	大小	56.9x16.7x68.6mm
	重量	60g

1.5、使用环境条件

注意：

- 工作温度：-40°C~80°C。
- 相对湿度：Not exceed 85%。
- 大气压力：86kPa ~ 106kPa。
- 使用地点不允许有爆炸危险的介质，周围介质中不应含有腐蚀金属和破坏绝缘的气体及导电介质，不允许充满水蒸气及有严重的霉菌存在。
- 使用地点应具有防御雨、雪、风、沙、灰的设施。

1.6、使用建议

对于初次使用 S3 航电系统的用户来说，建议分步骤完成航电系统的入门使用：

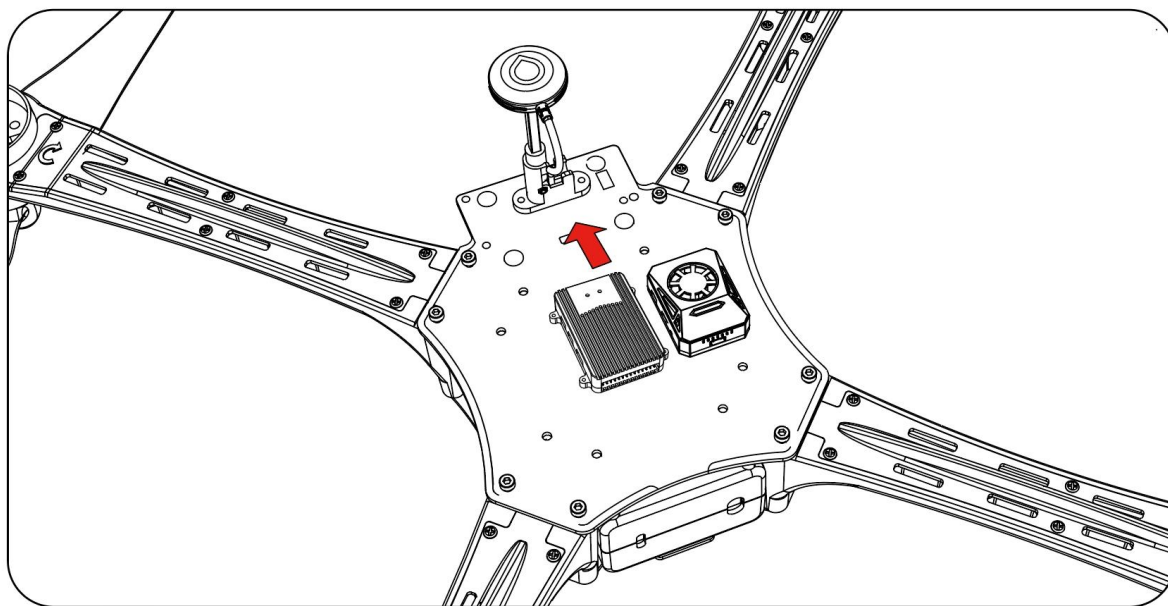
- 1、组装飞机，完成动力套的装配；
- 2、首先安装 FLY GCS 地面站控制软件，熟悉地面站界面的各个菜单功能；
- 3、遥控器连接航电系统完成罗盘校准和电机校准；
- 4、检查各类参数设定；
- 5、第一次解锁起飞；

二、第一次接触准备

2.1、安装航电系统

S3 应该靠近飞行器的重心位置，使用螺丝孔进行安装固定，若偏离载具重心位置安装，则需设置 IMU 位置偏移参数。

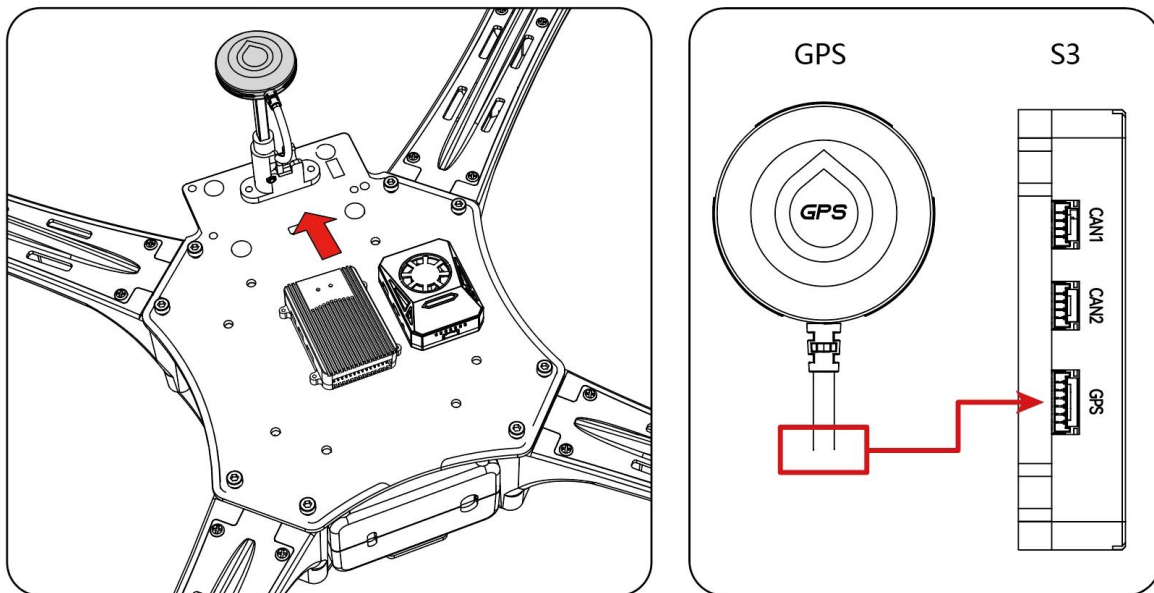
默认安装方向是机头方向，当安装其他方向时，需要使用 FLY GCS 进行调参设置。



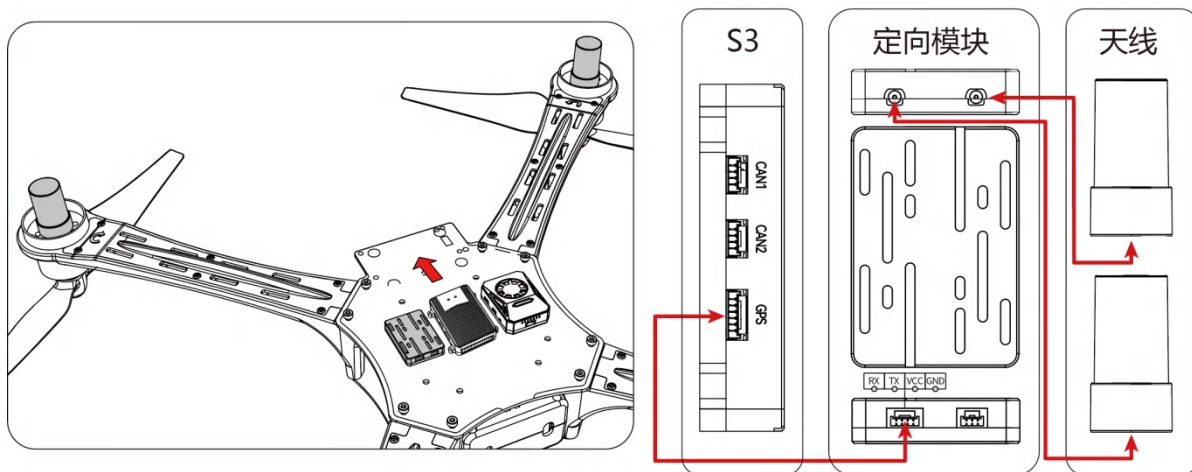
2.2、安装 GNSS 天线

①安装 GPS 模块

将 GPS 粘贴到支架上（支架需自备）并安装到飞行器上，拧紧螺丝，GPS 没有固定安装方向。



建议：GPS 模块带有磁罗盘，安装时远离航电系统主板、分电板等带有磁干扰的设备。



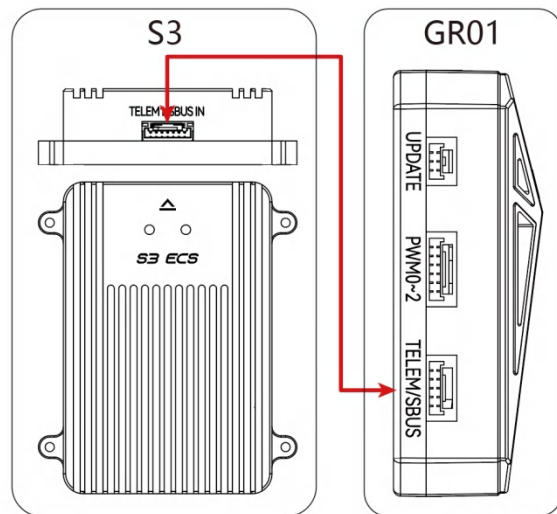
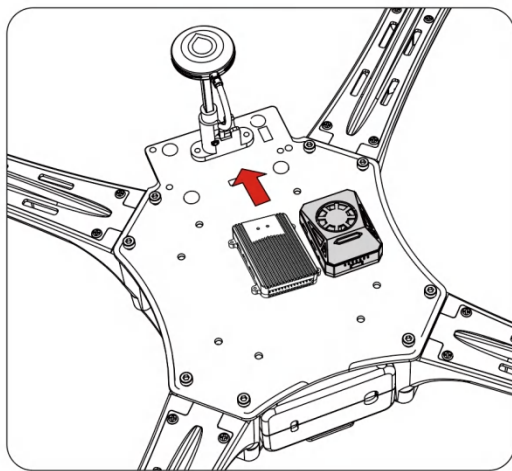
注意：为防止 RTK 天线松动，出货时 RTK 天线与馈线为整体，请勿进行拆卸。

定向模块没有位置安装要求: RTK 螺旋天线共有以下 4 中安装方式，主从天线间距 30CM 以上，间距越长，精度越高。（具体详情设置请看 4.5GPS 设置）

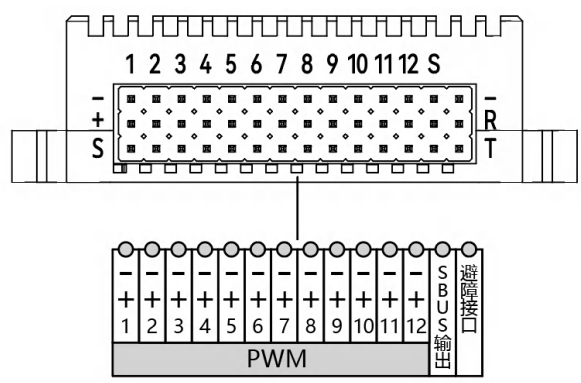
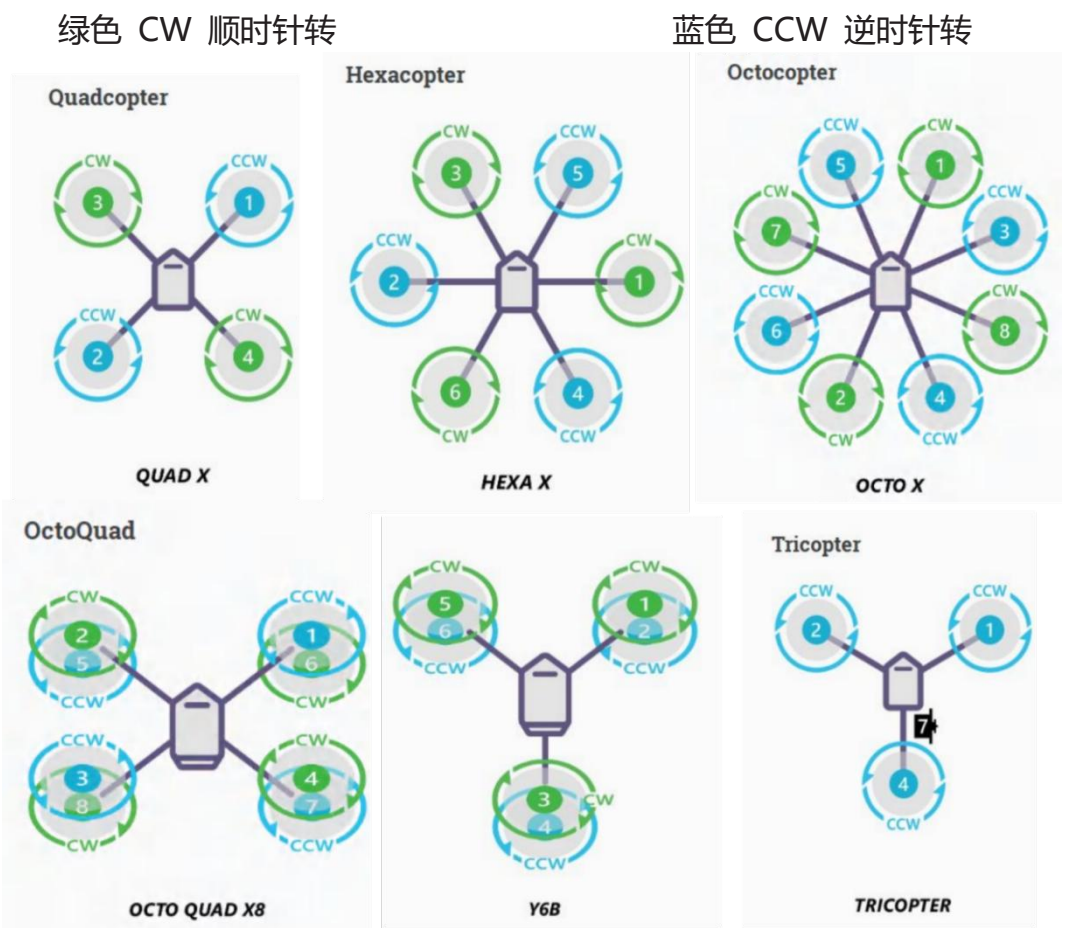


2.3 安装接收机和数传线连接

以云卓 GR01 接收机为例，安装接收机并连接航电系统，波特率设置：设备助手->高级选项->输入密码 999->波特率设置->点击读取设置->设置为 921600->保存设置。



2.4 电机顺序以及旋转方向



根据电机序号插进对应的 PWM 口，例如:1 号电机插 PWM1。

注意：因航电系统无电压输出，三轴机型接舵机需要外加 BEC 模块插针给舵机供电。

三、Fly GCS APP 使用

3.1、注册、激活

遥控器联网，打开 Fly GCS APP，选择新用户注册



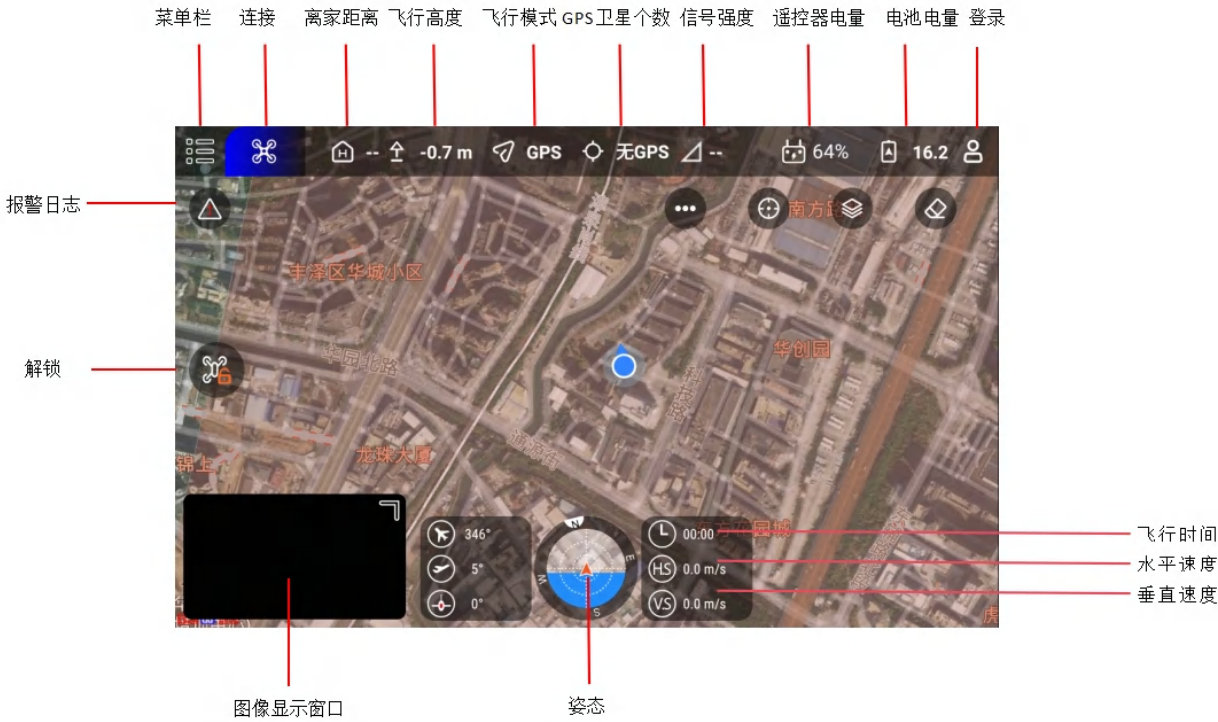
填入手机号，密码，获取验证码，验证码区分大小写，注册成功后登录

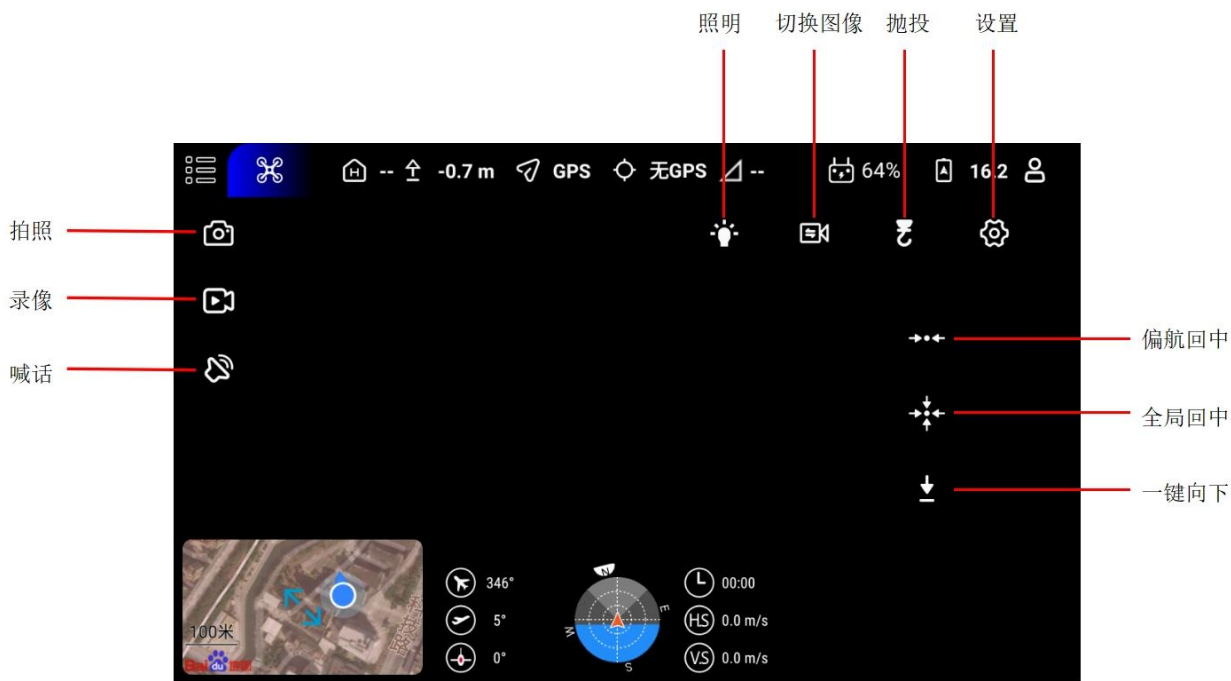


登陆后数传会自动连接上，此时第一次使用将会弹出激活框，请点击“立即前往”，去激活界面激活。



3.2、APP 主页面





四、航电系统调参（调参界面-长按飞机图案）

4.1、机架类型选择

长按可进入高级选项，根据实际机型选择相应的机架类型，点击图案即可保存机架类型。



4.2、轴距设置

测量飞机轴距，设置选择和使用机架相同或者接近的轴距，点击保存



注意：重量比较大的飞机（如大载重）轴距选择上面要选择比自身轴距更高的下一个轴距选项（例如自身轴距为 1500mm，但是飞机重量比较大，则要选择 2100mm）此设置好后直接保存即可。

4.3、飞控监测

通道查看：查看遥控器通道当前的舵量值。

输出查看：检查飞控系统的 PWM 通道输出信号值。



4.4、机头朝向



可修改飞控的安装方向，修改后请重启，并且进行六面校准。

注意：航电系统外壳箭头方向为机头方向。

4.5、GPS 设置



选择 GPS 的类型，默认为 GPS/单天线 RTK；

使用定向模块时，需设置为“双天线 RTK”，根据实际需求选择安装方式，建议两天线间距 30CM 以上。

方式一：从天线安装在航电系统前方，主天线安装在航电系统后方，两天线所在的直线必须与航电系统平行。

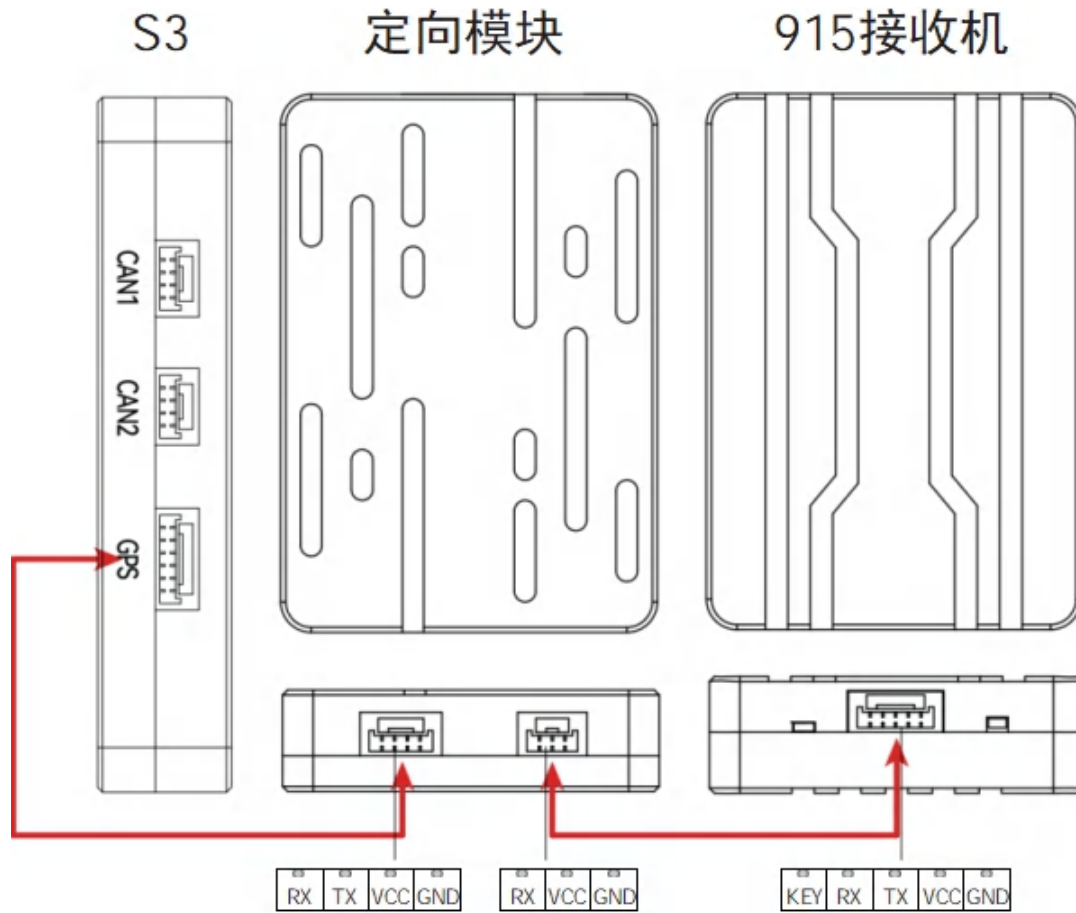
方式二：从天线安装在航电系统右侧，主天线安装在航电系统左侧，两天线所在的直线必须与航电系统垂直。

方式三：从天线安装在航电系统后方，主天线安装在航电系统前方，两天线所在的直线必须与航电系统平行。

方式四：从天线安装在航电系统左侧，主天线安装在航电系统右侧，两天线所在的直线必须与航电系统垂直。

4.6、RTK 定位设置

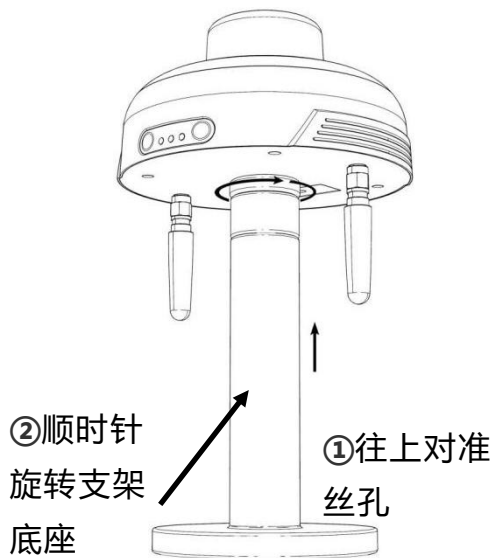
①连接云卓 RTK 基站



连接云卓基站需要配合 915 接收机，接线方式如上图，打开基站即可自动完成连接和定位。

基站使用说明

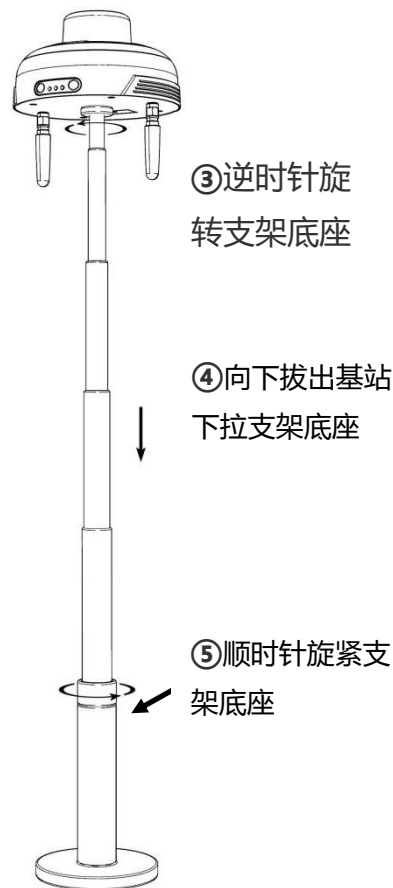
步骤 1： 将 RTK 基站固定在支撑杆上（见下图安装示意图）



步骤 2： 展支撑杆并锁紧（见右侧安装示意图）

步骤 3： 选择合适位置（底部为磁吸，可找铁等金属部位）放置安装基站，作业期间不要移动基站。

步骤 4： 长按电源键 3 秒开机，待 BAT 状态灯绿灯常亮表示通信正常。



②网络 RTK 设置（需选配定向模块且无 915 接收机和基站）



点击   —> —> 选择相应的网络 RTK—>RTK 偏好设定，输入网络 RTK 账号

注意：整个过程中遥控器需要保持网络连接状态

4.7、椭球校准

在室外环境下，确保 GPS 信号良好，进行罗盘校准。

椭球校准：将飞行器进行完整的 360 度旋转，确保在每次旋转过程中，飞行器的各个方向都能指向地面旋转一圈。



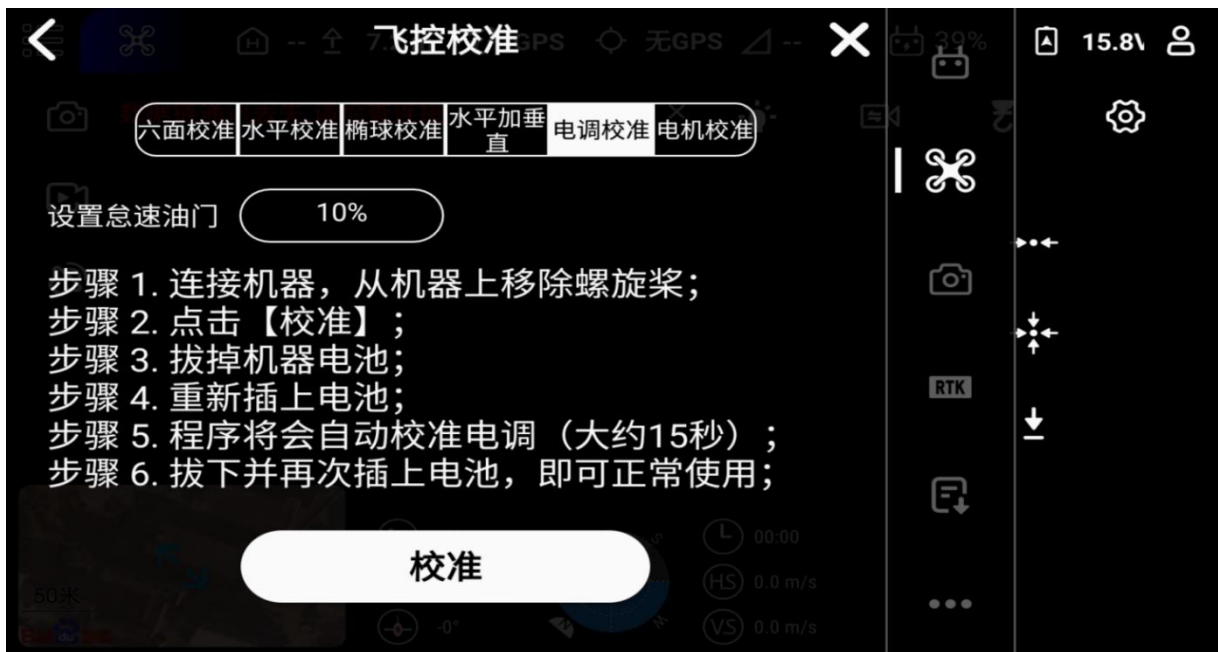
水平加垂直：首先将飞行器进行水平旋转，直至出现下一步操作的提示；然后将机头

向下进行垂直旋转，直到提示操作成功。



注意：使用定向套装时不需要椭圆校准和水平加垂直校准。

4.8、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。

4.9、水平校准

- 步骤 1.将机器静止放置在一个绝对水平的位置；
- 步骤 2.确保机身水平且无振动，水平误差不超过 10 度；
- 步骤 2.点击【校准】，开始水平校准。



4.10、电机测试



步骤 1: 输入油门设定值, 推荐范围为 5%-10% (对于大飞机, 由于电机的 KV 值较低, 可以适当增加此值) ;

步骤 2: 设定持续时间, 单位为秒;

步骤 3: 参照图片指示, 测试各个电机的旋转方向是否正确。

注意: 测试电机转向时, 桨叶需要卸下。

4.11、基础设置

4.11.1、姿态设置



通过调节感度和阻尼, 可以优化飞行器的飞行姿态。(具体参数信息, 请点击旁边的

“问号”)

4.11.2、刹车设置



调整刹车参数以优化飞行器的制动姿态。（具体参数信息，请点击旁边的“问号”）

4.11.3、导航设置（需长按飞机图标）



调整飞行器在航线任务中的飞行参数（详细信息可点击旁边“问号”）

4.11.4、速度设置



调节飞行器的飞行速度。（详细信息可点击旁边“问号”）

4.11.5、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“问号”进行参考

4.12、其他设置



在其他设置界面中，可以配置电机锁定选项，以及对航电系统和 GPS 安装位置进行修正（即 IMU 修正）。

4.13、辅助设置



可设置航电系统 PWM9-12 端口的映射通道，并且设置相应的故障保护值。

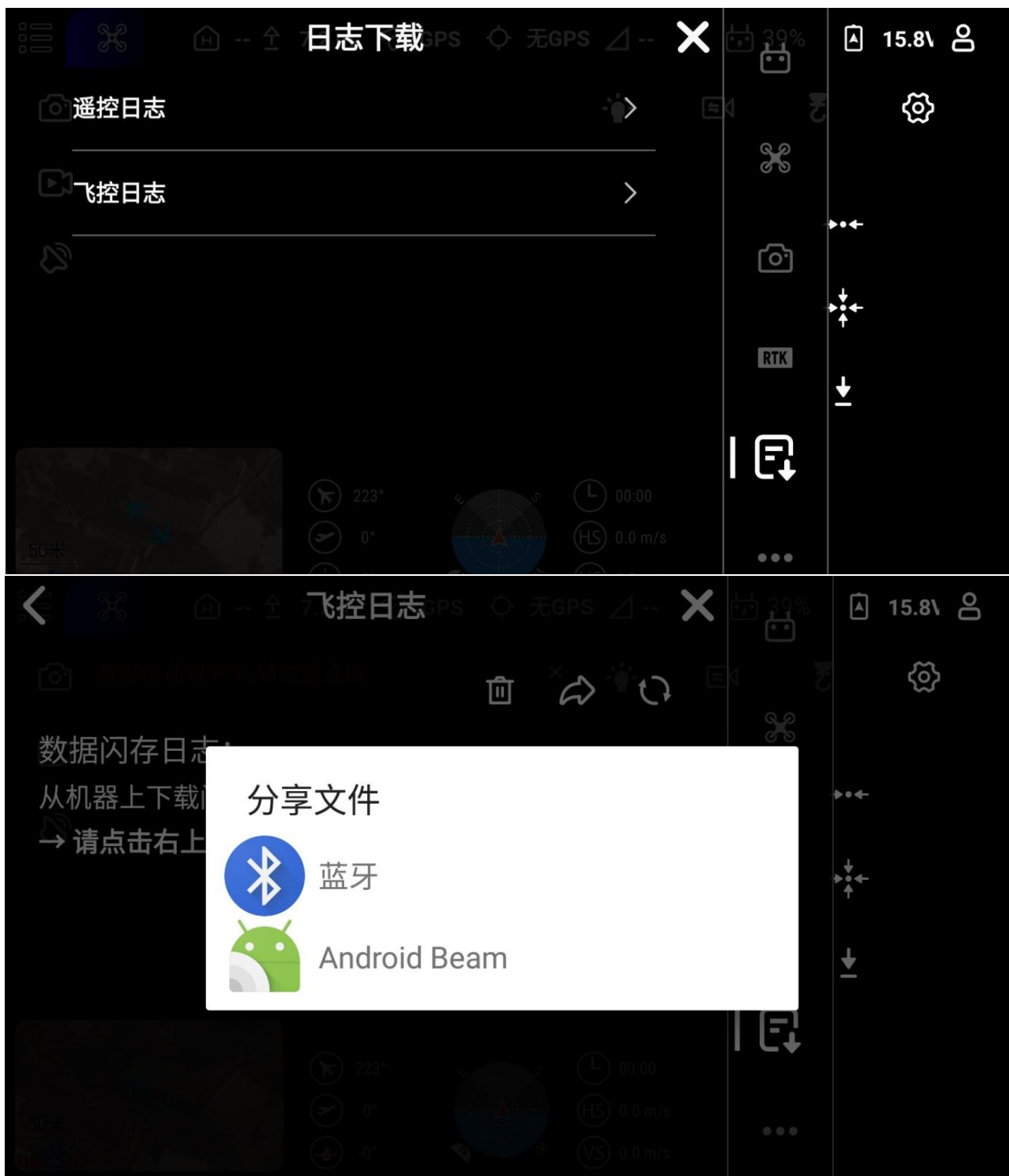
4.13、地理围栏

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。



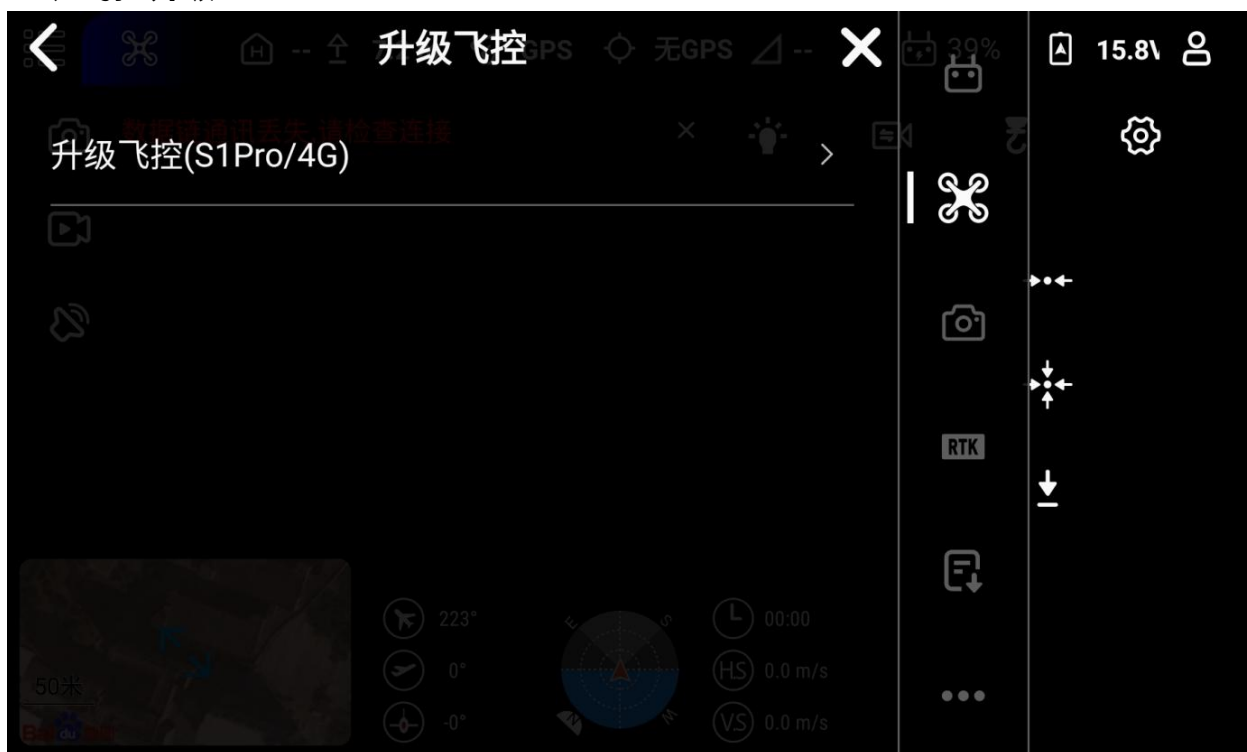
4.15、日志下载与查看



在进入日志下载界面后，请先点击右上角的刷新按钮，然后选择相应的日志文件下载。下载完成后，可以利用蓝牙功能进行分享。

注意：进行日志分析需要借助专业的软件工具，并且要求分析者具备相应的日志分析技能。

4.16、飞控升级



(用户可以在此处进行更新固件 检查更新)

4.17、恢复出厂



当航电系统参数调乱，或参数异常时，可以点击恢复出厂，注意恢复出厂后，需要重新校准水平和罗盘，重新调参。

五、失控保护

飞行器返航方式分别为 RTL 返航、低电压返航以及失控返航。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.若电压低于强制降落电压，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。

六、飞行控制

6.1、飞行模式介绍

遥控器五通道可切换飞行模式：

飞行模式	定高模式	飞行器会自动控制油门，保持飞行高度不变。在有风的环境中，飞手需要不断的修正横滚与俯仰以让飞行器定点停留。
	GPS 模式	飞行器会自动保持当前位置、指向、高度。GPS 位置良好、罗盘低电磁干扰、低振动都是非常重要的。
	返航模式	飞行器将自动返航，当飞行器飞到返航点正上方时，飞手可操作遥控器调整飞行器的降落位置，落地后，飞行器将自动上锁。

飞行前检查

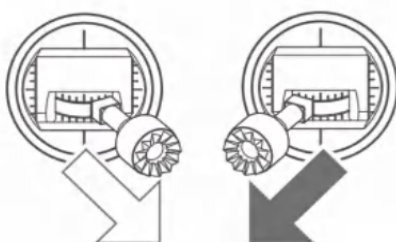
- 1.遥控器、飞行器电池等设备是否电量充足。
- 2.螺旋桨是否正确、稳固安装。
- 3.飞行器电池是否安装并连接稳固。
- 4.电源开启后相机和云台是否正常工作。
- 5.开机后电机是否能正常启动。

- 6.遥控器是否正常运行并显示相机图传画面。
- 7.确保飞行器天线安装稳固，遥控器天线已展开。
- 8.检查罗盘航向是否准确，手机打开指南针指向飞行器机头，对比 APP 首页姿态球航向度数，若差异较大，请进行罗盘校准，具体校准步骤查看第 8 点罗盘校准。
- 9.务必使用原厂配件，使用非原厂配件有可能对飞行器的安全使用造成危险。

6.2、解锁起飞

定高/GPS 模式

以美国手为例，执行内八掰杆动作可解锁飞行器，电机起转后，请马上松开摇杆，缓慢推油门起飞。



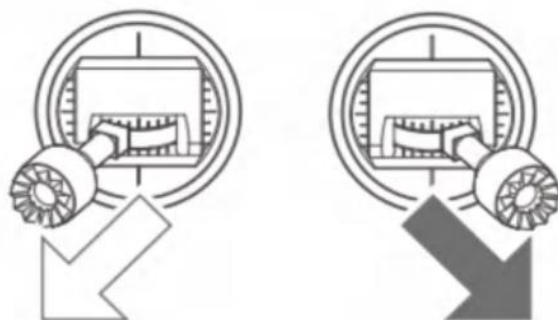
6.3、降落上锁

定高/GPS 模式

飞行器着地后，将油门杆推到最低的位置并保持 3 秒，之后电机停止。



若遇到倒扣着地、撞击着地降落等特殊情况，油门杆下拉无法上锁的情况下，请使用外八掰杆动作强制上锁。



注意：外八掰杆动作持续 1.5S(默认)以上，电机会强制上锁，请勿在空中正常飞行时执行此动作。

注意：首次试飞过程中，飞机如有异常，请立即拉低油门降落飞机，进入四、飞控调参中的 4.10 基础设置界面进行调参。

七、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 FLY GCS 地面站

2. 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

3. 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

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、限高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。

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云卓科技(福建)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,需注明出处为云卓科技(福建)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

此说明书不一定为最新版本,最新版本说明书请移步至官网资料下载中心-资料文档获取下载: <https://www.skydroid.xin/#/serviceSupport/downloadCenter>

SKYDROID 云卓

SKYDROID TECHNOLOGY (FUJIAN) CO., LTD



Skydroid S3

Professional Edition Instructions

V1.0

Notice:

It provides a classification of potential risks due to improper use of following terms for the product.

Note: Failure to follow the instructions when operating may result in property loss and minor injuries.

Note: Failure to follow the instructions when operating may lead to property damage, major accidents and serious injuries.

Warning: Before operating the product, please read the entire instruction to familiarize with its functions. Incorrect operation of this product may cause serious harm to yourself or others, or result in product damage and property loss. This product is complicated and requires time to get familiar with it before it can be used safely. Additionally, some basic knowledge is necessary for operation. Without a strong sense of safety, improper operation may cause product damage and property loss, or even serious harm to yourself or others. This product is not suitable for children. Do not use components which not provided or recommended by SKYDROID, and must strictly follow SKYDROID's guidelines for using the product.

After-sales Service Terms

- 1.The terms apply only to products manufactured by SKYDROID, and also to products sold by authorized SKYDROID agents.
- 2.For non-artificial quality issues confirmed by our company within one week from the date of purchase, SKYDROID shall bear the round-trip shipping costs for the returned product for repair. For non-artificial quality issues confirmed by our company exceed one week but within one year from the date of purchase, the user and SKYDROID bear the shipping cost for sending the product for repair respectively.
- 3.The purchase certificate, warranty card, or online transaction record must be provided when returning the product for repair.
- 4.If products has non-artificial quality issues under normal use within seven days from the date of purchase, and the appearance is intact, the user may negotiate with the dealer for a free replacement of the same model product by presenting the warranty card and purchase certificate. The dealer shall notify SKYDROID for record and replacement procedures immediately upon receiving the product to be replaced.
- 5.SKYDROID products are entitled to lifetime after-sales service provided by

SKYDROID, non-artificial quality issues are covered by free warranty within one year from the date of purchase. For artificial damage, modification, disassembling, or exceeding the one-year free warranty period, the user shall bear the round-trip shipping costs and repair fees.

6.To protect your rights and ensure timely and effective service, please completely fill out the warranty card and request a purchase certificate when buying SKYDROID products. The warranty card and purchase certificate are mandatory for users to enjoy these after-sales service.

7.Repaired products will be sent back to customers within 15 working days after receipt by SKYDROID, along with a repair report.

8.Above after-sales service terms are applicable only to SKYDROID products sold in mainland China.

For after-sales questions from clients in Hong Kong, Macao, Taiwan and overseas regions, please send emails to sales01@skydroid.xin. Specific after-sales rules shall be determined on specific cases.

Contents

I . S3 Overview	1
1.1、 Product Features	1
1.2、 Package Contents	1
1.3、 Interfaces & Definitions	2
1.4、 S3 Dimensions	4
1.5、 Technical Specifications	5
1.6、 Operating Environment	6
1.7、 Usage Recommendations	6
II. Pre-Flight Preparation	6
2.1、 Flight Controller Installation	6
2.2、 GNSS Antenna Installation	7
2.3 Receiver Installation & Data Transmission Cable Connection	9
2.4 Motor Sequence & Rotation Direction	9
III. Fly GCS APP Operation	10
3.1、 Registration & Activation	10
3.2、 APP Main Interface	12
IV. Flight Controller Parameter Tuning (Password:999)	13
4.1、 Frame Type Selection	13
4.2、 Wheelbase Setting	13
4.3、 Flight Controller Monitoring	14
4.4、 Nose Orientation	15
4.5、 GPS Setting	15
4.6、 RTK Positioning Setting	16
① Connecting to SKYDROID Base Station	16
②Network RTK Settings (Directional Module is Required; 915 Receiver and Base Station are not needed)	18
4.7、 Compass Calibration	18
4.8、 ESC Calibration	19
4.9、 Motor Test	20
4.10、 Basic Settings	20
4.10.1、 Posture Settings	20
4.10.2、 Brake Setting	21
4.10.3、 Navigation Setting	21
4.10.4、 Speed Setting	22
4.10.5、 Battery Level Setting	22

4.11、 Other Settings	23
4.12、 Auxiliary Settings	24
4.13、 Geofencing	24
4.14、 Log Download & Viewing	25
4.15、 Flight Controller Firmware Update	26
4.16、 Restore Factory Settings	27
V . Fail-safe Protection	28
VI. Flight Control	29
6.1、 Flight Mode Introduction	29
6.2、 Arm & Takeoff	31
6.3、 Land & Disarm	31
VII. FAQs	32
Disclaimer:	32

I . S3 Overview

1.1、 Product Features

The series flight controller has achieved a comprehensive upgrade in design and performance, it is equipped with a high-performance STM32H7 series main control chip at its core, providing strong computing support for flight control. The built-in IMU adopts an automotive-grade BMI088 sensor, which is optimized with elaborate shock absorption design. This ensures stable and efficient collection of attitude data even in complex flight environments, greatly improving flight accuracy and reliability. In addition, screw mounting holes are specially added to the flight controller housing. This not only simplifies the installation process but also ensures assembly stability, building a solid line of defense for the safe flight of the aircraft.

1.2、 Package Contents



S3

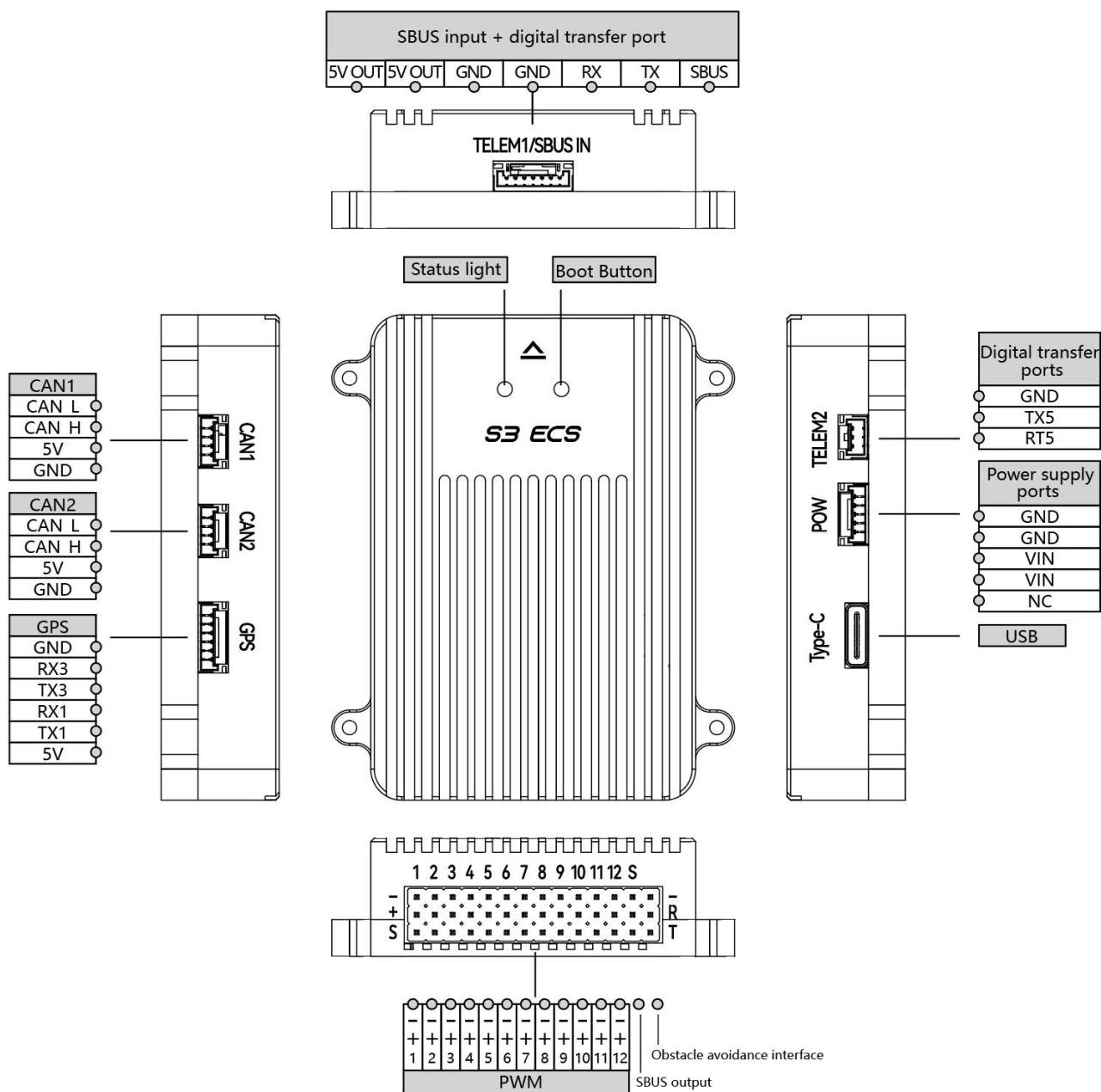


GP (Optional)



Directional Module
(Optional)

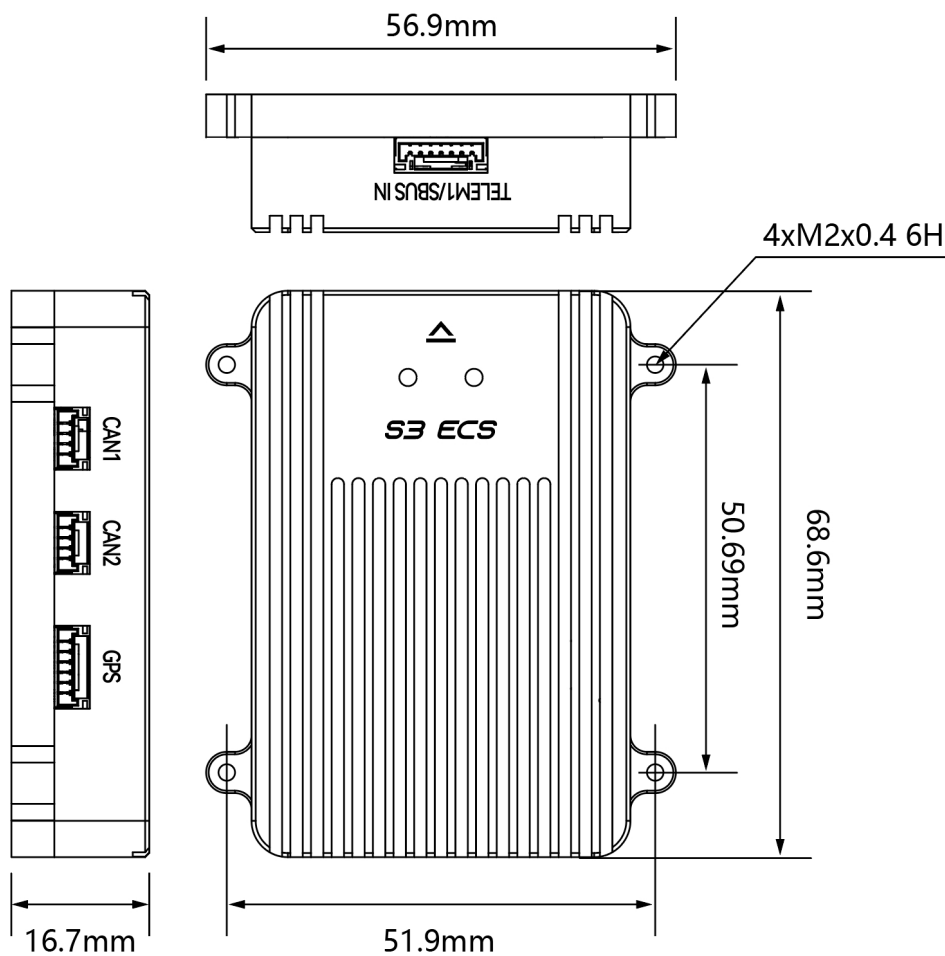
1.3、Interfaces & Definitions



Meanings of Flight Controller Status Lights:

Red and blue flashing rapidly	IMU initializing
Red, blue and green flashing rapidly	ESC calibration mode
Blue and yellow flashing alternately	GPS malfunction
Red and yellow flashing	EKF malfunction
Yellow flashing	Battery malfunction/Remote controller signal lost
Green light steady on	Armed+3D positioning
Blue light steady on	Armed+No positioning
Green light flashing	Disarmed + 3D positioning
Blue light flashing	Disarmed + No positioning

1.4、S3 Dimensions



1.5、Technical Specifications

S3 Avionics System		
Hardware Specifications	Main Processor	STM32H743
	Gyroscope	BMI088
	Barometer	MS5611
External Interfaces	PWM Outputs	12
	SBUS OUT	1
	GPS Serial Port	1
	Compass Serial Port	1
	POWER Port	1
	Data Transmission Interfaces	2
	SBUS Input	1
	CAN Interfaces	2
	Obstacle Avoidance Interface	1
	TYPE-C Interface	1
Supported Models	Unmanned Vehicles, Unmanned Vessels, 3-8 Axis Multirotors	
Operating Environments & Physical Parameters	POWER Input Voltage	2S~18S
	USB Voltage	5V±0.3V
	Servo Voltage	5V±0.3V
	Operating Temperature	-20°C~65°C
Dimensions & Weight	Dimensions	56.9x16.7x68.6mm
	Weight	60g

1.6、Operating Environment

Note:

- a) Operating temperature: -40 °C ~ 80 °C.
- b) Relative humidity: Not to exceed 85%.
- c) Atmospheric pressure: 86 kPa ~ 106 kPa.
- d) The operating site shall be free of explosive hazards. The surrounding medium shall not contain gases or conductive substances that corrode metals or damage insulation. There shall be no excessive water vapor or severe mold.
- e) The operating site shall be equipped with facilities for protection against rain, snow, wind, sand, and dust.

1.7、Usage Recommendations

For users who are using the S3 flight controller for the first time, we recommend completing the initial operation of the flight controller step by step as follows:

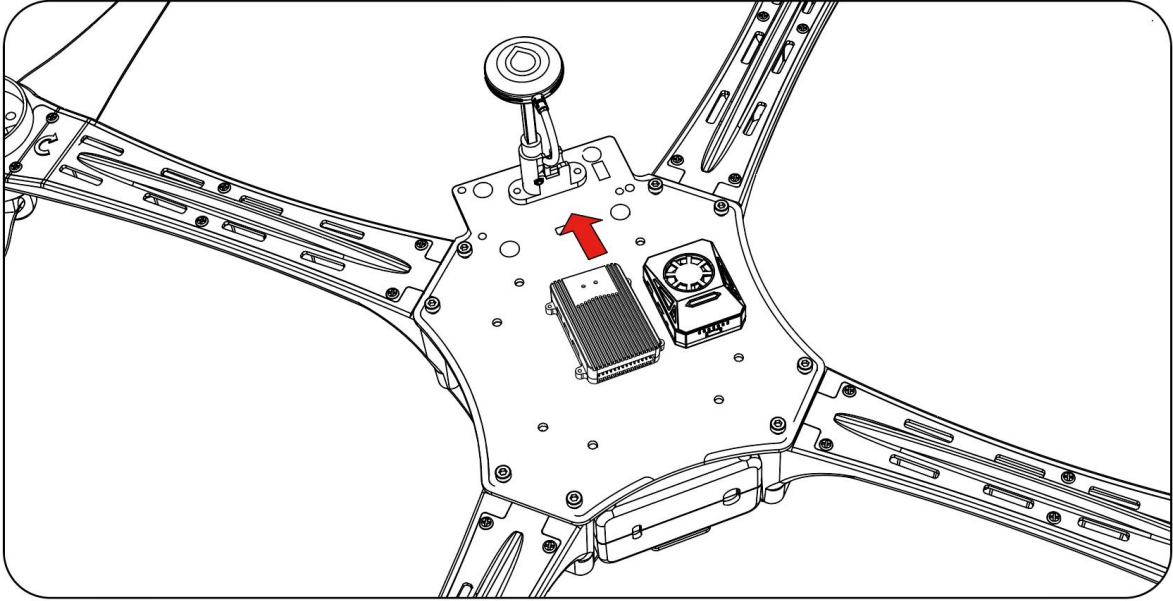
- 1、 Assemble the aircraft and complete the installation of the power system;
- 2、 Install the FLY GCS ground control software firstly and get familiar with the functions of each menu on the ground station interface;
- 3、 Connect the remote controller to the flight controller, and complete compass calibration and motor calibration;
- 4、 Check all parameters settings;
- 5、 Perform the first arming and takeoff.

II. Pre-Flight Preparation

2.1、Flight Controller Installation

S3 should be installed near the aircraft's center of gravity using the screw holes for secure fixation. If installed offset from the vehicle's center of gravity, the IMU position offset parameters must be configured.

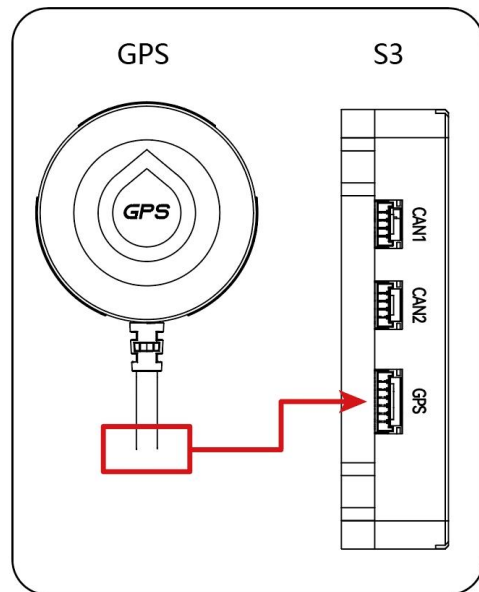
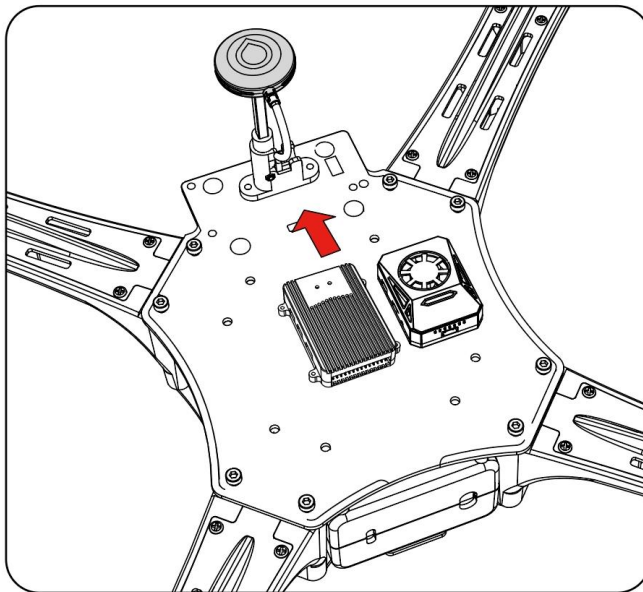
The default installation orientation is the nose direction. If installed in any other orientation, parameter adjustment via the FLY GCS is required.



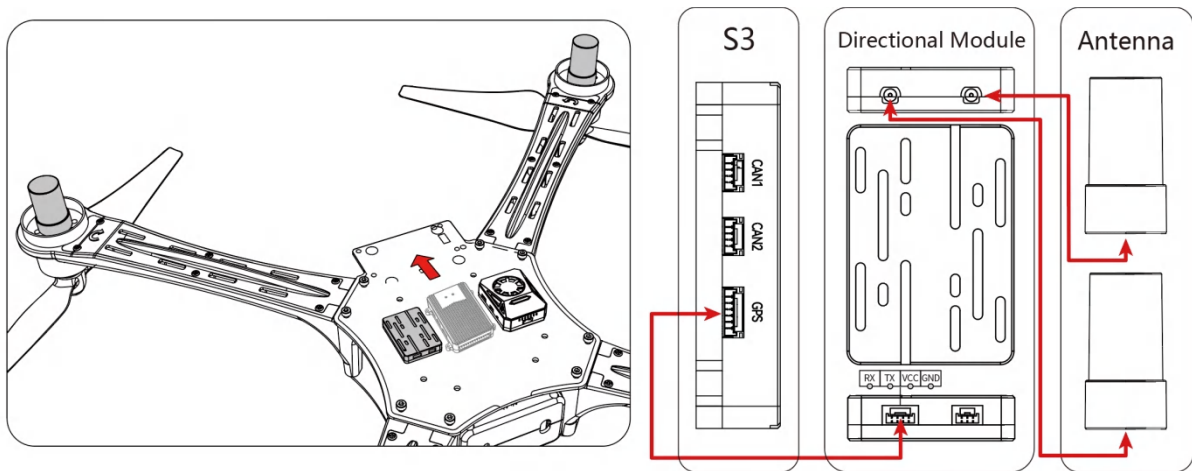
2.2、 GNSS Antenna Installation

①GPS Module Installation

Mount the GPS bracket onto the aircraft and tighten the screws. The GPS module has no fixed installation orientation.

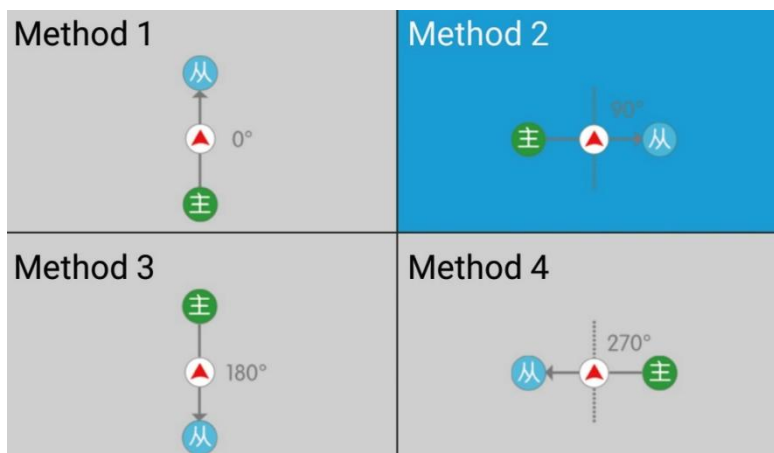


Recommendation: The GPS module is equipped with a magnetic compass. During installation, keep it away from devices with magnetic interference such as the flight controller mainboard and power distribution board.



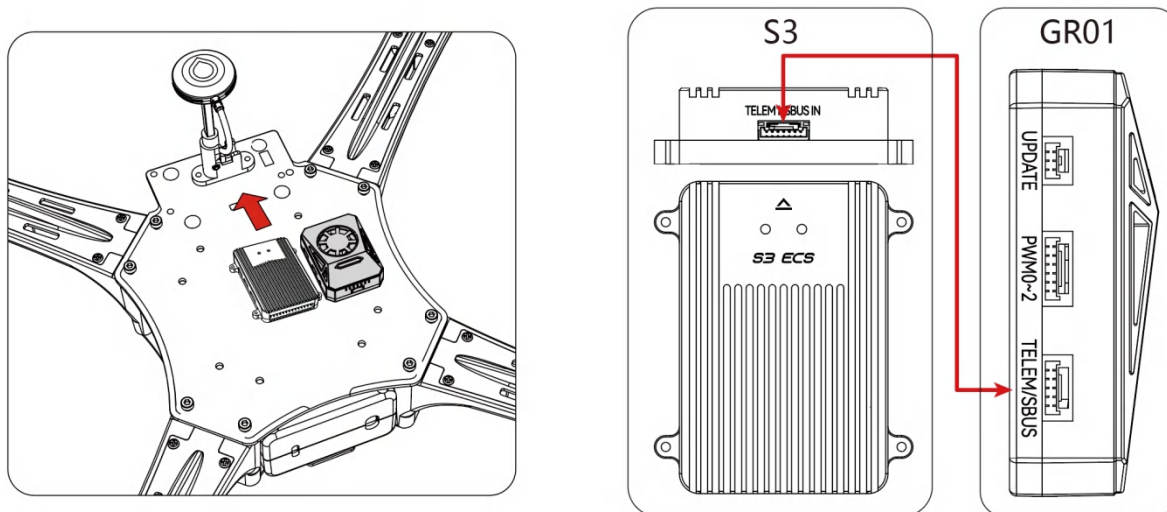
Note: To prevent the RTK antenna from loosening, the RTK antenna and feeder cable are supplied as an integrated unit. Do not disassemble them.

There are no positional requirements for installing the directional module. The RTK helical antenna can be installed in the following 4 ways. The distance between the master and slave antennas must be at least 30 cm; longer distances will yield higher positioning accuracy. (For detailed configuration, refer to Section 4.4 GPS Settings)



2.3 Receiver Installation & Data Transmission Cable Connection

Take the SKYDROID GR01 receiver as an example. Install the receiver and connect it to the flight controller. Baud rate setting steps: Device Assistant → Advanced Options → Enter password 999 → Baud Rate Settings → Click Read Settings → Set to 921600 → Save Settings.



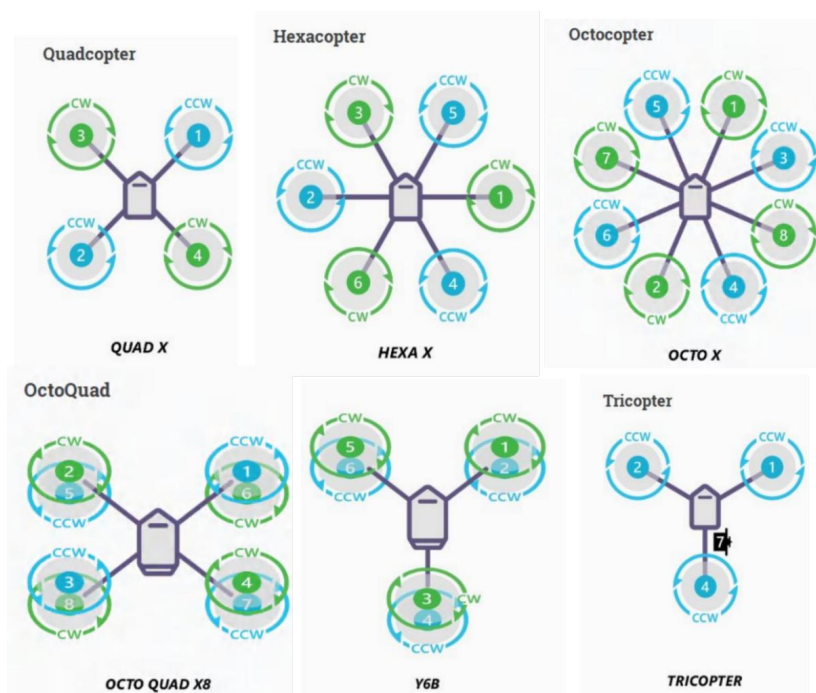
2.4 Motor Sequence & Rotation Direction

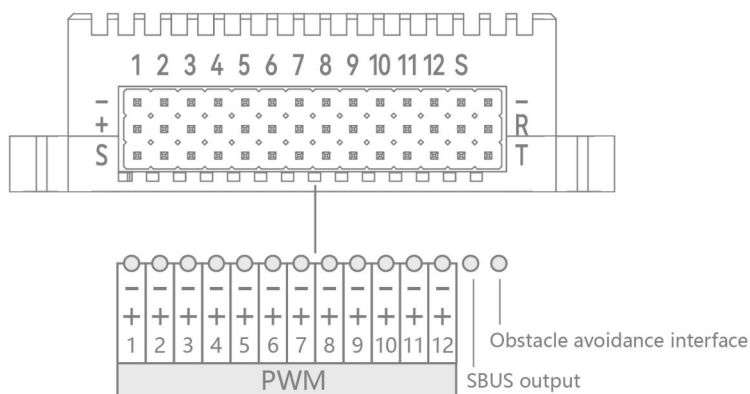


CLOCKWISE ROTATION
USE PUSHER PROPELLER



COUNTER-CLOCKWISE ROTATION
USE NORMAL PROPELLER





Connect the motors to the corresponding PWM ports according to their numbers. For example, connect Motor No.1 to PWM1.

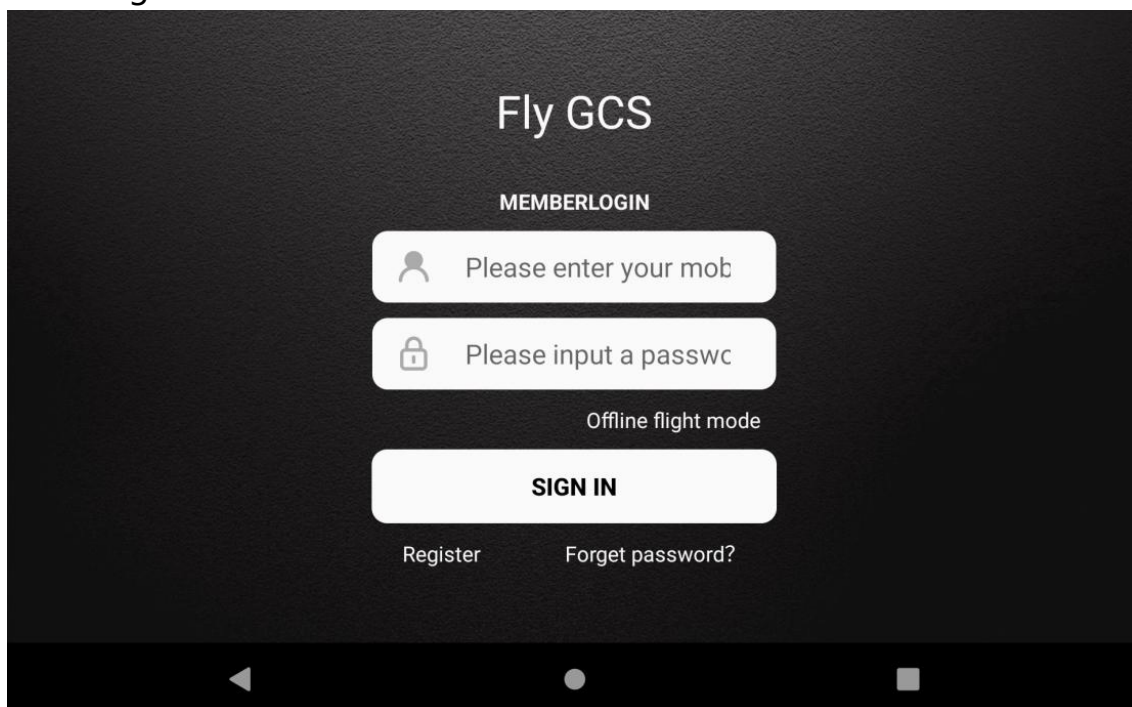
Note: Since flight controller provides no voltage output, an external BEC module pin is required to supply power to the servos for 3-axis aircraft.

Note: If the power system uses Hobbywing ESCs, a 2-second delay must be enabled to avoid the risk of catapult takeoff. To do this, access the Full Parameter List, search for the parameter HOBBY_ESC_EN, and set its value to 1.

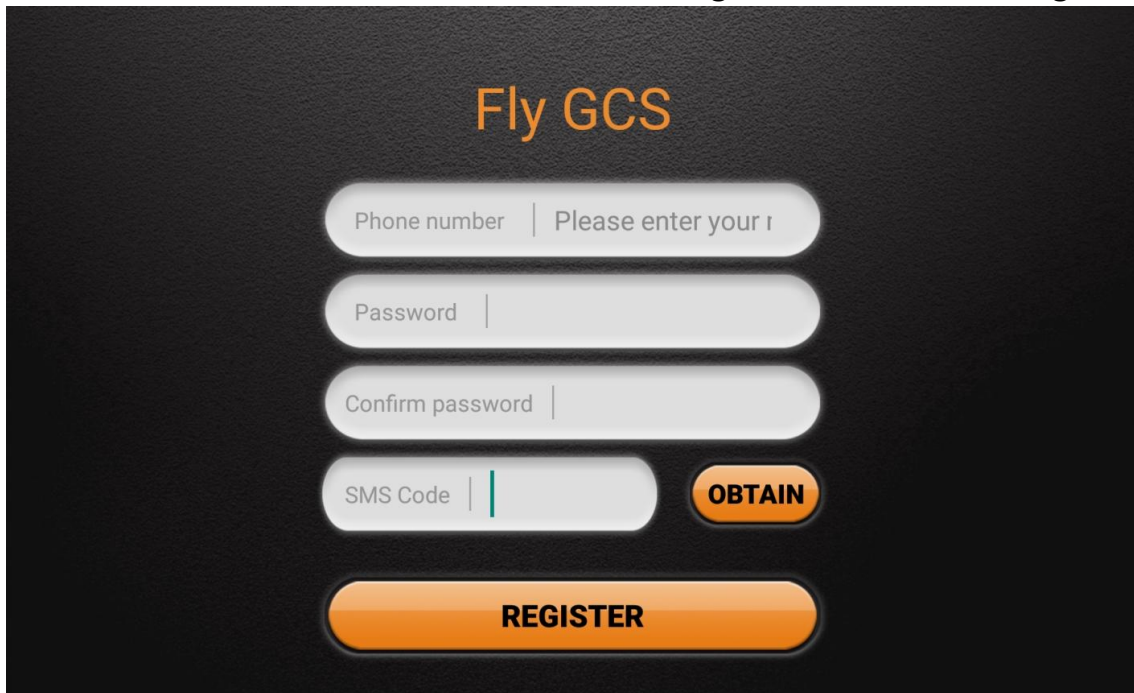
III. Fly GCS APP Operation

3.1、Registration & Activation

Connect the remote controller to the network, launch the Fly GCS App, and select New User Registration.

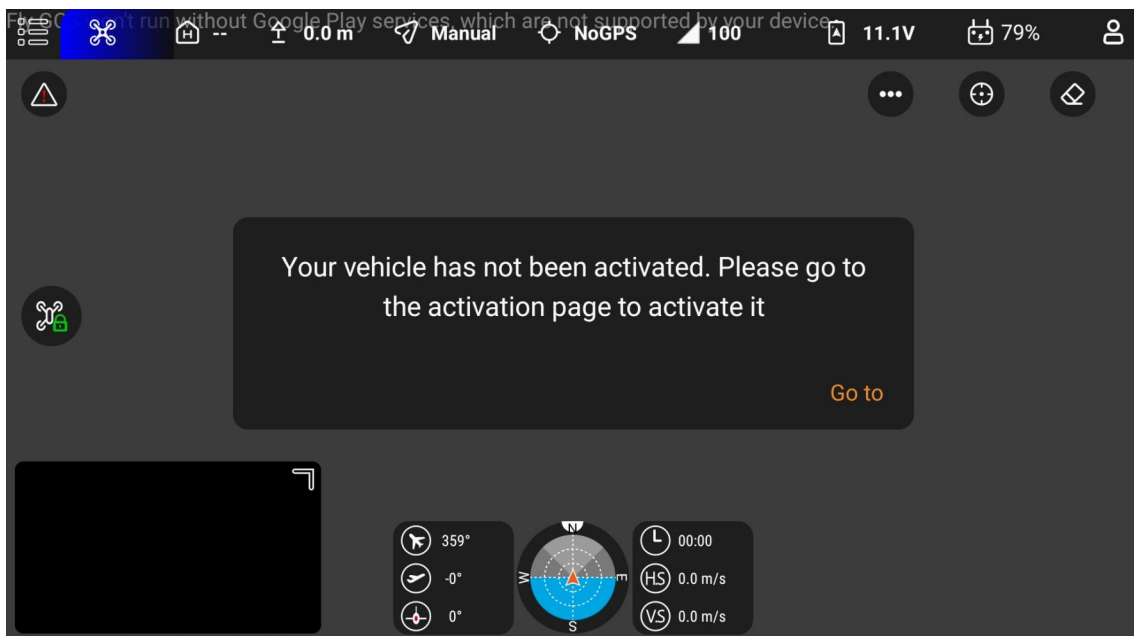


Enter your mobile phone number and password, then obtain the verification code. Note that the verification code is case-sensitive. Log in after successful registration.

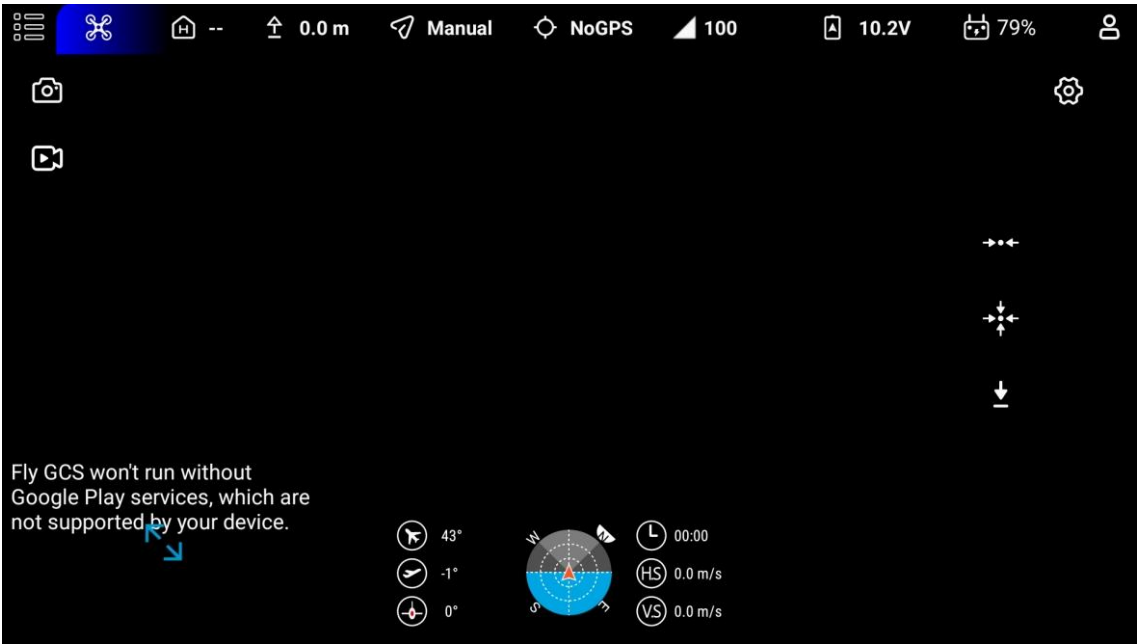
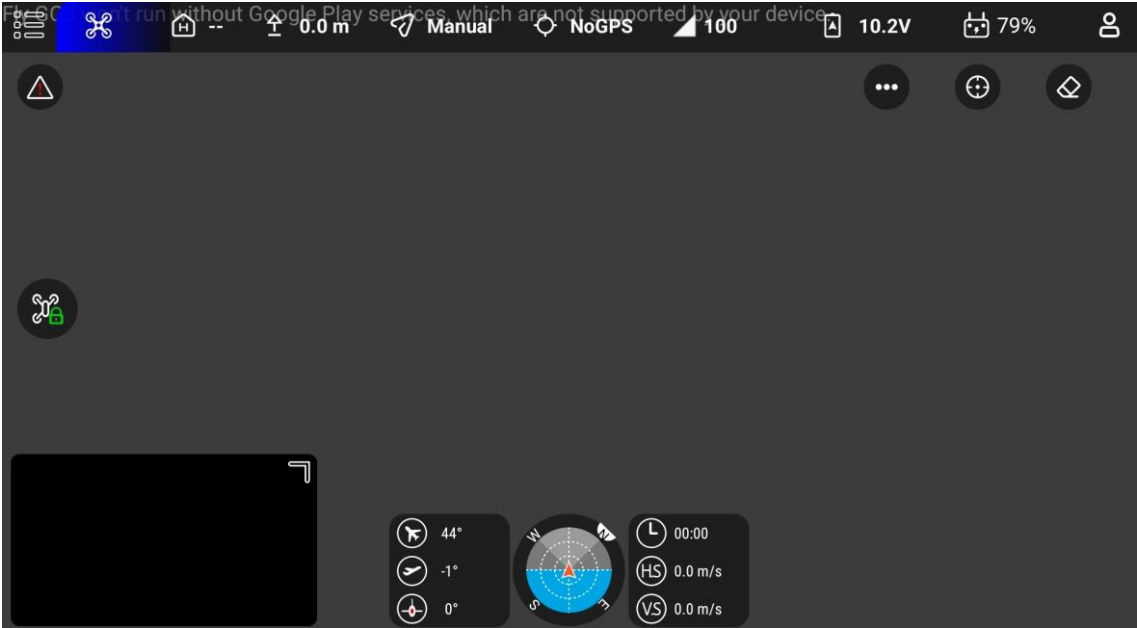


The registration screen for Fly GCS features a dark background with orange text and buttons. At the top, the text "Fly GCS" is displayed in orange. Below it, there are four input fields: "Phone number | Please enter your r", "Password |", "Confirm password |", and "SMS Code |". To the right of the SMS Code field is an orange button labeled "OBTAIN". At the bottom center is a large orange button labeled "REGISTER".

After logging in, the data link will connect automatically. For first-time use, an activation pop-up will appear. Click "Go Now" to navigate to the activation page and complete the activation process.



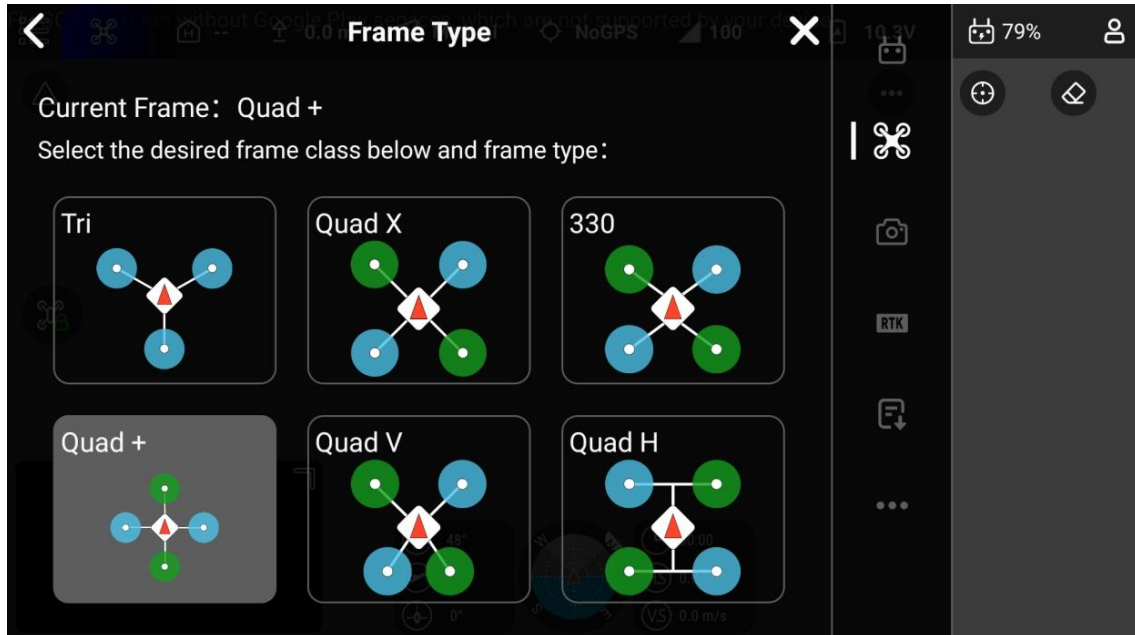
3.2、APP Main Interface



IV. Flight Controller Parameter Tuning (Password:999)

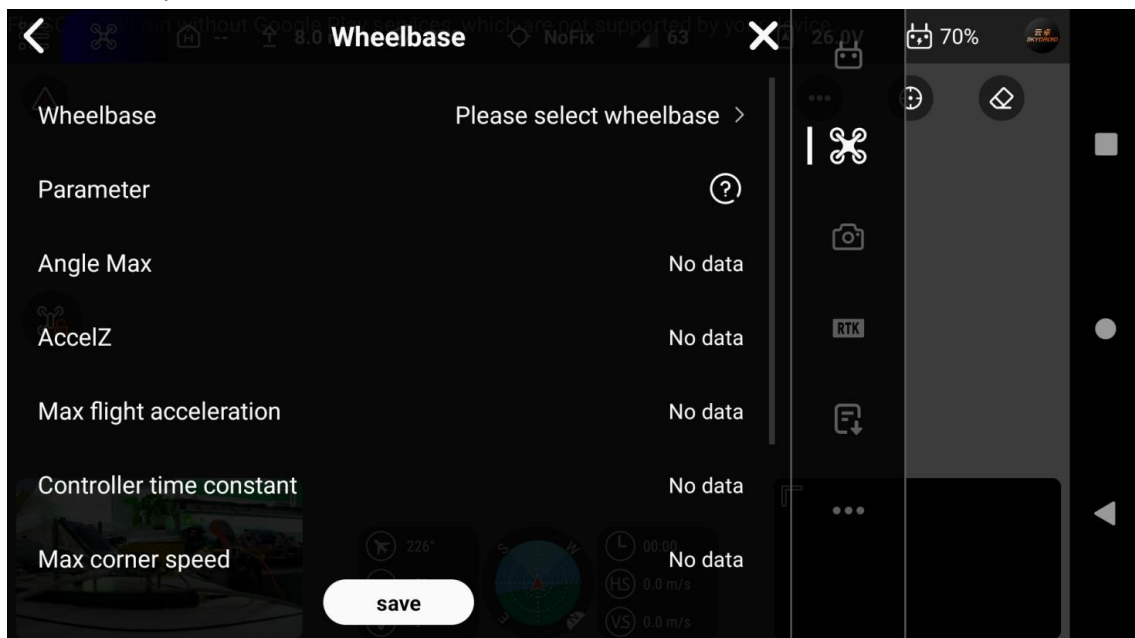
4.1、Frame Type Selection

Select the corresponding frame type according to the actual aircraft model. Click the pattern to save the frame type.



4.2、Wheelbase Setting

Measure the wheelbase of the aircraft, select a wheelbase identical or close to that of the used frame, then click Save.



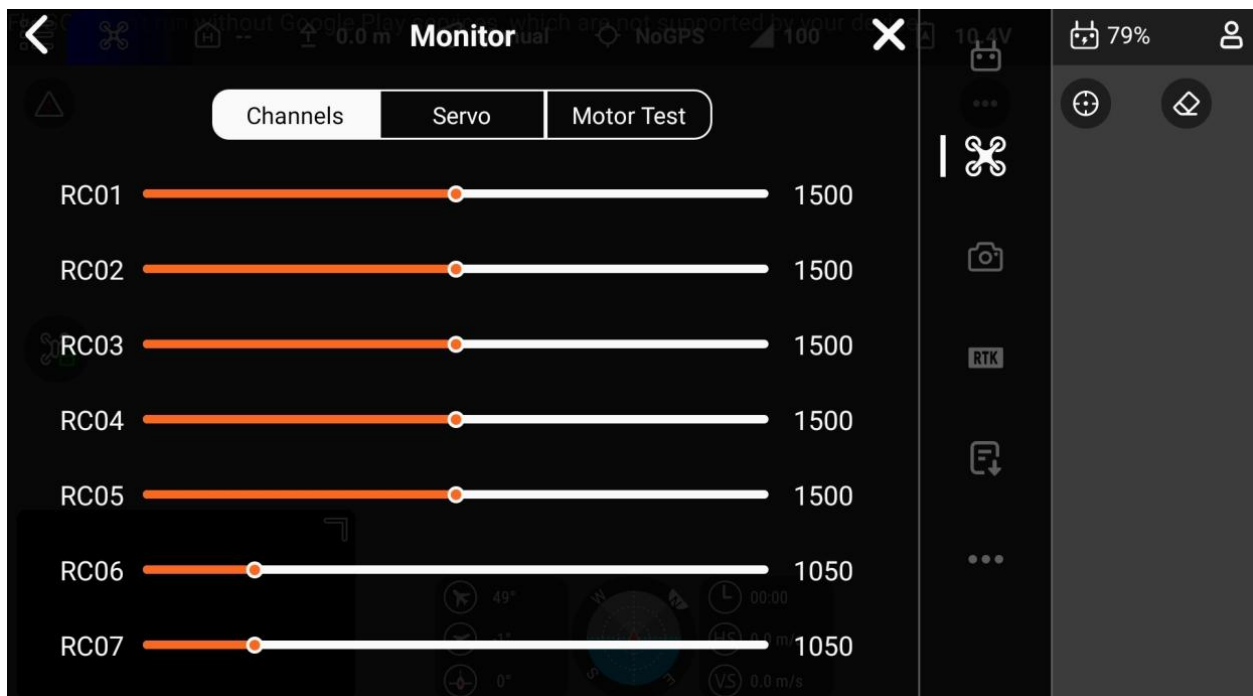
Note: For heavy-duty aircraft (such as high-payload models), select the next larger wheelbase option than the actual one. For example, if the actual wheelbase is

1500mm but the aircraft is heavy, choose 2100mm. Save the settings directly after configuration.

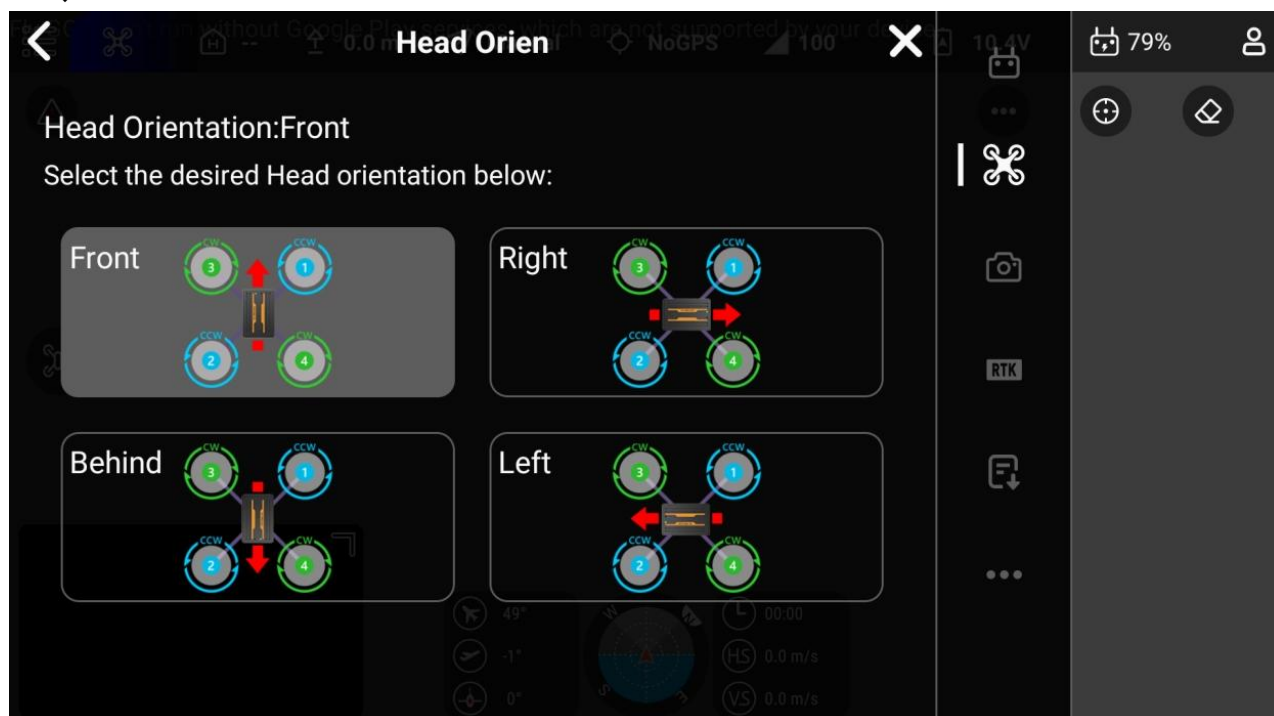
4.3、 Flight Controller Monitoring

Channel Monitoring: Check the current servo travel values of the remote controller channels.

Output Monitoring: Verify the PWM channel output signal values of the flight controller



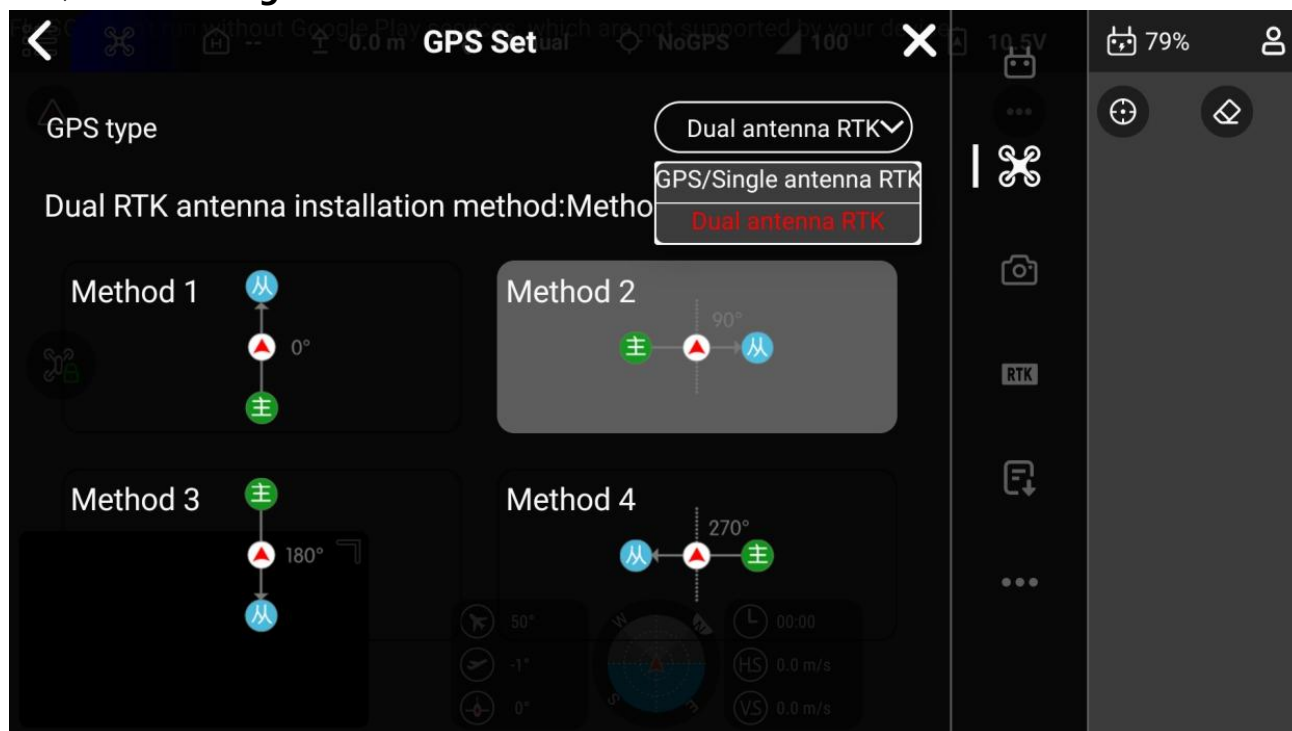
4.4、Nose Orientation



You can modify the installation orientation of the flight controller. Restart the flight controller and perform the six-position calibration after modification.

Note: The arrow direction on the flight controller housing indicates the nose direction.

4.5、GPS Setting



Select the GPS type; the default is GPS/Single-Antenna RTK.

When using the directional module, set it to Dual-Antenna RTK. Select the installation method according to actual requirements, and it is recommended that the distance between the two antennas be more than 30cm.

Method 1: Install the slave antenna at the front of the flight controller and the master antenna at the rear. The line connecting the two antennas must be parallel to the flight controller.

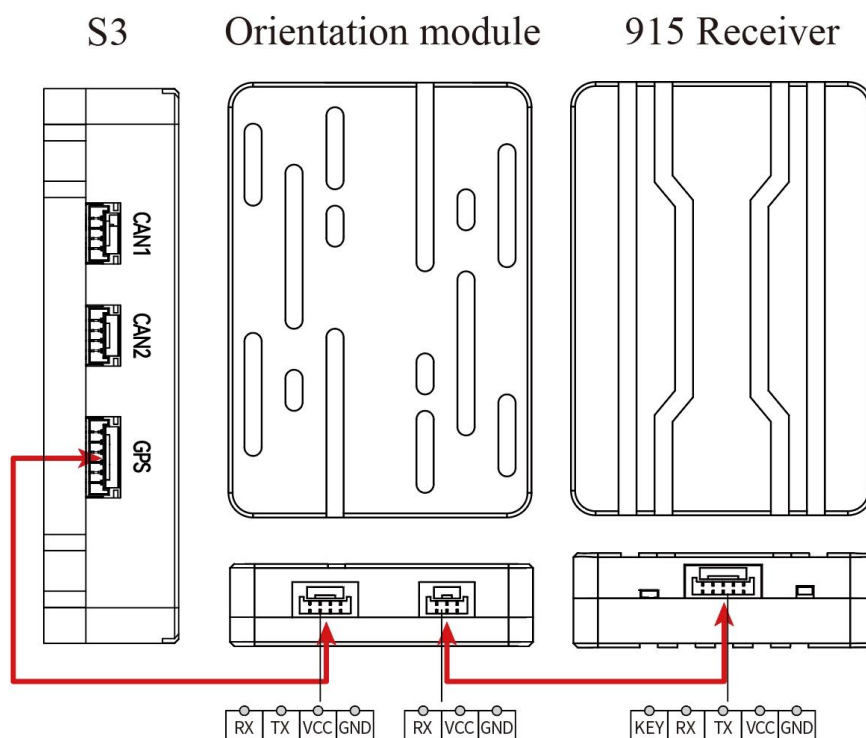
Method 2: Install the slave antenna on the right side of the flight controller and the master antenna on the left side. The line connecting the two antennas must be perpendicular to the flight controller.

Method 3: Install the slave antenna at the rear of the flight controller and the master antenna at the front. The line connecting the two antennas must be parallel to the flight controller.

Method 4: Install the slave antenna on the left side of the flight controller and the master antenna on the right side. The line connecting the two antennas must be perpendicular to the flight controller.

4.6、RTK Positioning Setting

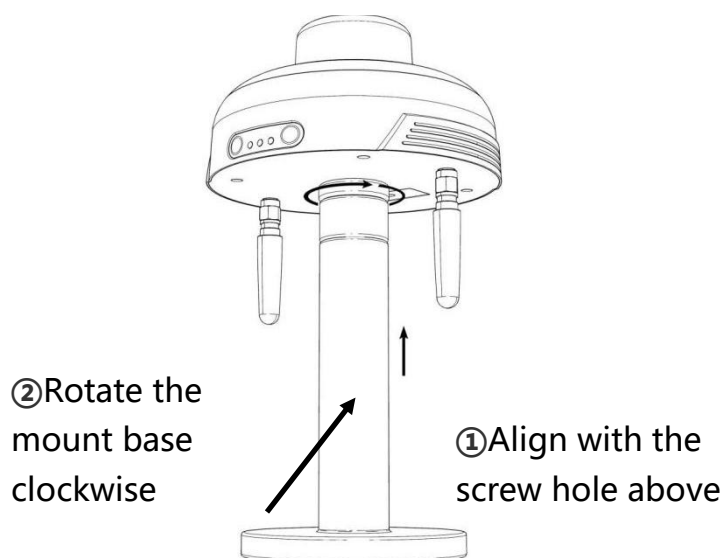
① Connecting to SKYDROID Base Station



Connecting to the SKYDROID base station requires the 915 receiver. Wire according to the diagram above; simply power on the ground base station to automatically establish the connection and complete positioning.

Ground base station instructions:

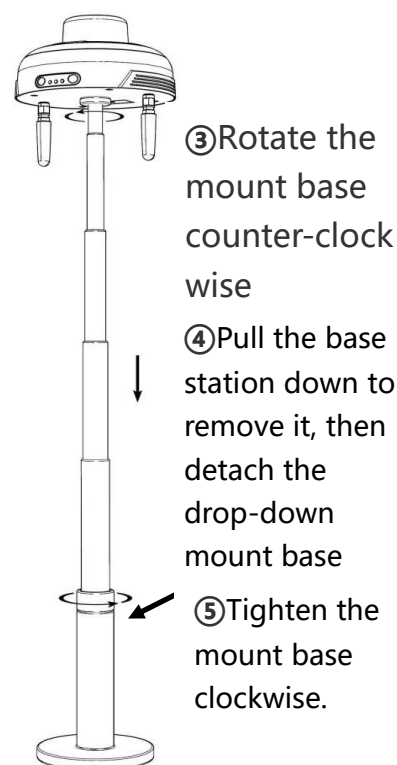
Step 1: Fix the RTK ground base station on the support rod (see the installation diagram below)



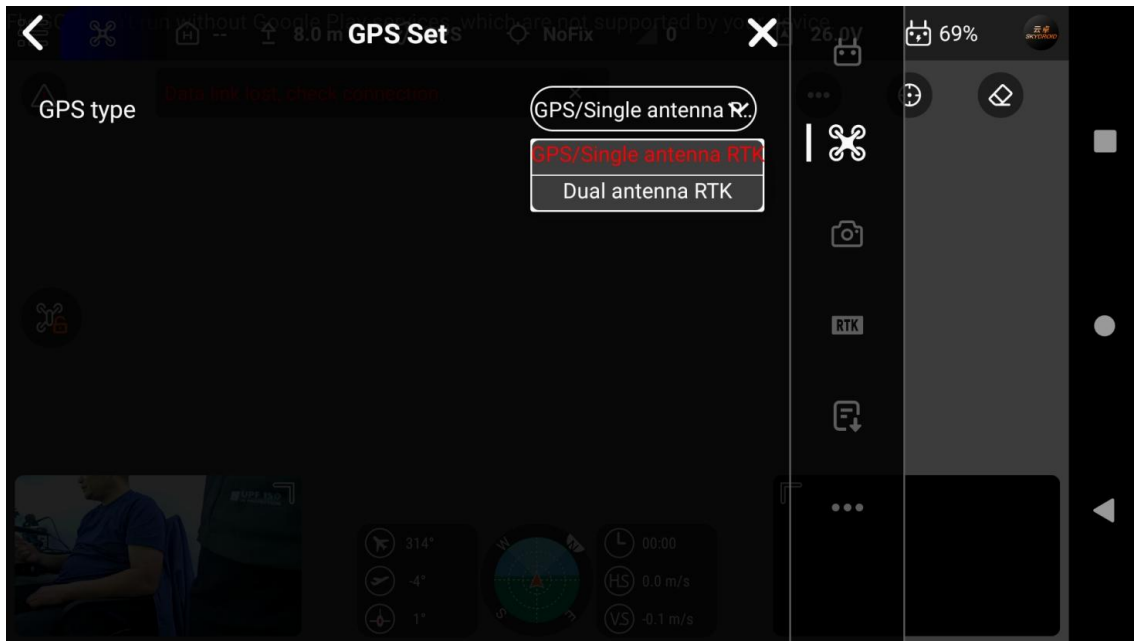
Step 2: Extend the support rod and lock it in place (refer to the installation diagram on the right side.)

Step 3: Select a suitable location (the base is Magnetic and can be attached to iron or other metal surfaces) to place and install the base station. Do not move the base station during operation.

Step 4: Press and hold the power button for 3 seconds to power on the device. A steady green light on the BAT status indicator means the communication is working normally



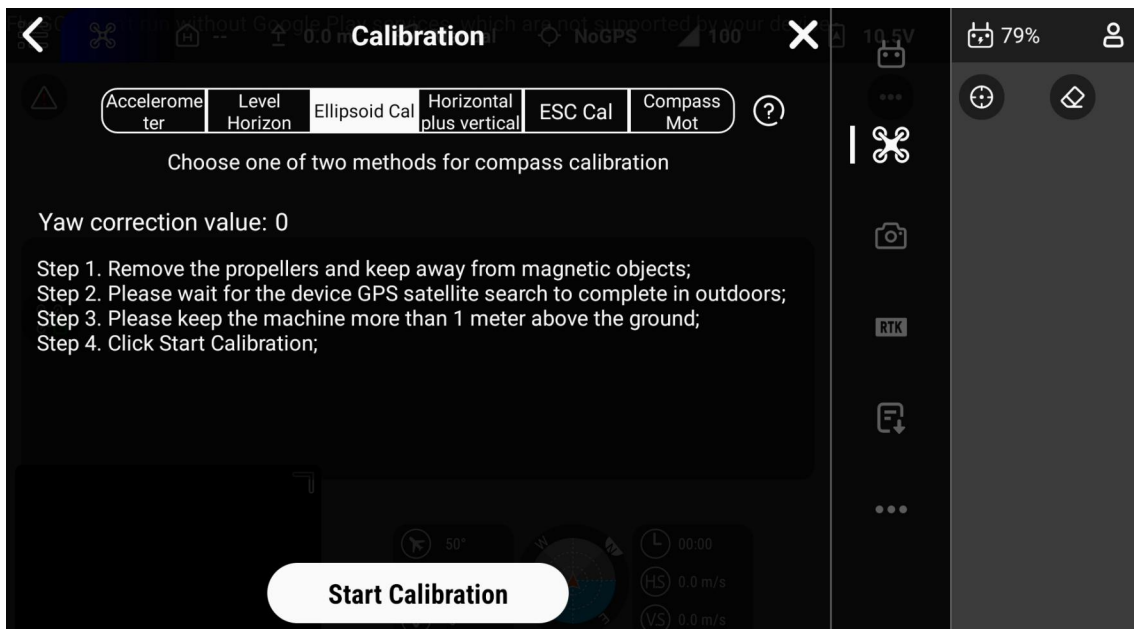
②Network RTK Settings (Directional Module is Required; 915 Receiver and Base Station are not needed)



Click— > —> Select the corresponding network RTK → RTK preference settings, then enter your network RTK account.

Note: Keep the remote controller connected to the network throughout the whole process.

4.7、Compass Calibration



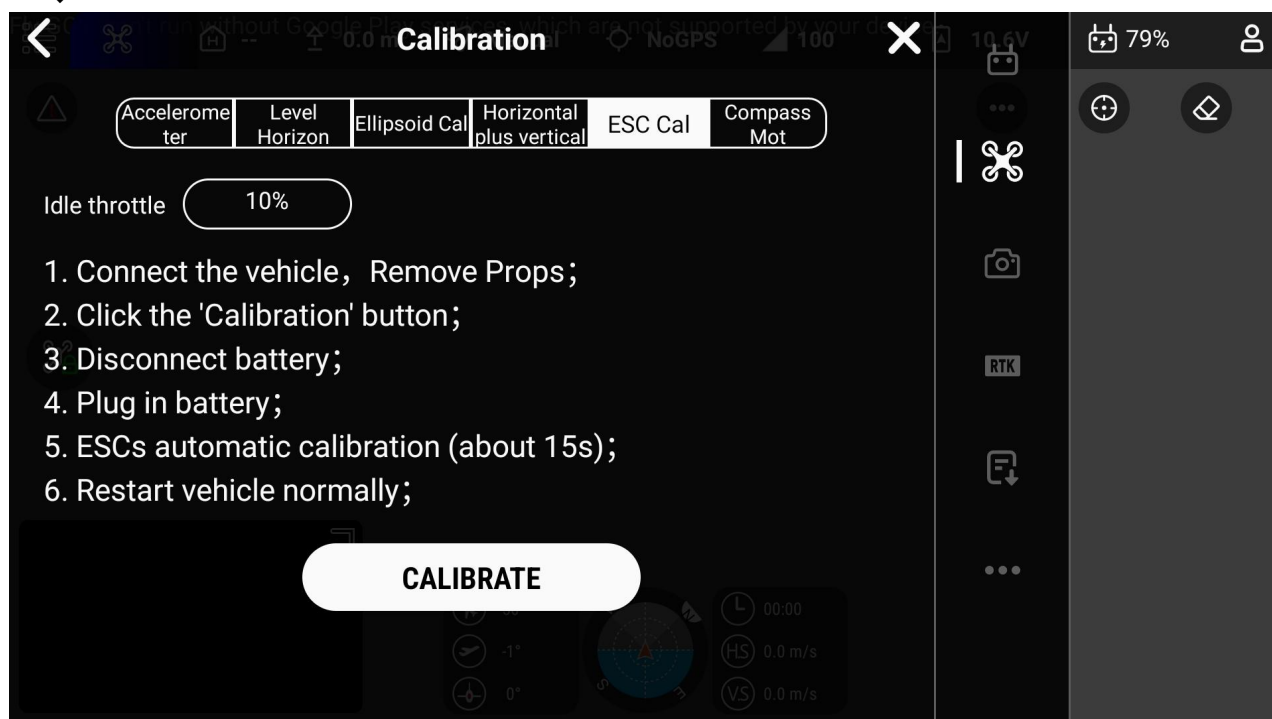
Perform compass calibration outdoors with strong GPS signal reception.

Ellipsoid Calibration: Rotate the aircraft 360° fully, ensuring that every orientation of the aircraft faces the ground during the rotation process.

Horizontal + Vertical Calibration: First, rotate the aircraft horizontally until the prompt for the next step appears. Then, point the aircraft nose downward and rotate it vertically until a calibration successful prompt is displayed.

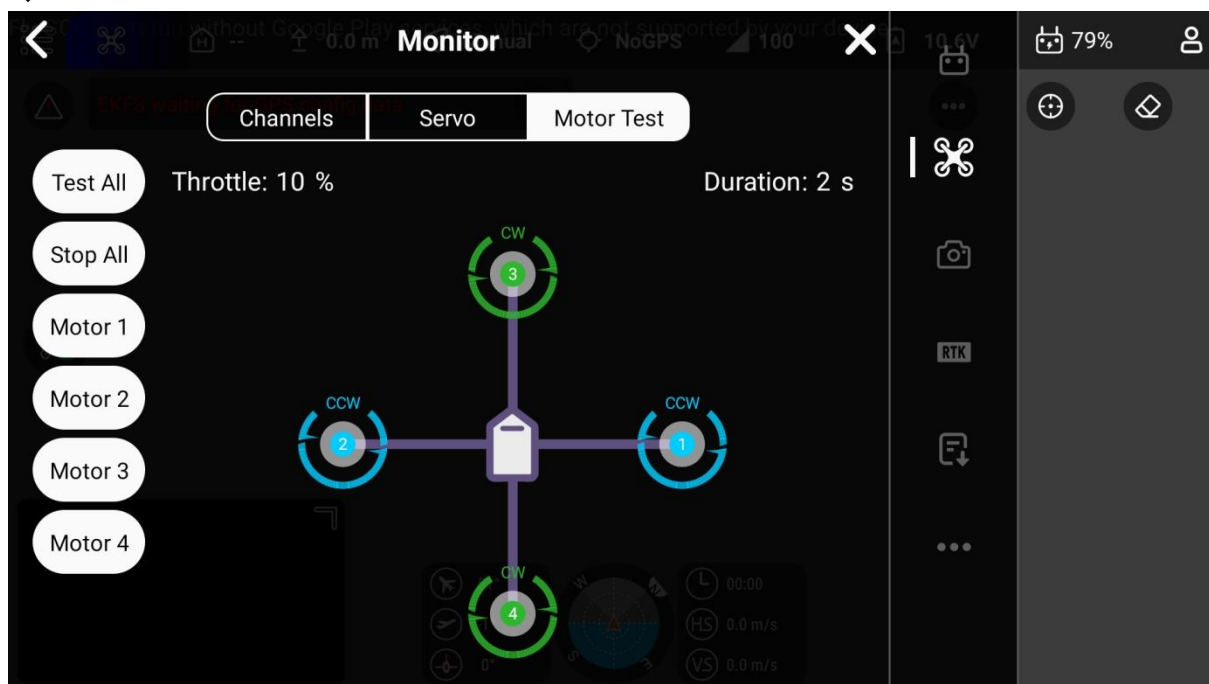
Note: Compass calibration is not required when using the directional module kit.

4.8、ESC Calibration



- 1: Connect to the aircraft and remove the propellers from the drone (critical safety to prevent accidental rotation).
- 2: Click "Calibrate" on the ground station interface;
- 3: Disconnect the aircraft battery;
- 4: Reconnect the aircraft battery;
- 5: The system will automatically calibrate the ESCs (calibration takes approximately 15 seconds; do not operate the controller during this process).
- 6: Disconnect and reconnect the battery again. The aircraft is now ready for normal use.

4.9、Motor Test



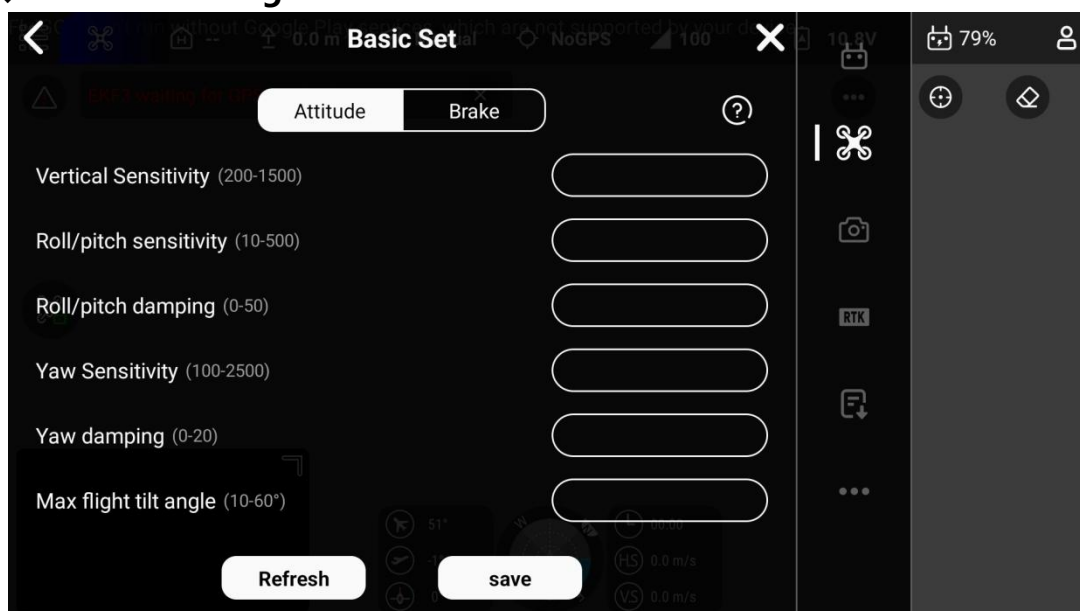
Step 1: Enter a throttle setting, with a recommended range of 5%-10%. (For large aircraft, the value can be appropriately increased due to the lower KV rating of the motors.)

Step 2: Define the test duration in seconds;

Step 3: Refer to the diagram instructions to verify whether the rotation direction of each motor is correct.

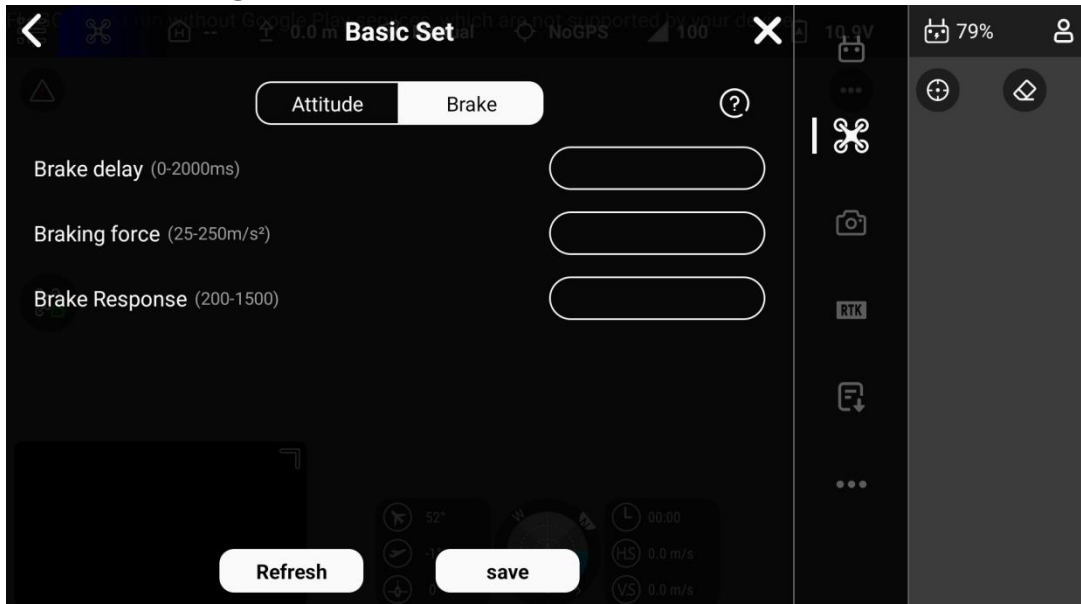
4.10、 Basic Settings

4.10.1、 Posture Settings



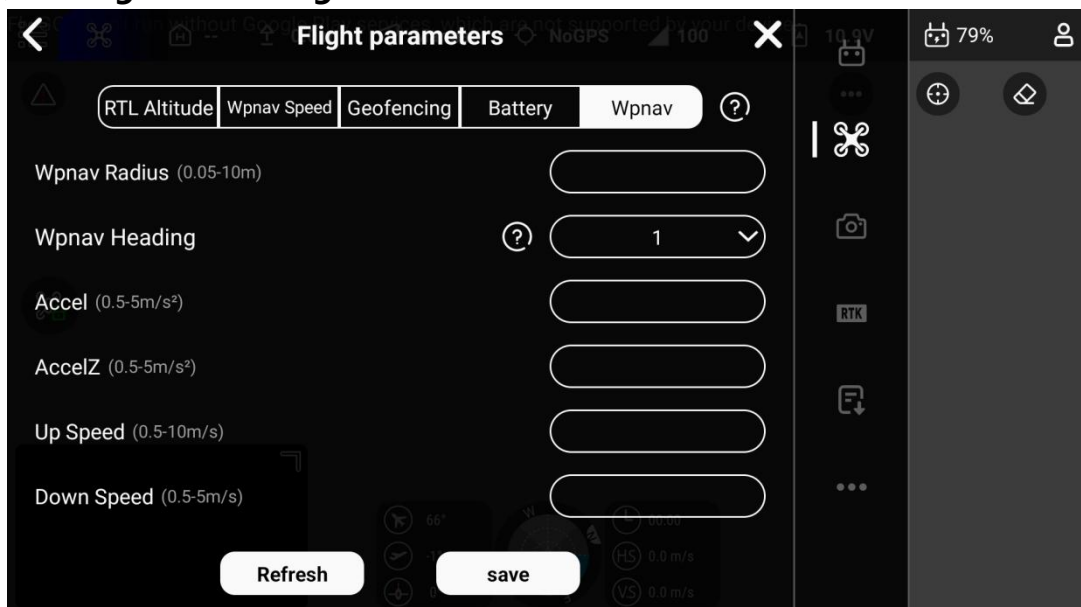
The flight attitude of the aircraft can be optimized by adjusting the sensitivity and damping parameters. (For detailed parameter information, please click the adjacent question mark icon.)

4.10.2、 Brake Setting



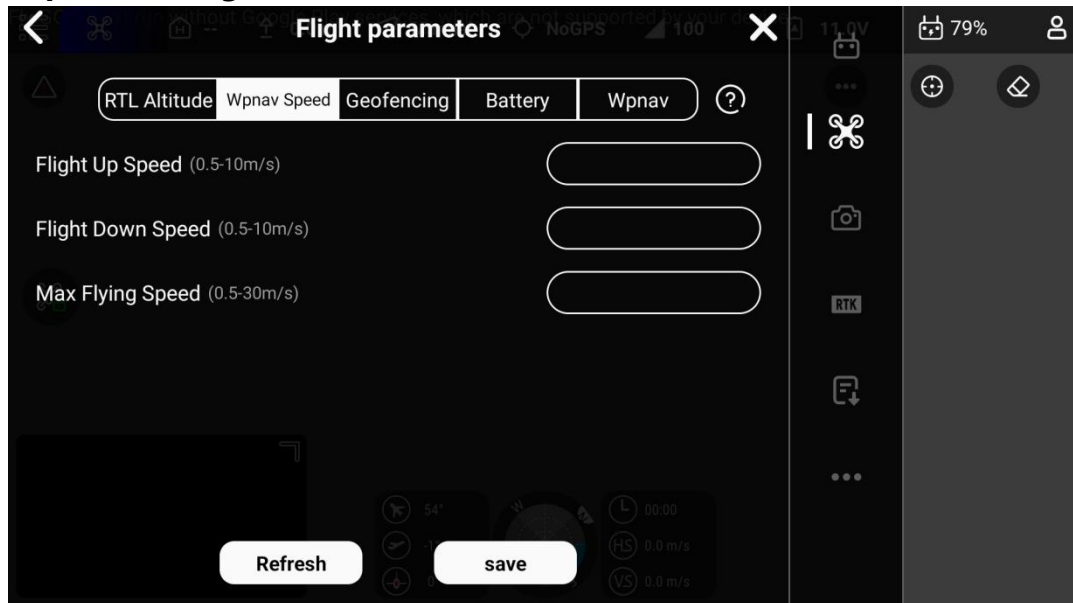
Adjust the braking parameters to optimize the aircraft' s braking attitude. (For detailed parameter information, please click the adjacent question mark icon.)

4.10.3、 Navigation Setting



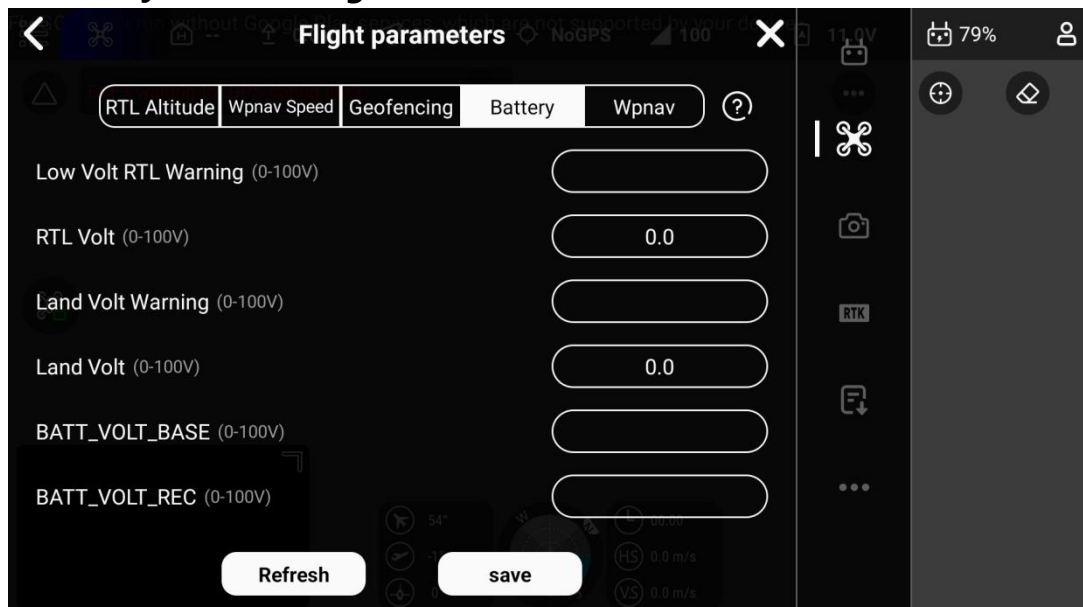
Adjust the flight parameters of the aircraft during waypoint missions. (For detailed information, please click the adjacent question mark icon).

4.10.4、Speed Setting



Adjust the flight speed of the aircraft. (For detailed information, please click the adjacent question mark icon.)

4.10.5、Battery Level Setting



Low-Voltage Return-to-Home Warning: When the battery voltage reaches this value, the APP will issue a return-to-home alarm prompt.

Mandatory Return-to-Home Voltage: When the battery voltage reaches this value, the aircraft will automatically initiate mandatory return-to-home.

Mandatory Landing Voltage Warning: When the battery voltage reaches this value, the APP will issue a landing alarm prompt.

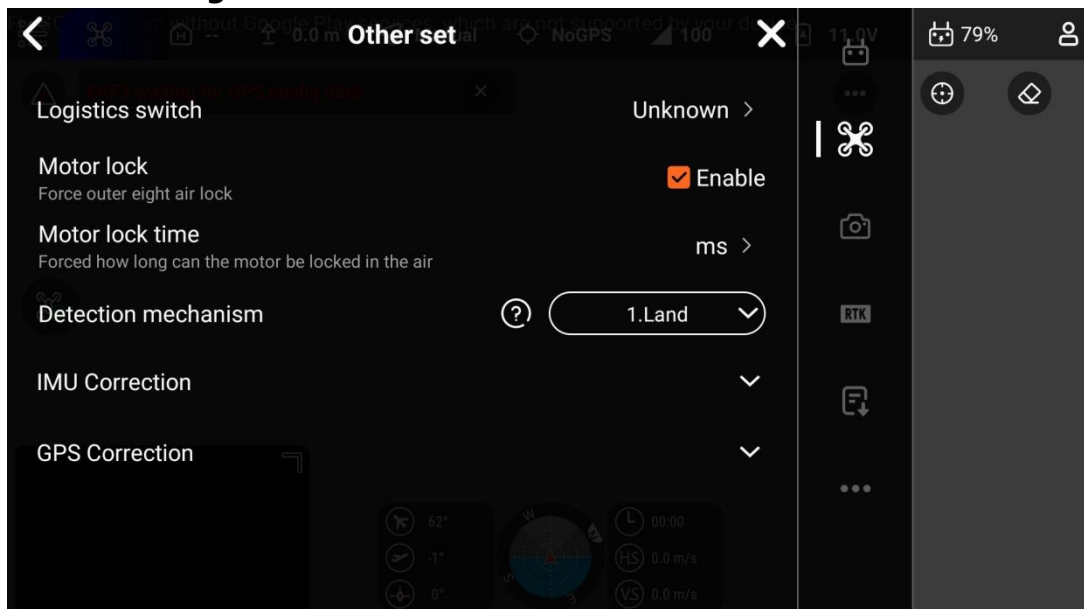
Mandatory Landing Voltage: When the battery voltage reaches this value, the aircraft will automatically perform a mandatory landing on-site.

Unlocked Compensation Voltage: Power on the aircraft and keep it in the unlocked state, measure the current battery voltage with a multi-meter, then check the voltage displayed by the data link, and enter the voltage difference between the two values.

Full-load Compensation Voltage: Load the aircraft to its maximum payload capacity and hover for 20 seconds; record the current voltage. Land the aircraft immediately and wait for another 20 seconds; record the post-landing voltage. Enter the voltage difference between the two recorded values.

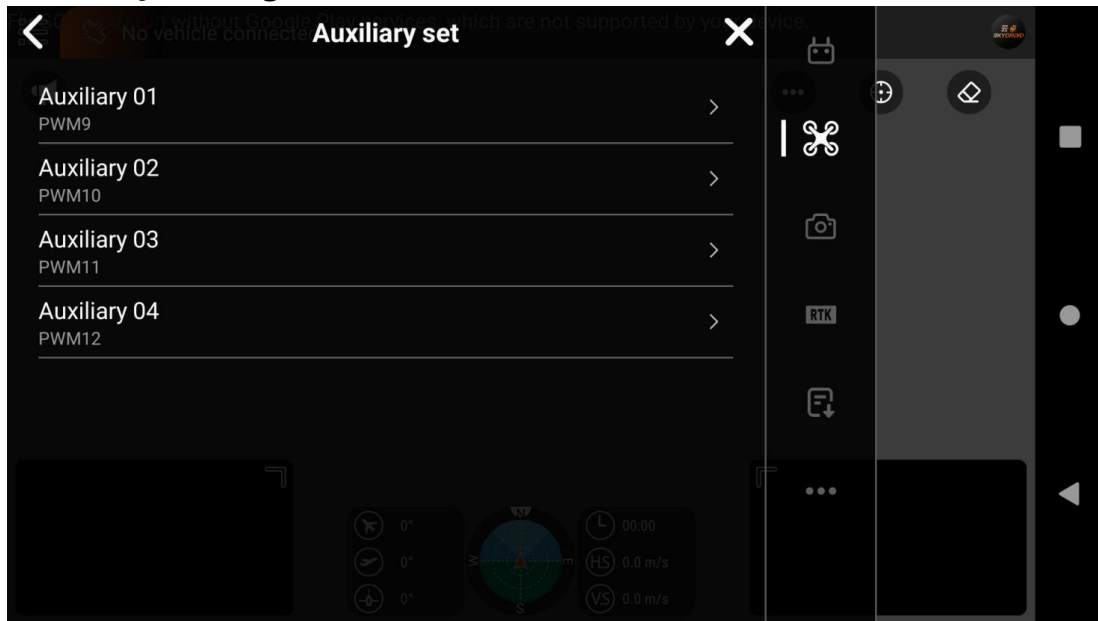
Note: For specific voltage setting references, please click the adjacent question mark icon.

4.11、Other Settings



In the Additional Settings interface, you can configure the motor lock option, as well as correct the installation positions of the flight controller and GPS (namely IMU Calibration).

4.12、Auxiliary Settings

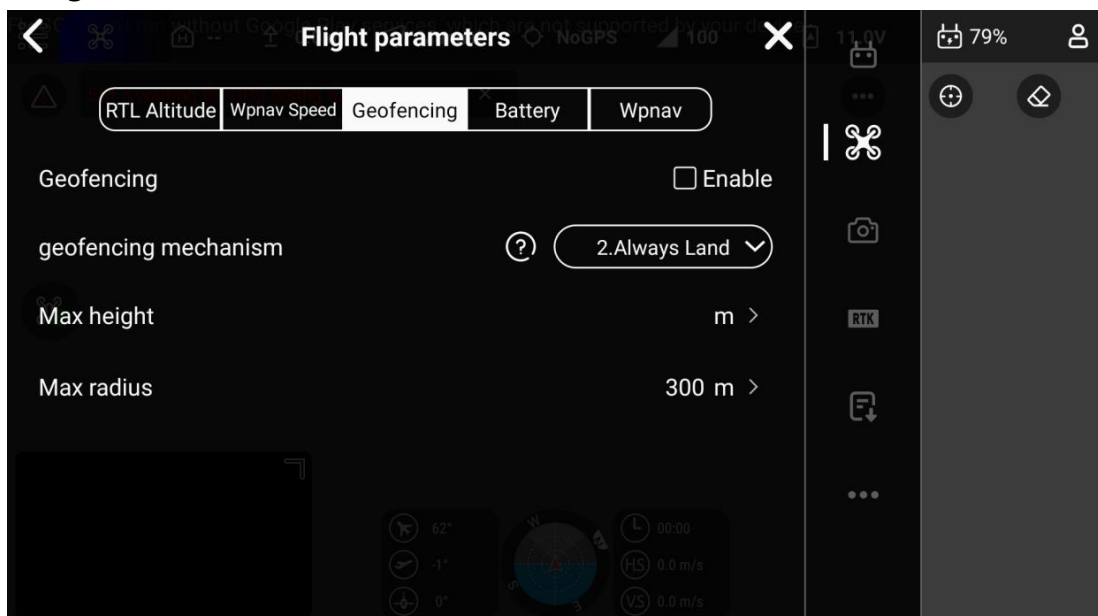


You can map channels for PWM9-12 ports of the flight controller and set corresponding failsafe values.

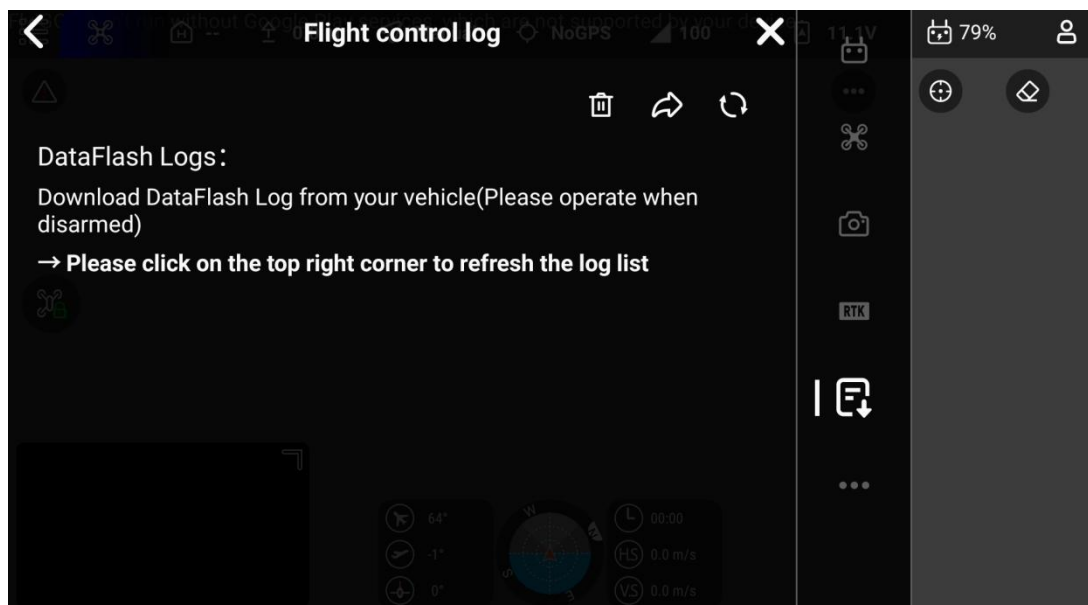
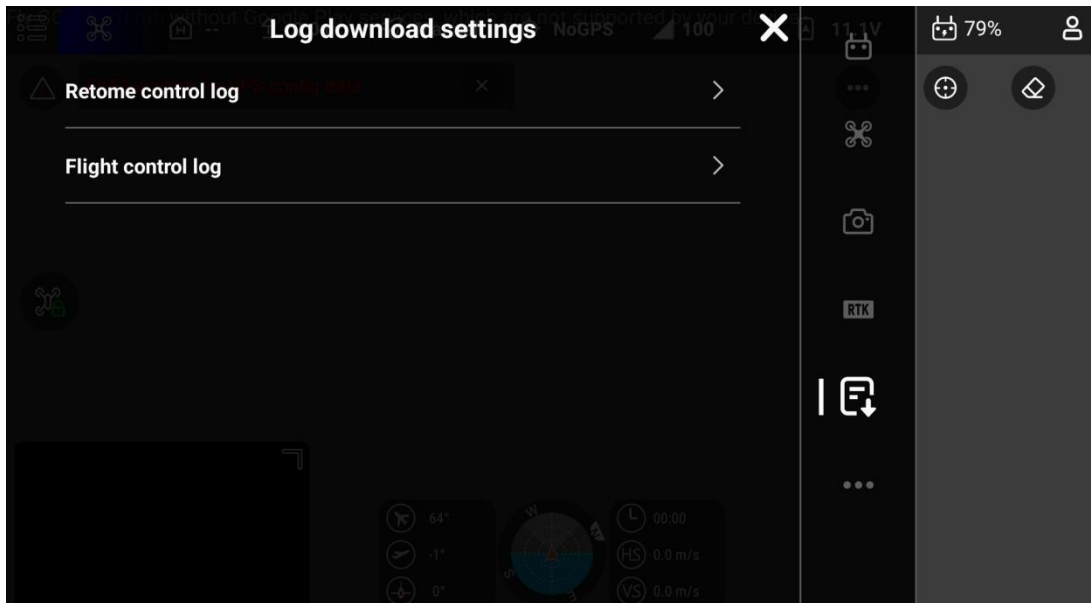
4.13、Geofencing

The geofence function is disabled by default. If necessary, enable it in Flight Controller Tuning>Geofence.

This is a safety protection mechanism designed to prevent the aircraft from flying beyond the preset boundary. When this function is enabled, the system will detect GPS positioning status automatically-the aircraft cannot be unlocked if GPS positioning is unavailable.



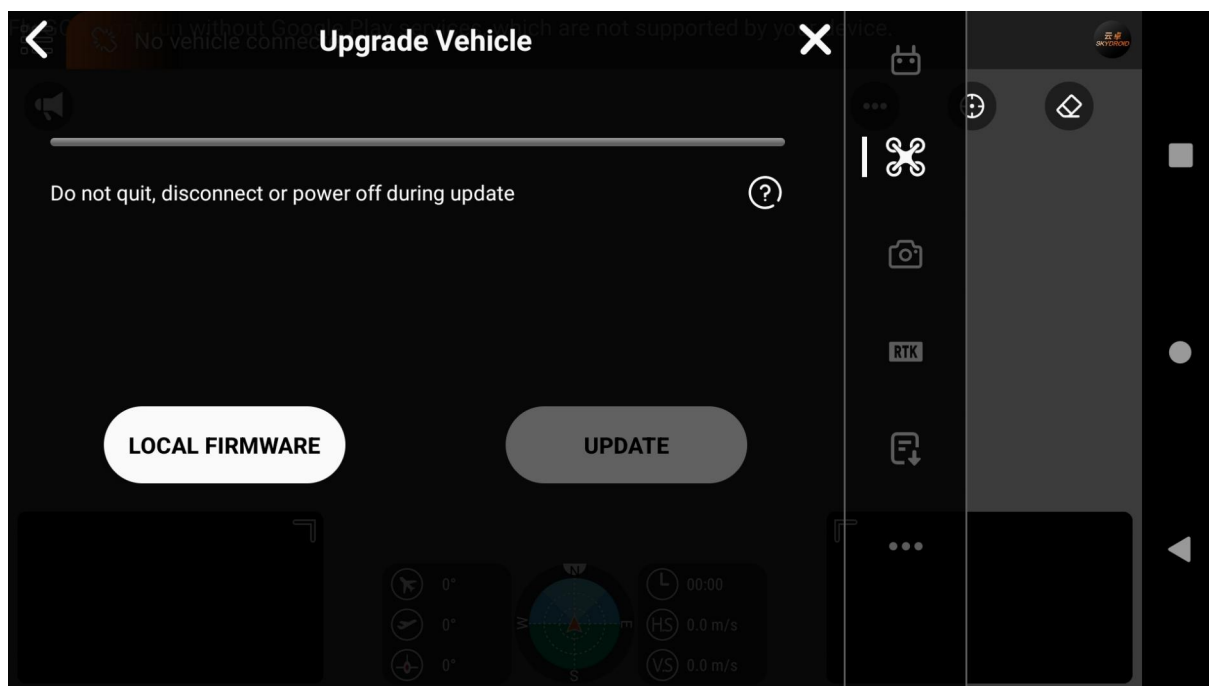
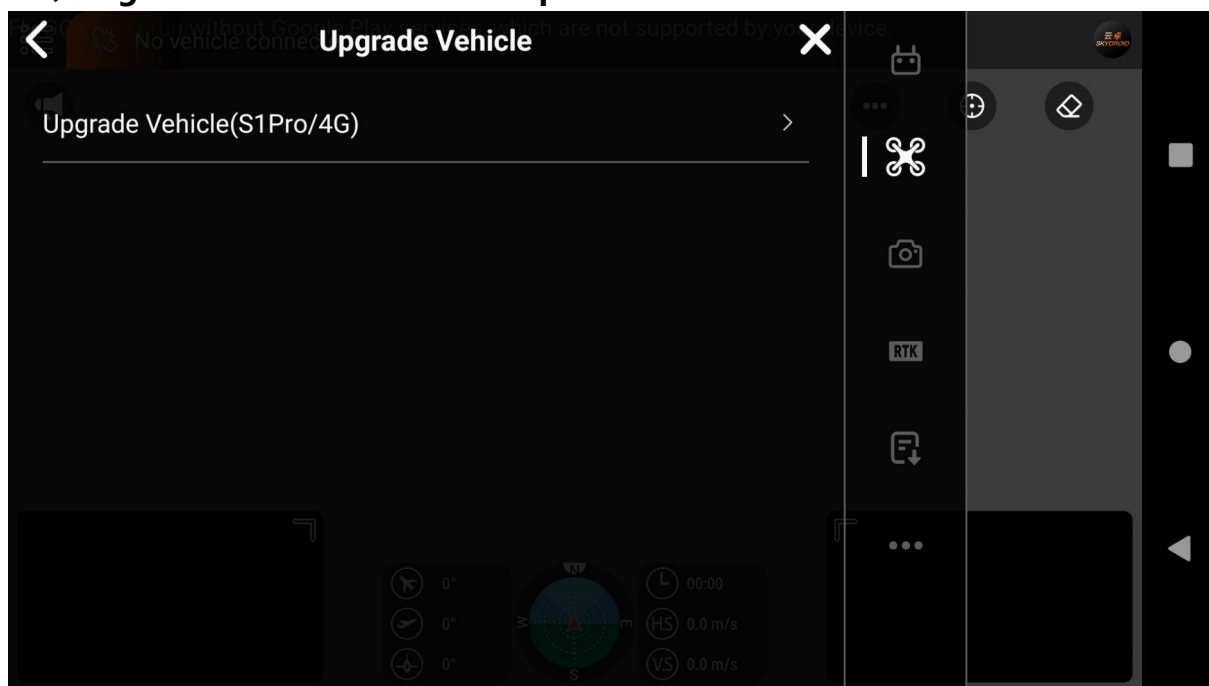
4.14、Log Download & Viewing



After entering the Log Download interface, first click the refresh button in the upper right corner, then select the corresponding log file for download. Once the download is complete, you can share the file via Bluetooth.

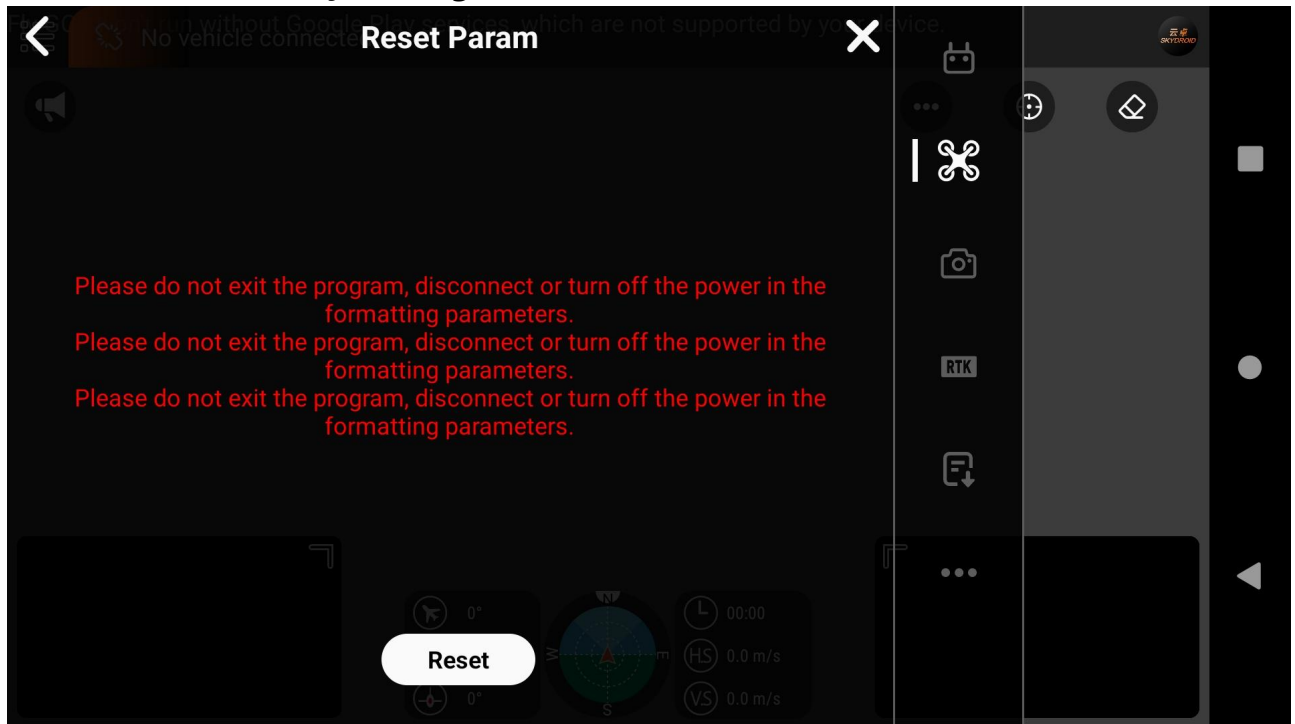
Note: Log analysis requires the use of professional software tools and the analyst must have the corresponding log analysis skills.

4.15、Flight Controller Firmware Update



(Users can update firmware and check for updates here.)

4.16、 Restore Factory Settings



If flight controller parameters are messed up for abnormal, click Restore Factory Settings. Note: After restoration, you must re-calibrate the level horizon and compass, and re-tune all flight parameters.

V. Fail-safe Protection

The aircraft has these return-to-home modes: RTL(Return to Launch), smart low-battery return-to-home, and loss-of-control return-to-home. Upon takeoff, if the number of GPS satellites locked is more than 12, the aircraft will successfully record the current position as the home point. If the aircraft is forcibly taken off without GPS signal, the home point will be recorded as the position where the number of GPS satellites locked reaches more than 12 for the first time afterwards.

Return-to-Home (RTH) Process	1.Record Home Point 2.Trigger RTH Conditions 3.Adjust Aircraft Nose Direction 4.Execute RTH at the Altitude Set in the APP (1) Regardless of the aircraft' s current altitude, it will land directly if the horizontal distance to the home point is within 5 meters. (2) If the aircraft is between 5 and 20 meters away from the home point horizontally, it will return at its current altitude, with a minimum RTH altitude of 5 meters. (3) If the aircraft is over 20 meters away horizontally: It will return directly if its current altitude is higher than the preset RTH altitude; It will climb to the preset RTH altitude is lower than the preset value.
One-key RTH	One-key RTH via APP/One-key RTH via remote controller button

Low-Voltage RTH	The aircraft will automatically initiate low-voltage RTH based on the mandatory RTH voltage threshold; 2.If there is no GPS signal or the signal is weak during low-voltage RTH, the aircraft will land automatically; 3.If the aircraft is forcibly taken off under poor GPS signal conditions, it will automatically return to the location where it first obtained a stable GPS signal; 4.If the battery level drops below the mandatory landing voltage threshold, the aircraft will enter landing mode.
Loss-of-Control Return-to-Home	When the connection between the aircraft and the remote controller is lost for more than 2 seconds, the aircraft will initiate RTH automatically. Performance Requirement: Automatic RTH function will be triggered 2 seconds after the aircraft loses control; If connection is restored during loss-of-control RTH, the aircraft will continue to execute the RTH procedure; The aircraft will land directly if there is no GPS signal or the signal is weak.

VI. Flight Control

6.1、 Flight Mode Introduction

Flight Mode Switch via Channel 5 of the remote controller

Flight more	Altitude Hold Mode	The aircraft automatically controls the throttle to maintain a constant flight altitude. In windy conditions, the pilot needs to continuously correct the roll and pitch to keep the aircraft hovering in a fixed position.
	GPS Mode	The aircraft automatically maintains its current position, heading and altitude. It is critical to ensure good GPS positioning, low electromagnetic interference on the compass and low vibration levels.
	RTH Mode	The aircraft will initiate automatic RTH. When the aircraft flies to the position directly above the home point, the pilot can operate the remote controller to adjust the landing position. After landing, the aircraft will automatically lock the motors.

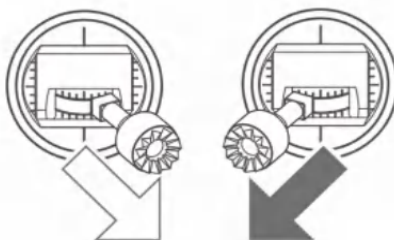
Pre-flight Inspection:

1. Check if the remote controller, aircraft battery and other devices have sufficient power.
2. Verify that the propellers are installed correctly and securely.
3. Ensure the aircraft battery is properly installed and firmly connected.
4. Confirm that the camera and gimbal are functioning normally after power-on.
5. Check if the motors can start up properly after the aircraft is turned on.
6. Verify that the remote controller is operating normally and displaying the camera's live video feed.
7. Make sure the aircraft's antenna is firmly mounted, and the remote controller's antenna is fully extended.
8. Check the accuracy of the compass heading: Open the compass app on your mobile phone and point it toward the aircraft's nose. Compare the heading reading with the attitude sphere's heading value on the APP's home page. If there is a significant discrepancy, perform compass calibration. For detailed calibration steps, refer to Section 8: Compass Calibration.
9. Always use genuine accessories. The use of non-genuine accessories may pose risks to the safe operation of the aircraft.

6.2、 Arm & Takeoff

Altitude Hold/GPS Mode

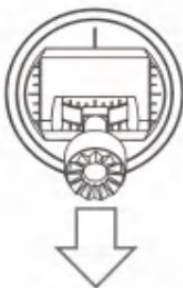
Take the American Hand Configuration as an example: Perform an inward eight-stick maneuver to unlock the aircraft. Once the motors start spinning, release the sticks immediately and push the throttle stick gradually to take off.



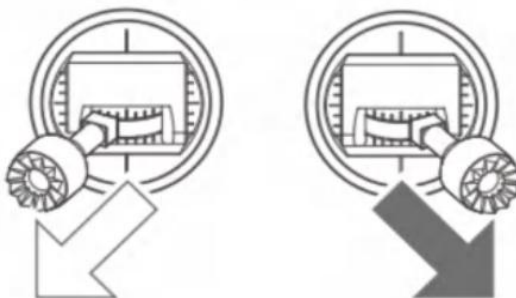
6.3、 Land & Disarm

Altitude Hold/GPS Mode

After the aircraft touches down, push the throttle stick to the lowest position and hold it for 3 seconds, after which the motors will stop.



If the aircraft lands in special circumstances such as inverted touchdown or impact touchdown, and the motors cannot be disarmed by pulling the throttle stick down, please perform an outward eight-stick maneuver to force disarm the motors.



Note: The outward eight-stick maneuver must be held for 1.5 seconds (default) or longer to force the motors to disarm. Do not perform this maneuver during normal flight.

Note: During the first test flight, if the aircraft behaves abnormally, immediately pull the throttle stick down to land the aircraft. Then enter the Basic Settings interface under IV. Flight Controller Tuning to adjust parameters.

VII. FAQs

1.Remote Controller Fails to Connect

- ①Check if the correct APP type has been selected
- ②Ensure that no background programs are occupying the FLY GCS Ground Station.

2.Aircraft Hovers Unsteadily

- ①Change the flight location; do not fly near tall buildings or signal towers;
- ②Perform compass calibration and level calibration on the aircraft;
- ③Determine if excessively strong wind is affecting the flight stability;
- ④Fine-tune the control sensitivity.

3.GPS Accuracy is poor or GPS accuracy test fails

- ①Search for GPS signals outdoors in an open area until the number of locked satellites reaches 11 or more.

Disclaimer:

When using this product, SKYDROID shall not be liable for any direct or indirect damages arising from the following causes:

- 1.Damages caused when the user is in poor physical or mental condition, such as being under the influence of alcohol, drugs, anesthetics, or experiencing dizziness, fatigue, nausea, etc.
- 2.Personal injury, property loss, and legal liability caused by the user' s international misconduct or misjudgment.
- 3.Any compensation claims related to mental damages arising from accidents.
- 4.Damages caused by flying the aircraft in restricted areas prohibited by laws and regulations, such as nature reserves.
- 5.Damages caused by poor aircraft performance resulting from unauthorized modification or replacement of components with non-SKYDROID manufactured

parts.

6. Malfunction of the aircraft itself caused by natural wear (after 100 hours or more of flight time), decay, or circuit aging.

7. Aircraft crash caused by failing to land promptly after the low-voltage alarm is triggered.

8. Damages caused by forced flight despite knowing the aircraft is in an abnormal state, including but not limited to exposure to water, oil, soil, sand or other foreign substances, incomplete assembly, obvious malfunctions of key components, or visible damage/missing parts of accessories.

9. Damages caused by flying in unsuitable operating conditions, such as areas with magnetic or radio interference (e.g., near high-voltage power lines, large electrical equipment, radio and television transmission towers, mobile phone base stations, etc.), government-designated no-fly zones, or situations where the user's line of sight is backlit, obstructed by obstacles, blurred, or impaired due to poor eyesight.

10. Damages caused by flying in severe weather conditions, such as rainy days, strong winds (above Level 4), snow, hail, etc.

11. Damages caused by the aircraft being exposed to collisions, overturning, fire, explosion, lightning strikes, storms, tornadoes, heavy rains, floods, tsunamis, ground subsidence, ice subsidence, cliff collapses, avalanches, hail disasters, mudslides, landslides, earthquakes, etc.

12. Damages arising from infringement claims related to any data, audio, or video materials obtained by the user through the use of the aircraft.

13. Damages caused by improper matching or use of battery protection circuits, battery packs, or chargers.

14. Any indirect losses and legal liabilities caused by equipment or accessory malfunctions (including memory cards), such as failure to save images or videos.

15. Losses and legal liabilities caused by reckless and unsafe flight operations conducted by users who have not completed adequate flight training.

16. Losses and legal liabilities caused by the user's failure to comply with the usage methods and precautions specified in the product manuals or quick start guides published by SKYDROID on its official website.

17. Other damages that do not fall within the scope of SKYDROID'S liability.

Important Notes:

(1) In certain circumstances, filming or recording performances, exhibitions, or other commercial buildings for private purposes may also constitute an infringement of

others' intellectual property rights.

(2) In some certain regions and countries, small aerial photography models are prohibited from engaging in any commercial activities.

If you encounter unsolvable problems during installation, please contact an officially authorized SKYDROID agent or SKYDROID technical support.

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Kind Reminder: Please read the instructions carefully before use.