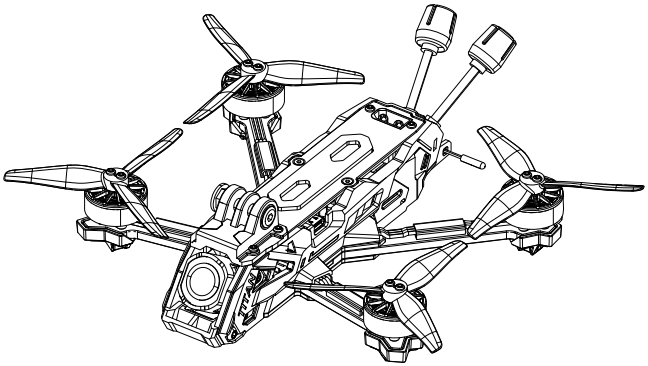
IFLIGHT

TITAN X3

Quick Start Guide

快速入门指南



V1.0

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安全概要与免责声明

⚠ 警告：在使用本产品之前，请您认真阅读此手册以熟悉产品的功能。此手册包含有关安全、操作及维护的说明概要。如未正确遵循手册的操作流程，可能会造成财产损失、产品损坏或造成严重的人身伤害!

安全飞行条款

1. 年龄建议：本产品并非玩具，具有一定的风险性，不适合未满 18 岁的非专业人士使用。
2. 请放置在儿童触碰范围之外，禁止儿童触碰。
3. 本产品仅供娱乐用途，不支持自主飞行。
4. 禁止在饮酒、疲劳、或其他精神状态不佳的情况下进行任何操作。
5. 禁止使用飞行器搭载任何违法危险物品。
6. 禁止操控飞行器进入法律法规规定的禁飞区和敏感建筑设施附近。可能包括机场、边境线、主要城市、发电站、水电站、监狱、交通要道、政府大楼及军事设施。
7. 在进行遥控器通道校准、固件升级、参数设置前请关闭动力电源或者取下螺旋桨，防止电机高速旋转。
8. 禁止在有限定高度的空域上飞行。
9. 禁止使用本产品进行任何未经授权的监视活动，侵犯他人隐私权的行为。
10. 禁止使用本产品侵犯他人物权。
11. 禁止在人口密集地区使用飞行器，这些地区包括但不限于：市区中心、体育比赛场馆、展会、演唱会，车站及临时举行活动区域。如有拍摄需求，请务必在飞行前向相关部门申请许可证。

免责声明

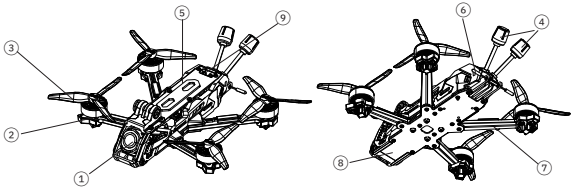
1. 本产品并非玩具，需要有一定的基础知识才能控制，所以要循序渐进，在开始使用前，请特别留意其中的注意与警告，惠州市翼飞智能科技有限公司 (iFlight) 保留更新本《免责声明与概要》的权利。
2. 在使用本产品前，请务必仔细阅读本文档，以充分了解您的合法权益、责任以及安全须知。未遵守文档中的指导可能导致财产损失、安全事故或人身伤害。通过开始使用本产品，您即表明已完全理解、接受并同意本文档的所有条款与内容，并承诺对自身行为及其所产生的一切后果承担责任。此外，您还承诺仅出于正当目的使用本产品，并同意遵守 iFlight 可能制定的任何相关政策和准则。
3. 对于因未按照官方文档指导使用产品所造成的任何损失，iFlight 概不负责。此外，无论是否事先告知可能发生的损害，iFlight 均不对因购买、使用或无法使用本产品而导致的间接、后果性、惩罚性、偶然性、特殊性或惩戒性损害承担责任。在法律允许的最大范围内，不论基于合同还是其他形式，iFlight 对您的总责任上限为您实际支付给 iFlight 的产品购买金额。
4. 在遵守相关法律法规的前提下，iFlight 保留对上述条款的最终解释权。iFlight 有权随时更新、修改或终止本注意事项中的条款内容，且无需事先通知。除非本指南的下载服务被终止，否则本注意事项将长期有效。
5. iFlight 是惠州市翼飞智能科技有限公司及其关联公司的注册商标。本文中提及的所有产品名称、品牌均为其各自所属公司的商标或注册商标。

一、产品信息

1. 飞行器描述

TITAN X3 为 iFlight TITAN 系列 3.5 寸紧凑型花飞影视穿越机，采用轻量化高刚性碳纤维机架，机身小巧紧凑，场地适应性强。相机支架角度可调，兼容数字与模拟图传，可搭载运动相机。整机操控响应灵敏，飞行手感细腻，兼顾室内外创意拍摄与花式飞行练习，适合小空间动态镜头创作。

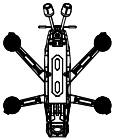
2. 外观部件



①摄像头　②电机　③螺旋桨　④天线　⑤防滑垫

⑥接收机天线　⑦机臂　⑧底板　⑨ XT60

3. 产品清单


TITAN X3 x1


CW 顺时针桨 x2


CCW 逆时针桨 x2


电池防滑垫 x1

电池扎带 x2


贴纸 x1

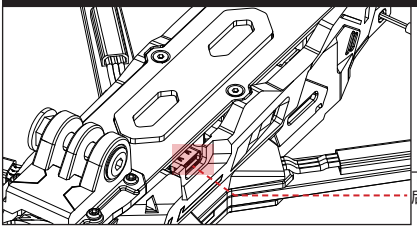

配件包 x1


售后返修卡 x1


安全提示卡 x1


免责声明 x1

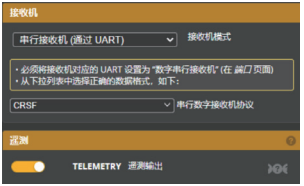
二、飞行器设置



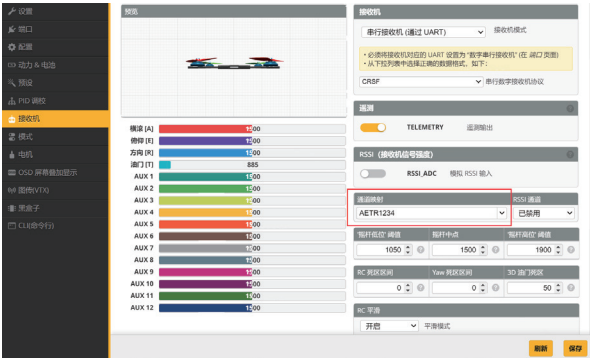
下载 Betaflight configuration[*1]
后连接飞控 USB

a. 接收机端口 / 协议
ELRS/TBS 接收机 :CRSF



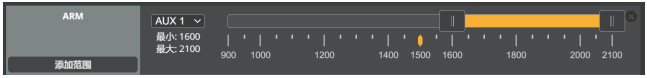


b. 通道映射设置
接收机通道映射: “AETR1234” 美国手 - 左手油门 “TAER1234” 日本手 - 右手油门

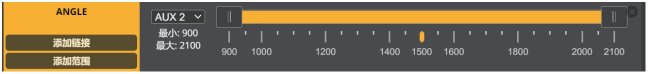


c. 接收机端口协议
飞行器默认出货为自稳，用户也可自行设置其他模式。

ARM: 解锁 / 上锁通道开关，用于飞行器的解锁与上锁，默认出厂设置为 AUX1, 低位为上锁，高位为解锁。图标亮起表示解锁，图标呈现灰色表示上锁。

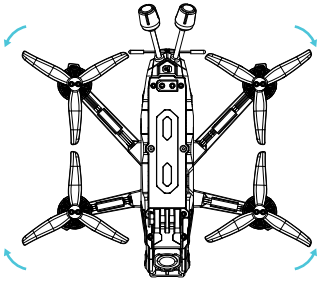


ANGLE: 自稳通道开关，用于飞行器开启自稳飞行模式，默认出厂设置为 AUX2 该模式全程保持开启状态。图标亮起表示开启自稳模式，图标呈现灰色表示非自稳模式。



三、桨叶安装指南

CW 顺时针桨 & CCW 逆时针桨，用户需根据桨叶表面的方向标识，区分桨叶方向，安装至飞行器。



注意 ⚠

◆ 拆装桨叶时, 请确保飞行器处于断电状态。
◆ 由于桨叶较薄, 请小心操作以防意外划伤。
◆ 螺旋桨为易损耗品, 如有需要, 请另行购买。
◆ 每次飞行前请检查螺旋桨是否安装正确和紧固。每次飞行前请务必检查各螺旋桨是否完好。如有老化、破损或变形, 请更换后再飞行。
◆ 请勿贴近旋转的螺旋桨和电机, 以免割伤。
◆ 本产品不适合儿童使用。

四、飞行前检查

警告： 在进行任何调试、维护或故障排除之前，请务必保持无桨 / 卸桨状态。在确保对频以及 Betaflight*1 调试无误之后再安装桨叶。如果操作不当导致人身伤害，责任自负。请务必谨慎操作，确保安全。

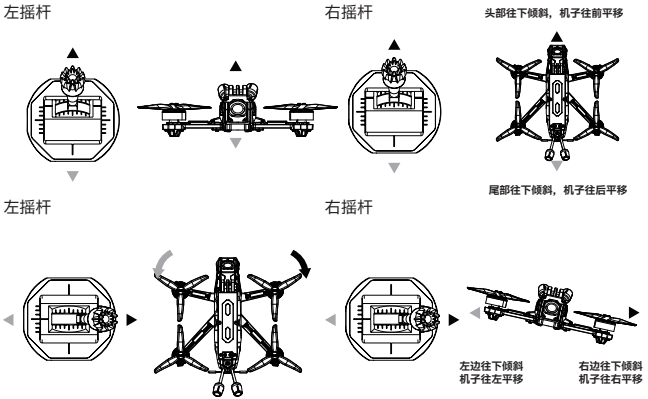
每次飞行前，请对以下内容进行检查。

1. 必须正确安装天线才能上电。
2. 检查使用的电池电量是否充足且健康，确保电池无明显破损、变形或泄露现象。
3. 确认电池型号与飞行器兼容，电压规格正确（比如对于 6S 电池，应为 22.2V 左右）。
4. 检查电池插头与飞行器电池插座接触良好，无松动、污物或损坏情况。
5. 遥控器开启并已与飞行器正确对频，确认接收机指示灯正常闪烁或显示已连接。
6. 确保电机旋转方向正确，拆卸桨叶后，在地面站的电机页面推动油门确认
7. 确认螺旋桨安装方向，确定螺丝螺母不会松动。
8. 确保起飞地点空旷无障碍物，远离人群和贵重物品，以防止意外失控造成的损失。
9. 如果是首次飞行或重大升级后，建议先进行地面测试，确认所有功能正常后再进行空中飞行。

通过以上这些预防性检查，可以有效降低因疏忽导致的飞行事故，保证飞行器的安全运行。

五、飞行操作

1. 遥控器基本操作
使用遥控器摇杆可控制飞行器飞行，遥控器摇杆操控方式主要分为日本手、美国手，下图以美国手 (Mode 2) 为例。更多信息详见遥控器说明书。



2. 飞行步骤

⚠注意：在操作飞行器前，请查询当地的法律和条款。在某些地区，飞行器的使用可能会受到限制或禁止。飞行时需严格遵守当地法律法规，您将对所有违反当地法律法规的飞行行为负责。

起飞步骤:

需要目视飞行器同时将油门 (throttle) 推至最低位置，然后慢慢提升油门，使飞行器离地约 10-20 厘米。观察飞行器的姿态稳定后，收油门遥控器上锁。确认飞行器工作正常后再带上 FPV 飞行眼镜，或者使用专用监视设备进行飞行，解锁缓慢提高油门，使其平稳升空。

降落步骤:

1. 降低高度，在降落前，先将飞行器逐渐降低至合适高度，保持稳定的飞行速度和姿态。
2. 靠近降落点，控制飞行器慢慢接近预先选好的降落区域，尽量采用滑翔方式接近，才能更好控制距离点位。
3. 减小油门，缓慢减少油门输出，让飞行器缓慢下降。
4. 接触地面或距离地面 5-10cm 即可上锁，小心周围环境避免硬着陆损坏。
5. 降落地面后请立即对无人飞行器进行断电操作。

注意事项

●电池电量过低，飞行中可通过查看 FPV 飞行眼镜或监视器中的 OSD 信息判断电池剩余电量，飞行过程中需自行判断剩余飞行时间并留足冗余作为安全降落电量，当电池单片电芯电压接近 3.7V 时需要注意返航降落，过度放电会对电池造成不可逆的损坏。

●观察四周，在降落前再次确认周围环境安全，没有人员或动物进入降落区。

●降落地后优先将电池插头拔掉使设备断电，避免再次误触遥控器开关 再次解锁极其危险。降落地面后优先将无人飞行器设备断电，避免误触遥控器开关使其再次解锁从而避免发生事故和人身伤害。

六、GPS 救援功能使用指南

设置 GPS 时，请连接飞行器电池，以确保 GPS 可在 Betaflight*1 中正常设置。

1. 若本飞行器已预装 GPS，GPS 救援模式请参考《GPS 救援模式注意事项》进行设置。
2. 救援触发操作:

① 若飞行器已经自动触发 GPS 救援，飞回来后想要手动接管仅需拨动左右任意一个摇杆接管，而不是拨打 GPS 救援开关。

②当飞行器因手动触发救援开关返航，且飞回到可接管范围时，则需再次操作救援开关以重新接管控制。

若自动触发救援模式后，遥控器接管成功再手动拨动开关，会导致 GPS 救援再打开，若在没有达到救援条件的时候，会导致上锁掉落。

注：在启用 GPS 救援模式及开始使用飞行器前，请熟读《GPS 救援模式注意事项》中所有注意事项。

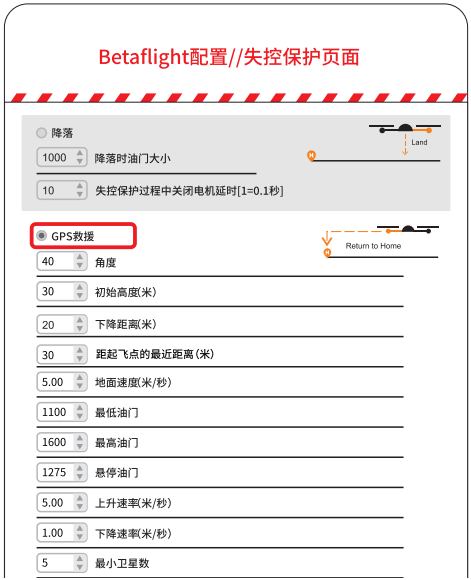
七、自动救援模式行为

GPS 救援模式注意事项

请您认真阅读以下注意事项，正确使用救援功能

1、GPS 救援模式默认为关闭状态，请设置一个空闲的拔档开关用于手动控制救援功能。
2、GPS 搜星数量需要达到 5 颗或以上，飞机才能正常解锁。
3、GPS 救援模式是在紧急情况下，自动将飞机带回起飞点上空（例如失控情况下或者手动拨杆启动 GPS 救援模式）在救援模式下，当飞机进入可控范围后请尽快手动接管，因为 GPS 救援模式无法做到精准降落
4、机子需要飞离起飞点 15 米外（水平距离）才能正常激活 GPS 救援。Betaflight4.5 以上版本则离起飞点 15 米外即可激活救援（出厂会设置为 15 米）。
5、GPS 搜星速度和搜星数量与环境天气有关，所以不同地方搜星的速度和数量均不一样，请确保起飞之前搜到卫星数量大于 5 颗，否则可能无法正常启用失控救援。

Betaflight 4.5 默认设置



允许在未锁定的情况下解锁- 警告：这样将无法使用GPS救援

最大高度 ▼ 高度模式

仅限失控保护 ▼ 可用性检测

有效脉冲范围设置

885 最小长度

2115 最大长度

Stage 1 - Channel Failback Settings

横滚 [A]	Auto
俯仰 [E]	Auto
方向 [R]	Auto
油门 [T]	Auto
AUX 1	Hold
AUX 2	Hold
AUX 3	Hold
AUX 4	Hold
AUX 5	Hold
AUX 6	Hold
AUX 7	Hold
AUX 8	Hold
AUX 9	Hold
AUX 10	Hold
AUX 11	Hold
AUX 12	Hold

失控保护开关

阶段 1 失控保护开关行为

二阶失控保护 - 设置

1.5 Period of time in Stage 1 failsafe after signal loss [seconds]

10.0 低油门失控保护延迟 [秒]

二阶失控保护措施

坠落



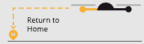
降落



1000 降落时油门大小

1.0 失控保护过程中关闭电机延时 [秒]

GPS 救援



最大高度 高度模式

10 Initial climb (meters)

30 Return altitude (meters) - **only applies in Fixed Altitude mode**

7.5 上升速率（米/秒）

7.5 Return ground speed (meters/second)

45 Maximum pitch angle

20 下降距离 (米)

1.5 下降速率（米/秒）

1100 最低油门

1700 最高油门

1275 Throttle hover - **IMPORTANT: set this value accurately**

15 距起飞点的最近距离 (米)

5 最小卫星数

Allow arming without fix - **WARNING: No fix = disarm on failsafe!**

仅限失控保护 可用性检测

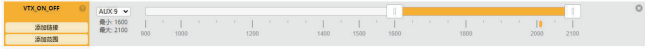
八、故障排除指南

问题	可能原因	解决方案
遥控器打杆，飞行器无反应	接收机协议设置与实际不符	检查接收机协议设置是否和接收机所连接的串口一致
	模式设置有冲突导致解锁失败	检查地面站模式设置是否有重复
	接收机通道预设与和遥控器的通道预设不一致	检查并设置使接收机通道映射和遥控器的通道映射一致
	飞行器在倾斜角度下	检查地面站配置页面的最大解锁角度
	油门通道过高	将油门杆拉到最低，或者检查通道序号是否正确
飞行器起飞即翻滚或无法起飞	螺旋桨安装错误	检查螺旋桨的安装是否正确
飞行器起飞后电机存在异响	螺旋桨松动	拧紧螺旋桨的螺母
	螺旋桨轴心损坏	更换螺旋桨

连接电池后，O4图传不亮灯，地面站显示图传正常	关闭了图传开关模式	连接Betaflight，进入模式设置，找到并开启“VTX_ON_OFF”模式，同时确保模式范围条拉满保持VTX模式保持开启。



飞控 12V 供电用于控制图传开关，默认全段开启，通道为 AUX9。用户可根据实际需求设置 AUX 通道。



开启图传开关



如需控制开启或关闭，则把通道调至 1600-2000 位置，图标显示黄色则为开启，显示灰色则为关闭。

关闭图传开关

注：如重新刷写固件或恢复默认参数，需要手动在 Betaflight 的 CLI 界面输入以下指令，重新启动图传开关控制功能:

```
resource PINIO 1 C0
set pinio_config = 1,1,1,1
set pinio_box = 40,41,255,255
set box_user_1_name = VTX_ON_OFF
aux 0 40 8 900 2100 0 0
save
```

九、风险意识和法律免责声明

免责声明与警告

1. 免责声明

本产品并非玩具，需要有一定的基础知识才能控制，所以要循序渐进。在开始使用前，请特别留意其中的注意与警告，惠州市翼飞智能科技有限公司（翼飞）保留更新本《免责声明和安全操作引导》的权利。
本产品为多旋翼飞行器，配备了动力强劲的电机和锋利的螺旋桨，具有极快的飞行速度，同时具有一定的危险性，操作时需要谨慎使用。在电源正常工作及各部件未损坏的情况下将提供优异的飞行体验。
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使用须知

1. 遥控器

1. 每次飞行前，确保遥控器电量充足。
2. 确保遥控器天线展开并调整到合适的位置，以获得最佳的信号效果。
3. 切勿遮挡或覆盖遥控器内置天线，以获得最佳的信号效果。
4. 遥控器天线如有损坏将影响使用性能，请及时联系翼飞技术支持进行返修。
5. 如更换遥控器，需要重新对频。
6. 每隔三个月左右对遥控器内置电池进行一次充放电。
7. 切勿遮挡遥控器进风口及出风口，以免遥控器温度过高，影响遥控器性能。

2. 飞行器

1. 每次飞行前，确保飞行器电量充足。
2. 螺旋桨是否正确、稳固安装。
3. 电池是否安装并连接稳固。

3. 电池

1. 请勿使用镍 (NICD)、镍氮 (NIMH) 或者其他种类电池专用的充电器来为聚合物 (LIPO) 电池充电，请使用 LIPO 专用充电器充电。
2. 请勿在无人看顾的情况下充电。
3. 请勿过充 (每片电芯充满电的电压不超过 4.25V)。
4. 请勿短路 (正负极接反)。
5. 请在 0-45° C 范围内充电。
6. 充电时，请注意充电的桌面或平台可耐热耐高温，充电时，有条件地选择在水泥地上或者装满泥沙 的花盆中充电。
7. 在任何时候，都不能让电池电芯过热。电芯在温度高达 60° C 后，会存在安全隐患，甚至是燃烧。
8. 在充电时，电池不可接近或者直接放置在易燃物品如 : 纸张、塑料、地毯、乙烯、皮革、木材，或者 直接放在设备中充电。
9. 请勿过放 (每片电芯放完电的电压不低于 3.3V)，过放易损伤电池，如鼓胀。
10. 请勿将电解液溅到眼睛或者皮肤，如不慎溅到，请立即用清水清洗，严重者请立即就医。
11. 请勿任意拆开电池重组或者改变接线。请勿直接接触有漏液现象电池。
12. 请勿私自组装电池，将旧电池电芯拆开后重组、或者将拆开后的某一片电芯与另外一组电池重组的 行为都是危险的 (无专用的组装仪器易引起短路燃烧)。
13. 如在使用中发生碰撞，请将电池取出。请仔细检测电池以及连接器是否正常，以防万一。

注意 : 电池有可能高温烫手 !

飞行警告

1. 恶劣天气下请勿飞行，如大风、下雪、下雨、有雾天气等。
2. 选择开阔、周围无高大建筑物的场所作为飞行场地。大量使用钢筋的建筑物会影响信号工作，干扰飞行。建议飞行器至少距离建筑物、电线杆、障碍物等 10m 以上距离。
3. 飞行时，请保持在视线内控制，远离障碍物、人群、水面等 , 避免在人员密集处飞行。
4. 请勿在有高压线、通讯基站或发射塔等区域飞行，以免受到干扰。
5. 请勿在移动的物体表面起飞（例如行进中的汽车、船只）。
6. 请勿在易燃易爆的环境中使用飞行器。
7. 切勿接触工作旋转中的螺旋桨，否则可能受到严重人身财产损害。

法律规范

1. 警告

为避免违法行为、可能的伤害和损失，务必遵守以下各项：
1. 禁止将飞行器进行任何改装或用于其他非法用途。
2. 切勿在载人飞机附近飞行。必要时立即降落。
3. 禁止在大型活动现场使用飞行器。这些场地包括但不限于：体育比赛场馆、演唱会。
4. 切勿在当地法律禁止的区域飞行
5. 确保飞行器飞行时不会对航线上的大型载人飞行器造成影响。时刻保持警惕，并躲避其他飞行器。

2. 小心

为避免违法行为、可能的伤害和损失，务必遵守以下各项：
1. 禁止操控飞行器使之进入法律法规规定的禁飞区。禁飞区包括但不限于：机场、边境线以及主要城市和临时举行活动区域。
2. 禁止在超过限定高度的空域飞行。
3. 确保飞行器在您的视距范围内飞行，若有必要可安排观察员帮助您监控飞行器位置。
4. 禁止使用飞行器搭载任何违法危险物品。

3. 注意

1. 确保您已清楚了解飞行活动的类别（例如：娱乐、公务或商务）。在飞行前务必获取相关部门颁发的许可证。如有必要，可向当地政府主管部门咨询飞行活动类别的详细定义说明。请注意，在某些地区与国家禁止使用飞行器进行任何形式的商业行为。
2. 禁止在敏感建筑设施，例如：发电站、水电站、监狱、交通要道、政府大楼以及军事设施附近使用飞行器。

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1. 遵守出口管制法律

本产品的出口、再出口或转移受中国的出口管制法律及其他适用的出口管制法律管控。除非适用的出口管制法律允许，或者获得相关出口管制主管机构的许可，您对本产品的使用、销售、转让、出租或者其他行为需要确保：
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2. 不与适用出口管制法律禁止的最终用户进行交易。
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注释:
*1：Betaflight configuration 是飞行器飞控调参软件，请通过以下地址下载。https://betaflight.com/download

惠州市翼飞智能科技有限公司

电话：+86752-3866-695
邮箱：support@iflight.com
网址：www.iflight.com
地址：惠州仲恺高新区陈江街道仲恺六路 333 号星河仲恺人工智能产业园 B2 栋厂房第 5-6 层

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Safety Warning & Disclaimer

⚠ Warning: Before using the aircraft, thoroughly read this manual for important notes and warnings. This manual contains important safety, operation, and maintenance instructions. Failure to follow proper usage may result in damage, injury, or product malfunction.

Safe Flying Guidelines

1. Age Recommendation: This product is not a toy and has certain risks. It is not suitable for non-professionals under the age of 18.
2. Please keep out of reach of children. Children are prohibited from touching it.
3. For entertainment purposes only. Autonomous flight not supported.
4. DO NOT operate under the influence of alcohol, fatigue, or other impaired mental states.
5. DO NOT use the aircraft to carry any illegal or dangerous goods.
6. DO NOT operate the aircraft in no-fly zones and near sensitive buildings and facilities stipulated by laws and regulations. These may include airports, borderlines, major cities, power plants, hydroelectric stations, prisons, transportation hubs, government buildings, and military facilities.
7. Before performing remote control channel calibration, firmware upgrades, or parameter settings, please turn off the power supply or remove the propellers to prevent the motor from rotating at high speed.
8. DO NOT fly in airspace with limited altitude.
9. DO NOT use this product for any unauthorized surveillance activities or to infringe on the privacy of others.
10. DO NOT use this aircraft to infringe on the property rights of others.
11. DO NOT use the aircraft in densely populated areas, including but not limited to: city centers, sports stadiums, exhibition venues, concert halls, stations, and temporary event areas. If there is a filming requirement, be sure to apply for a permit from the relevant authorities before flying.

Disclaimer

1. This product is not a toy and requires basic knowledge to control. Therefore, it is important to proceed gradually. Before using the aircraft, thoroughly read this manual and the Disclaimer and Safety Guidelines for important notes and warnings. iFlight reserves the right to update this Disclaimer.
2. Before using this aircraft, be sure to read this document carefully to fully understand your legal rights, responsibilities, and safety precautions. Failure to comply with the instructions in the document may result in property damage, safety accidents, or personal injury. By starting to use this product, you indicate that you fully understand, accept, and agree to all the terms and contents of this document, and you undertake to be responsible for your own actions and all consequences arising therefrom. In addition, you also promise to use this aircraft only for legitimate purposes and agree to comply with any relevant policies and guidelines that iFlight may formulate.
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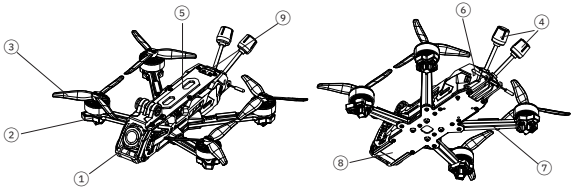
I. Overview

1. Introduction

The iFlight TITAN X3 is a compact 3.5-inch freestyle and cinematic FPV drone from the TITAN Series. It features a lightweight, high-rigidity carbon fiber frame with a compact design for versatile flying environments. The adjustable camera mount supports digital and analog video transmission systems and can carry an action camera. With responsive handling and precise flight control, the X3 is ideal for creative indoor and outdoor filming, freestyle practice, and dynamic shots in tight spaces.

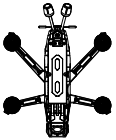
2. Appearance Components



① Camera ② Motor ③ Propeller ④ Antenna ⑤ Anti-slip pad

⑥ Receiver Antenna ⑦ Arm ⑧ Bottom plate ⑨ XT60

3. Packing List



TITAN X3 x1



CW propeller x2



CCW propeller x2



Battery pad x1



Battery strap x2



Accessory pack x1



Stickers x1



After-sales service card x1

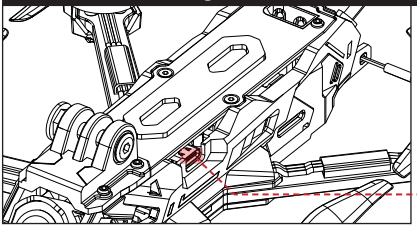


Safety warning card x1



Disclaimer x1

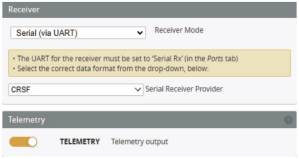
II. Aircraft Setting



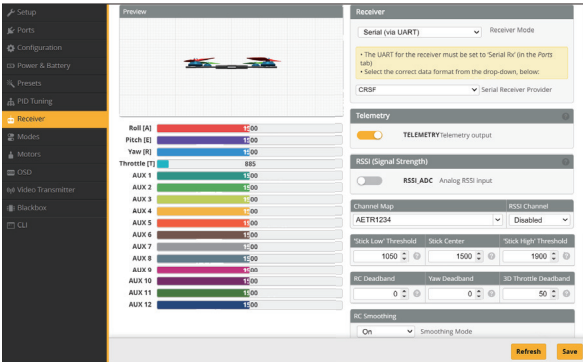
Download Betaflight Configurator[*1] and connect to flight controller USB.

a. Receiver port / protocol
ELRS/TBS receiver: CRSF

Identifier	Configuration/MSP	Serial Rx	Telemetry Output
USB VCP	115200		Disabled AUTO
UART1	115200		Disabled AUTO
UART2	115200		Disabled AUTO
UART3	115200		Disabled AUTO
UART4	115200		Disabled AUTO
UART5	115200		Disabled AUTO
UART6	115200		Disabled AUTO

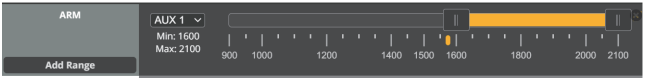


b. Channel map settings
Receiver Channel Mapping:
"AETR1234" – Mode 2 (American hand / Left-hand throttle),
"TAER1234" – Mode 1 (Japanese hand/ Right-hand throttle)



C. Mode Switch (Default Angle)
The default mode is Angle, and users can also switch to other modes.

ARM: The ARM/DISARM channel switch for arming and disarming the aircraft. Default factory setting is AUX1, low position for disarm, high position for arm. The icon is lit to indicate arm, the icon is gray to indicate disarm.

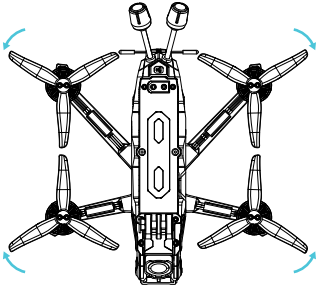


ANGLE: The Angle channel switch is used to enable the aircraft's self-leveling flight mode, the default factory setting is AUX2, this mode remains on throughout the flight. The icon is lit to indicate Angle mode is on, the icon is gray to indicate Angle mode is off.



III. Propeller Installation

Identify CW & CCW propellers and install them correctly on the aircraft.



Note⚠

◆ Before removing or installing the propellers, please make sure the aircraft is powered off.
◆ Handle propellers carefully to avoid accidental cuts.
◆ Propellers are consumables; inspect and replace them if worn, damaged, or deformed.
◆ Ensure propellers are installed correctly and securely before each flight.
◆ Avoid close contact with rotating propellers and motors.
◆ This product is not intended for children.

IV. Pre-Flight Check

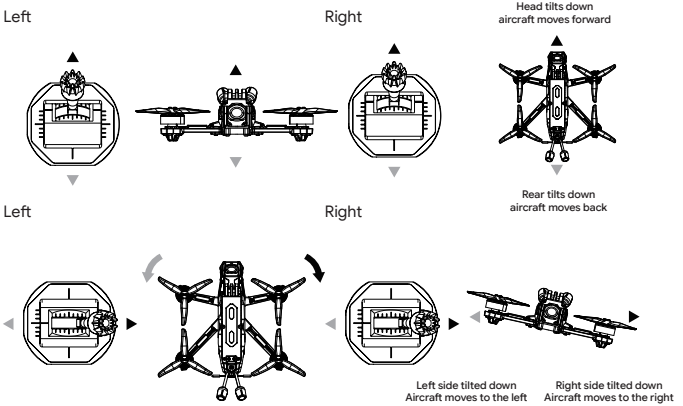
Warning: Before tuning, maintenance, or troubleshooting, always ensure that the propellers are removed or not installed. Only install the propellers after successful binding and proper setup verification. Improper operation may result in personal injury, for which the user assumes full responsibility. Please operate with extreme caution and prioritize safety at all times.

Check the following items before every flight.
1. Make sure the antenna is installed correctly before powering on the aircraft.
2. Make sure the aircraft batteries are fully charged and there is no obvious damage, deformation or leakage in the battery.
3. Make sure the battery model is compatible with the aircraft and the voltage specification is correct (e.g. for 6S battery, it should be about 22.2V).
4. Make sure the aircraft battery is properly connected and secure, there is no looseness, dirt or damage.
5. Make sure the remote controller is powered on and properly bound to the aircraft,and verify the receiver indicator light flashes normally or indicates a connection.
6. Make sure the motor rotates in the right direction, take off the propellers and connect the aircraft to Betaflight Configurator, then push the throttle to confirm the rotation on the motor page.
7. Make sure propellers are in good condition and mounted onto the motors correctly and securely.
8. Ensure the takeoff area is open and free of obstacles. Keep a safe distance from people and valuable objects to prevent potential damage in case of loss of control.
9. If it is the first flight or after a major upgrade, it is recommended to conduct a ground test first to make sure all functions are normal before flying in the air.

These preventive inspections can effectively reduce flight accidents caused by negligence and ensure the safe operation of FPV drones.

V. Flight Operation

1. Basic Remote Controller Operation
The aircraft is controlled via the remote controller sticks. There are two main stick configurations: Mode 1 and Mode 2. The following diagram uses Mode 2 as an example. See the remote controller manual for more information.



2. Flight Procedures

⚠ Note: Before operating the aircraft, please check local laws and regulations. In some areas, the use of aircraft may be restricted or prohibited. Users are solely responsible for complying with all applicable laws and regulations during flight operations, and any violations will be at your own risk.

Takeoff Procedure

Start by pushing the throttle to the lowest position, then gradually increase it to lift the aircraft approximately 10-20cm off the ground. Once the aircraft's attitude is stable, throttle down and disarm the remote controller. Put on FPV goggles or face the monitor (such as a handheld monitor), arm the aircraft using the remote controller and slowly increase the throttle to smoothly ascend.

Landing Procedure

1. Decrease altitude, before landing, gradually lower the aircraft to an appropriate altitude, maintaining a stable flight speed and attitude.
2. Approach landing spot, control the aircraft to slowly approach the pre-selected landing area, preferably using a gliding approach to better control the distance.
3. Reduce throttle, slowly decrease throttle output to allow the aircraft to land slowly.
4. Disarm the aircraft when it touches the ground or is 5-10cm away from the ground, be careful to avoid hard landings that could cause damage.
5. After landing, immediately unplug the battery to power off the device to avoid injury.

Precautions

- Monitor battery level: You can check the remaining battery power by checking the OSD information in the FPV goggles or the monitor during flight. You need to judge the remaining flight time and maintain a sufficient battery for a safe landing. When the voltage of a single battery cell approaches 3.7V, you need to pay attention to return and land. Over-discharge will cause irreversible damage to the battery.
- Observe surroundings: Before landing, double-check the surrounding environment for safety, ensuring no people or animals are in the landing area.
- Disconnect battery: After landing, it is important to first power off the aircraft to avoid accidentally triggering the remote controller switch to arm it again, preventing potential accidents and injury.

VI. GPS Rescue Mode Instruction

When setting up GPS, please connect the battery to ensure that the GPS can be properly configured in Betaflight.*1

1. If this aircraft is already equipped with GPS, please refer to the GPS Rescue Mode Precautions for setup instructions.
2. Rescue Trigger Operation:

① If the aircraft has automatically triggered GPS rescue, after it returns, you only need to move either joystick (left or right) to take manual control, do not toggle the GPS rescue switch.

② When the aircraft returns due to manually triggering the GPS rescue switch, and it has returned to within controllable range, you need to toggle the GPS rescue switch again to regain control.

If the GPS rescue switch is manually toggled after the remote controller successfully takes over, it will cause GPS rescue mode to turn on again. If rescue conditions are not met at that time, this may cause the aircraft to disarm and fall.

Note: Before enabling GPS rescue mode and operating the aircraft, please carefully read all precautions in GPS Rescue Mode Precautions.

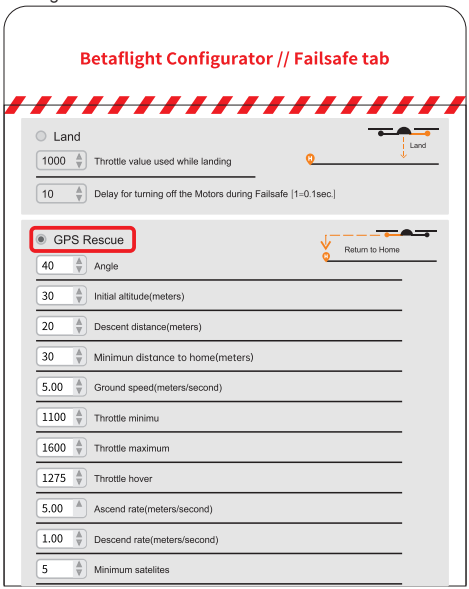
VII. Automatic Rescue Mode Behavior

GPS Rescue Mode / Setup

Please read carefully and customize settings if necessary

1. GPS Rescue is OFF by default to prevent from unwanted or unexpected drone behavior.Please carefully study the Betaflight Wiki on https://github.com/betaflight/betaflight/ wiki/GPS-rescue-mode and set up an AUX switch for first tests in line of sight and safe environment!
2. Enable Expert Mode in the Betaflight Configurator to access the Failsafe tab and configure the GPS Rescue feature. Default setup needs at least 5 satellites before you're able to arm, unless you adapt the settings. At this point in time, DJI digital FPV can't display OSD messages (for example if GPS Rescue is not available). Analog FPV does!
3. Quote BF: "GPS Rescue Mode is intended to bring your quad back autonomously in case of an emergency such as loss of video or radio link. The only purpose of GPS Rescue is to bring the quad back into range so you can retake control as soon as possible. GPS Rescue IS NOT a full "Return To Home" (RTH) function."
4. Fly in a straight line for at least 15 meters past your descent distance,make sure the home arrow is pointing at your direction to confirm correct GPS functionality.Manually activate GPS rescue mode and observe its behaviour.
5. GPS performance (search speed and the amount of satellites found) greatly depends on the environment you're in. Bad weather and obstructed areas will give you fewer satellites and reduced positioning accuracy that might not work reliably before take-off or even in-flight. Always make sure not to bring yourself or others in danger!

Betaflight 4.5 Defaults



Allow arming without fix-WARNING : the GPS Rescue will not be available

Maximum altitude ▼ Altitude mode

Failsafe only ▼ Sanity checks

Valid Pulse Range Settings

885 Minimum length

2115 Maximum length

Stage 1 - Channel Fallback Settings

Roll [A]	Auto
Pitch [E]	Auto
Yaw [R]	Auto
Throttle [T]	Auto
AUX 1	Hold
AUX 2	Hold
AUX 3	Hold
AUX 4	Hold
AUX 5	Hold
AUX 6	Hold
AUX 7	Hold
AUX 8	Hold
AUX 9	Hold
AUX 10	Hold
AUX 11	Hold
AUX 12	Hold

Failsafe Switch

Stage 1 Failsafe Switch Action

Stage 2 - Settings

1.5 Period of time in Stage 1 failsafe after signal loss [seconds]

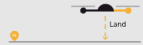
10.0 Failsafe Throttle Low Delay [seconds]

Stage 2 - Failsafe Procedure

Drop



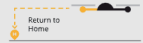
Land



1000 Throttle value used while landing

1.0 Delay for turning off the Motors during Failsafe [seconds]

GPS Rescue



Maximum altitude Altitude mode

10 Initial climb (meters)

30 Return altitude (meters) - **only applies in Fixed Altitude mode**

7.5 Ascend rate (meters/second)

7.5 Return ground speed (meters/second)

45 Maximum pitch angle

20 Descent distance (meters)

1.5 Descend rate (meters/second)

1100 Throttle minimum

1700 Throttle maximum

1275 Throttle hover - **IMPORTANT: set this value accurately**

15 Minimum distance to home (meters)

5 Minimum satellites

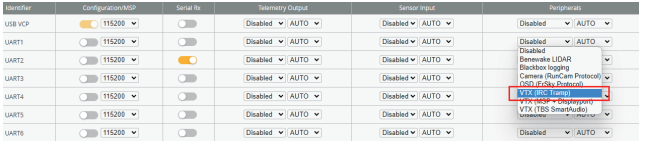
Allow arming without fix - **WARNING: No fix = disarm on failsafe!**

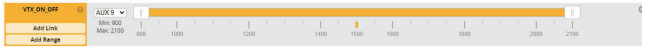
Failsafe only Sanity checks

VIII. Troubleshooting Guide

Issue	Possible Reason	Solution
The aircraft does not respond to the remote control stick input.	Receiver protocol settings do not match the actual configuration.	Check if the receiver protocol settings are consistent with the serial port to which the receiver is connected.
	Mode settings conflict causing failure to arm.	Check if there are any conflicts or duplicates in the Betaflight Configurator mode settings.
	Receiver channel presets do not match the transmitter channel presets.	Verify and configure receiver channel map setting to match the transmitter channel map setting.
	Aircraft is at a tilted angle.	Check the maximum arming angle setting on the Betaflight Configurator page.
	Throttle channel is too high.	Move the throttle stick to the lowest position or verify if the channel number is correct.
Aircraft Rolls Over Immediately on Takeoff or Cannot Take Off	Propellers installed incorrectly.	Ensure that the propeller direction matches the motor direction.
Unusual Noise from Motors After Takeoff	Propellers are loose	Tighten the propellers.
	Propeller shaft is damaged	Replace the propeller.

After connecting the battery, the O4 air unit LED does not light up, although the Betaflight configurator shows the VTX is working correctly.	The VTX switch mode is turned off.	Connect to Betaflight, go to Mode Settings, find and enable the "VTX_ON_OFF" mode, and ensure the mode range is set to the maximum so that the VTX remains continuously on.

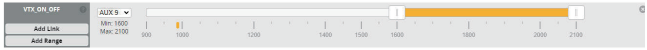




12V is a controllable VTX output port. The default factory setting is AUX9, this mode is always on. Users can set the AUX channel according to actual needs.



VTX_ON_OFF Mode On



To control VTX on/off, please drag the range to 1600-2000. If the icon is yellow, it is on, and if it is gray, it is off.

VTX_ON_OFF Mode Off

Reflashing firmware or restoring the default factory settings requires manually entering the following commands in Betaflight CLI to re-enable VTX switch control:

```
resource PINIO 1 C0
set pinio_config = 1,1,1,1
set pinio_box = 40,41,255,255
set box_user_1_name = VTX_ON_OFF
aux 0 40 8 900 2100 0 0
save
```

IX. Risk Awareness & Legal Disclaimer

Disclaimer and Warning

1. Disclaimer

This product is a multi-rotor aircraft, equipped with powerful motors and sharp propellers, has fast flight speed, but also has a certain hazard when operating, need to be used with caution.
This product is not a toy and requires some basic knowledge to control, so please pay special attention to the warnings and cautions before you start using it. iFlight reserves the right to update this Disclaimer.
By using this product, you are deemed to have understood, acknowledged and accepted all of the terms and conditions of this document and you undertake to be responsible for your own actions and all consequences arising therefrom. You undertake to use this product only for legitimate purposes and agree to all of the terms and conditions of this document and any related policies or guidelines that iFlight may establish.
iFlight is a trademark of HuiZhou iFlight Intelligent Technology Ltd. and its affiliated companies. Product names and brands, etc., appearing in this document are trademarks or registered trademarks of their respective owner companies.
iFlight reserves the right to update this disclaimer and the safety guidelines.
Visit www.iflight.com for the latest version.

2. Warning

Be sure to familiarize yourself with the product's functions before operating it. Improper operation may cause serious injury to you or others, or result in product damage and property loss. This product is relatively complex and requires time to become familiar with before it can be used safely. Basic knowledge is also required for operation. This product is not suitable for children. Do not use parts that are not supplied or recommended by iFlight. Strictly follow iFlight's instructions when installing and using the product. This guide contains safety, operation, and maintenance instructions. Carefully read all instructions and warnings in the user manual before assembly, configuration, and use.

Individual Parts

1. Remote Controller

1. Make sure the remote controller is fully charged before each flight.
2. Make sure the antenna is fully unfolded and adjusted properly for optimal signal performance.
3. Do not cover or block the built-in antenna to maintain strong signal transmission.
4. Damaged antennas may affect performance, please contact iFlight technical support for repairs.
5. If you replace the controller, re-bind it with the aircraft.
6. Charge and discharge the built-in battery approximately once every three months.
7. Do not block the air intake or exhaust vents to avoid overheating and performance degradation.

2. Aircraft

1. Make sure the aircraft is fully charged before each flight.
2. Make sure the propellers are installed correctly and securely.
3. Check that the battery is properly mounted and firmly connected.

3. Battery

1. Do not use chargers designed for Nickel-Cadmium (NiCd), Nickel-Metal Hydride (NiMH), or other battery types to charge Lithium Polymer (LiPo) batteries. Only use chargers specifically made for LiPo batteries.
2. Never leave the battery unattended while charging.
3. Do not overcharge (the fully charged voltage of each cell should not exceed 4.25V).
4. Do not short-circuit (e.g., reverse polarity connection).
5. Charge the battery only within a temperature range of 0–45°C.
6. When charging, place the battery on a heat-resistant and fireproof surface. If possible, charge on concrete ground or in a flowerpot filled with sand.
7. Never allow the battery cells to overheat at any time. When the cell temperature reaches 60°C or higher, there is a risk of safety issues, including combustion.
8. Do not charge the battery near or on flammable materials such as paper, plastic, carpet, vinyl, leather, wood, or while it is still inside a device.
9. Do not over-discharge (the voltage of each cell should not drop below 3.3V). Over-discharging may damage the battery and cause swelling.
10. Avoid contact with battery electrolyte. If it splashes into your eyes or onto your skin, rinse immediately with clean water. Seek medical attention if necessary.
11. Do not disassemble or modify the battery or its wiring. Avoid handling batteries that are leaking.
12. Do not reassemble or DIY battery packs. Disassembling and recombining battery cells without proper equipment can lead to short circuits or fire hazards.
13. If the battery is impacted during use, remove it immediately and inspect both the battery and connectors carefully to ensure they are undamaged.
Caution: The battery may be in high temperature!

Flight Condition Requirements

1. Do not fly in severe weather conditions including strong wind, snow, rain, fog, etc.
2. Only fly in open areas without tall buildings and large metal structures around. Buildings with a large number of concrete irons will affect the signal and interfere with the flight. It is recommended to fly at least 10m away from buildings, poles, obstacles, etc.
3. When flying, please keep control within sight and away from obstacles, crowds, water, etc.
4. Please do not fly in areas with high voltage lines, communication base stations or transmission towers to avoid interference.
5. Do not take off from moving objects, such as cars and ships.
6. Do not use the aircraft in an environment at risk of a fire or explosion
7. To avoid injury, stay away from rotating propellers or motors.

Regulations

1. WARNING

To avoid illegal activity, potential injury, or damage, strictly follow these rules:
1. Do not modify the aircraft or use it for any illegal purposes.
2. Do not fly near manned aircraft. Land immediately if necessary.
3. Do not operate the aircraft at large public events such as sports stadiums or concerts.
4. Do not fly in areas where it is prohibited by local laws and regulations.
5. Ensure your aircraft does not interfere with manned aircraft flight paths. Always stay alert and avoid other aircraft.

2. CAUTION

To avoid legal violations, injury, or property damage, please observe the following:
1. Do not fly in restricted or no-fly zones defined by local laws. These include but are not limited to airports, border areas, major cities, and temporary activity zones.
2. Do not fly above the legally permitted altitude limit.
3. Always keep your drone within visual line of sight (VLOS). If needed, assign a spotter to assist in maintaining visual awareness.
4. Do not use the aircraft to carry any illegal or dangerous goods.

3. NOTICE

1. Make sure you fully understand the category of your flight activity (e.g., recreational, governmental, or commercial). Before flying, obtain the necessary permits from relevant authorities. If unsure, consult your local government agency for detailed classification guidelines. Please note that in certain regions or countries, the use of drones for any commercial purpose may be prohibited.
2. Do not operate aircraft near sensitive facilities such as power stations, hydroelectric stations, prisons, transportation hubs, government buildings, or military installations.

Export Controls

1. Comply with Applicable Export Control Laws

You are advised that export, re-export, and transfer of the Products are subjected to Chinese export control law and other applicable export control laws and sanctions (hereafter collectively referred to as "Export Control Laws"). Prior to your use, sale, transfer, rental, or other conduct related to the Products, unless permitted by the Export Control Laws or with the license issued by competent authorities, you shall in particular check and guarantee by appropriate measures that:
1. There will be no infringement of an embargo imposed by the Export Control Laws;
2. The Products will not be provided to the entities, persons, and organizations listed in all applicable sanctioned party lists;
3. It is only for civilian use, and it is forbidden to directly or indirectly use iFlight products for or related to the following content (1) any military combat purpose or military combat-related purposes; (2) terrorist activities; (3) other criminal acts. The purchaser shall also require its customers or users to comply with the aforementioned requirements.

2. Export Compliance, Disclaimer & Indemnity

You acknowledge it is your responsibility to comply with Chinese export control law and any other applicable export control laws. You shall solely be responsible for the legal responsibility if any of your use, sale, transfer, rental or other conduct related to the Products fail to comply with the applicable export control laws. iFlight shall, in no circumstances, be responsible for your violation of any applicable export control laws. Furthermore, you shall indemnify, defend, and hold harmless iFlight, its affiliates, directors, officers, employees, agents, and representatives, from and against any and all claims, demands, suits, causes of action, expenses (including reasonable attorneys'fees), damages, losses, or liabilities of any nature whatsoever, arising from, or allegedly arising from, or related to, your failure to comply with applicable export control laws.

Cautions:
*1 : Betaflight is the flight controller software (firmware) used to configure your aircraft. Please download at this link: https://betaflight.com/download

IFLIGHT INNOVATION TECHNOLOGY LIMITED

TEL: +86752-3866-695
Email: support@iflight.com
Website: www.iflight.com
ADD: 6th Floor, Building B2, Galaxy IMC, Beixin Road, Zhongkai Avenue, Huizhou 516006, Guangdong, CHINA

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