

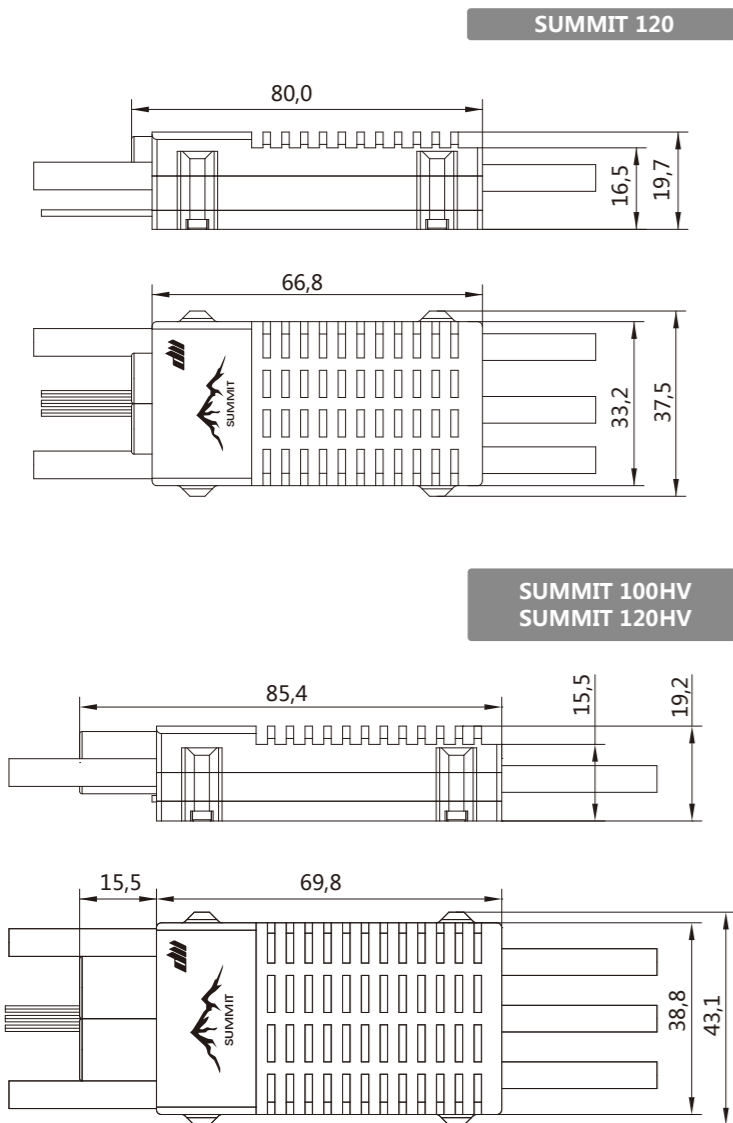


# 巅峰系列电子调速器快速指南

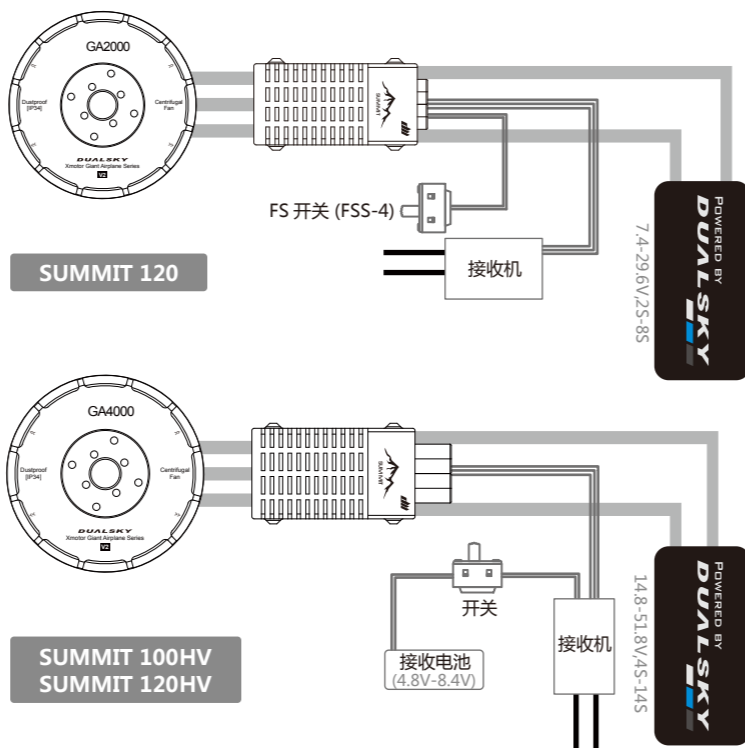
## 产品特点

- 32-bit ARM core 32位ARM内核
- Auto timing 自动进角
- Quick acceleration 迅速的加速
- Anti-spark 防电弧设计
- Reaction torque limit program (Pattern Flight Edition Special) 反扭矩限制程序 (F3A版本专属)
- Drag brake & energy recovery 拖刹及能量回收
- Brake Adjustable 可调刹车力度
- OPTO throttle signal (HV special) 光耦信号隔离 (高压专属)
- Performance UBEC 高性能UBEC
- (Low voltage version special) (低压版专属)
- Multiple protection 多重保护
- Full CNC ALU. case 全金属外壳
- Tests passed with Dualsky GA, HD, EA, DA, ECO motors 兼容全系列双天电机

## 产品尺寸



## 电调功能及连线示意图



## 初始化流程



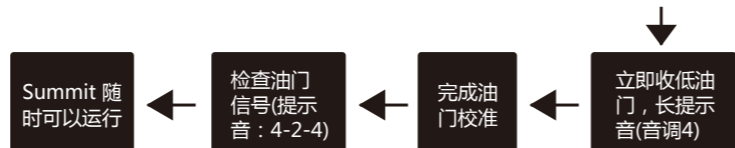
\* 如果出现油门信号报警, 请根据状态表处理。

## 电池节数提示

- Summit专为锂聚合物电池设计, 电池节数自动识别, 通过声音提示。
- 电池节数提示 = 长音次数 x 3 + 短音次数 (1或2)。
- 举例: 一长音加一短音为4S电池, 两长音为6S电池, 两长音加两短音为8S电池, 四长音为12S电池
- 如果电池节数提示音与实际电池节数不符, 请检查电池是否正确, 是否充满电使用。

## 油门校准

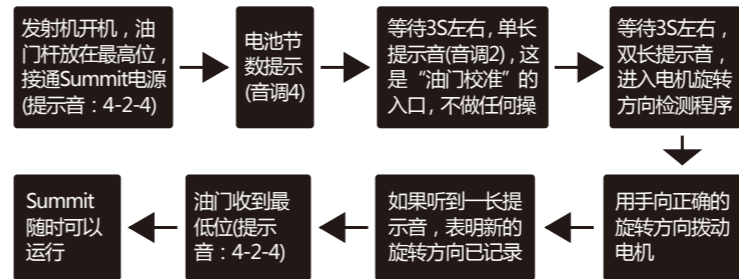
- 每当遥控器中的模型数据与Summit电调首次搭配使用时, 强烈建议做“油门校准”。
- 不校准可能油门最低位信号偏高, 电调报警不工作。也可能油门信号偏低, 激活电调刹车功能。



- 如果第一次遥控器油门信号是反向的, 会误入油门校准程序。请特别注意这一点, 断电并调整油门信号正反。

## 改变电机旋转方向

Summit 电调可以通过设置更改电机旋转方向, 不必通过对换两相电机线的物理方式。



- 先做油门校准, 再做改变旋转方向的操作。如果电机旋转方向正确, 不必操作
- 此操作时, 电机必须是没有安装螺旋桨的状态
- 此操作只记录一次电机方向, 如果需要重新记录, 必须断电重复上述步骤
- 此操作不改变油门校准值。

## 进角及适用电机

Summit 采用智能算法和自动进角, 用户不再需要尝试不同的进角与电机的兼容性。Summit 适用双天 ECO, EA, DA, GA, MR, HD 等系列电机, 也同样适用市场上同类型高品质无刷无感外转子电机。同时, 对于内转子无刷电机也有很好的兼容性。

## 设置怠速及能量回收

Summit 油门校准之后, 默认的最低油门为无动力空旋 (Freewheel)。此时, 如果将油门微调推高几格, 让电机旋转起来, 可以模拟出发动机的怠速效果。怠速有如下优点:

- 电机加速反应快
- 保持在能量回收模式中
- 比空旋具有更好的减速效果

## 设置刹车

如果将油门最低点由无动力位置往下调低 (通过微调或油门曲线), 油门进入刹车区间。Summit 系列的刹车力度可以在 0-100% 的区间细腻调节, 油门位越低, 刹车力度越大, 非常适合 F3A 等特技飞行。

## 设置油门锁定开关

地面上, 油门如果不小被碰到, 螺旋桨会高速旋转, 非常危险。Summit 电调同样不能够避免。建议通过熄火开关 (Throttle cut) 功能设置油门锁定, 多一重保护。同时, 此功能可以和怠速功能很好地配合使用。

## 开关和休眠

带 BEC 的 Summit 电调, 可以通过 FSS-4 开关控制 BEC 输出, 当 BEC 关闭后, 电调也进入休眠状态。开关为 Fail safe 类型, 不插入开关或开关故障, 电调保持工作状态。

不带 BEC 的 Summit HV 系列, 当油门信号消失 3S 以上, 进入休眠状态。信号恢复后必须收低到最低油门, 才可重新启动电调。具备此功能后, 模型可以事先安装并接通主电池, 不开启遥控系统, 放置在待飞区。

- 休眠的电调有几毫安的功耗, 供待飞用途, 不建议存放超过 24 小时。

## Summit电调具备如下保护功能:

- 防电弧保护
- 上电过电压欠压保护
- 不安全油门信号保护
- 低电压保护
- 失控保护
- 堵转保护
- 失步保护
- 过流保护
- 过温保护
- 短路保护

## SUMMIT 电调状态及提示

项目	声音提示	内置 LED		外置 LED (HV 专用)	操作
		红	绿		
无油门信号	1 短声长间隔重复 (Summit HV 休眠)	灭	灭	常亮	检查油门 / 接收机, 有信号后恢复正常
不安全油门信号	1 短声重复	灭	常亮	常亮	油门过高, 收低油门后恢复正常
油门信号丢失	N/A	灭	灭	灭	工作状态下油门丢失超过 0.2S, 电机停止, 油门正常后电机恢复运行; 油门丢失超过 3S, 进入无油门信号处理模式
上电欠压	3 短声重复	灭	常亮	常亮	电池电压过低 (HV 电调, 低于 13.2V), 检查输入电压后重新上电
上电过压	4 短声重复	灭	常亮	常亮	电池电压过高 (高于 4.2V/CELL), 检查输入电压后重新上电
工作低压保护	N/A	灭	单闪	慢闪	电池电压低, 电机功率限制 60% (多旋翼版本不限功率)
失步保护	N/A	常亮	灭	常亮	油门收低后可尝试恢复
堵转保护	N/A	常亮	灭	常亮	油门收低后可尝试恢复
短路保护	N/A	三闪	灭	慢闪	内部操作
过流保护	N/A	双闪	灭	慢闪	内部操作
过温保护	N/A	单闪	灭	慢闪	内部操作

## 免责声明

首先非常感谢您, 使用本产品。在使用之前请仔细阅读本声明, 一旦使用即代表您同意本声明的全部条款。请严格按照手册注意事项, 使用本产品。我们不承担使用本产品或非法改装、操作不当产生的任何责任, 包括但不限于间接损失或连带责任, 最高赔偿不高于产品本身价格。

## 安全警告

- 使用本产品请参照当地法律法规合法飞行, 务必远离人群、高压线、公共场所。
- 请勿靠近高速旋转的电机或螺旋桨, 本产品动力强劲、高速运转中具备一定的安全风险。
- 使用者必须年满 18 周岁及具备相应专业知识。
- 飞行前请仔细检查所有零部件是否完好, 螺旋桨和电机是否安装正确, 螺丝是否松动。
- 在规定参数内使用电子调速器
- 保证所有插头连接的极性准确
- 特别要注意防止短路
- 不能接触到油脂、油或水
- 确保足够的空气流通
- 在电池连接后请远离桨平面, 防止受伤

## 保修条例

双天电子类产品自售出之日起提供 12 个月的保修服务。如果你想在保修期内索赔, 请立即联系您的经销商。

模型店的收银台收据可证明货物是否在保修期内。请注意, 任何情况下保修期都不会延长。在保修期内, 任何功能缺陷、生产故障或材料缺陷都会免费提供保修服务。我们不会接受任何进一步索赔, 如间接损害货物返回时需自行承担运费, 我们将支付回程费用。运费未预付, 我们将不会接受货物。我们不接受运输造成的损害, 也不弥补运输损失。我们建议您投保运输险, 将你的设备发送到服务中心。

满足以下条件, 我们才能处理您的索赔:

- 提供收银台收据
- 按说明书正确操作调速器
- 使用推荐的电源和配件
- 不是因为进水, 反极性, 重载而造成的损害
- 请提供一个简洁、准确的故障描述, 帮助我们解决问题



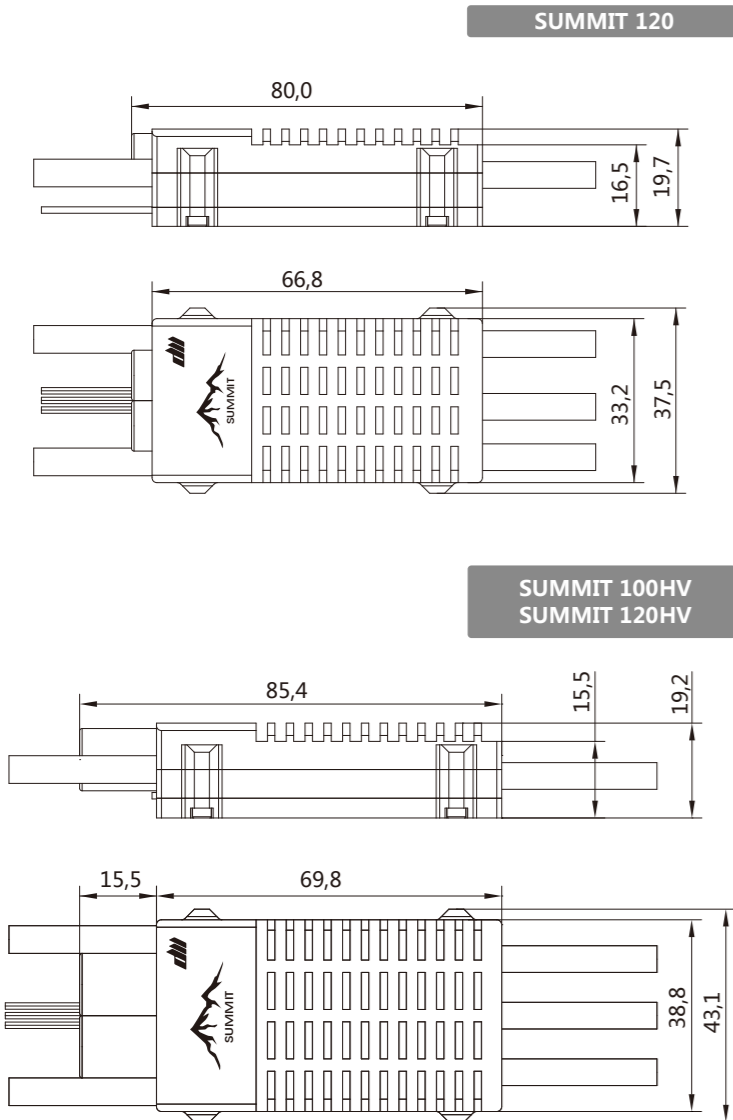
# Summit Series ESC instruction manual

## Features

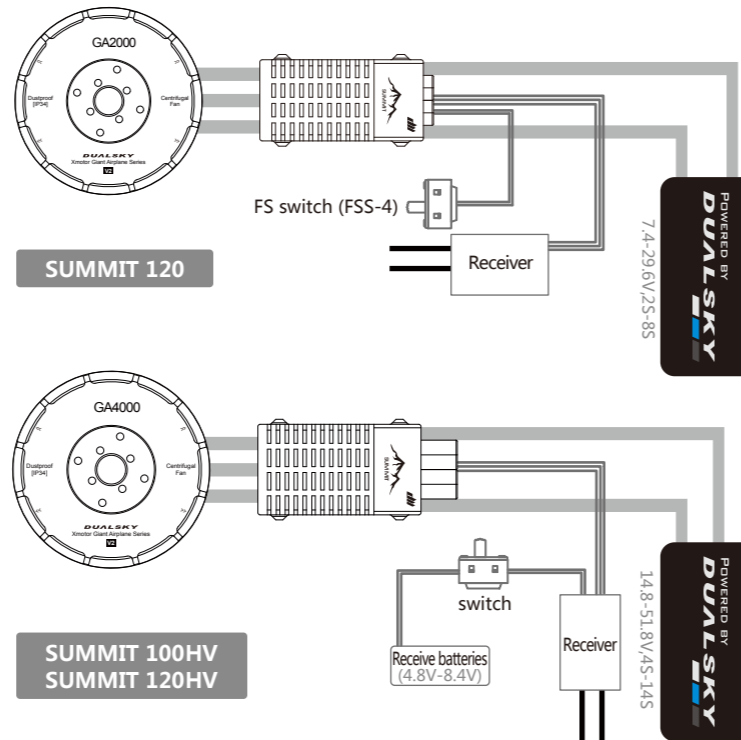
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- Auto timing
- Quick acceleration
- Anti-spark
- Reaction torque limit program (Pattern Flight Edition Special)
- Drag brake & energy recovery
- Brake Adjustable
- OPTO throttle signal (HV special)
- Performance UBEC (Low voltage version special)
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- Full CNC ALU. case
- Tests passed with Dualsky GA, HD, EA, DA, ECO motors

- 32位ARM内核
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- 反扭矩限制程序 (F3A版本专属)
- 拖刹及能量回收
- 可调刹车力度
- 光耦信号隔离 (高压专属)
- 高性能UBEC (低压版专属)
- 多重保护
- 全金属外壳
- 兼容全系列双天电机

## Dimensions



## Wiring Diagram



## Initialization



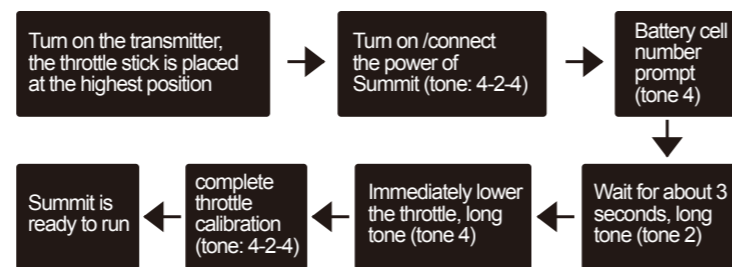
\* If the throttle signal alarm occurs, please follow the status table.

## Battery cells number prompt

- Summit ESC is designed for lithium-ion polymer batteries. The number of cell is automatic recognized, and the sound is prompted.
- Prompt the battery number of cells = long tone times x 3 + short tone times (1 or 2)
- For example: one long tone and one brief tone are 4S batteries, two long tone are 6S batteries, two long tone and two brief tone are 8S batteries, and four long tone are 12S batteries
- If the battery number of cells is difference from actual battery number of cells, please check the battery and to ensure it is fully charged.

## Throttle calibration

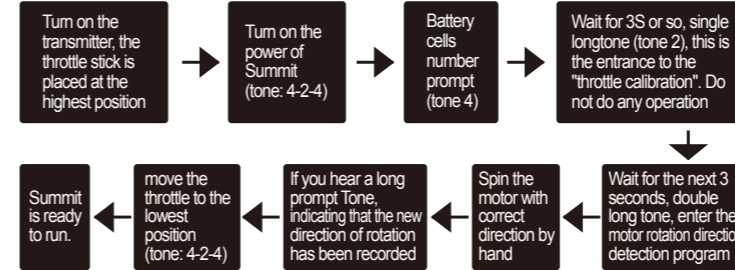
- Whenever the model data in the remote control is used with the Summit ESC for the first time, it is strongly recommended to do "throttle calibration".
- If the calibration is not done, the lowest throttle signal may be high and the ESC will not work. It is also possible that the throttle signal is low and the ESC brake function is activated.



- If R/C throttle signal is reversed, the ESC may enter the calibration incorrectly. Please pay special attention to this, power off, reverse the throttle signal and try again.

## Change the direction of motor rotation

The Summit ESC can change the direction of motor rotation by setting, without having to go through the physical way of changing the two-phase motor line.



- Do the throttle calibration firstly
- If the motor rotates in the right direction, do not operate.
- In this operation, propeller must NOT be installed.
- This operation only records the direction of the motor once. If it needs to be re-recorded, power off the ESC and repeat the above steps.
- This operation does not change the value of throttle.

## Timing and applicable motors

Summit ESC uses intelligent algorithms and automatic timing, so users no longer need to experiment with different timing and motor compatibility. Summit is applicable to Dualsky ECO, EA, DA, GA, MR, HD, etc series motors. It is also applicable to the same type of high quality senseless brushless outrunner on the market. There is also good compatibility with the senseless brushless inrunners.

## Set idle speed and energy recovery

After the Summit throttle is calibrated, the default minimum throttle is the freewheel. At this time, if the throttle's trim is pushed up a few and the motor is rotating, the gas engine idle speed effect can be simulated. The idle speed has the following advantages:

- Motor acceleration is faster
- Stay in energy recovery mode
- Better drag-brake effect than freewheel.

## Set the brake

If the lowest point of the throttle is lowered from the unpowered position (by trim or throttle curve), the throttle enters the brake zone. The braking force of the Summit series can be finely adjusted in the range of 0-100%. The lower the throttle position, the greater the braking force, which is very suitable for aerobatics such as F3A.

## Set the throttle lock switch

On the ground, if the throttle stick is accidentally touched, the propeller will rotate, which is very dangerous. Summit ESC can't be avoided either. It is recommended to set the throttle lock by the Throttle cut-off function, one more protection. At the same time, this function works well with the idle function.

## Switch and dormancy

For Summit which has BEC module, the BEC output can be controlled by the FSS-4 switch. When the BEC is turned off, the ESC goes to dormancy. The switch is Fail safe type. Without switch or switch failure, ESC remains in working condition. Summit HV series which is without BEC enters the dormancy state when the throttle signal disappears for more than 3 seconds. After the signal is recovered, it must be lowered to the minimum before the ESC can be restarted. With this function, the main battery can be connected with power system in advance, the remote control system is not turned on and placed the model in the waiting area.

- Dormant ESC has a few milliamperes of power consumption. it is not recommended keeping dormancy for more than 24 hours.

## Summit's protection features

- Anti-spark protection
- Unsafe throttle signal protection
- Loss signal protection
- Out-of-step protection
- Over temperature protection
- Over-voltage and under-voltage protection
- Low voltage protection
- Locked-rotor protection
- Over current protection
- Short circuit protection

## SUMMIT ESC status and tones

Item	Tones	Built-in LED		External LED (HV ONLY)	Operation
		Red	Green		
No throttle signal	One short tone repeats (Summit HV dormancy)	Off	Off	Solid On	Check the throttle/receiver and it will return to normal when there is signal
Unsafe throttle signal	1 short tone repeat	Off	On	Solid On	The throttle is too high, recovery after the throttle is lowered
Throttle signal loss	N/A	Off	Off	Off	In working state, throttle signal loses more than 0.2S, motor stops, power recover when throttle is normal, signal loses more than 3S, ESC enters no throttle signal processing mode.
Power-on under voltage	3 short tone repeat	Off	Solid On	Solid On	Battery voltage is too low (less than 13.2V), check the input voltage and then power on again
Power-on overvoltage	4 short tone repeat	Off	Solid On	Solid On	The battery voltage is too high (higher than 4.2V/CELL), check the input voltage and power on again.
Working low voltage protection	N/A	Off	Single flash	Slow flash	Output power is limited to 60% (multi-rotor version is not limited to power)
Out of step protection	N/A	On	Off	On	Decrease throttle to lowest position and try again
Stall protection	N/A	On	Off	On	Decrease throttle to lowest position and try again
Short circuit protection	N/A	Three flash repeat	Off	Slow flash	Internal operation
Over current protection	N/A	Double flash repeat	Off	Slow flash	Internal operation
Over temperature protection	N/A	Single flash repeat	Off	Slow flash	Internal operation

## Disclaimer

Thank you very much for using this product. Please read this statement carefully before use. By using it, you agree to the full terms of this statement. Please use this product strictly in accordance with the precautions in the manual. We do not assume any liability arising out of the use of this product or illegal modification or mishandling, including but not limited to indirect or joint liability, and the maximum compensation is not higher than the price of the product itself.

## Precautions

- Please use this product to fly legally according to local laws and regulations, and be sure to stay away from crowds, high-voltage lines, and public places.
- This product has strong power and high speed operation of the propeller. Do not approach the motor or propeller that is rotating at high speed to avoid being cut.
- Users must be at least 18 years of age and have the appropriate expertise.
- Before flying, please check all the components are intact, the propeller and motor are installed correctly, and the screws are not loose.
- Keep within the limits stated in the speed controller specification.
- maintain correct polarity of all connecting leads.
- take great care to avoid short-circuits.
- install and protect the speed controller in such a way that it cannot come into contact with grease, oil or water.
- ensure that air circulation is adequate.
- Keep well clear of the rotational plane of the propeller when the battery is connected
- Injury Hazard.

## Warranty regulations

Dualsky electronic products are warranted for 12 months from the date of sale. If you want to claim during the warranty period, please contact your dealer immediately. The cashier receipt at the model store can prove that the goods are under warranty. Please note that the warranty period will not be extended under any circumstances. Warranty service is provided free of charge for any functional defects, production failures or material defects during the warranty period. We will not accept any further claims, such as indirect damage to the goods at the time of return, The user need to pay the retuning shipping cost. We will pay for the shipping cost when return the goods back to user. If shipping costs are not prepaid, we will not accept the returned goods. We do not accept the damage caused by transportation and do not make up for the loss of transportation. We recommend that you buy the insurance for transportation and send your equipment to the service center.

**We can process your claim if the following conditions are met:**

- Provide cashier receipts
- Operate the ESC correctly according to the instructions
- Use recommended power supplies and accessories
- Not due to the damage caused by water ingress, reverse polarity, heavy load.
- Please provide a concise and accurate description of the fault to help us solve the problem.