多旋翼飞行器
无刷电子调速器说明书
〔小精灵系列〕

感谢您购买本产品！本产品功率强大，错误的使用可能导致人身伤害和设备损坏，强烈建议您在使用设备前仔细阅读本说明书并保存，严格遵守规定的操作程序。我们不承担因使用本产品或擅自对产品进行改造所引起的任何责任，包括但不限于对附带损失或间接损失的赔偿责任。在保证品质相等前提下，我们有权在不经通知的情况下变更产品的设计、外观、性能及使用要求。

01 主要特性

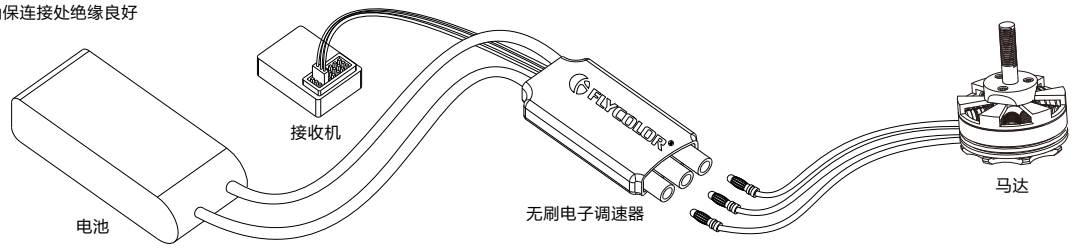
- 支持 OneShot 125； ● 采用功能强大、高性能MCU； ● 尺寸更小，重量更轻的设计；
- 卓越的堵转保护，有效保障设备与人身安全；
- 专门针对穿越机马达优化的固件，兼容性非常出色；
- 专门针对多旋翼设计的程序，飞行过程中油门调整响应迅速；
- 固件自适应能力强，保留四种进角设定项，使用极为简单,同时兼顾稳定性和电池使用寿命；
- 最高可支持刷新率高达500Hz的油门信号，兼容各种飞控（注：>=500Hz的油门信号皆为非标准油门信号）；

02 Fairy系列电调产品规格

型号	制造型号	持续电流	瞬时电流(10S)	BEC	锂电池节数	重量	尺寸(不包括插头)	典型应用
Fairy-6A	S-FW006004	6A	8A	5V/1A	2-4S	6.7g	28x13x5mm	170-250 多旋翼
Fairy-10A	S-FW010004	10A	15A	5V/1A	2-4S	8.6g	28x15x6mm	170-250 多旋翼
Fairy-12A	S-FW012004	12A	18A	5V/1A	2-4S	9.5g	28x15x6mm	170-250 多旋翼
Fairy-15A	S-FW015004	15A	20A	5V/1A	2-4S	9.5g	28x15x6mm	170-280 多旋翼
Fairy-20A	S-FW020004	20A	30A	5V/1A	2-4S	10g	28x15x6mm	170-330 多旋翼
Fairy-30A	S-FW030004	30A	40A	5V/1A	2-4S	11g	28x15x6mm	170-450 多旋翼
Fairy-40A	S-FW040006	40A	50A	无	2-6S	15g	40x21x7mm	450-850 多旋翼
Fairy-50A	S-FW050006	50A	60A	无	2-6S	16g	40x21x7mm	650-1000 多旋翼

03 连线示意图

*为避免短路和漏电，请确保连接处绝缘良好



04 操作说明

1 正常工作模式

开启遥控器，将油门摇杆打到最低点 → 电调接上电池，等待2S后，马达连续发出一长一短鸣叫音，此时表明电调已经准备就绪，随时可以启动并进入正常运转状态

2 油门行程设定

开启遥控器 将油门摇杆 推至最高点 → 接通接收机电源，确保遥控器和接收机通讯正常后给电调上电 → 等待2S，马达发出两短音“哔_哔”鸣叫后，3S内将油门打到最低点 → 等待2S后，马达发出一长一短音,此时,电调已准备就绪

首次使用无刷电调或更换遥控设备后需要进行油门行程设定。

3 进角参数设定

开启遥控器 将油门摇杆 推至最高点 → 接通接收机电源，确保遥控器和接收机通讯正常后给电调上电 → 等待2S，马达将按以下顺序循环鸣叫

“哔-哔-”	油门行程设定
“哔-哔-哔-”	15°进角
“哔-哔-哔-哔-”	18.75°进角
“哔-”	22.5°进角
“哔--哔-”	26.25°进角

听到对应的提示音后3秒内将油门摇杆打至最低点，即可完成相应设定 → 等待2S后，马达发出一长一短音，此时，电调已准备就绪

(声音次数≥5次后用一长鸣音”哔--”表示5)
当电调驱动盘式马达油门急加速时马达出现失步现象堵转或者要求达到更高转速时，可尝试更改进角参数（注：电调出厂默认为22.5度进角）。更高的进角可提高马达转速，但发热通常也会更多。进行进角调整后，请先于地面进行测试，测试正常后方可起飞。

05 保护功能说明

启动保护	当加大油门时，三秒内未能正常启动马达，电调将会关闭动力输出，油门摇杆需再次置于最低点后才可以重新启动马达（出现这种情况的原因可能有：电调和马 达连线接触不良或有断开、螺旋桨被其他物体阻挡等）。
过负荷保护	当负载突然变得极大时，电调会切断动力，须油门归零后才可正常操作。当马达和电调失步时，电调会自动尝试重新启动。
油门信号丢失保护	当电调检测到油门遥控信号丢失0.32 秒以上即立即关闭输出，以免因螺旋桨继续高速转动而造成更大的损失。信号恢复后，电调也随即恢复相应的功率输出。
堵转保护	当电机/桨叶因接触外物而堵转时，电调会立即停转，防止高速旋转的桨叶造成人身伤害。（油门小于10%时，堵转保护不能生效）

06 常见故障及提示音

故障现象	警报音	可能原因	解决办法
上电后马达无法启动	“哔哔哔-”的连续急促短音	油门未归零或行程设置过小	将油门打至最低点或重新设定油门行程
上电后马达无法启动	“哔、哔、哔、.....”的短暂间隔短音	接收机油门通道无油门信号输出	检查发射机与接收机配合是否正常；检查油门控制通道接线是否正常
上电后马达无法启动	“哔-哔-, 哔-哔-哔- ..... 哔--哔-”循环鸣叫	油门通道“正反向”错误	参考遥控器说明书，调整油门通道正反向设置

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251400-1027,CH,V1.7

User Manual
Multi-Rotor Brushless ESC

(Fairy series ESC)

Thank you for purchasing our brushless electronic speed controller (ESC) . Any Improper operation may cause personal injury damage to the product and related equipments. This high power system for RC model can be dangerous ,we strongly recommend reading the user manual carefully and completely. We will not assume any responsibility for any losses caused by unauthorized modifications to our product. We have the right to change the design, appearance, performance and usage requirements of the product without notice.

01 Main features

- Support OneShot 125. High performance MCU. Mini size, lighter in weight.
- Outstanding blocking protection, protect equipment and personal safety.
- Optimized firmware is specialized for FPV racing motor, excellent compatibility.
- The firmware is specialized for multi-rotor , fast throttle response during flying.
- Strong self-adaptable firmware, 4 timing options.
- Support frequency of throttle signal to 500Hz max , compatible with various kinds of flight control. (≥500Hz throttle signal is nonstandard signal)

02 Specifications

Model	Manufacture Model	Con. Current	Burst Current (10S)	BEC	LiPo cells	Weight	Size (Excluding Plugs)	Typical Applications (For reference)
Fairy-6A	S-FW006004	6A	8A	5V/1A	2-4S	6.7g	28x13x5mm	170-250 Multi-Rotor
Fairy-10A	S-FW010004	10A	15A	5V/1A	2-4S	8.6g	28x15x6mm	170-250 Multi-Rotor
Fairy-12A	S-FW012004	12A	18A	5V/1A	2-4S	9.5g	28x15x6mm	170-250 Multi-Rotor
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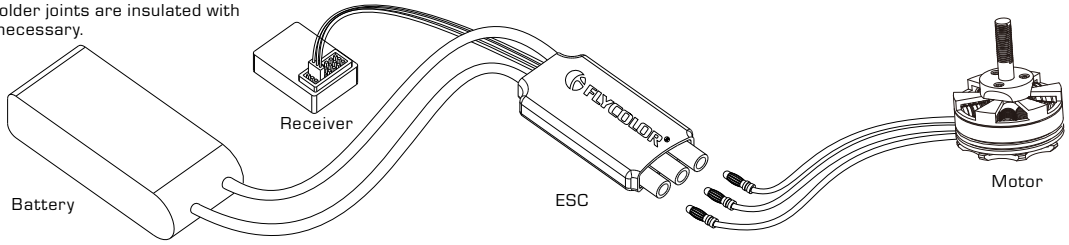
Fairy-30A	S-FW030004	30A	40A	5V/1A	2-4S	11g	28x15x6mm	170-450 Multi-Rotor
Fairy-40A	S-FW040006	40A	50A	No	2-6S	15g	40x21x7mm	450-850 Multi-Rotor
Fairy-50A	S-FW050006	50A	60A	No	2-6S	16g	40x21x7mm	650-1000 Multi-Rotor

03 Wiring diagram

*Please ensure all solder joints are insulated with heat shrink where necessary.



04 operation instructions

1 Normal start-up Process

Turn on the transmitter, move the throttle stick to the bottom position. → Connect ESC & battery packs, wait for 2 seconds, motor emits continuously 1 long and 1 short tone. It means the ESC is ready for working.

2 Set Throttle Range

Turn on the transmitter, move the throttle stick to the top position. → Connect the receiver to the battery, ensure the communication is normal between the transmitter and receiver, then power on the ESC. → Wait for 2 second, after motor emits 2 short "BEEP-BEEP",move the throttle stick to the bottom position in 3 seconds. → Wait for 2 seconds, motor emits continuously 1 long and 1 short tone. It means the ESC is ready for working.

Please set throttle range, when first time to use ESC or change transmitter.

3 Set Timing

Turn on the transmitter, move the throttle stick to the top position. → Connect the receiver to the battery, ensure the communication is normal between the transmitter and receiver, then power on the ESC. → The motor will emit different tone circularly. →

"Beep-beep-"Throttle rage;
"Beep-beep-beep-" 15° timing
"Beep-beep-beep-beep-"18.75° timing
"Beep--" 22.5° timing
"Beep--beep-" 26.25° timing

Move the throttle stick to the bottom position in 3 seconds after hearing corresponding tone, the setting will be completed. → Wait for 2 seconds, motor emits continuously 1 long and 1 short tone. It means the ESC is ready for working.

(When motor emits tone times ≥5 times, long " Beep--" will represent 5 times)
When ESC drives disc type motor with accelerating throttle , motor may be out-of-step ,stalling or requires higher speed , you could try to change timing (factory default value is 22.5°). Higher timing can accelerate motor speed, but also cause more heat. After changing timing, please test on the ground before flying.

05 Protections

Start-up Protection	ESC will cut off output if it fails to start the motor within 3 seconds by accelerating throttle. you need to move the throttle stick back to the bottom position and restart the motor.(The possible causes : Bad connection or disconnection between ESC & motor , propellers are blocked, etc)
Over-load Protection	ESC will cut off power or output when the load suddenly increases to a very high value, normal operation will resume after moving the throttle stick to the bottom position. ESC will automatically try to restart when ESC and motor are out-of-step.
Throttle Signal Loss Protection	When ESC detects the loss of throttle signal for over 0.32 seconds, it will cut off power or output immediately to avoid an even greater loss caused by the continuous high speed rotation of propellers. ESC will resume the corresponding output after the normal signal is restored.
Blocking Protection	When the motor / blade due to contact with foreign objects blocking, ESC will stop immediately, to prevent the high-speed rotation of the blade caused personal injury. (when the throttle is less than 10%, the protection is invalid).

06 Trouble shooting

Trouble	Warning Tone	Possible Cause	Solution
ESC was unable to start the motor	"Beep beep beep..." continuous urgent short tone	The throttle stick is not at the bottom position or throttle range is too small.	Move the throttle stick to the bottom position or reset the throttle range.
ESC was unable to start the motor	"Beep,beep,beep..." short interval tone	No output signal from the throttle channel on the receiver.	Check if the communication is normal between transmitter and receiver; Check throttle channel connection well.
ESC was unable to start the motor	"Beep-beep,beep-beep-beep,...Beep--beep--" Circular tones	The"Normal/Reverse"direction of the throttle channel on transmitter is incorrect.	Refer to the transmitter instruction and adjust the setting of "Normal/Reverse"direction of the throttle channel.

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