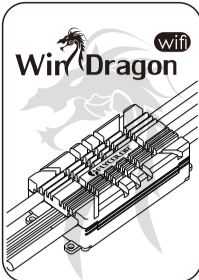




感谢您使用本产品！本产品功率强大，错误的使用可能导致人身伤害和设备损坏，强烈建议您在设备使用前仔细阅读本说明书并保存，严格遵守规定的操作程序。我们不承担因使用本产品或擅自对产品进行改造所引起的一切责任，包括但不限于对附带损失或间接损失的赔偿责任。我们有权在不通知的情况下变更产品的设计、外观、性能及使用要求。



01 主要特性

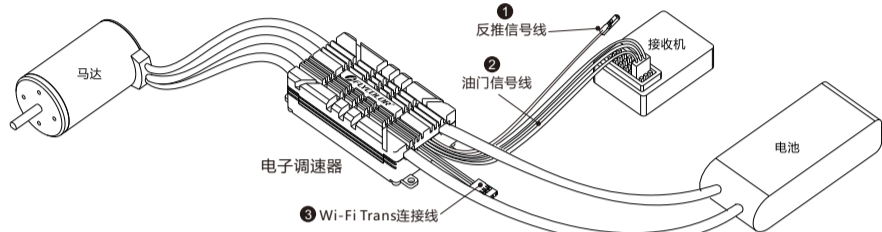
- 采用功能强大、高性能MCU，精心的电路设计，抗干扰性超强。支持无刷马达最高210K rpm转速。
- 启动方式可设置，油门响应速度快，并具有非常平滑的调速线性，适用于固定翼飞机及直升飞机。
- 具备多种保护功能，更好保护设备正常使用。
- 通电安全性能好：接通电源时无论遥控器油门拉杆在任何位置不会立即启动马达。
- 设置报警音判断断电后工作情况。
- 循环菜单设置，操作简单，并兼容所有遥控器操作设置。
- 支持手机APP编程调参及近距离检测实时数据（需Flycolor WiFi Trans）。
- 支持在线飞行数据记录，可记录当次飞行的电流、电压、转速、温度.....等参数（需Flycolor WiFi Trans）。
- 8.4V/7.4V/6V/5V 10A 可调BEC，瞬间可达15A。
- 主动续流ASCF (Active Switch Continued Flow) 技术，效率更高，显著降低电调发热。
- 反推功能，支持飞行过程中切换电机正反向，达到减速目的。

02 产品规格

型号	持续电流 (散热良好)	瞬间电流 (散热良好)	BEC	锂电池	重量 (供参考)	尺寸 (供参考)
WinDragon wifi 80A-B	80A	100A	8.4V/7.4V/6V/5V,10A	2-6S	125g	82.5x39.5x23.5mm
WinDragon wifi 100A-B	100A	120A	8.4V/7.4V/6V/5V,10A	2-6S	127g	82.5x39.5x23.5mm
WinDragon wifi 130A-B	130A	150A	8.4V/7.4V/6V/5V,10A	2-6S	132g	82.5x39.5x23.5mm

03 连线示意图

*为避免短路和漏电，请确保连接处绝缘良好



*每种规格的产品外观有差异，图片为代表型号仅供参考，以实物为准

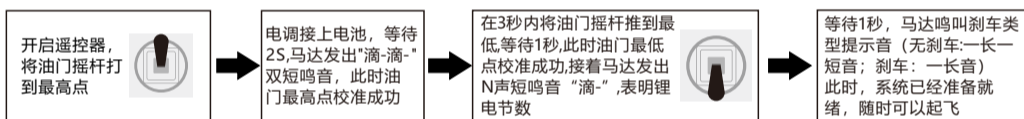
- 1 反推信号线：插入接收机任意的2段开关通道，以实现飞行中电机正反切换；
- 2 油门信号线：插入接收机油门通道。其中白线为传输信号，红线和黑线分别为内部BEC的输出线和地线；
- 3 Wi-Fi Trans连接线：通过和Flycolor Wi-Fi Trans相连，支持手机APP编程及近距离检测实时数据。

04 操作说明

1. 正常工作模式



2. 油门行程设定



3. 通过遥控器进行参数编程设定

推荐使用Flycolor Wi-Fi Trans通过Flycolor App进行参数编程设定。

开启遥控器，将油门摇杆打到最高点

电调接上电池，等待2S, 马达发出“滴滴-”双短鸣音，等待5S, 马达鸣叫“>12321”特殊提示音，表明已经进入编程模式。

设定项目
进入编程模式后，会听到以下鸣音按顺序循环鸣叫，

项目	鸣叫	说明
1 刹车	1短音	滴-
2 电池类型	2短音	滴-滴-
3 低压保护阈值	3短音	滴-滴-滴-
4 进角	4短音	滴-滴-滴-滴-
5 启动模式	1长音	滴--
6 定速控制	1长音1短音	滴--滴-
7 PWM频率	1长音2短音	滴--滴-滴-
8 BEC电压	1长音3短音	滴--滴-滴-滴-
9 低压保护模式	1长音4短音	滴--滴-滴-滴-滴-
10 电池节数	2长音	滴--滴--
11 电机转向	2长音1短音	滴--滴--滴-
12 主动续流	2长音2短音	滴--滴--滴-滴-
13 反推	2长音3短音	滴--滴--滴-滴-滴-
14 恢复出厂设置	2长音4短音	滴--滴--滴-滴-滴-滴-
15 退出	3长音	滴--滴--滴--

注：一个长音“滴--”相当于5声短音“滴”；一长一短“滴-滴-”表示第6选项。

当马达鸣叫“退出”选项鸣音后的3秒内将油门打到最低点, 马达发出“>765765”鸣音, 则退出设定。

项目参数值

在马达发出某组鸣音后，3秒内将油门打到最低，则进入该设定项目，进入项目参数值设定时, 马达会循环鸣叫参数值的指示音 (见下表)

在鸣叫某个提示音后将油门摇杆打到最高点，则选择该提示音所对应的设定值，接着马达鸣叫特殊提示音“>1212”，表示该参数值已被保存。如果还要设定其它选项，则继续等待，退回上一步骤，再选择其它设定项)

项目	1	2	3	4	5	6	7	8
1. 刹车	无刹车	软刹车	重刹车	很重刹车				
2. 电池类型	锂电	镍氢/镍镉						
3. 低压保护阈值	低	中	高					
4. 进角	0°	3.75°	7.5°	11.25°	15°	18.75°	22.5°	26.25°
5. 启动模式	普通	柔和	超柔和					
6. 定速控制	关	低定速	高定速					
7. PWM频率	8KHz	16KHz	24KHz					
8. BEC电压	5V	6V	7.4V	8.4V				
9. 低压保护模式	软关断	硬关断						
10. 电池节数	自动	2S	3S	4S	5S	6S		
11. 电机转向	正常	反转						
12. 主动续流	关	开						
13. 反推	关	开						

*阴影部分为出厂默认值

05 编程参数值说明

- 1. 刹车:** [1] 无刹车 [2] 软刹车 [3] 重刹车 [4] 很重刹车 (出厂默认值为无刹车)
- 2. 电池类型:** [1] LiPo(锂电) [2] NiCb/NiMh(镍氢/镍镉) (默认值为LiPo)
- 3. 低压保护阈值:** 低/中/高 [1] 2.8V [2] 3.0V [3] 3.2V ; 默认值为中 (3.0V)
对于Ni-xx电池组: 低/中/高中止电压是电池组初始电压值的50%/65%/75%对于Li-xx电池组: 可自动计算电池数量, 除了确定电池类型外无需用户设置。电子调速器为低压保护点提供了三个选择档位: 低 (2.8V) / 中 (3.0V) / 高 (3.2V)。
例如: 对于一个14.8V/4节的Li-po电池组来说, 低压中止保护电压为11.2V低/12.0V中/12.8V为高。
- 4. 进角:** [1] 0° [2] 3.75° [3] 7.5° [4] 11.25° [5] 15° [6] 18.75° [7] 22.5° [8] 26.25° (默认值为15°)
低 (0°/ 3.75°/ 11.25°/ 15°/ 18.75°) --为大多数的内转子马达设置
高 (22.5°/ 26.25°) --为6级和6级以上的外转子的马达设置
大多数情况下, 15°进角适用于所有类型的马达, 但为了提高效率, 我们建议对2级马达使用低进角设置 (一般的内转子), 6级和6级以上(一般的外转子)马达使用高进角。对于要求较高转速的马达, 可以设定高进角。某些马达需要特殊的进角设置, 如无确定我们建议您采用马达制造商推荐的进角设置或使用15°进角设置。注: 马达的进角设置修改后, 请先在地面上进行调试成功后再试飞。
- 5. 启动模式:** 提供带有线性油门响应的快速加速启动。(默认值为普通)
[1] 普通启动: 从开始到最大速度油门响应无滞后, 适用于固定翼飞机
[2] 柔和启动: 从开始到最大速度油门响应滞后6秒, 适用于直升机
[3] 超柔和启动: 从开始到最大速度油门响应滞后12秒, 适用于直升机
- 6. 定速控制** [1] 关 [2] 低定速 [3] 高定速 (默认值为关)
定速模式下, 启动后不论油门摇杆处于何种位置及负载如何变化, 电调都会尽力维持恒定的转速 (在定速模式下, 遥控发射机中的油门曲线设置为水平直线, 通过调整该直线的高度可以预设期望的转速值)。
低速定速模式下, 2级马达的定速范围为: 10000-20000RPM。
高速定速模式下, 2级马达的定速范围为: 20000RPM以上。
注意: 油门量在60%以下时, 禁止使用定速模式 (即油门量在60%以下时, 电调会自动关闭定速功能)。
- 7. PWM频率** [1] 8KHz [2] 16KHz [3] 24KHz。(默认值为16KHz)
对于一些极数多且转速高的马达, 设置更高PWM频率可以使马达驱动更平滑, 但是也同时导致的开关损耗加大, 发热更严重。
- 8. BEC电压** [1] 5.0V [2] 6.0V [3] 7.4V [4] 8.4V (默认5.0V)
BEC输出电压可设置, 此选项部分型号可用。
- 9. 低压保护模式:** (默认值为软关断)
[1] 软关断: 当达到预设的低压保护阈值时, 电调便会减小马达的输出功率, 一段时间后停止输出功率。
[2] 硬关断: 当达到预设的低压保护阈值时, 电调立即关断输出马达功率。
- 10. 电池节数:** 此选项只有电池类型选择LiPo(锂电)才有效。
[1] 自动 [2] 2S [3] 3S [4] 4S [5] 5S [6] 6S (默认值为自动)
- 11. 电机转向:** (默认正常)
[1] 正常: 电机默认旋转方向;
[2] 反向: 将电机旋转方向更改。
- 12. 主动续流:** [1] 关 ; [2] 开 (默认关)
主动续流ASCF (Active Switch Continued Flow) 技术, 效率更高, 显著降低电调发热。
- 13. 反推:** [1] 关 ; [2] 开 (默认关)
将反推信号线插入接收机任意的2段开关通道, 以实现飞行中电机正反切换, 达到减速目的。2段开关通道脉冲宽度最低点必须小于油门行程的最低点 (如油门行程最低点为1000us, 那么2段开关通道的脉冲最低点要≤1000us)。
* 反推功能生效条件: 1. 反推功能-开; 2. 定速模式-关; 3. 刹车-开
- 14. 恢复出厂默认设置**
马达鸣叫该选项提示音后5S内, 将油门拉杆拉到最低位置, 进入恢复出厂默认设置选项, 该选项没有二级菜单功能, 此时马达发出“>765765”提示音, 表明已经恢复出厂默认设置, 并且电调进入了正常工作模式。
- 15. 退出**
听到该选项提示音后, 将油门拉杆拉到最低位置, 进入退出设置功能选项, 该选项没有二级菜单功能, 此时马达发出“>765765”提示音, 表明电调进入了正常工作模式。

06 保护功能

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能重新启动马达 (出现这种情况的原因可能有: 电调和马达连接线接触不良或有断开、螺旋桨被其他物体阻挡等)。
温度保护	当电调工作温度超过100°C时, ESC将自动降低输出功率进行保护, 但不会将输出功率全部关闭, 最多降到全功率的40%, 以保证马达留有一定动力, 避免摔机。当温度下降至80°C后, 电调将逐渐恢复到最大动力。
油门信号丢失保护	当ESC检测到油门信号丢失1秒以上即关闭输出, 以免因螺旋桨继续高速转动而造成更大的损失。如果油门信号恢复, ESC可以立即恢复相应的功率输出。

报警音: 设计可通过电机听见的报警音, 供使用者判断通电后的异常情况

1. 油门信号丢失警告音: 当电调未检测到油门信号时, 会发出如下警示: “滴-滴-滴” (每声之间的间隔为2秒)

2. 油门未归零 (油门摇杆未置于最低位置警告音): 当油门未打到最低时, 会发出如下警示: “滴-滴-滴-滴” (很急促的单短音鸣叫)

3. 油门行程过小警告音: 当所设定油门总行程过窄时, 要求油门总行程不得小于三格油门, 会发出警示表明本次行程设定无效, 需要重新设定。警示方式: “滴-滴-滴-滴” (持续2秒)

07 首次使用电子调速器注意事项

- 第一次接通电调建议设置油门行程
飞盈佳乐电调的特点是根据不同的发射机设置最佳油门行程, 电调才能够通过发射机的整个油门行程来获取最平滑的油门线性, 目的是让电调获取并记忆发射机的油门输出信号, 此操作只需要进行一次, 更换发射机时需重复此操作步骤。
- 使用时, 连接电池组之前, 务必仔细检查所有插头连接的极性是否正确, 以及安装是否牢固, 防止因为错误连接极性或短路而损坏电子调速器。
- 您的航模如果在飞行过程中马达突然停转, 应当立即将油门拉杆拉到最低位置, 再推起油门拉杆, 这样马达将重新启动, 此时将油门控制在较小位置, 立即降落航模飞机。

08 故障快速处理

故障现象	可能原因	解决办法
上电后, 马达不工作, 并未发出任何音乐声, 伺服系统也未接通。	电池组与ESC之间接触不良, 电源没有接通。 焊接不牢固, 容易造成接触不良。	重新清理插头或更换插头, 检查并确认接线极性正确。 再次焊接连接线。
上电后, 马达不工作, 但未发出任何音乐声, 伺服系统也未接通。	电池电压不足。 ESC有其他质量问题。	检查电池组, 用符合规格满电的电池组替换。 更换ESC。
上电后, ESC有自动检测电池节数声音, 但马达不能启动。	ESC没有设置油门行程。	重新进行油门行程设置。
ESC工作, 但马达不工作, 未发出音乐声; ESC上电后, 马达不工作, 发出报警音。(滴滴两声后有短暂停顿)	ESC与马达之间接触不良, 或焊接不牢。 马达不良。	检查连接器终端或替换连接器或再次焊接马达接线。 更换马达。
上电后, 马达不工作但发出报警音。(滴-滴-滴-, 每声之间的间隔为2秒)	接收机油门信号无输出。	检查并确认信号线与接收机油门通道是否连接正确; 检查发射器和接收机, 确认有信号输出。
上电后, 马达不工作, 发出持续地滴滴响。	油门摇杆未放置最小位置上。	将油门摇杆移至“零点”位置或者重新设置油门行程。
上电后, 马达不工作, ESC发出两声长响之后, 有两声短促的滴滴响。	油门通道正反被错置, 导致ESC进入编程模式。	参考遥控器的说明书, 调整油门通道正反设置。
马达反向运行。	马达与ESC连接线序错误。	1. 将ESC与马达之间三条连接线中的任意两条调换。 2. 直接用手机调参App、遥控器或编程卡通过改变马达转向设置, 改变方向。
飞行过程中, 马达中途停转。	电池电压低于设定的低压保护电压阈值, 且低压保护模式为关断方式。 油门信号丢失。 接线接触不良。	1. 正确设置低压保护电压阈值; 电池充满飞行; 低压保护模式设为降低功率模式。如果在飞行中发现功率降低, 请及时降落。 2. 控制模型飞机在遥控器遥控的范围内注意遥控器电池电压, 若电压降低较多, 需及时降落。 1. 检查遥控器是否操作得当。 2. 检查遥控器与接收机配合是否正确。 3. 使用环境中极强烈的电磁干扰, 尝试重新上电启动以恢复正常工作, 若该问题反复出现, 说明飞行地外部干扰过于强烈, 请更换飞行场地。



Thank you for using our product. Any improper operation may cause personal injury or damage the product and relevant 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

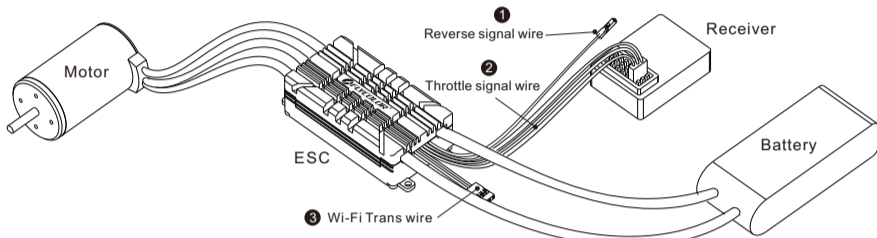
- Use powerful & high performance microprocessor. Unique circuit design, strong anti-interference.
- Start mode can be set. throttle response fast, and it has a very smooth speed control linearity. Compatible with fixed wing aircraft and helicopters.
- Multiple protection features ensure the equipments safety.
- High power safety performance, when power up the motor will not start immediately wherever the throttle stick is.
- Beeping alarm can indicate working condition.
- Cycle programming menu for easy operation. Compatible with all kinds of remote controllers.
- Supports programming and detection of real-time data at close range via mobile phone APP (extra Flycolor Wi-Fi Trans needed).
- Supports on-line flight data recording, which can record the current, voltage, speed, temperature ... (extra Flycolor Wi-Fi Trans needed).
- 8.4V/7.4V/6V/5V, 10A adjustable BEC , 15A peak current.
- ASCF (Active Switch Continued Flow) technology, higher efficiency, reduce heat generation massively.
- Reverse function, supports to reverse the motor rotation during the flight to decelerate.

02 Specifications

Model	Con. Current (Good heat dissipation)	Burst Current (Good heat dissipation)	BEC	LiPo	Weight (For reference)	Size (For reference)
WinDragon wifi 80A-B	80A	100A	8.4V/7.4V/6V/5V, 10A	2-6S	125g	82.5x39.5x23.5mm
WinDragon wifi 100A-B	100A	120A	8.4V/7.4V/6V/5V, 10A	2-6S	127g	82.5x39.5x23.5mm
WinDragon wifi 130A-B	130A	150A	8.4V/7.4V/6V/5V, 10A	2-6S	132g	82.5x39.5x23.5mm

03 Wiring Diagram

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

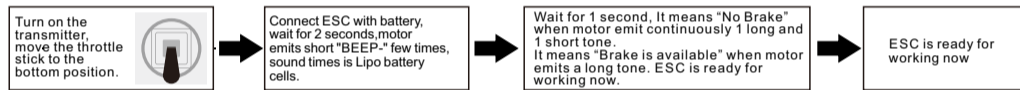


*The appearance of each model is different, the picture is a typical model for reference only.

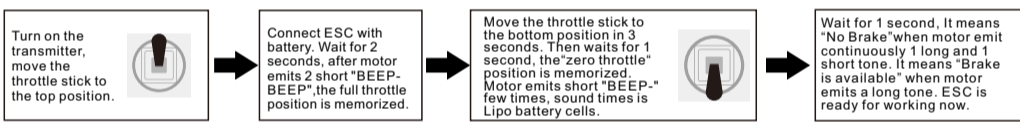
- Reverse signal wire: plug it into a two-stage switch channel on the receiver, to reverse the motor rotation during the flight.
- Throttle signal wire: plug it into the throttle channel on the receiver, the white wire is for transmitting throttle signal, the red&black wires are the BEC output wire and ground wire.
- Wi-Fi Trans wire: connect with Flycolor Wi-Fi Trans, Supports programming and detection of real-time data at close range via mobile phone APP.

04 Operation instruction

1. Normal start-up



2. Throttle Range calibration



3. Programming

It is recommended to use Flycolor app to change parameters through Flycolor Wi-Fi Trans.

Turn on the transmitter, move the throttle stick to the top position. → Connect ESC with battery. Wait for 2 seconds, motor emits 2 short "BEEP-BEEP". Then still wait for 5 seconds, motor emits special tone ">12321", it has entered programming mode.

Select Items
After entering programming mode, you will hear groups tone which emits in a loop as following sequence.

Item	1	2	3	4	5	6	7	8
1.Brake	1short	1short	1short	1short	1long	1long&1short	1long&2short	1long&3short
2.Battery type	2short	2short	2short	2short	2short	2short	2short	2short
3.Cutoff voltage	3short	3short	3short	3short	3short	3short	3short	3short
4.Timing	4short	4short	4short	4short	4short	4short	4short	4short
5.Startup mode	1long	1long	1long	1long	1long	1long	1long	1long
6.Governor mode	1long&1short	1long&1short	1long&1short	1long&1short	1long&1short	1long&1short	1long&1short	1long&1short
7.PWM frequency	1long&2short	1long&2short	1long&2short	1long&2short	1long&2short	1long&2short	1long&2short	1long&2short
8.BEC voltage	1long&3short	1long&3short	1long&3short	1long&3short	1long&3short	1long&3short	1long&3short	1long&3short
9.Voltage cutoff option	1long&4short	1long&4short	1long&4short	1long&4short	1long&4short	1long&4short	1long&4short	1long&4short
10.Battery cells	2long	2long	2long	2long	2long	2long	2long	2long
11.Motor rotation	2long&1short	2long&1short	2long&1short	2long&1short	2long&1short	2long&1short	2long&1short	2long&1short
12.ASCF	2long&2short	2long&2short	2long&2short	2long&2short	2long&2short	2long&2short	2long&2short	2long&2short
13.Reverse function	2long&3short	2long&3short	2long&3short	2long&3short	2long&3short	2long&3short	2long&3short	2long&3short
14.Restore factory default	2long&4short	2long&4short	2long&4short	2long&4short	2long&4short	2long&4short	2long&4short	2long&4short
15.Exit	3long	3long	3long	3long	3long	3long	3long	3long

Note: Usually, 1 long tone "Beeper-" equals to 5 short tone "beep-", for example: 1 long tone "Beeper-" and 1 short tone "beep-" equals to 6.

When motor emits "Exit" tone, move throttle to the zero position in 3 seconds, then motor emits special tone ">765765", it will exit the programming mode.

Item parameter

After motor emits a item tone, move the throttle to the zero throttle position, then will enter this item, and motor will emits the parameter tone in a loop please see the table below)

Move throttle stick to the top position after a certain tone that the parameter you want, the parameter is selected, then motor emits special tone ">1212", this parameter will be stored. Just wait if you still want select other item, it will go back to the Level 1 menu to select item, the operate method is the same.

Item	1	2	3	4	5	6	7	8
1.Brake	NO	Soft	Heavy	Very Heavy				
2.Battery type	LiPo	NiCd/NiMh						
3.Cutoff voltage	Low	Med	High					
4.Timing	0°	3.75°	7.5°	11.25°	15°	18.75°	22.5°	26.25°
5.Startup mode	Normal	Soft	Very Soft					
6.Governor mode	OFF	Low	High					
7.PWM frequency	8KHz	16KHz	24KHz					
8.BEC voltage	5V	6V	7.4V	8.4V				
9.Voltage cutoff option	Reduce cutoff	Cut off						
10.Battery cells	Auto	2S	3S	4S	5S	6S		
11.Motor rotation	Normal	Reversed						
12.ASCF	OFF	ON						
13.Reverse function	OFF	ON						

*Shadow parts are factory default value

05 Programming parameter

- Brake:** [1]NO(default) [2]Soft [3]Heavy [4]Very heavy
- Battery type:** [1] LiPo(default) [2] NiCd/NiMh
- Cutoff voltage:** Low-voltage protection threshold, [1] Low [2] Medium (default) [3] High
For Ni-xx battery packs: Low/Medium/High cut off voltage is 50%/65%/75% of the battery packs' initial voltage.
For LiPo battery: can count battery cells automatic. Low voltage protection threshold :Low (2.8V) / Medium (3.0V) / High (3.2V) .Eg:For 4S/14.8V Lipo battery packs, low voltage protection threshold is 11.2V low/12.0V medium/12.8Vhigh.
- Timing:**
[1]0° [2]3.75° [3]7.5° [4]11.25° [5]15°(default) [6]18.75° [7]22.5° [8]26.25°
Low (0°/3.75°/11.25°/15°/18.75°) --for most inner rotor motors
High (22.5°/26.25°) --For 6 poles or higher poles outer rotor motors
As usual, 15° applies to all the outer rotor motors , but for improving efficiency , recommend that set low timing for 2 poles motor (most inner rotor motors), set high timing for 6 poles and high poles motors (most outer rotor motors). If need high speed motor, you can set high timing. Some motors should set special timing, if not sure, you'd better to set timing as motor manufacturer recommended, or set 15°.
Note: After changing timing, please test on the ground before flying.

- Startup Mode :** Start up with linear accelerator
[1] Normal: It's preferred for fixed wing. (default)
[2] Soft: It's preferred for helicopter, it will take 6 seconds from 0% throttle to 100% throttle.
[3] Very soft: It's preferred for helicopter, it will take 12 seconds from 0% throttle to 100% throttle.
- Governor mode :** [1]OFF(default) [2]Low [3]High
If the Governor mode is activated, ESC will try to keep the motor in a fixed speed (usually the throttle curve is a horizontal line, you can change the preset motor speed by changing the height of the line).
[1] OFF(default)
[2] Low : "Low constant speed" mode , 10000-20000RPM for 2 poles brushless motor .
[3] High, "High constant speed" mode , above 20000RPM for 2 poles brushless motor .
Note: Governor mode function is automatically disabled if the throttle value less than 60%.

- PWM frequency:** [1]8KHz [2]16KHz(default) [3]24KHz
For high poles and high speed motors, the higher PWM frequency can make motor drive smoothly, but the higher PWM frequency will make ESC hotter .

- BEC voltage:** [1]5.0V(default) [2]6.0V [3]7.4V [4]8.4V
(this option is available for partial models)

- Voltage cutoff option:**
[1] Reduce cutoff(default): the voltage drops to the set low-voltage protection threshold , ESC will reduce the power then cut off the motor output.
[2] Cut off: the voltage drops to the set low-voltage protection threshold , ESC will cut off the motor output immediately.

- Battery cells:** Available for LiPo battery only.
[1] Automatic judgment(default) [2]2S [3]3S [4]4S [5]5S [6]6S .
You also can select the options according to your battery cells.

- Motor rotation:**
[1]Normal(default): Default motor rotation;
[2]Reversed: Change the motor rotation.

- Active Switch Continued Flow:** [1]Off (default) [2]On
ASCF (Active Switch Continued Flow) technology, higher efficiency, reduce heat generation massively.

- Reverse function :** [1]Off (default) [2]On
Plug reverse signal wire into an two-stage switch channel on the receiver ,to reverse the motor rotation during the flight to decelerate. The lowest point of the pulse width range of the 2-stage switch channel must be less than the lowest point of throttle. (e.g. the lowest point of throttle is 1000, then the lowest point of pulse width of 2-stage switch channel should be less than 1000).
Effective conditions : 1. Reverse function - on; 2. Governor mode - off; 3. Brake - on.

- Restore default settings**
When the beeping indicates the mode of "Restore default settings", move the throttle stick to zero position in 5 seconds after the beeping can activate the mode. There is no sub-menu under this mode. Then the motors makes indication tones of ">765765" which means default settings are restored.

- Exit program mode**
After a sound "Beep-" , move throttle stick to the bottom position, enters the item of exit program mode, motor emits sound ">765765" the same time, it represents ESC enters normal operation mode.

06 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 heat protection	When ESC temperature is higher than 100 °C, it will reduce output power (throttle will be limited below 40%) for protection, leave some power for motor to land , when the temperature Reduced to 80°C , ESC recover to normal running mode.
Throttle Signal Loss Protection	When ESC detects the loss of throttle signal for over 1 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.

- Alarm tone: (To judge the abnormal cases via alarm tone)
- Alarm tone of signal loss : when ESC detects no signal , motor will emit the alarm tone "Beep- Beep, -Beep-"(alarm tone emits every 2 seconds).
 - Alarm tone of throttle not in the zero throttle position: throttle not in the zero throttle position, motor will emit "Beep-Beep-Beep-Beep-Beep-" (urgent single short tone).
 - Alert tone of narrower throttle range: when throttle range is set too narrow, motor emits "Beep-Beep-Beep"(harried alarm tone emits last for 2 seconds). You must set throttle range again.

07 First time to use ESC

- When first time to use ESC, you must set throttle range. You just need to calibrate throttle range only once, but you must set again if you change transmitter.
- Before connecting battery packs, please check if all the connectors polarity are correct , to avoid ESC damage for false connection or short circuit .
- If motor stops suddenly during flying, please move throttle stick to the zero position immediately, then push the throttle stick to make the motor restart, then move throttle tick to a small range to land the aircraft immediately.

08 Trouble Shooting

Troubles	Possible causes	Solutions
After powering up, motor doesn't run and doesn't emit any sound.	Bad connection between ESC and battery.	Clean the connectors or replace them, check the connection polarity.
	Bad soldering cause bad contact.	Solder the wires again.
	Low voltage of the battery.	Check battery pack, use full-charged battery.
After powering up, ESC emits the sound of battery cells, but motor can't run.	Quality problem of ESC.	Change ESC.
	ESC doesn't set throttle range.	Set throttle range again.
After powering up, ESC works ,but motor can't run and doesn't emit any sound. After powering up ESC, motor doesn't run and emits warning tone "Beep-Beep". (a short stop after "Beep-Beep")	Bad connection between ESC and motor, or bad soldering.	Check the connectors or replace the connectors or solder the motor wire again.
	Bad motor.	Change motor.
	Battery voltage out of range	Check the battery voltage is within the range of ESC.
After powering up, motor doesn't work and emits warning tone "Beep-Beep-"(emits every 2 seconds).	No output throttle signal from receiver.	Check if right connection between signal wire and receiver throttle channel. Check transmitter and receiver, make sure there are signal outputs.
After powering up, motor doesn't work and emits continuous warning tone "Beep-".	Throttle doesn't in the zero position.	Push the throttle to the zero position, or set throttle range again.
After powering up, motor doesn't work. ESC emits 2 long "Beep" and 2 short "Beep".	The positive and negative of throttle channel is wrong. So ESC enters programming mode.	Refer to the user instruction of transmitter, adjust the setting of throttle channel.
Motor rotates in the opposite direction.	The wrong sequence of connection wires between motor and ESC.	1.Exchange random 2 of the 3 connection wires between ESC and motor. 2.Change motor rotation direction via mobile phone App, transmitter or programming card.
Motor stops during running	Battery voltage is lower than low-voltage protection threshold and low-voltage protection mode is cutoff output.	1. Set right low-voltage protection threshold. Run with full-charged battery pack. Choose reduce power as Low-voltage protection. If power is decreasing during running, please fly back soon. 2. Make sure your aircraft in the range available to control with your transmitter. 3. Attention to the voltage of transmitter, if it will run out of the battery, please fly back soon.
	Loss throttle signal	1. Check if the transmitter operation correct. 2. Check if transmitter match with receiver. 3. Strong electromagnetic interference around the used environment, try to turn off and power up again, to see if it recovers normal work, if the problem come up again and again, please change to another field.
	Bad connection between wires	Check the connectors of battery pack, battery wires ,motor wires connections are good.