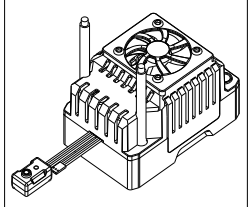
车用无刷电子调速器 使用说明书

Lightning 系列

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。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。



*图片仅供参考，产品以实物为准

01 主要特性

- 精心设计的适用于车模的驱动固件，具备平滑、细腻的调速手感、一流的调速线性；
- 支持无感无刷电机和有感无刷电机，兼容绝大多数无刷电机；
- 9种启动加速度选择。适用于各种不同车型，轮胎和场地；
- 8种进角可选，可使电机工作在最佳效率点；
- 比例式刹车：6段最大刹车力度调节、8段拖刹力度调节；
- 完善的保护功能：电池低压保护，过温保护，油门信号丢失，电机堵转等；
- 配备安全的电子开关，避免传统机械式开关在恶劣条件下的卡死、触点锈蚀等情况；
- 优异的防水（提供纳米防水和灌胶防水两种版本），适用于复杂的工作条件；
- 内置强大的10A BEC，BEC 输出电压可调节（5V/6V/7.4V/8.4V）；
- 支持无线wifi编程，通过手机APP可进行所有参数设置（需单独购买Flycolor WiFi模块）；
- 支持近距离监测和记录实时数据，方便了解运行状态（需单独购买Flycolor WiFi模块）。

02 产品规格

型号	Lightning-200A	Lightning-300A
持续电流/峰值电流	200A/1300A	300A/1800A
电池节数	5-12节锂电池	
BEC输出	开关稳压;8.4V/7.4V/6V/5V 10A;	
支持电机类型	无感无刷和有感无刷电机	
模型比例	1:5卡车/越野/大脚/电房	
尺寸	114*74*78mm	
重量(不含配件)	630g(纳米防水版本)；770g(灌胶防水版本)	

03 连线示意图

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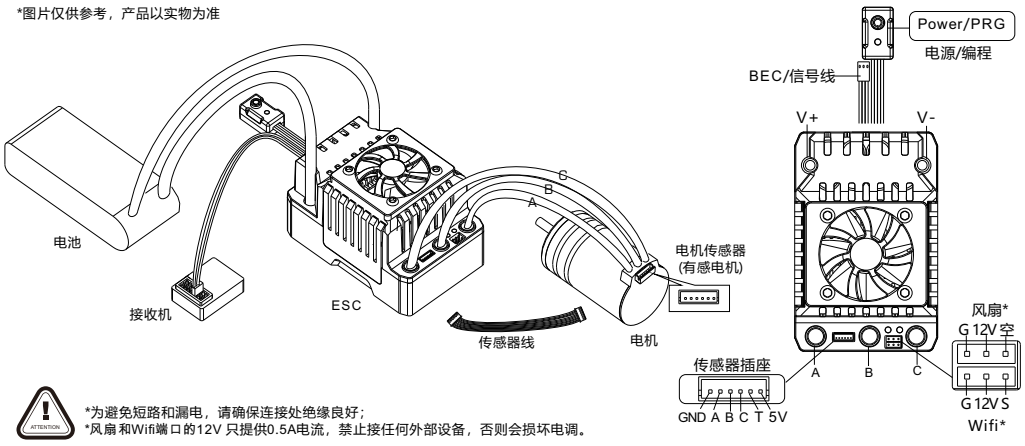


*为避免短路和漏电，请确保连接处绝缘良好；
*风扇和Wifi端口的12V 只提供0.5A电流，禁止接任何外部设备，否则会损坏电调。

04 操作说明

1 连接无刷电子调速器

1.连接电机

连接无感无刷电机时：
电调与电机连接无严格的线序要求，电调的A/B/C可以与电机A/B/C随意对接，任意交换两条电机线即可更改电机转向。

连接有感无刷电机时：
连接有感无刷电机的方法与无感无刷电机不同，电调和电机的线序有严格的要求，电调的A/B/C必须一以对应电机的A/B/C，否则会损坏电调或者电机.
用传感器线将电调和电机感应口对接，如果有感无刷马达未接上传感器线，相当于电调连接了无感无刷电机，电调则会工作在无感模式。

2.连接接收机

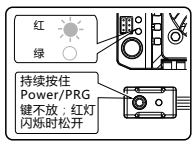
将电调的信号线插入接收机的油门通道。注意信号线中的红色线会输出电压给接收机及舵机，所以请勿给接收机再额外供电，否则会损坏电调。

3.连接电池

注意电源的正（+），负极（-）绝对不要接反，否则电调将会损坏。长时间不用时请断开电池与电调的连接，以免损坏电池和发生意外。

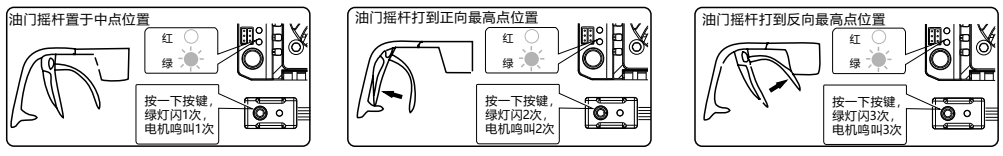
2 油门行程设定

1. 电调接上电池，开启遥控器，持续按住“Power/PRG”键不放；
2. 电调上的红色LED开始闪烁，在红色LED闪烁期间松开“Power/PRG”键；（闪烁约13次，如不松开则会进入编程模式）；
3. 松开"Power/PRG"按键后，红灯停止闪烁，表示进入遥控器油门行程设定；



电调第一次使用或遥控器修改过油门中点、ATL、EPA等参数，均需重设油门行程。遥控器ABS功能必须设置为OFF，遥控器油门通道方向设置为“REV”，油门微调设置为“0”，油门通道的EPA/ATL正反向均设置为100%（最大）。不然可能会导致无法使用或误动作。

4. 此时需要设定三个点：
1）油门中点：油门摇杆置于中点位置，按一下“Power/PRG”键，绿灯闪烁一次，电机鸣叫一次，表示中点油门被存储；
2）油门正向最高点：油门摇杆打到正向最高点位置，按一下“Power/PRG”键，绿灯闪烁两次，电机鸣叫两次，表示正向最大油门被存储；
3）油门反向最高点：油门摇杆打到反向最高点位置，按一下“Power/PRG”键，绿灯闪烁三次，电机鸣叫三次，表示反向最大油门被存储；



5. 油门摇杆回到中点位置，绿灯闪烁N次指示N节电池数，然后红色LED开始持续闪烁（如是有感电机则红色LED闪烁，绿色LED常亮），表示油门行程设定完毕，可用遥控器控制调速系统正常运行了；

3 正常工作

1. 电调接上电池，开启遥控器，按一次“Power/PRG”键；
2. 电调上的绿灯闪烁N次指示N节电池数，然后红色LED开始持续闪烁（如是有感电机则红色LED闪烁，绿色LED常亮）,便可用遥控器控制调速系统正常运行了；
3. 正常关机：只需按一次“Power/PRG”键即可（不得长按超过3秒，否则恢复出厂设置）

05 编程选项及说明

*阴影部分为出厂默认设置

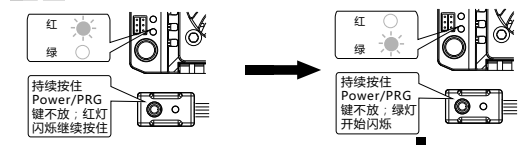
设定项目	参数1#	参数2#	参数3#	参数4#	参数5#	参数6#	参数7#	参数8#	参数9#
1.运行模式	正转带刹车	正反转带刹车	直接正反转						
2.油门中立点区域	6%	9%	12%						
3.初始刹车力度	0%	5%	10%	20%	30%	40%	50%	60%	
4.电池低压保护阈值	不保护	2.6V	2.8V	3.0V	3.2V	3.4V			
5.启动加速度	1级	2级	3级	4级	5级	6级	7级	8级	9级
6.工作频率	4KHz	8KHz							
7.最大倒车力度	25%	50%	75%	100%					
8.最大刹车力度	50%	60%	70%	80%	90%	100%			
9.拖刹力度	0%	5%	10%	20%	40%	60%	80%	100%	
10.进角设置	0度	3.75度	7.5度	11.25度	15度	18.75度	22.5度	26.25度	
11.电机运转方向	正转	反转							
12.过温保护	保护	不保护							
13.锂电池节数	自动判别	5节	6节	7节	8节	9节	10节	11节	12节
14.BEC电压	5V	6V	7.4V	8.4V					

1、运行模式:
●正转带刹车：只能前进，油门反向时为刹车，无倒车，该模式主要用于竞赛。
●正反转带刹车：有倒车功能，当油门从正向推到反向区域时，车子处于刹车状态，油门必须回中且电机停止运转后，第二次推至反向区域才倒车。
●直接正反转：当油门从中点区域推至反向区域时，电机立即倒车，该模式一般用于攀岩车等特种车辆。
2、油门中立点区域：6%、9%、12%。有些遥控器中点位置容易漂移，如果漂移，请把区域值设置更大；也可根据个人喜好或手感实验后选择。
3、初始刹车力度：最小刹车力度，是指在刹车初始位置时作用在电机上的刹车力。
4、电池低压保护：电调在运行过程中会时刻监视电池电压，一旦电池电低于设定值，将在5秒内降功率至50%，然后立即关断电机输出。
5、启动加速度：共9级，默认为6级，根据场地和个人习惯选择合适的加速度，级别越大启动速度越快，但对电池放电能力要求高（电池容量不足时使用高等级会造成启动异常，这时请减小级数）操作难度也高。
6、工作频率设置：根据电机、电池特征选择合适在工作频率。低的驱动频率会再油门初段可以提供更强爆发力；高频率可以使电机驱动更平滑，但是会导致电调发热增加。
7、最大倒车力度：25%、50%、75%、100%四种。选择不同的选项，有不同的倒车力度。推荐使用较小选项，以免力度太大倒车时不易控制造成撞车。
8、最大刹车力度：该电调提供此例式刹车功能，刹车力度大小和油门摇杆位置相关，最大刹车力度指油门摇杆处于刹车极限位置时的刹车力，用户可根据个人习惯及具体情况选择合适的刹车力度。
9、拖刹力度：拖刹指油门摇杆从正向区域转入中点区域时，对电机产生的一个刹车力度，与有刷电机碳刷阻力类似，方便减速入弯等动作。
10、进角设置：0度、3.75度、7.5度、11.25度、15度、18.75度、22.5度、26.25度可选择。
此功能作用：
●兼容不同电机，如果电机在默认进角下无法正常作用，需要调整合适在进角方可正常工作。
●通过调整进角，可以微调电机输出最大转速，进角越高，则最大输出转速也越高，同时消耗功率也越大。
●通过调整进角，可使电机工作在最佳效率点。
●自动进角就能够根据电机转速自动调整进角在0-30度之间变化。
11、电机运转方向：对于电机输出线直接与电机焊接起来不方便调换接线的情况下，可通过该选项改变电机转向。
12、过温保护：电调温度过高（超过95℃）时用于选择是否切断电机的输出，默认值为保护。
13、锂电池节数:
●自动判别：能够自动判别电池的节数。●5-12节：用户根据电池节数指定相对应数值。
14、BEC电压：5V、6V、7.4V、8.4V 。四个BEC输出电压，可根据实际需求选择。

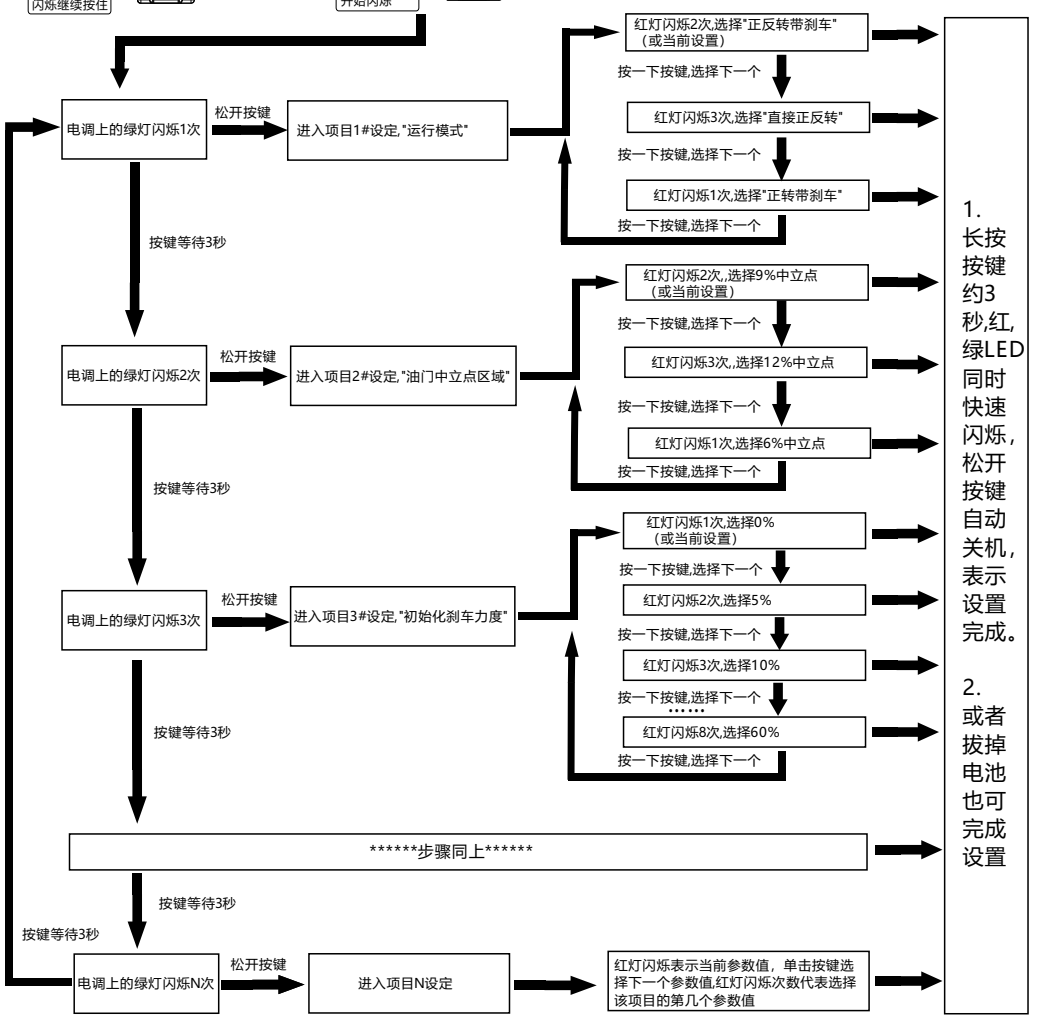
06 编程方法

1 使用电调按键编程方法

1. 电调接上电池，开启遥控器，持续按住“Power/PRG”键不放。
2. 电调上的红灯开始持续闪烁，在红色LED闪烁期间继续续按住“Power/PRG”键；（闪烁约13次）；
3. 绿灯开始闪烁，表示进入编程模式。

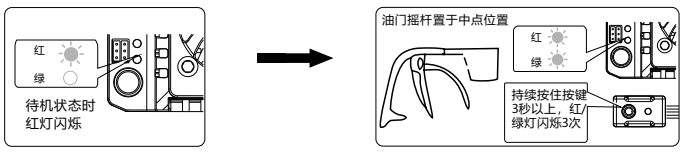


●指示灯闪烁的同时，电机会发出鸣音“哔”，以便识别。
●当N>=5时，使用的是较长时间的指示灯闪烁（带较长时间的鸣音提示）来表示数字5，例如，电调上绿灯长闪一次（同时电机发出长音“哔--”），表示进入第5设定项；如果电调上的绿灯长闪一次再短闪一次（同时电机发出一次长音“哔--”和一次短音“哔”），表示进入第6设定项，依次类推，第7设定项为“哔--哔哔”，第8设定项为“哔--哔哔哔”。
●绿灯闪时，松开按键表示进入该项目的参数设定，红灯闪烁次数代表选择该项目的第几个参数值；每个项目第一次闪烁的红灯均为当前的参数设置；



2 按键恢复出厂设置

待机状态时红灯闪烁（如是有感电机则红色LED闪烁，绿色LED常亮），保持油门在零点位，按住“Power/PRG”键3秒以上，红、绿LED同时亮起，并间隔2秒闪烁3次，将恢复除油门行程以外的所有参数为出厂默认值。（油门行程设置和编程操作时无效）



3 使用Flycolor 调参App编程方法

另外可使用Flycolor Wifi Trans通过Flycolor App 进行参数编程设定。详见Flycolor Wifi Trans 和 Flycolor App 使用说明书。
或者访问www.flycolor.net获取更多信息。
当使用Flycolor App 进行恢复出厂默认值操作时，则将恢复包括油门行程在内的所有参数。

07 电调状态指示灯(LED）说明

1.启动阶段
●绿色LED闪烁N次：表示N节锂电池；
●红色LED闪烁（如是有感电机则红色LED闪烁，绿色LED常亮）：油门摇杆在中点位置，待机状态，随时准备启动。

2.运行阶段
●油门摇杆处于中点区域：红色LED闪烁,（如是有感电机则红色LED闪烁，绿色LED常亮）；
●前进时：红色LED熄灭，绿色LED闪烁，油门值越大绿灯闪烁越快；
●刹车时：红色LED闪烁，绿色LED熄灭；
●倒车时：红色LED熄灭，绿色LED闪烁，油门值越大绿灯闪烁越快。

3.保护功能触发时
●当温度保护生效时，红色LED闪烁；
●当低压保护生效时，红色LED闪烁；
●当油门信号丢失时，红色LED常亮。

08 常见故障快速处理

故障现象	可能原因	解决办法
上电后，红色LED不亮，电机无法启动，风扇不转	1.电调没有通电 2.电源开关损坏，或开关接点不良	检查电池到电调的电源输入通路是否有焊接不良情况，并重新焊好。 联系Flycolor或者经销商。
上电后红色LED常亮，电机无法启动	1.电调信号线插错通道 2.电调信号线插反	1.将电调信号线插入正确的接收机通道 2.将电调信号线按正确的方向插入接收机
遥控器做前进操作，车子反而倒退	1.电调输出线和电机连线的线序不一致 2.该车架的转向系统可能不同	1.如果是无刷无感电机，则将电机的三条线中任意两条互换即可。 2.如果是有刷无感电机，则无法通过更换线序实现电机反转，电调默认程序不适配此特殊机架。
电机转动过程中，突然停止	1.接收机遇到干扰 2.电调进入电池低压保护 3.电调进入过热保护	1.检查接收机出现干扰的原因，检查遥控器电池电量。 2.红灯持续闪烁，如果电池电压过低，则更换电池。 3.红灯持续闪烁，电池电压正常，则为温度保护，待降温后再使用。
电机启动时急加速，电机有卡住或停顿的现象	1.电池放电能力不够。 2.电机转速过高，齿轮比搭配不合适。 3. 电调启动加速度设置过快。	1. 更换放电能力强的电池 2. 更换低速电机，或将减速比提高。 3. 将电调启动加速度（启动模式）设置得慢一些。
电机抖动，无法启动	1.电调和电机之间接线错误。 2.电调和电机之间连线有虚焊。 3. 电调故障。	1.查看接线是否正确，确保A-A,B-B,C-C。 2.检查各个焊点，必要时重新焊接。 3. 联系Flycolor或者经销商。
上电后启动，红色LED闪烁，3S后自动停机	1.电池电压超过工作范围。	1.更换符合电调工作范围的电池。

09 警告

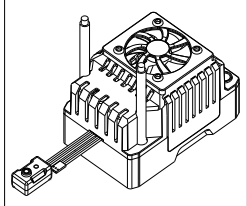
- 在关机的状态下，按一下开关按键，电源指示灯点亮，电调可以开始工作；再按一下开关按键，则指示灯灭，电调关闭。
- 为防止误关机，在电机运转时和参数设置过程中不可关机，仅在马达停止运转时才可关机。当遇到紧急情况无法关机时，请直接断开电源线。
- 电调大负荷运行后，外壳温度很高，为防止关机时烫伤手，建议让电调自然冷却一两分钟后再按键关机。
- 为避免短路和漏电，请确保电调和相关部件连接处绝缘良好。
- 无论任何时候都要注意极性，供电之前一定要反复检查。
- 在插拔或者做任何连接时，请关闭电源。
- 如需更多信息，请联系飞盈佳乐售后或者技术支持。

FLYCOLOR®

User Manual
Brushless ESC for RC Car
Lightning series

Thank you for using our product. Any Improper operation may cause personal injury or 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 unannounced.

Lightning



*All pictures are for reference only

01 Main features

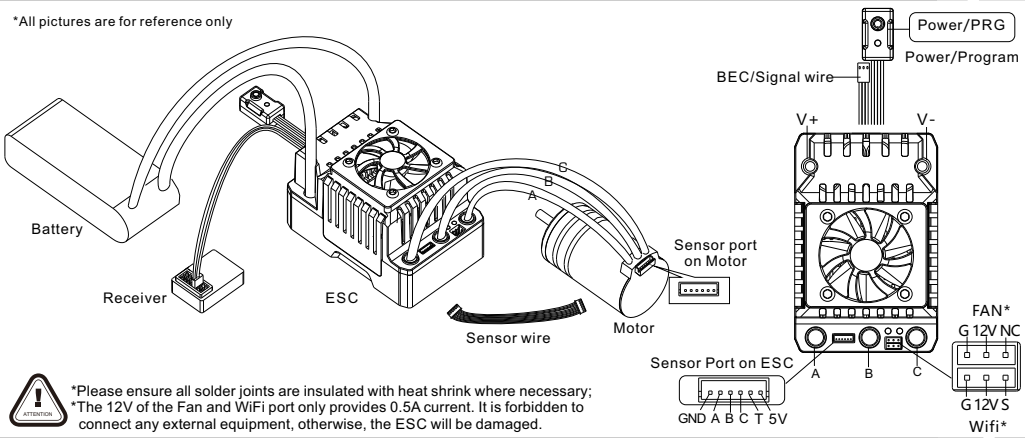
- Well-designed driver firmware for RC vehicles, smooth throttle response.
- ESC is compatible with sensorless brushless motor and sensored brushless motor.
- 9 levels of start acceleration for different vehicles, tires and tracks.
- 8 timings can be selected , it can motors can work at the best efficiency point.
- Proportional brake with 6 levels of maximum brake force and 8 levels of drag brake force.
- Perfect protections: low voltage protection, thermal protection, throttle signal loss protection and motor stall protection.
- Highly reliable electronic switch avoids troubles which may happen to traditional mechanical switch due to dirt,dash, water and etc.
- Excellent waterproof (2 versions of nano waterproof and glued waterproof are available), suitable for complex working conditions and pavement.
- Built in powerful 10A BEC, BEC output voltage adjustable (5V / 6V / 7.4v / 8.4v).
- Wifi Trans for programming, programming via mobile phone APP (extra Flycolor Wi-Fi Trans needed).
- Supporting close-range monitoring and recording of real-time data via mobile phone APP (extra Flycolor Wi-Fi Trans needed).

02 Specifications

Model	Lightning-200A	Lightning-300A
Cont./Peak Current	200A/1300A	300A/1800A
LiPo Cells	5-12S Lipo	
BEC Output	8.4V/7.4V/6V/5V 10A; Switch-mode	
Motor Type	Sensored Brushless/Sensorless Brushless	
Applications	1:5 Truck/Buggy/Touring car	
Size	114*74*78mm	
Weight (not including accessories)	630g(nano waterproof);770g(glued waterproof)	

03 Wiring diagram

*All pictures are for reference only



*Please ensure all solder joints are insulated with heat shrink where necessary;
*The 12V of the Fan and WiFi port only provides 0.5A current. It is forbidden to connect any external equipment, otherwise, the ESC will be damaged.

04 Operation Instructions

1 Connections

1.Motor wiring

Sensorless brushless Motor:
There is no wiring order from the ESC to the Motor , the ESC A/B/C wires can be freely connect to the Motor A/B/C wires, you can swap two wires if the motor runs in reverse.

Sensored Motor :
The motor wiring is different between the sensored and the sensorless; There is strict wiring order from the ESC to the motor, the three A/B/C ESC wires must connect to the three A/B/C motor wires correspondingly. Then connect the ESC sensor port and the motor sensor port with the sensor cable. If you don't plug the sensor cable in, your ESC will still work in sensorless mode even if you're using a sensored motor.

2.Receiver wiring

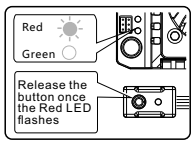
The signal cable on the ESC need to be plugged into the throttle channel on receiver, the signal cable has a output voltage to the receiver and steering servo,so please don't give the receiver additional power supply, otherwise the ESC may be damaged.

3.Battery wiring

Pay attention to the positive (+) and negative (-) of the power supply, and never connect them reversely, otherwise will damage the ESC. Disconnect the battery from the ESC if don't use for a long time to avoid battery damage or accidents.

2 Throttle calibration

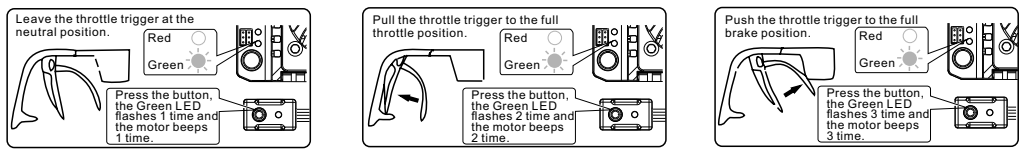
1. Connect the ESC to the battery, turn on the transmitter, continue press and hold the"Power/PRG"button.
2. The Red LED starts to flash, and release the"Power/PRG"button during the flashing (it flashes about 13 times, if not released, it will enter the programming mode) .
3. After releasing the"Power/PRG"button,the Red LED stops flashing, then enter to the throttle calibration.



First time to use transmitter or change the parameters such as throttle middle point, ATL, EPA , throttle range is need to be calibrated again.
Transmitter ABS must set to be "OFF", set throttle channel direction to be"REV", set throttle trim to be "0", set EPA/ATL clockwise and anticlockwise direction of throttle channel to be 100% (Max.).Otherwise, it may cause the ESC failure to work or mistake.

4. Then three throttle points need to be set:

1)Neutral point: leave the throttle trigger at the neutral position, press the Power/PRG button, the Green LED flashes 1 time and the motor beeps 1 time to accept the neutral position.
2)Full throttle point: pull the throttle trigger to the full throttle position, press the Power/PRG button, the Green LED flashes 2 times and the motor beeps 2 times to accept the full forward point.
3)Full brake point: push the throttle trigger to the full brake position, press the Power/PRG button, the Green LED flashes 3 times and the motor beeps 3 times to accept the full brake point.



5. Release the throttle trigger to the neutral position, the Green LED on ESC flashes "N" times indicate battery cells No.,then the Red LED starts to flash continuously (For sensored motor, Red LED flashes, Green LED turns to solid) , the throttle calibration is complete and the system is ready to work.

3 Normal Operation

1. Connect the ESC to the battery, turn on the transmitter, press the"Power/PRG"button once to turn on the ESC.
2. The Green LED on ESC flashes "N" times indicate battery cells No.,then the Red LED starts to flash continuously(For sensored motor, Red LED flashes, Green LED turns to solid) , the system is ready to work.
3. Turn off the ESC: press the"Power/PRG"button once(no longer than 3 seconds, otherwise the factory settings will be restored).

05 Programmable Items & parameter values

*Shadow parts are factory default values

Programmable Items	Value1#	Value2#	Value3#	Value4#	Value5#	Value6#	Value7#	Value8#	Value9#
1.Running Mode	Forward with Brake	Forward / Reverse with Brake	Forward and Reverse						
2.Neutral Range	6%	9%	12%						
3.Initial Brake Force	0%	5%	10%	20%	30%	40%	50%	60%	
4.Low Voltage Protection	Disabled	2.6V	2.8V	3.0V	3.2V	3.4V			
5.Start Acceleration	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
6.PWM Frequency	4KHz	8KHz							
7.Max. Reverse Force	25%	50%	75%	100%					
8.Max.Brake Force	50%	60%	70%	80%	90%	100%			
9.Drag Brake Force	0%	5%	10%	20%	40%	60%	80%	100%	
10.Timing	0°	3.75°	7.5°	11.25°	15°	18.75°	22.5°	26.25°	
11.Motor Direction	Normal	Reverse							
12.Thermal Protection	Protection	Disabled							
13.Lipo Cells	Auto	5S	6S	7S	8S	9S	10S	11S	12S
14.BEC output	5V	6V	7.4V	8.4V					

1. Running Mode:
- **Forward with Brake**: It has only forward and brake functions, no reverse, this mode is mainly used for competition.
- **Forward / Reverse with Brake**: Your vehicle only brakes on the 1st time you push the throttle trigger to reverse (brake) . The motor stops when you quickly release the throttle trigger and then re-push the trigger quickly (2nd push), only then the vehicle will reverse. The vehicle only reverses after the motor stops. This mode is mainly used for training.
- **Forward and Reverse**: the vehicle will reverse immediately when you push the throttle trigger forward to reverse (brake). This mode is often used by special vehicles (such as rock crawler).

2. Neutral Range: As not all transmitters have the same stability at "neutral position", please adjust this parameter as per your preference. You can adjust to a bigger value when necessary.

3. Initial Brake Force: Minimum brake force. It is the force when pushing throttle trigger from neutral point to the initial brake position.

4. Low Voltage Protection: In order to keep the battery at a safe minimum voltage (for LiPo batteries). The ESC monitors the battery voltage all the time, when the voltage goes below the threshold ,it will immediately reduce the power to 50% (in 5 seconds) then cut off output, The Red LED will flash. Please set to "Disabled" if you're using NiMH batteries.

5. Start Acceleration:
It can be adjustable from 1 to 9,set a high value to have a quick start-up response, but requires high discharge capacity of the battery. A suitable rate can help driver to control his vehicle properly during the starting-up process.

6. PWM Frequency:
Choose the appropriate working frequency according to the features of motor and battery. The acceleration will be more aggressive at the initial stage when the frequency is low; A higher drive frequency is smoother but this will create more heat to the ESC.

7. Max. Reverse Force: Different value have different reverse force. For the safety we recommend using a low value to avoid crashing.

8. Max. Brake Force:
This ESC provides proportional braking function; the braking effect is decided by the position of the throttle trigger. It sets the percentage of available braking power when full brake is applied. Large amount will shorten the braking time but it may damage your pinion and spur.

9. Drag Brake Force:
It is the braking power produced when releasing from full speed to neutral position. This is to simulate the slight braking effect of a neutral brushed motor while coasting. It's not recommended for buggy and monster truck.

10.Timing:
If the motor does not work properly under the default value, please try to change the appropriate timing. Change motor Max. RPM by changing timing. The timing higher the output RPM is faster, power consumption is bigger. Make motor work in the best efficiency point by changing timing. Auto timing can change timing between 0°and 30°automatically.

11.Motor Direction: Change motor rotation direction.

12.Thermal Protection:
The Red LED flashes when temperature is reaches to 95℃, and ESC will cut off output . The output will not resume until the temperature is lower than 80℃,For the safety , please don't set this protection disable.

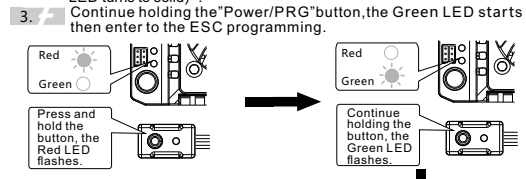
13.Lipo Cells: Auto : count Lipo cells automatically; 5-12S:choose the corresponding values according to battery cells.

14.BEC Output: 5V, 6V, 7.4V, 8.4V. Four BEC output voltages can be selected according to the actual demand.

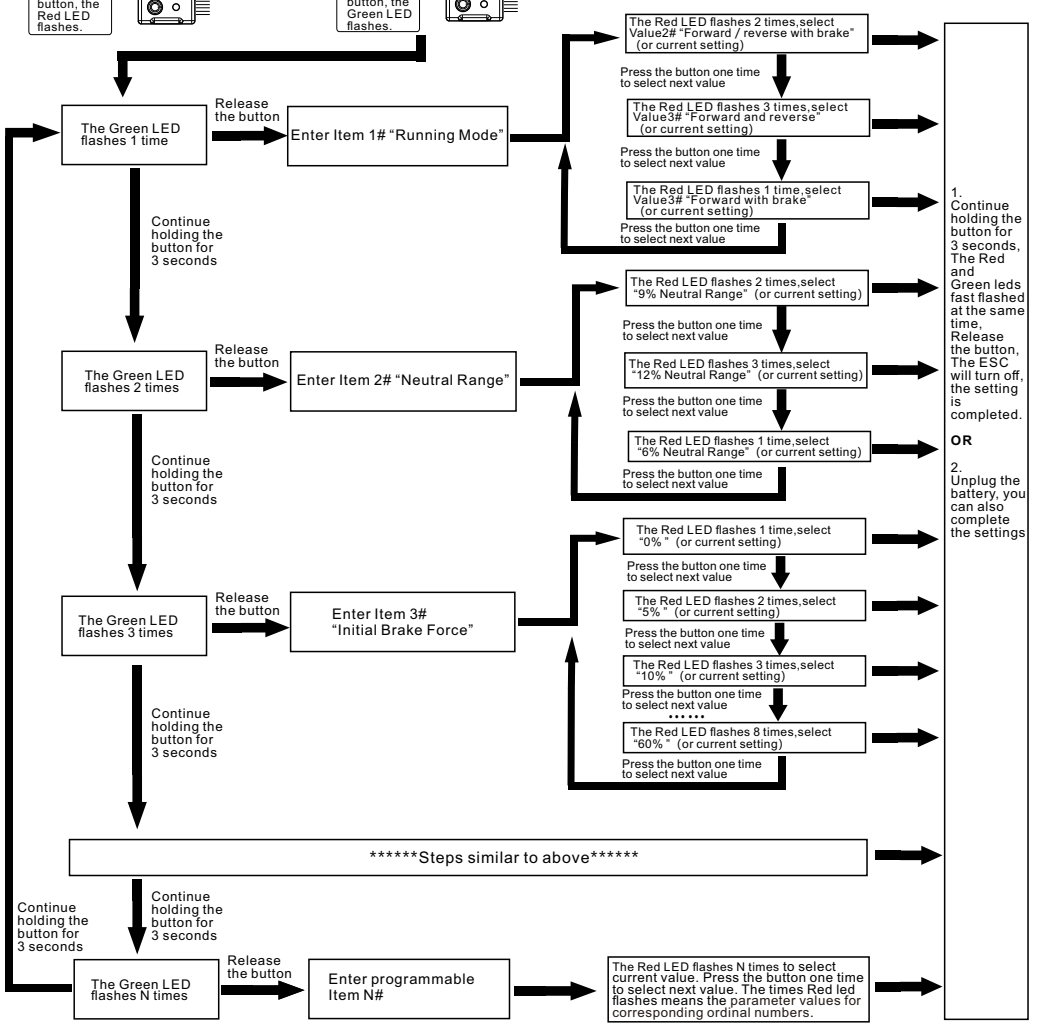
06 ESC Programming

1 Programming with Power/PRG button on the ESC

1. Connect the ESC to the battery, turn on the transmitter, press and hold the "Power/PRG"button.
2. The Green LED on ESC flashes "N" times indicate battery cells No.,Then the Red LED starts to flash continuously (For sensored motor, Red LED flashes, Green LED turns to solid) .
3. Continue holding the"Power/PRG"button,the Green LED starts to flash, then enter to the ESC programming.

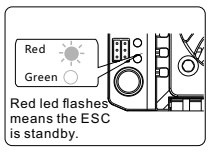


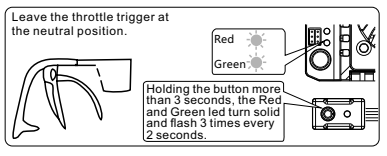
Note:
- Motor will beep when led flashes.
- When N>=5, Led will flash for a long time (with motor beeps long tone) to indicate 5 .For example, The LED flashes for a long time once (motor beeps a long tone "BEEP---" at the same time) , it means the 5th item or value. If LED flashes for a long time once then for a short time once (motor beeps a long tone once and a short tone once at the same time), it means the 6th item or value.
- when Green LED flashes, release the button means enter the programmable item. The times Red led flashes means the parameter values for corresponding ordinal numbers.
- The first led flashing for each item is the current parameter value;



2 Restore default settings

Leave the throttle trigger at the neutral position, the Red led flashes means the ESC is standby (For sensored motor, Red LED flashes, Green LED turns to solid).Press and hold the Power/PRG button more than 3 seconds, then the Red LED and Green LED turn solid, then flash 3 times every 2 seconds, then all parameters except throttle range will restore the factory default . (it's invalid during throttle range calibration and programming).





3 Programming ESC with Flycolor App

Flycolor Wifi Trans is used for programming via Flycolor App; Please see Flycolor Wifi Trans and Flycolor App instructions for details.
Or visit www.flycolor.net for more information.
When using the flycolor app to restore factory defaults, all parameters including throttle range will be restored.

07 LED status instructions

1.During start-up

- The Green LED flashes "N" times indicate battery cells No.
- The Red led flashes indicate the ESC is ready to work (For sensored motor, Red LED flashes, Green LED turns to solid).

2.In operation

- Standby: The Red LED flashes indicate the ESC is standby and ready to work when the throttle trigger is in the neutral position (For sensored motor, Red LED flashes, Green LED turns to solid).
- Forward: The Red LED dies out and the Green LED flashes when your vehicle runs forward. The Green LED turns solid when pulling the throttle trigger to the full (100%)throttle position.
- Brake: The Red LED flashes and the Green LED die out when you brake.
- Reverse: The Red LED dies out and the Green LED flashes when reversing your vehicle . The Green LED turns solid when pushing the throttle trigger to the full brake position.

3.Protections activated

- The Red LED flashes indicate the low voltage protection is activated.
- The Red led flashes indicate the ESC thermal protection is activated.
- The Red led turns solid indicate the throttle signal is lost.

08 Trouble shooting

Troubles	Possible Causes	Solutions
The ESC was unable to start the Red LED, The motor and cooling fan after it power on.	1. No power was supplied to the ESC. 2. The ESC power switch was damaged.	Check if all ESC & battery connectors have been soldered well or firmly connected.
The ESC was unable to start the motor ,but the Red LED on the ESC turned on solid.	The signal cable was plugged into wrong channel or reversely plugged into the TH channel on the receiver.	Plug the ESC signal cable into the throttle channel (Ch2) by referring to relevant mark shown on the receiver .
The vehicle ran backward when you pulled the throttle trigger towards you.	1. The wiring (ESC-motor)order was incorrect. 2. Your chassis is different from popular chassis	1. Swap any two wires (ESC-motor)if you're using a sensorless motor . 2. Change your chassis if different from popular chassis.
The motor suddenly stopped or significantly reduced the output in operation.	1.The receiver was influenced by some foreign Interference. 2.The ESC entered the LV protection. 3.The ESC entered the thermal protection.	1.Check all devices and try to find out all possible causes, and check the transmitter's battery voltage. receiver was influenced by some foreign interference. 2.The Red LED continue flashing, please replace the battery if it enters the low voltage protection. 3.The Red LED continue flashing, please let you ESC cool down before using it again if it enter the thermal protection.
The motor got stuck or stopped when increasing the throttle during the starting-up process.	1. Poor discharging capability of the battery. 2. The RPM of the motor was too high, or the FDR was too low. 3. Set the "Start Acceleration" to a high level.	1.Change another battery with great discharging capability. 2.Change a low speed motor, or increase the FDR. 3.Set the "Start Acceleration" to a low level.
The motor stuttered but couldn't start.	1. The (ESC-motor) wiring order was incorrect. 2. Bad connection between ESC&motor . 3. The ESC was damaged.	1.Check if the wiring order is A-A,B-Band C-C. 2.Ensure well soldering between ESC&motor wiring . 3.Contact the distributor or Flycolor for repair.
Start after power on, red LED flashes, and stop automatically after 3S	1. The battery voltage exceeds the working range.	1. Replace the battery with the working range of the ESC.

09 Warnning

- Press once "Power/PRG"button to turn on the ESC (the LED comes on); and press the button again to turn off the ESC (The LED dies out).
- You cannot turn off the ESC during the motor is spinning or ESC programming. If there is an emergency, please unplug the battery to turn off .
- The temperature of the ESC cover may be very high when there is heavy load, for precaution, please let ESC cool down before press the button.
- To avoid short circuits, ensure that all wires and connections be well insulated before connecting the ESC to related devices.
- Observe polarity at all times. Check and double check before applying power.
- Power off before unplugging ,plugging in or making any connections.
- Please contact Flycolor for more information.