

感谢您购买本产品！无刷动力系统功率强大，错误的使用可能造成人身伤害和设备损坏。为此，我们强烈建议您在设备使用前仔细阅读本说明书，并严格遵守规定的操作程序。我们不承担因使用本产品而引起的任何责任，包括但不限于对附带损失或间接损失的赔偿责任；同时我们不承担因擅自对产品进行修改所引起的任何责任。我们有权在不经通知的情况下变更产品设计、外观、性能及使用要求。

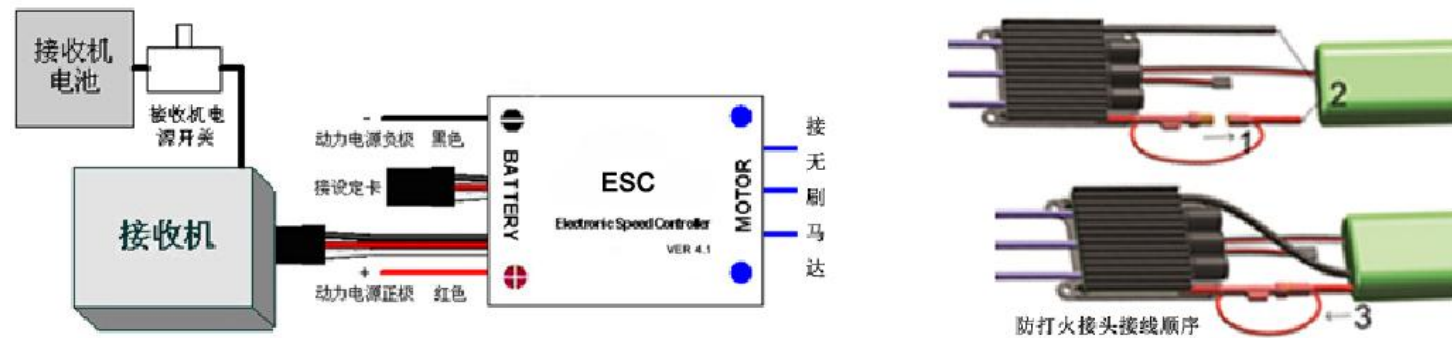
【产品特点】

- ◆ 采用名厂优质功率管、单块大型功率板设计，散热面积大，电调发热量小，具有强劲的高功率输出。
- ◆ 采用超低阻抗 PCB（印刷线路板），具有极强的耐电流能力。
- ◆ 电源输入端采用日本名牌超低阻抗大容量电容，有效降低干扰，延长电池寿命。
- ◆ 输入线上具有防火花的电路，消除上电瞬间的电火花，有效延长电源接头的寿命。
- ◆ 具备电压保护/过热保护/油门信号丢失保护等多重保护功能，有效延长电调使用寿命。
- ◆ 具有普通启动/柔和启动/超柔和启动三种启动模式，兼容固定翼飞机及直升机。
- ◆ 可设定油门行程，兼容市面上所有遥控器。具备平滑、细腻的调速手感和一流的调速线性。
- ◆ 最高转速可以达到 210000 RPM（2 极马达）、70000 RPM（6 极马达）、35000 RPM（12 极马达）。
- ◆ 可配合编程设定卡（注：选配件）使用，编程卡小巧便携，具有简单直观的界面，便于您随时随地修改各项编程参数。

【产品规格】

飞腾高电压系列 FLYFUN HV Series										
电流级别	型号	持续输出电流	瞬时电流(10秒)	BEC类型	BEC输出	支持电池节数		参数编程功能	重量	体积 长*宽*高
						锂电	镍镉镍氢			
80A	FLYFUN-80A-HV	80A	100A	无	无	5-10	15-30	有	125g	88*55*18
100A	FLYFUN-100A-HV	100A	120A	无	无	5-12	15-36	有	112g	88*55*18

【接线示意图】



FLYFUN-80A-HV 和 FLYFUN-100A-HV 电调都具有 2 条三色排线。靠近红色电源线那条三色排线较长，仅用于连接接收机油门通道；远离红色电源线那条三色排线较短，仅用于连接参数设定卡来设置电调的参数。

【火花消除电路】

电源正极线（粗红线）上附带着一根细红线和两个接头，这是新型的防火花结构，用于防止通电瞬间在电源接头处产生强烈电火花。其接线顺序应为：

- 1、将电调正极红色粗线上的香蕉插头分开
- 2、将电调红黑线分别接上电池正负两极
- 3、听到上电提示音♪123 后，尽快连接电调正极红色粗线上的香蕉接头（请注意，一定要确认听到♪123 提示音再做第 3 步操作）。

【产品功能简要说明】

1. **刹车设定：**无刹车/有刹车，出厂默认值为无刹车。
2. **电池类型：**Li-xx（锂电池）/ Ni-xx（镍镉或镍氢）两大类电池，默认值为 Li-xx（锂电池）。
3. **低压保护模式：**降低功率/关闭输出，默认值为降低功率。
4. **低压保护阈值：**低/中/高，默认值为中截止电压。
 - ◆ 当设定使用的是 Li-xx 电池，则根据用户设定的锂电节数计算截止电压，低/中/高情况下每颗电池的截止电压分别为：2.6V/2.85V/3.1V。例如使用 10 节锂电，设定为中截止电压，则低压保护阈值为：2.85X10=28.5V。
 - ◆ 当设定使用的是 Ni-xx 电池，低/中/高情况截止电压为开机时输入电压的 0%（无保护）/45%/60%。例如：使用 20 节镍氢电池，充满电时电压为 1.44X20=28.8V，当设定为中截止电压时，则截止电压阈值为：28.8X45%=12.96V。
5. **启动模式：**普通/柔和/超柔和启动，默认值为普通启动。
普通启动适用于固定翼，柔和启动/超柔和启动适用于直升机。柔和启动和超柔和启动的初始转速都较低，从启动到全速分别需要 3 秒和 6 秒钟，但启动后若关闭油门，3 秒内再次启动时则均以普通模式启动，以免在做一些特技动作飞行时因反应过慢而导致摔机。
6. **进角：**低/中/高，默认值为低进角。
一般情况下，低进角和中进角可以适应大多数马达。如需要更大的功率输出，可选用高进角，但此时系统效率会有所降低。改变进角设置后，建议先在地面进行测试，然后再飞行。

【首次使用您的无刷电子调速器】

注意：下述的“油门摇杆最低位置”对应的油门值为 0%， “油门摇杆最高位置”对应的油门值为 100%

在使用全新的无刷电子调速器之前，请仔细检查所有连接是否正确、可靠。经检查一切正常后，请按以下顺序启动无刷电子调速器。

1. 将遥控器油门摇杆推至最低位置，打开遥控器；
2. 给接收机接上电源（4-6V），然后给电调接上动力电池，约 2 秒后电机发出一声“啾”长鸣音表示自检正常，一切准备就绪，可以随时启动电机。
 - ◆ 若无任何反应，请检查电池是否完好，电池连线是否可靠。
 - ◆ 若上电后 2 秒电机发出“啾—啾—”的鸣音，5 秒后又发出“♪567i2”特殊提示音，表示电调进入编程设定模式，这说明您的遥控器未设置好，油门通道反向，请参考遥控器说明书正确设置油门通道的“正/反”方向。
 - ◆ 若上电后电机发出“啾-啾-、啾-啾-、啾-啾-”鸣音（间隔 1 秒），表示电池组电压过低或过高，请检查电池组电压。
3. **特别强调** 为了让电调适应您的遥控器油门行程，在首次使用本电调或更换其他遥控器使用时，均应重新设定油门行程，以获得最佳的油门线性。具体操作请参阅第 2 页首处的说明。

【警示音说明】

1. 电压不正常警示音：电调开机时，会对电源电压进行检测，当电源电压不在正常范围内时，电调会作如下警示：“啾-啾-、啾-啾-、啾-啾-”（每两声之间的间隔时间为 1 秒），直到电源电压正常为止；
2. 油门信号丢失警示音：当电调未检测到油门信号时，电调会作如下警示“啾-、啾-、啾-”（每声之间的间隔为 2 秒）；
3. 油门未归零（油门摇杆未置于最低位置）警示音：电调会作如下警示：“啾-啾-啾-啾-啾-”（很急促的单音鸣叫）；
4. 油门行程过小警示音：当所设定油门行程过窄时，电调会做警示，表明本次行程设定无效，需重新设定。警示方式为：“啾-啾-啾-啾-啾-”（很急促的单音鸣叫）；

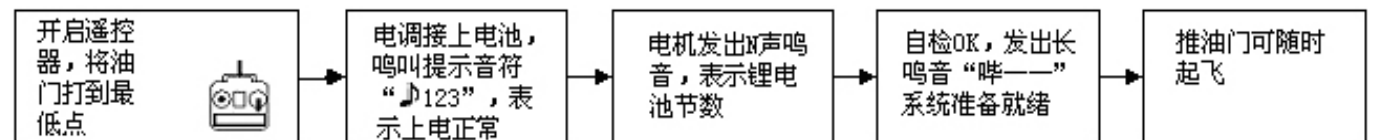
【其他保护功能说明】

1. 启动保护：当推油门启动后，如在两秒内未能正常启动电机，电调将会关闭电机，油门需再次置于最低点后，才可以重新启动。（出现这种情况的原因可能有：电调和电机连线接触不良、螺旋桨被其他物体阻挡、减速齿卡死等）
2. 温度保护：当电调工作温度超过特定的阈值时，电调会自动降低输出功率至正常值的 40%，以免温度持续升高。当温度下降后，电调会逐渐恢复最大动力。
3. 油门信号丢失保护：当检测到油门遥控信号丢失 0.5 秒后，电调开始降低输出功率，如果信号始终无法恢复，则一直降到零输出（降功率过程为 2 秒）。如果在降功率的过程中油门遥控信号重新恢复，则立即恢复油门控制，这样做的好处是：在油门信号瞬间丢失的情况下（小于 0.5 秒），电调并不会进行断电保护；如果遥控信号确实长时间丢失，则进行保护，但也不是立即关闭输出，而是有一个逐步降低输出功率的过程，给玩家留下一定的时间救机，兼顾安全性和实用性。
4. 过负荷保护：当负载突然变得很大时，电调会切断动力，或自动重启。出现负载急剧增大的原因通常是螺旋桨打到其他物体堵死。

【故障快速处理】

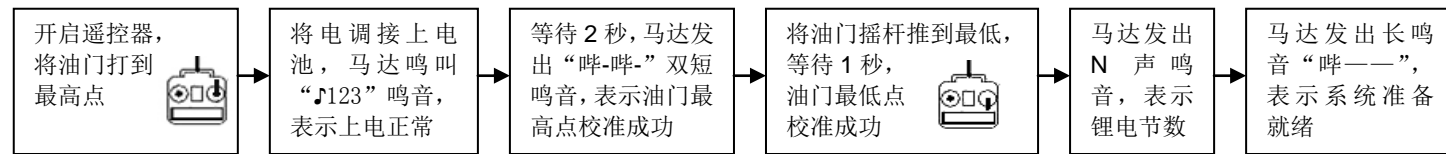
故障现象	可能原因	解决方法
上电后电机无法启动，无任何声音	接收机电源或动力电池供电不正常	将动力电池和接收机电源接好。
上电后电机无法启动，发出“啾-啾-、啾-啾-、啾-啾-”警示音（每两声之间的间隔时间为 1 秒）	电池组电压不正常	检查电池组电压
上电后电机无法启动，发出“啾-、啾-、啾-”警示音（每声之间的间隔时间为 2 秒）	接收机油门通道无油门信号输出	检查发射机和接收机的配合是否正常，油门控制通道接线是否插紧
上电后电机无法启动，发出“啾-啾-啾-啾-啾-”急促单音	油门未归零或油门行程设置过小	将油门摇杆置于最低位置；重新设置油门行程
上电后电机无法启动，发出“啾-啾-”提示音，然后发出“♪567i2”特殊提示音	油门通道“正/反”向错误	参考遥控器说明书，调整油门通道的“正/反”向设置
电机反转	电调输出线和电机线的连接线路错误	将三根输出线中的任意两根对调
电机转动中途停转	油门信号丢失保护	检查遥控器和接收机的配合是否正常，检查油门通道接线是否接触良好
	电池电压不足，进入低压保护状态	重新给电池充满电
	接线接触不良	检查电池组插头是否正常、电调输出线和电机线连接是否稳固可靠
随机性的重新启动和工作状态失常	使用环境中具有强烈的电磁干扰	电调的正常功能会受到强烈电磁波的干扰。出现这种情况时，请尝试重新上电启动来恢复正常工作状态

【正常使用开机过程说明】



注：报锂电节数时，5 节锂电的表示方式为一声长音“啾—”，6 节锂电的表示方式为“啾—啾—”（一声长音+一声短音 = 5+1 = 6），以此类推，二声长音表示 10 节锂电，“二声长音+一声短音”表示 11 节锂电，“二声长音+二声短音”表示 12 节锂电。

【油门行程设定说明】（注意！当首次使用电调或更换其他遥控器使用时，均应重新设定油门行程）



【使用遥控器摇杆进行电调参数设定】

使用遥控器油门摇杆设定参数分为四个步骤：

- 一. 进入编程
- 二. 选择设定项
- 三. 选择设定项下的参数值
- 四. 退出

一、进入编程模式：

1. 开启遥控器，将油门打到最高，再将电调接通电源
2. 等待2秒，鸣叫“哔-哔-”提示音
3. 再等待5秒，会鸣叫“♪567i2”特殊提示音，表示已经进入编程模式。

二、选择设定项：

进入编程模式后，会听到9种鸣音，按如下顺序循环鸣叫，在鸣叫某个提示音后，3秒内将油门打到最低，则进入该设定项。

1. “哔”	刹车	(1短音)
2. “哔-哔-”	电池类型	(2短音)
3. “哔-哔-哔-”	低压保护方式	(3短音)
4. “哔-哔-哔-哔-”	低压保护阈值	(4短音)
5. “哔-”	启动模式	(1长音)
6. “哔-哔-”	进角	(1长1短)
7. “哔-哔-哔-”	锂电池节数	(1长2短)
8. “哔-哔-哔-哔-”	恢复出厂默认值	(1长3短)
9. “哔-哔-”	退出	(2长音)

注：此处一声长音“哔-”相当于5声短音“哔-”，所以在第二步骤“选择设定项”中，一长一短“哔-哔-”表示第6选项。

三、选择参数值：

马达会循环鸣叫，在鸣叫某个提示音后将遥控器打到最高，则选择该提示音所对应的设定值，接着鸣叫特殊提示音“♪isis”，表示已选择了该参数值，且已保存。（此时如果不想再设定其它的设定项，则2秒内将油门打到最低，即可快速退出编程设定；如果还要设定其它选项，则继续等待，退回第二步骤，选择其它设定项）

设定项	“哔-” 1声	“哔-哔-” 2声	“哔-哔-哔-” 3声	“哔-哔-哔-...” N声
刹车	无刹车	有刹车		
电池类型	锂电池	镍镉/镍氢		
低压保护方式	降低功率	关闭动力		
低压保护阈值	低	中	高	
启动模式	普通启动	柔和启动	超柔和启动	
进角	低	中	高	
锂电节数	N声哔音表示N节锂电池（4声及4声以下表示自动判别）			

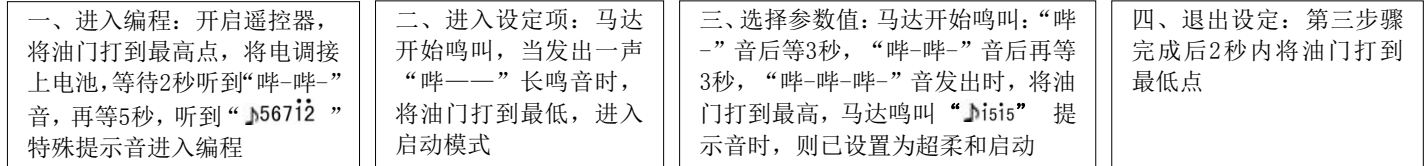
“锂电节数”设定项中，一声长音和五声短音等价。如：6节锂电的表示方式为“哔-哔-”（一声长音+一声短音 = 5+1 = 6），二声长音表示10节锂电，二声长音+一声短音表示11节锂电，二声长音+二声短音表示12节锂电。

对于四节以上的锂电池，最好使用手动方式设置锂电节数，尽量不要使用“自动”模式。（因为锂电池充满电状态和非充满电状态下单体电压差别较大，因此电池组所含的单体越多，越难以准确判别单体颗数。）

四、退出设定

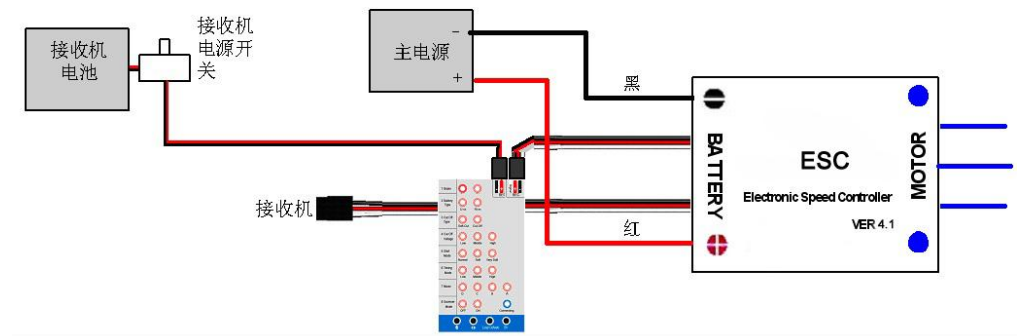
- 有如下两种方式退出设定。
1. 在第三步骤，选择设定值时，鸣叫特殊提示音“♪isis”后，2秒内将油门打到最低，则退出设定。
 2. 在第二步骤，选择设定项时，当电机鸣叫出“哔-哔-”两长音（即第9个设定项）后，3秒内将油门打到最低，则退出设定。

【编程设定示例】（例如将启动模式设为“超柔和启动”，即第5设定项的第3个参数值）



【使用编程设定卡设定“锂电节数”参数的说明】

当使用编程设定卡设置 HV（高压）系列无刷电调可编程参数时，此时接线及电顺序为：



- 1) 将接收机电池接入设定卡上标注着“BATT”的插座中；
- 2) 将电调控制线（较短的那根三色线）插头插入设定卡上标注着“BEC”的插座中；
- 3) 接通电调主电源；

注意：此时设定卡上的“MUSIC/LI-PO CELL”设定选项所代表的含义为“锂电节数”（●表示发光管亮，○表示发光管灭）

发光管状态				锂电节数	发光管状态				锂电节数
D	C	B	A		D	C	B	A	
○	○	○	○	自动判断锂电节数	●	○	○	○	9节 (33.3V)
○	○	○	●	自动判断锂电节数	●	○	○	●	10节 (37.0V)
○	○	●	○	自动判断锂电节数	●	○	●	○	11节 (40.7V)
○	○	●	●	自动判断锂电节数	●	○	●	●	12节 (44.4V)
○	●	○	○	5节 (18.5V)	●	●	○	○	自动判断锂电节数
○	●	○	●	6节 (22.2V)	●	●	○	●	自动判断锂电节数
○	●	●	○	7节 (25.9V)	●	●	●	○	自动判断锂电节数
○	●	●	●	8节 (29.6V)	●	●	●	●	自动判断锂电节数

【标配附件：无刷电机测速传感器】

本电调标配“无刷电机测速传感器”作为附件。该传感器检测无刷电机引线上的电压变化，输出对应于电机转速的信号。该传感器可以和多种转速控制系统相连，典型应用如：作为 Mikado 公司的 V-Bar 系统转速传感器（电动直升机使用）。

规格

- 1、外形尺寸：23mm*10mm*2mm
- 2、重量：6g（含输入输出线）
- 3、工作电压：3.5V 至 8.4V（1-2S Lipo）
- 4、消耗电流：1-5mA
- 5、电机线信号电压范围：2-14S Lipo
- 6、电气转速测试范围（2极电机）：1000rpm-30000rpm



使用方法

A、B 接无刷电机的任意两根引线（不分极性），C 是白红黑三色排线，黑线为地线，红线接 3.3V 至 5V 电源为本传感器供电，白线输出电机转速（RPM）信号。

Thanks for purchasing our Electronic Speed Controller (ESC). High power system for RC model can be very dangerous, so we strongly suggest you read this manual carefully. In that we have no control over the correct use, installation, application, or maintenance of our products, no liability shall be assumed nor accepted for any damages, losses or costs resulting from the use of the product. Any claims arising from the operating, failure or malfunctioning etc. will be denied. We assume no liability for personal injury, property damage or consequential damages resulting from our product or our workmanship. As far as is legally permitted, the obligation to compensation is limited to the invoice amount of the affected product.

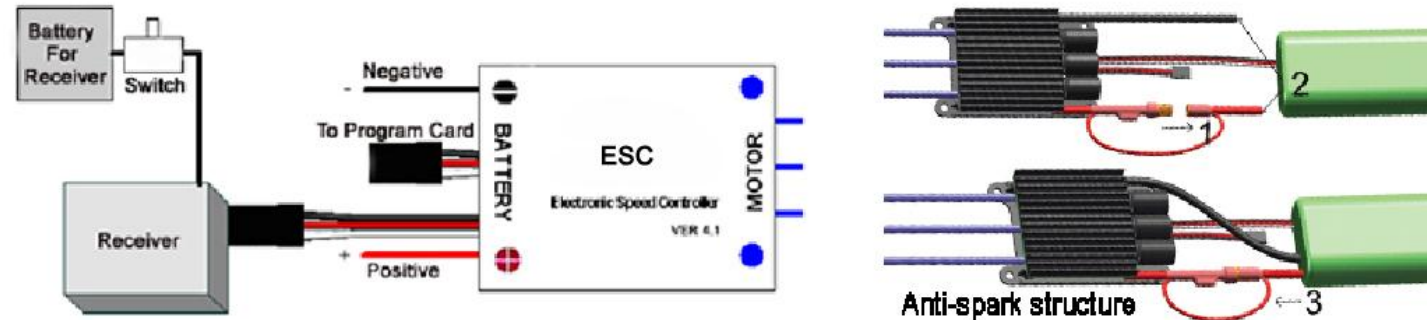
【Features】

1. Use extreme low resistance PCB to make the whole ESC with super current endurance capability.
2. Military quality capacitors with extreme low resistance increase the ability for preventing unwanted RF noise or interference.
3. Anti-spark circuit eliminates sparks when the battery pack is connecting with the ESC.
4. Protection features: Low-voltage cutoff protection / over-heat protection / throttle signal lost protection.
5. 3 start modes: Normal / Soft / Super-Soft, compatible with fixed-wing aircraft and helicopter.
6. Throttle range can be configured, fully compatible with all transmitters.
7. Smooth and accurate speed control, excellent throttle linearity.
8. Maximum speed: 210000 RPM (2 poles motor), 70000 RPM (6 poles motor), 35000 RPM (12 poles motor).
9. Pocket- sized program card can be purchased separately for extremely easy programming of the ESC at flying field.

【Specification】

Class	Model	Cont. Current	Burst Current (>10s)	BEC Output	Battery Cell		User Programmable	Weight	Size
					Lipo	NiMH			L*W*H
80A	FLYFUN-80-HV	80A	100A	N/A	5-10	15-30	Yes	125g	88*55*18
100A	FLYFUN-100-HV	100A	120A	N/A	5-12	15-36	Yes	112g	88*55*18

【Wiring Diagram】



Note: There are 2 control wires on the HV controller. The longer one is close to the positive battery wire, which is connected with the receiver, and the shorter one is close to the negative battery wire, which is used to connect the program card to set the programmable parameters of the controller.

【Anti-Spark Circuit】

There is a pair of bullet connectors and a thin red wire attached with the positive input wire (red color, thick) of the ESC. They are used to eliminate sparks when the battery pack is connecting with the ESC. Please use it in the following sequence:

1. Disconnect the bullet connectors on the positive input wire (red color, thick) of the ESC.
2. Connect battery wires to the ESC.
3. Connect the bullet connectors on the positive input wire (red color, thick) of the ESC as soon as you hear the special tone “♪123”.

【Feature Explanation】

1. **Brake:** Brake Enabled / Brake Disabled, default is Brake Disabled
2. **Battery Type:** Li-xx(Li-ion or Li-po) / Ni-xx(NiMh or Nicd), default is Li-xx.
3. **Low Voltage Protection Mode(Cutoff Mode):** Soft Cutoff (Gradually reduces the output power) or Hard Cutoff (Immediately stops the output power), default is Soft Cutoff.
4. **Low Voltage Protection Threshold(Cutoff Threshold):** Low / Medium / High, default is Medium.
 - ◆ For Li-xx battery, the cells quantity of a battery pack is calculated automatically or set manually. Low / Medium / High cutoff voltage for each cell is: 2.6V/2.85V/3.1V. For example: 10 cells Lipo, when “Medium” cutoff voltage is set, the cutoff voltage is: 2.85*10=28.5V.
 - ◆ For Ni-xx battery, low / medium / high cutoff voltages are 0%/45%/60% of the startup voltage (i.e. the initial voltage of the charged battery pack), 0% means the low voltage protection function is disabled. For example:20 cells NiMH battery, fully charged voltage is 1.44*20=28.8V, when “Medium” value is set, the cutoff voltage is: 28.8*45%=12.96V.
5. **Start Mode:** Normal /Soft /Super-soft, default is Normal startup. Normal is suitable for fixed-wing aircraft. Soft and Super-soft are suitable for helicopter. The initial speed of Soft and Super-soft mode is very slow so it will take 3 seconds (Soft startup) or 6 seconds (Super-soft startup) from zero speed to full speed. But if the startup process is completed (i.e. The motor is running), then the throttle is closed (that means the throttle stick is moved to bottom position at 0% throttle) and opened again (throttle stick is moved upwards) within 3 seconds, the restart will be temporarily changed to normal mode to get rid of the chances of crash caused by slow throttle response in aerobatic fly.
6. **Timing:** Low / Medium / High, default is Low. In normal cases, Low or Medium timing is suitable for most motors. In order to get higher speed, please try the **High** timing value.

Note: After you changing the timing setting, please test your RC model on ground before taking off.

【Begin To Use The New ESC】

Note: In the following instructions, we use the words of “Top position” and “Bottom position” to represent the position of the throttle stick.

Top Position: The throttle value is 100% at this position.

Bottom Position: The throttle value is 0% at this position.

Before using your new ESC, please check all the connections to make sure that they are reliable, and then start up the ESC in the following sequence:

1. Move the throttle stick to bottom, and then switch on the transmitter.
2. Connect the receiver battery pack (4-6V) to the receiver, and then connect the main power battery pack to ESC, the ESC begins the self-test process, and the motor will emit several “beep” tones to represent the cells quantity of the lithium battery pack. After 2 seconds a long “beep-----”tone emits, which means the self-test is OK, and now the RC model is ready to take off.
 - ◆ If nothing is happened, please check your battery packs and all the connections;
 - ◆ If a special tone “♪56712” emits after 2 beep tones (beep-beep-), means the ESC has entered the program mode, i.e. the throttle channel of your transmitter is reversed, please set the direction of throttle channel correctly.
 - ◆ If a very rapid “beep-beep-, beep-beep-” tone emits (The time interval of each “beep-beep-” tone is 1 second), means the input voltage is too low or too high, please check the battery voltage.
3. **VERY IMPORTANT!** Because different transmitter has different throttle range, you need to use the “Throttle Range Setting Function” to calibrate the throttle range. Please read the instructions on page 1-----“Throttle Range Setting”.

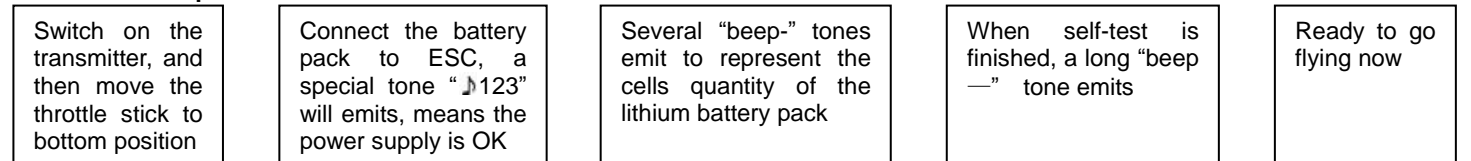
【Alert Tone】

1. Input voltage abnormal alert tone: The ESC begins to check the voltage of battery pack when it is power on, if the voltage is not in the acceptable range, such an alert tone emits: “beep-beep-, beep-beep-, beep-beep-” (Every “beep-beep-” has a time interval about 1 second)
2. Throttle signal abnormal alert tone: When the ESC can’t detect the normal throttle signal, such an alert tone emits: “beep-, beep-, beep-”. (Every “beep-” has a time interval about 2 seconds)
3. Throttle stick is not at its bottom position alert tone: When the throttle stick is not in the bottom (lowest) position, a very rapid alert tone emits: “beep-, beep-, beep-”. (Every “beep-” has a time interval about 0.25 second.)

【Protection Function】

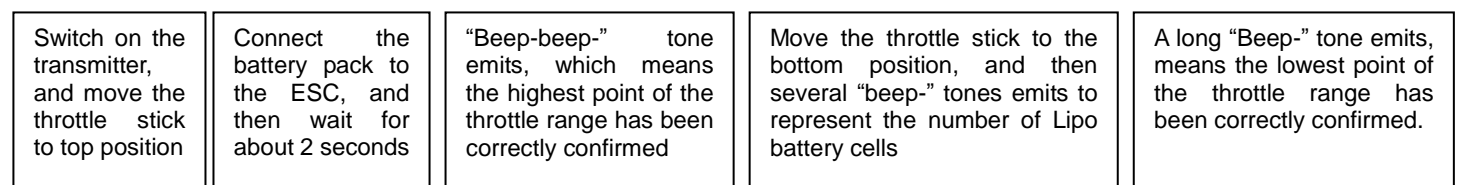
1. Start up protection: If the motor failed to start up in 2 seconds, the ESC will cut off the output power. In this case, the throttle stick **MUST** be moved to bottom again and then to restart the motor. (Such a situation happens in the following cases: The connection between ESC and motor is not reliable, propeller is blocked, gearbox is damaged, etc.)
2. Over-heat protection: When the temperature of ESC is higher than a factory-preset value, the ESC will gradually reduce the output power.
3. Throttle signal lost protection: The ESC will reduce the output power if the throttle signal is lost for 1 second, further lost for totally 2 seconds will cause its output to be completely cut off.

【Normal Startup Procedure】



Please note that we use a special way to represent the cells quantity of a lithium battery pack: 1 long “beep—” = 5 short “beep-”. For example, 2 long “beep—” plus 2 short “beep-” (Beep—Beep—BB) means a 12 cells lithium battery pack, 1 long “beep—” plus 1 short “beep-” (Beep—B) means a 6 cells lithium battery pack, and so on.

【Throttle Range Setting】 Throttle range should be reset when a new transmitter is being used



【Trouble Shooting】

Trouble	Possible Reason	Action
After power on, motor can't work, no sound is emitted	The connection between battery pack and ESC is not OK	Check the power connection. Replace the connector.
After power on, motor can't work, such an alert tone emits: “beep-beep-, beep-beep-,beep-beep-” (Every “beep-beep-” has a time interval about 1 second)	Input voltage is abnormal, too high or too low	Check the voltage of battery pack
After power on, motor can't work, such an alert tone emits: “beep-, beep-, beep-”(Every “beep-” has a time interval about 2 seconds)	Throttle signal is abnormal	Check the receiver and transmitter Check the cable of throttle channel
After power on, motor can't work, such an alert tone emits: “beep-, beep-, beep-” (Every “beep-” has a time interval about 0.25 second)	Throttle stick is not in its bottom position (Lowest position).	Move the throttle stick to bottom

After power on, motor can't work, a special tone "♪56712" emits after 2 beep tones (beep-beep-)	The direction of throttle channel is reversed, so the ESC has entered the program mode	Set the direction of throttle channel correctly
The motor runs in opposite direction	The connection between ESC and the motor need to be changed.	Swap any two wire connections between ESC and motor
The motor stop running while in working state	Throttle signal is lost	Check the receiver and transmitter Check the cable of throttle channel
	ESC has entered Low Voltage Protection mode	Land RC model as soon as possible, and then replace the battery pack
	Some Connections are not reliable	Check all the connections: battery pack connection, throttle signal cable, motor connections, etc.

【 Program The ESC With Transmitter Stick (4 Steps)】

1. Enter program mode
2. Select programmable items
3. Set item value (Programmable value)
4. Exit program mode

1. Enter program mode

1. Switch on transmitter, move throttle stick to top position, and then connect the battery pack to ESC
2. Wait for 2 seconds, the motor will emit special tone like "beep-beep-"
3. Wait for another 5 seconds, special tone like "♪56712" emits, which means program mode is entered

2. Select programmable items

After entering program mode, you can hear 9 tones in a loop in the following sequence. If you move the throttle stick to bottom within 3 seconds after one kind of tones, then this item will be selected.

- | | | |
|---------------------------|--------------------|------------------|
| 1. "beep" | Brake | (1 short tone) |
| 2. "beep-beep-" | Battery type | (2 short tone) |
| 3. "beep-beep-beep-" | Cutoff mode | (3 short tone) |
| 4. "beep-beep-beep-beep-" | Cutoff threshold | (4 short tone) |
| 5. "beep—" | Startup mode | (1 long tone) |
| 6. "beep—beep-" | Timing | (1 long 1 short) |
| 7. "beep—beep-beep-" | Lipo battery cells | (1 long 2 short) |
| 8. "beep—beep-beep-beep-" | Set all to default | (1 long 3 short) |
| 9. "beep—beep—" | Exit | (2 long tones) |

Remark: 1 long "beep—" = 5 short "beep-"

3. Set item value

You will hear tones in loop. Set the value matching to a tone by moving the throttle stick to top when you hear the tone, then a special tone "♪1515" emits which means the value is set and saved. (Keeping the stick at top, you will go back to step 2 and you can select other items; Moving the stick to bottom within 2 seconds, you will exit the programming mode directly)

Items	Tones			
	beep- 1 short tone	beep-beep- 2 short tones	beep-beep-beep- 3 short tones	beep-beep-beep... N short tones
Brake	Off	On		
Battery type	Li-ion / Li-Po	NiMH / NiCd		
Cutoff mode	Soft Cutoff	Hard Cutoff		
Cutoff threshold	Low	Medium	High	
Startup mode	Normal	Soft	Super soft	
Timing	Low	Medium	High	
Lipo cells quantity	N beep tones represent N cells (N ≤ 4 means "Auto Detect")			

4. Exit program mode

There are 2 ways to exit program mode.

1. In the step 3, after special tone "♪1515", move throttle stick to the bottom within 2 seconds.
2. In step 2, after the tone "beep—beep—" (Item #9), move throttle stick to the bottom within 3 seconds.

Note:

1. It very important to set the Lipo battery cells quantity correctly, otherwise the ESC will mistakenly calculate the cut off voltage.
2. In "Lipo cells quantity" setting process, 1 long "beep—" = 5 short "beep-". For example, 2 long "beep—" plus 2 short "beep-" means a 12 cells lithium battery pack, 1 long "beep—" plus 1 short "beep-" means a 6 cells lithium battery pack.
3. If you are using lithium battery pack, you'd better set the "Lipo cells quantity" manually. The voltage of a full charged lithium battery pack is different from that of a discharged battery pack, the more cells a battery pack has, the more difficult for the ESC to automatically detect the cells quantity accurately.

【An Example about ESC Programming】

In the following example, we set the Startup Mode to "Super-soft", i.e. value #3 of the programmable item #5

1. Enter Program Mode

Switch on transmitter, move throttle stick to top, connect battery packs to receiver and ESC, wait for 2 seconds, "beep-beep" tone emits. Then wait another 5 seconds, a special tone "♪56712" emits, that means the ESC is in the program mode.

2. Select Programmable Items

Now you'll hear 9 tones in loop. When a long "beep—" tone emits, please move the throttle stick to bottom position to enter the "Startup Mode" item.

3. Set Item Value (Programmable Value)

"Beep-", wait for 3 seconds; "Beep-beep-", wait for another 3 seconds; then you'll hear "beep-beep-beep", move the throttle stick to top position, then a special tone "♪1515" emits, now you have successfully set the "Startup Mode" item to the value of "Super-soft Startup"

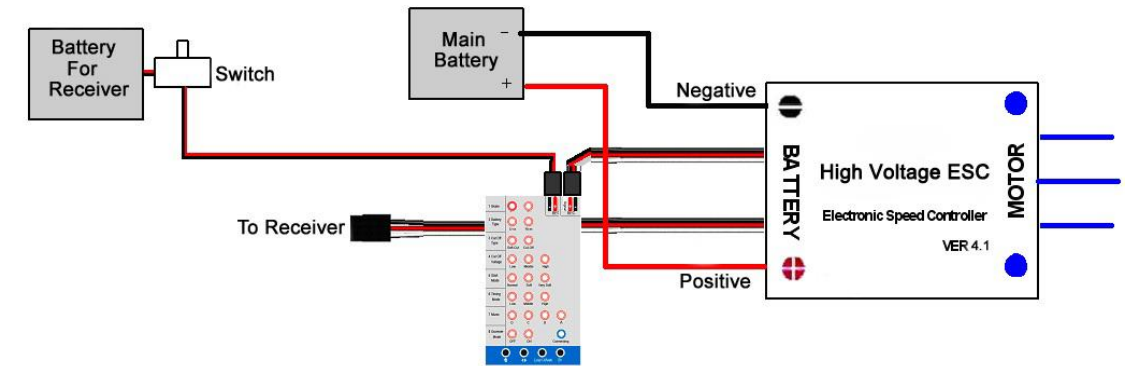
4. Exit Program Mode

After the special tone "♪1515", move the throttle stick to bottom position within 2 seconds.

【How To Use The Program Card】

1. Connect the battery (4.8V to 6V) to the port marked with "BATT".
2. Connect the programming lead (shorter control wire) to the port marked with "BEC".
3. Connect the main battery pack to the ESC.

Please note the above connection sequence cannot be reversed.



Now the "Music/Lipo cell" item only means the cells quantity of the lithium battery pack. (● = LED is lighting)

LED				Lipo Cells	LED				Lipo Cells
D	C	B	A		D	C	B	A	
○	○	○	○	Auto detect	●	○	○	○	9 CELLS (33.3V)
○	○	○	●	Auto detect	●	○	○	●	10 CELLS (37.0V)
○	○	●	○	Auto detect	●	○	●	○	11 CELLS (40.7V)
○	○	●	●	Auto detect	●	○	●	●	12 CELLS (44.4V)
○	●	○	○	5 CELLS (18.5V)	●	●	○	○	Auto detect
○	●	○	●	6 CELLS (22.2V)	●	●	○	●	Auto detect
○	●	●	○	7 CELLS (25.9V)	●	●	●	○	Auto detect
○	●	●	●	8 CELLS (29.6V)	●	●	●	●	Auto detect

【Accessory: RPM Sensor】

The RPM sensor is an accessory of the high voltage speed controller.

Function

It detects the voltage changes at the wires of brushless motor, and then outputs the RPM signal. This RPM sensor can work with some speed control systems for helicopters. And one of its typical applications is to work as the RPM sensor for V-Bar system made by Mikado (www.mikado-heli.de).

Specifications

1. Size: 23mm(L)*10mm(w)*2mm(H)
2. Weight: 6g (Input and output wires are included)
3. Working voltage: 3.5V to 8.4V(1S to 2S Lipo)
4. Current: 1 to 5mA
5. Voltage range of the motor wires: 2 to 14S Lipo
6. RPM range (for 2 poles brushless motor): 1000rpm to 30000rpm
7. Working temperature: 0 to 50 Celsius degree or 32 to 122 Fahrenheit degree



How to Use

The lead A and lead B is connected to any 2 wires of the brushless motor (Do not need to consider about the polarity). The lead C is a three color wires with a connector at the end, the black wire is the ground wire, the red wire is connected to 3.3V or 5V to supply the sensor, and the white wire outputs RPM signal.