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使用设备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。

产品特色

1. 所有器件均为原装正品，确保电调具有一流品质和极高的可靠性。
2. 具有强大的耐流能力。
3. 具备输入电压异常保护、电池低压保护、过热保护、油门信号丢失保护等多重保护功能。
4. 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。
5. 可设定油门行程，兼容各种遥控器。具备平滑、细腻的调速手感，一流的调速线性。
6. 最高转速可达 210000 RPM（2 极马达）、70000 RPM（6 极马达）、35000 RPM（12 极马达）。

产品功能简要说明（黑体字为出厂默认值）

1. 刹车设定：**无刹车**/有刹车。
2. 电池类型：**Lipo（锂电池）** / NiMH（镍氢）。
3. 电池低压保护模式：**逐渐降低功率**/立即关闭输出。
   注：低压保护时，将油门摇杆拉到最小油门的位置后即可重新启动马达，但因为此时仍处于低压状况，所以功率输出较小。
4. 低压保护阈值：低/**中**/高。
   1) 当电池类型设定为 Lipo 电池时，电调自动判断锂电节数，低/中/高情况下每节电池的截止电压分别为：2.85V/3.15V/3.3V。例如使用 3 节锂电，设定为中截止电压，则低压保护阈值为：3.15×3=9.45V。
   2) 当电池类型设定为镍氢电池时，低/中/高情况下截止电压为开机时输入电压的 0%/50%/65%。0%意味着不进行低压保护。例如：使用 6 节镍氢电池，充满时电压为 1.44×6=8.64V，当设定为中截止电压时，则截止电压阈值为：8.64×50%=4.3V。
5. 启动模式：**普通**/柔和/超柔和启动，马达转速从静止到最高速度的时间分别为 300ms/1.5s/3s。
   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比较低，即便瞬时将油门摇杆推到最大位置，马达从静止到全速也分别需要 1.5 秒和 3 秒。
   （注：启动过程结束后若关闭油门，3 秒内再次启动，则均自动切换为普通模式，以免在特技飞行时因反应过慢而导致摔机）。
6. 进角：**低**/中/高，分别为 3.75 度/15 度/26.25 度。
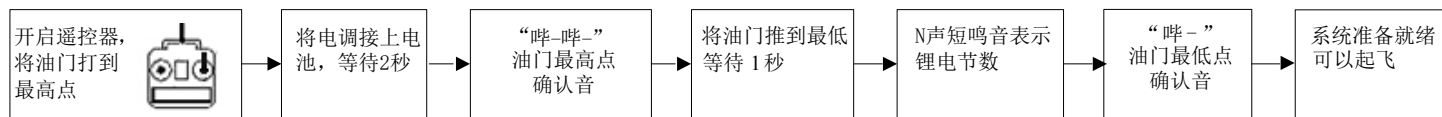   一般情况下，低进角可以适应较多的马达。但是因为马达结构差异很大，请试用各个进角以获得满意的驱动效果。为提高转速，可以将进角设为高进角。改变进角后，建议先在地面进行测试，然后再飞行。

产品规格

型号	持续电流	瞬时电流(10秒)	BEC类型	BEC输出	BEC驱动微型舵机能力				电池节数		重量	体积
					2节锂电	3节锂电	4节锂电	6节锂电	锂电	镍氢		长*宽*高
Skywalker-6A	6A	8A	线性稳压	5V/0.8A	3个舵机				2节	5-6节	5.5g	32*12*4.5
Skywalker-12A	12A	15A	线性稳压	5V/1A	3个舵机	2个舵机			2-3节	5-9节	9g	38*18*6
Skywalker-12AE	12A	15A	线性稳压	5V/2A	5个舵机	4个舵机			2-3节	5-9节	10g	38*18*7
Skywalker-15A	15A	20A	线性稳压	5V/2A	5个舵机	4个舵机			2-3节	5-9节	16.5g	48*22.5*6
Skywalker-20A	20A	25A	线性稳压	5V/2A	5个舵机	4个舵机			2-3节	5-9节	19g	42*25*8
Skywalker-30A	30A	40A	线性稳压	5V/2A	5个舵机	4个舵机			2-3节	5-9节	37g	68*25*8
Skywalker-40A	40A	55A	线性稳压	5V/3A	5个舵机	4个舵机			2-3节	5-9节	38g	68*25*8
Skywalker-40A-UBEC	40A	55A	开关稳压	5V/5A	5个舵机	5个舵机			2-4节	5-12节	43g	65*25*12
Skywalker-50A-UBEC	50A	65A	开关稳压	5V/5A	8个舵机	8个舵机	6个舵机		2-4节	5-12节	41g	65*29*10
Skywalker-60A-UBEC	60A	80A	开关稳压	5V/5A	8个舵机	8个舵机	6个舵机	6个舵机	2-6节	5-18节	63g	77*35*14
Skywalker-60A-OPTO	60A	80A	无						2-6节	5-18节	60g	77*35*14
Skywalker-80A-UBEC	80A	100A	开关稳压	5V/5A	8个舵机	8个舵机	6个舵机	6个舵机	2-6节	5-18节	82g	86*38*12
Skywalker-80A-OPTO	80A	100A	无						2-6节	5-18节	79g	86*38*12

首次使用您的无刷电子调速器

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。

油门行程设定说明：

开启遥控器，将油门打到最高点 → 将电调接上电池，等待2秒 → "哔-哔-"油门最高点确认音 → 将油门推到最低等待1秒 → N声短鸣音表示锂电节数 → "哔-"油门最低点确认音 → 系统准备就绪可以起飞

正常使用开机过程说明：

开启遥控器，将油门打到最低点 → 电调接上电池，鸣叫提示音符"♪123"，表示上电正常 → 发出N声短鸣音，表示锂电池节数 → 自检OK，发出长鸣音"哔——"系统准备就绪 → 推油门可随时起飞
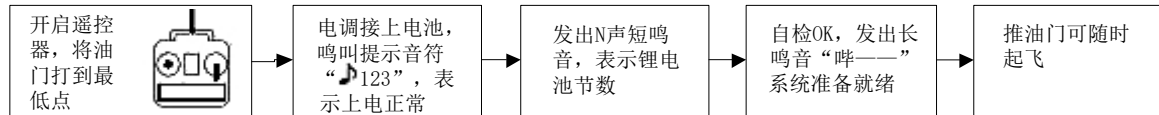
电调保护功能说明

1. 启动保护：当推油门启动后，如在两秒内未能正常启动马达，电调将会关闭马达，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：电调和马达连线接触不良或个别输出线断开、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 110 摄氏度时，电调会降低输出功率进行自我保护，但不会将输出功率全部关闭，最多只降到全功率的 40%，以保证马达仍有动力，避免摔机。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持续丢失1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（降功率时间为 2 秒）。优点：在降功率的过程中油门遥控信号重新恢复后，立即恢复油门输出。优点：在油门信号瞬间丢失的情况下（小于 1 秒），电调并不会立即切断动力输出；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，给玩家留有一定的时间救机，兼顾安全性和实用性。
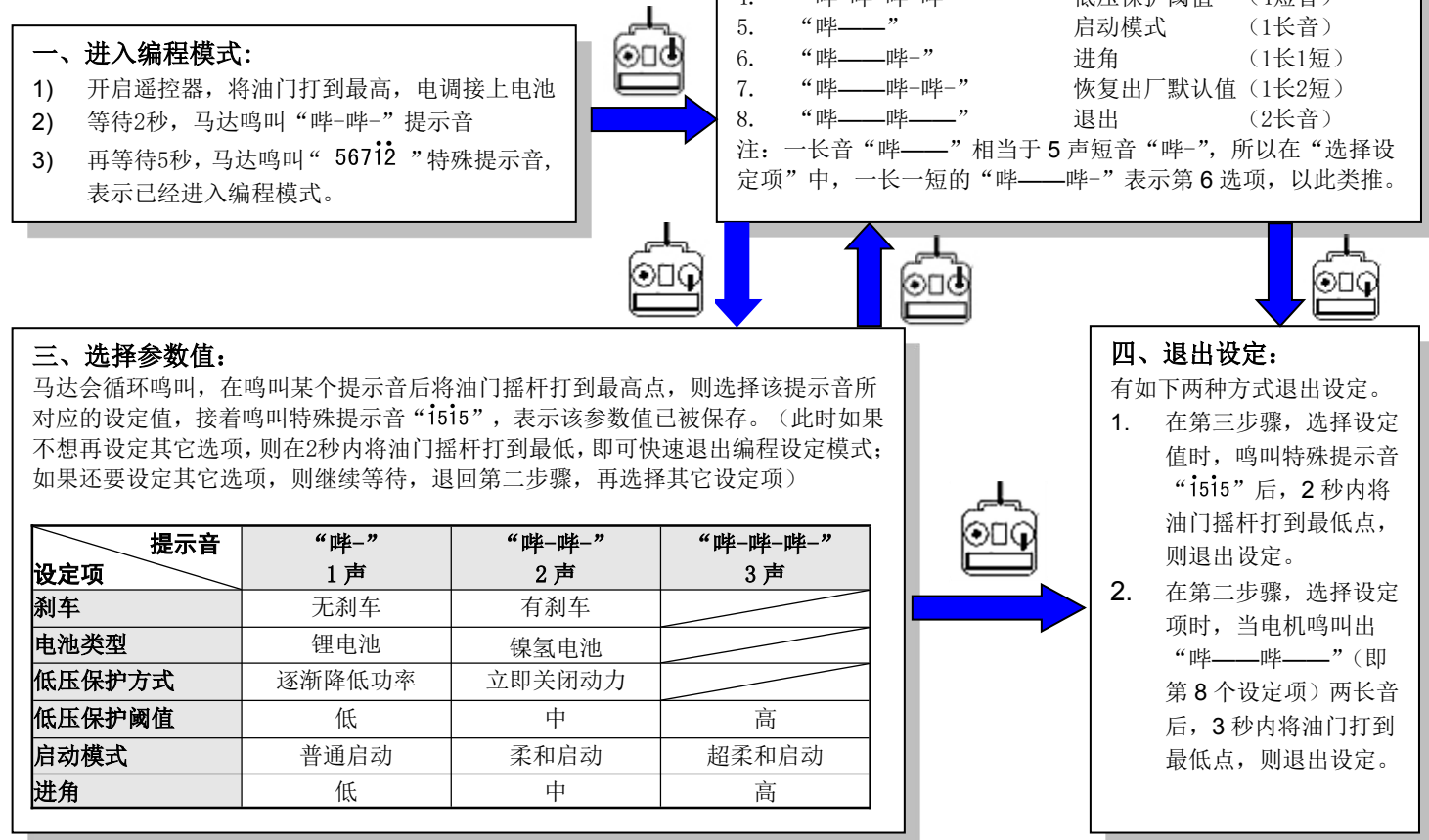4. 过负荷保护：当负载突然变得很大时，电调会切断动力，或自动重启。出现负载急剧增大的原因通常是马达堵转。

故障处理

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	电源接头接触不良	重新插好接头或更换接头
上电后电机无法启动，发出"哔-哔-、哔-哔-、哔-哔-"警告音（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"哔-、哔-、哔-"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"哔、哔、哔、哔、哔"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点位置；重新设置油门行程
上电后电机无法启动，发出"哔-哔-"提示音，然后发出"567í2"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连接的线序错误	将三根输出线中的任意两根对调

使用遥控器编程设定说明

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

注意： 务必检查遥控器中油门曲线的设置，确保摇杆最低点位置对应的油门输出值为 0，最高点位置对应输出值为 100%。

一、进入编程模式：

1) 开启遥控器，将油门打到最高，电调接上电池
2) 等待2秒，马达鸣叫"哔-哔-"提示音
3) 再等待5秒，马达鸣叫"567í2"特殊提示音，表示已经进入编程模式。

二、选择设定项：

进入编程设定后，会听到8种鸣叫音，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-" 　　低压保护模式（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长短）
7. "哔——哔-哔-" 恢复出厂默认值（1长2短）
8. "哔——哔——" 退出 　　　　　（2长音）

注：一长音"哔——"相当于 5 声短音"哔-"，所以在"选择设定项"中，一长一短的"哔——哔-"表示第 6 选项，以此类推。

三、选择参数值：

马达会循环鸣叫，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，接着鸣叫特殊提示音"í5í5"，表示该参数值已被保存。（此时如果不想再设定其它选项，则在2秒内将油门摇杆打到最低，即可快速退出编程设定模式；如果还要设定其它选项，则继续等待，返回第二步骤，再选择其它设定项）

提示音 设定项	"哔-" 1声	"哔-哔-" 2声	"哔-哔-哔-" 3声
刹车	无刹车	有刹车	
电池类型	锂电池	镍氢电池	
低压保护方式	逐渐降低功率	立即关闭动力	
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

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"í5í5"后，2 秒内将油门摇杆打到最低点，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——"（即第 8 个设定项）两长音后，3 秒内将油门打到最低点，则退出设定。

Thanks for purchasing our Electronic Speed Controller (ESC). High power system for RC model is very dangerous, please 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.

Specifications

Model	Cont. Current	Burst Current (≤10s)	BEC Mode	BEC Output	BEC Output Capability				Battery Cell		Weight	Size
					2S Lipo	3S Lipo	4S Lipo	6S Lipo	Lipo	NiMH		L*W*H
Skywalker-6A	6A	8A	Linear	5V/0.8A	3 servos				2S	5-6 cells	5.5g	32*12*4.5
Skywalker-12A	12A	15A	Linear	5V/1A	3 servos	2 servos			2-3S	5-9 cells	9g	38*18*6
Skywalker-12AE	12A	15A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	10g	38*18*7
Skywalker-15A	15A	20A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	16.5g	48*22.5*6
Skywalker-20A	20A	25A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	19g	42*25*8
Skywalker-30A	30A	40A	Linear	5V/2A	5 servos	4 servos			2-3S	5-9 cells	37g	68*25*8
Skywalker-40A	40A	55A	Linear	5V/3A	5 servos	4 servos			2-3S	5-9 cells	39g	68*25*8
Skywalker-40A-UBEC	40A	55A	Switch	5V/3A	5 servos	5 servos	5 servos		2-4S	5-12 cells	43g	65*25*12
Skywalker-50A-UBEC	50A	65A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-4S	5-12 cells	41g	65*29*10
Skywalker-60A-UBEC	60A	80A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18 cells	63g	77*35*14
Skywalker-60A-OPTO	60A	80A	N/A	N/A					2-6S	5-18 cells	60g	86*38*12
Skywalker-80A-UBEC	80A	100A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18 cells	82g	86*38*12
Skywalker-80A-OPTO	80A	100A	N/A	N/A					2-6S	5-18 cells	79g	86*38*12

Programmable Items   (The option written in bold font is the default setting)
1. Brake Setting：Enabled / **Disabled**
2. Battery Type：**Lipo** / NiMH
3. Low Voltage Protection Mode(Cut-Off Mode)： **Soft Cut-Off (Gradually reduce the output power)** /Cut-Off (Immediately stop the output power)
4. Low Voltage Protection Threshold(Cut-Off Threshold)：Low / **Medium** / High
   1) For lithium battery, the battery cell number is calculated automatically. Low / medium / high cutoff voltage for each cell is: 2.85V/3.15V/3.3V. For example: For a 3S Lipo, when "Medium" cutoff threshold is set, the cut-off voltage will be: 3.15*3=9.45V
   2) For NiMH battery, low / medium / high cutoff voltages are 0%/50%/65% of the startup voltage (i.e. the initial voltage of battery pack), and 0% means the low voltage cut-off function is disabled. For example: For a 6 cells NiMH battery, fully charged voltage is 1.44*6=8.64V, when "Medium" cut-off threshold is set, the cut-off voltage will be: 8.64*50%=4.32V。
5. Startup Mode：**Normal** /Soft /Super-Soft (300ms / 1.5s / 3s)
   a) Normal mode is suitable for fixed-wing aircraft. Soft or Super-soft modes are suitable for helicopters. The initial acceleration of the Soft and Super-Soft modes are slower, it takes 1.5 second for Soft startup or 3 seconds for Super-Soft startup from initial throttle advance to full throttle. If the throttle is completely closed (throttle stick moved to bottom position) and opened again (throttle stick moved to top position) within 3 seconds after the first startup, the re-startup will be temporarily changed to normal mode to get rid of the chance of a crash caused by slow throttle response. This special design is suitable for aerobatic flight when quick throttle response is needed.
6. Timing：**Low** / Medium / High,(3.75°/15° /26.25°)
   Usually, low timing is suitable for most motors. To get higher speed, High timing value can be chosen.

Begin To Use Your New ESC
IMPORTANT! Because different transmitter has different throttle range, please calibrate throttle range before flying.
Throttle range setting (Throttle range should be reset whenever a new transmitter is being used)

Switch on the transmitter, move throttle stick to the top position	Connect battery pack to the ESC, and wait for about 2 seconds	The "Beep-Beep-" tone should be emitted, means the top point of throttle range has been confirmed	Move throttle stick to the bottom position, several "beep-" tones should be emitted to present the amount of battery cells	A long "Beep-" tone should be emitted, means the lowest point of throttle range has been correctly confirmed

Normal startup procedure

Move throttle stick to bottom position and then switch on transmitter.	Connect battery pack to ESC, special tone like " ♪ 123" means power supply is OK	Several "beep-" tones should be emitted to present the amount of lithium battery cells	When self-test is finished, a long "beep-----" tone should be emitted	Move throttle stick upwards to go flying

Protection Function
1. Start up failure protection: If the motor fails to start within 2 seconds of throttle application, the ESC will cut-off the output power. In this case, the throttle stick **MUST** be moved to the bottom again to restart the motor. (Such a situation happens in the following cases: The connection between ESC and motor is not reliable, the propeller or the motor is blocked, the gearbox is damaged, etc.)
2. Over-heat protection: When the temperature of the ESC is over about 110 Celsius degrees**,** the ESC will reduce the output power.

3. Throttle signal loss protection: The ESC will reduce the output power if throttle signal is lost for 1 second, further loss for 2 seconds will cause the output to be cut-off completely.

Trouble Shooting

| Trouble	Possible Reason	Action
After power on, motor does not work, no sound is emitted	The connection between battery pack and ESC is not correct	Check the power connection. Replace the connector.
After power on, motor does not work, such an alert tone is emitted: "beep-beep-, beep-beep-,beep-beep-" (Every "beep-beep-" has a time interval of about 1 second)	Input voltage is abnormal, too high or too low.	Check the voltage of battery pack
After power on, motor does not work, such an alert tone is emitted: "beep-, beep-, beep- "(Every "beep-" has a time interval of about 2 seconds)	Throttle signal is irregular	Check the receiver and transmitter Check the cable of throttle channel
After power on, motor does not work, such an alert tone is emitted: "beep-, beep-, beep-" (Every "beep-" has a time interval of about 0.25 second)	The throttle stick is not in the bottom (lowest) position	Move the throttle stick to bottom position
After power on, motor does not work, a special tone " ♪ 5671̇2̇ " is emitted after 2 beep tone (beep-beep-)	Direction of the throttle channel is reversed, so the ESC has entered the program mode	Set the direction of throttle channel correctly
The motor runs in the opposite direction	The connection between ESC and the motor need to be changed.	Swap any two wire connections between ESC and motor

Program the ESC with your transmitter (4 Steps)
Note: Please make sure the throttle curve is set to 0 when the throttle stick is at bottom position and 100% for the top position.
1. Enter program mode
2. Select programmable items
3. Set item's value (Programmable value)
4. Exit program mode

1. Enter program mode
1) Switch on transmitter, move throttle stick to top position, connect the battery pack to ESC
2) Wait for 2 seconds, the motor should emit special tone like "beep-beep-"
3) Wait for another 5 seconds, special tone like " ♪ 5671̇2̇ " should be emitted, which means program mode is entered
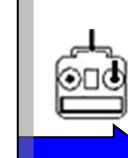
2. Select programmable items
After entering program mode, you will hear 8 tones in a loop with the following sequence. If you move the throttle stick to bottom within 3 seconds after one kind of tones, this item will be selected.
1. "beep" brake (1 short tone)
2. "beep-beep-" battery type (2 short tone)
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-" set all to default (1 long 2 short)
8. "beep-----beep-----" exit (2 long tone)
Note: 1 long "beep-----" = 5 short "beep-"

3. Set item value (Programmable value)
You will hear several tones in loop. Set the value matching to a tone by moving throttle stick to top when you hear the tone, then a special tone " ♪ 1̇5̇1̇5̇" emits, means the value is set and saved. (Keeping the throttle stick at top, you will go back to Step 2 and you can select other items; or moving the stick to bottom within 2 seconds will exit program mode directly)

Items \ Tones	"beep-" 1 short tone	"beep-beep-" 2 short tones	"beep-beep-beep" 3 short tones
Brake	Off	On	
Battery type	Lipo	NiMH	
Cutoff mode	Soft-Cut	Cut-Off	
Cutoff threshold	Low	Medium	High
Start mode	Normal	Soft	Super soft
Timing	Low	Medium	High
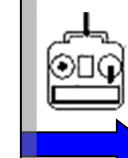
4. Exit program mode
There are 2 ways to exit program mode:
1. In step 3, after special tone " ♪ 1̇5̇1̇5̇", please move throttle stick to the bottom position within 2 seconds.
2. In step 2, after tone "beep-----beep-----"(that is: The item #8), move throttle stick to bottom within 3 seconds.