USER MANUAL OF 3A ESC

REV 2.0

Features

1. Equipped with high-speed, small-sized, multifunctional MCU.
2. Full protection feature including low-voltage protection, over-heat protection, signal lost protection, safe power on protection.
3. Excellent startup performance, great throttle linear and quick throttle response.
4. Max speed: 240,000 RPM (2 poles), 80,000 RPM (6 poles), 40,000 RPM (12 poles).
5. The parameters of ESC can be configured via transmitter .
6. Throttle range can be configured to be compatible with different receivers.

Specification

Continuous Current	Burst current (10S)	Li-XX	Max voltage	Size(mm) L*W*H	Weiht (g)	BEC	Program Function
3A	4A	1	4.2V	11×13×8	0.7	NO	YES

Using ESC

Normal Startup Procedure

Move throttle stick to the bottom position (full Off throttle) → Switch on the transmitter → Connect one cell battery to ESC → System detects the Min throttle signal, makes a long "beep" sound → System detects battery voltage and makes one short "**beep-**" sounds → when self-test is finished → "♪ **1 2 3**" tone should be emitted →ready for start.

Set Throttle Range (Throttle range should be setup when a new transmitter is being used)

Push the throttle stick to the top position (full On throttle) → switch on the transmitter → Connect one cell battery to ESC → System detects the Max throttle signal, and makes two "**beep-**" sounds, which denotes that Max throttle has been confirmed and saved → Pull the throttle stick to the bottom position within 5 seconds(program mode will be entered if you wait for 6 seconds) → System detects the Min throttle signal, makes a long "**beep-**" sound → System detects battery voltage and makes one short "**beep-**" sounds → when self-test is finished → "♪ **1 2 3**" tone should be emitted → Ready for start.

If the system doesn't detect the throttle signal, it will make "**beep-**" sounds continuously without stopping.

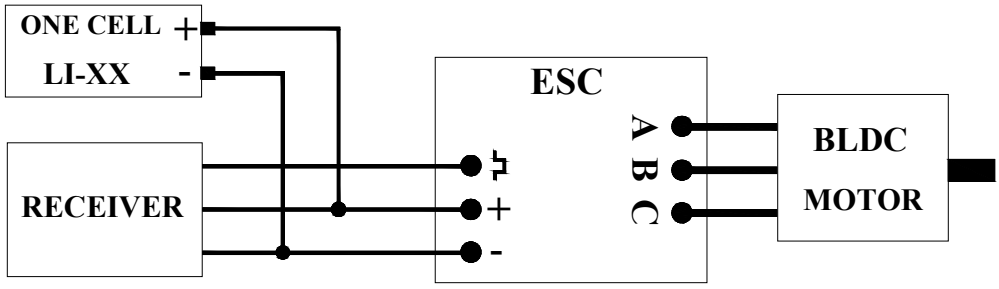
Protection

A. Low voltage protection: When power voltage is lower than the cutoff threshold, ESC will reduce output power or cut off. Read the "Configurable parameter" for more information.

B. Throttle signal lost protection: The ESC will reduce output power to 20% if throttle signal lost for 1 second, the output power will recover if signal is detected.

C. Over heat protection: when the temperature of ESC is over 110℃,the ESC will reduce output power, the min output power can be reduced to 35%. The output power will raise after temperature gets low.

Wiring Diagram



Configurable parameter with transmitter

1. **BrakeType**: **Off,Soft** brake and **Hard** brake. default is **Off** (brake disable). Soft brake: less forceful and brake time is longer. Hard brake: more forceful and brake time is shorter.
2. **AdvanceT**(Timing Mode): **Low, Middle** and **High**, default is **Middle**. Low advance timing is recommended for high inductance and low KV motors. High advance timing is recommended for low inductance and high KV motors, e.g. high KV outrunner motors. For some high KV motors, if it shakes while rotating in high speed, the "**High**" timing mode is recommended.
3. **Start**: **Fast, Soft** and **Very Soft**. default is **Very Soft**. Fast start is recommended for low inductance and low start loading motors, Very Soft start is recommended for high inductance and high start loading motors.
4. **OffType**(Cutoff Mode,Low Voltage Protection Mode): **Reduce power** and **Cutoff** output power for selecting, default is Reduce the output power gradually to 50% of the current power.
5. **Cutoff threshold: 2.8V, 3.0V, 3.1V.** default is **2.8V**.

Program example with transmitter

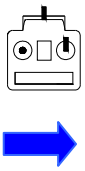
Setting "**Timing Mode**"to "**High**", i.e. value #3 in program item #2

1. Enter Program mode Push the throttle stick to the top position, switch on the transmitter, connect battery to the ESC; wait for 2 seconds, **"beeb- beeb-"** will be emitted, then wait for another 6 seconds, special tone **"♪ i 3 i 3"** will be heard, that means program mode is entered.
2. Select Programmable Items There are 6 different tones in loop, when you hear **"beeb- beeb-"** (2 short tone),push the throttle stick to the bottom position within 2 seconds, the "**Timing Mode**"is selected.
3. Set Item Value (Programmable Value) There are 3 tones match to 3 item value. When you hear **"beeb- beeb- beeb-"** (3 short tone),push the throttle stick to the top position within 2 seconds, special tones **"♪ 5 6 5 6"** will be heard, that means "**Timing Mode**"is set as "**High**" and saved.
4. Exit Program Mode After hearing special tones **"♪ 5 6 5 6"**, push the throttle stick to the bottom within 2 seconds, you will exit program mode.

Program ESC with transmitter

1.Enter program mode

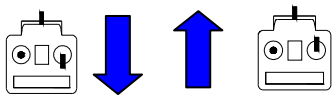
1. Switch on transmitter ,move throttle stick to top position,,connect the battery pack to ESC
2. Wait for 2 seconds ,the motor should emit **"beeb-beeb-"**tone
3. Wait for another 6 seconds ,special tone like **"♪ i3i3"** should be emitted ,which means program mode is entered

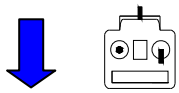


2.Select programmable items

After entering program mode ,you will hear 6 tones in a loop in the following sequence. If you move the throttle stick to bottom within 2 seconds after one kind of tone, this item will be selected.

(1) "beeb-"	(1 short tone)	**Brake**
(2) "beeb- beeb-"	(2 short tone)	**Timing**
(3) "beeb- beeb- beeb-"	(3 short tone)	**Startup mode**
(4) "beeb- beeb- beeb- beeb-"	(4 short tone)	**Cutoff mode**
(5) "beeb- beeb- beeb- beeb- beeb-"	(5 short tone)	**Cutoff threshold**
(6) "beeb----- beeb-----"	(2 long tone)	**Exit**



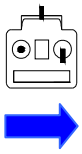


3.Set item value

After entering the item, you will hear several tones in loop, Set the value matching to a tone by moving throttle stick to top within 2 second when you hear the tone, then you will hear special tone like **"♪ 5 6 5 6".** It means the value is set and saved.

Wait for 3 second, you will go back to step 2, if push the throttle stick to the bottom position within 2 second, you will exit the program mode quickly.

Tone / Items	beeb- 1 tone	beeb-beeb- 2 tone	beeb-beeb-beeb- 3 tone
1.Brake	Off	Soft brake	Hard brake
2.Timing	Low	Mid	High
3.Start Mode	Fast	Soft	Very Soft
4.Cutoff Mode	Reduce power	Shut down	
5.Cutoff threshold	Low(2.8V)	Mid(3.0V)	High(3.1V)



4.Exit program

There are two ways to exit program mode:

1. In step 2, after 2 long tone (The item #6), please move throttle stick to the bottom position within 2 seconds.
2. In step 3,after special tone**"♪ 5 6 5 6",** please move throttle stick to the bottom position within 2 seconds.