AT(Fixed Wing Series) ESC Manual

DISCLAIMER

Thanks for purchasing our Electronic Speed Controller (ESC). Under strong power system,wrong operation for RC model will bring danger, please read this manual carefully and strictly comply with the rules of operating procedure.

We assume no any liability for personal injury, property damsge or consequential damages resulting from using our product in incorrect way or retrohtting our workmanshi

PRODUCT FEATURES

1 .All devices are original made, ensuring that the ESC has high quality and high reliability.

2 Strong flow resistance.

3.Input voltage abnormal protection, battery low voltage protection, overheat protection, throttile signal loss protection and other Multi-protection functions.

4.Ordinary start, soft start, ultra-soft start modes, it is compatible with fixed-wing aircraft and helicopter.

5.The throtle range can be set and compatible with various transmitter.It has smooth feel and great linear for the speed control.

6.The highest speed can reach 210,000 RPM (2-pole motor), 70000 RPM (6-pole motor), 35000 RPM (12-pole motor).

Brief description of product features

1. Brake type.

1) Normal brake: After the throttle is zeroed, the brake will be triggered, and the braking force will be the set braking force.

2) Reverse Brake: After opening the reverse brake function, the reverse brake signal line (signal range and throttle travel consistent) must be inserted into an idle channel of the receiver, through which the motor is controlled to rotate forward and reverse, the channel travel 0-50% is the default setting for the motor steering, and the channel travel 50%-100% of the trigger generator reversal. It is recommended that the position of the rocker of the channel be within the range of 0-50% of the channel travel (preferably 0), otherwise there may be a situation that the motor turns forward and then reverses after pushing the throttle. When reversal is triggered, the motor brakes first and then reverses to accelerate to the throttle output of the throttle rocker.

3) Linear reverse brake: After turning on this function, the reverse brake signal line should be inserted into an idle channel of the receiver, and the channel should be set as a linear switch (usually the knob on the remote control), and the linear switch should be pushed to start the throttle reverse. The thrust reversal throttle

size is 10% at startup, and thereafter the thrust reversal throttle size is controlled by the linear switch. The linear pushback throttle travel is cured to 1.34-1.79 ms. The modified channel must be held at 0% throttle when the ESC is powered up, just as the throttle channel is held at 0% throttle. Loss of signal on either channel will trigger the throttle signal loss protection.

2. Brake force.

The higher the braking force, the shorter the time from rotating to stopping; this function is only effective in normal braking mode, where low/medium/high corresponds to 60%/90%/100% of the braking force.

3. low voltage protection mode.

Soft shutdown: after triggering the low voltage protection, the output power will be gradually reduced to 60% of the total power: hard shutdown: immediately disconnect the output.

4. Li-Ion Battery Sections.

Select Auto Calculation, it will calculate the number of battery sections according to a single battery 3.7V, or you can set the number of battery sections manually.

5. Low Voltage Protection Threshold.

If the setting is off, the low voltage protection function is off, and the protection voltage value of the low voltage protection function corresponding to the three modes of low/medium/high is about 2.8V/cell/3.0V/cell and 3.4V/cell; this value is the voltage of a single battery, multiplied by the number of Li-ion batteries automatically recognized by the ESC or the number of Li-ion batteries set manually, that is, the value of the protection voltage of the batteries. (Example: 3 lithium batteries, low-voltage protection threshold for the center, the battery protection voltage is: 3x3.0 = 9.0V)

6. Start-up Mode.

Normal: the motor will start immediately after pushing the throttle rocker and reach the corresponding throttle value quickly (acceleration rate is 200ms); Soft: the motor will start immediately after pushing the throttle rocker and reach the corresponding throttle value quickly (acceleration rate is 200ms).

Soft: the motor will start slowly and then quickly reach the corresponding throttle value after pushing the throttle stick (the acceleration rate is 500ms); Very Soft: the motor will start slowly and then quickly reach the corresponding throttle value after pushing the throttle stick (the acceleration rate is 500ms).

Very Soft: after pushing the throttle stick, the motor will start slowly and then reach the corresponding throttle value quickly (the acceleration rate is 800ms); and

7. Timing.

You can adjust the angle of approach of the drive motor. The low, medium and high values are: 5 °/15 °/25 °. 8.

8. Synchronous Rectification Freewheeling.

Fixed to on, turning on the synchronized rectification will bring better throttle linearity.

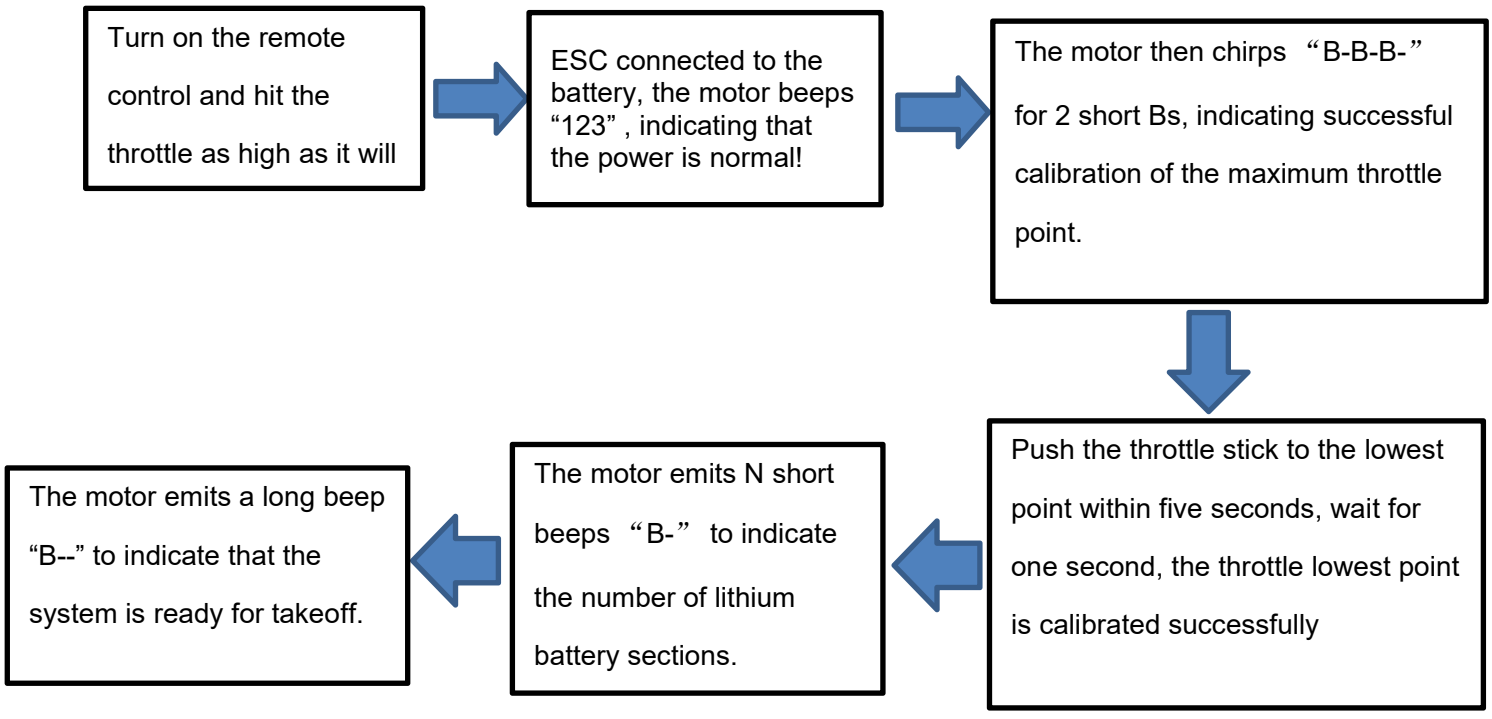
9. Seek Mode.

When on, the ESC will drive the motor to chirp after holding the throttle at 0% for a set period of time.

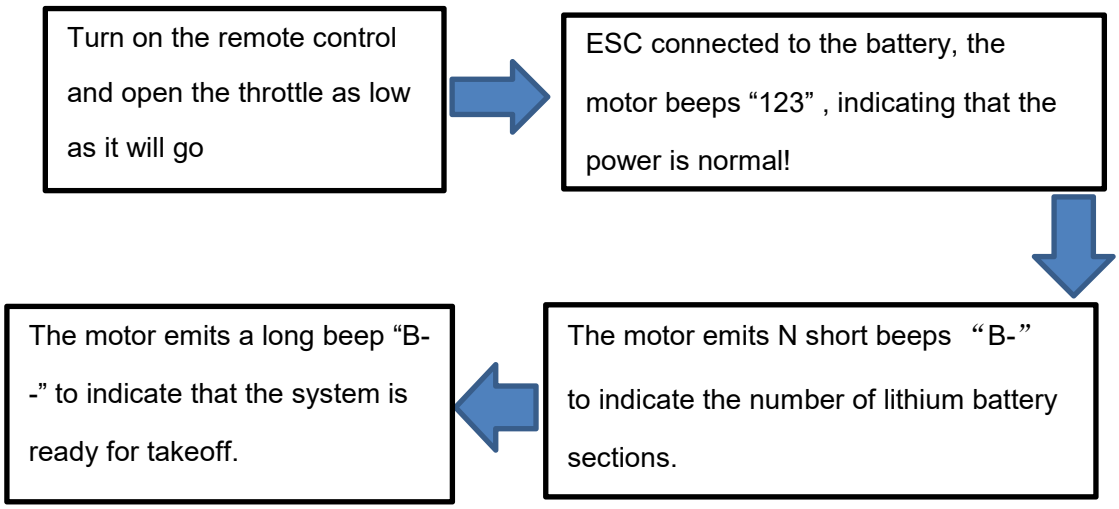
SPECIFICATIONS

Model	Cont Current	Burst Current (10S)	BEC Mode	BEC Output	BEC Output Capability				Battery Cell		Wight	Size
					2S Lipo	3S Lipo	4S Lipo	6S Lipo	Lipo	NiMH		L*W*H
AT-20A	20A	25A	Linear	5V/2A	5 servos	4 servos			2-3节	5-9节	19g	42*25*8
AT-30A	30A	40A	Linear	5V/2A	5servos	4servos			2-3S	5-9S	37g	68*25*8
AT-40A-UBEC	40A	55A	Switch	5V/3A	5 servos	5 servos	5 servos		2-4S	5-12S	43g	65*25*12
AT-55A-UBEC	55A	75A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18S	63g	77*35*14
AT-75A-UBEC	75A	95A	Switch	5V/5A	8 servos	8 servos	6 servos	6 servos	2-6S	5-18S	82g	86*38*12

Throttle Range Calibration:



Normal Start Procedure:



ESC protection function description

1. Start protection:
During the startup process, ESC will detect the motor speed, when the speed stops rising or the speed is unstable, it will be judged that the startup fails, if the throttle is less than 15% at this time, ESC will automatically try to restart; if the throttle is more than 20% at this time, it is necessary to zero the throttle and then restart. (The reasons for this situation may be: poor contact between ESC and motor wires or disconnection of individual output wires, obstruction of propeller by other objects, jammed gears, etc.)
2. Throttle signal loss protection:
When the ESC detects that the throttle remote control signal has been lost for more than 0.25 seconds, it will turn off the output immediately to avoid greater losses caused by the propeller continuing to rotate at high speed. When the signal is restored, the ESC will also restore the corresponding power output. 3.
3. Stall protection:
When the load suddenly becomes extremely large, the ESC will cut off the power and restart automatically. (The cause of rapid increase of load is usually the propeller stalling.)
4. Temperature protection:
When the working temperature of ESC exceeds 120 degree Celsius, the ESC will gradually reduce the output power to protect the motor, but it will not shut down the output power completely, but only reduce it to 60% of the full power at the most, in order to ensure that the motor still has power to avoid falling down due to lack of power. After the throttle is zeroed, the ESC will drive the motor to chirp an alarm.
5. Low voltage protection:
When the battery voltage decreases to the voltage below the ESC low voltage protection threshold, the ESC will gradually reduce the output power for protection, but will not shut down all the output power, but only up to 60% of the full power, to ensure that the motor still has power, to avoid falling down due to lack of power. After zeroing the throttle, the ESC will drive the motor to beep alarm.
6. Abnormal power-up voltage protection:
When the connected battery voltage is not within the input voltage range supported by the ESC, it will trigger the ESC to access the abnormal voltage protection, and the ESC will drive the motor to chirp an alarm.

Trouble Shooting:

Trouble	Beep	Possible Reason	Action
ESC does not work after power on, beeps and alarms.	“BB, BB, BB, ……”	The input voltage is not Within the working voltage of the ESC.	Adjust the power supply voltage to within the working voltage range of the ESC.
ESC does not work after power on, beeps and alarms.	“B, -, B, -, B, -, ……”	Throttle signal lost。	Access the throttle signal。
ESC does not work after power on, beeps and alarms.	“ B , B , B, ……”	Throttle rocker not zeroed。	Zero the throttle rocker and calibrate the throttle range.
ESC does not operate after throttle travel calibration, alarm beeps	“ B , B , B, ……”	If the set total throttle range is too narrow (the ESC is designed to require a total throttle range of not less than three throttle cells), the current trip setting is invalid.	Re-calibrate throttle range
ESC output power suddenly drops to 60% during flight,and beeps without power after stopping	“BB, BB, BB, ……”	Triggers ESC temperature protection.	Improvement of heat dissipation,reduce ESC load.

flight.			
ESC output power suddenly drops to 60% during flight, and beeps without power after stopping flight.	“BBB，BB ，B B B，……”	Triggers ESC low voltage protection.	Replace batteries. Lower the low voltage protection threshold.

Program the ESC with your transmitter

Setting parameters using the remote control throttle rocker is divided into four steps

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

1.Enter the Programming:

Turn on the transmitter,move the throttle stick to the top position,and connect a battery to the ESc,2 seconds later,the motor will beep"B-B-"first,then emit "56712"5 seconds later to indicate that you are in the ESC programming mode.

2.Select Paremeter Items

After entering the programming,you'l hear the following 12 kinds of beeps circlarly.Move the throttle stick to the bottom position within 3 seconds after you hear some kind of beeps,you'll enter the corresponding parameter item.

1).“B-”	Beake Type	1 Short B
2）.“B-B-”	Brake Force	2 Short Bs
3）.“B-B-B-”	Voltage Cutoff Type	3 Short Bs
4）.“B-B-B-B-”	Lipo Cells	4 Short Bs
5）.“B--”	Cueoff Voltage	1 Long B
6）.“B--B-”	Start Up	1 Long B and 1 Short B
7）.“B--B-B-”	Timing	1 Long B and 2 Short Bs
8）.“B--B-B-B-”	Freewheeling	1 Long B and 3 Short Bs
9）.“B--B-B-B-B-”	Search Mode	1 Long B and 4 Short Bs
10）.“B--B--”	Factory Reset	2 Long Bs
11）.“B--B--B-”	Exit	2 Long Bs and 1 Short B

Note: A long “B--”equals to 5 short“B-”, so a long “B--” and a short “B-”repersent the 6th item in “Select Parameter Items”.

3. Select the parameter value under the parameter item

The motor will beep different kinds of beeps circularly,move the throttle stick to the top position after you hear some kind of beeps will get you to the corresponding parameter value, then you'll hear the motor emit "i5i5" to indicate the value is saved,then get back to "Select Parameter Items"and continue to select other parameter items that you want to adjust.

Items \ Values		“B- ”	“B-B _ ¨	“B-哔B- B _ ”	“B-B- B-B _ ”	“B- _ ”
1	Beake Type	*Brake-less	Normal Brake	Reverse Brake	Liner Reverse Brake	
2	Beake Force	*Low	Medium	High		
3	Low voltage protection mode	*Soft	Hard			
4	Lipo Cells	*Auto Calc	3S	4S	5S	6S
5	Low voltage protection threshold	Off	Low	*Medium	High	
6	Start-up Mode	*Normal	Soft	Very Soft		
7	Timing	Low	*Medium	High		
8	Freewheeling	*on	Off			
9	Seek Mode	Off	5 mins	10 mins	15 mins	

Settings with * are factory default settings.

4. Exit the Programming

When the motor beeps out 11). “B--B--B-” (i.e., the 11th setting item) two long and one short beeps, the setting is exited by hitting the throttle to the lowest point within 3 seconds. The motor emits N short beeps “B-” to indicate lithium battery level, followed by one long beep “B--” to indicate system readiness.