Air Mold Brushless Motor Electronic Speed Controller (ESC) Instruction Manual

Thank you for purchasing this product! Brushless power systems are powerful and incorrect use may cause personal injury and equipment damage. For this reason we strongly recommend that you read this manual carefully before using the equipment and strictly follow the specified operating procedures. We do not accept any liability arising from the use of this product or unauthorized modifications to the product, including but not limited to liability for incidental or consequential damages.

Product Features

1. All devices are original and genuine, ensuring that the ESCs are of top quality and extremely high reliability.
2. Strong current withstanding capability.
3. Multiple protection functions such as abnormal input voltage protection, battery low voltage protection, overheating protection, and throttle signal loss protection.
4. With three starting modes: normal start, soft start and super soft start, compatible with fixed-wing airplanes and helicopters.
5. Throttle stroke can be set, compatible with various remote controls. Smooth and delicate speed control feel, first-class speed control linearity.
6. Maximum speed can reach 210,000 RPM (2-pole motor) 70,000 RPM (6-pole motor) 35,000 RPM (12-pole motor)

Brief description of product features (factory defaults in bold)

1. Brake Setting: **No** brake/brake.
2. Battery Type: **Lipo (Lithium Battery)** / NiMH (Nickel Metal Hydride)
3. Battery low voltage protection mode: **Gradually reduce power** / Immediately shut down output.
   Note: During low voltage protection, the motor can be restarted after pulling the throttle rocker to the minimum throttle position, but the power output is lower because it is still in a low voltage condition.
4. Low voltage protection threshold: low/medium/high.
   1) When the battery type is set to Lipo battery, the ESC automatically determines the number of Li-ion batteries, and the cut-off voltage of each battery in the low/medium/high condition is 2.85V/3.15V/3.3V respectively. e.g. if 3 Li-ion batteries are used, and the cut-off voltage is set to the medium one, the low-voltage protection threshold will be: 3.15*3=9.45V.
   2) When the battery type is set to NiMH, the cutoff voltage in low/medium/high case is 0%/50%/65% of the input voltage at power on. 0% means no low voltage protection. For example: using 6 NiMH batteries, the voltage is 1.44*6=8.64V when fully charged, when set to medium cutoff voltage, the cutoff voltage threshold is: 8.64*50%=4.3V.
5. Starting mode: Normal/soft/ultra soft start, motor speed from standstill to maximum speed is 300ms/1.5s/3s respectively.
   Normal start is suitable for fixed wing, soft start/ultra soft start is suitable for helicopter. The initial RPM for both soft start and super soft start is relatively low, even if the throttle rocker is pushed to the maximum position instantaneously, the motor will take 1.5s and 3s respectively to go from standstill to full speed.
   (Note: If you turn off the throttle after the startup process and then start it up again within 3 seconds, it will automatically switch to normal mode, so as not to cause a crash due to slow reaction during aerobatics)
6. Approach Angle: Low/Medium/High, 3.75 degrees/15 degrees/26.25 degrees respectively.
   In general, low approach angle can accommodate more motors. However, since motor construction varies greatly, try each feed angle to obtain satisfactory driving results. To increase the rotation speed, the
   The inlet angle is set to high inlet angle. After changing the angle of approach, it is recommended to test on the ground before flying.

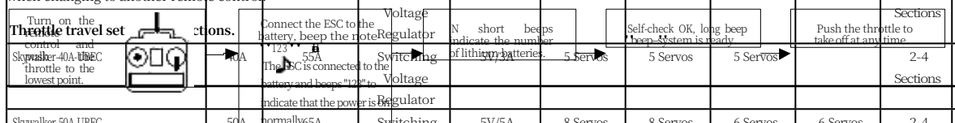
Product Specification

Model	Continuous Current	Instantaneous Current (10 seconds)	BEC Type	BEC Output	BEC Drive Micro Servo Capability				Battery Cells		Weight	Volume
					2 LiPo	3 LiPo	4 LiPo	6 LiPo	Lithium Ion	Ni-MH		Length*Width*Height
Skywalker-6A	6A	8A	Linear Voltage Regulator	5V/0.8A	3 Servos				2 Sections	5-6 Sections	5.5g	32*12*4.5
Skywalker-12A	12A	15A	Linear Voltage Regulator	5V/1A	3 Servos	2 Servos			2-3 Sections	5-9 Sections	9g	38*18*6
Skywalker-12AE	12A	15A	Linear Voltage Regulator	5V/2A	5 Servos	4 Servos			2-3 Sections	5-9 Sections	10g	38*18*7
Skywalker-15A	15A	20A	Linear Voltage Regulator	5V/2A	5 Servos	4 Servos			2-3 Sections	5-9 Sections	16.5g	48*22.5*6
Skywalker-20A	20A	25A	Linear Voltage Regulator	5V/2A	5 Servos	4 Servos			2-3 Sections	5-9 Sections	19g	42*25*8
Skywalker-30A	30A	40A	Linear Voltage Regulator	5V/2A	5 Servos	4 Servos			2-3 Sections	5-9 Sections	37g	68*25*8
Skywalker-40A	40A	55A	Linear Voltage Regulator	5V/3A	5 Servos	4 Servos			2-3 Sections	5-9 Sections	39g	68*25*8
Skywalker-40A-UBEC	40A	55A	Switching Voltage Regulator	5V/2A	5 Servos	5 Servos	5 Servos		2-4 Sections	5-12 Sections	43g	65*25*12
Skywalker-50A-UBEC	50A	65A	Switching Voltage	5V/5A	8 Servos	8 Servos	6 Servos	6 Servos	2-4 Sections	5-12 knots	41g	65*29*10

Using your brushless E S C for the first time

Special emphasis! In order to adapt the ESC to the throttle travel of your remote control, the throttle travel should be reset when using the ESC for the first time or when changing to another remote control.

Throttle travel set ctions.



ESC Protection Function Description

1. Start protection: When the throttle is pushed to start, if the motor fails to start normally within two seconds, the ESC will shut down the motor and the throttle needs to be placed at the lowest point again before it can be restarted. (The reasons for this situation may be: poor contact between the ESC and motor wires or individual output wires are disconnected, the propeller is blocked by other objects, the gear teeth are jammed, etc.)
2. Temperature protection: When the ESC working temperature exceeds 110 degree Celsius, the ESC will reduce the output power for self-protection, but it will not shut down the output power completely, but only reduce it to 40% of the full power at the most, in order to ensure that the motor still has power to avoid dropping the airplane. After the temperature drops, the ESC will gradually restore the maximum power.
3. Throttle Signal Loss Protection: When detecting a continuous loss of the throttle remote control signal for 1 second, the ESC will start to reduce the output power, and if the signal can never be recovered, it will be reduced all the way down to zero output (the process of power reduction is 2 seconds). If the throttle remote control signal is restored during the power reduction process, the throttle control will be resumed immediately. Advantage: In the case of instantaneous loss of throttle signal (less than 1 second), the ESC will not cut off the power output immediately; if the remote control signal is really lost for a long time, it will be protected, but it will not shut down the output immediately, but there is a gradual reduction of the output power process, which will give the player some time to save the machine, and it will take into account the safety and practicability.
4. Overload protection: When the load suddenly becomes very large, the ESC will cut off the power or restart automatically. The reason for a sharp increase in load is usually motor blockage.

Troubleshooting

Fault phenomenon	Possible causes	Solution
Motor does not start after power on, no sound	Poor contact of power connector	Re-insert the connector or replace the connector
Motor does not start after power on, [illegible] 哔-" 警示音（每两声之间的间隔时间为 1 秒）	Battery pack voltage is not normal	Check battery pack voltage
Motor will not start after power up, "beep-beep-beep-beep-beep-beep" warning tone sounds (1 second between each tone). Beep-beep-beep-beep" alarm sound (2 seconds between each sound)	No throttle signal output from receiver throttle channel	Check whether the cooperation between transmitter and receiver is normal. Whether the wiring of the throttle control channel is plugged in tightly
Motor will not start after power on, "beep, beep, beep, beep, beep"is emitted. Rapid monotone	The throttle is not zeroed or the throttle travel is set too small.	Set throttle rocker to lowest position; Reset throttle travel.
Motor will not start after power up, beep-beep-beep, then special tone"will sound. Then "56712 " special beep will sound.	Throttle channel "forward/reverse" direction is wrong.	Refer to the remote control manual to adjust the "Forward/Reverse" setting of the throttle channel. Refer to the remote control manual to adjust the "Forward/Reverse" setting of the throttle channel.
Motor Reverse	Wrong wiring sequence between ESC output wires and motor wires.	Switch any two of the three output wires.

Programming instructions using the remote control

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

I. Entering Programming

II. Select the setting item

III. Select the parameter value of the setting item. Exit

Note: Be sure to check the setting of the throttle curve in the remote control to ensure that the lowest position of the rocker corresponds to the throttle output value of 0, and the highest position corresponds to the output value of 100%.

I. Entering Programming Mode.

1) Turn on the remote control, hit the throttle to the highest, connect the ESC to the battery.
2) Wait for 2 seconds, the motor beeps "beep-beep-beep
3) Wait for another 5 seconds, the motor beeps "56712." special tone has entered the programming mode.

Second, select the setting items:

After entering the programming setting, you will hear 8 kinds of beeps, in the following order cycle beeps, after beeping a certain tone, within 3 seconds, the throttle to the lowest, then enter the setting item.

1.	"Beep"	Brake. (1 short tone)
2.	"Beep-beep-"	Battery type (2 short tones)
3.	"Beep-beep-beep-"	Low voltage protection mode (3 short tones)
4.	"Beep-beep-beep-beep"	Low voltage protection threshold (4 short tones)
5.	"Beep-"	Activation mode (1 long tone)
6.	"Beep-beep-"	enter the corner (1 long, 1 short)
7.	" Beep-beep-beep-"	Restore factory defaults (1 long 2 short)
8.	" Beep-beep-"	Exit (2 long tones)

Note: One long "beep-" is equivalent to 5 short "beep-" tones, so in the "Select Setting Items", one long and one short "beep-" indicates the factory default (1 long and 2 short tones). Therefore, in the "Select Setting Item", one long and one short "beep-beep-" indicates the 6th option, and so on.

Beep / Setting item	"Beep-" 1 beep	"Beep-Beep-Beep" 2 beeps	"Beep-beep-beep-beep." 3 beeps
Brakes	No brakes.	With Brake	
Battery Type	Lithium Ion Battery	Nickel-metal hydride	

Exit setting:

There are two ways to exit the setting as follows.

1. In the third step, when selecting the setting value, after beeping the special tone " " " " and then hitting the throttle rocker to the lowest point within 3 seconds, the setting will be exited.
2. In the second step, when selecting the setting item, when the motor beeps "Beep-beep-beep" (i.e., the 8th setting item) two long times, then press the throttle rocker to the lowest point within 3 seconds, the setting will be exited. The setting will be exited.