

# AL-Series Brushless ESC User Manual

Thank you for purchasing AL-Series Brushless electronic Speed Controller (ESC). We strongly suggest that you read this manual carefully before using it.

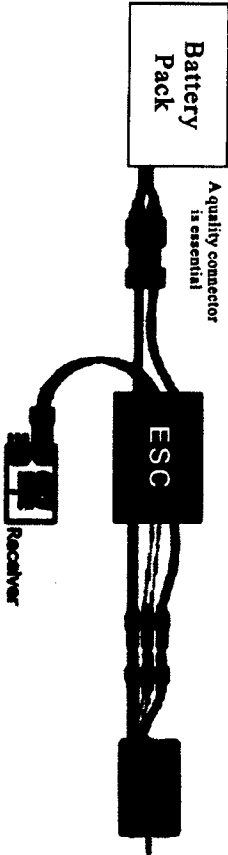
AL-Series ESC allows you to program all functions to fit your specific needs, which makes it very efficient and user friendly:

- 1. Brake Setting
- 2. Battery Type(LiPo or NiCd/NiMH)
- 3. Low Voltage Cutoff Setting
- 4. Factory Default Setup Restore
- 5. Timing Settings (to enhance ESC efficiency and smoothness)
- 6. Soft Acceleration Start Ups (for delicate gearbox and helicopter applications)
- 7. Governor Mode (for helicopter applications)
- 8. Motor Rotation(clockwise\counterclockwise)
- 9. Switching Frequency
- 10. Low Voltage Cut-off Type (power reduction or immediate shutdown)

## Wires Connection:

The speed controller can be connected to the motor by soldering directly or with high quality connectors. Always use new connectors, which should be soldered carefully to the cables and insulated with heat shrink tube. The maximum length of the battery pack wires shall be within 6 inches.

## Brushless Speed Controller



## POWERING UP THE ESC FOR THE FIRST TIME AND SETTING THE AUTOMATIC THROTTLE CALIBRATION

The ESC features Automatic Throttle Calibration to attain the smoothest throttle response and resolution throughout the entire throttle range of your transmitter. This step is done once to allow the ESC to "learn and memorize" your Transmitter's throttle output signals and only repeated if you change your transmitter.

- 1. Switch your Transmitter ON and set the throttle stick to its maximum position.
  - 2. Connect the battery pack , receiver and motor to the ESC. Wait for about 2 seconds, the motor will beep for twice, then put the throttle in the minimum position, the motor will also beep, which indicates that your ESC has got the signal range of the throttle from your transmitter.
- The throttle calibration is set and your ESC is ready to use.

## ENTERING THE PROGRAMMING MODE

- 1. Switch your Transmitter ON and set the throttle to its maximum position.
  - 2. Connect the battery pack to the ESC.
  - 3. Wait until you hear two short beeps (•• •• ••) confirming that the ESC has now entered the programming mode.
  - 4. If the throttle stick is left in the maximum position beyond 5 seconds, the ESC will begin the sequence from one function and its associated setting options to another. (Please refer to the table below to cross reference the functions with the audible tones).
  - 5. When the desired tone for the function and setting option is reached, move the throttle stick down to its minimum position. ESC will emit two beeps (••) confirming the new setting has been stored.
  - 6. The ESC only allows the setting of one function at a time.
- Therefore should you require making changes to other function, disconnect the battery pack and wait 5 seconds to reconnect the battery and repeat the above steps.

## Programming Mode Audible Tones

Programming Mode Audible Tones				ESC Functions
Throttle Calibration				
(Within the first 4 Sec) •• •• •• ••				
1	Brake	* * * *	*	Brake On/Off
2	Battery type	~ ~ ~ ~	~ ~ ~ ~	NiCad Lipo
3	Low Voltage Cut-off Threshold	* * * * *	* * * *	Low(2.8v/50%) Medium(3.0v/60%) High(3.2v/65%)
4	Restore Factory Setup Defaults	~ ~ ~ ~	~ ~ ~ ~	Restore
5	Timing Beep	~ ~ ~ ~	~ ~ ~ ~	Automatic(7-30°) Low(7-22°) High(22-30°)
6	Soft Acceleration Start Ups	V V V V V V V V	V V V V V V V V	Very Soft Soft Acceleration Start Acceleration
7	Governor Mode	* * * *	* * * *	Rpm off Heli first range Heli second range
8	Motor Rotation	W W W W	W W W W	Forward/Reverse
9	Switching Frequency	// // // //	// // // //	8KHz 16KHz
10	Low Voltage Cutoff Type	~ ~ ~ ~	~ ~ ~ ~	Reduce Power Hard Cut-Off