

WELGARD

Manual for 18A Brushless ESC

Basic Features:

1. Voltage Range:4V-15V
2. 2-3 lipo, 4-10 NC
3. Internal Resistance:0.0050ohm
4. 12 FETS
5. Single lipo protection 3.0V per cell
6. Size: 32x24x9mm
7. Continuous working current:18A
8. 10 Sec. Burst Current: 22A
9. Temperature-protection:110 Celsius Degree
10. PWM: 8K
11. Support most types of motors, the rotation speed can be up to 40000RPM for 14 poles magnet)

Additional Features:

1. Soft start
2. Won't start if the throttle position is wrong.
3. Auto learning of the throttle range
4. Auto shut down of the motor if the signal is lost or out-of-spec
5. Auto calibration of the motors
6. If there is no response on the receiver, the motor will be automatically shut off

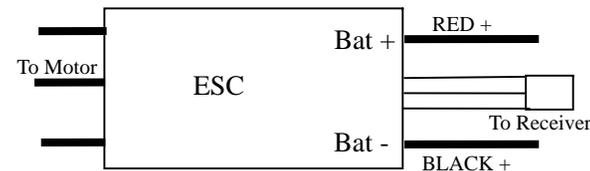
The 18A ESC can be used with 4-10NiCd/MiMh or 2-3 cell Lipo batteries and will automatically detect the number of cells. The BEC is functional with up to 3 Lipo cells. The only programmable feature on this ESC is the brake. The brake defaults to OFF. If you don't need to program the brake function, your ESC is plug and play and ready for use up to 3 cell Lipo or 10 cell NiCd/NiMh.

CAUTION: Secure the aircraft and stay clear of the propeller attached will damage the motor.

CAUTION: Running the motor at high RPM without a propeller attached will damage the motor.

Connecting the Motor:

Note the wiring diagram below:



1. Solder an appropriate connector on the battery + (red) and battery - (Black) leads. We recommend Deans Ultra or Anderson Power Pole connectors. If using a polarized connector, make sure the polarity matches your batteries, and make sure your connector can handle 18 amps of current.
2. Connect the three motor wires to your

brushless motor (ignore the wire colors). If the motor spins in the wrong direction, swap any two of the motor wires to reverse the direction. We recommend using gold plated spring connectors (also known as bullet connectors) between the motor and the speed control to facilitate swapping the wires. Make sure to cover the bullet connectors with heat shrink tubing.

3. Plug the servo connector into the appropriate channel on your receiver. Most receivers use channel 3 for the throttle, but some use channel 1. Consult the manual for your receiver for details. The red wire on the servo connector is positive (+), the brown or black wire is negative (-), and the orange or white wire is the signal.
4. Make sure your transmitter throttle channel is not reversed. Most Futaba transmitters have the throttle channel reversed by default.
5. Before flight, make sure to program your battery type and brake setting if required. See the next page for programming instructions.
6. Install your ESC in a location in your airplane that receives good cooling airflow. Keep the motor and battery wires away from your receiver and antenna.

Battery Eliminator Circuit (BEC)

This Electronic Speed Controller (ESC) contains a Battery Eliminator Circuit (BEC) which may be used to power your receiver and servos under certain conditions. This will allow you to eliminate the separate onboard radio battery pack, and reduce the weight of your aircraft. The BEC may not be used simultaneously with an onboard radio battery pack. You must use one or the other, but not both. Up to 4 servos can be used when the voltage is 7.4V or less. With 11.1V or above, only 3 servos can be used.

If you are not using the BEC function, you must clip the red (+) wire on the ESC receiver lead.

Cutoff Voltage:

- Cutoff voltages are auto-set
- 6V/2Lipo
- 9V/3lipo
- 0.8V per cell for NiCd/NiMh selection

To Enter Programming Mode:

1. Connect the motor and receiver to the ESC.
2. Remove battery power from the ESC.
3. Set the throttle stick to full power and then turn on the transmitter.
4. Reconnect battery power to the ESC.

5. If you are using a separate receiver battery pack instead of using the BEC, connect the receiver battery pack and turn it on.
6. Secure the airplane and stay clear of the propeller
7. The ESC will issue a series of one through four beeps representing the four items that can be programmed. Each is repeated twice. When you hear the option you wish to program (summarized in the table below), move the throttle stick to the full down position to program the option.

-	1 Beep	Set Lipo Battery Cutoff
--	2 Beep	Set Ni-Mh / NiCd battery cutoff
---	3 Beep	Toggle Brake Mode

8. Note: You should choose either Lipo cutoff or Ni-Mh/NiCd cutoff – do not choose both.
9. Once you confirm your choice, you will hear a sharper tone indicating this choice has been saved.
10. If you want to change the brake setting, repeat steps 2-10. You must power off the speed control before programming each option.

CAUTION: At this point the throttle is armed. If you advance the throttle stick the motor will run. If you are not ready to fly, unplug the motor battery and then turn the transmitter off. Always turn the transmitter on (and the receiver if you are using a separate receiver battery) and be sure it is set at idle position before connecting the motor battery.

All of your selected programming will be saved in the ESC. There is no need to program again unless you wish to change a setting.

Note: If the motor rotates in the wrong direction, simply swap any two of the three wires from the speed controller to the motor.