

Suppo 20A Brushless ESC

Specifications:

Max Continuous Current:	20A on 3 Cells
BEC:	2A
Input Voltage:	2-3 Lithium Polymer 4-10 NiCD/NiMH
Resistance:	0.0050 ohm
FETs:	12
Lithium Cut-Off Voltage:	3.0V / cell
Size:	32 x 24 x 9mm
Temperature Protection:	110C
PWM:	8Khz
Max Rotation Speed:	40,000 RPM for 14 pole motor

Features:

- Soft start
- Won't start if throttle stick is not at idle
- Auto learns your throttle range
- Auto shut-down of motor if signal is lost or out-of-spec
- Auto calibration of motors
- If there is no response on the receiver, the motor will be automatically shut off

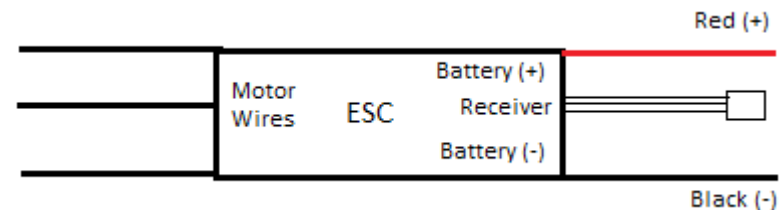
The 20A ESC can be used with 4-10 NiMH/NiCd or 2-3 cell LiPo batteries and will automatically detect the number of cells. The BEC is functional with up to 3 LiPo cells. Before use, you should program the battery type (LiPo or NiMH/NiCd) and the brake setting. The brake defaults to OFF.

CAUTION:

- 1- Always secure the motor or aircraft and stay clear of the propeller
- 2- Do not run the motor at high RPM without a propeller. This could damage the motor.

Hookup Instructions:

- 1- Solder your connector on the battery + (red) and – (black) leads. Make sure you use a connector that can handle at least 20A. We recommend a Deans Ultra 'T' style connector.
- 2- Connect (if bullet connectors are installed) or solder the 3 motor wires to your motor. It doesn't matter which wire on the ESC goes to which wire on the motor for now. If the motor runs backwards you will need to switch any 2 of the wires.
- 3- Plug the servo connector into the appropriate channel on your receiver (consult your receivers manual). The red wire on the connector is positive (+), the brown or black is negative (-) and the white or orange is signal.
- 4- Make sure your transmitter throttle channel is not reversed.
- 5- Before flight, you will need to program the battery type, number of cells, and cut-off voltage (see 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 ESCs battery eliminator circuit (BEC) can be used to power your receiver and servos under most conditions. This allows you to eliminate a separate on-board radio battery pack, to reduce the weight of your aircraft. The BEC may not be used simultaneously with an on-board radio pack - use one or the other. Up to 4 servos can be used when the battery voltage is 7.4V or less. Over 7.4V, 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. The cut-off voltages are:

- 6.0V for 2-cell LiPo
- 9.0V for 3-cell LiPo
- 0.8V per cell for NiCd/NiMH

Programming Instructions:

- 1- Connect your motor and receiver to the speed controller, but do not connect the battery yet.
- 2- Turn on your transmitter and move the throttle stick to the full throttle position (full up).
- 3- If you are using a separate receiver battery pack instead of using the BEC, connect the receiver pack and turn it on
- 4- Connect your battery and the controller will initialize with a musical tone.
- 5- Secure the airplane/motor and stay clear of the propeller
- 6- The ESC will issue a series of one to three beeps representing the three 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 Beeps Set NiMH/NiCd Battery Cutoff
— — —	3 Beeps Toggle Brake Mode

Note: choose either LiPo cutoff, or NiMH/NiCd cutoff – do not choose both

- 7- Once you confirm your choice, you will hear a sharper tone indicating this choice has been saved
- 8- If you want to change the brake setting, disconnect your battery and repeat steps 2-7. You must power off the speed control before programming each option.

CAUTION:

After programming an option, 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 turn the transmitter off. Always turn your transmitter (and receiver if using a separate receiver battery) and be sure the throttle stick is set to idle before connecting the motor battery.

NOTE:

If the motor rotates in the wrong direction, simply swap any two of the three wires from the speed control to the motor. All of your programming will be saved in the ESCs non-volatile memory. There is no need to program again unless you wish to change a setting.