

GH Disposable Foamie Brushless Combo - Sport & 18A ESC

Great motor for Speed 400 Size Airplanes
Great for 3D Flying

An excellent motor for small sport and aerobatic planes or trainers up to 17 oz. Use with the GraysonHobby18 Amp brushless ESC.

Motor Stats

Wire Winds / Turns: 28

Li-Po Battery: 2 / 3 cells

RPM per volt : 1400

Max efficiency: 80%

Max efficiency current: 5 - 9 A (>74%)

No Load Current / 10V: 0.6A

Max Current: 12A/60 sec

Max Watts 100W

Dimension: 27.5x26

Shaft: 3mm threaded shaft or embedded shaft with prop saver

Weight: 1.2oz

Recommended ESC: Grayson Hobby 18Amp

Recommended Model Weight: 200 - 500g (7oz to 18oz)

Recommended Propeller:

- 2S (11.1 V) 9 x 5
- 3S (7.4 V) 7 x 5

Operating Instructions:

1. This brushless motor requires the use of a brushless speed control. Failure to use the correct speed control may result in damage to the motor and/or speed control.

2. When mounting the motor, be sure the correct length of screws are used so damage to the inside of the motor will not occur. We suggest you use the mounting hardware included with your motor. **The use of long screws will damage the motor.**

3. You may connect the three motor wires directly to the controller with solder or with the supplied 2.0mm bullet connectors, which will also need to be soldered properly to your wires. The three motor wires can be connected in any order to the three output wires or output port on a brushless speed control. Be sure to use heat shrink tubing to properly insulate the wires so the wires will not short. Shorting WILL damage the motor and speed control.

4. If you add connectors and you no longer wish to use them, never cut the motor wires. Remove them by properly desoldering them. Shortening the motor wires is considered an improper modification of the motor and may cause the motor to fail.

5. When you connect the motor to the esc, check the rotation direction of the motor. If you find the rotation is reversed, switching any two motor wires will reverse the direction so the motor rotates properly.

6. Proper cooling of the motor is very important during operation. New technology has brought much higher capacity batteries with higher discharge rates, which can cause extreme motor temperatures during operation. It is the responsibility of the user to monitor the temperature and prevent overheating. Overheating of the motor is not covered under any warranty.

7. You can install the propeller on the motor shaft after you have confirmed proper rotation direction. Also consult the instruction included with your electronic speed control for proper adjustments and timing.

8. Once the battery is connected to the motor, please use extreme caution. Stay clear of the rotating propeller since spinning propellers are very dangerous as the motors produce high amounts of torque.

9. Never disassemble the motor. This will void any warranty

Grayson Hobby

Manual for 18A

Brushless ESC

Basic Features:

1. Voltage Range:4V-12V
2. 2-3 lipo,
3. Internal Resistance:0.0025ohm
4. 12 FETS
5. 3AMP BEC
6. Lipo LVC 75% of initial startup voltage
7. Size: 45x24x9mm
8. Continuous working current:20A
9. Burst: 25A (10 Seconds Max)
10. Temperature-protection:100 Celsius Degree
11. PWM: 8K
12. Max RPM 20,000 with Outrunner motors

Additional Features:

1. Soft start
2. Start disabled if the throttle is in the wrong position.
3. Auto detect of the throttle
4. Auto shut down of the power if the signal is lost.
5. Auto calibration of the motors
6. If there is no response on the receiver, the input will be automatically shut off

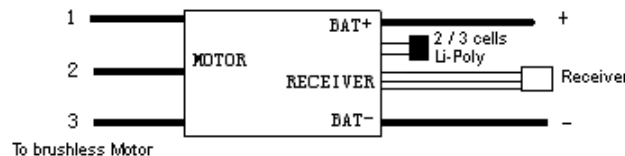
The 20A ESC can be used with 4-10 NiCd/MiMh or 2-3 cell Lipo batteries and will automatically detect them. The BEC is functional with up to 3 Lipo cells. The only programmable feature on this ESC is the brake. The brake defaults to OFF. If you don't need to program the brake function, your ESC is plug and play and ready for use up to 3 cell Lipo or 10cell 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 60 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. Grayson Hobby recommends 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. 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 Elimination Circuit (BEC)

This Electronic Speed Controller (ESC) contains a Battery Elimination 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 and 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, 3 servos can be used.

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

(Grayson Hobby Tip) Use a servo extension between the ESC and RX. Clip the red extension wire to instead of the ESC wire so you will maintain the warranty and best of all, you can use the BEC on your next project.

Cutoff Voltage:

- Cutoff voltages are auto-set
- Lipo 75% of initial startup voltage
- 0.8V per unit for NiMh selection

If the proper cell type and cell number is selected, the ESC will cut off at **75%** of the initial voltage. For example, when using a 2s lipo when fully charged, the initial voltage is 4.2V [4.2V x 2 (2S pack) = 8.4V.] ESC cut off at $8.4 * 0.75 = 6.3$ per pack or 3.15V each cell.

If the cells are not fully charged or if there is any other reason causing the voltage to be lower than 4.2V a cell in some circumstance the LVC will be lower than 3.0V a cell.

PACKS MUST BE FULLY CHARGED BEFORE USE

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. A sequence of one to three beeps will be followed.
8. The table below summarize the simple options for the choices:

-	1 Beep	Lipo self protection
--	2 Beep	Ni-Mh/NiCd self protection
---	3 Beep	Brake Mode

9. Move the throttle stock to the full down position if you confirm the option.
10. You should have only one choice between the lipo self-protection of NiMh/NiCd self-protection.

11. Once you confirm your choice, you will hear a sharper tone indicating this choice has been saved.
12. If you want to change the brake setting, repeat steps 2-10.

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 switch any two of the three wires from the speed controller to the motor.