



**1**  
**YEAR**  
**WARRANTY**

# **20-Amp Brushless ESC** **with Dual BEC & Advanced Programming**

## **For Unparalleled Sensorless Brushless Performance**

- Up to 20-Amp continuous current with proper air flow
- Dual BEC regulators for use with up to 4\*\* servos when using 3-Cell Li-Po and 10-Cell Ni-Cd/Ni-MH packs
- Programmable voltage cutoffs for 2–3 Cell Li-Po or 6–12 Cell Ni-Cd/Ni-MH packs\*
- Programmable motor braking
- Automatically sets correct motor timing
- Safe power-on mode prevents accidental starts
- Includes gold bullet connectors and extension wire leads for your motor

### **Specifications**

Length: 36mm (1.4 in)

Width: 24mm (.95 in)

Height: 9mm (.37 in)

Weight: 14 g (.5 oz)

Cells: 6–12 Ni-Cd/Ni-MH; 2–3 Li-Po

Continuous Amps: 20

\* It is always best to use a fully charged battery pack in order to ensure proper cutoff voltage is selected. Once a battery pack has been partially discharged and unplugged from the ESC, reconnecting it before fully recharging the pack could result in the incorrect voltage cutoff being selected, possibly causing damage to the pack.

### **Servo Ratings with BEC Enabled:**

<b>CELLS</b>	<b>SERVO-HIGH TORQUE</b>	<b>SERVO STANDARD</b>	<b>SUB-MICRO SERVO</b>
6–8 Ni-Cd/Ni-MH	3	4	4**
9–10 Ni-Cd/Ni-MH	2	3	4**
11–12 Ni-Cd/Ni-MH	N/A	N/A	2
2 Li-Po	3	4	4**
3 Li-Po	2	3	4**

\*\* When using economy class sub-micro servos, it is best to reduce the number of servos by one due to the higher average and peak current draw commonly associated with these servos. Also, be sure to position the ESC for maximum airflow since cooling can significantly aid in the performance of the BEC.

If you wish to disable the BEC (required if you're using more than 10 cells), you must first remove the red receiver wire from the connector and then insulate it properly to prevent shorting. When the BEC is disabled, you must use a four- or five-cell receiver pack to power your receiver and servos.



# 20-Amp Brushless ESC

## with Dual BEC & Advanced Programming

### PLEASE READ THESE INSTRUCTIONS IN THEIR ENTIRETY BEFORE USE

Before installing your ESC, take a moment to look it over. The input power side has a black and red wire along with a throttle lead. The motor side has three female gold bullet connectors.

The black and red wires will connect to your power battery. The red wire connects to the red wire on your battery pack, the black wire to the black wire on your battery pack. If the wires are reversed, the ESC may be damaged. **YOU MUST ENSURE THAT YOU CONNECT THE BATTERY POLARITY PROPERLY TO PREVENT DAMAGE TO THE ESC.** Reversing polarity will void your warranty, so always double-check this connection. Solder a connector to the speed control that matches your battery connector. We suggest a set of Dean's Ultra Plugs (WSD1300). Make sure you install the male connector on the ESC and the female on your battery. The throttle lead connects to the throttle channel on your radio receiver.

The three wires from your motor connect to the three female gold bullet connectors on the ESC. The order of connection to the motor is not important; you can plug any motor wire into any connector. If, when you test the system, the motor runs backwards, reverse any two of the motor wire plugs connected to the ESC. It is usually easiest to switch the outside wires. If your motor does not come with connectors, solder the three male gold bullet connectors (EFLA241) included with your ESC to the three motor wires.

**NOTE:** If your brushless motor does not have silicone insulated wire leads or the wire leads will not reach the ESC, you should solder the included pieces of silicone wire to your motor leads first (use heat shrink tubing). Then, you can solder the silicone insulated wire leads to the included male gold bullet connectors, or directly to the female gold bullet connectors on the ESC (be careful not to desolder the connectors from the board).

Before first use, please refer to the chart on the front of this card for BEC usage and cutoff voltage guidelines. You must follow these guidelines for safe operation.

Be sure to plug the throttle lead into the throttle channel of your receiver before testing the ESC. First, turn on your transmitter. Then, plug the power battery into the ESC. If you are using the ESC with the BEC disabled, turn on the transmitter first, apply power to the receiver and servos, then plug the power battery into the ESC. **Always start your system in the appropriate sequence.** Your motor will beep when you plug the power battery in, and your servos should move if using the BEC. Check servo motion as part of your preflight check. It is very important you make sure linkages are free-moving with no binding. It is also always best to use a fully charged battery pack. When you are ready to fly, move the throttle stick to the low position. The motor will beep twice indicating the system is armed. You are now ready to fly.

The factory defaults are set to Auto Li-Po for voltage cutoff and brake off.

#### Changing the programming for brake and voltage cutoff:

To change cutoff type or to turn the motor brake on or off follow this sequence:

1. Disconnect the battery from the ESC, and leave disconnected for at least 30 seconds to allow the ESC to reset. Turn your transmitter ON.
2. Move your throttle control on your transmitter to FULL throttle.
3. Plug the battery into the ESC.
4. Wait 5 seconds. You should hear a second beep after the initial power-on beep.
5. Move your throttle control on your transmitter to the CENTER position.
6. Wait another 5 seconds. You will hear another beep.
7. Move your throttle control BACK to FULL throttle and wait for another beep.
8. Move your throttle control back to the CENTER position. You will hear three beeps.
9. To turn Auto Ni-Cd/Ni-MH ON (and Li-Po OFF) move the throttle BACK to the FULL throttle position.
10. To turn Auto Li-Po ON (and Ni-Cd/Ni-MH OFF) move the throttle DOWN to the OFF throttle position.
11. Move your throttle control back to the CENTER position. You will hear two beeps.
12. To turn the brake ON, move the throttle BACK to the FULL throttle position.
13. To turn the brake OFF, move the throttle DOWN to the OFF throttle position.
14. Disconnect the battery. The brake and cutoff type are now programmed.

EFLA311B 20 AMP



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