



C-25, C-35 and C-55 High-Power High-Frequency Electronic Speed Controls w/BEC



INTRODUCING THE ELECTRIFLY LINE OF HIGH-POWER BRUSHED ESC's

The ElectriFly™ line of High-Power ESC's feature the "Safe Start" system to prevent accidental motor starts by disabling the motor circuitry until the throttle stick is moved to full throttle, then to the "off" position.

Other features include BEC (Battery Elimination Circuitry) which allows the motor battery to power the receiver and servos. When the motor battery voltage is reduced to a set voltage per cell, the low-voltage cut-off circuitry stops the motor while continuing to supply power to the receiver and servos. This eliminates the need for and weight of a separate receiver battery. The ElectriFly line of ESC's comes with thermal protection that reduces the throttle to 70% when the maximum temperature is reached. These ESC's can easily be adjusted for use with NiCd/NiMH or Li-Po batteries. These ESC's function with brushed motors **only!**

SPECIFICATIONS

	C-25
Dimensions:	0.98" x 0.43" x 0.71" [25 x 11 x 18mm]
Weight:	0.85oz. [24g]
Input Voltage:	6-10 cells NiCd/NiMH 2-3 cells Li-Po
Continuous Current:	25 amps
Max Rated Current:	35 amps
BEC Voltage:	5V / 1.5A
Low-Voltage Cutoff:	0.8 volts per cell NiCd/NiMH 2.75 volts per cell Li-Po
Battery Plug:	Star® Plug
Switching Frequency:	1.3 kHz

	C-35
Dimensions:	1.30" x 0.43" x 0.71" [33 x 11 x 18mm]
Weight:	1.08oz. [31g]
Input Voltage:	6-12 cells NiCd/NiMH 2-4 cells Li-Po
Continuous Current:	35 amps
Max Rated Current:	45 amps
BEC Voltage:	5V / 1.5A
Low-Voltage Cutoff:	0.8 volts per cell NiCd/NiMH 2.75 volts per cell Li-Po
Battery Plug:	Star® Plug
Switching Frequency:	1.3 kHz

	C-55
Dimensions:	1.42" x 0.43" x 0.71" [33 x 11 x 18mm]
Weight:	1.22oz. [35g]
Input Voltage:	6-12 cells NiCd/NiMH 2-4 cells Li-Po
Continuous Current:	50 amps
Max Rated Current:	65 amps
BEC Voltage:	5V / 1.5A
Low-Voltage Cutoff:	0.8 volts per cell NiCd/NiMH 2.75 volts per cell Li-Po
Battery Plug:	Star® Plug
Switching Frequency:	1.3 kHz

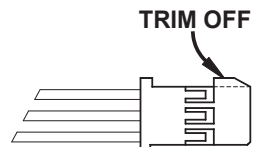
IMPORTANT PRECAUTIONS

Read and follow these instructions carefully before using.

- Do not operate the airplane on or near water. Never allow water, moisture or any foreign material onto the ESC's PC board.
- Never use more cells then specified for the main battery pack.
- The ceramic capacitors must be properly installed on the motor to prevent radio interference.
- Always disconnect the motor battery from the ESC when not in use.
- Always switch on the transmitter before switching on the ESC.
- Use heat-shrink tubing to insulate any bare wires from the motor battery to the ESC and from the ESC to the motor to prevent a short circuit.
- Allow the ESC to cool before touching.

STEP 1 THE RECEIVER PLUG

The receiver plug attached to the speed control plugs directly into a Futaba® "J" receiver. However, if you are using an Airtronics "Z," Hitec "S" or JR receiver, you will need to slightly modify the receiver plug on the ESC. To modify the plug, use a hobby knife or wire cutter to carefully cut off the alignment tab on the side of the receiver plug as shown.



The white "signal wire" on the ESC receiver plug should be in the same position in the receiver slot as the white wire on Futaba, the blue wire on the new Airtronics "Z" connector, the yellow wire on the Hitec "S" connector or the orange wire on the JR connector. **WARNING:** This connector is NOT directly compatible with the old Airtronics connector style. Use an Airtronics Servo Adapter to connect this ESC to the older style Airtronics radios.

NEVER ALLOW THE BARE RED (+) AND BLACK (-) WIRES TO TOUCH ON ANY RECEIVER OR ESC, AS PERMANENT DAMAGE WILL RESULT TO BOTH ITEMS AND VOID ALL WARRANTIES.

STEP 2 MOUNTING THE SPEED CONTROL

Determine the best location for the ESC inside the fuselage. The ESC should be in a position which allows good airflow for proper cooling, and close enough so the wires reach the motor. It is highly recommended to put cooling air intake holes in the front of the fuselage and exit holes towards the aft end.

IMPORTANT: When using the ESC's with the maximum number of cells and at the maximum current draw, the ESC must have good air flow over it to keep it cool.

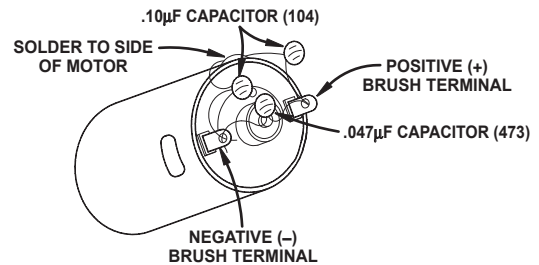
The best method to mount the ESC in the fuselage is with Velcro®. If the ESC will be mounted on wood, first saturate the wood with thin CA and allow to dry. Cut a 1/4" x 1" piece of Velcro (both hook and loop). Attach the hook (hard) material to the inside of the fuselage. Clean the side of the ESC with rubbing alcohol and attach the loop (soft) material. The ESC on/off button should be positioned in the battery compartment. Do not apply Velcro to the top or bottom of the ESC's. These are the locations of the heat sinks and must not be covered.

STEP 3 INSTALL THE MOTOR CAPACITORS

Motors generate radio noise which can interfere with your receiver and cause problems. Your ESC includes two .10µF (104) and one .047µF (473) non-polarized, ceramic capacitors. These capacitors must be used at all times, and on every motor to help reduce the radio noise generated by the motor and prevent possible damage to the ESC.

- Cut a piece of heat-shrink tubing long enough to cover one of the leads on both of the .10µF capacitors, leaving approximately 1/4" of the lead exposed at the bottom.
- Solder the 1/4" of exposed lead from one of the capacitors to the positive brush terminal on the motor end cap.
- Solder the 1/4" of exposed lead from the second capacitor to the negative brush terminal on the motor end cap.

- Solder the remaining leads from both capacitors to the side of the motor case.
- Cut two pieces of heat-shrink tubing long enough to cover both leads on the .047µF capacitor, leaving approximately 1/4" of the lead exposed at the bottom.
- Solder one of the leads to the positive brush terminal and the other lead to the negative brush terminal.
- Solder the positive (+) lead from the ESC to the positive brush terminal on the motor and the negative (-) lead to the negative brush terminal on the motor.



STEP 4 TRANSMITTER ADJUSTMENTS

Adjusting the transmitter is critical for proper ESC operation. The transmitter throttle adjustments should be set as follows:

1. Set the travel adjustment, ATV, EPA or ATL to 100%.
2. Set the throttle trim and sub trim to neutral or zero.
3. Set the throttle reversing switch to reverse on Futaba transmitters and to normal on most other transmitters.

STEP 5 SPEED CONTROL SETUP

Before you begin this setup, remove the propeller from the motor. Then plug the ESC into the throttle channel on the receiver and adjust the transmitter.

BATTERY SETUP MODE

1. Switch on the transmitter. With the ESC off, press and hold the on/off button for 4-5 seconds until the red LED goes off. Then, release the button.
2. Pressing the button again will cause the blue light to stay on or start flashing. To change settings, press the button until the correct setting is obtained.
 - NiCd/NiMH: The blue light will be on.
 - 2-cell Li-Po: The blue light will blink 2 times.
 - 3-cell Li-Po: The blue light will blink 3 times.
 - 4-cell Li-Po: The blue light will blink 4 times.
3. Once the battery type is set, press and hold the button for 2-3 seconds until the red light comes on.

BRAKE SETUP

1. The factory brake default setting is "brake on." To turn the brake off, switch the transmitter on and set the throttle stick to the brake position. Press the on/off button on the ESC. The red and blue light should be on or flashing for Li-Po and the motor should beep 3 times.

2. Move the throttle stick to full power. The motor will beep 5 times. Wait 5 seconds and the motor will beep 7 times.
3. Move the throttle stick to the brake position. The motor will beep 3 times. The ESC is now ready to operate.
4. To switch the brake on, repeat the process.

Once the battery type and brake are set, they do not require resetting once the ESC has been switched off.

ESC OPERATION

1. Switch on the transmitter.
2. Move the throttle stick to the brake position (towards you).
3. Press the on/off button on the ESC and listen for the 3 beeps.
4. Move the throttle stick to full power (away from you) and listen for the 5 (brake on) or 7 (brake off) beeps indicating full throttle. Move the throttle stick back to brake immediately.
5. Move the throttle stick back to the brake position.
6. The ESC is now ready to operate.
7. To switch the ESC off, press the button until the lights go out.

IMPORTANT: If the speed control does not operate properly after following the above set-up procedure, switch the throttle reversing switch on transmitter and repeat the speed control set-up.

As a safety precaution to prevent the motor from starting when the ESC is first switched on, you will need to move the throttle to full and back to brake every time the ESC is switched on.

Note: Once you have finished flying you must disconnect the battery. Even though the ESC is switched off it still draws a slight amount of current and will completely drain the battery over an extended amount of time.

STEP 6 RANGE TEST

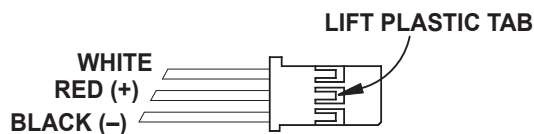
Because electric motors generate electrical noise it is critical to range test the airplane, with the motor on, before flying. With the antenna collapsed and a helper holding the airplane, operate the flight controls while walking away from the airplane. You should be able to get approximately 75' to 100' away before losing control of the airplane. Next, check the range with the motor running at half throttle. The range should be close to the range you got with the motor off. If it is not, you may need to move the receiver, receiver antenna servo leads or speed control to a different location.

OPTIONAL RECEIVER BATTERY

A separate receiver battery may be needed if high-power servos are used. With a helper holding the airplane and the motor running, move all the servos simultaneously. If the servos slow down or stop, a separate receiver battery should be used.

Installing A Separate Receiver Battery:

1. Remove the red wire from the ESC receiver plug. To do this use a small flat bladed screwdriver to raise the plastic tab holding the metal pin. Carefully pull the red wire out of the receiver plug and insulate the pin with heat-shrink tubing or electrical tape.



2. Plug the ESC into the throttle channel on the receiver.
3. Connect a separate receiver battery to a receiver switch harness and plug this into the battery slot of the receiver. In most electric planes a 300mAh receiver battery will work well. If the ESC is used in an electric sailplane a 600mAh receiver battery is recommended.
4. To operate the receiver, first switch on the switch harness, then the ESC. Reverse the order to shut the receiver off.

TROUBLESHOOTING GUIDE

SPEED CONTROL DOES NOT WORK

Problem: Motor and receiver do not work.

1. Make sure motor battery is charged.
2. The plug between the motor battery and ESC may not be making contact.
3. Check that the ESC plug is correctly plugged into the receiver.
4. Unplug the ESC from the receiver and plug a receiver battery into the receiver. Does the radio work now? If it does, the problem may be the ESC and requires servicing.

Problem: The ESC runs but cannot be controlled.

1. Make sure the ESC is plugged into the correct slot in the receiver.
2. Check that the transmitter is adjusted properly.

SPEED CONTROL WORKS (BUT OTHER PROBLEMS EXIST)

Problem: Receiver glitches or stutters while motor is running.

1. The three motor capacitors are not installed correctly or have broken.
2. Receiver is mounted too close to the ESC.
3. The receiver antenna is routed too close to the motor battery, ESC or wires.
4. The motor battery/ESC plugs do not fit tightly.

Problem: Motor slows down after only a few minutes of running.

1. The prop on the motor may be too large, causing high current draw and overheating the speed control. The thermal protection is slowing the motor.
2. The motor may be damaged (bent shaft, tight bearing or shorted winding) causing high current draw.
3. The ESC may need more cooling air flowing over it.

Problem: Motor runs backwards.

1. The ESC is wired to the motor backwards.

SERVICE PROCEDURES

Please Note: ESCs that operate normally when received will be charged a minimum service fee and return shipping charges. Before sending your ESC in for service, it is important that you review the **“Troubleshooting Guide”** on this instruction sheet. The ESC may appear to have failed when other problems exist in the system – such as a defective transmitter, receiver or servo, or incorrect adjustments/installation.

- Hobby dealers are not authorized to replace ESCs thought to be defective.
- Do not cut the input wires or switch harness of the ESC before sending it for service. A fee will be charged for cut wires which must be replaced for testing.

180 DAY LIMITED WARRANTY

Great Planes warrants this product to be free from defects in materials and workmanship for a period of 180 days from the date of purchase. During that period, we will repair or replace, at our option, any product that does not meet these standards. You will be required to provide proof of purchase date (receipt or invoice). If, during the warranty period, your ESC shows defects caused by abuse, misuse, or accident, it will be repaired or replaced at our option, at a service charge not greater than 50% of the current retail list price. Be sure to include your daytime telephone number in case we need to contact you about your repair. This warranty does not cover components worn by use, application of reverse voltage,

cross connections, poor installation, subjection of components to foreign materials, any alterations to wires, or tampering. In no case shall our liability exceed the original cost of the product. Your warranty is voided if:

- You apply reverse voltage to the ESC by connecting the motor battery pack backwards or plugging the motor wires into the motor battery pack.
- You allow any wires to become frayed which could cause a short.
- You use more than the rated number of cells (1.2 volts per cell) in the motor battery pack.
- You tamper with any of the electronic components.
- You allow water, moisture, or any other foreign material onto the PC board.

Under no circumstances will the purchaser be entitled to consequential or incidental damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **If you attempt to disassemble or repair this unit yourself it may void the warranty.**

For service to your **ElectriFly C-25, C-35, or C-55 ESC**, either in or out of warranty, send it post paid and insured to:

Hobby Services

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Internet Address: www.electrifly.com

