



BADASS
POWER SYSTEMS

REBEL SERIES ESC
PROGRAMMER INSTRUCTIONS

Thank you for your purchase of the BadAss Rebel LED ESC Programming Card. This programming card is very easy to use and will make changing the parameters in your ESC a quick and simple process.

An Electronic Speed Control (ESC) transforms the DC power from an aircraft's flight-pack battery into 3-phase AC power and provides it to a brushless electric motor to spin the propeller on an airplane, the rotor blades on a helicopter, or the fan in an Electronic Ducted Fan (EDF). The ESC translates the position of the throttle stick on the transmitter to a specific motor speed. This speed corresponds to the amount of propulsive thrust provided by the spinning propeller or fan blades on a plane or the rotors on a helicopter.

Some ESCs also provide power to the aircraft's receiver and servos through a Battery Eliminator Circuit (BEC). This simplifies the power system installation and saves the weight of having to carry an additional battery pack, just to power your Receiver and Servos.

ESCs are programmable, which means that you can configure certain aspects of how they work. For example, you can configure the brake function, which determines how the motor behaves when the throttle is shut off (e.g., if motor can continue to spin or if it is slowed or stopped using the brake function). You can typically program ESCs in one of two ways: Either by using your RC transmitter throttle stick while you listen for a series of beeps from the motor, or by using a programming card.

When you use your transmitter, the ESC provides feedback to you by playing various combinations of tones to indicate the current settings. You change settings by moving the sticks on the transmitter until you hear the sounds indicating the settings you want to use. This method can be very confusing, and time consuming, because it is often difficult to tell what the current settings are and which settings you are configuring.

Using a programming card is much faster, easier, and more accurate, because you can see the ESC's current settings before you make any changes to them. Making changes to those settings is also much easier because you can change them by pushing buttons on the programming card and have visual indicators display the current value of each setting.

In this User Guide, you'll find all the information you need to use the BadAss Rebel Series LED ESC Programming Card to program a Rebel Series ESC.

(Please Note, the Rebel ESC Program Card can ONLY be used on BadAss Rebel Series ESC's. If you have a BadAss Renegade Series ESC, they you will need to get the Renegade Series LCD Programmer.)

Programming an ESC with the LED ESC Programming Card

SAFETY NOTICE: If you are programming the ESC while it is connected to a motor in an aircraft, you should remove the propeller or rotor blades so that they don't cause damage or injury should they inadvertently start spinning. If you are programming the ESC while it is connected to an EDF, make sure that nothing can be sucked into the EDF and that you keep all objects (especially your fingers!) out of the fan blades in the event the fan blades start spinning unexpectedly.

Introducing the BadAss Rebel LED ESC Programming Card

The following diagram points out all the Buttons, Ports and Displays on the Rebel LED Programmer.



Available Programming Options on the ESC Program Card

All the available parameters, 9 in total, which can be set with the Rebel LED Program Card, along with the options for each parameter are conveniently printed on the front and back of the case of the program card as shown in the following diagram.



Factory Default Values

1. Brake Type: Off
2. Battery Type: LiPo
3. Cutoff Voltage Level: 3.0V LiPo (60% Ni-xx)
4. Motor Timing: AUTO
5. SBEC Voltage: 5.0 Volts
6. Governor Mode: Off
7. Motor Direction: Normal
8. Motor Start-Up Power: 30%
9. Low-Voltage Cut-off Mode: Reduce Power

Connecting the Rebel ESC Program Card to an ESC

To use the Program Card, unplug the control lead on the ESC from the throttle channel of your radio receiver and plug it into the top right port on the Program Card. If you look closely you will see a “-”, “+” and “[]” symbol next to the port as seen in the next photo.



This signifies the wire colors for the control lead when it is plugged in. The “-” indicates the Ground (Brown Wire), the “+” indicates +5 volts (Red Wire) and the “[]” indicates the Control Signal (Orange Wire) on the lead. When plugged in it should look like the next photo.



Programming the ESC with the Program Card

To begin programming, power up the ESC with your aircraft motor battery. When first powered up, the left Parameter Display will show a “ 1”, and the right Parameter Value will show what value the ESC is currently set for. In the Default State, this value would be 1 for Brake Off.

To set a value, first press the MENU button until the number is displayed for the Parameter you wish to change. Each time you press the MENU button the value will count up by one. Once it gets to a value of 9, it will go back to 1 and start counting back up again.

Once you have the Parameter number selected in the left display, push the VALUE button repeatedly until the number of the option you wish to program appears. Each time you press the VALUE button, the value will increase by one, until it gets to the highest value for that parameter, and then it will start over again at 1 and start counting up again as the button is pressed.

The next photo shows the Program Card set to Parameter 3 (Cutoff Voltage Level) with the value set to option 2 (3.0 volts per cell for LiPo batteries).



To program this value into the ESC, the OK button is pressed, and that value will be stored in the ESC's memory. This process is repeated for each parameter you wish to change by first pressing the Menu button repeatedly to select the Parameter to be changed, then press the VALUE button repeatedly until the correct option is shown, and finally pressing the OK button once to lock that value into the ESC.

Master Factory Reset Procedure

At any point during the programming process, if you wish to return ALL the ESC Parameters back to the Factory Default setting, simply press the RESET button one time. That will send a master reset command to the ESC and reset all the Parameters to their associated default values.

Finishing the Programming Process

Once all the ESC programming has been completed, simply unplug the motor battery from the ESC to power is down. Then unplug the Program Card from the ESC Control Lead and plug the Control Lead back into the throttle channel on your radio receiver.

Transmitter Throttle Endpoint Calibration Procedure

It is always a good idea to perform a Transmitter Throttle Endpoint Calibration Procedure whenever you make any programming changes to your ESC. This ensures that you get the full travel for your throttle, and that the ESC learns the highest and lowest throttle stick positions of your transmitter for the most linear and proportional throttle response. Follow the simple steps below to perform this procedure.

1. For safety, remove the prop from the motor before performing the throttle calibration.
2. With the plane unpowered, turn on the transmitter and set the throttle stick to full throttle.
3. Plug in the motor battery. After a second the ESC will emit a couple Beep tones.
4. Immediately after you hear the beep tones, quickly reduce the throttle to its lowest position.
5. You will then hear a beep followed by the normal start up tones.
6. This completes the Throttle Endpoint Calibration Procedure.

If you have any additional Questions or Comments you can send an email to info@badasspower.com