

Thank you for purchasing a Cobra Electronic Speed Controller (ESC). The Cobra ESC's are designed to work well with many different types of brushless motors. Please read this manual carefully and follow all of the instructions to ensure safe operation. On the back of this manual is a copy of our 6-month warranty policy. There is also a place to write down the the purchase information for your ESC. If you have any questions, you can consult your local dealer or contact us directly by email at Service@CobraSystem.net.

INTRODUCTION

Cobra Electronic Speed Controllers (ESC) are designed with a relentless pursuit of exceptional product quality. Cobra takes great efforts to develop ESC's, and has complete intellectual property rights over them. This ensures full control over the products, and allows us to make improvements as needed. In order to increase the reliability of the ESC's, Cobra uses only the best components, such as expensive "Chemi-con" brand electrolytic capacitors and extremely low resistance PC Boards. To increase the overall stability of Cobra ESC's, a separate voltage regulator IC is used for the microprocessor. Cobra ESC's are built with attention to detail in every step of the manufacturing process to provide the best customer experience possible.

FEATURES

1. Easy set-up and operation: In most cases, the ESC's can be used right out of the package.
2. By using a single movement of your RC throttle stick, some basic functions can be programmed. By using the optional Programming Card (available separately), all of the ESC functions can be programmed quickly.
3. The throttle range is automatically detected and set to provide smooth, linear throttle response.
4. Safe Start-up System: When the battery is connected, in order to avoid personal injury, the motor will not start no matter which position the throttle stick is in. The throttle must be at idle for the ESC to initialize.
5. Locked-Rotor Protection: If the motor is blocked so it cannot rotate, the power to the motor will be cut off automatically in order to avoid damage to the ESC.
6. Cobra ESC's are provided with an internal BEC circuit that supplies power to the receiver and servos. The 11A and 22A models have a 2 amp 5.0 volt Linear BEC. The 33A model has a 3 amp 5.5 volt Switching BEC. The 40A through 150A models have a 6 amp 5.5 volt Switching BEC.
7. Pulse Width Modulation (PWM): The PWM Frequency of the Cobra ESC's is fixed at 8KHz.
8. Over-Temp Protection: The power to the motor will be cut off if the ESC temperature exceeds 110°C. (230° F)
9. Over/Under-Voltage Protection: The motor will not start if the input voltage is too high or too low.
10. Automatic Power Cut-off: The power to the motor will be cut off automatically if the radio signal between the transmitter and receiver is lost for more than 3 seconds.

OUT OF BOX

The package includes an ESC and its manual. Please check to see if there is a manual in the package, and whether there is any physical damage to the ESC. If you find any of the above problems, please repack the ESC and contact your local dealer. You may also download the manual at CobraSystem.net.

HOW TO CONNECT ESC

Connect the Motor, ESC, Battery, and Receiver together as shown below. If the motor runs backwards, swap the positions of any two of the three motor leads (red, yellow and black) and the motor will reverse its rotation.



OPERATIONS BY USING RC THROTTLE STICK

By using a single movement of RC throttle stick, three of the ESC parameters can be programmed, Brake Level

Battery Type and Timing Mode. All other parameters can only be used under the Factory Default Settings. (Acceleration Mode: **Mid**; Cut-off Mode: **Slow Down**; Cut-off Voltage: **3V per cell**). If you want to program more parameters, please use the optional Cobra Prog-Card, which is available separately. **Note:** Programming by using RC throttle stick can set only one parameter each time. Before setting the second parameter, the connections of battery and ESC must be disconnected and reconnected to re-boot the ESC.

Setting 1: Brake Mode (Factory Default Setting: Brake On-Mid Braking)

- Switch the transmitter on and move the stick to "full throttle" (highest position).
- Connect the battery pack to the ESC. For ESC without BEC, switch on the power to receiver. Wait 3 seconds.
- After 3 seconds, you will hear 4 continuous "beeps" (the sound is noncyclic)
- Swiftly move the throttle stick to the "motor off" setting (lowest position).
- After moving, if you hear a single "beep" the brake is on; if you hear a double "beep beep" the brake is off.

Setting 2: Battery Type (Factory default setting:Lion/LiPo)

- Switch the transmitter on and move the stick to "full throttle" (highest position).
- Connect the main power pack to the ESC. For ESC without BEC, switch on the power to receiver. Wait 3 seconds, you will hear 4 continuous "beeps". (Do not move the stick yet.)
- Wait further 3 seconds, you will hear:
 - (1) 5 continuous "Beep", which means Li-Po or Li-Ion battery;
 - (2) then 5 continuous "Beep Beep", which means Ni-MH/Ni-Cad battery;
 - (3) then 5 continuous "Beep Beep Beep", which means LiFePO4 battery (A123 cells);
- If you want to set Li-Po/Li-Ion Battery, when you hear (1), or if you want to set Ni-MH/Ni-Cad Battery, when you hear (2), or if you want to set LiFePO4 Battery, when you hear (3), swiftly move the throttle stick to the "Motor Off" (lowest position).
- After moving, you will hear "Beep" or "Beep Beep", which means the setting has been saved.

Setting 3: Timing Mode (Factory Default Setting: Auto)

- Setting Timing mode, according to motor type.
- Switch the transmitter on and move the stick to "full throttle" (highest position). Connect the main power pack to the ESC. For ESC without BEC, switch on the power to receiver.
- Wait 3 seconds, you will hear 4 continuous "beeps". (Do not move the throttle stick yet.) Wait further 3 seconds, you will hear 5 continuous "Beep", 5 continuous "Beep Beep", then 5 continuous "Beep Beep Beep" (Do not move the throttle stick yet.)
- Wait further 3 seconds, you will hear:
 - (1) 5 continuous "Beep Beep Beep Beep", which means Timing AUTO
 - (2) then 5 continuous "Beep Beep Beep Beep Beep", which means Timing High
- If you want to set Timing Auto, when you hear (1), or if you want to set Timing High, when you hear (2), swiftly move the throttle stick to the "Motor Off" position (lowest position).
- After moving, you will hear "Beep" or "Beep Beep", which means the setting has been saved.

PROGRAMMING TIME LINE

The above procedures are the operations available by using RC throttle stick. You will find that Setting 2 repeats the procedure of Setting 1, and Setting 3 repeats the procedure of Setting 1 & Setting 2. The ESC's built-in software adopts a method of "Time line" to judge which setting the user is going to do. Please see below picture.

