

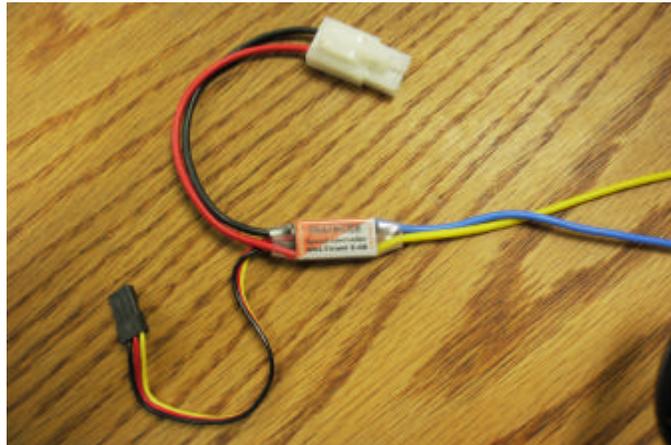
## Setting up an electric speed control for the first time.

*By Tony Ohm*

If you are new to RC electric planes, setting up an Electronic Speed Control (ESC) for the first time can be disconcerting. With its many wires and, in most cases, lack of instructions or a wiring diagram, can make it seem overwhelming at first. My hope is that this article will assist you in the installation and setup of your new ESC.

I will use the Multiplex X-08 speed control as an example. This speed control is designed for small electrics using speed 400 motors that do not exceed 10Amps of current. Its wiring and setup is similar to all other types of controllers on the market making it the perfect choice for this article.

If you look at the X-08 from the top you will notice five possible connections. On one side is a yellow and blue wire and on the other side is a red, black wire and a servo plug connection. The yellow and blue are for your motor. The yellow wire is your positive motor wire and the blue is the negative. Other speed controls may have white and blue or some other color combination. Just make sure to follow the ESC label markings for positive and negative.



Determining which wires go to which post of the motor can be tricky because it all depends on if the motor is directly connected to the prop or if it is connected to a gearbox.

The rule of thumb for a direct-drive motor is for the shaft and prop to spin counter clockwise when the shaft of the motor is pointed toward you. If it is connected to a gearbox then it should spin clockwise. For example; if the X-08 is connected to a direct drive motor, the yellow wire is soldered to the positive side of the motor (usually marked with a red dot) and the blue wire is soldered to the negative side. Reverse the wiring if the motor is connected to a gearbox.

On the other side of the X-08 is a red and black wire. These connect to your battery. Red is positive and black is negative. If you are wiring a connector onto these wires in order to mate the ESC to your battery pack, double-check the polarity of the plug before final soldering.

The servo plug is fitted into the throttle channel of the receiver. On some receivers this is channel 3 on others it's channel 1. Read your transmitter manual for the proper placement. The ESC should not be placed in the battery slot of the receiver because if this is done you will not be able to control it with the transmitter.

Modern speed controls have a built in Battery Eliminator Circuit (B.E.C.). What this does is take the motor battery voltage and drop it down to a usable voltage for the receiver and servos. Depending on the manufacturer the voltage will range from 4.8V to 6V. The X-08 will take a 7.2V to 12V battery and lower the voltage to 5V so the receiver and servos are safely powered. No extra battery is required.

After the speed control has been wired into the plane it is time to test it. To do this, turn the transmitter on first and leave the ESC off. While the transmitter is on, make sure the throttle stick and throttle trim are in the off position. The reason for this is that X-08 and other speed controls have an auto-initializing feature. This feature requires the throttle to be in the off position before the ESC will recognize the setup. Now connect the battery to the ESC. To test the setup, hold the plane and throttle up. The ESC should respond to the throttle channel movement.

If the ESC does not respond to the transmitter input, disconnect the battery from the speed control and double check your connections. Also make sure that the battery is fully charged. If all connections are ok and the battery is freshly charged, check your transmitter and make sure the throttle and trim are off. If you are using a computer radio, double check your EPA settings. The throttle EPA should be set to 100%. If it is then you might try increasing it to 120%. Reconnect the battery to the ESC. It should work now.

That's it! Now you can install the rest of the equipment (if you haven't already) and go fly.