

RC-Hydros.com

Penguin ESC Instruction Sheet

The Penguin controls comes in two basic formats –air-cooled and water-cooled. These formats share many common features:

COMMON FEATURES:

- Two-color LED shows OFF (red) and FULL POWER (green) operation
- All adjustments are done on your transmitter - no pots to fiddle with!
- Opto-Isolated and no BEC - reduces or eliminates radio interference (except PG-612/60WBEC)
- Pre-wired for standard receivers, easy to change for old Airtronics
- 12” servo leads for improved mounting options
- Fail-safe powers down on radio signal loss (but doesn't glitch)
- Safe-On feature prevents glitching on power-up – cycle throttle to “arm” the ESC
- 12AWG wire for minimum resistance
- Only **half** the resistance of our legendary SC3 and SC5 record-setters!

90 A AIR COOLED

- 90 A continuous
- 1.875" x 1.675" x 0.875"
47 x 42 x 23 mm
- Weight with wires
1.7oz (46g)
- 7-FET design .00043Ω

90 A WATER COOLED

- 90 Amps Continuous
- 1.5" x 2.5" x 0.5"
(40 x 65mm x 13mm)
- Weight with wires 1.5oz (44g)
- 6-FET design .0005 Ω

60 A WATER COOLED

- 60 A Continuous
- 1.5" x 2.25" x 0.5"
(40 x 65mm x 13mm)
- Weight with wires 1.5oz (44g)
- 4-FET design .00075 Ω

CONNECTING TO THE BATTERY AND MOTOR

The underside of each ESC tells how many cells your controller is good for. Look for it to say “6-14” or “10-24” on the bottom side. NEVER use more or less cells than your ESC is intended for – it can cause the unit to burn up!

All leads are color coded. The red and black leads which are found near the water cooling tubes (left side of photograph) attach to the battery pack. Red goes to plus, black goes to minus. The red and blue leads attach to the motor. Red goes to plus, blue goes to minus.

Connect **one** of the the provided Schottky diodes between the red and black motor leads with the stripe toward the red lead. If you are using multiple motors, use one Schottky on each motor. Attach the diode as close to the motor as possible. **DO NOT OPERATE YOUR ESC WITHOUT THE SCHOTTKY DIODE ON THE MOTOR.** If you normally use capacitors on your motor, you may continue to do so.

CONNECTING TO YOUR RECEIVER

The white lead is the signal lead, the black lead is the ground lead, and the red is the 5V power lead. Opto-isolated controls (all except PG-612/60WBEC) do not use the red lead. All controllers are shipped for use according to the industry-standard Futaba format, with black on one end and white at the other. Some companies have in the past configured their systems with the black in the center. If your ESC does not work as shipped, move the black wire at the connector into the center position and all should be fine. Do not worry – you can't break anything doing this!

ADJUSTING YOUR TRANSMITTER

With most pistol-grip radios, you will need to make any only minor adjustments if any. Hook up your main power batteries (charged), ESC, radio and receiver battery; do NOT hook up the motor yet! Turn OFF the transmitter. The LED should glow red. If it does not, please check the wiring. Usually a wiring error keeps it from working.

Turn the transmitter on. If the LED stays red, this is good. When you pull the trigger the LED should first go off, then turn green. If this sequence is reversed (it is green or off with the transmitter in idle, pulling the trigger makes it turn red) then you need to reverse the throw on the transmitter. There is usually a small switch to slide or a function in a computer radio to perform this operation.

After you have the sequence correct (green when pulling trigger) you may still need to adjust endpoints and trim. Since we can't document setup for every radio, please refer to the radio owners manual. Your best response with the throttle will be when the red LED stays on with a slight pull on the trigger, and turns green just before you've pulled the trigger all the way. Try to get your radio set up like this – it will make driving the boat much easier. *In the development of our ESCs we compared dozens of radio systems to find settings which worked with all the sample systems. If your transmitter is "factory default" there is little likelihood of things being amiss. If you need help, please e-mail, write, or telephone.*

Now disconnect the main power battery and plug the motor into the ESC. Re-connect the main battery again. The LED should be red. If not, please disconnect the motor and refer to the preceding paragraph to adjust the radio. After this is corrected, pulling the trigger will cause the motor to spin. When the LED turns green the motor is at full speed.

If you have any problems, please e-mail to support@montanadesign.com or call (5pm-9pm Mon-Fri, Sat 10AM-3PM 908-454-4611, **closed Sunday**) or write to the address below.

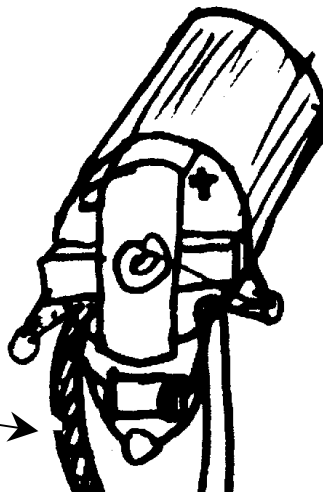
COOLING

For maximum efficiency and reliability, it is essential that you cool your ESC properly. Air-cooled versions should be mounted to that the FET tops are in the airstream if at all possible. Water-cooled versions should have plumbing installed which provides a steady stream of water.

WATER PROOF

All RC-Hydros.com ESCs are *water-proof*. Submerging them while running will not cause any damage. Leaving them submerged with batteries attached for extended periods (ie, your boat sank and you get it a day or two later) may cause some components to be electrolyzed away. There's nothing we (nor anybody else) can do for that. However some owners have reported their units were fine after several days under water.

Schottky Diode goes between motor red and black leads at the motor, with the stripe to red. Caps are also installed.



Last revised 22 October 2002 by AMK.