



# ESC 5000

ELECTRONIC SPEED CONTROL WITH REVERSE

## ELECTRONIC SPEED CONTROL OPERATING INSTRUCTIONS



### INTRODUCTION TO ESC 5000 INSTRUCTIONS

The following instructions will help you get trouble-free operation from your electronic speed control (ESC). These simple steps will allow your ESC to achieve maximum performance and minimize the chance of problems due to incorrect installation. Consult the specifications listed below for limitations for this ESC. You should always ask your hobby dealer or call our service department before using the ESC for an application other than what is listed in these instructions. **PLEASE FOLLOW ALL INSTRUCTIONS CAREFULLY!**

#### Features & Specifications

- The ESC 5000 is designed to be used with up to 50A peak motors.
- Motor, battery, and radio connectors are pre-installed.
- High frequency operation provides very smooth control, maximizes battery run time, and reduces operating temperatures.
- LED indicators (non-setup) are red and green (neutral), red for reverse, and green for forward throttle.

### Specifications

<b>ESC 5000</b>	
<b>Input Power:</b>	4.8 – 7.2 volts DC (4–6 cells)
<b>Operating Frequency:</b>	13.9 kHz
<b>BEC:</b>	5.0 volts / 1.0 amp
<b>Current Rating Forward:</b>	50 amps
<b>Current Rating Reverse:</b>	20A Reverse voltage protection
<b>Case Size (with heat sink):</b>	1.02" x 1.02" x 0.63" (26 x 26 x 16mm)
<b>Weight (with heat sink):</b>	0.88 oz (25g)

### IMPORTANT PRECAUTIONS

(ESC=ELECTRONIC SPEED CONTROL)

- Do not run the car near water! Never allow water, moisture, or any foreign material inside the case of the ESC.
- Never use more than 6 cells (7.2 volts total) in the battery pack.
- Do not attempt to connect the battery pack to the ESC in reverse, as permanent damage to the ESC could result.
- Do not mix instructions. If you are building a vehicle that has a mechanical speed control, do not use the wiring diagram included with the vehicle.
- Never cut or splice the ESC input wires. Do not connect a battery to the receiver's (Rx) "battery" slot. The Rx receives power through the ESC itself which plugs into the Rx's throttle channel slot.
- Always disconnect the battery pack from the ESC when not in use.
- Never turn on the ESC before plugging it into the Rx and switching on the transmitter (Tx).

### MOUNTING THE SPEED CONTROL

The following information can help the ESC perform at maximum efficiency and minimize the chance of overheating and radio interference problems.

#### MOUNTING THE SPEED CONTROL (Figure 1)

1. Locate the ESC in a position to allow for good airflow, with as little obstruction from the model's outer body or exterior dirt and debris as possible. Maintaining a clean ESC and achieving good airflow across the unit is very important for keeping the ESC cool and maximizing performance.
2. Mount the ESC using double-sided mounting tape.
3. Mount the ON/OFF switch in a convenient place. Ensure that it is securely mounted using mounting tape in a location where it cannot be easily turned off by objects on the track or rough terrain.

### MOUNTING THE RECEIVER

1. Radio interference can cause the ESC to rapidly switch between forward and reverse, overheating the transistors and possibly damaging the ESC. The Receiver (Rx) and its antenna should be mounted as far away from the ESC as possible. Also, try to keep the Rx away from the motor, battery, power wires, servos, or any large piece of metal - such as a metal chassis.
2. Make sure the Rx antenna can be fully extended through an antenna tube and not completely enclosed inside the model. Do NOT cut or coil the Rx antenna.

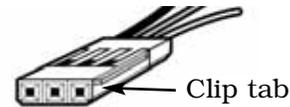
### TRANSMITTER ADJUSTMENTS

Adjusting your transmitter (Tx) is critical for proper speed control operation. The Tx throttle adjustments are described below:

- ATV, EPA, or ATL - set all to maximum.
- Throttle Trims and Sub Trims - set all at neutral or zero.

### RADIO CONNECTOR POLARITIES

The connector included on the ESC directly fits Futaba receivers. By simply clipping off the tab on the side of the connector using wire cutters, it can be directly connected to any Airtronics "Z," Hitec "S," or JR receivers. For proper connection refer to your radio's manual.



### MOTOR PREPARATION

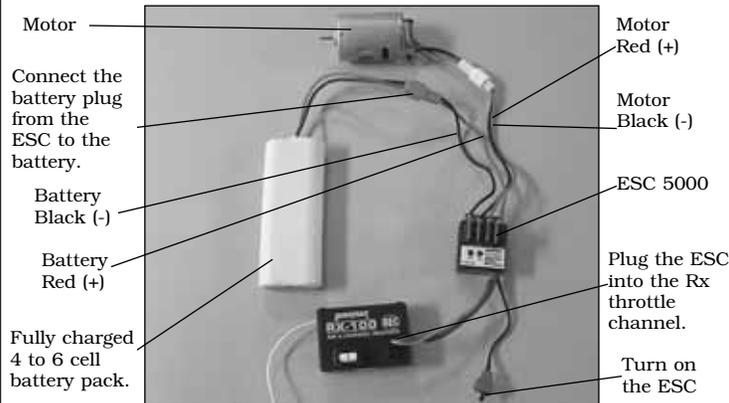
Your motor will require three 0.1µF capacitors to be soldered as shown. These capacitors will help prevent RF feedback from adversely affecting the motor.



## SPEED CONTROL SET-UP

Before you begin this step, the ESC should be connected to the throttle channel on the Rx, the Tx should already be adjusted, and the ESC switch should be in the off position. You will be programming three positions into the ESC: neutral, full throttle and full reverse.

1. Connect the battery pack to the ESC, turn on the Tx, then the ESC.
2. Press and hold the "set" button until both LEDs are flashing, then release the button.
3. NEUTRAL POINT: Leave the throttle trigger in the neutral position. Press the setup button once; the green LED will flash.
4. FULL THROTTLE: Move the throttle trigger to full throttle and press the button once until the red LED illuminates (motor will not operate in set up mode).
5. FULL REVERSE: Move the throttle trigger to full reverse and press the button once - the red LED will stop flashing. Release the throttle trigger; the ESC is now ready to operate with your system. If the motor operates in reverse when applying forward throttle, the throttle reversing switch on the Tx must be moved to the opposite position.



## TROUBLESHOOTING GUIDE

### ESC DOES NOT WORK

**Problem:** Motor and/or steering servo do not move.

- 1) Recharge dead batteries.
- 2) Check for faulty power connections.
- 3) Check for a damaged connection between ESC and Rx.
- 4) Internal damage. Unit may require service. See "Service Procedures."

**Problem:** No reverse.

- 1) Tx adjusted incorrectly. Repeat "Transmitter Adjustments."
- 2) Improper setup. Repeat "Speed Control Set-Up."
- 3) Reverse transistors might be damaged, and unit may require service. See "Service Procedures."

**Problem:** Case is melted.

Internal damage and unit requires service. See "Service Procedures."

**Problem:** ESC runs with switch off.

Unit will require service. See "Service Procedures."

### ESC WORKS BUT OTHER PROBLEMS EXIST

**Problem:** Rx glitches or stutters during acceleration.

- 1) The required motor capacitors are not installed or have broken. Re-check all capacitors.
- 2) Rx mounted too close to ESC causing interference. Relocate Rx away from ESC.
- 3) Check for faulty power connections.

**Problem:** Model runs slowly or has no acceleration.

- 1) The ESC is not set up properly. Repeat "Speed Control Set-Up."
- 2) Check for faulty battery and/or motor connections.
- 3) Tx is improperly adjusted. Repeat "Transmitter Adjustments."
- 4) Check that the battery is fully charged.

**Problem:** Steering servo works but motor doesn't.

- 1) Motor brushes are hanging up, worn out, or motor is bad. Clean or replace brushes and check motor.
- 2) Check for faulty motor connections.

**Problem:** Overheated motor or hot power plugs.

- 1) Motor is geared too high. Change to a lower gear setup.
- 2) Binding in the vehicle's drive train. Check to make sure nothing is interfering with the models' drive train.
- 3) The motor is shorted electrically. Check the motor for shorts and replace if necessary.
- 4) Check for faulty motor connections.

**Problem:** Motor runs backwards while forward LEDs are on.

- 1) Motor is wired backwards. Reverse wiring on the motor.
- 2) A "reverse rotation" motor is being used. Replace motor with a forward rotation motor.

**Problem:** Motor runs backwards when forward command is given, even though LEDs match the motor direction.

Move the Tx throttle reversing switch to the opposite position.

**Problem:** Model runs properly, then slows or stops.

Check for binding drive train, bad motor or incorrect gear ratio for track conditions. Adjust gear mesh, replace motor or change gear ratio.

## SERVICE PROCEDURES

**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" in this instruction sheet. The ESC may appear to have failed when other problems exist in the system, such as a defective Tx, Rx or servo, or incorrect adjustments/installation.

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

## 120-DAY LIMITED WARRANTY

### U.S. AND CANADA ONLY

DuraTrax warrants this product to be free from defects in materials and workmanship for a period of 120 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 120-day period, your DuraTrax product 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:

- A. Reverse voltage is applied to the ESC by connecting the battery pack backwards, or plugging the motor connectors into the battery pack.
- B. Any wires are allowed to become frayed which could cause a short.
- C. The ESC is subjected to improper voltage on the inputs.
- D. Tampering of any electronic components or circuitry is attempted.
- E. Water, moisture, or any other foreign material is allowed inside the ESC.

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 DuraTrax product, either in or out of warranty, include a detailed description of the problem, return address and daytime phone number. Please include a copy of the receipt or invoice and send it post paid and insured to:

### Hobby Services

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