



## IntelliSpeed™ Auto-Sport Forward Electronic Speed Control with Brake OPERATING INSTRUCTIONS



### INTRODUCTION TO INTELLISPEED AUTO-SPORT ESC

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 on 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 IntelliSpeed Auto-Sport ESC is designed to be used with any 20-27 turn stock motor – a great upgrade from mechanical controls, and perfect for sport applications.
- Sets up automatically from the transmitter (Tx) for convenience.
- High frequency operation provides very smooth control, maximizes battery run time, and reduces operating temperatures.
- Motor, battery, and radio connectors are pre-installed.
- High temperature control automatically shuts down the ESC to prevent damage from occurring during excessive current situations.

Input Power:	7.2 to 8.4 volts DC (6-7 cells)
Operating Frequency:	1.0 kHz
BEC:	5.0 volts / 1.0 amp
On-Resistance:	0.007 ohms
Max. Constant Current:	128 amps
Max. Peak Current:	440 amps
Acceleration Time Delay:	0.34 seconds fixed
Motor Turns Limit:	no fewer than 20 turns
Case Size (with heat sink):	1.48 x 1.34 x 0.57" (42 x 38 x 16mm)
Weight (with heat sink):	1.9 oz (55g)

### IMPORTANT INSTRUCTIONS (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 7 cells (8.4 volts total) in the battery pack.
- Do not attempt to connect the battery pack to the ESC in reverse, as permanent damage 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.
- Three 0.1µF, 50V monolithic capacitors (included) should be properly installed on any motor that does not have built-in capacitors to reduce interference from electronic noise. (See step 2)
- Always disconnect the battery pack from the ESC when not in use.
- Never turn on the ESC switch before connecting it to the Rx and turning on the Tx.
- Be careful not to touch the heat sink during use as it can become very hot.
- For the best performance, use an FM radio system.

### STEP 1: MOUNTING THE ESC & RECEIVER

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

#### MOUNTING THE ESC (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 through the heat sink fins is very important for keeping the ESC cool and maximizing performance.
2. Mount the ESC using double-sided mounting tape.

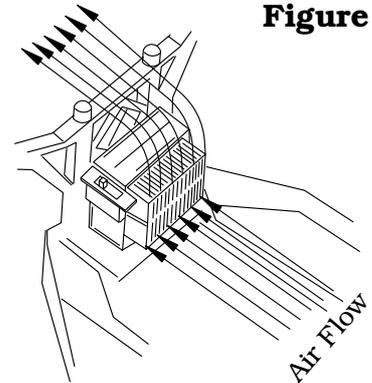
3. Mount the ON/OFF switch in a convenient place. Ensure that it is securely mounted, using mounting tape or screws in a location where it cannot be easily turned off by objects on the track or rough terrain.

#### MOUNTING THE RECEIVER

1. Radio interference can cause the ESC to rapidly switch between forward and brake, overheating the transistors and possibly damaging the ESC. The 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 a mast and not completely enclosed inside the model. Do NOT cut or coil the Rx antenna.
3. Mounting the Rx deep within the tub of the chassis can greatly increase the chance for radio interference. Try to mount the Rx away from the bottom of the chassis tub.
4. Graphite and metal chassis' transmit radio noise generated by the motor. To mount the Rx on a graphite chassis (if necessary), place it on edge with the crystal and antenna as far away from the chassis as possible to reduce the chance of radio interference.

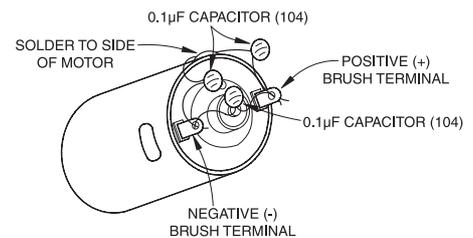
Figure 1

Mount the speed control to obtain maximum parallel airflow THROUGH the heat sink. For off-road cars, or cars with a metal or graphite chassis, mount the ESC on the chassis, and the Rx and antenna on the rear shock tower to reduce radio interference.



### STEP 2: MOTOR & CAPACITOR CONNECTIONS

Figure 2



Motors generate electrical noise which can interfere with radio reception. Properly installed capacitors can help reduce the chance of such interference. Some motors come from the factory with capacitors pre-installed. Check the motor's instructions to see if capacitors are in place. Otherwise, installation of the three included 0.1µF 50V non-polarized ceramic capacitors onto the motor is highly recommended.

- Solder one capacitor between the motor's POSITIVE (+) brush tab and GROUND tab†.
- Solder one capacitor between the motor's NEGATIVE (-) brush tab and GROUND tab†.
- Solder one capacitor between the motor's POSITIVE (+) and NEGATIVE (-) tabs.

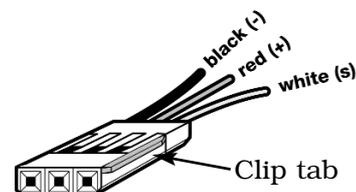
† Solder to the can of the motor if your motor doesn't have a ground tab.

### STEP 3: 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.

### STEP 4: RADIO CONNECTOR POLARITIES

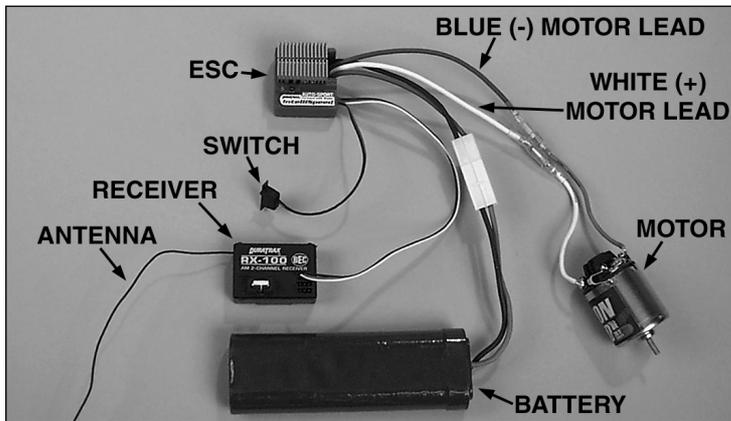


By simply clipping off the tab on the side of the connector using wire cutters, it can be directly connected to any Futaba® J, Airtronics® "Z," Hitec® "S," or JR receiver. For proper connection refer to your radio's manual. **WARNING:** This connector is NOT directly compatible with the old Airtronics connector style. For old Airtronics radios, it is highly recommended to use an Airtronics Servo Adapter to connect this ESC to the older style Airtronics radios. **NEVER ALLOW THE RED (+) AND BLACK (-) WIRES TO CROSS ON ANY RECEIVER OR ESC AS PERMANENT DAMAGE WILL RESULT TO BOTH ITEMS.**

## STEP 5: SPEED CONTROL SET-UP

Before you begin this step, the ESC should be connected to the throttle channel on the Rx, and the Tx should have already been adjusted (refer to Step 3 for Tx adjustment). Before connecting the battery pack to the ESC, make sure the ESC switch is turned off.

- 1) Connect the battery pack to the ESC, and turn on the Tx.
- 2) **NEUTRAL POINT:** Turn on the ESC's switch. The position of the throttle trigger at this time will become the neutral point. The green LED will illuminate at this time to indicate neutral is set.
- 3) **FULL THROTTLE:** Move the throttle trigger to full forward and hold it until the red LED illuminates, indicating the full forward point is set (motor will not operate in set up mode).
- 4) **FULL BRAKE:** Move the throttle trigger to full brake and hold it until both the green and red LEDs illuminate, indicating the brake point is set.
- 5) Move the throttle trigger back to neutral position, where the green LED will illuminate to indicate the ESC is now ready to run. Repeat the above steps if the green LED does not illuminate. All settings will be stored until the ESC is manually reset.
- 6) If the motor does not operate, when applying forward throttle, try moving the throttle channel-reversing switch in the Tx to the opposite position.
- 7) If the motor runs in reverse when applying full throttle, the motor leads are reversed. Change motor leads to opposite positions.



## TROUBLESHOOTING GUIDE

### SPEED CONTROL DOES NOT WORK

**Problem: Motor and/or Steering Servo are dead.**

- 1) Recharge dead batteries.
- 2) Check for faulty power connections.
- 3) Check for a damaged connection between ESC and Rx.
- 4) Reverse polarity at battery. Allow ESC to rest at least 1 minute to reset the circuit protection system.
- 5) Internal damage. 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.**

Drive transistor may be blown and unit may require service. See "Service Procedures."

### SPEED CONTROL WORKS BUT OTHER PROBLEMS EXIST

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

- 1) The three required motor capacitors are not installed or have broken. Re-check all capacitors.
- 2) The Rx signal is intermittent due to a large voltage drop during acceleration. Use an external battery and a **non-BEC** Rx designed to be used with ESCs. Pay special attention to remove the red lead from the Rx to ESC harness prior to powering up the ESC or Rx.
- 3) Rx mounted too close to ESC causing interference. Relocate Rx away from ESC.
- 4) Check for faulty power connections.
- 5) Use of an AM radio system might be resulting in erratic signals. Use of an FM radio system might be necessary.

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

- 1) The ESC is not set up properly. Repeat Step 5 above.
- 2) Check for faulty battery and/or motor connections.
- 3) Tx is improperly adjusted. Repeat Step 3 above.

**Problem: Steering servo works but motor is dead.**

- 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 drivetrain. Check to make sure nothing is interfering with the models' drivetrain.
- 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 red LED is on.**

- 1) Motor is wired backwards. Re-check Step 5 above.
- 2) A "reverse rotation" motor is being used. Replace with a forward rotation motor.

## 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 speed controls thought to be defective.
- Do not cut the input harness, switch harness, or power wires of the speed control 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.
- F. The red wire in the input harness is not removed when using an external battery pack.
- G. Too much pressure is applied when installing the heat sink.

*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, send it post paid and insured to:

HOBBY SERVICES  
1610 Interstate Drive,  
Champaign, IL 61822  
(217) 398-0007

E-Mail: [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)  
Internet Address: [www.duratrax.com](http://www.duratrax.com)