DURATRAX SPRINT ESC w/Reverse

Automatic Forward/Reverse MOSFET ELECTRONIC SPEED CONTROL OPERATING INSTRUCTIONS

IMPORTANT INSTRUCTIONS

(ESC=ELECTRONIC SPEED CONTROL)

- Do not run the car near water! Never allow water, moisture, or any foreign material onto the ESC's PC board.
- Never use more than 7 cells (8.4 volts total) in the main battery pack.
- 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 harness wires. The receiver does not need to have anything plugged into the "battery" slot. It receives power through the ESC input harness which plugs into the CHANNEL 2 slot.
- Two 0.1µF (50V) monolithic capacitors (not included) should be properly installed on any motor that does not have capacitors built in. (See step 2)
- Always disconnect the battery pack from the ESC when not in use.
- Never turn on the ESC before plugging it into the receiver and switching on the transmitter.
- Be careful not to touch the heat sink when it is hot.

PLEASE FOLLOW ALL INSTRUCTIONS CAREFULLY!

STEP 1

MOUNTING THE SPEED CONTROL

The following mounting information will assure that your speed control performs at maximum efficiency and minimizes the chances of overheating and radio interference problems.

Mounting the Speed Control (Figure 1)

1. Mount the ESC to the chassis using mounting tape. Mounting the ESC to achieve good airflow through the heat sinks is very important for maximum performance. The ESC should be mounted as far away from the receiver as possible to prevent radio interference.

2. Mount the ON/OFF switch in a convenient place using mounting tape or screws.

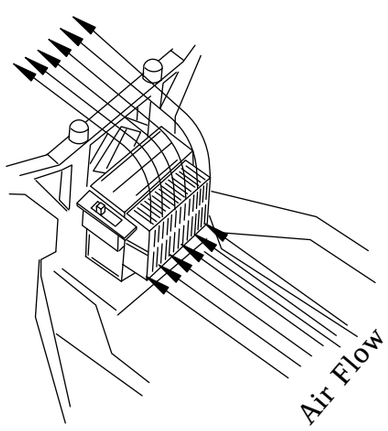
Mounting the Receiver

1. To prevent radio interference, mount the receiver and antenna at least two inches away from the motor, batteries, power wires, servo, or any large piece of metal - such as a metal chassis.

2. Mounting the receiver in the tub of the chassis greatly reduces the range of your radio and increases the chance of radio interference.

3. If your car has a graphite chassis, and you want to mount the receiver on the chassis, mounting the receiver on edge with the crystal and antenna as far away from the chassis as possible reduces 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 receiver and antenna on the rear shock tower to reduce radio interference.

INTRODUCTION TO SPRINT INSTRUCTIONS

The following instructions will help you get trouble-free speed control operation. These simple steps will allow your speed control to achieve maximum performance and minimize the chance of problems due to incorrect installation.

Consult the specifications printed in the table below for limitations on the number of cells that the speed control can be used with. You should always ask your hobby dealer or call our service department before using the speed control for an application other than what is listed in these instructions.

The Sprint has a reverse polarity protection circuit, which protects the speed control if the battery pack is hooked-up backwards. To reset the ESC turn it off and then back on, there is not a delay.

The Sprint is designed to be used with any 20-27 turn stock motor and run on 6 to 7 cells only (1.2 volts/cell connected in series). Using more than 7 cells may damage the speed control and void the warranty.

Specifications

	Forward	Reverse
On-Resistance	0.007 ohms	0.014 ohms
Max. Constant Current	128 amps	64 amps
Battery Size	7.2 to 8.4V (6-7 cells)	
Case Size (with heat sink)	42mm x 38mm x 16mm	
Weight (with heat sink)	60 g	
BEC Voltage / Amps	5.0 volts / 1.0 amps	

STEP 2

HOOK-UP INSTRUCTIONS

Motors generate radio noise, which can interfere with your receiver and cause problems. Check your motor to see if it has capacitors installed on it. Some motors have capacitors built in so refer to the motor's instructions. If the motor does not have capacitors installed, you might need to install two (not included) 0.1µF, 50V, non-polarized, ceramic capacitors onto the motor. These capacitors will help reduce radio noise generated by the motor and prevent possible damage to the speed control. Solder the capacitors between:

- POSITIVE (+) motor brush tab & GROUND motor tab†.

- NEGATIVE (-) motor brush tab & GROUND motor tab†.

STEP 3

TRANSMITTER ADJUSTMENTS

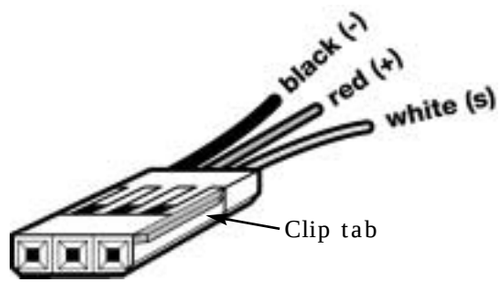
Adjusting your transmitter is critical for proper speed control operation. The transmitter (TX) throttle adjustments are described below:

- ATV, EPA, or ATL - set all to maximum.

- Throttle Trims and Sub Trims - set all at neutral or zero.

STEP 4

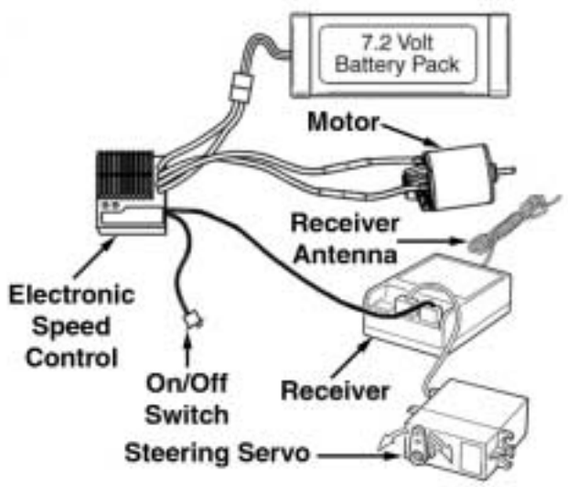
RADIO CONNECTOR POLARITIES



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, your speed control should be plugged into the receiver and your transmitter should have already been adjusted. Before you connect the main battery pack to the speed control, make sure that the ESC switch is turned off. Connect the battery pack to the speed control and turn on the transmitter. Make sure the throttle trigger is in the Neutral position before turning on the ESC.



1) With the transmitter throttle trigger in neutral, turn on the ESC. The green LED will light up for about 1 second.
2) Pull the throttle trigger to full forward, the red LED will light up to indicate the full forward is now being operated.
3) Push the throttle trigger to full reverse, the green and red LED will light up to indicate full reverse is now being operated.
4) The ESC will hold this setting until it is reset.
5) Repeat this procedure if any or all steps fail to operate as expected. (**Note:** The motor does not function during the set-up process.)

Note: If the throttle is set to full forward on the transmitter and you get reverse operation instead of forward operation, the throttle-reversing switch on the transmitter must be switched.

TROUBLE SHOOTING GUIDE

SPEED CONTROL DOES NOT WORK
Problem: Motor and/or Steering Servo are dead.
1) Recharge discharged batteries.
2) Bad power plug(s).
3) Damaged connection between ESC and receiver. Check plug prongs.
4) Reverse polarity at battery.
5) Internal damage.
6) Over temperature protection of speed control has engaged. Check for proper installation of speed control, allowing sufficient air flow to heat sink. Allow ESC to cool down until LEDs indicate ESC is ready to operate.

Problem: No reverse.
1) Transmitter adjusted incorrectly. Center ATV, ATL and radio trims.
2) Transistor is blown. Unit will require service. See "Service Procedures"

Problem: Case is melted.
Internal damage.
Unit will require service. See "Service Procedures"

Problem: ESC runs with switch off.
Drive transistor is blown.
Unit will require service. See "Service Procedures"

SPEED CONTROL WORKS (BUT OTHER PROBLEMS EXIST)
Problem: Receiver glitches or stutters during acceleration.
1) The 2 required motor capacitors are not installed or have broken.
2) Receiver is glitching due to a large voltage drop during acceleration. Use either an external battery or a non-BEC receiver designed to be used with ESCs.
3) Receiver mounted too close to ESC.
4) Bad power plugs or input harness.
5) Receiver mounted flat in chassis.

Problem: Model runs slowly or has no acceleration.
1) The ESC is not set up properly.
2) Bad plug(s), battery, and/or motor.
3) Transmitter improperly adjusted.
4) Low battery (re-charge)

Problem: Steering Servo works and motor is dead.
Motor brushes are hanging up, are worn out, or motor is bad. Clean or replace brushes.

Problem: Overheated motor or hot power plugs.
1) Motor is geared too high-reduce gearing
2) Binding in the vehicle's drive train-eliminate binding
3) Defective or loose plug(s)-repair or replace the plug(s)
4) Shorted motor-replace motor

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

Problem: Motor runs backwards when forward command is given.
(LEDs match the motor direction.) Put the throttle reversing switch in the opposite position.

Problem: Model runs, then motor goes dead.
Binding drive train, bad motor or incorrect gear ratio for track conditions. Adjust gear mesh, replace motor or change gear ratio.

PREVENTING RADIO PROBLEMS

Radio interference can cause the speed control to rapidly switch between forward and full brakes, causing overheating of the brake transistors and possible damage to the ESC. Here are a few of the most common causes of radio problems:

- **Capacitors not installed on motor.** Electric motors generate radio noise that can interfere with the receiver. To prevent radio problems, every motor should have two 0.1µF (50V) ceramic capacitors installed (See step 2).

- **Receiver mounted on graphite or metal chassis.** Graphite and metal chassis transmit radio noise generated by the motor. To prevent radio problems, mount the receiver on the rear shock tower or away from the chassis. If the receiver is mounted on the chassis, stand it on its side with the crystal as far away from the chassis as possible.

- **Receiver antenna cut or coiled wrong.** If the receiver's antenna is cut, the range will be reduced. The antenna should be mounted away from the motor and power wires. Coiling the antenna wire, or keeping the entire antenna inside the body will reduce the range and increase the risk of radio problems.

SERVICE PROCEDURES

PLEASE NOTE: Speed controls that operate normally when received will be charged a minimum service fee and return shipping charges. Before sending your speed control in for service, it is important that you review the Trouble-Shooting Guide in this instruction set. The speed control may appear to have failed when other problems exist in the system such as a defective transmitter, receiver 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

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. Plugging the motor connectors into the battery pack.
B. You allow any wires to become frayed which could cause a short.
C. You subject the ESC to improper voltage on the inputs.
D. You tamper with any of the electronic components.
E. You allow water, moisture, or any other foreign material onto the PC board.
F. You apply too much pressure 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*
Internet Address: www.duratrax.com

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