



FH1000 ELECTRONIC SPEEDCONTROL

INTRODUCTION

Congratulations on the purchase of your new Schumacher Electronic Speed Control (E.S.C.). The FH1000 has been designed as a cost effective replacement for a mechanical speed control. However, instead of having a reverse function it has proportional brakes. The FH1000 also has an inbuilt B.E.C. (Battery Eliminator Circuit) to remove the requirement of a separate receiver power supply in the model. Only one main Ni-Cad is required.

FEATURES

1. Fully proportional forward and brake.
2. High Frequency 1000 Hz operation (FWD and Brake).
3. Small lightweight design.
4. Temperature protected
5. Protected 1.5 Amp B.E.C.
6. 14 AWG (12 SWG) power wire.
7. Set Up LED indicator.
8. Surface mount design (robot built).
9. Super high quality design.
10. Optional Heatsink G975T for motors down to 12 turn.

8th May 1995

GETTING STARTED

Install the E.S.C. away from the receiver by mounting it on a double sided tape or velcro. Keep the thick power wires away from the antenna wire and other thin wires. Install 2 motor capacitors on the motor one from the negative to the can and one from the positive to the can. The servo lead on the E.S.C. is wired for Futaba as standard. For Kyosho and Accoms simply remove the flange on the plug with a knife. On KO; Graupner; Airtronics and Sanwa receivers swap the black and red wires in the plug. The FH1000 is fitted with a Tamiya style plug and bullet connector at the factory. If you decide to use alternative connectors the wire identification is as follows:

Black	=	Battery Negative
Red	=	Battery Positive
Yellow	=	Motor Negative
Purple	=	Motor Positive

CONNECTING and SETTING UP

1. Plug the E.S.C. to the receiver (channel 2). Ensure the plug is fitted with the white wire facing inward next to the receiver label.
2. Connect the purple wire bullet connector to positive on the motor.
3. Connect the yellow wire bullet connector to negative on the motor.
4. Switch on the transmitter.
5. Plug in the E.S.C. into the Ni-Cad making sure it is not reverse connected and turn on the miniature switch on the E.S.C.
N.B. be prepared for the wheels to rev up!
6. Set the neutral, marked N on the E.S.C., with a trimming tool. Neutral is located at the point where the red LED just goes out and no power is supplied to the motor.
N.B. To prevent damage to the pots they have no end stop.
7. Set the high point, marked H on E.S.C. with trimmer tool. This sets the point on the forward stick travel where the E.S.C.
8. Fit the round rubber bungs in the round holes and the rectangular bungs in the unused slots.
9. Remember this E.S.C. is not designed for use on motors with less than 16 turns of wire or 12 turns if fitted with optional G975T Large Heatsink.
10. Temperature connection operates by reducing the maximum speed. After a few seconds to cool down the FH1000 will operate normally.

SPECIFICATION

Case size	50mm x 34mm
Weight	Less than 50g
Input Voltage	6 to 12 volts - 5 to 10 cells
Forward Volt drop @ 10A	0.044 volts
Braking current	70 Amps
Forward current	140 Amps
Peak forward current	400 Amps
B.E.C. output	5 volts 1.5 Amps
Frequency (Forward)	approx 1000 Hz
Frequency (Brake)	approx 1000 Hz
Ambient temperature range	-5 to +35 degrees centigrade (Non condensing)
All specifications @ 25 degrees centigrade.	

SYMPTOM	POSSIBLE CAUSE	ACTION
Not working at all	Incorrectly wired.	Check wiring and set up procedure
	Thermal Shutdown.	Investigate reason eg. Faulty Motor.
No Brakes.	Transmitter set-up.	Check Transmitter settings.
Erratic radio operation - interference or ESC switch between forward and full brakes with possible overheating.	Receiver wrongly positioned (Graphite and metal chassis particularly suspect)	Ensure receiver is well away from:- (i) The cells (ii) The negative speedo wire. (iii) The chassis - mount the receiver in the rear shock tower. Also turn the receiver on it's side, plugs up and the antenna and crystal down.
	No capacitors on the motor.	Install capacitors.
	Main battery voltage to low	Recharge main battery pack.
	Wiring too long.	Keep wiring to a minimum length.
	Receiver antenna cut or incorrectly mounted	A cut antenna will reduce the range of operation. Also the antenna should be mounted away from the motor and power wires. Avoid coiling the antenna inside the bodyshell.
Juddery at low speed	Fit a choke if using a FET servo.	Break into power wire of servo lead and fit choke in series.
Delay from using throttle before car responds	Interference	See Erratic radio operation above
	Transmitter set-up	Check exponential trim is set to zero/linear
Not reaching full speed.	Transmitter	Adjust high point. See connecting and setting up.
Car runs backwards.	Motor end bell 180° out	Refit end bell.
Motor won't shut off, runs at low speed.	Moisture in Speedo.	Disconnect battery and allow speedo to dry out.
Overheating.	Main battery connected backwards.	Disconnect battery immediately.
	Using modified motor with incorrect gear ratio.	Adjust spur gear/pinion ratio.
	Greater airflow required.	Ensure heatsinks are fitted. Cut holes in bodyshell.

GUARANTEE AND PRODUCT WARRANTY

Schumacher Ltd guarantees the product to be free from defective material, components and workmanship for a period of 3 month from the original date of purchase.

Within 3 months of purchase there will be no charge for repair work carried out under guarantee due to faulty components or workmanship. Please send proof of purchase when claiming warranty repair.

The warranty is invalid if the user:-

- tampers with the product.
- exceeds the operating specification.
- does not fit the heatsink with motor of less than 16 turns.
- short circuits or incorrectly fits the heatsinks.
- damages the trimmers by using too much force.
- incorrectly installs or connects the two 0.1 uf, 50 volt capacitors on the motor.
- doesn't fit the rubber bungs and/or allows water ingress to the electronics.
- fits damaged motor which causes additional stress on the E.S.C.
- splices, cuts or damages any of the thin signal wires.
- reverse connects the nicad. 'Tell Tale' is fitted.

Our liability is limited to the original cost of the ESC. We reserve the right to alter the specification of the ESC and the Warranty details without notice.

Because Schumacher Ltd has no control over the installation, use and application of its products, no liability may be assumed nor will liability be accepted for any damage resulting from their use. All Schumacher products are fully tested and operational prior to shipment from our factory. By the act of installing and/or operating the E.S.C., the user accepts all resulting liability.

These speedcontrollers are designed and manufactured in the United Kingdom.

Turbofets is a trademark of M-troniks Ltd.

SERVICE & REPAIR

There is a fixed service price of £18 for any repair. Normally a service exchange unit will be provided. Please include cheque or credit card details.



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