MS-1 ELECTRONIC SPEED CONTROL

Thank you for choosing TrakPower as your source for brushless electronics. The MS-1 ESC was specifically developed for 1/10th competition. The MS-1 ESC features an aluminum CNC machined case which is designed as a heat sink to reduce operating temperatures and eliminate the need for a cooling fan. The switch and receiver lead exit the top of the case to allow the ESC to fit into the smallest areas, and gold-plated solder posts provide the best option for solder connections. Pre-installed power capacitors ensure power is available for when it is demanded. The MS-1 also features "blinky" mode, a popular race mode for stock class racing.

⚠ **It is strongly recommended to completely read this manual before use! Damage resulting from misuse or modification will void your warranty.**

Special Features

- CNC Machined Aluminum Case
- Gold-plated solder posts
- Handles down to 2.5T
- 100A continuous current
- Compact design
- "Blinky" Mode

Specifications

Motor Types:	Sensored
Motor Limit:	2.5T (on 2S)
Input Voltage:	2-3S LiPo
Direction:	Forward, Brake, Reverse
BEC:	6.0V/3A
Protection:	low voltage, thermal
Rated Current:	100A Continuous
Battery Connections:	Gold-plated solder posts
Motor Connections:	Gold-plated solder posts
Dimensions:	24 x 33 x 36mm
Weight:	55g
Programming:	Manual
Indicators:	LEDs (Green, Blue, Red)
Includes:	Sensor cable, (x5)12AWG silicon wires, heat shrink and mounting tape

Important Precautions

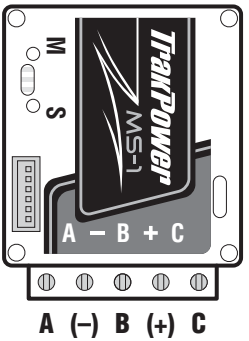
- Disconnect the battery from the ESC immediately if the ESC or battery becomes hot!! Allow the ESC or battery to cool down before reconnecting.
- NEVER use more than the specified voltage on the ESC's input.
- ALWAYS mount the ESC in a position where free air can flow across it during operation.
- ALWAYS monitor ESC temperatures.
- Always turn on the transmitter before connecting the battery to the ESC.
- Always disconnect the battery from the ESC when not in use.
- Make sure the input battery is fully charged before connecting to the ESC, so the low voltage cutoff feature can function properly.
- Do not attempt to use with brushed motors.
- Use heat shrink tubing to insulate any bare wires between the motor battery and ESC, and from the ESC to the motor, to prevent a short circuit.
- Allow the ESC to cool before touching.
- Do not run the car near water! Never allow water, moisture or any foreign material onto the ESC's PC board.
- Do not allow metal/conductive materials to accidentally make contact across all motor/ battery posts.
- Never turn on the ESC before plugging it into the receiver and switching on the transmitter.
- Keep out of reach of children.
- TrakPower is not responsible for incidental damage or personal injury as a result of misuse of this product.

Installation

Refer to your vehicle's manual for the best mounting location and position on your chassis. Always mount in a location where it will receive maximum airflow over and around the unit. The MS-1 ESC features a CNC machined aluminum case that functions as a heat sink and helps reduce operating temperatures. Once the mounting location has been determined, use the included mounting tape to secure the ESC to the chassis.

Included are five 200mm pieces of 12AWG silicon wire for the motor and battery connections. You will need to supply the battery connector of your choice. It is highly recommended to make one solder connection at a time so that there is no possibility of making an incorrect connection which could result in permanent damage to the ESC and/or motor.

Solder Connections



1. Begin with solder post “A”. Heat up the solder post by positioning the iron tip in the cutout section of the post. Apply a small amount of solder to the post. Next, heat up the tinned wire to get the solder flowing. Apply a small amount of solder to the iron tip, then set the wire into the solder post cutout and heat both the wire and post together. Once the solder begins to flow at the joint, apply solder in small amounts until the wire and post have a solid connection.

⚠ **IMPORTANT:** Only apply the solder in small amounts. Applying solder in large amounts will cause excessive solder drip and potentially make connection to the next post.

Once the wire has been connected to the solder post, solder the other end of the wire to the “A” tab on the motor. Repeat for “B” and “C” connections.

2. Solder the included red wire to the “+” (positive) solder post in the same manner as the motor wires. The other end of this wire will be soldered to the battery connector of your choice. If using a dual pin type connector, such as Deans® or Traxxas™, be sure that the “+” is connected to the “+” on the connector.

3. Solder the remaining black wire to the “–” (negative) solder post as listed above. The other end of this wire will be soldered to the negative pin on the selected connector type. Again, note proper polarity and ensure the black wire from the negative (–) solder post on the ESC is connected to the negative (–) pin on the connector.

4. Install the included sensor wire by plugging into the ESC first and then the motor. TrakPower MS Series brushless motors include a clip screw for the sensor wire. See the TrakPower Brushless Motor manual for installation of the clip screw.

5. Connect the ESC lead into Channel 2 of the receiver and secure the power switch to the desired location on the chassis by using a small piece of double sided mounting tape.

Throttle Calibration

Before the ESC can be used, throttle calibration must be performed to ensure the throttle is setup properly. Be sure that all trims and sub-trims are set to ZERO before performing calibration and that throttle and brake end points are set to maximum. Use a small diameter screwdriver or similar to adjust the ESC. Failure to do so may result in the inability to complete calibration or possibly case forward or reverse input when the trigger is at neutral.

Note: If using a Futaba transmitter, the throttle channel will need to be reversed prior to calibration.

1. Turn on transmitter.

2. With the small screwdiver, press and hold the Modify button (“M”) on the ESC. This button is located on the left side of the LEDs as shown above in the diagram.

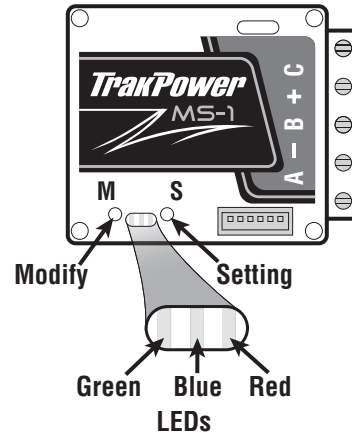
3. Turn ESC on.

4. ALL LEDs will illuminate once power is applied. Release the Modify button (“M”) at this time. After releasing the Modify button, the green LED will flash.

5. Move the trigger to the full throttle position. The green LED will turn solid. Hold the trigger in position until the red LED begins to flash.

6. Move the trigger to the full brake position. The red LED will turn solid. Continue to hold the trigger in the brake position until the blue LED begins to flash.

7. Return the trigger to the neutral position. The blue LED will turn solid. All LEDs will flash simultaneously 3 times to complete throttle calibration.



Programming

1. Turn on transmitter.

2. Plug in battery and turn the ESC on. The blue LED will illuminate. **Note:** If 0° of advanced timing is currently selected, the blue LED will flash indicating the ESC is in “blinky” mode. Otherwise the LED will be solid.

3. Press and hold the Setting (S) button on the ESC and release once all LEDs have illuminated. The green LED will remain lit after releasing. This signals that the first programmable feature (Voltage Cutoff) is ready to be adjusted. Pressing the S button will advance through the features. Each LED or LED combination will correspond to a particular feature. Use the below chart as a reference.

4. To modify or change the setting within a feature, press the Modify (M) button. The M button will need to be pressed a certain amount of times to match the desired setting. Example: Pressing the M button twice while the Red LED is illuminated will change the drive mode to “Forward/Reverse”. Use the below chart as a reference.

To determine which setting a particular feature is currently on, use the S button to locate the correct feature. Press and hold the M button. The LEDs will then turn off and begin flashing. The current setting is displayed by the number of times the LEDs are OFF (not on).

5. After choosing a particular setting for a feature, the LEDs will then repeat the selection by flashing the corresponding amount of times. This is displayed by the number of times the LEDs are **OFF (not on)**.

When programming is completed, press and hold the S button until all LEDs illuminate and then release. Once the ESC returns to the blue LED, the ESC is ready for use.

See the quick reference chart on other side for programming:

PROGRAMMING CHART

Adjustable Feature	Press Modify Button	LED	Setting	Press Setting Button	LED Flashes
Voltage Cutoff	x1	Green	2S 3S	x1 x2	Green x1 Green x2
Motor Direction	x2	Blue	Forward Reverse	x1 x2	Blue x1 Blue x2
Drive Mode	x3	Red	Forward Only Forward/Reverse For/Rev Delay	x1 x2 x3	Red x1 Red x2 Red x3
Neutral Width	x4	Grn & Bl	6us 9us 15us	x1 x2 x3	Grn & Bl x1 Grn & Bl x2 Grn & Bl x3
Start Power	x5	Grn &Rd	Lowest Low Normal High Highest	x1 x2 x3 x4 x5	Grn & Rd x1 Grn & Rd x2 Grn & Rd x3 Grn & Rd x4 Grn & Rd x5
Drag Brake	x6	Bl & Rd	0% 5% 10% 15% 20% 25% 30% 35% 40% 45% 50% 55% 60% 65% 70% 75%	x1 x2 x3 x4 x5 x6 x7 x8 x9 x10 x11 x12 x13 x14 x15 x16	Bl & Rd x1 Bl & Rd x2 Bl & Rd x3 Bl & Rd x4 Bl & Rd x5 Bl & Rd x6 Bl & Rd x7 Bl & Rd x8 Bl & Rd x9 Bl & Rd x10 Bl & Rd x11 Bl & Rd x12 Bl & Rd x13 Bl & Rd x14 Bl & Rd x15 Bl & Rd x16
Timing	x7	G, B & R	0° 5° 10° 15° 20° 25° 30° 35° 40° 45° 50°	x1 x2 x3 x4 x5 x6 x7 x8 x9 x10 x11	G, B &R x1 G, B &R x2 G, B &R x3 G, B &R x4 G, B &R x5 G, B &R x6 G, B &R x7 G, B &R x8 G, B &R x9 G, B &R x10 G, B &R x11

Troubleshooting

Below is a reference for troubleshooting. These are common problems with easy solutions. If a problem other than what is listed below exists, contact Hobby Services for assistance.

Green and Red flashing LED: *No signal. Check to see if transmitter is turned on. Also be sure that the ESC lead is plugged into Channel 2 of the receiver.*

Turning the steering wheel causes motor to spin: *ESC lead is plugged into Channel 1 of receiver. Reinstall into Channel 2.*

Blue LED illuminates normally but nothing happens when throttle is applied: *Check that the sensor wire is plugged in securely to both the ESC and motor. Also check that the A, B and C wires are soldered correctly to the motor tabs and there is not a solder bridge between the tabs.*

LEDs illuminate normally but motor does not spin every time throttle is applied: *Ensure that the wires that connect the ESC and motors are connected and soldered well. Also, be sure that the battery is charged.*

Solid Blue and Red LEDs: *Low voltage cut-off. The LiPo battery is equal to or less than the programmed low voltage cut-off point. Turn off ESC and re-charge battery.*

Solid Red and Green LEDs: *Thermal protection. The ESC has reached an unsafe temperature for operation and has shut down to protect itself. Allow the ESC to cool to room temperature before attempting another run. If the ESC continues to enter thermal protection mode, a different gearing option might need to be considered.*

Warranty

TrakPower 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 warranty period, your motor 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 or reverse voltage, cross connections, poor installation, subjection of components to foreign materials, or tampering. In no case shall our liability exceed the original cost of the product. Your warranty is voided if:

- You apply an input voltage that exceeds the maximum specifications of the ESC.
- You allow water or moisture to enter the ESC.
- You attempt to modify or tamper this ESC.

Under no circumstances will the purchaser be entitled to consequential or incidental damages. This warranty gives you specific legal rights, and you have other rights which vary from state to state.

For service to your TrakPower ESC, either in or out of warranty, send it post-paid and insured to

Hobby Services
3002 N. Apollo Dr. Suite 1
Champaign, IL 61822
(217) 398-0007

Email: *hobbyservices@hobbico.com*

TKPM0010

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