



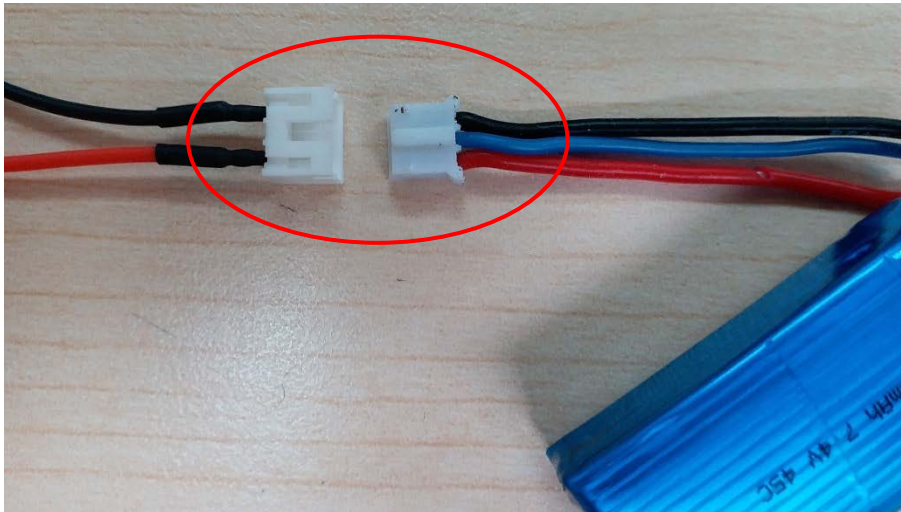
## Swave ESC suddenly fail during your run? Here are some possible causes...

### Battery

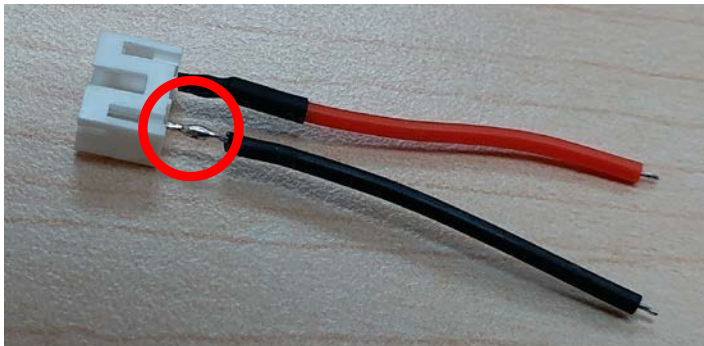
- A good condition battery is a must! A bad battery could mean that the voltage of a fully charged battery can instantly fall under load (current draw).
- Ensotech published an article, about the disadvantage of using the micro JST style connectors in Facebook group “Swave Team” or you can download the article “[Increasing the efficiency of your electronic power system](http://www.ensotech.ltd/download/Increasing%20the%20efficiency%20by%20MR30%20AMASS%20connector.pdf)” from our shop.  
<http://www.ensotech.ltd/download/Increasing%20the%20efficiency%20by%20MR30%20AMASS%20connector.pdf>

It is important to know that the micro JST style connectors are not designed for high current flow and therefore create high resistance. This is harmful for high consuming electronic devices.

- Inspect your connectors! Every connector may look the same, but different brand of connectors has their own manufacturing tolerances, and which may cause bad connections. After repeated connecting/disconnecting of the connectors the connection pins wear out (this is a fact, on all types of plugs) and especially on the micro JST style plugs. This is a popular potential issue, and may cause ‘power cuts’ under vibration, and in the worse-case scenario will create an un-necessary high resistance and heat up the ESC, resulting in a burnt ESC. CHANGE YOUR PLUGS!



- Inspect for no broken wires



### **Proper Gear Ratio**

A proper gear ratio decreases the ESC temperature. Improper gearing may result in excessive amp draw from the ESC, temperature increase at last the shutting down protection activated.

### **Calibration - have you calibrated your ESC properly?**

Do not skip the calibration process of a brand-new ESC! It is critical to perform calibration before running on track. Be aware: running the car without performing calibration will damage, shut down and maybe burn the ESC within 2 laps.

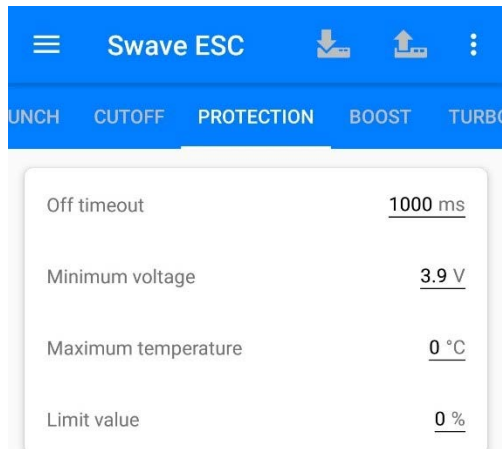
### **Powering external electronics through the SWAVE ESC (servo, receiver, personal transponder and maybe lighting system and gyro)**

The power from the battery is filtered through the ESC to the external electronics (servo, receiver, personal transponder and sometimes maybe a gyro). The total amp draw of these external devices should not exceed no more than 1A in total (Swave E and Swave E2) / 1.5A (Swave W).

The Swave ESC was designed for serious racers, with using original factory servo, receiver and personal transponder in mind. If you use other after-market devices please consult with manufacturer the specification and calculate the overall current draw, of those devices. If the total amp draw exceeds 1A in total (Swave E and Swave E2) / 1.5A (Swave W), you may need a separate BEC or receiver battery.

## **Is your protection settings, correct in the Swave App?**

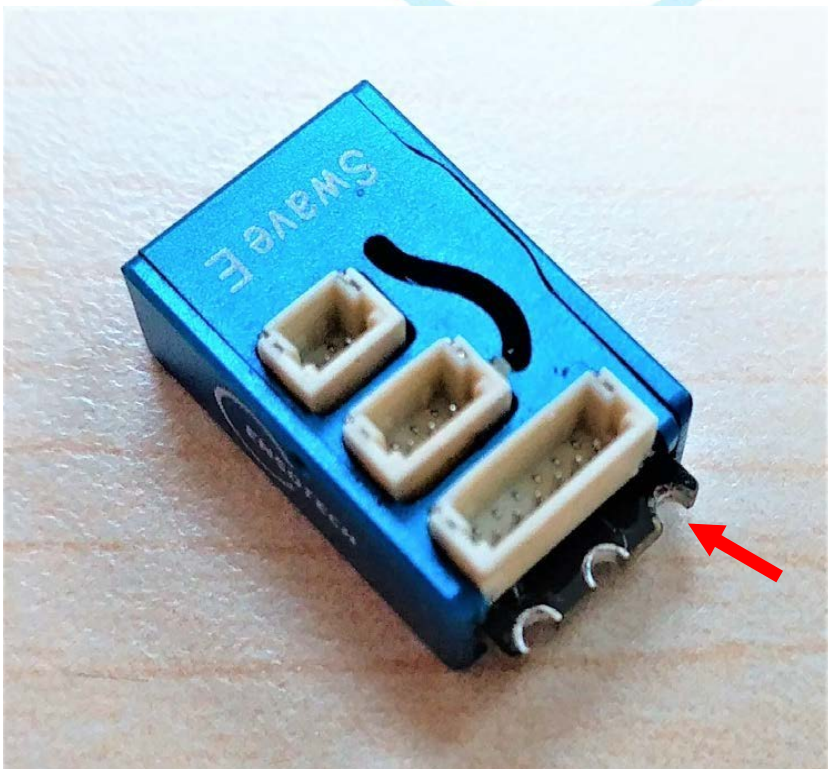
To save your battery and ESC, protection may shut down the ESC during run if temperature and/or voltage exceeds a certain value. Proper setup of your protection values, should result in a better cooled ESC and should prolong your battery's lifespan.



## **Soldering**

Below result caused by an in-proper soldering, after some run time and hitting plus vibrations or some other reason, the PCB metal plate falls off. It is hard to notice until all cables are removed. You can check this yourself:

1. Simply remove the cable and the remaining soldering material.
2. Use a cloth wrapped with alcohol to clean the ESC, if the metal plate is loosened it will fall off when wiping it.
3. Check all five soldering point especially on the battery side.
4. Ensure that the solder, is covering the whole PCB metal plate (top/button/sides).



If there is no issues now you can soldering all cables back to ESC as follows:

First Step: Put soldering material on each connection point metal plate (cover the top/button/sides), each contact between soldering iron and ESC should not exceed 1 second. After soldering each point, allow the ESC cool down a bit before the next soldering point.

Second Step: Put soldering material on the cable wire

Third Step: Soldering the cable wire to the PCB without using additional soldering material and the melting time should only take 1 second or less.

*Check this link here for proper solder technique:*

Future more, even the metal plate didn't falls off but after some run time and hitting plus vibrations or some other reason, the soldering material may also lose.

### **Motor & Motor Powering Cable & Sensor Cable**

Always check the motor and sensor cable, sometimes problem came from a worn out motor and degraded motor sensor board and the sensor cable.

Remove the motor from the car, use your fingers to rotate the shaft to see if the rotor rotates smoothly.

No broken sensor cable.

No loosen powering cable.

A worn out motor has high resistance, a degraded motor sensor board either sensor cable losing signal, both causes the ESC's temperature to rise or irregularly response.

At this point a new motor and sensor cable required.

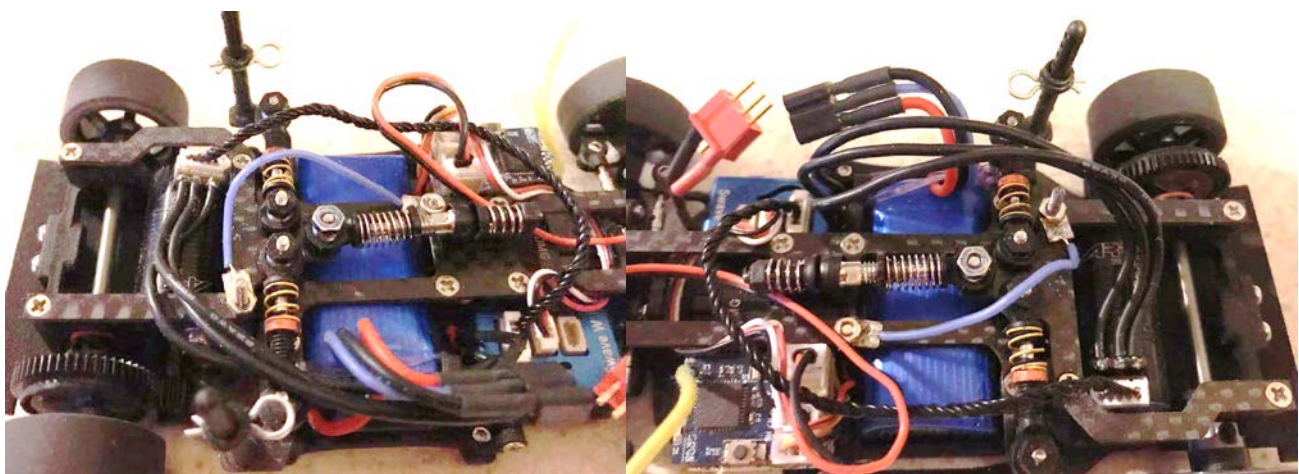
### **Static Electricity lead to ESC shutting down, motor glitching or cogging even esc burn**

In mini-z R/C it appears that static electricity can build up with air especially during the winter time / air-conditioning also the tires rotating and hitting the pavement, etc.

Problem could be even more critical for static build up if running metal chassis.

Why it's happening to Swave esc? Because esc metal case is a conductive material.

Below photos show how to ground the static electricity:

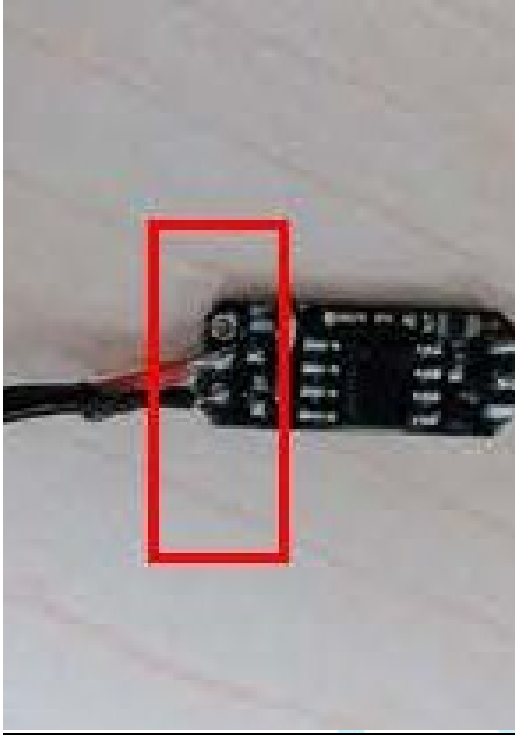


Car in this photo had the static electricity issues, we found the static build up in the rear lower carbon plate and transfer to the motor and esc

We have incorporated a grounding cable (the blue color cable) to go from rear motor mount to top plate to discharge the static inside. After installing this cable there is no more glitching and cogging of the motor as well as the esc no more shutting down.

UARTLINK LINK / UARTLINK LINK-II broken wire

Check the soldering if found not able to establish the phone connection



ENSOTECH