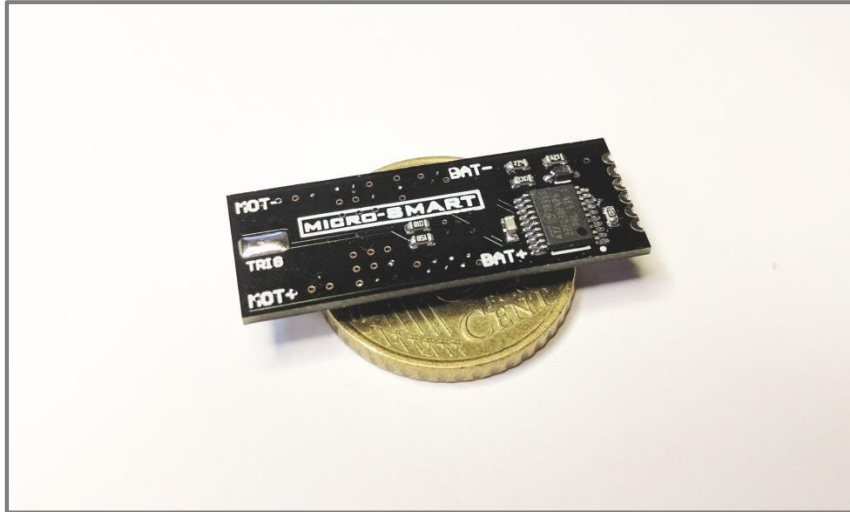


# microSMART mosfet unit



The MicroSMART is an advanced computerised MOSFET unit for an AEG rifle, which adds many different fire modes, and at the same time protects the motor and battery against damage. Due to its small size ( 36 x 13 x 4 mm ) it can be installed virtually anywhere.

MOSFET uses solid-state switches, which redirect the current from the trigger contacts in the rifle. This in turn improves the response time, increases the rate of fire and improves the efficiency of the rifle.

The unit also incorporates active braking, so that the piston, spring and gears remain in the front position after every semi shot. Decocking the spring after every shot increases its life time and decreases the mechanical load on the system.

Battery monitoring, over-temperature and over-current protection prevent damaging the battery, motor or the unit. In case of any errors or warnings, the unit warns the user with quiet motor buzzing.

## 1 Features:

- **Active braking (adjustable)** – This feature quickly stops the motor after a shot and returns the piston to the front position and releases tension in the spring. Braking is adjustable from 50 to 100%, but it can also be turned off. Stronger braking can be used in DMR rifles, for assault and full-auto rifles weaker braking is recommended.
- **Semi-only** – In this mode the gun will shoot semi on both selector positions – for use in DMR rifles.
- **Semi-delay** – After a shot the unit won't allow for another shot within a time, which is adjustable from 0 to 1 second – for use in DMR rifles.
- **Precocking** – This mode precocks the piston so that the next shot will be as fast as possible. Precocking is adjustable from 50 to 90% (of full cycle).
- **3 round Burst** – On full-auto position the rifle will make 3 rounds.
- **Burst-auto hybrid** – In burst mode, if you keep holding the trigger down after the burst cycle has completed, the rifle will transition to full-auto after a determined time. This time is adjustable from 0.1 to 1 second.
- **ROF control** – Adjustable ROF for when we want to slow down the ROF of a rifle. It is adjustable from 50 to 100%, but the first round is always done at full power to retain the fast response time.
- **Battery monitoring** – The unit can be adjusted to the battery type that you are using (NiMH, LiPo, LiFe) and it will warn you if the battery gets discharged. The warnings will start when the battery capacity falls below 20% and the gun will stop shooting below 5% battery capacity.
- **Over temperature warning** – If the unit temperature exceeds 70 degrees Celsius, the unit will warn you with three buzzes after shot and the unit will turn off.
- **Over current protection** – If the current during firing exceeds 300 A, the unit will turn off the motor and disable firing. There won't be any buzzes.

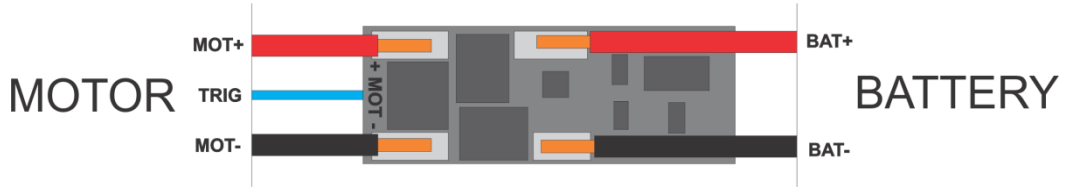
## 2 Technical data

Dimensions:	36 × 13 × 4 mm
Max continuous current:	40 A +
Max pulse current:	1000 A
Internal resistance:	1.0 mΩ
Battery voltage range:	6.5 – 16.5 V (4S lipo max)

- 2N design, powered by two powerful 300 amp N-FETs
- very low quiescent current consumption (won't discharge the battery if left connected)
- possibility of future firmware update
- fully protected against motor spikes
- resistant against moisture and water (short time)

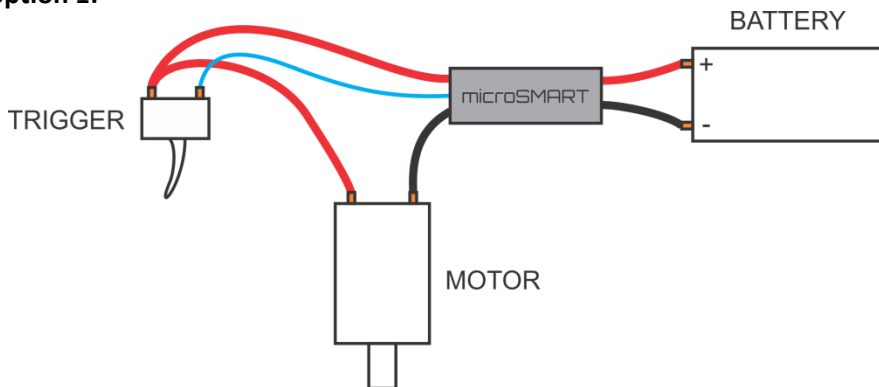
### 3 Installation

Wire connections are marked on the unit:

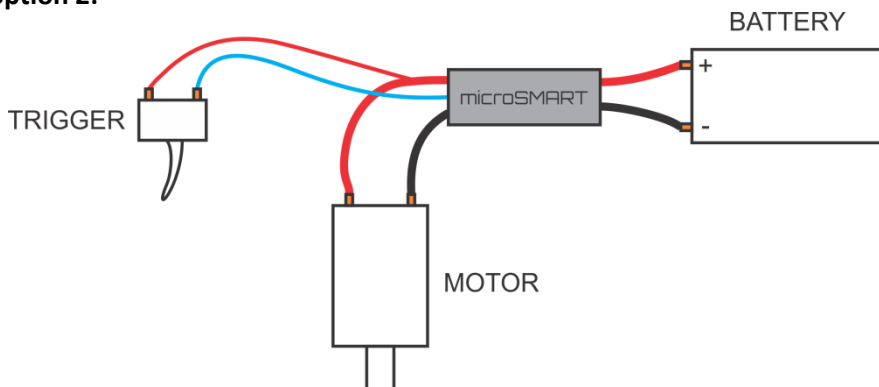


- **MOT-** negative motor terminal (thicker wire)
- **MOT+** positive motor terminal (thicker wire)
- **BAT-** negative battery terminal (thicker wire)
- **BAT+** positive battery terminal (thicker wire)
- **TRIG** trigger wire terminal – on the bottom side of the unit (thinner wire can be used)
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**Installation option 1:**



**Installation option 2:**



**Note:** The left terminal of the trigger can be connected to the positive terminal of the battery or the motor – both battery and motor positive wires are connected inside the unit. Any voltage above 5V on the trigger contact (referenced to battery negative terminal) will turn on the MOSFET.

**Installation steps (option 1):**

- 1)** Desolder the positive wire from one side of the trigger and solder it with the other wire on the trigger. Now we have bypassed the trigger and we have a direct connection from the battery to the motor.
  
- 2)** Solder a thin wire (used for signalling) on the empty trigger contact. Route this wire together with the other two wires outside the gearbox
  
- 3)** Cut the thicker motor-battery wires on the appropriate location, where the unit will be mounted. Add the heat shrink tube on the wires first. Strip and solder all five wires (motor, battery and trigger) on to the correct terminals on the MOSFET unit. Slide the heat shrink tube over the unit, heat it with a heat gun or a lighter, and you're done.