

EMF Absorber

General

Normally a motor drives a load. However, if the load drives the motor, the motor acts like a dynamo. This situation can for instance occur when the motor is decelerating. The voltage generated by the motor is then super imposed on the supply voltage. This causes the supply voltage level to increase which can damage the power supply and/or electronics.

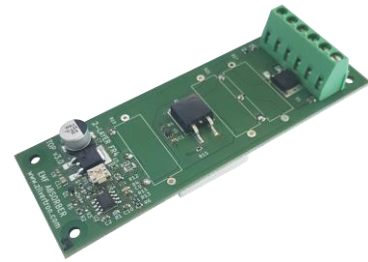
The EMF absorber recognises this situation automatically. In order to reduce the supply voltage, the EMF absorber connects an additional electrical load in parallel to the supply voltage. The LED on the PCB indicates if the electrical load is activated.

By default, the electrical load consists of a 50ohm 21W resistor. However, when required an identical resistor can be added.

The EMF absorber also provides a possibility to supply the controller/electronics via a diode. This feature can be handy if the electronics can't handle varying supply voltages very well.

See below connection diagrams for: if motor current is less 10A and more then 10A. If capacity of one EMF absorber is not enough, it is possible to add more EMF absorber units and connect them parallel. **Options:**

- 1) **20W version (2.5 ohm), our article 6002551**
- 2) **DIN-rail mounting base, our article 6002493**



Temperature guard

Normally the EMF absorber is only active for a short moment of time. Note EMF absorber activity can be observed by the LED on the PCB flickering. In case of excessive over voltages the EMF absorber might become hot. Therefore, an automatic temperature guard switches the electrical load off when the surface temperature of the PC rises above 85 degrees Celsius. After an over temperature event the cool down time may take several minutes. Note the over temperature guard overruling electrical load switching. E.g. during the cool down time the EMF absorber is not operative. It should be noted that an overtemperature event normally should not occur. However, if it does, this might be due to:

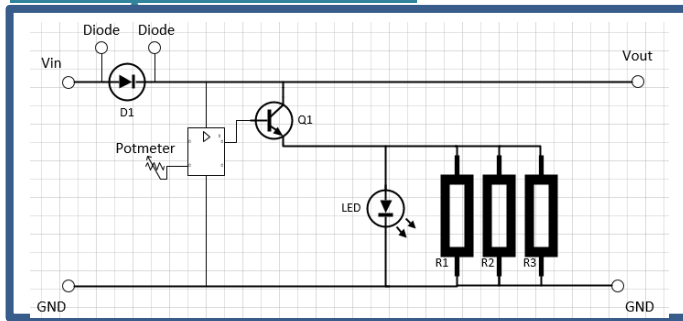
- The EMF absorber being under dimensioned (consider the use of an additional units)
- The electric installation might be defect
- The EMF absorber might defect

Adjustment procedure

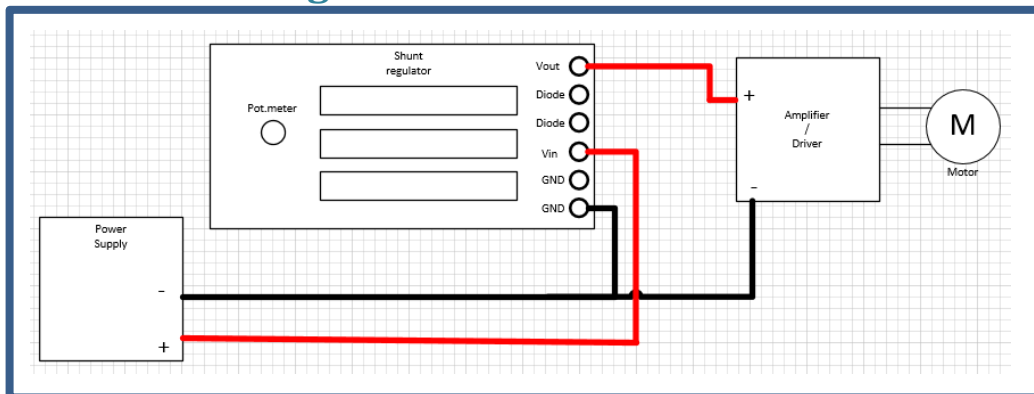
1. Note, in this procedure a 24VDC power supply is assumed
2. Turn the potentiometer on the EMF absorber fully left
3. Check if the power supply is 24VDC, if not correct it
4. Electrically connect the EMF absorber
5. Check if the LED on the EMF absorber is off (**if not, switch off the power supply immediately**)
6. Turn the potentiometer on the EMF absorber to the right until the LED switches on
7. Now turn the potentiometer on the EMF absorber to the left until the LED switches off
8. Ready

Note perform step 6 and 7 quickly after each other.

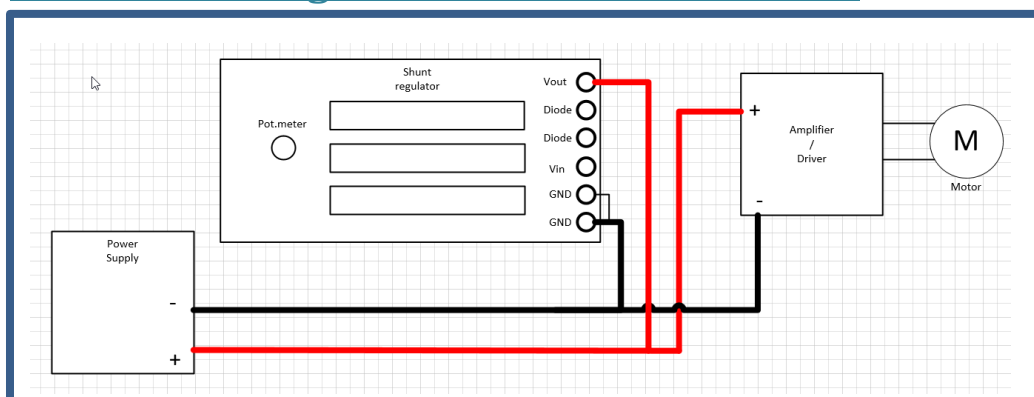
Principal schematics



Connection Diagram if motor current is < 10A



Connection Diagram if motor current > 10A



Technical information

What	Value	Unit	Comment
Supply voltage	12...40	V	
Idle current		mA	
Trigger voltage	18...39	V	Hysteresis approx. 5%
Load current (24V)	4.8/9.6	A	9.6A is optional, requires extra resistor(s)
Load resistance	5.0/2.5	Ohm	2.5Ohm is optional, requires extra resistor(s) The load resistors are of a type that won't explode or loss of particals/material in case of electrical over load
Over temperature protection	85	Degrees Celsius	PCB surface temperature
Max supply current via on board diode	10	A	Continue (15A peak)
Dimintions	120 x 80 x 40	mm	length x width x hight