



## 12V Low Voltage Cutout v2.2

*Simple, economical over-discharge protection for your 12V battery.*

they will not loosen from vibration, tightened to  $\leq 5\text{Nm}$ . (Overtightening can damage the plastic around the terminal bolt head.) The wires connected to the Reset and Batt- spade plugs handles minimal current and can be light gauge wire.

A fuse up to 50A is recommended before or after the device if your vehicle does not already have a master fuse on its 12V system (though most do).

### USE IN COMBUSTION ENGINE VEHICLES

The LVC12 typically has sufficient current rating to run all 12V systems in vehicles *except the starter motor!* In many vehicles it is possible to leave the large starter motor power wire connected to your battery directly, and wire the rest of your vehicle's 12V system through the LVC12. This way all loads on the 12V system can be isolated (including the ignition signal which triggers the starter motor solenoid) without damaging the LVC12 when the starter motor runs.

### PROTECTING YOUR 12V BATTERY

Many EV builders prefer to use a smaller auxiliary battery, often Lithium chemistry, for their 12V systems to save space and weight. Unfortunately these smaller batteries tend to go flat more quickly if the vehicle is left unattended, which can damage them.

The ZEVA LVC12 will automatically isolate your 12V battery if its voltage gets low to protect it from further discharge – but leaving enough charge to allow the vehicle to get going again when you return. It uses little power while monitoring, and by switching its own power supply off upon low voltage detection, has zero current draw once tripped to avoid further discharge, no matter how long the battery is left.

An onboard LED indicates whether the 12V battery is enabled (on) or disabled (off). A momentary switch between the RESET terminal and ground is used to re-enable the battery, and after pressing will give you a 10-second window to start the vehicle or commence recharging.

### TECH NOTE

This device is based on a MOSFET switch interrupting the positive battery wire. The MOSFET can only block discharge current, hence even if the low voltage cutout has tripped, the device will allow charge current to flow.

However since it disables its own power supply after tripping, the device can **not** automatically turn itself back on even if the voltage gets back within safe range. Furthermore the intrinsic reverse diode in MOSFETs are relatively inefficient, so you may notice the device gets hot if you try to charge the battery while the device is off.

As such it is strongly recommended that you ensure the LVC12 is always enabled whenever the battery is being used, either charging or discharging.

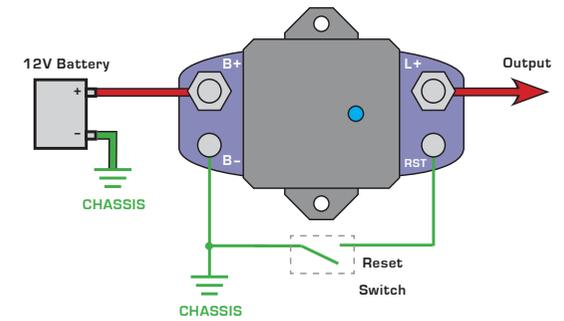
### SPECIFICATIONS

- Voltage Range: 8-20VDC
- Low voltage trip threshold: 11.5VDC
- Trip delay / reset window: 10 seconds

### INSTALLATION AND RECOMMENDED WIRING

The LVC12 should be fastened securely in your vehicle using screws through the two holes in the plastic housing.

A typical wiring diagram for the LVC12 is shown below:



For up to 50A continuous current rating, 8AWG wire or larger is recommended for the power connections, with a 6mm or 1/4" ring terminal attachment. Ensure you use the provided Nyloc nuts with terminal bolts to ensure

- Current rating: 50A continuous, 100A intermittent
- Power consumption: 4mA when active, 0mA when tripped
- On-resistance: 0.001 $\Omega$
- Dimensions: 72x43x18mm
- Weight: 35g

### TECHNICAL SUPPORT

If you have any queries not covered by these instructions, feel free to contact us via our website: [www.zeva.com.au](http://www.zeva.com.au)

Products are covered against manufacturing faults for a period of 12 months from date of purchase. If you believe your product may be faulty, please contact us for RMA information.

*ZEVA is a 100% carbon neutral business. All products proudly designed and manufactured in Australia.*