

# INSTALLATION GUIDE

**This installation guide is very important for correct operation of the BMV-501. Please read this carefully to avoid battery monitor malfunction and/or fire hazards.**

In addition to the BMV-501 battery monitor and the 500A/50mV current shunt (supplied as standard), you will need a two wire twisted pair flexible connection cable minimum AWG24/0.2mm<sup>2</sup>) plus a three wire flexible connection cable (minimum AWG21/0.4mm<sup>2</sup>). Also two isolated inline fuse holders with 1Amp slow blow fuses and some crimp terminals are necessary. All these items are available in the 'BMV-501 connection kit' available on request.

## Installation procedure :

- 1.) First determine the location of the battery monitor. Use the template sticker provide to exactly locate the position of the fixing holes. The hole diameter for the battery monitor body must be 52mm. For the four mounting screws use 3.5mm holes for metric screws or 2mm holes for the self tapping screws. When the holes are made, do not forget to remove the template. Due to the risk of errors in readout of voltage and current, it is not recommended to position the battery monitor further than 30m away from the battery system.
- 2.) Once the location of the battery monitor is determined, the cable length required between battery monitor and battery system can be estimated. When cutting the connection cables always leave excess cable of approximately 50cm on both sides of the cables, just in case. **When routing the cable from monitor to battery system, avoid running it with mains cables over long distances or beside large relays or generators/motors.**
- 3.) **Please read chapter 2.1, "precautions when working with batteries", of the user manual first.** First the connections on the battery system side are made. **Make absolutely sure that the two 1 Amp fuses are removed from the inline fuseholders before connecting the wires to the battery.** Please follow the wiring diagram (figure 1) and the corresponding notes very strictly. Wrong connection may cause battery monitor malfunctioning and/or fire hazards. The thick lines in the wiring diagram represent the main current path cables. These cables must be of a heavy duty type and able to carry full load current drawn from the battery. The five wires going to the battery monitor unit can be connected to shunt and battery using universal crimp terminals.

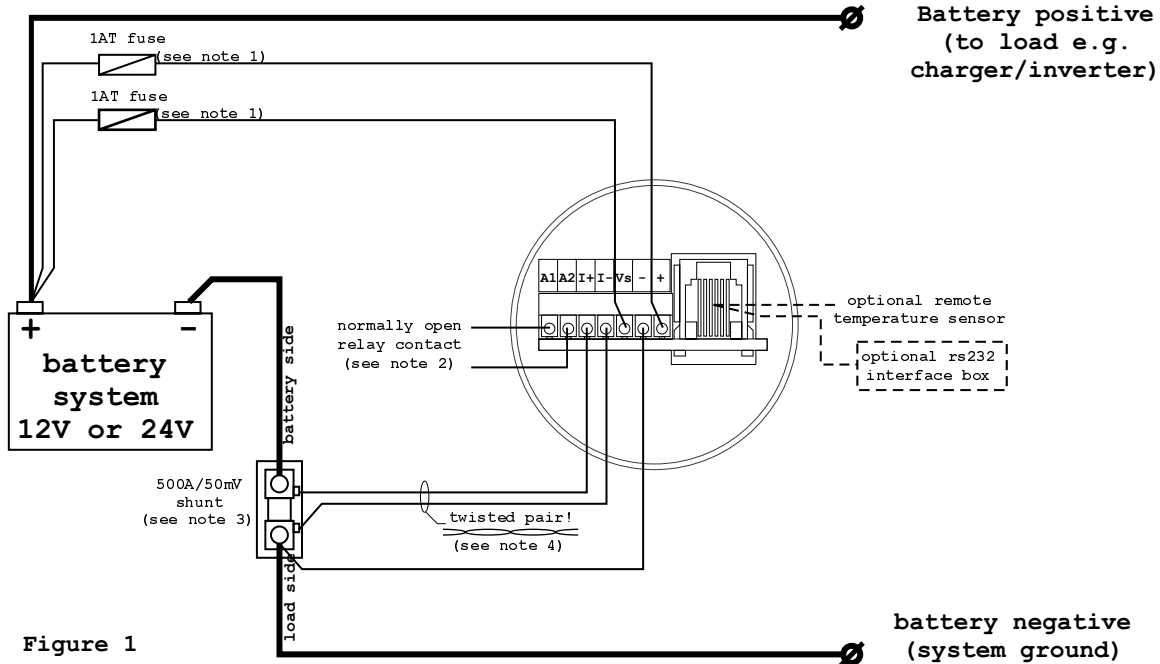


Figure 1

note 1: Fit an inline fuseholder in series with the battery monitor '+' positive supply wire and the battery monitor 'Vs' positive battery sense wire. For maximum safety place these fuseholders as close as possible to the battery system. **When installing the battery monitor make sure both fuses are not yet installed in the fuseholders!**

note 2: Terminals A 1 and A2 are internally connected to the potential free (normally open) contact of the alarm relay. This contact can be used to control external equipment like a battery charger or a generator. The maximum switching voltage is 60V and the maximum switching current is 1 Amp.

note 3: In order to avoid large current measurement errors, the connections to the shunt are very important. The shunt has two sides named 'battery side' and 'load side'. **The large 'battery side' shunt screw may only contain the heavy duty cable going to the negative battery terminal. No other wires are allowed on this terminal.** The battery monitor 'I+' wire is the only wire which may be connected to the small 'battery side' shunt screw. The large 'load side' screw holds the the heavy duty system ground cable, as well as the battery monitor 'I-' negative supply wire. The battery monitor 'I-' wire is the only wire which may be connected to the small 'load side' shunt screw.

note 4: **The two 'I+' and 'I-' current sense wires connected to the small shunt screws, must be twisted together.** This is absolutely necessary to minimise noise and interference pickup, hence avoiding large errors.

- 4.) When all connections are made and double checked on the battery system side, the battery monitor unit can be connected to the other end of the cable. When cutting the cable make sure you always leave some excess cable length to enable the battery monitor to be pulled out of the mounting hole afterwards. The wire connections to the battery monitor terminal block must be made according to figure 2. Use a small 2mm flat-blade terminal screwdriver or a small phillips head screwdriver to tighten the terminal block screws. To avoid damage, do not apply too much torque to the small terminal block screws. It is advisable to provide some form of a strain relief on the battery monitor cable to avoid mechanical stress on the terminal block. When the battery monitor connections are made and double checked, the monitor unit can be mounted into the 52mm hole that was made earlier. Be carefull not to overtighten the four mounting screws to avoid damage to the BMV501 frontpanel. Do not use an electrical screwdriver for this purpose.

## rear view connection terminals :

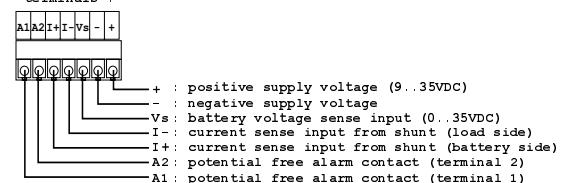


Figure 2

- 5.) It is now time to apply power to your BMV501 monitoring system by inserting the two 1AT fuses into the inline fuse holders. First place the fuse into the 'Vs' battery voltage sense wire, fuseholder. After that the second fuse can be installed in the '+' positive supply voltage wire, fuseholder. Now your BMV501 will power up, activating the backlight and flashing the battery voltage readout on the display. Note that this status will also be reached when the supply voltage of the battery monitor has reached too low a value ( $V+ < 8VDC$ ) causing the monitor to reset.