

An Introduction to Battery Monitors

Battery Monitors are designed to provide information about your battery bank. They allow you to answer questions like “Are my batteries charged?”, “Can we leave the fridge running overnight?” and “When should we start the generator”. They have become an invaluable tool for those dependent on battery power.

Battery monitors are used in numerous applications from offshore sailing vessels to ambulances and standby battery packs to defence vehicles.

Standard voltmeters and ammeters do not provide enough information for the average user (unless they are well versed in batteries and how they act under charge/ discharge). Most users will also need to know State of Charge (SOC) so that battery capacity remaining can be considered rather like fuel in a tank.

Conventional Battery Monitors use a current measuring Shunt to count the number of amp-hours flowing in/ out of battery. By using this information, they are able to display capacity remaining until flat.

It's important to understand the draw-backs of conventional monitors. Perhaps the largest is that they (like any other meter) have a certain degree of error. Battery age, condition, temperature etc can all effect actual battery capacity). This in-accuracy compounds cycle after cycle, causing the SOC displayed to be as far

as 50% off over time.

To overcome this, monitors need to be re-synchronised with the batteries on a regular basis. Certain monitors do this automatically, others manually. Auto re-synchronisation resets the monitor to 100% SOC when specific charge parameters are met (usually under charge for a certain period of time matched to a certain amount of current flowing into a battery at a target voltage). However, if these parameters are not met (often the case if the vehicle isn't regularly plugged into mains for charging), the monitor will not re-synchronise – a regular problem with all conventional monitors.



Care must be taken to ensure that the current measurement shunt is rated appropriately for the system in question. Experience shows that a minimum of 400A is required for most vehicle electrical systems (especially is auxiliary batteries can be used for emergency engine starting.) Overloading of shunts with cranking current can present a fire risk.

Thanks to carefully prepared software algorithms to minimise synchronisation issues (and warnings if re-synch parameters aren't met after several cycles), the PowerGauge monitors are an ideal choice. They are shipped as standard with a 500A

current measurement shunt.

New developments in battery monitoring

The SmartGauge was developed specifically to overcome the drawbacks of conventional battery monitors.

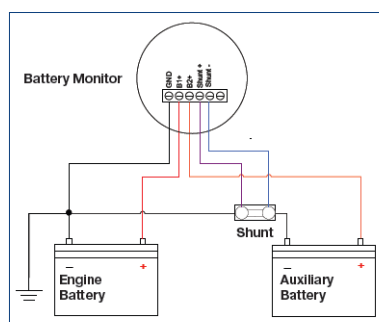
First, unique technology and measuring techniques remove the need for a current measurement shunt altogether (drastically re-reducing installation time and cost). Proprietary monitoring techniques fed into advanced battery modelling software means that SmartGauge never runs out of synchronisation-ever.

Second, users of monitors are often not properly trained. Manual re-synchronisation seldom, if ever, takes place. Also, the plethora of information provided doesn't make sense (compounded by SOC information being incorrect). SmartGauge acts just like a fuel gauge for the battery- no user training is necessary.

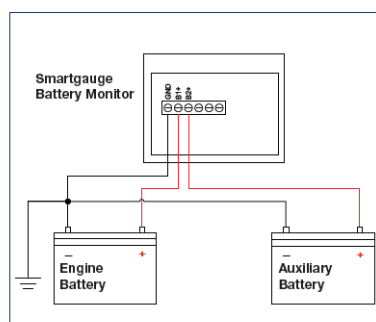
The DataCell product uses the same measuring techniques and algorithm as SmartGauge- it's perfect for larger electrical systems and industrial use. Recent tests by battery scientists (working for a major UK company) found SmartGauge to be the most accurate monitor available today.



Overloaded shunts are a fire risk. Always ensure that shunts can handle all current on board (including emergency starting)



Conventional battery monitor installation.
Includes installing heavy duty cables and a shunt.



Smartgauge is easier to install.