

Voltage Protection

Source: <http://sci.tech-archive.net/Archive/sci.electronics.design/2006-04/msg02548.html>

- *From:* joost.jager@xxxxxxxxxx
 - *Date:* 18 Apr 2006 10:10:14 -0700
-

Hi all,

I'm currently working on a PIC circuit to manage the power system in my sailing boat. Relevant sensory inputs of the PIC are:

- battery voltage measured via a voltage divider (2 resistors)
- current measured via a heavy shunt resistor and a MAX 472 chip

These sensors are directly connected to powerlines. On these powerlines there is a engine alternator and a wind generator. I don't know this for sure, but these generators might generate voltage spikes. Maybe the spikes are absorbed by the battery, maybe not. To be safe, I would like to protect the inputs in some way, but without losing accuracy.

Does someone know whether or not this is necessary and if yes, how to do it?

Related to this is: where to put fuses? There are a quite some sensor lines running to the positive power lines. It does not seem practical to me to put a fuse in every line. Especially for the current sensor the extra resistance of the fuses would disturb the measurement. Would it be an option to fuse the complete system on ground? The risk then is that the hull of the ship is also connected to ground, so an unfused short circuit on the battery is still possible.

Thanks in advance,
Joost.

.