A Boost/Buck DC-DC Converter for use with the KX3 or Other QRP Rig
Al Duncan VE3RRD

I wanted to use my KX3 as a portable transceiver powered from whatever battery power was available to me. For the full output power of 10 to 12W, or to charge the internal batteries, a 13.8V (or slightly greater) supply is needed; so some means of converting voltages that are too low or too high is required.

On eBay, I found several boost/buck converters that would work to supply a continuous 13.8V at 2.5 to 3A. The one I ordered can operate from any input voltage between 5 and 32VDC and can supply the required output at 3A continuous (5A peak).
http://www.ebay.com/itm/DC-DC-Boost-Buck-Converter-5-32V-to-1-25-20V-5A-Power-Supply-Voltage-Regulator-/181516035122

I also ordered a compact DC voltmeter module to monitor the battery voltage so I would not discharge it too far and cause permanent damage.
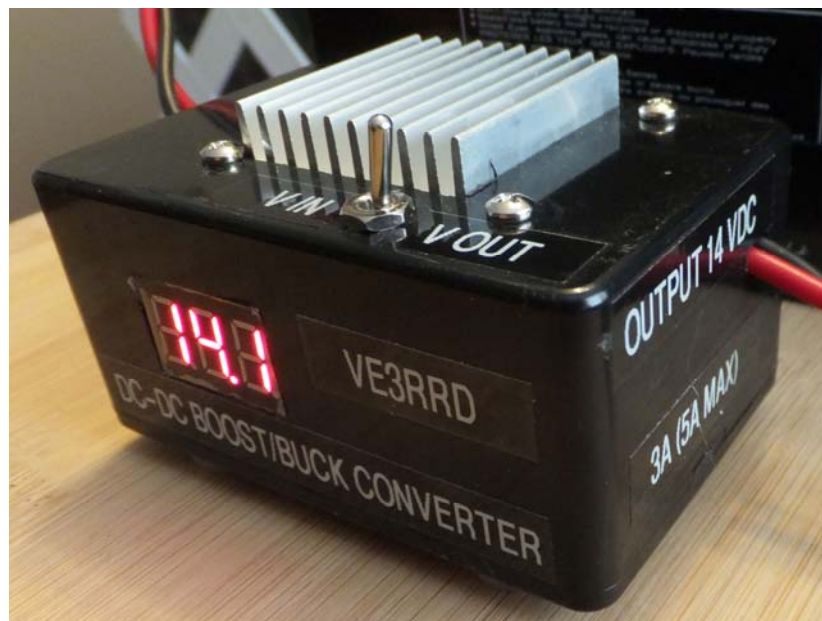http://www.ebay.com/itm/Mini-DC-2-5-30V-Red-LED-Panel-Voltage-Meter-3-Digital-Display-Voltmeter-LS4G-/131051474424
This voltmeter is powered by the voltage it is measuring, and operates over a range of 2.5 to 30VDC.

The finished converter allows me to use 6V, 12V or even 24V batteries to power my KX3

A toggle switch allows the voltmeter to monitor either the input (battery) voltage, or the output voltage. The KX3 has a series diode in the power supply line, so I adjusted the converter output voltage to obtain the desired voltage as displayed on my KX3. An output of 14.1V resulted in a displayed value of 13.9V on my KX3.

I used 18 AWG wire for both the input and output cabling to minimize voltage drop. At maximum output current and lower input voltages, the converter can draw as much as 8A intermittently from the battery.
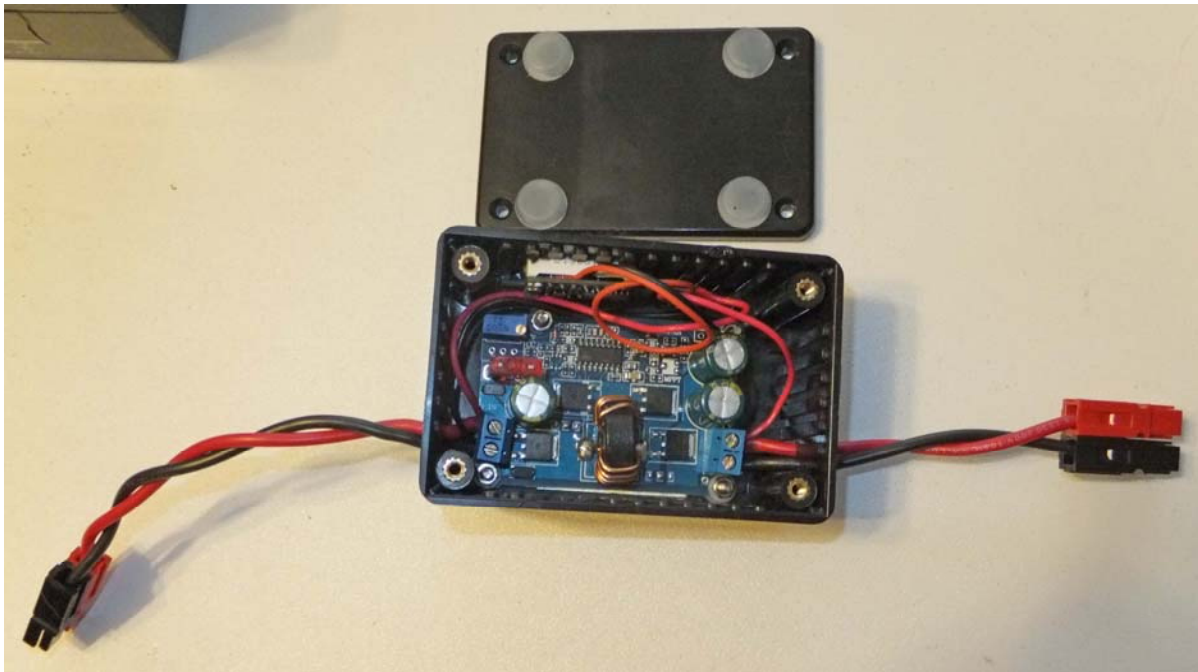
Everything fits inside a Hammond 3.3 x 2.2 x 1.5 inch (1591LSBK) box. There is just enough room between the edge of the PCB and the wall of the box to fit the subminiature SPDT switch and the compact DVM board. The DVM is secured in its opening with a few drops of cement.

I monitor the battery (input) voltage while I am operating; as I mostly use 12V gel cell batteries (two 6V – 7AH in series), if I see the battery voltage drop much below 11.5 VDC during transmit, I will switch to a new set of batteries (or call it a day).