Voltage Reducer for Portable Transceivers
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Most portable transceivers today can put out full transmit power at less than the normal +13.8VDC power supply voltage. As an example, the FT-817 can put out it's full 5-watts at 9.6VDC, and the IC-703 can put out it's full 10-watts at 12VDC and the full 5-watts at 9.6VDC. So what happens with that extra power drawn when you operate from a higher voltage? It is dissipated inside your radio. Since voltage and heat are the enemies of semiconductor devices, why stress your radio any more than you need to?

I normally operate my IC-703 at the full 10-watts output, so I run it from my +13.8VDC MFJ-4103 switching power supply. Since I only need to power the radio with 12-volts, I built a simple diode-drop assembly to put in-line whenever my +13.8V power supply is used. Two 1N5400 3-amp power diodes connected in series between two sets of Anderson PowerPole connectors did the trick. The few necessary parts are shown in the photo "Parts.jpg", and the final assembly is shown in the photo "FinalAssy.jpg" (the diode assembly is covered with heat-shrink tubing). You'll see that I marked one PowerPole connector as "Out" so as to show the correct orientation when connected in-line. Under full current transmit (approximately 2.4 amps maximum), I measured the voltage at the radio at +12.2 volts. During receive, the voltage at the radio measures +12.4 volts. So at normal full transmit power, I am dissipating almost 4-watts less in the radio, and reducing the maximum voltage.

So is this worth doing? I think so, since anything you do to reduce stress on your radio is a good thing – especially since this is so cheap (less than $2) and easy to build. And as a side benefit, it also provides reverse voltage protection.


Parts


Final Assembly