

In Praise of PowerPole Connectors

Paul Wade W1GHZ

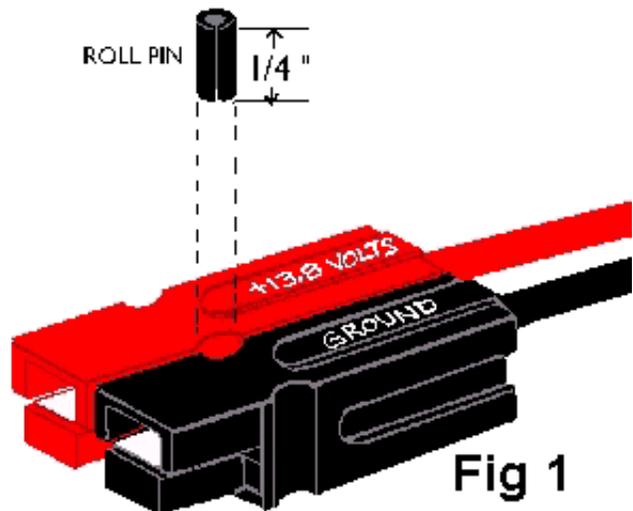
w1ghz@arrl.net

With summer approaching (though rather slowly in New England), many of us will be going out roving or mountaintopping with our radios. From painful experience, 75% of the problems in the field are power problems – just getting 12 volts to the electronics. (Don't ask what the other 75% of the problems are...).

One thing that helps a lot with power is good, reliable, connectors. I started out with CB connectors and little coaxial power connectors like the ones on some Japanese radios, then the 10 GHz gang migrated me to Cinch-Jones connectors. Others used the Molex connectors from Radio Shark. These all had common properties: they are flaky, unreliable, come apart with a pull on the cable, and can be plugged in backwards if you push hard enough. A few brave souls used banana plugs – and inevitably plugged them in backwards. Eventually, we discovered Anderson PowerPole (www.andersonpower.com) connectors – robust, reliable, and almost foolproof, even in dark, wet and cold.

The PowerPole connectors are great on cables, but the other end was still a problem – I don't like pigtailed hanging off my gear. Matt, KB1VC, and I made a couple of chassis mounts with a milling machine, but they took too much work. Distribution was another problem, with tangled octopus cables connecting all the gear. Then the "RIGrunner" from West Mountain Radio (www.westmountainradio.com) came out and solved the distribution problem: a nice box with a dozen PowerPole outlets, with fuses and an undervoltage indicator. Unfortunately, they followed the ARES standard for connections (see Figure 1), which was the opposite of what we had chosen. However, it only takes a minute to reverse the connectors, unless they were glued them together.

The RIGrunner also showed me how to make the chassis mount – solder the PowerPole to a PC board and bolt that to the panel. I had some extra space on PC board design I was sending off to be made at ExpressPCB, so I added a couple of PowerPole mounts. They worked so well, I got carried away and made more boards for small distribution boxes. Figure 2 is a photo with several sizes, suitable for a rover or mobile setup. Assembly is simple: take some #10 bare copper wire (from household wiring), solder it to the PowerPole contacts, assemble the connector, push the other end of the wires through the board so the plastic housing sits flush, and solder to the board. Use a real soldering iron, not one of those tiny point ones we use for chip capacitors. Figure 3 shows the back side of the board, with the wires soldered in place. Notice the idiot diode and bypass capacitor at one end – cheap precautions.



The soldering isn't much work, but the metalwork is tedious – I don't have a square drill, so the rectangular holes take a lot of filing. Now that West Mountain Radio is offering 5 and 8 outlet RIGrunners, I'd

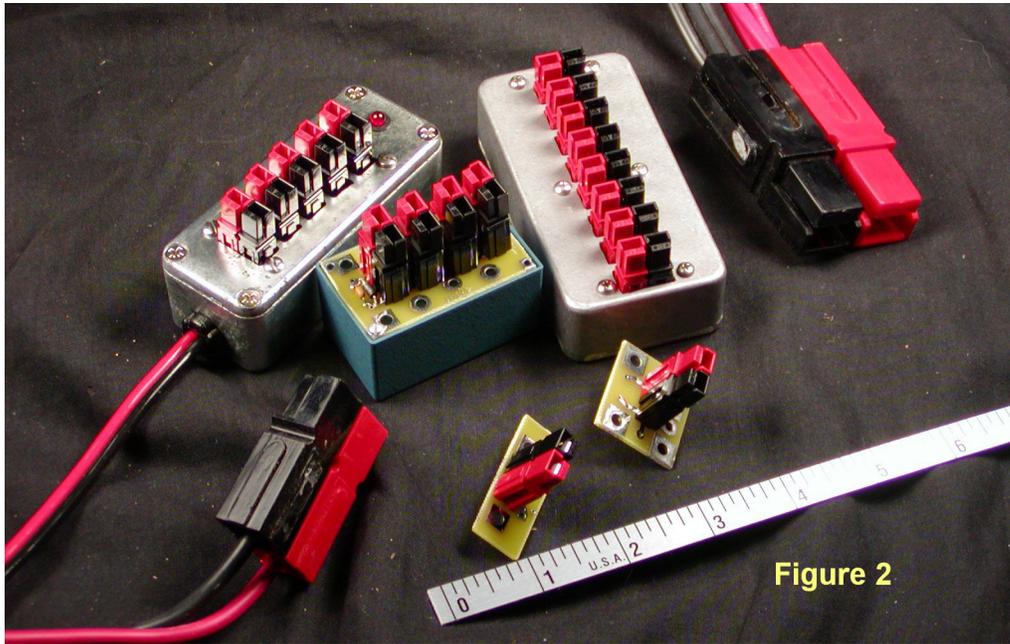


Figure 2

recommend them unless you really need tiny like the one in the Pomona box in Figure 2. If you prefer homebrew, the PCB files are on my webpage at www.w1ghz.org/powerpole – download the software from www.expresspcb.com and you can modify them any way you like. Cut and paste the patterns together to fill up the board outline, then send the file off to ExpressPCB and you'll get 3 boards back in 4 days, for \$62.

There are bigger PowerPole connectors available as well, if you need more power, although the 30-amp rating of the standard ones should be adequate for most ham use. The big one in the lower left of Figure 2 is rated at 75 amps, and the really big one in the upper right is rated at 125 amps. I use the big ones with heavy cables on my rover batteries – they are much easier to swap with gloves on in the dark and wet (everything works better in warm sunshine, I hear). A good source for the larger ones is www.powerwerx.com.

So, if you aren't already using PowerPoles, I recommend them. You'll not only be compatible, you'll be on the air at full power.

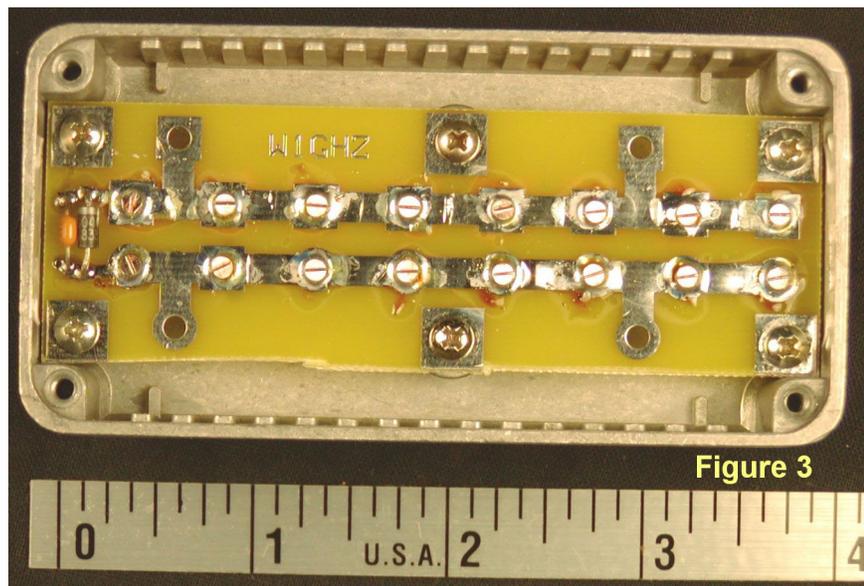


Figure 3