Modifications to the “new” MFJ-4125 Switching Power Supply
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The “new” MFJ-4125 switching power supply has dimensions of only 5.5”x2.5”x5.75”. It is possibly the smallest and lightest (under 3-pounds) 22-amp switcher out there for its current capacity. The specifications are summarized below:

- Current capacity: 25 Amps maximum, 22 Amps continuous at 13.8 VDC
- Weight: 2.98 lbs including AC cord.
- Dimensions: 5 ½" W x 2 ½" H x 5 ¾" D
- High current output (25-amps): Five-Way binding post
- Low current output (5-amps): Speaker-type Quick-Connectors
- Protection: Over Voltage and Over Current
- Quiet Internal Cooling Fan
- Switchable AC Input Voltage
    - 85-135 VAC at 47-62 Hz
    - 170-260 VAC at 47-63 Hz
- AC Line Fused (5 Amps)

My unit had an output voltage of 13.73 volts at no-load. Under the 18-amp load provided by my IC-706MKIIG at 100 watts output, the MFJ-4125 output voltage dropped just 0.10 volts. I also found the MFJ-4125 to be extremely quiet, RF-wise. I can hear no noise floor increase on my IC-706MKIIG receiver when comparing the MFJ-4125 to a battery power supply, even with the antenna disconnected and a short wire connected to the IC-706MKIIG antenna terminal and draped across the power supply. This has to do with the outstanding shielding and filtering provided inside the power supply. Besides the heavy internal L/C filtering on both the AC input and DC output, MFJ also puts additional capacitive filtering – both low frequency and high frequency – directly across both the front and back DC power terminals (see photos “DC Filter” and “AC Filter”). MFJ even scraped off the paint around the eight cover mounting screw holes on both the chassis and the cover to ensure a good RF ground between them. All this care sure pays off.

My only complaint with this power supply is that I prefer to take power from back-side connectors. This looks neater, and is especially desirable for fixed station use. Also, I really wanted a power supply with Anderson Powerpole connectors on it.

I opened up the MFJ-4125 and found that the same high current DC output goes to both the front and rear connectors. The spring-loaded speaker-type connector on the rear has a maximum current capacity of 5-amps (see photo “Original Back”). Since the rear connector had a large cut-out associated with it, there is enough space to mount two pairs of Powerpole connectors in this area. Just remove the back connector by unsoldering the power and ground leads, and also unsolder the bypass capacitors mounted on this connector. Remove the two mounting screws and the assembly easily comes out.

My starting place for the backside Powerpole connectors was a PowerWerx 2/4 Powerpole mounting clamp set. So my plan was to mount one-half of the Powerpole

mounting clamp set pair along the bottom of the large cut-out, and the second half of the clamp set along the top of the cut-out. Each of the clamp set pieces could mount with screws in the top and bottom holes originally used for mounting the low-current connector. Then, I would need to make a center-piece to mount between the two Powerpole connectors.

The dimensions of the center-piece are shown in Figure 1. The 0.062" thick sheet aluminum was purchased from my local ACE Hardware Store, and is the same thickness as the Powerpole mounting clamps. The only tools I used to make this center-piece were a hacksaw and an inexpensive Radio Shack RS64-823 nibbler. The width of this nibbler is exactly ¼", so it is perfect for making the cutout. The depth of the cutouts needs to be exactly three "bites" of the nibbler. The "pin" between the two cutouts on each side is 0.062", which is the same as the thickness of the aluminum sheet. So, first cut-out the 1.1"x1.3" plate with a hacksaw. Place the nibbler exactly 0.35 inches from one side and take three "bites. Then move the nibbler approximately equal to the thickness of the aluminum and take three more bites. Repeat for the opposite side of the 1.1" x 1.3" aluminum plate. Next, drill the #4 clearance side mounting holes (1/8" diameter) as shown in Figure 1. Photo "All Parts" shows the individual parts, and photo "Parts Mounted" shows the unpainted parts mounted in place to verify the fit. I then un-mounted the parts and held them over the hole to mark positions for the new side mounting holes (1/8" diameter) required in the MFJ-4125 case. Next, I spray painted the aluminum pieces flat black to match the case.

While the paint was drying, I made up two 3-inch lengths of braid (from scrap RG-58) terminated in 30-amp Powerpole terminals (#12 insulated wire is also fine). The Powerpole terminal associated with the bottom black (negative/ground) connector also has a 7-inch braid attached to it. This longer braid will eventually be connected to the front panel ground. Put insulation or heat-shrink tubing over the braid, and then insert the pins into the appropriate power pole connectors. See Figure 2 for details. Once the paint has dried, it is time to mount everything

Before mounting the bottom clamp, scrape off the paint on the lower half of the clamp so that it will make electrical contact with the chassis when it is bolted in place. Now, place the bottom clamp in place inside the chassis, and pass a #4 screw through the chassis, the mounting clamp, the original ground lug, a #4 lock-washer, and a #4 nut. Leave the screw a little loose. Next, place the bottom power pole connector pair in the bottom clamp. Place the home-made aluminum center piece on this power pole pair, place the top power pole connector pair on the center piece, and finally put the top clamp in place. This entire assembly can be rocked back for assembly, and then pushed forward into place. Put all the screws in place and tighten them. Inside the chassis, solder the ground lug to the braid on the lower black power pole connector. Solder the internal red DC wire to the braid attached to the two red power pole connectors, and re-solder the bypass capacitor assembly to the braid on the red and black power pole connectors. Finally, solder the long ground braid to the front panel ground connector (I just didn't trust the physical chassis interface on the back connector). Photo "Power Pole Inside" shows everything wired in place.

Finally, we need to make the back look professional. I printed out a "2" on Casio "white-on-clear" tape and attached this "2" just in front of the "5 amps max" silkscreen. Then I printed out a "+" sign, again on Casio "white-on-clear" tape, and placed this over the original silkscreened "-" sign. Photo "Final Back" shows the final result.

In conclusion, the new MFJ-4125 is a great switching power supply. It is small, light, and extremely quiet. And with a little bit of effort, you can add rear full-current Powerpole connectors. This enhances the flexibility of this power supply, making it neat-looking for either fixed station or portable use.

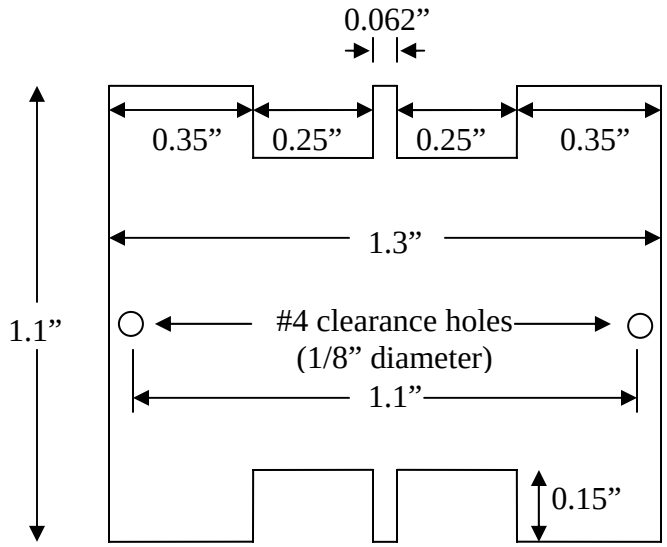


Figure 1 – Center Piece Dimensions

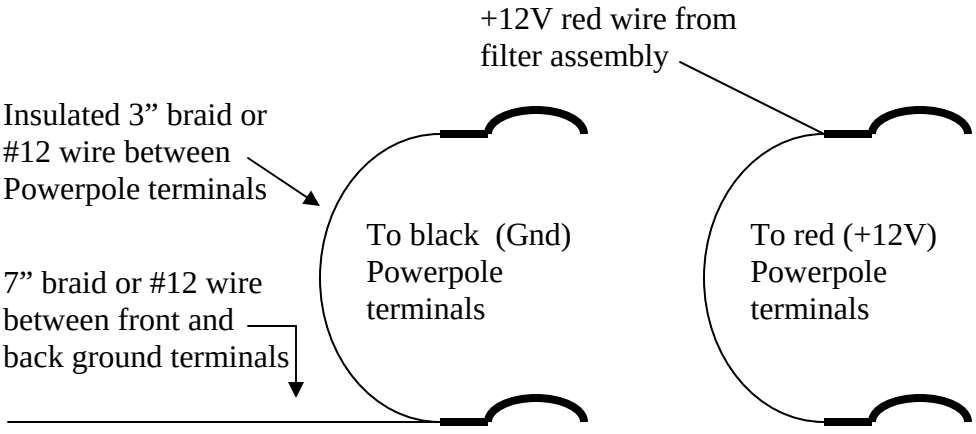
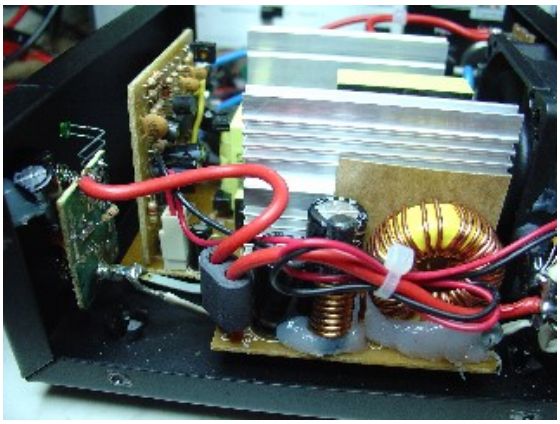
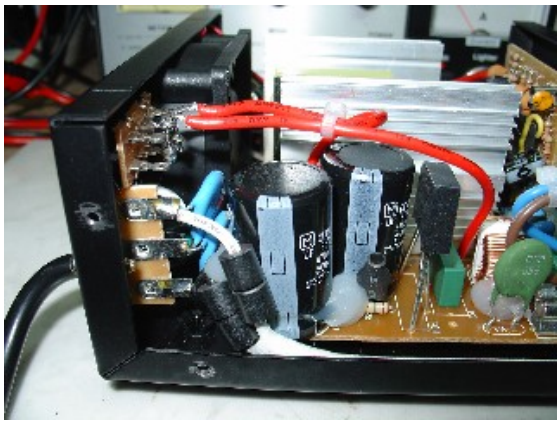


Figure 2 – Powerpole pin wiring

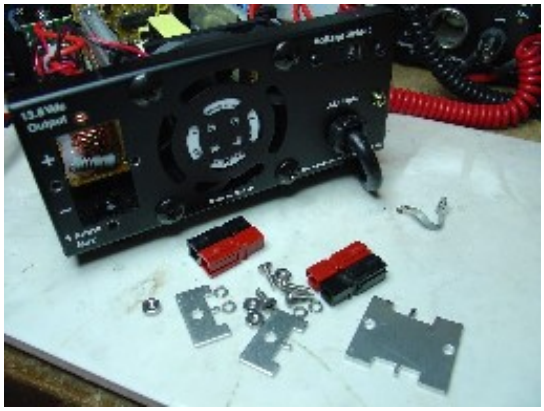


DC Filter



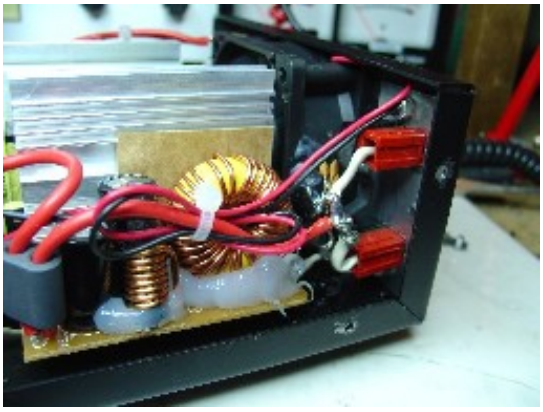
AC Filter

Original Back



All Parts

Parts Mounted



PowerPole Inside

Final Back