

Mini DC Power Distribution Box

Northwest Harris County ARES

Waller County ARES

General Meeting Project

This construction note should help avoid some of the pit falls one can encounter while assembling the distribution box. These notes were gathered from several people who helped package the kit and walk through the first assembly. Thanks go to a long list of those who participated in the preparation of this project for our ARES group

Parts List:

Item #	Quantity	Description
1	1	Plastic Box 400-1551
2	1	PCB
3	1	Drilled Panel
4	6	Power Poles housing (6) and spade tips (12) (small parts bag)
5	2	Spade Terminals
6	1	30A Auto Fuse
7	1	Red LED
8	1	LED Bessel
9	1	1 K Ohm Resister
10	1	12" length Red and Black Zip cord
11	1	#12 wire (to be cut into 10 X 3/4" pieces)



(1) Do a parts count by emptying the kit on a clean surface that you can see the parts



(2) Open the plastic box and remove the 4 screws. Put these screws in the small part bag until the project is ready to complete

(3) Drill two holes (1/8 " drill) on the end of the plastic box, centered and ~1/4 " from the top of the box.

These holes should be as close side by side as possible so the two holes are coincident on one edge. This will allow the zip cord to pass snugly into the box. Place the box aside for a while for the next steps.



(4) Being careful to locate the top side of the metal panel insert the LED bessel into the round hole on the panel.

(5) From the under side of the panel insert the top of the LED into the bessel and press until you hear a clicking noise. The bessel has a slot for the edge of the LED to fit that holds the bessel snug in the hole. If you want you can place a bit of glue on the edge of the bessel



(6) Locate the negative (short) lead of the LED for soldering the 1K or 1.3K Ohm resistor. Using a twist of the positive led and one led of the resistor do a twist such that the leads stay together while you solder them. The over all remaining length should be long enough to go to the other side of the PC board during final assembly. Put the panel aside for the moment.

a) LED instructions for the two color LED: Locate the flat side on the edge of the LED to identify and confirm the short leg which if connected to the positive board trace will show **Green** when the Power Pole Panel is connected correctly to the power supply and will show **red** (hopefully never) when connected with incorrect power polarity



(7) You must strip the #12 solid copper wire. After doing that cut 10 pieces of the bare copper wire to 3/4" strips. These will be the wire pieces that fit into the power poles and solder to the PC board



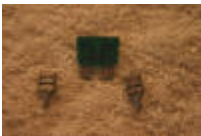
(8) Using a vice or some other proper holding device place the wire vertically in the holding device. Place a power pole spade on the piece of wire and solder being careful to not get solder on the spade but allowing the solder to be consumed into the fitting and wire. You should be able to look into the wire end of the power pole spade and see the solder almost if not flat with the wire end of the spade. Do 10 spades (the other two spades are for one end of the zip cord



(9) Now it's time to put the power poles on the panel. Using ~3" of #12 bare wire place the connector side of the assembled power pole through one of the end slots on the panel being careful to get a full seat in the slot. This may be a bit tricky due to the close tolerances of the holes to the power poles. Slip the bare wire through the center hole of the power pole to hold it on the panel while you install the next power pole. Do this for all 5 power poles.



(10) With all 5 power poles snugly mounted on the panel now locate the PC board copper side and begin fitting the wire side into the drilled holes on the board. Make sure the copper side of the PC board is showing on the underneath of the assembly so you can solder. You may have to make several attempts while using pliers to move the wires into position over the drilled holes. Once all 5 power poles have the wire ends showing through the underside (copper) side of the PC board it is recommended that a "C" clamp or some means for holding the assembly together while solder is applied to the wires on the solder side of the board. Be sure the power poles are bottomed out on the PC board or there may not be enough clearance to have a flush panel in the plastic box.



(11) Locate the 30A automotive flat fuse and two spade terminals. Clean the spade terminal ends with sandpaper and tin with solder. Put the spade terminals on the terminals of the fuse and adjust so they do not touch and are parallel. Make sure they are flush with the bottom of the fuse as this is going to be the depth gauge when soldering on the PC board.



(12) Insert the fuse assembly through the hole on the panel and make sure the assembly bottoms out on the PC board. A "C" clamp or other holding device helps to make sure this position is held while soldering. Check for clearance between the top of the terminals and the bottom of the metal panel.



(13) You are close to being finished. Wrap the long LED lead over the edge of the PC board to the positive rail and solder. (The positive rail will be the circuit land that extends across the whole board on one side of the circuit trace.)



(14) Feed the resistor through the power poles near the center of the panel to the other side of the PC board and wrap on the negative rail (The negative rail is the land that is cut to provide a circuit land for the fuse.)



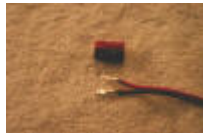
(15) Pull one end of the zip cord through the holes that were drilled on one end of the plastic box. I like to have the red lead of the zip cord match the side where the red power poles are so if the box is held with the hole to the left the red lead of the zip cord will be on top.

(16) Solder the back zip cord lead to the negative rail on the PC board feeding the cord from the top of the board through the hole to the PC board copper material.

(17) Solder the red zip cord lead to the fuse land feeding the red lead just like the black lead



(18) This should be a snug fit but pull the zip cord while positioning the panel on top of the plastic box. Using the 4 screws the top can be tightened into place.



(19) Solder the remaining power pole spades on the wire and assemble to complete the project.



(20) Quality check by using an Ohm meter to check for shorts or opens.



(21) Mini DC power distribution box plugged in and running. 73'S

Reference URLs for using power poles with several ideas that engendered this project.

<http://www.qsl.net/wd4bis/connect.htm> – Where the idea came from.

<http://www.147300.com/projects/powerpoledistributionproject.htm> Another construction idea that was pursued but dropped for better construction techniques. Concern was stability of the copper strips to hold the power poles should they be pulled or forced while a power cable was plugged into one. The bottom could come loose or short out without knowing.

Instruction provided by Ken Mitchell KD2KW

Photo provided by Ken Miller W5KAM