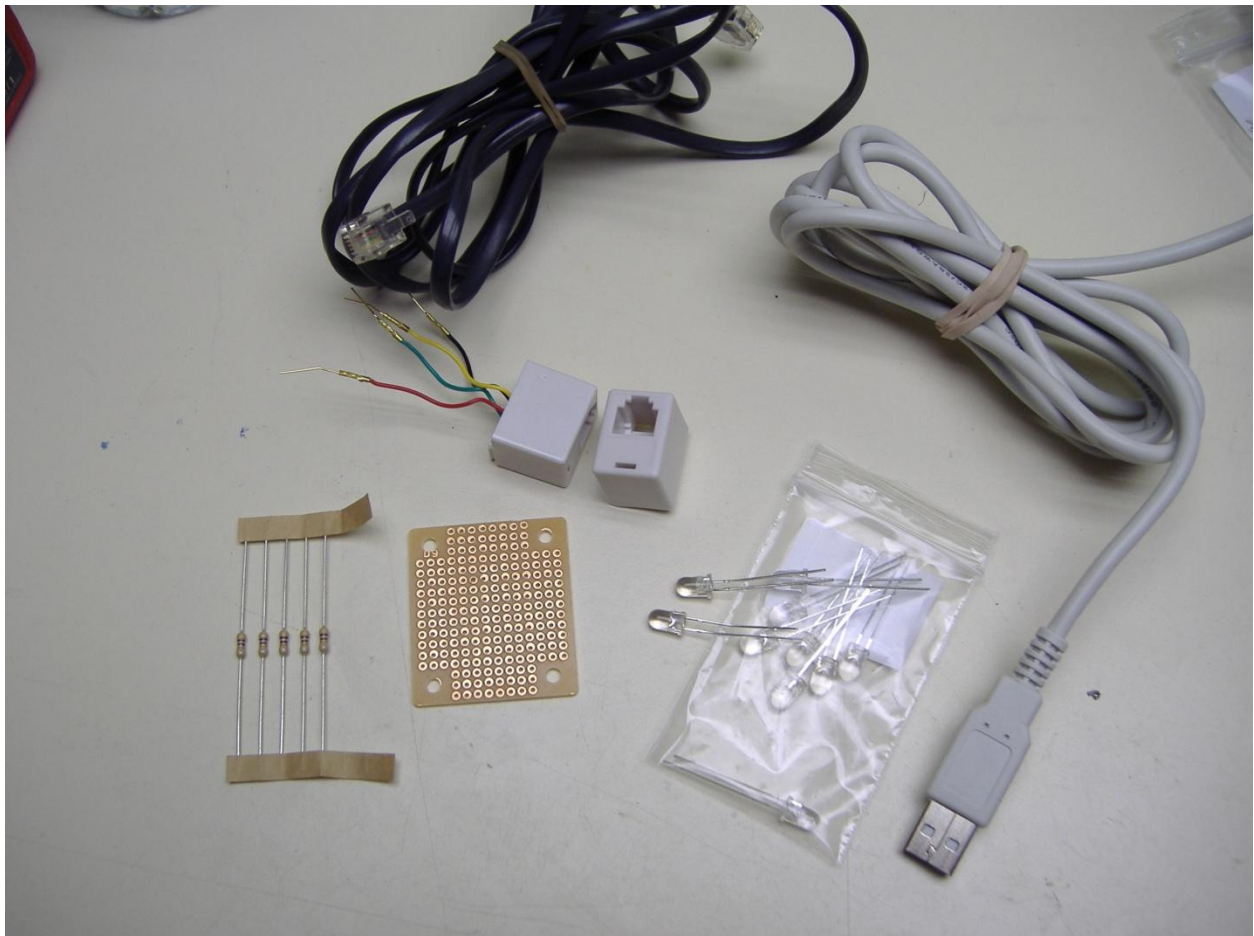

HOW TO MAKE A USB TO RJ11 POWER SOURCE AND 3-POINT LED CLIP

By CrashDome

WHAT YOU WILL NEED:

- Standard USB Cable
- RJ-11 Telephone Wire/Cord
- RJ-11 Inline Coupler (or a standard wall mount is possible but more difficult to seal)
- Suitable LEDs (IR LEDs preferred - [Cheap LEDs from MPJA Online - US Only](#))
- Resistors to match LEDs (Use 1/4A 470hm with above recommended LEDs)
- Small Electrical Hobby Board ([Proto Board from MPJA Online - US Only](#))
- Solid 18AWG Wire (or substitute a wire hanger wrapped in elect tape – not recommended)
- Hot Glue/Gun
- Soldering Iron/Solder/Solder Flux
- Electrical Tape

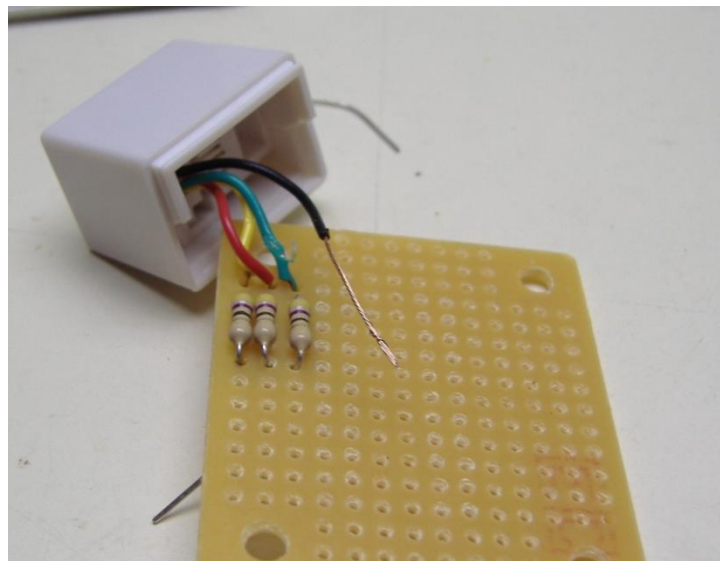


CREATING THE POWER SOURCE

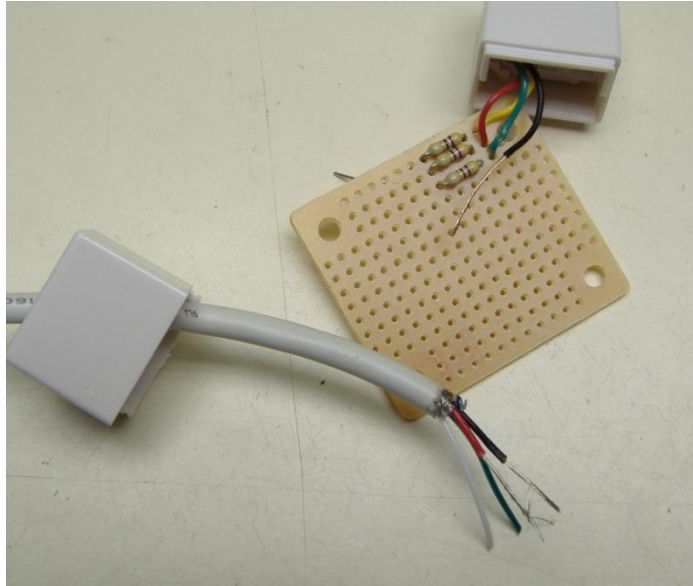
After my first attempt at creating a headset clip, I quickly burned out an LED because of a bad wire. I decided that I wanted an easy way to swap out new clips/LEDs if needed and still reuse the same USB cable. The best method that I found was to use an RJ-11 jack (three wires for positive and one ground wire). Phone wire can come in different grades of durability from very light and flexible to very heavy and durable. This makes it easy to create a headset to your liking. The fact the resistors are stored in the cable means you are stuck with one type of LED, but they are cheap enough online you should buy them in bulk anyways.

Step 1) Disassemble the inline coupler. They usually snap in half. Then remove the components from one side including the wire. (See the picture with all the parts above)

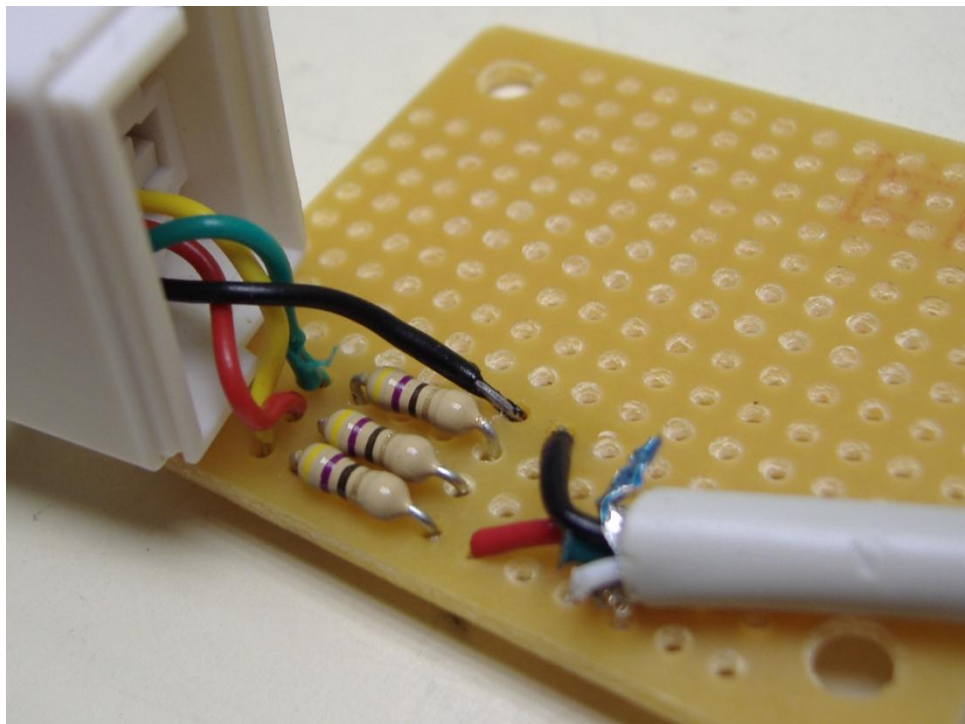
Step 2) Solder the wires to the electrical board together with the resistors



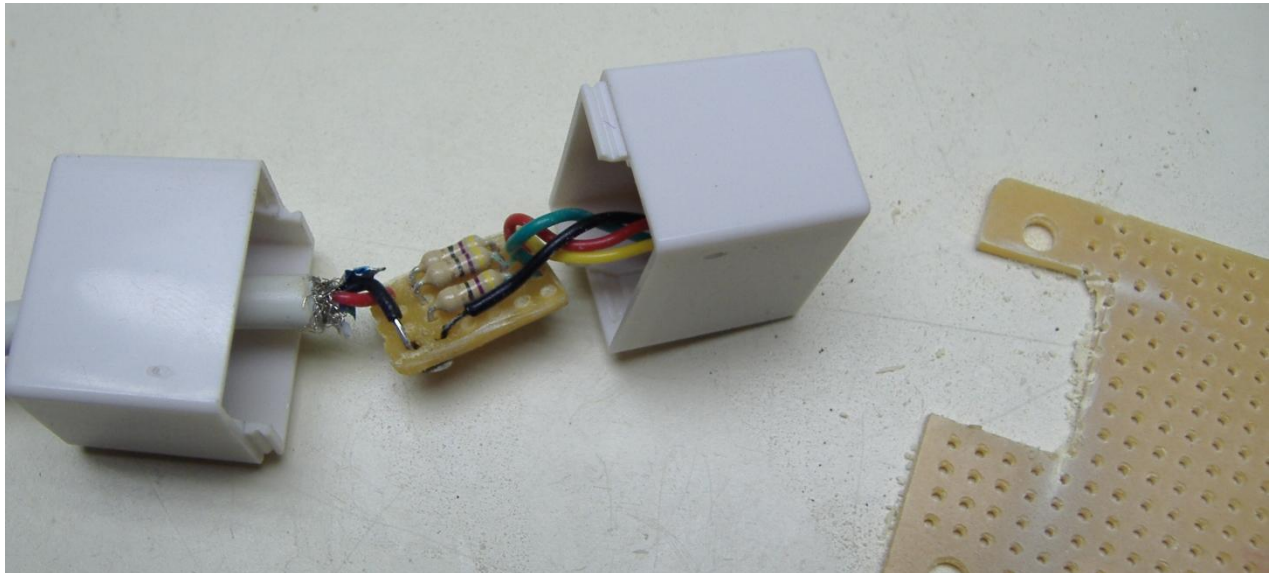
Step 3) Cut the end off a USB cable and strip out the +5 volt wire and the ground wire leaving the data wires alone. Slide the cut end through the empty half of the coupler (You may need to cut some parts out).



Step 4) Solder the +5v wire to the three resistors and the ground to the ground wire on the coupler.

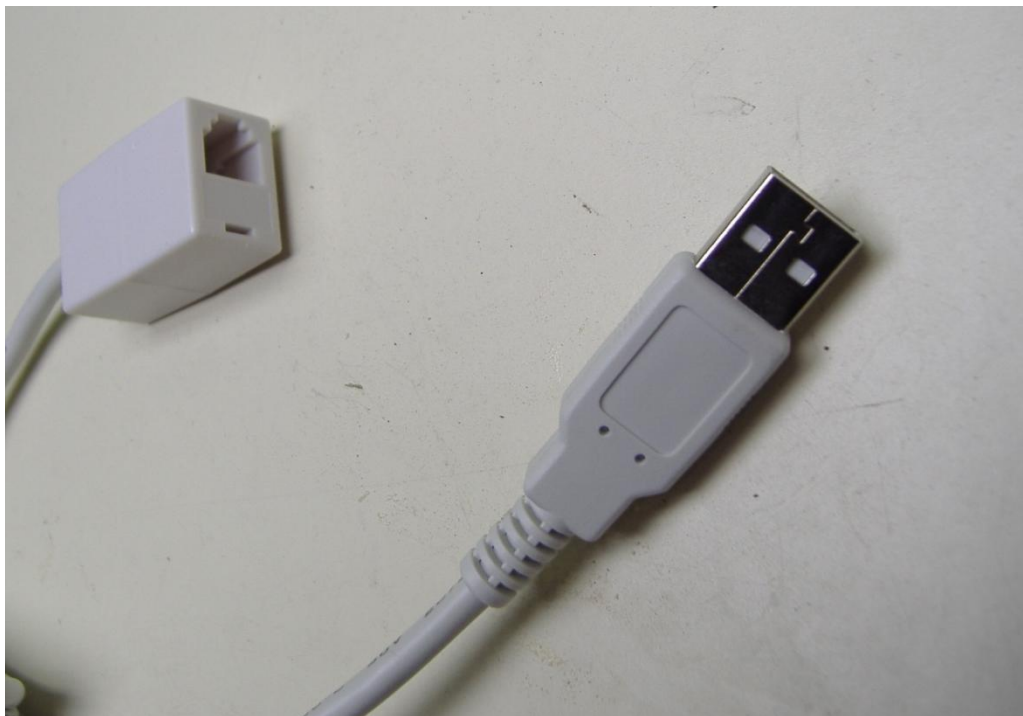


Step 5) Using a Dremel Tool, Small saw, or Knife cut the electrical board so that it fits within the coupler itself. You may actually want to make sure this is possible with a test piece before any soldering is done.



Step 6) Reassemble the coupler. The end with the USB cable might be loose and exposed a little. I used Hot Glue to fill in the coupler and make it a nice solid piece.

Finished Cable:



CREATING THE 3-POINT CLIP

I used 18-gauge solid copper wire as a test for my first attempt and found it to be quite rigid yet flexible enough to bend and attach to anything I wanted. The wire solders easily if you have flux. This makes it easy to build any shape you want.

Step 1) Cut the pieces you need. I made one L-shaped piece for the ends and used one longer straight piece for the body of it. Make sure the L-shape has legs that are longer than intended. You will trim it down later.



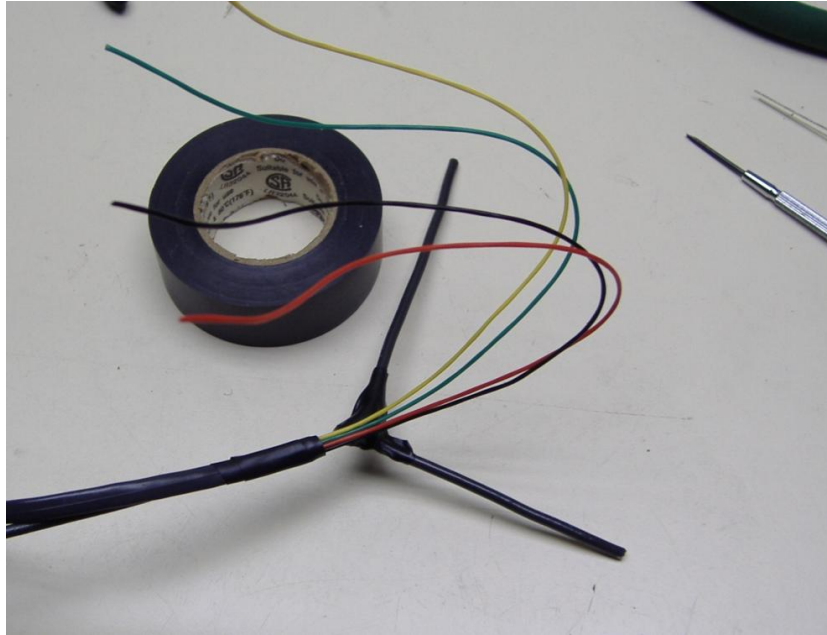
Step 2) Expose the middle of the L-Shape by taking a Long-nosed Pliers and twisting around and around until the plastic is gone. Then strip one end of the long piece and wrap around the center. Use plenty of flux and solder them on a nice flat surface. (Note the wire is a solid copper wire and not twisted wires – very important for stability)



Step 3) Once you are confident the joint is tough, wrap in electrical tape to prevent any wires from the LEDs to touch it.

Step 4) Cut one end of the Phone line. MAKE SURE YOU LEAVE THE END WITH THE CORRECT GROUND WIRE ATTACHED!! When you plug into the USB cable, the black wire should match the black wire. I made this mistake and cut the wrong end on my first attempt. I ended up having to buy another phone wire.

Step 5) Temporarily hold it in place with some electrical tape.

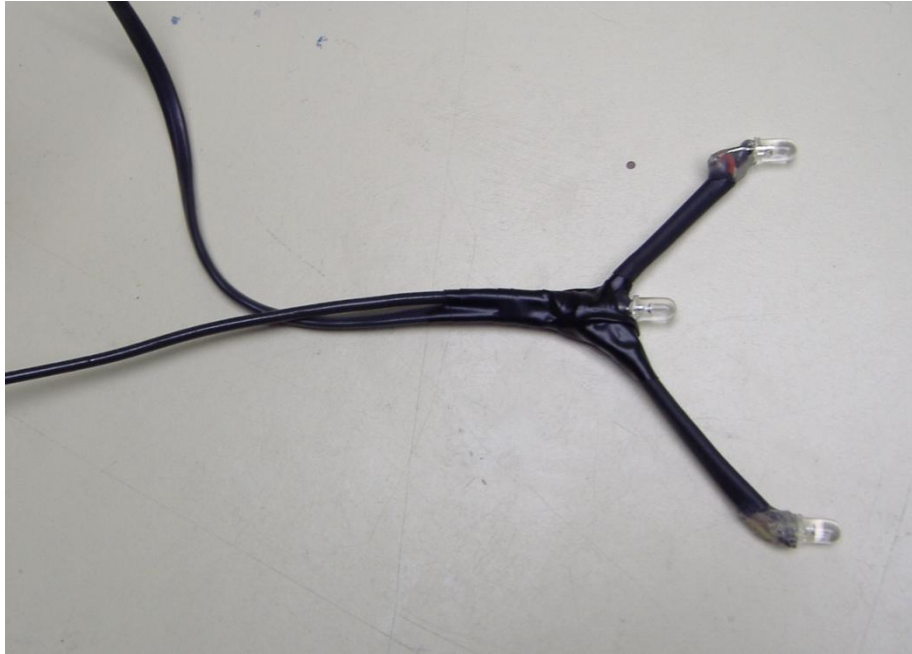


Step 6) Solder the LEDs to the wires and hold them in place with some hot glue on the back ends of them. I used shrink tube to hold the wires onto the frame. The center might require electrical tape.

The best way to approach this is to roughly position the LED on each 'leg' by pushing the pins outwards and sliding the 18-gauge wire 'leg' between them. When you measure the correct distance, Cut and Solder the phone wires at the appropriate length to the LED pins. Then trim off any excess 18-gauge wire and any excess from the LED pins. Hot-glue the LED enough to cover the wires and connections.



Finished Clip:



END NOTES:

I use the long end and wrapped it around my headset's frame to keep it in place. It is surprisingly sturdy. You can opt to solder a clip on the end instead.

Plug the RJ11 jack into your USB cable and test it before using.

I also use a Dremel Tool with Cutting Wheel to flatten the LEDs. Simply cut the 'Dome' shaped area off.

Here is a project you may want to try as a way to mass produce the 3-point clips for friends:

Instead of using 18-gauge wire as a frame, make an initial plaster mold of the finished 3-point set above (Wrap thickly in electrical tape first. Then solder 3 LEDs to loose phone cord and fit the LEDs into plaster mold along with the loose wire. Fill the mold with resin and when set, you should have a complete and correctly positioned harness.