

Wiring Your CDV-700 GM Survey Meter for Sound

The CDV-700 survey meter provided to Science Teacher Workshop attendees is simple, reliable, and easy to use. However, demonstrating radiation detection in front of a class is hard without a speaker hooked up to the detector output. These instructions should allow anyone to set up the CDV-700 so you can plug your PC's speakers into the meter to provide loud, clear clicks proportional to the radiation detected, making classroom demonstrations much easier. In fact, since the speaker output is directly proportional to the detector response, you could use this interface to feed the signal to your PC for more advanced data manipulation.



The CDV-700 survey meter

The Parts: While there are many ways to correctly do this job, this way uses a razor blade knife [not shown], a pair of needle nosed pliers, and the following purchased from Radio Shack:

• Three-Conductor 1/4" Stereo Phone Jack

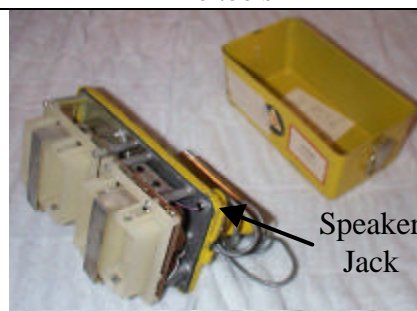
• Headphone Adapter (Adapts 1/8" stereo male plug to fit 1/4" stereo phone jacks)

The 1/4" stereo jacks fit the meter case perfectly with no machining [1/8" jacks don't], while the adapter accepts your PC's 1/8" stereo jack.

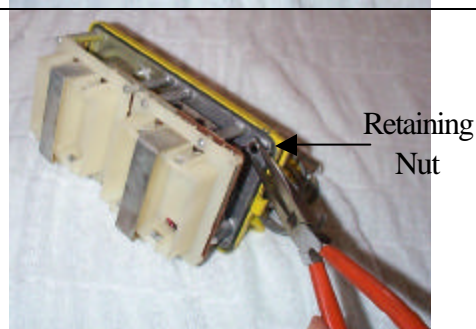


The tools

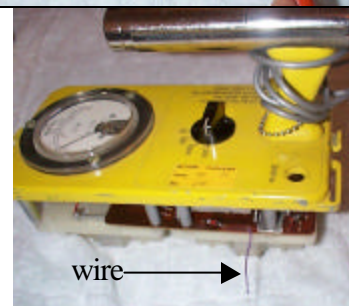
Step 1: Open the meter case by releasing the latches at both ends. Remove the upper part and lay it as shown in the picture. Remove any batteries. At the end where the handle is attached, there are two cables, one in each corner. One cable goes through the cover and to the detector; you don't want that one. The other cable - shown here - goes to the speaker jack. Unfortunately this speaker jack is an odd size - we'll replace it with the standard 1/8" jack that your PC speakers use.

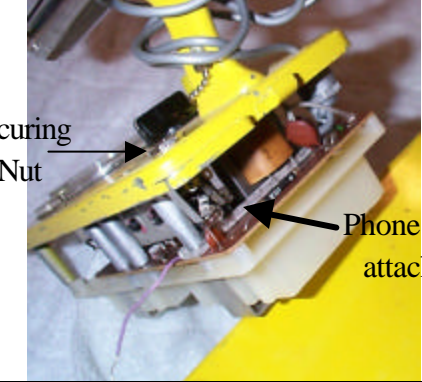
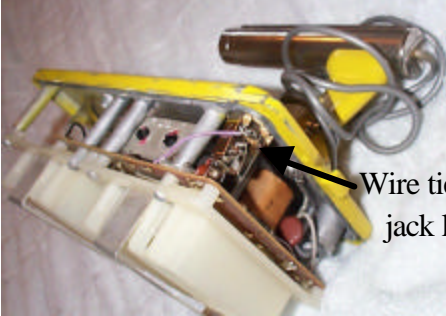



Step 2: Carefully cut the wire to the old jack, as close to the old jack as possible (i.e. leave yourself as much wire to work with as you can). Then remove the retaining nut from the jack assembly.



Step 3: Remove the old speaker jack. You should be left with a hole in the upper case and the speaker wire. Bring the speaker wire out to where you can see it and use a wire stripper, razor blade knife, or similar implement to strip about 1/4 inch of insulation from the end of the wire.



<p><u>Step 4:</u> Remove the retaining nut and washer that comes with the 1/4" stereo phone jack. Guide the jack gently through the hole in the upper case, taking care not to disturb the electronics down there. If possible, rotate the jack so that you can get to the connecting lugs easier (see Step 5). Put the washer and retaining nut on the jack on the outside of the case and tighten the nut enough to secure the jack to the case (be gentle here too - there's not much to it).</p>	
<p><u>Step 5:</u> Use needle nosed pliers to carefully guide the wire through the hole of either of the larger side lugs on the jack (not the smaller bottom lug; it's ground). If everything is going well for you, you'll have just enough wire to fit neatly. If it's a bad day, you'll need to add a short length of wire to get it to reach the jack lug. Wrap the wire tightly around the lug. A purist would now solder the wire to the lug, and that would certainly be appropriate if you're taking the meter into combat. But for just banging around the classroom, a mechanical connection will do.</p>	
<p><u>Step 6:</u> Replace the batteries, reassemble the upper and lower cases, and plug the 1/8" to 1/4" adapter into the jack. Now you can unplug the 1/8" stereo speaker jack from the back of any PC and plug the speakers into this meter. Turn the meter on to get loud, clear clicks every time the detector responds to ionizing radiation!</p>	
<p>Conclusion</p> <p>The method described here is not the only way, perhaps not the best way, and certainly not the most elegant way to get sound out of your survey meter. But it's quick, easy and cheap. If you get into trouble, there are usually a few folks around a school who dabble in electronics; this will be trivial for those folks. Enjoy!</p> <p>North Carolina Chapter of the Health Physics Society - Science Teachers Workshop</p>	