Parts Needed

- Panasonic mic capsule
  - Digikey part number: 668-1391-ND
- 4 2" pieces of 26AWG stranded hookup wire
- 10K Resistor
- 3.3uf Capacitor
- Electrical Tape
- 9v Battery holder
- 3.5mm Stereo Audio Plug
- 3 - 4 ft of coax cable RG174
- 9v Battery

- PROCELL 9V Alkaline Battery

- Scotch Electrical Tape

- Beige 26 AWG Wire

- Black 26 AWG Wire
220A Handmade Mic

Microphone

Stereo Plug Outer shell

Shield

GND

Resistor

10kΩ

Capacitor 3.3μF

Battery

Stereo Plug Center pin

Black

Red
Strip the coax wire down so that about 1/4” of bare copper wire is showing, 1/4” of clear plastic is showing. Pull the braided shielding over to the side.
Solder this 3 way point between the positive side of the capacitor (longer leg), one side of the resistor and the inner copper core of the coax cable.
Wrap all three wires together near their components
Wrap all three wires together, close to their actual components. Solder that connection and then cut off the excess.
This is where this should sit on the diagram
Now we will make the connection between the other side of the resistor and the battery holder.
Wrap the red wire of the batter holder around the side of the resistor. Keep the red plastic shielding and the resistor body close together.

Solder that connection and cut off the extra wire.
Solder 1 of the red jumper wires to the two small pins inside the audio plug.
Make sure no solder or wire strands touch the larger metal tab.
Solder 1 black jumper wire to the large metal tab in the plug.
Slide the clear plastic cover over the inside of the plug.
Screw the casing and spring onto the plug.
Next, we will solder the 3-way connection between the coax shielding, the black wire on the battery terminal, and the black jumper wire attached to the audio plug.
Black Battery Wire

Black jumper wire attached to audio plug

Coax Shielding
Next, we will connect the negative side of the capacitor to the red wire attached to the audio plug.
There should be two blobs of solder on the mic capsule. We will connect the remaining red jumper wire to the blob the positive sign and the remaining black jumper wire to the other blob.
Soldering to the mic capsule is the only challenging part of this project. To make it work, we have a couple of tricks we can use.

1) Strip a tiny amount off of one of the ends of the jumper wire and apply a dab of solder to that end. This is called tinning the wire.

2) Re-cut the wire so that only 1/8” is exposed.

3) This will allow you to place that small blob onto the equally small blobs of solder on the mic capsule.

4) With the blobs resting on each other, apply heat...
This is how it should look in the end. Note that the rubber coating on each jumper wire goes right up to the soldering point. If you leave excess exposed wire, you will create a short and your mic will not work.
Now, take the side of the coax that you did not solder to yet.

Strip the coax wire down so that about 1/4” of bare copper wire is showing, 1/4” of clear plastic is showing. Pull the braided shielding over to the side.
Solder the jumper wires to the exposed coax cable. Red should go to the inner core. Black should go to the shielding.
When you are done with all of these steps, carefully use electrical tape to wrap the individual connections, making sure to not allow any short circuits.

Plug a 9V battery into the battery terminal and test out your mic. It should work with most laptop mic inputs as well as the small test amplifiers we have in the lab.

When you are not using the mic, remember to disconnect the battery or it will run out.