Build an Air Mic - Tutorial

Please, make sure to read all the instructions.

Gather the materials:

- PCB board
- 9V battery
- 4 2” pieces of 26AWG stranded hookup wire
- 3.3uf capacitor
- 10K resistor
- Rocker Switch 2 Pins 2 Position
- Panasonic Microphone Capsule, digikey part number: 668-1391-ND
- 3-4 ft of coax cable RG174
- 3.5mm Stereo Audio Plug
- + electrical tape
Below is the schematic of the mic we are going to build.
Let’s start with the microphone capsule and the audio plug.

- Start by striping all ends of your cable and wires (coax cable and the four 26AWG wires).

- We will now solder two of the 26AWG wires to the mic. Start by tinning the 26AWG wires.

- The RED wire will be soldered to the positive (+) pole, the BLACK wire will be soldered to the negative one. Some mic capsules have a + printed under the positive pole, some don’t. The negative (-) pole is the one that comes connected to the metal casing and the positive (+) pole is the other one that isn't.

- **Make sure to avoid creating a short circuit.** Exposed wiring and soldering blobs should make only the intended connection and not contact with anything else.

Note that if the red and black wires come into contact, this will create a short circuit. Keep the exposed metal part of the wires short. Their insulated portion should extend as close as possible to the soldering.
- Solder the jumper wires to the coax cable. **Red** goes with the **inner core**, and **black** with the **outer braid**.

- Tape the solders that you just made. Make sure the two connections are isolated from one another.

- We will now solder the second pair of jumper wires to the 3.5mm audio plug. The **red** wire will be connected to the **two small tabs**. The **black wire** will be connected to the **large tab**.
- Use the clear plastic tube to isolate the solders. Screw the metal casing to the Audio Plug.

- We will now add the power switch to the battery holder. Cut the **black** wire of the battery holder into 2 pieces. Strip and tin the wires to prepare for the soldering.

- Solder the two resulting black wires to the switch's solder lugs.
PCB Board:

Reproduce the schematic with your PCB board and the components.

- Line up the wires and components so their ends can be inserted in the PCB holes from the front side.

- Then solder the connections on the back side.

Back view = soldering

Note that you can slightly shift the locations of the components on the PCB board as long as the connections between those components remain correct.

Be patient and check your circuit before soldering.
When you are done with all of these steps, make sure not to 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 switch off the battery or it will run out.