

Piezoelectric Earphone

Crystal Earphone

Piezoelectric earphones also known as crystal earphones are the most sensitive earphones.

In fact they are at least 10 times more sensitive than very sensitive magnetic earphones, dynamic earphones, and electrostatic earphones.

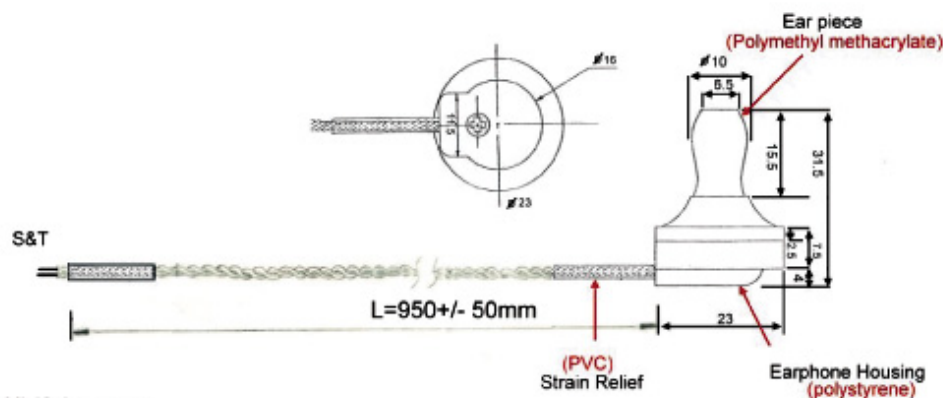
Sensitive earphones have a very high impedance, which is measured in ohms.

Product Code: CH905ST



A sensitive earphone built around an electromagnet might have an impedance of about 2,000 ohms, while the impedance of a crystal earphone is about 20,000 ohms.

A crystal earphone (more properly called a piezoelectric earphone, pronounced pee-zo) is made of a material that changes its shape when connected to a source of electricity. Some crystals such as quartz, and Rochelle's Salt are piezoelectric. Some ceramics (such as those made with barium titanate) are also piezoelectric. Our piezoelectric earphone is made of a disk of brass that is coated with barium titanate ceramic. When electricity is connected to it, the ceramic bends the brass disk, and we can hear the vibrations this causes in the air.



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SPECIFICATIONS

1. Impedance: 20K ohm
2. Capacity: 15,000 pf
3. Sensitivity: 57 dB at 1KHz
4. Frequency Range: 200 ~ 8000 Hz
5. Operation Temperature: -20 to 60 Celsius
6. Cord: 3ft twisted cable.

Test the sensitivity of Crystal Earphone

To demonstrate just how sensitive a crystal earphone is, try this experiment: with the earphone in your ear, touch the two wires together. You will hear a sharp click as electrons move from one wire to the other. If the earphone came with a jack on the end instead of two bare wires, you will need a piece of metal such as a spoon to connect the two metal parts of the jack.

Piezoelectric Earphone (Crystal Earphone)

Use crystal Earphones for Crystal Radio

One detail about such a very sensitive earphone is important in building a crystal radio. A sensitive earphone does not use very much current to create the sound. Another way of saying this, is that not much current is going through the earphone. Our radio needs a certain amount of current to flow through the diode in order to work.

When substituting a piezoelectric earphone for an earphone made with a coil of wire, we must provide a way for some current to bypass the earphone. We do this by putting a resistor or a coil in parallel with the earphone (parallel means that the resistor or coil is attached to the same two places that the earphone wires are attached).

The resistor can be anything in the range of 1,000 ohms to 100,000 ohms, and can be a piece of graphite out of a pencil, or a couple hundred coils of fine wire around a nail.

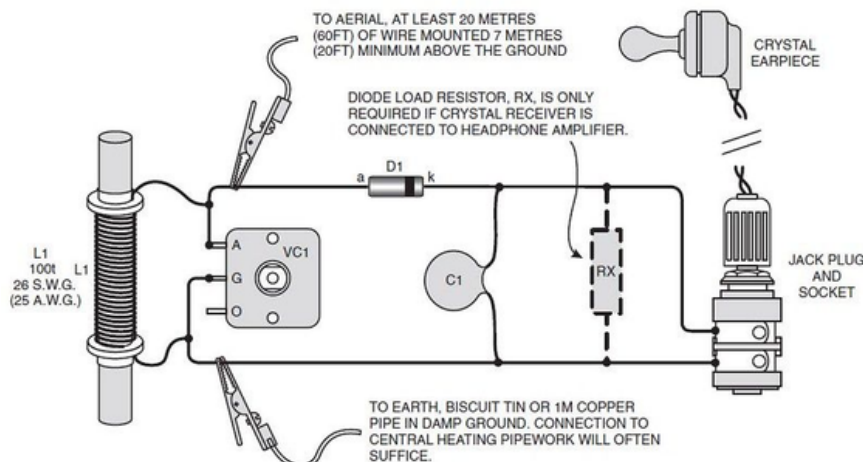
Product Code: CH905MP For use in the Crystal Radio projects, and to listen to electric fish. Also great for the laser communicator project.



Crystal earphones are available with and without plugs. In CH905ST model (shown above), the ends of the wires are stripped and tinned 1 cm for easy connection or soldering.

Crystal earphone is also available with Mono plug under the model number CH905MP. This earphone is ready to be plugged in any low voltage audio device including some vintage crystal radios.

Plug size is 3.5 mm in diameter.



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