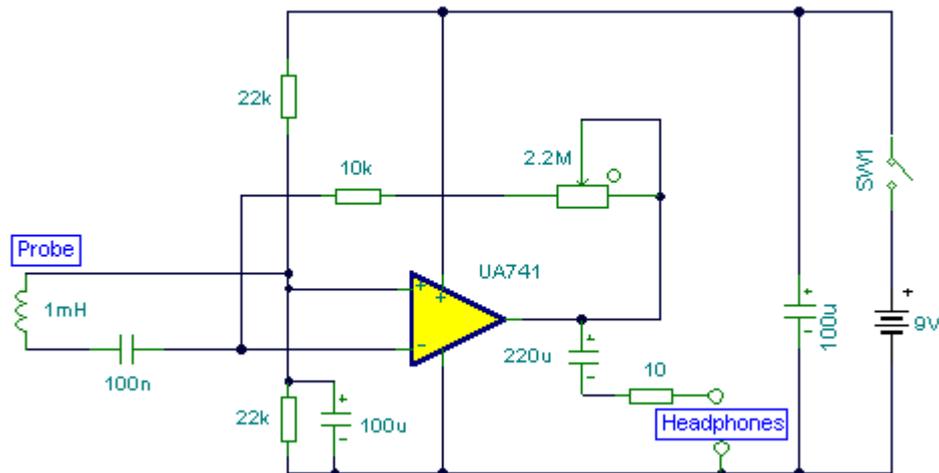


# Electromagnetic Field Detector

This circuit is sensitive to low frequency electromagnetic radiation and will detect for example hidden wiring or the field that encompasses a transformer. Pickup is by a radial type inductor, used as a probe which responds well to low frequency changing magnetic and electric fields. Ordinary headphones are used for detection. The field that surrounds a transformer is heard as a 50 or 60Hz buzz. The circuit is below:-



## Notes:

I threaded a length of screened cable through an old pen tube and soldered the ends to a radial type can inductor. I used 1mH. The inductor fitted snugly into the pen tube. The opposite end of the cable connects to the input of the opamp. Any opamp should work here, possibly better results may be achieved with a low noise FET type such as the LF351. The 2M2 potentiometer acts as a gain control and the output is a pair of headphones. Stereo types can be used if they are wired as mono. I used an 8 ohm type, but the circuit should work equally well with higher impedance types. The probe (shown below) may be connected via screened cable and a 3.5mm stereo plug and socket.



## Detection:

The sensitivity of this circuit is good. Mains wiring buried an inch in plaster can be detected with precision. A small load on the electric supply is all that is needed; a 20 watt desk lamp or similar will suffice. The hum field surrounding a transformer can be detected out over 7 inches. Domestic appliances such as videos and alarm clocks all produce interference which can be heard with the probe. The electric field surrounding a loudspeaker or earpiece can also be heard. Try lifting a telephone and place the probe near the earpiece. A telephone pickup coil can be used in place of the inductor if desired. I will make an improved version of this circuit with a meter output later.