

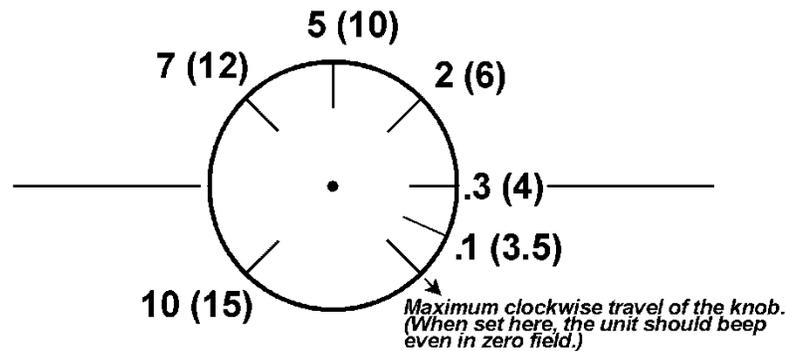
MicroAlert™ Model MA2 Instructions

This device detects radio and microwaves, and it will beep if the strength of these is higher than a level that you set. The “power” switch is just above the words “OFF ON”, on the adjacent top surface of the box. Slide this recessed switch “on”. You should hear a single beep when you do this, and that beep indicates the battery is good. The unit is now working. The small black knob marked SENSITIVITY, which is on the right face of the box, is normally set at the factory to its center position. Notice the line that is indented into this small black knob. The “center position” means that this indented line points toward the arrow next to “NORMAL”, which is on the label of the MicroAlert. If you rotate this knob clockwise, it will increase the sensitivity. (Counterclockwise rotation will decrease the sensitivity.) This center position represents a certain sensitivity, but the sensitivity depends to some extent on how the MicroAlert is positioned. If held up in the air with your fingers on the lower half of the case (with your fingers beside or below the word “MicroAlert 2”, this “NORMAL” sensitivity is about 5 microwatts/cm². This is the strength (or technically, the power density) of the radio/microwaves that make the unit just begin to beep. The beeps will repeat at about 4 per second if the average power density is just at this threshold of 5 microwatts/cm². If you move to an area where the power density is higher, the beeping will become more frequent (as frequent as 20 beeps per second). Above about 10 microwatts per cm², the beeping becomes a solid “always-on” tone.

Adjusting the Sensitivity:

If the SENSITIVITY knob is turned all the way clockwise, the unit should begin beeping (a few beeps per second) by itself, even if there is no radio/microwave present. In case radio waves are present, you can shield the MicroAlert from these waves simply by cupping it in your hands. Then the unit, if correctly calibrated, should continue to beep, but only once per second or less. However, if you turn the SENSITIVITY knob halfway toward horizontal (see “.1” in diagram below), the beeping should stop provided that the MicroAlert is cupped in your hands. If the unit beeps in both knob positions or if it beeps in neither position, then it needs calibration. This is a simple operation which will be described later.

The diagram below shows the approximate minimum strength of radio/microwave, measured in microwatts/cm² (units of power density) that is required to make the MicroAlert start beeping. These numbers depend on where the SENSITIVITY knob is set, and are accurate within about a factor of two if the radio/microwave signal is in the frequency range 6 MHz – 3 GHz. Frequencies below 6 MHz are discussed later. It assumes you’re holding the MicroAlert in front of you and that your fingers are holding the lower half (not blocking the upper half). (It’s reading the vertically-polarized electric field component of the radio/microwaves, which in most cases represents most or all of the power present). In the diagram, the higher number in parentheses is the power density required to make the unit produce a solid tone (not just beeping sound).



Position of SENSITIVITY knob vs. minimum power density (microwatts/cm²) at which the unit will begin beeping. The power density required by the unit to produce a solid tone is displayed in parentheses.

If you set the MicroAlert standing up on a metal surface, the sensitivity is about the same as shown above. However, if you’re carrying the MicroAlert in a pocket or have it set down flat (not standing up) on a surface, sensitivity is about ¼ of that shown in the diagram. That is, at the most sensitive knob setting, which is marked “.1 (3.5)” on the diagram, the minimum power density required to make the unit start to beep is .1 x 4 = .4 microwatts/cm², and the power density required to make the unit produce a solid tone is 3.5 x 4 = 14 microwatts/cm². Therefore, multiply all the numbers you see on the diagram by 4 if the MicroAlert is neither held upright in your hand nor standing up on a metal surface.

Calibration Procedure:

If the MicroAlert does not behave as described above, in the most clockwise position shown on the diagram, you should calibrate it. That is, it should beep even when it is shielded (by being cupped in your hands) when the knob is set to the "Maximum clockwise travel" position, but it should not beep when set to the ".1 (3.5)" position if it's cupped in your hands. To calibrate, unscrew the single screw on the backside of the MicroAlert (a small screwdriver is included for this). Rotate the black knob to its most sensitive position, at maximum clockwise travel. Inside the MicroAlert is a calibration screw located between the adjustment knob and the battery. With a small flat blade screwdriver, you can rotate the adjustment screw. Rotate this screw so that the MicroAlert beeps a few times a second. (This beeping should be heard after you take out the screwdriver and cup the MicroAlert in your hands.) Then turn the black knob to the ".1 (3.5)" position shown in the diagram. Now the unit should not beep when cupped. Of course, it's easiest to do this test in an area that seems to have fairly low radio/microwave signal already. That is, an area where there's not much difference in what the MicroAlert picks up whether you hold it upright or cup it in your hands.

Battery:

Battery life is typically 3 years if it isn't beeping more than about 5 minutes a day. If you don't hear a beep when you turn it on, replace the battery. Also as the battery voltage drops, the beeps become not as loud. This weak-battery does not affect the sensitivity level, but if the beep sound becomes too quiet to be useful to you, then you should replace the battery. It uses an inexpensive lithium "2032" (CR 2032) 3 volt battery, available any place that sells batteries. To replace it, unscrew the center screw and remove the back. You need to push down on the white plastic round tab (looks like a cul-de-sac) with a few pounds of force until you hear a click. Then the battery will be at a slight angle. Remove the battery. If you accidentally put the new battery in backward, it will not harm anything, but the unit will not work until you put the battery in with the "+" side facing up. After sliding in the battery, push down on the battery on the side where it is sticking up the most, so that it will sit flat in the holder. Replace the cover of the MicroAlert.

Additional Details:

Avoid strong static electric sparks around the MicroAlert. These might shift the sensitivity level and could require you to calibrate it. For 6 MHz radio waves, the unit is about half as sensitive as it is in most of its range. This means you should multiply the numbers in the diagram by two if you know the wave is 6 MHz. It is less sensitive at lower frequencies than 6 MHz. At 5 MHz, multiply by 3. At 2 MHz, multiply by 7. At 1 MHz, multiply by 20, and at 500 KHz, multiply by 50 (that is, it is 1/50 as sensitive). General maximum public exposure to microwaves is 10 microwatts/cm² in several European countries. In the US, the maximum allowable is much higher, at approximately 600 microwatts/cm², for typical cell tower frequencies (the maximum allowable depends slightly on the actual frequency). The MicroAlert does not read this high, but it can be used to check European Standards. In most areas in US cities, the level is below 10.

The warranty period for this meter is one year from the date of delivery.

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