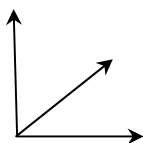


AC GAUSS METERS

To measure AC Magnetic Fields (what some people mean when they say "EMF"), from powerlines, wiring, lighting and appliances we use an AC gauss meter. Gauss meters measure the strength of the magnetic field *at the location of the meter*. Because magnetic fields are oriented in space, a sensor will only detect the field properly if it is aligned with the field. A single axis meter has only one sensor in it. Therefore to get a correct reading with this type of meter, you must slowly rotate the meter until you find the maximum reading. This will be the correct reading. If the meter is turned 90° from the maximum reading, it will read nearly zero. It is easy to understand how it is possible to get a lower than actual reading if the meter is not properly aligned.



A three axis meter has 3 sensors in it, aligned at right angles to each other. Therefore, this type of meter is always correctly aligned and no rotation is required to get a correct reading. This type of meter takes less time to use but generally costs more than its single axis counterpart.

What is the difference between flat response and frequency weighted?

Often, the signal we are measuring is not one pure frequency (nor even from one single source!). When a mixture of frequencies is present, a meter will give a total value based on a formula for how each frequency is "weighted".

Flat: A flat frequency meter gives each frequency equal weighting. In other words, it measures the energy level present independent of the frequency of the energy, provided that the frequency is within the range of the meter. This type of meter is recommended for applications that are not related to the potential induced energy impact on a human body.

Weighted: A meter with a frequency weighted response gives more "weight" to higher frequencies. So the total calculated will be higher than a flat meter would report. For example, at 60 Hz a 10 mG field would be reported as 10 mG. But at 180 Hz, it would show as 30 mG ($180/60 \times 10$ mG).

The main features to consider when choosing a gauss meter are:

- **Readout type:** lights, sound, numbers, needle gauge
- **Range:** how sensitive on the low end, and the upper limit on the high end
- **Axis:** 1-axis only, 3-axis only, or switchable 1-axis and 3-axis
- **Accuracy:** high accuracy is desirable, but not necessary to locate "hot spots".
- **Outputs:** voltage output or PC interface for data logging
- **Frequency weighted vs. flat frequency response**