

## DC Milligauss Meter Model MGM

This meter reads the component of magnetic fields in the direction of the cable. The sensor is the square bulge at the gray tip of the cable. The sensitive region is the center of that bulge. The direction of sensitivity is parallel to the surface of the bulge, in a direction parallel to the cable. On the display, the numerals to the left of the decimal point are in milligauss, which is to say in units of 1/1000 gauss. (One gauss is the same as one Oersted). The Earth field is approximately 500 milligauss, and is not purely horizontal except in a few areas of the Earth. (In North America, the north field is declined from horizontal north, and it reads negative on this meter. To find that direction, point the tip of the cable north and then tip it slowly downward and slightly left and right until you find the direction with the largest negative number. In Asia, the north field is generally close to horizontal).

When turned on, the meter displays the actual magnetic flux density in milligauss in the direction of the sensor (an indicator triangle will appear below "Field", which is printed on the label. The meter can also display the deviation between maximum and minimum in the " $\Delta$ " mode. By pressing "MODE" once briefly, the triangle shifts to " $\Delta$ " printed on the label. In  $\Delta$  mode, press "ZERO" once to reset  $\Delta$  to near zero. Then the display shows the difference between maximum and minimum field, since the last time that ZERO was pressed. The MODE button toggles from Field from  $\Delta$  to "- peak" (negative peak) value to "+ peak" (positive peak) value and back to field. If left at - or + peak, the display will revert to Field after 5 seconds. When displaying - or + peak, the max and min (which determine  $\Delta$ ) are shown respectively. If ZERO is pressed, these peaks are reset to the present value of the field. In the Field mode, pressing ZERO will reset everything and simultaneously "zero" the present field, so the display shows the difference in field strength compared to its present value. The "Offset Adjust" pads can be pressed to add or subtract from the meter zero level. Turning the meter off will reset all settings. In noisy environments, press and hold the MODE button for at least 5 seconds. This will slow the display to update once/second with longer averaging. (Also a triangle will appear near the decimal point.) Turn the meter off and on to return to fast update.

"Low Battery" will show on the display when approximately 10 minutes of battery life remain. Slide off the back panel to replace the single 9-volt battery. An external power jack is on the meter. When you plug in a 2.1mm DC power plug, it will override the battery. The external power should be between 9 and 15V DC, at least 50ma, center positive. (If you accidentally use wrong polarity, it will not damage the meter). An external adapter is included. If the (optional) output jack is present, two holes will be on the side of the meter. Use a 1/8" mono plug. Output is 1mV/milligauss +/- .5%. Range is +/- 2000mV.

This meter reads DC magnetic field with accuracy of +/-0.5% of the reading in the temperature range 30°F – 110°F. When turned on, the meter will read between + 0.5 and –0.5 milligauss if the field component (in the appropriate direction) is actually zero. If  $\theta$  is the angle between the field and the sensor direction, the reading changes with  $\theta$  as  $\cos(\theta)$  to within 1:100,000, if the magnitude of the field is < 10 gauss and the component in the sensor direction is < 2 gauss. Range is + to – 1999.99 milligauss.

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