DC Gaussmeter Instructions

For Models IDR-309, IDR-329

General Information

Please read BEFORE operating the meter.

Congratulations! You have purchased a very accurate instrument for measuring the DC magnetic field intensity (magnetic flux density) of relays, electromagnets, motors, generators, loudspeakers, actuator, ferrite content in non-ferrous materials, etc. We are proud to say that this meter “measures what it is calibrated for.”

The gaussmeters are sold with axial probe, a bare or shielded transverse probe or both. Customers have to specify which probe before purchasing. Your gaussmeter can be shipped with a bare probe for the sake of sensitivity because small magnets, even though they may have very intense fields, are very non-uniform. This means that if we supply a shield over the probe, the sensitivity will be reduced and the measurement will not be accurate (4% Error), but the life of the sensor will be much longer. A bare probe is offered more and more throughout the industry. Care with placement of the probe will allow the probe to be used almost anywhere except under water. The kapton plastic is very flexible and durable as well.

Please note that the probe is a transverse probe. Therefore, the probe, when placed flat on a magnetic surface, will measure the flux density B, that is perpendicular to the surface. Figure 1 shows both the transverse and axial probes, where the magnetic field B is perpendicular to the hall effect for maximum readings.

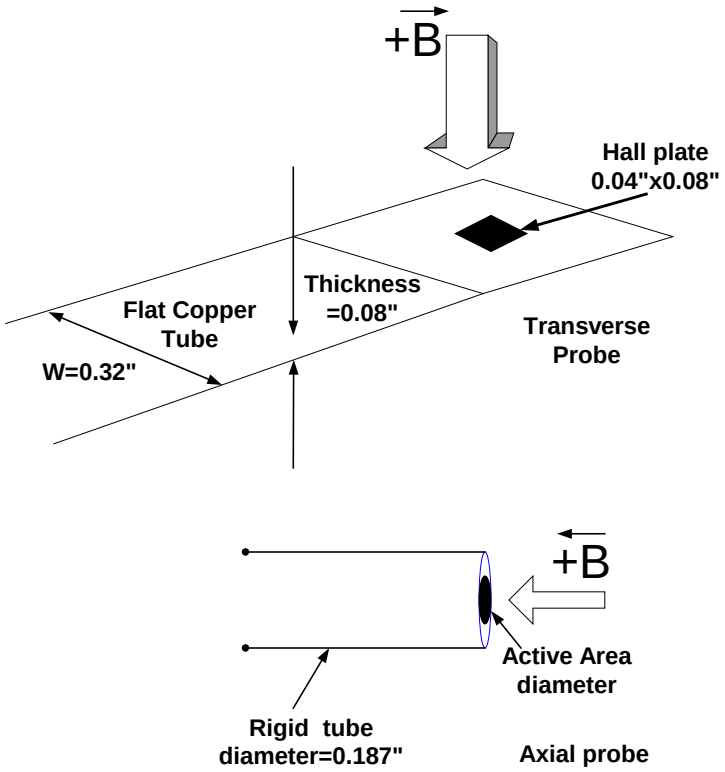

Figure 1

We think you will appreciate the coarse and fine knobs available for zero adjustment. If the meter should appear to be slightly off from zero, adjust the coarse knob first, then the fine adjustment. Note: the fine adjust knob is attached to a twenty-turn potentiometer which will continue to turn at each "end" of its range. Therefore, if the fine adjust knob appears not to work, try turning it in the opposite direction. The fine adjust knob should then work properly. During this zeroing adjustment, MAKE SURE the probe (Hall effect) is AWAY from any magnetic material.

For consideration of accuracy and economy, use the AC adaptor for long-term use of gaussmeter, especially inside the lab. Just connect the adaptor to 110/220 Volt outlet and turn the ON/OFF power switch. If BAT appears on screen, accuracy will diminish and it is time to change the battery. Lastly, the meter is calibrated at a factory with a Helmholtz coil producing a uniform magnetic field and with reference magnets. If you think the meter is out of calibration, check it with the round reference magnet that it comes with the unit, which should give a reading within a 10% of the reference magnet,

this value is written on the envelope containing the magnet. The meter can be recalibrated at our facility for a cost of $110 prepaid, which includes shipping by UPS Ground only inside the U.S.A. Or, you may choose to take the calibration “into your own hands” by using a very small screwdriver. Our factory calibration error is guaranteed to +/-3%.

The gaussmeter (IDR-309, 321, 329) is designed for DC applications. However, as noted on the specification sheet, the frequency response of the meter is flat up to the 3 db drop at 68 Hz. So, 60 Hz readings are possible using the recorder output and making rms (0.707) calculations of peak-to-peak results. However, our AC Hz magnetic field meters are recommended for 2% accurate readings of 60 HZ AC magnetic fields. For products information, please visit our site at www.integritydesign.com. If you have any questions, do not hesitate to call Integrity Design & Research Co. at (802)-872-7116 or fax to (802)-872-7115.

Operating Instructions:

- Step 1:

  Connect gently the probe cable by matching the key way in the connector to that in the mating socket in the meter. To disconnect, pull on the body of the plug, **not the cable!**

- Step 2:

  Turn the meter ON by depressing the power switch. The display should now read out numbers. If it doesn’t, check to make sure the battery or the adaptor is connected.

- Step 3:

  Take your reference point by turning the Coarse Adjustment Knob. Turn the knob clockwise to adjust higher and counter clockwise to adjust lower. Adjust until you are near the reference point, and then using the same procedure as with the coarse knob, use the Fine Adjustment Knob to get the precise reference point. We prefer the zero reading as reference to void an arithmetic subtraction. Make sure that probe is further away from any DC magnetic filed sources; there may be situations where the fields are unavoidable, like during the measurement around the MRI system. The user

needs to shield the probe from all external magnetic fields prior to zeroing. A Zero Gauss chamber like IDR-800 or IDR-803 are capable of shielding against fields. The probe is simply inserted into the chamber before the zeroing process begins.

- Step 4:

  Now you are ready to take magnetic field measurements. This is done by placing the end of the probe (little square dot) flat or perpendicular on the magnet or close to the source as possible. A negative or positive reading will appear on the display, depending on the polarity of the magnets. Finally, the actual reading of the magnet will appear. If the display is blank except for one (1) in the left most end, then the field is too high to read in this scale. To change scales, simply turn the big knob labeled “Gauss” clockwise to be able to take a higher reading. Figure 2 shows the front panel of the DC Gaussmeter.

Figure 2

- Step 5:

  Once you are done taking the reading be sure to turn the meter OFF. Also we recommend keeping the probe connected to the meter if it is possible.

Sources of Measurements Errors:

When making flux density measurements there are several conditions that can introduce errors:

1) Operating the meter while the low battery symbol appears
2) Failure to zero the error signals from the meter, probe and nearby sources of magnetic interference.
3) Subjecting the probe to physical abuse, handle the probe with care, do not bend or apply pressure to the probe.
4) One of the most common sources of error is the angular position of the probe with respect to the field being measured. The flux lines are required to be perpendicular to the sensor for better accuracy on the measurements.
5) The greater the distance between the magnetic source and the hall probe, the fewer flux lines will pass through the probe, causing the probe's output to decrease.