AlphaLab Inc.

Air Shipment Milligauss Meter Model ASMGM Instructions

Set the sensor box (with arrow printed on it) on the ground or at about the same level as the package 15 feet (4.6 meters) from where packages will be measured. Measure the distance from the small black square printed on the top of the sensor box, to the nearest edge of the package. (The actual sensor is 1" in vertical altitude below the black square, so it's near the bottom of the black box). The arrow should point toward the package testing area. Avoid having any large steel objects within 5 feet of the sensor. You may want to use an AC adaptor instead of the battery. If so, use the jack on the side of the digital display box. (It is 9V DC, center positive.) Remove any packages from the testing area.

Turn the meter on (the slide switch is on the right side of the display box); note that the display box does not need to be near the sensor box. The display will show the field in milligauss (mG). If the display fluctuates up and down by more than 20 counts (+/- 0.20), then the environment is magnetically noisy, and a new test site should be considered. Heavy equipment moving nearby will cause such fluctuation. Once a good location is found, point the sensor box arrow toward the area where the package will be[1].

Bring in the package to be tested in such a way that the nearest face of the package is 15 feet (4.6m) from the black square on the sensor box. Unlike the sensor box, the display box (with digital display) can be near the package. Make sure the shipment can be rotated 360°. The package need only be roughly on the same level as the sensor. The package can now be rotated 360° about the vertical axis. If the field deviates by > 5.25 mG (0.00525 gauss) from average during the rotation (or has a difference Δ between maximum and minimum of > 10.50 mG), the package cannot be shipped by air. (If it passes this test, then a second test at 7 feet [2.1 meters] with a maximum of +/- 2.00 mG deviation may be performed. However, this second test may soon be phased out. If > 2 milligauss in this second test but < 5.25 milligauss in the first test, the shipment may require a magnetic goods label.) This meter can directly display the deviation between maximum and minimum in the "Δ" mode. When the meter is turned on, a triangle appears in the display under the word "Field" printed on the label. In this mode, the present field value is displayed. By pressing "MODE" once, the triangle shifts to "Δ". In Δ mode, press "ZERO" once to reset Δ to near zero. Then the display shows the difference between maximum and minimum field, since the last time that ZERO was pressed. To do the test the easy way, put the meter in the Δ mode, press (and release) ZERO, and perform the 360° rotation. If Δ reads more than 10.50 mG, the package cannot be shipped by air unless some alterations (demagnetizing, adding keeper bars, or reorienting the magnets inside the package) are done to bring Δ below 10.50 mG on a subsequent test. The MODE button toggles from Field to Δ 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 Δ) 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, but this is rarely needed. Turning the meter off will reset all settings. The field being measured is in the direction of the arrow on the sensor box.

Generally, the field from the package will be a simple "dipole". That is, the field will be most positive when one face of the package is pointing to the sensor and will gradually go more negative as the package is rotated, reaching the most negative (or least positive) number 180° away. The negative and positive numbers are generally about the same magnitude of deviation from the average.

Low Battery shows on the display when approximately 30 minutes of battery life remain. Slide off the back or the display box and replace the battery with a 9-volt alkaline. Accuracy of this meter is +/-2% of reading. Accuracy drift is less than 0.1% per year, so yearly recertification is not necessary within a 10-year period to meet the +/-5% IATA and FAA accuracy standard. Absolute zero error (tare) is +/- 0.5 milligauss. (Absolute zero accuracy is irrelevant when measuring air shipments for magnetic compliance). Maximum measurable field is 2 gauss (2000 milligauss). To bypass the battery, plug in an AC adaptor with a standard 2.1mm power jack. It should be between 9 and 12 VDC, center positive, and at least 50 milliamps.

The warranty period for this meter is one year from the date of delivery.
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1. If the arrow on the sensor box is not pointed toward the shipment, then the maximum and minimum field deviation as the package is rotated 360° will be less extreme. If the arrow is correctly pointed toward a particular shipment, the meter may read for example a maximum of "10.00" milligauss and a minimum of –10.00 during the 360° rotation. If you then turn the sensor 90° so its left or right side is facing the shipment, then its maximum and minimum would typically be "05.00" and "-05.00", which is one half of the correct value. That's why the arrow must be pointed toward the package: it gives the worst case amount of magnetic deviation.