

# Instructions for Use: MT-263 True-RMS 3 Axis AC Gaussmeter

## FEATURES

**3 Axis AC Gaussmeter:** Accurately measure AC magnetic fields regardless of meter orientation.

**Measurement Range:** Auto-ranging 0.01 to 250.0 mG. The highest resolution setting possible will automatically be picked based on the waveform and amplitude.

**Wide Bandwidth:** 30 to 5,000 Hz, covering the entire SLF (Super Low Frequency) and ULF (Ultra Low Frequency) bands and part of the VLF (Very Low Frequency) spectrum.

**True-RMS Measurements:** Other meters use pseudo-RMS circuitry to estimate the field strength. This is ONLY accurate for pure sine waves, which are rarely found in non-laboratory conditions. The MT-263 uses an advanced microprocessor to calculate the True RMS (root-mean-square) magnetic field values detected by three orthogonal inductive sensors. This ensures accurate measurements of any waveform – square, triangle, sine, or even “dirty” sine waves from power lines.

**Adjustable Backlight:** Blue LED backlight has 9 different brightness settings.

**Bargraph Display:** Displays a graph of the current field strength.

**Max Hold:** Display the max value of the field strength measured.

**Peak Axis Detection:** See which axis has the strongest field strength, making it easy to find the source of the field.

**Selectable Units:** Select between milliGauss and microTesla.

**AC Adapter Option:** All units come standard with a power supply jack that will accept an AC Adapter (9v DC). This allows you to power the unit through a 120 VAC wall outlet, saving on batteries.

**Screen Update Rate:** 2.5 times per second

**Battery Life:** Approximately 15 hours with 9v alkaline battery (included)

## SWITCH POSITIONS

### MEASURE:

The True-RMS field strength is shown on the top line of the display in the MEASURE switch position. The second line displays which axis has the highest field strength, giving clues to the orientation and origin of the field being measured.

### GRAPH:

On the GRAPH switch position, the True-RMS field strength is shown on the top line of the display. The second line is a horizontal graph showing the relative field strength. As the field strength increases, the length of the bar will grow, giving a visual indicator of field strength. The bargraph will auto-scale depending on the strength of the signal.

### MAX HOLD:

On the GRAPH setting, you may also display the max value measured. To switch between the graph and max views, press and hold the VIEW button until the second line switches to show the MAX value.

### MENU:

The MENU switch position allows you to configure your meter to your needs. All settings in the Menu are saved even after power down, so the next time you power the meter up it will still have your desired settings.

**BACKLIGHT:** Press the ↑ arrow button to change the backlight brightness, you may select the brightness level from 1-9, or turn the backlight off. Press the → arrow button to advance to the next menu screen.

**Display Units:** Press the ↑ arrow button switch between display units of milliGauss (mG) or microTesla (μT). 1 μT is equal to 10 mG. Press the → arrow button to advance to the next menu screen. →

## OTHER FEATURES

### AXIS SELECTION:

On any of the measurement screens you can select which axis to measure. Press and hold the AXIS button to switch between 3D, X, Y and Z. 3D displays the 3-Axis True RMS measurement, which is equal to  $\sqrt{X^2 + Y^2 + Z^2}$ . This setting allows you to see the magnetic field strength, regardless of meter orientation. Magnetic fields are vectors, which have a not only a strength, but also a direction. Selecting X, Y, or Z only displays that axis's field strength, so meter orientation is important on these settings. For general surveys, it is recommended to use the 3D setting, so meter orientation does not affect the measurement. The sensors are located in the top right corner of the meter.

### UNIT OF MEASUREMENT:

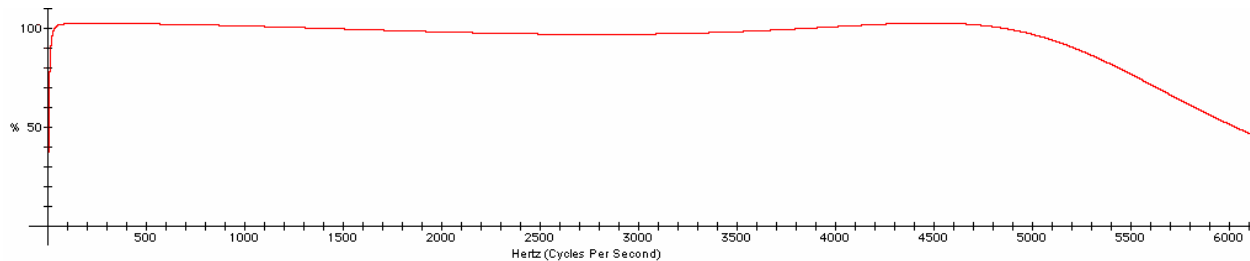
The current unit of measurement, either milliGauss (mG) or microTesla ( $\mu\text{T}$ ), is displayed in the upper right corner of the screen. This is changeable in the Menu system.

### BATTERY LEVEL:

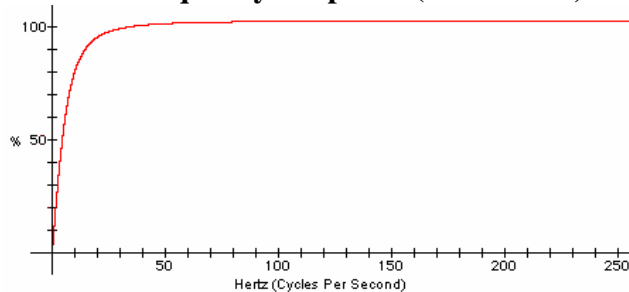
A general indicator of battery strength is shown in the upper right corner upon powerup. If the battery begins to die, -BATT- will be periodically displayed on the screen, indicating that it's time to change the battery.

## FREQUENCY RESPONSE GRAPHS

### Full Frequency Response



### Low Frequency Response (Zoomed In)



## MEASUREMENT RANGE & RESOLUTION

Measurement range on any 1 axis is 0.01 to 250.0 mG (autoranging). Because this is a 3 axis meter, the maximum possible reading of a 3D field is therefore  $\sqrt{250^2 + 250^2 + 250^2} = 433$  mG, but for most areas the energy is only found on one axis, limiting the 3D measurement range to approximately 250 mG. If the field strength is over 250 mG on one axis, the meter will show "OVFLOW" (overflow). The highest resolution setting possible will automatically be picked based on the waveform and amplitude of the field. For sinusoidal fields, resolution of 0.01 mG is typical up to 20 mG, and 0.1 mG above this.