

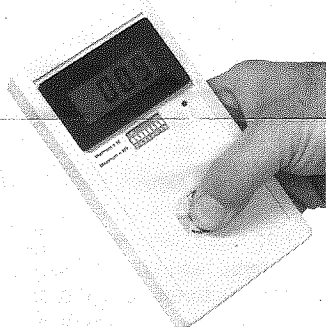
# LF Field Meter

## User Guide

**Elpas**  
Active RFID Solutions

### Product Overview

The Elpas LF Field Meter is a battery-powered hand-held, magnetic field meter. The device employs an on-board 3-axis sensor and microprocessor to process and display representative amplitude values of the detected low frequency (125 KHz) flux density within the theoretical coverage area of a specific Elpas LF Exciter.



The device is designed for system integrators, field service or maintenance engineers that need to: identify and eliminate LF exciter signal overlap, reduce and expand signal penetration or just speedup the process of maximizing overall signal coverage.

The LF Field Meter is especially useful for identifying and isolating detrimental ambient noise (125 KHz) such as magnetic fields emanating from overlapping LF Exciters, HVAC compressors, electric motors or metal barriers (such as ceiling tiles/signs/pillars/beams) that may be adversely distorting the coverage area of a LF Exciter.

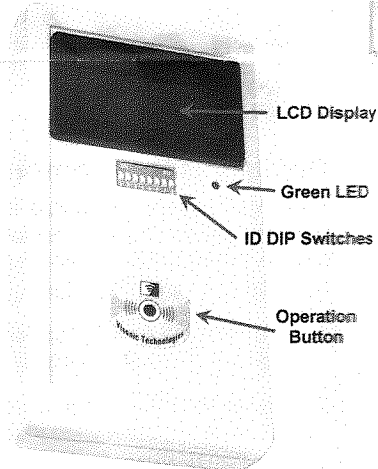
The meter can also be used to easily verify the identification address of the specific LF Exciter whose magnetic field is undergoing evaluation.

Each LF Field Meter is shipped with one 9.0 volt transistor battery.

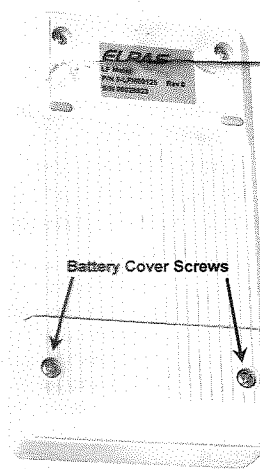
**CAUTION:** It is important that you read, understand, and follow the instructions in this document. If you have questions, call your local VT support representative.

### Front/Rear Panel Components

The key front panel components are detailed below:



Front Panel – LF Field Meter



Rear Panel – LF Field Meter

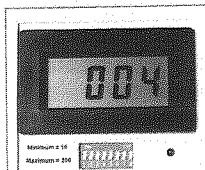
### General Usage Notes

- Upon initial operation, press the 'Operation' button once; the meter performs self-diagnostic testing. Upon completion, the Green LED flashes 3 times verifying that the instrument is full operational.
- The LF Field Meter will only function as long as the 'Operation' button remains constantly pressed.
- The meter must be stationary to take a reading. Additionally changing the physical orientation of the LF Field Meter may produce different results.
- Since the meter measures analog signals, small variances in the results may occur even if the device remains motionless in the same position.
- Different LF Exciters, equal distance from the meter can generate dissimilar results due to the physical orientation of the instrument and/or the output power settings of each exciter.

## Measuring Field Output of a LF Exciter

The overall amplitude, shape and size of the LF field being emitted by a LF exciter can be easily determined. The meter can also be used to verify the identification address of the specific LF Exciter whose magnetic field is undergoing evaluation.

1. Set the DIP switches on the LF Field Meter to the ID of the LF Exciter being tested.

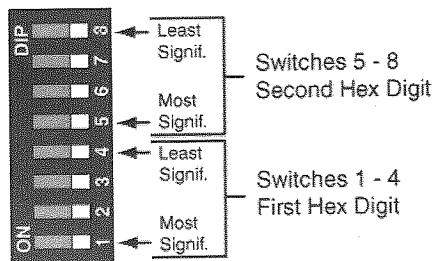


**NOTE:** The right-most ID DIP switch (# 8) represents the Least Significant Bit.

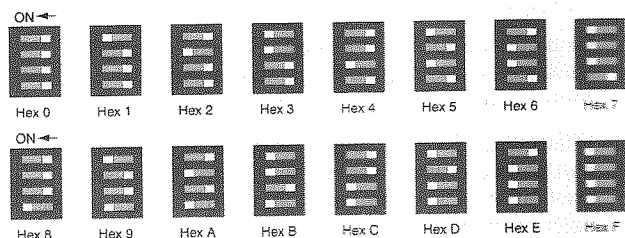
2. Bring the meter into the vicinity of the exciter and press the meter's 'Operation' button.
  - If the meter's green LED indicator flashes and the value displayed on the LCD is between 10 and 200, then the LF field of the exciter has been detected. This also indicates the meter set ID does not match the ID address of the exciter.
  - Should the meter's green LED indicator remain lit and the value displayed on the LCD is between 10 and 200, then the LF field of the exciter has been detected. This also indicates the meter set ID matches the ID of the exciter.
3. Move the meter around the environment while holding the Operation button continuously pressed to determine over amplitude, shape and size of the LF field.

## Understanding LF Exciter ID Addresses

An Elpas LF Exciter must have a defined ID address before the device can be fully functional. The ID address is configured using a binary coded hexadecimal number. The switches 1 - 4 (high nibble) are used to set the first hexadecimal digit and the switches 5 - 8 (low nibble) the second hexadecimal digit.



The two hexadecimal digits provide a total of 256 possible addresses. Below, shows the setting of hex digits: 0 to F.



**IMPORTANT:** Certain addresses are not acceptable and should not be set on any LF Exciter. These addresses are: 00, 13, 35, 4B, 4D, 5C, B8, D5 and DC.

## Measuring Ambient Noise

If the magnetic field of the LF Exciter is less than expected (3m/10ft at full power), then high-levels of ambient noise (125 KHz) in the environment may be reducing the actual coverage area of the LF Exciter.

1. Bring the meter into the vicinity of the LF ambient magnetic fields that are hampering the LF Exciter; then press the meter's 'Operation' button.
  - If the meter's green LED indicator remains un-lit and the displayed value on the LCD is < 10, noise has not been detected. This indicates that the exciter may be installed too close to a metal plate or barrier.
  - If the meter's green LED indicator illuminates and the displayed value on the LCD is between 10 & 250 ambient noise has been detected. This indicates that either a magnetic field emanating from an overlapping exciter has been detected or that there exists a substantial amount of ambient noise in the environment.
2. Power down any and all overlapping exciters and retest.
  - If the meter's green LED indicator remains un-lit and the displayed value on the LCD is between 10 & 250 ambient noise has been detected, noise emanating from such devices as electric motors, or HVAC compressors has been detected.
3. Move the meter around the environment while holding the Operation button continuously pressed to determine the source of the ambient noise.

**NOTE:** The closer the meter is to source of the ambient noise the higher the displayed value will be on the LCD.

## Battery Replacement

The meter normally provides about 50 hours of continuous use with a 9-volt alkaline battery. Should instrument fail to turn on or behaves unpredictably, replace the battery. This typically solves most problems

1. Purchase a new 9 Volt Alkaline 9.0 volt transistor battery (Duracell MN1604 or equivalent).
2. Place the meter back cover side up on a clear dry level surface.
3. Using a Phillips type screwdriver that fits the back cover screws, unscrew the 2 screws and remove the back cover.
4. Disconnect the old battery and dispose of the worn-out battery according to local recycling practices in your area.
5. Connect a new battery. Then close the back cover such that the screw holes are aligned. Next tighten the 2 screws into place.

## Technical Specifications

Electrical	
<b>Field Range</b>	125KHz, Low frequency electromagnetic fields
<b>Power Source</b>	Alkaline 9.0 volt transistor battery (Duracell MN1604 or equivalent)
<b>Power Consumption</b>	Less than 20mW (typical usage 50 hours)
<b>Visual Display</b>	3.5 digit Liquid Crystal display (LCD)
<b>Power Range</b>	To 60 dBµV <b>&lt; 10:</b> No detected LF field or No ambient noise detected in environment <b>10 &lt; Value &lt; 200:</b> Usable LF field detected or <b>10 &lt; Value &lt; 250:</b> Ambient noise detected <b>200 &gt;:</b> Detected LF field over saturated
<b>Displayed Values</b>	<b>Not Lit:</b> No LF field detected <b>Flashing:</b> Meter set ID does not match Exciter ID <b>Constant:</b> Meter set ID matches Exciter ID
<b>Green LED Indicator</b>	
<b>DIP Switch</b>	Represents ID address of detected LF Exciter
General	
<b>Construction</b>	Polymer plastic (not waterproof)
<b>Dimensions (H x W x D)</b>	151mm x 82mm x 33mm (5.9 inches x 3.2 inches x 1.3 inches)
<b>Weight</b>	195 grams (6.8 ounces)
<b>Temperature &amp; Humidity</b>	-10° to 50°C (14° to 122°F); 05% to 80% non-condensing
<b>Warranty</b>	One year limited warranty (excluding battery)

## Ordering Details

Part Information	
<b>5-LFM00125</b>	LF Field Meter

## Product Warranty

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The purchaser or user should follow the Product installation and operation instructions and test the Product and the entire system at least once each week. For various reasons, including but not limited to changes in environmental conditions, electric, electronic, or electromagnetic disruptions, and tampering, the Product may not perform as expected. The purchaser and user are advised to take all necessary precautions for the protection and safety of persons and property.

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Any questions about this statement should be directed to VT. 3/07

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Additional information may be found at [www.VT-Partners.com](http://www.VT-Partners.com)



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