

MODEL 9500

9000
SERIES
GAUSSMETERS

SERIES-9500A SPECIFICATIONS

RANGES/RESOLUTION

01X PROBE

RANGES

RESOLUTION

<u>GAUSS</u>	<u>TESLA</u>	<u>GAUSS</u>	<u>TESLA</u>
30 mG	3 μ T	10 μ G	0.001 μ T
300 mG	30 μ T	10 μ T	0.001 μ T
3 G	300 μ T	100 μ G	0.01 μ T

.01 X Probe can not be used for measurements above 2 Gauss

1x PROBE

RANGES

RESOLUTION

<u>GAUSS</u>	<u>TESLA</u>	<u>GAUSS</u>	<u>TESLA</u>
3 G	300 μ T	1 mG	0.1 μ T
30 G	3 mT	1 mG	0.1 μ T
300 G	30 mT	10 mG	1 μ T
3 kG	300 mT	100 mG	10 μ T
30 kG	3 T	1 G	100 μ T
300 kG	30 T	10 G	1 mT

10 X PROBE

RANGES

RESOLUTION

<u>GAUSS</u>	<u>TESLA</u>	<u>GAUSS</u>	<u>TESLA</u>
30 G	3 mT	10 mG	1 μ T
300 G	30 mT	10 mG	1 μ T
3 kG	300 mT	100 mG	10 μ T
30 kG	3 T	1 G	100 μ T
300 kG	30 T	10 G	1 mT

dc ACCURACY

<u>Range</u>	<u>\pm % of Reading</u>	<u>\pm Number of Counts</u>
30 mG to 30 G	.075	14
300 G to 300 KG	.075	6

Additional Influences:

Temperature Coefficient: $<\pm(0.02\%$ of Reading, ± 3 Counts) /C
From 0C to +50 C

dc Calibration Reference: $\pm 0.1 \%$ of Reading

1 year; 23C, ± 5 C

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900C
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ac Accuracy Filter Off	Ranges			
	30 mG to 30 G*		300 G to 300 KG	
Frequency(HZ)	±% of Reading	±Number of Counts	±% of Reading	±Number of Counts
20-49	3.6	500	3.6	75
50-99	1.7	500	1.7	75
100-499	1.0	500	1.0	75
500-10K	0.5	500	0.5	75

ac ACCURACY Filter On	Ranges			
	30 mG to 30 G*		300 G to 300 KG	
Frequency(HZ)	% of Reading	±Number of Counts	% of Reading	±Number of Counts
20-49	± 3.6	500	± 3.6	75
50-99	± 1.7	500	± 1.7	75
100-499	- 10	500	- 10	75
500-1K	- 30	500	- 30	75

Additional Influences:

Temperature Coefficient: $\pm (0.04\% \text{ of Reading, } \pm 5 \text{ Counts}) / \text{C}$
From 0C to +50C

ac Calibration Reference: $\pm 1.0\% \text{ of Reading}$
Sinewave input, >10% of Full Scale
1 Year; 23 C, $\pm 5^* \text{ C}$

NOTES: dc and ac accuracy is for the corrected, displayed reading and the digital information sent out on the RS-232 port or the IEEE-488 bus.

Accuracies do not include probe errors.
*1X probe only

FREQUENCY RANGE:

DC Mode	dc
AC Mode (Filter on)	20 Hz to 1 KHz
AC Mode (Filter off)	20 Hz to 10 KHz

FREQUENCY RANGE ANALOG OUTPUT

dc MODE: dc TO 400 HZ
ac MODE: (Filter on) 20 Hz to 1 KHz
ac MODE: (Filter off) 20 Hz to 10 KHz

TEMPERATURE RANGE:

Operating	0 to 50C
Storage	-20C to 70C

SECTION IV

MENU OPERATIONS/ GAUSSMETER PROGRAMMING

IV-A INTRODUCTION

The gaussmeter's MENU mode allows the user to modify all aspects of the instrument operation; RANGE settings, DISPLAY format, PEAK HOLD, communications format, etc. Probe ZEROING and RELATIVE operations are also initiated from the MENU mode.

IV-B MENU MODE OPERATION

The MENU mode can be entered at any time by pressing the PROGRAM/ENTER pushbutton. When this occurs all measurement operations cease and the probe is placed in a standby position. The master selection list (MAIN MENU) will appear.

Generally, each menu will contain a primary selection list accompanied by one or more operations lists. Pressing the up "↑" or down "↓" pushbutton allows an item to be chosen from each list. Each time this happens the cursor will advance up or down accordingly. A selection is then validated by pressing the ENTER pushbutton. In some menus the up "↑" and down "↓" pushbuttons will be used to enter numeric values.

Each menu is accompanied by a brief explanation of the operation that it affects. This will appear by selecting HELP. Once the explanation appears, press the ENTER pushbutton to return to the menu. Choosing MAIN MENU will cause a return to the master selection list. Field measurements may be resumed at any time by choosing the RUN selection.

Each gaussmeter is programmed by selecting CHANGE. It is not necessary for the probe to be physically present while programming except during the PROBE ZERO or PROBE RELATIVE operations.

IV-C MAIN MENU

This is the master selection list that appears when entering the MENU mode or when returning from any other menu. The up "↑" or down "↓" pushbutton is used to choose a selection, and the ENTER pushbutton is used to advance to the chosen operation.

MAIN MENU	
MODE SELECTION	PROBE ZERO
RANGE SELECTION	PROBE RELATIVE
PEAK HOLD	RESERVED
DISPLAY FORMAT	COMMUNICATION FORMAT
SETUP SAVE-LOAD	HELP- STATUS
RUN	

Figure IV-A
MAIN Menu

One of the selections in the MAIN MENU is "HELP-STATUS". When selected the first screen contains general information about menu operations. The next screen contains information about the probe. Displayed is the model number, serial number and Hall device type of the probe. If no probe is connected a "NOT PRESENT" message will appear. If a probe is attached but the meter cannot identify it a "NOT DEFINED" message will appear. The latter message may indicate a problem in the probe or the meter. It may also appear when special calibration hardware is connected. The information on this screen will not be updated until the meter is returned to the RUN mode.

SECTION IV continued Menu Operations/Gaussmeter Programming

IV-D MODE SELECTION

Mode selection affects three operating parameters: the type of magnetic field being measured (ac for alternating or dc for steady-state), the units of measurement (GAUSS or TESLA) and filter selection.

In the ac mode, field readings will be preceded by a symbol representing a sinusoidal waveform (~), whereas dc readings will be preceded by the appropriate polarity (+ or -).

GAUSS is defined as a flux density of 10^8 lines per square meter. TESLA is defined as 10^{12} lines per square meter. One TESLA=10 kG.

Refer to section III-M for information about filters.

MODE SELECTION		FILTER
CHANGE	GAUSS-AC	OFF
	GAUSS-DC	ON
	TESLA-AC	
	TESLA-DC	
HELP		
MAIN MENU		
RUN		

Figure IV-B
MODE SELECTION Menu

IV-E RANGE SELECTION

The choice of ranges depends upon whether the gaussmeter has been programmed to measure GAUSS or TESLA (via MODE SELECTION). The range the user selects will depend on the intensity of the field to be measured versus the resolution required.

NOTE: The user cannot specify whether a probe is 1X, 10X or a .01X device. This information is retrieved from the probe itself. If the probe is not physically present when programming the RANGE the gaussmeter will assume a 1X configuration.

SECTION IV continued
Menu Operations/Gaussmeter
Programming

RANGE SELECT	3 G [30mG]	300 uT [3 uT]
1X- 10X [.01X]	30 G [300mG]	3mT [30 uT]
CHANGE	300 G [3 G]	30mT [300 uT]
	3KG [30 G]	300mT [3mT]
	30KG [300 G]	3 T [30mT]
	300KG [3 KG]	30 T [300mT]
HELP	AUTO GAUSS	AUTO TESLA
MAIN MENU		
RUN		

Figure IV-D
RANGE SELECT Menu

One other selection in this menu is the AUTO ranging mode. This feature allows the gaussmeter itself to select a RANGE appropriate for the present intensity of the field to obtain the best resolution. Note that AUTO ranging will cause a slight degradation in the system speed.

The present range setting always appears in the information block in the MEASURE mode display screen as field measurements are being taken. (See Figure III-A.) If the AUTO range mode is selected, the AUTO indicator will appear in the block as well.

IV-F PEAK HOLD

PEAK HOLD allows the largest absolute field measurement to be captured and held indefinitely. When engaged, the PEAK indicator will appear in the information block in the MEASURE mode display screen as field measurements are being taken. (See Figure III-A.)

The presently held peak can be manually reset at any time during the measurement process by pressing *and* releasing the RESET pushbutton. The PEAK indicator will flash momentarily to indicate that the reset is in progress, but a new peak will not be captured until the pushbutton is released.

See Section III-G for more information.

PEAK HOLD	
CHANGE	ON OFF
HELP	
MAIN MENU	
RUN	

Figure IV-E
PEAK HOLD Menu