

## Gaussmeter Probes for FH 35, FH 36, FH 37

### Gaussmeter Probe Selection

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1. Choose a probe to match the application. Do not buy more accuracy, field range, or fragility than is actually necessary.
2. The thinner a probe, the more fragile it is. Try to avoid the temptation to select an easily damaged probe based on a possible, but not probable, future application. For instance, avoid using an exposed-device probe such as a Model MFT-3E03 type for general field measurements.  
Once a stem or sensor has been damaged, the probe is not repairable.
3. Metal enclosed probes, such as the Model MMT-6J08 and MMA-2508 types, offer the greatest amount of protection to the Hall sensor, and therefore are the most rugged types.
4. Be cautious about using aluminum stemmed, transverse probes, such as the Model MMT-6J08 type, where AC magnetic fields are to be measured. Eddy currents in the stem material can affect reading accuracy. A superior choice for AC measurements would be the Model MNT-4E04 type fiberglass-epoxy stem probes.
5. Several stem lengths are offered for each probe type. User preferences or test set-up dimensions usually determine the final selection. Longer stems are more susceptible to accidental bending (in many cases not catastrophic, but bothersome). Stem length does not affect performance.
6. Be aware of the differences in the probe "active areas" shown on the data sheet. A Hall effect probe will indicate the average field value sensed over that total active area. Thus, when measuring magnetic fields with a high gradient across the sensor width, choose the smallest active area practical (keeping in mind, however, the fragility rule in number 2 above).
7. The gaussmeter probes exhibit different ranges of magnetic fields over which they will provide valid readings. Check the specification sheet for these usable ranges. High Stability probes, such as those whose model numbers end in -VG, are usable on full scale ranges of 300 gauss (30 millitesla) to 30 kilogauss (3 tesla). The High Sensitivity family of probes (i.e., -VH models) can be used on 30 G (3 mT) to 30 kG (3 T) full scale ranges. High field probes are specially calibrated to provide use above 30 kG (3 T), and the new "Gamma" probe operates on the 300 mG (30  $\mu$ T) and 3 G (300  $\mu$ T) ranges.
8. If none of the standard probe configurations seem to fit your needs, always remember that we can provide custom probes to meet your physical, temperature, and accuracy requirements.

### Polarity on Transverse Probes

The output will be positive when the direction of the flux density vector is into the logo (i.e., the logo is towards the north pole)

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## Definitions

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A = Distance from tip of probe to center line of active area.

+B = Magnetic flux density vector (positive Gaussmeter reading).

HST = High Stability Probe.

HSE = High Sensitivity Probe.

UHS = Ultra-High Sensitivity Probe.

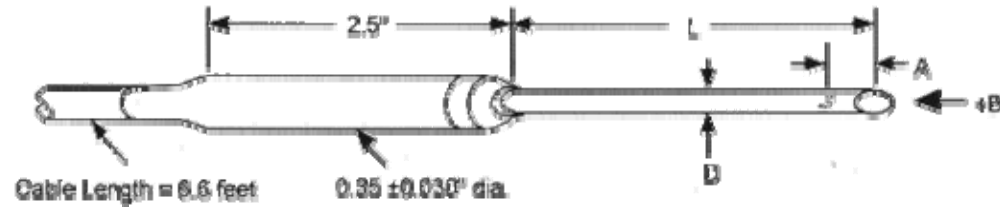
Type	HST-1	HST-2	HSE-1	UHS-1
Usable on ranges	300 G	300 G	30 G	300 mG
	3 kG	3 kG	300 G	3 G
	30 kG	30 kG	3 kG	30 G
	300 kG	-	30 kG	-

## Radiation Effects on Gaussmeter Probes

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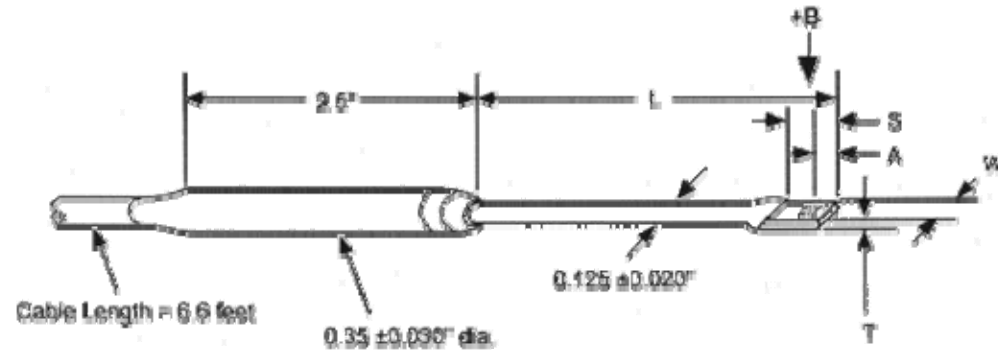
The HST and HSE probes use a highly doped indium arsenide active material. The HST material is the more highly doped of the two and therefore will be less affected by radiation. Some general information relating to highly doped indium arsenide Hall generators is as follows:

- Gamma radiation seems to have little effect on the Hall generators
  - Proton radiation up to 10 Mrad causes sensitivity changes less than 0.5 %
  - Neutron cumulative radiation (> 0.1 MeV, 10E15sq.cm) can cause a 3 to 5 % decrease in sensitivity
  - In all cases the radiation effects seems to saturate and diminish with length of time exposed
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Model No.	L	D	A	Active Area	Stem Material	Freq. range	Type	Corrected accuracy (% of reading)	Op. temp. range	Temperature coefficient (max)	
										Zero	Calibration
MMA-0602-TH	2 $\pm 0.125$ "	0.060 dia $+0.001$ $-0.003$ "	0.010 $\pm 0.005$ "	0.020" dia (approx)	Aluminium	DC and 10 to 400 Hz	HST-2	$\pm 0.25\%$ to 10 kG	0 °C to $+75$ °C	$\pm 0.13$ G/°C	$\pm 0.01\%/^{\circ}\text{C}$
MMA-0604-TH	4 $\pm 0.125$ "										
MMA-0608-TH	8 $\pm 0.125$ "										
MMA-0618-TH	18 $\pm 0.25$ "										
MMA-1302-UH	2 $\pm 0.125$ "	0.125 dia $\pm 0.005$ "			Stainless steel	DC and 10 to 100 Hz		$\pm 0.25\%$ to 20 kG			
MMA-1304-UH	4 $\pm 0.125$ "										
MMA-1308-UH	8 $\pm 0.125$ "										
MNA-1902-VH	2 $\pm 0.125$ "	0.187 dia $\pm 0.005$ "		0.030" dia (approx)	Fiberglass epoxy	DC and 10 to 400 Hz	HSE-1	$\pm 0.25\%$ to 30 kG		$\pm 0.09$ G/°C	FH36: $-0.015\%/^{\circ}\text{C}$ FH35: $-0.04\%/^{\circ}\text{C}$
MNA-1904-VH	4 $\pm 0.125$ "										
MNA-1908-VH	8 $\pm 0.125$ "										

MMA-2502-VH	2 ±0.063"	0.25" ±0.006"			Aluminium						
MMA-2508-VH	8 ±0.125"										
MNA-1902-VG	2 ±0.125"										
MNA-1904-VG	4 ±0.125"	0.187" dia ±0.005"			Fiberglass epoxy						
MNA-1908-VG	8 ±0.125"					HST-2	±0.15% to 30 kG				
MMA-2502-VG	2 ±0.063"									±0.13 G/°C	±0.005%/°C
MMA-2508-VG	8 ±0.125"	0.25" ±0.006"			Aluminium						
MMA-2536-WL	36 ±0.25"										
MCA-2560-WN	60 ±0.50"		0.025 ±0.005"		Stainless steel	DC	HST-1	±1% to 100 kG	1.5 K to 350 K		±0.01%/°C
								±2% to 100 kG			

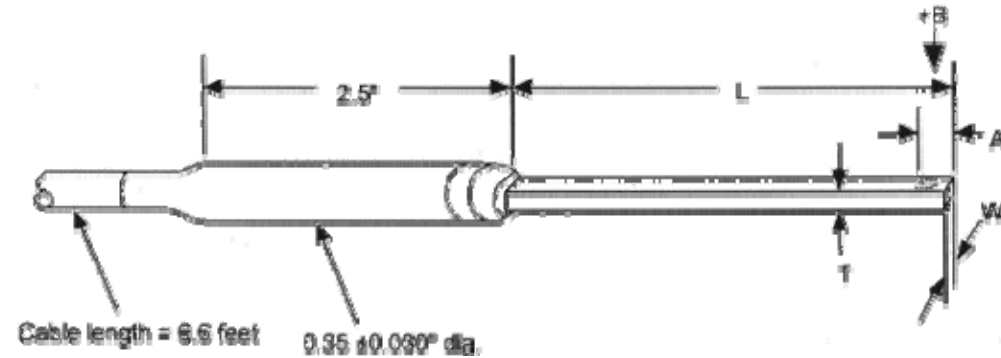


This table is for L = 3 inches and S = 0.375 inches

Model No.	W	T	A	Active Area	Stem Material	Freq. range	Type	Corrected accuracy (% of RDG)	Op. temp. range	Temperature coefficient (max)	
										Zero	Calibration
MFT-3E03-VH	0.135" max	0.025" max	0.125" ±0.005"	0.040" dia (approx)	Flexible tubing	DC and 10 to 400 Hz	HSE-1	±0.25% to 30 kG	0 °C to +75 °C	±0.09 G/°C	FH36: -0.015%/°C
MFT-3E03-VG							HST-1				±0.15% to 30 kG
MFT-2903-VJ	0.085" max	0.020" max	0.065" ±0.005"	0.030" dia (approx)			HSE-1	±0.50% to 30 kG		±0.09 G/°C	FH36: -0.015%/°C
MFT-2903-VH							HST-2				±0.25% to 30 kG

This table is for L = 15 inches and S = 0.75 inches

Model No.	W	T	A	Active Area	Stem Material	Freq. range	Type	Corrected accuracy (% of RDG)	Op. temp. range	Temperature coefficient (max)	
										Zero	Calibration
MFT-4F15-VH	0.150" max	0.045" max	0.150" ±0.005"	0.040" dia (approx)	Flexible tubing & epoxy fiberglass	DC and 10 to 400 Hz	HSE-1	±0.25% to 30 kG	0 °C to +75 °C	±0.09 G/°C	FH36: -0.015%/°C FH35: -0.04%/°C
MFT-4F15-VG										±0.13 G/°C	±0.005%/°C



Model No. L T W A Active Area Stem Material Freq.

range Type Corrected

accuracy

(% of reading) Operating

temp.

range Temperature

coefficient (max) Zero Calibration MMT-6J02-VH 2" 0.061" max 0.180 ±0.005" 0.150 ±0.050" 0.040" dia (approx) Aluminium DC HSE-1 ±0.25% to 30 kG 0 °C

to

+75 °C ±0.09 G/°C FH36: -0.015%/°C

FH35: -0.04%/°C MMT-6J04-VH 4" MMT-6J08-VH 8" MMT-6J18-VH 18" MNT-4E02-VH 2" 0.045" max 0.140 ±0.005" Rigid glass epoxy DC,

10 to

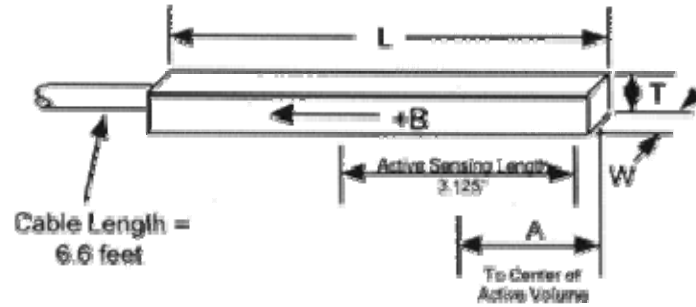
400 Hz MNT-4E04-VH 4" MMT-6J02-VG 2" 0.061" max 0.180 ±0.005" Aluminium DC HST-2 ±0.15% to 30 kG ±0.13 G/°C -0.005%/°C MMT-6J04-VG 4" MMT-6J08-VG 8" MMT-6J18-VG 18"

MNT-4E02-VG 2" 0.045" max 0.140 ±0.005" Rigid glass epoxy DC,

10 to

400 Hz MNT-4E04-VG 4" MCT-3160-WN 60" 0.312" dia max 0.210" ±0.050 Stainless steel HST-1 ±2% to 100 kG 1.5 K to

350 K -0.010%/°C



Small variations in, or low values of large volume magnetic fields, such as that of the earth or fringe fields, around large solenoids, can be measured with these ultra-high sensitivity probes. Resolutions of several gammas (10-5 gauss) to tens of gammas are available depending on the mating gaussmeter.

Application is optimum when fields are homogeneous over length >1 foot. The active sensing length of the gamma probe is -3.125 inches.

Model No.	W	T	A	L	Freq. range	Type	Corrected accuracy (% of reading)	Op. temp. range	Temperature coefficient (max)	
									Zero	Calibration
MLA-5006-HJ	0.25"	0.5"	2.2"	5.7"	DC and 10 to 400 Hz	UHS-1	±0.5% to 2 gauss	0 °C to +75 °C	1 mG/°C	FH36: -0.02%/°C FH35: -0.05%/°C
MLA-5009-HJ			4.5"	9.0"						