



Mag-01H

Single Axis Fluxgate Magnetometer

This portable, high performance instrument provides precision measurements, in one axis, of the intensity of static and slowly varying magnetic fields from 0.1nT to 2mT (1mT = 10G). Axial, transverse and cryogenic probes are available.

The Mag 01H provides a resolution of 0.1nT and an offset control for up to $\pm 90\mu\text{T}$ in $10\mu\text{T}$ steps.

It is mains or battery powered and provide direct readings on a 4½ digit display together with an analogue output.

It features superb linearity and accuracy, and very low drift with time and temperature.

Calibration services provided by Bartington Instruments are traceable to National Standards (NPL). Please contact us if an accredited calibration certificate is required.



Applications

- Cryogenic probes to measure remanent magnetisation inside RF cavities in particle accelerators
- Field uniformity measurements during manufacture of electro and superconducting magnets
- Compass safe distance testing during EMC tests

Features

- Axial, transverse and cryogenic probes
- Resolution to 0.1nT
- Measuring range from $\pm 0.1\text{nT}$ to $\pm 2\text{mT}$
- Offset removal facility
- Very low drift

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Mag-01H Specifications

Performance	
Number of axes	One
Polarity	+ve non-inverting output when pointing North
Measuring range	$\pm 0.2\text{mT}$ or $\pm 2\text{mT}$ depending on probe
Bandwidth	0 to 10Hz, -12dB per octave roll off (DC for x10 sensitivity)
Scaling (analogue output)	Low field probes 10mV/ μT (100mV/ μT with x10 sensitivity) High field probes 1mV/ μT (10mV/ μT with x10 sensitivity)
Scaling temperature coefficient	<10ppm/ $^{\circ}\text{C}$
Offset in zero field (at 20 $^{\circ}\text{C}$)	$\pm 5\text{nT}$
Offset temperature coefficient	0.01nT/ $^{\circ}\text{C}$
Scaling error	$\pm 0.25\%$
Maximum resolution	0.1nT

Environmental	
Operating temperature	0 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$
Relative humidity	0-90% non-condensing



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Mechanical	
Dimensions (W x H x D)	155 x 68 x 175mm
Weight	0.95kg
Enclosure material	High impact ABS
Front panel On/off switch Probe input Charge indicator Offset control (Mag-01H only) Sensitivity control (Mag-01H only)	Switches on internal battery 6 pole waterproof Fischer connector Illuminated when external supply connected Allows $\pm 90\mu\text{T}$ in steps of $\pm 10\mu\text{T}$ to be added or subtracted from the field at the probe Increases the sensitivity by a factor of 10

Electrical	
Power supply	Integral rechargeable lead-acid battery
Battery charger inlet Analogue output low field probes high field probes Output impedance	2.1mm socket 6-18V DC 0.5A max, polarity protected, continuous or intermittent use 4mm insulated sockets 5V full scale 2V full scale 1k Ω
Cable length	5m
Maximum cable length	25m



Mag Probes

The following Mag probes are available.

Type	Low field probes (0 to 0.2mT)	High field probes (0 to 2mT)
Axial	Mag B Probe	Mag D Probe
Transverse	Mag C Probe	Mag E Probe
Cryogenic (axial)	Mag F Probe	Mag G Probe

Measurement range / resolution (LCD display)				
Magnetometer	Low field probes (B, C and F)		High field probes (D, E and G)	
	Range (µT)	Resolution (nT)	Range (µT)	Resolution (nT)
Mag-01H	0–20	1	0–290	10
	20–290	10	290–1000	100
Mag-01H (x10 sensitivity)	0–2	0.1	0–20	1
	2–100	1	20–1000	10
	100–290	10	1000–2000	100

Note: Probes and electronic units are fully interchangeable with a cumulative calibration uncertainty of 0.25%.

Specifications



Performance	
Linearity	0.01%
Scaling accuracy	±1%
Probe alignment error to case	<0.2°
Offset error when probe paired to Mag-01H low field probes high field probes	±5nT ±25nT
Offset error when probe supplied alone low field with probe high field with probe	±25nT ±125nT
Scaling temperature coefficient low field probes high field probes	±10ppm/°C ±30ppm/°C
Sensitive volume of metal cores low field probes high field probes	0.0023cm³ 0.0015cm³
Excitation power low field probes high field probes	26mW 16mW
Operating temperature axial and transverse probes cryogenic probes	-30°C to +75°C Liquid helium to +30°C