

*Innovation in Magnetic Field Measuring Instruments*

## *Mag-01H DI*

*Declinometer/Inclinometer System*



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**Bartington®**  
Instruments

## *Mag-01H DI Fluxgate Declinometer/Inclinometer System*



The Mag-01H Declinometer/Inclinometer system provides fast, accurate and convenient measurements of the declination and inclination of the geomagnetic field.

Reliability and ease of use make this system the ideal choice for magnetic observations and surveying, in both fixed and mobile locations. If required, it can be calibrated against a reference system at a magnetic observatory.

The system comprises a single axis Mag-01H magnetometer, a Mag A fluxgate probe, and a WILD T1 6 seconds steel-free theodolite. A steel-free tripod is available if required.



## *Features*

- Measures localised magnetic field declination and inclination to 6 seconds of arc
- Non-magnetic theodolite
- 20 hours continuous use on internal battery

## *Typical Applications*

- Earth's magnetic field Measurement
- Calibration tool for compasses and rangefinders
- Directional drilling in oil and gas exploration
- Magnetic cleanliness of sites such as aircraft compass calibration pads



## Mag-01H Single Axis Fluxgate Magnetometer



This battery powered instrument provides the drive for the probe and processes its output to show the field strength on a 4½-digit display, updated at 2 readings per second. An analogue output is also provided.

The Mag-01H may be fitted with an audio output indicator, on request. This facility enables the operator to seek the null position without continuously monitoring the digital display. A sensitivity switch can be used to select 1nT or 0.1nT resolution.

The non-magnetic internal battery provides 20 hours of continuous use and can be recharged via the mains adaptor or vehicle connector. Battery voltage is displayed for several seconds after switch-on and an audible alarm indicates when recharging is required. The magnetometer and cable incorporate shielding against radio frequency interference.

Specification – Mag-01H instrument	
Number of axes	One
Polarity	+ve non-inverting output when pointing North
Measuring range	±0.2mT
Bandwidth	DC to 10Hz (-3dB) at 20μT p-p. Roll off -12dB per octave (DC on x10 sensitivity)
Scaling (analogue output)	10mV/μT (100mV/μT with x10 sensitivity)
Scaling temperature coefficient	<10ppm/°C
Offset in zero field	±1nT
Offset temperature coefficient	0.01nT/°C
Scaling error	0.1%
Maximum resolution	0.1nT
Operating temperature range	0°C to +50°C
Relative humidity	0-90% non-condensing
Dimensions (W x H x D)	155 x 68 x 175mm
Weight	0.950kg
Enclosure material	High impact ABS
Liquid crystal display: x1 sensitivity x10 sensitivity	4 1/2 digit autoranging Displays 0 to 20μT with 1nT resolution and 20 to 200μT with 10nT resolution Displays 0 to 2μT with 0.1nT resolution and 2 to 20μT with 1nT resolution
Front panel: On/off switch Probe input Charge indicator Sensitivity control	Switches on internal battery 6 pole waterproof Fischer connector Illuminated when external supply connected Increases the sensitivity by a factor of 10
Rear panel: Battery charger inlet Analogue output x1 sensitivity x10 sensitivity Output impedance	2.1mm socket 6-18V DC 0.5A max., polarity protected, continuous or intermittent use 4mm insulated sockets 100μT/V, ±500μT max, 1nT resolution 10μT/V, ±50μT max, 0.1nT resolution 1kΩ
Battery	Lead acid

## Mag A Probe



The Mag A probe contains a fluxgate element selected for high rejection of orthogonal fields. The element is extremely high quality, very stable and well aligned with little offset. The probe alignment will normally be stable to 1 minute of arc over the suggested two-year calibration period. Re-adjustment is seldom required.

A mechanically isolated enclosure protects the sensor from accidental misalignment. The probe has a strong but highly flexible 5-metre cable for connection to the Mag-01H instrument.

Each probe is individually calibrated to a standard traceable to the UK National Physical Laboratory.

Probes and electronics units are fully interchangeable, with a cumulative calibration uncertainty of 0.25%.

Specification - Mag A Probe	
Calibration accuracy	0.1%
Collimation error	<20 seconds (collimation adjustment by joystick and clamp)
Fluxgate element	Temperature coefficient <10ppm/°C, length 55mm, with precision feedback solenoid
Operating temperature range	-20°C to +80°C
Dimensions (H x W x D): with WILD T1 theodolite with Zeiss theodolite	32.5 x 106* x 50mm 25 x 100* x 50mm * Add on 10mm for cable gland
Weight	250g
Protective enclosure	Aluminium housing, mechanically isolated from element mounting
Connecting cable: length core-screen capacitance resistance	4-core overall screened high flexibility audio grade with 6 pole Fischer connector 5m standard (alternative lengths available) 160pF/m 92Ω/km



## WILD T1 Steel-free Theodolite



As these optical theodolites are no longer manufactured, each unit supplied is pre-used, restored as far as possible to its original condition and meticulously converted to be steel-free. All magnetic components are replaced by a non-magnetic equivalent. The horizontal and vertical axis bearings are replaced with specially plated phosphor bronze parts, and the steel ball-race removed from the horizontal axis. The WILD axis lubrication system ensures that these parts require zero maintenance.

The redundant resetting mechanism for the horizontal circle has been eliminated to give enhanced accuracy. The steep sighting prisms allow fields down to  $18^\circ$  to be measured. The optical/magnetic collimation error is set to less than 20 seconds.

All theodolites undergo a rigorous check for magnetic hygiene and are guaranteed to be non-magnetic.

Theodolite (steel-free)	WILD T1 (360°)
Scaling division	6 seconds
Estimation	3 seconds
Directional accuracy*	3 seconds

\* The directional accuracy is given as the standard deviation to DIN 18723 of a direction measured in two telescope positions.

Weight with fluxgate sensor fitted	5.85kg
Weight in carrying case	8.75kg

A separate manual for the WILD T1 theodolite is available on request.



# Accessories and Optional Extras

The Mag-01H and the Wild T1 theodolite are each provided in a robust polycarbonate carrying case.



Accessories	
AC mains adaptor for 110/220/240V with outlet adaptors	
Vehicle charging connector 12V DC output (12-24V input)	
Operation Manual for Mag-01H Declinometer/Inclinometer and Wild T1 theodolite	
Screwdriver	
Orange filter and sun filter	
Lens cap	
Mag-01H carry bag	
Polycarbonate carrying case for Mag-01H and accessories	

Optional extras	
Steel-free tripod (5/8 - 11 UNC)	Tripod weight: 6.1kg (8kg packaged)
Steep sighting prisms	
Audio output	
Calibration check at Hartland Point Observatory	
Chemiluminescent light sources (for night use)	
Pillar mounting adaptor (5/8 - 11 UNC) with pins on a 120mm PCD	



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The specifications of the products described in this brochure are subject to change without prior notice.