

Software

A comprehensive range of PC compatible software is available for use with the *MS2* system.

Multisus

Multisus is used in conjunction with the *MS2* meter and sensors type *MS2B*, *MS2C* , *MS2E* or *MS2G*. It includes a facility for drift correction of measurements and the calculation of the frequency coefficient of susceptibility. Data can be output to a printer or downloaded into a spreadsheet for further manipulation. [Further information and a full version download](#) are available.

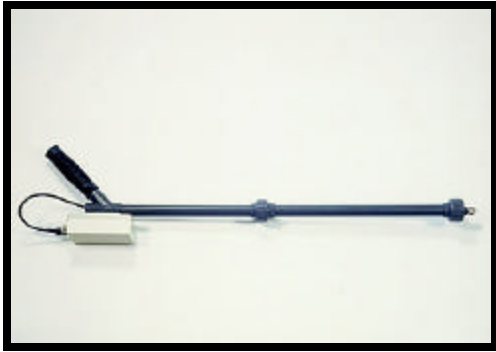
AMS-BAR

AMS-BAR is a dedicated package for the measurement of the anisotropy of magnetic susceptibility for use in conjunction with the *MS2* meter and *MS2B* sensor. A sample adaptor, designed for 25mm diameter paleomagnetic samples, is supplied with the software.

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MS2 Probe Handle With Electronics Unit



Probes type *MS2D* and *MS2F* are used in conjunction with this handle which is submersible to the depth of the electronics unit (0.6 meters).

The *MS2F* probe can be used in conjunction with both parts of the handle or with the upper section only.

<i>Weight</i>	0.65kg
<i>Dimensions</i>	Upper section 430mm long
	Lower section 360mm long

Equipment Carrying Case



This lockable case has internal cut-outs to suit individual customer requirements. It has a tough exterior which provides maximum protection for the equipment.

<i>Weight</i>	8-10kg (with equipment)
<i>Dimensions</i>	570 x 430 x 240mm

MS2G Single Frequency Sensor



This sensor is designed for magnetic susceptibility measurements of 1ml liquid or powder samples. The sensor operates in conjunction with the MS2 meter at a low frequency and has a high temperature stability and a resolution of 1×10^{-7} CGS (1×10^{-6} SI) volume susceptibility. It is used for susceptibility measurements where only very small samples of homogeneous fine grained material are available.

Examples are airborne particulates collected in filter papers or particles in colloidal suspension.

The sensor accepts commercially available polythene vials with a diameter of 8mm and a length of 30mm. The sample holder is compatible with other rock measuring equipment allowing for a comprehensive range of measurements to be taken without the need for re-packing the sample. The sample cavity is situated at the tip of a boom mounted on the aluminum electronics module.

A detachable screw adjustment is provided for optimizing the position of the vial for sample volumes between 0.2 and 1ml. Calibration correction factors are given on the label.

<i>Calibration accuracy</i>	2%* (a calibration check sample is supplied)
<i>Resolution</i>	1×10^{-7} CGS, 1×10^{-6} SI (volume susceptibility)
<i>Measurement period</i>	0.9 seconds (SI), 0.7 seconds (CGS) on 1.0 range 9 seconds (SI), 7 seconds (CGS) on 0.1 range
<i>Operating frequency</i>	1.3kHz
<i>Drift - at room temperature</i>	$<2 \times 10^{-7}$ CGS in 5 minutes
<i>Enclosure</i>	Aluminium and ceramic
<i>Sample cavity diameter</i>	8.5mm
<i>Sample cavity height</i>	28mm
<i>Sensitive region</i>	5mm length at centre of cavity
<i>Weight</i>	670g
<i>Dimensions</i>	189 x 91 x 67mm
<i>Sample vial - 1ml volume</i>	Kartell part number 730
* May be used with sample volume down to 0.2ml - scaling correction data supplied	

Sensor Type *MS2E2*



This sensor is identical to the *MS2E1* except that the ceramic tube housing the sensor is set in the face of the metal enclosure.

It is designed for magnetic screening of small parts such as aneurism clips or other implant components.

Due to the high measuring frequency the sensor is very sensitive to conductors, and is therefore not suitable for solid metal samples except where they have a cross section of less than about 1 square mm. The specification is identical to the *MS2E1* except the dimensions which are 64 x 50 x 100mm.

Probe Type *MS2F*



This miniature probe is ideal for the stratigraphic study of exposed geological and archaeological sections. It is also used where difficult surface conditions prevent good contact with the *MS2D* loop. The probe can only be operated in conjunction with the *MS2* probe handle.

<i>Area of response</i>	end face and cylinder wall up to the shoulder
<i>Depth of response</i>	10% at 6mm from end face and 4.5mm from outer diameter of cylinder
<i>Measurement period</i>	0.9 seconds on 1.0 range
	9 seconds on 0.1 range
<i>Operating frequency</i>	0.58kHz
<i>Drift - at room temperature</i>	<20 x 10 ⁻⁶ CGS in 20 minutes after 20 minutes operation
<i>Enclosure</i>	Nylon 6.6
<i>Weight</i>	0.075kg
<i>Dimensions</i>	88 x 20 x 15mm
<i>See also the MS2 probe handle with electronics unit</i>	

Sensor Type MS2E1



This sensor is designed for high spatial resolution measurements of magnetic susceptibility along flat surfaces with a roughness of <1mm, particularly for split drill or soft sediment cores with no metal cladding.

The sensitive area of the probe, as defined by 50% maximum response is in the form of a rectangle 3.8mm x 10.5mm. The position of the long axis is identified by marks on the circumference of the ceramic cylinder. Soft or wet cores may be protected by a thin (<0.05mm) plastic film during the measurement to avoid smearing.

The sensor is connected directly to the MS2 meter by a cable which may be up to 30m (standard 5m) in length.

<i>Area of response</i>	3.8mm x 10.5mm at the end of the ceramic cylinder
<i>Depth of response</i>	50% at 1mm, 10% at 3.5mm
<i>Measurement period</i>	1.2 seconds on 1.0 range 12 seconds on 0.1 range
<i>Operating frequency</i>	2kHz
<i>Drift - at room temperature</i>	<2 x 10 ⁻⁶ CGS in 10 minutes after 5 minutes operation
<i>Enclosure</i>	aluminium and ceramic
<i>Weight</i>	0.22kg
<i>Dimensions</i>	64 x 25 x 140mm

Search Loop Type MS2D



This loop is designed for rapid assessment of the concentration of ferromagnetic minerals in the top 60mm (approximately) of the land surface. It is used in studies of slope processes and is a powerful tool in archaeological prospecting, as human habitation leads to an irreversible magnetic enhancement of the soil, mainly as a result of burning. It has been used in conjunction with handle extension tubes, to trace the movement of artificially enhanced river bed load, to depths of 5 meters. The MS2D loop can only be operated in conjunction with the MS2 probe handle.

<i>Depth of response</i>	50% at 15mm, 10% at 60mm
<i>Measurement period</i>	0.5 seconds on 1.0 range
	5 seconds on 0.1 range
<i>Operating frequency</i>	0.958kHz
<i>Drift - at room temperature</i>	$<20 \times 10^{-6}$ CGS in 20 minutes after 20 minutes operation
<i>Enclosure</i>	reinforced epoxy
<i>Weight</i>	0.5kg
<i>Dimensions</i>	Mean diameter 185mm
	Overall height 100mm
<i>See also the MS2 probe handle with electronics unit</i>	

Sensors Type MS2C



A series of loop sensors, ranging from 36 to 162mm in diameter, is available for high resolution volume susceptibility measurements on whole cores. They are suitable for measuring any type of peat, lake or marine sediment core, provided it is not metal clad.

As a result of their rugged construction these sensors are ideally suited for laboratory, field or shipboard use.

Data obtained with these sensors are of great value in prospection, core correlation and multiple core studies and in identification of paleoclimatic sequences.

Optimum measurement accuracy is achieved with 5-10mm core clearance. Calibration graphs are provided for intermediate core sizes.

These sensors can be used with automated core analysis systems - details on request.

<i>Internal diameter of loop</i>	36, 40, 45, 60, 72, 80, 90, 100, 125, 130, 135, 140, 145, 150, 160 or 162mm standard (other sizes between 40 and 200mm are available at an additional cost)
<i>Calibration accuracy</i>	5%
<i>Measurement period</i>	0.9 seconds on 1.0 range 9 seconds on 0.1 range
<i>Operating frequency</i>	0.565kHz
<i>Drift - at room temperature</i>	$<2 \times 10^{-6}$ CGS in 10 minutes after 5 minutes operation
<i>Enclosure</i>	white polyacetal
<i>Weight</i>	2-2.65kg depending on loop diameter
<i>External dimensions</i>	290 x 200 x 144mm

Sensor Type MS2B



This sensor accepts 10ml and 20ml cylindrical bottles, 25.4mm and 23mm cubic boxes, 35mm pots and 25.4mm cylindrical cores.

A manually operated platen allows the sample to be inserted and positioned centrally within the sample cavity.

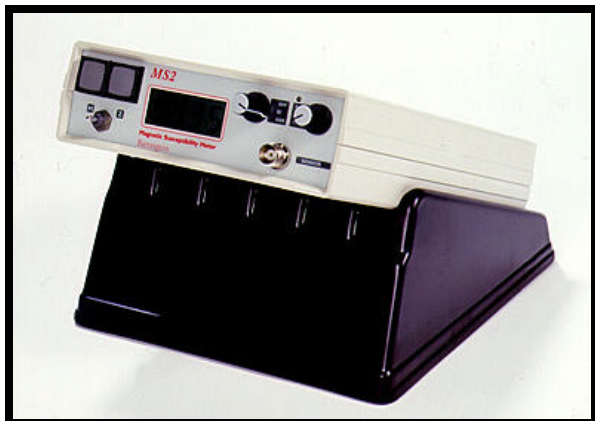
The sensor is used for mass or volume specific susceptibility measurements of standard paleomagnetic samples in studies of rock and mineral magnetism. It is also used in conjunction with the AMS-BAR software and sample adaptor for measurements of the anisotropy of susceptibility.

The unique dual frequency facility permits identification of ferromagnetic grains close to the superparamagnetic stable single domain transition. This information is critical to many aspects of interpretation, for example in studies of weathering and soil formation, fossil soil identification and characterization, and sediment or dust source investigations.

In archaeology, precise measurements with this sensor confirm and enhance the evidence of ancient human occupation and land use obtained with the MS2 field sensors.

<i>Calibration accuracy</i>	1% (10ml calibration sample provided)
<i>Measurement period</i>	1.2 seconds on 1.0 range
	12 seconds on 0.1 range
<i>Operating frequencies</i>	0.465kHz and 4.65kHz
<i>Drift - at room temperature</i>	$< 2 \times 10^{-6}$ CGS in 3 minutes after 5 minutes operation
<i>Enclosure</i>	ABS
<i>Weight</i>	0.8kg
<i>Dimensions</i>	200 x 110 x 110mm

Magnetic Susceptibility Meter Model *MS2*



Features of the *MS2* meter include a choice of SI or CGS units, single or continuous measurements, 4 digit plus sign LCD, RS232 interface and an optional analog output.

Internal batteries are rechargeable from the mains or a vehicle dashboard.

Specification	
<i>Display - x1 range x0.1 range</i>	1-9999 0.1-999.9
<i>Display exponent - volume specific mass specific</i>	10 ⁻⁶ CGS or 10 ⁻⁵ SI 10 ⁻⁶ CGS or 10 ⁻⁸ SI
<i>Operating temperature range</i>	-10°C to 40°C
<i>Enclosure</i>	high impact ABS
<i>Weight</i>	1.3kg
<i>Dimensions</i>	255 x 158 x 50mm
<i>Sensor cable</i>	50 ohms TNC to TNC, 1 metre length, alternative lengths to 100 metres available on request
<i>Internal batteries</i>	14 x 0.45Ah sealed Nickel/Cadmium batteries in removable cassette, 8 hours continuous use without recharge
<i>Battery charger inlet</i>	2.1mm socket, dc polarity protected, 6-14V, 100mA maximum
<i>RS232 interface</i>	standard baud rate 1200. (9600 baud rate available on request)
<i>Interface connector</i>	4-way rear panel Fischer socket
Accessories	
<i>Instrument stand, vehicle dashboard connector 12V dc, carrying bag, RS232 interface cable (2m)</i>	
<i>Mains adaptor/battery charger - 110V or 220V (as requested)</i>	
<i>Options - Service manual, equipment carrying case, 10cc polystyrene sample bottles</i>	
<i>Booklet - Environmental Magnetic Susceptibility - Using The Bartington MS2 System - © Prof. J. A. Dearing 1994</i>	

Magnetic Susceptibility System



The **MS2** system is the international standard for the measurement of magnetic susceptibility in environmental sciences. The **MS2** meter is a portable instrument with sensors for field and laboratory use. The system is used in geomorphology, geophysics, archaeology and mineral exploration.

The **MS2** is a versatile system with a range of individually calibrated sensors. It has a high resolution and accuracy, excellent temperature stability and very low measurement drift. It provides non destructive measurements and has a low operating frequency so measurements are not affected by sample conductivity. Readings are taken in around 1 second.

MS2 Meter - The meter has a sensitivity of 2×10^{-6} SI (2×10^{-7} CGS) with a 4 digit display in SI or CGS units and an RS232 serial interface. Software and a field data logger are available for PC compatibles. The meter can be used with any of the following sensors:

MS2B - Laboratory sensor for dual frequency measurements on 25.4mm cores or 10ml samples.

MS2C - Range of core logging sensors with diameters from 36 to 162mm for measurements on sediment cores with no metal cladding. Automated core analysis systems are available.

MS2D - Field survey loop with 185mm diameter for surface measurements.

MS2E1 - Sensors with 3.8x10.5mm area of response for high resolution surface measurements of split cores.

MS2E2 - Similar to **MS2E1** but with different geometry for magnetic component screening.

MS2F - Probe with 15mm diameter for high resolution surface measurements.

MS2G - Single frequency sensor for 1ml samples.

MS2 Handle - With integral electronics for **MS2D** and **MS2F** probes.

Equipment Carrying Case - For maximum protection of the equipment.

MULTISUS - Software for laboratory measurements with **MS2B**, **MS2C**, **MS2E** or **MS2G** sensors.

AMS-BAR - Software for the measurement of the anisotropy of magnetic susceptibility in conjunction with the **MS2B** sensor.