

Magneto-Resistance (MR) Option

Option for DMS Vibrating Sample Magnetometers

Description

The MR option is a high temperature 4-point resistance probe that can measure resistances between 1 and 10,000 Ohms, as a function of magnetic field, with a resolution better than 0.01% of the full scale. The system is fast and easy to use. Typically, samples can be loaded and measured in less than 2 minutes. Powerful measurement software provides automatic extraction of all parameters, including dR/R , and coercivity and exchange field from the free and pinned layer. The reference current is user settable between 0 and ± 20 mA.

The MR probe is easy to install. It allows users to quickly reconfigure their VSM for this measurement. The MR probe is attached to the vibrator just like the regular DMS sample holders. Changing the system from VSM to MR measurements is as simple as changing a VSM sample.

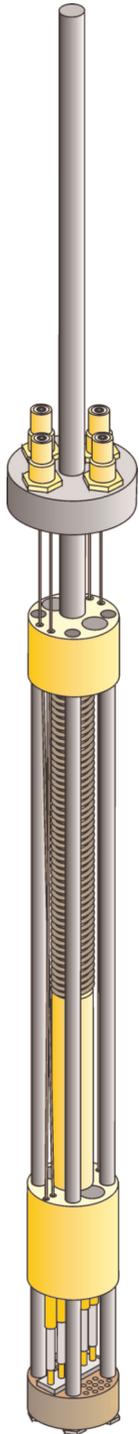
The MR probe is designed to fit into the DMS cryostat, and it will operate at temperatures between 0°C and 400°C . Custom designed high-temperature contacts are used to ensure good electrical contact. To further improve electrical contact, the signal processor can exert a "punch through" action. This is done without damaging MR devices.

The MR measurement software is easy to understand. It allows the user to create recipes that can be saved and retrieved. A number of preparation steps (like anneal steps for fixed or multiple durations and temperatures) can be

- ▲ 4 point measurement probe
- ▲ User programmable extraction formulas
- ▲ 2 minute measurement including handling
- ▲ High temperature capability up to 400°C
- ▲ Automatic extraction of parameters from free and

executed automatically. There are no difficult adjustments since the MR signal processor is fully auto-ranging. Data can be saved and retrieved later for viewing, manipulation and printing.

The MR package consists of a probe, an MR signal processor unit, a data-acquisition card and software. The MR software runs on an IBM-based system controller for the DMS division Vibrating Sample Magnetometer, which is not included. Users with older style system controllers can upgrade their controller to be compatible with the MR measurement option.



*4-Point Magneto-Resistant Probe
Replaces Sample Holder for
MR Measurement*



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Temperature Option

DMS Model 1660-LNA temperature chamber for fast regulation of the temperature of the MR probe between 0°C and +400°C. (Both up and down at about 20°C per minute). The probe is equipped with its own thermocouple that measures the temperature on the heat spreader disk directly under the sample.

High Speed Option

DMS Model 32 KP Gaussmeter includes a high speed field controller. Using the 32KP Gaussmeter, superior speed and field resolution is obtained. (For example: +1000 Gs to -1000 Gs in steps of 1 Gs is done within 1 minute).

Specifications

Ohms Range:	1~10,000 Ohm	Temperature Range:	0°C to +400°C
Ohms Resolution:	0.01% of Full Scale	Temperature Resolution:	0.1°C
Ohms Accuracy:	1%	Temperature Accuracy:	1% of temperature in Celcius ±1°C
Ohms Repeatability:	0.1%	Punch through:	±15 V on pins 1 and 2 (user settable time)
Reference Current Range:	Programmable to any value between -20 mA and +20mA		±15 V on pins 3 and 4 (user settable time)
Reference Current Resolution:	0.01% of full scale	Power:	110 V AC, 50W, feeding of power outlet of VSM.
Reference Current Accuracy:	0.1% of full scale	Dimensions of signal processor:	19" W x 5.25" H x 12"D
Voltage Compliance Range:	Programmable to any value between -10 V and +10 V		
Voltage Compliance Resolution:	0.01% of full scale		
Voltage Compliance Accuracy:	0.1% of full scale		



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