High-Performance Vibrating Sample Magnetometer (VSM) for Advanced Magnetic Research

Vibrating Sample Magnetometer

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The Challenge: Precise & Efficient Magnetic Measurement

Laboratory researchers and equipment purchasers face a common challenge: a need for a single, versatile, and highly accurate instrument that can quickly and reliably characterize the magnetic properties of a wide range of materials. Traditional methods are often manual, time-consuming, and lack the precision required for cutting-edge research.

Our **Vibrating Sample Magnetometer (VSM)** is engineered to solve these pain points. It provides automated, high-precision magnetic measurements, eliminating manual errors and significantly reducing the time required for data acquisition. This allows you to focus on your research, not on the tedious process of measurement.

Key Benefits: Precision Meets Performance

- **Exceptional Sensitivity & Accuracy:** Measure magnetic moments from 10?2 emu

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down to an industry-leading 10?5 emu sensitivity. With a relative accuracy and repeatability of **better than ±1%**, you can trust your data for critical research applications.

- **Broad Material Compatibility:** Characterize a diverse range of materials, including **powders, films, particles, bulk solids, and liquids**, making it the perfect all-in-one solution for your lab.
- **Fully Automated Operation:** Our VSM features a modern, user-friendly interface that controls all aspects of the measurement, from **phase locking to data acquisition**. Get results faster with minimal user intervention.
- **Comprehensive Data Analysis:** Instantly generate and display key magnetic parameters like **coercive force, saturation magnetization, remanence, and susceptibility** on-screen or print them for your records. The system automatically plots essential curves, including hysteresis loops, magnetization curves, and temperature-dependent magnetic changes.
- **Variable Temperature Capability:** The included **Low-Temperature Furnace** allows for measurements over a wide temperature range, from **77K to 400K**, enabling detailed studies of temperature-dependent magnetic transitions, such as the Curie temperature.

How It Works: The Science of VSM

The VSM's principle is based on electromagnetic induction. A sample is placed in a strong, stable magnetic field and made to vibrate at a high frequency (185 Hz). This cyclic motion induces a proportional voltage signal in a nearby detection coil. This signal, which is directly related to the sample’s magnetic moment, is then amplified and analyzed by the system's advanced electronics and software to provide highly accurate and repeatable magnetic measurements.

Technical Specifications: Built for Your Lab

Measurement Capabilities

- **Magnetic Moment Range:** 10?2 emu to 300 emu
- **Sensitivity:** 1×10?5 emu
- **Magnetic Field Range:** ± 1.6 T
- **Relative Accuracy (30 emu):** Better than ±1%

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- **Repeatability (30 emu):** Better than ±1%
- **Stability (30 emu):** Better than ±1% over 24 hours of continuous operation (after 24-hour preheating)
- **Variable Temperature:** 77K to 400K via included Low-Temperature Furnace

Core Components

Component	Model	Specifications
Electromagnet	MSDXV1751.6TSWISS	±1.6 T field range, water-cooled
Power Supply	Custom	High-stability DC power, 0-8.1 kW, with built-in protection
Vibration System	Custom	185 Hz vibration frequency, >50W output power
Control System	VSM Cabinet	Steady flow power, vibrating source, lock-in amplifier, Gauss meter
Data & Analysis	Lenovo PC	2GB RAM, 500GB HDD, 17" LCD monitor
Temperature Control	Low-Temp Furnace	77K to 400K
Cooling Unit	Lab Chiller	For water-cooled electromagnet
Printer	HP-1018	

Safety and Operation

For optimal performance and safety, always follow the operational guidelines provided in the comprehensive user manual. The system features multiple built-in protections, but always ensure proper installation and avoid contact with high-voltage connections during operation. Interested in learning more about how our VSM can elevate your research? [Contact us today].

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