



MAGNETOMAT

PC-supported magnetometer for measuring magnetic flux density and relative permeability



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Precisely measure magnetic fields and permeability.

MAGNETOMAT is a 4-channel measurement system for determining magnetic flux density and relative permeability. Using fluxgate probes, it measures static and low-frequency dynamic magnetic fields. A wide range of probes and sensors enables the system to be adapted to different measurement tasks.

Typical applications range from monitoring magnetic environments and checking components for residual magnetic fields to locating ferritic inclusions in stainless steels and non-ferrous materials. Permeability measurements also support quality control of low-permeability materials and can reveal material changes through comparative measurements.

Measurement display, data storage and export are handled via the PC software. Up to four magnetic field probes or permeability probes can be connected. Sensors and sensor electronics are supplied calibrated with a certificate. Stored device and calibration parameters as well as automatic sensor recognition support reliable and convenient operation.

For automated applications, MAGNETOMAT can be used as a benchtop device or installed on a DIN rail inside a control cabinet. USB and Ethernet, a trigger input, and up to six programmable inputs and outputs enable integration into automated measurement and testing systems.

YOUR ADVANTAGES AT A GLANCE

Two measurement parameters in one system:

Measurement of magnetic flux density and relative permeability μ_r

Up to 4 measurement channels: Connection of up to four magnetic field probes or permeability probes

Versatile sensor options: Wide range of fluxgate probes and permeability probes for different measurement tasks

Calibrated components: Sensors and sensor electronics with certificate, stored calibration parameters and automatic sensor recognition

PC-based data analysis: Measurement display, data storage and export via the associated software

Designed for automation: USB, Ethernet, trigger input and programmable I/Os for integration into automated measurement systems

NORMS

- STANAG 2897 and AEODP-7
- VG 95578
- API Spec 7

- ASTM A342M method 4
- IEC 60404-15 Section 6

TECHNICAL INFORMATION

MAGNETIC FIELD MEASUREMENT RANGE:	100 μ T / 1 mT, switchable
PERMEABILITY MEASUREMENT RANGE:	μ r 1.00000–2.00000
MEASUREMENT UNCERTAINTY, MAGNETIC FIELD:	1.5% of measured value
MEASUREMENT UNCERTAINTY, PERMEABILITY:	5% of measured value
MEASUREMENT CHANNELS:	Up to 4 magnetic field probes or permeability probes
RESOLUTION:	24-bit ADC
DATA RATE:	2 kHz
PC INTERFACE:	USB / Ethernet
TRIGGER INPUT:	Incremental encoder, sensors (4–20 mA), digital input
I/O INTERFACES:	Up to 6 programmable inputs and outputs
SUPPLY VOLTAGE:	24 V DC
AMBIENT TEMPERATURE:	0 to +40 °C
ELECTRONICS DIMENSIONS (L × W × H):	190 × 172 × 85 mm
ELECTRONICS WEIGHT:	Approx. 1.5 kg

PROBES AND SENSORS FOR MAGNETOSCOPE & MAGNETOMAT

Flexible Solutions for Magnetic Field and Permeability Measurements



Precise adaptation to different measurement tasks. Probes and sensors for MAGNETOSCOPE and MAGNETOMAT enable precise measurement of magnetic flux density as well as determination of relative permeability μ_r across a wide range of applications. Depending on the task, absolute and differential probes as well as permeability probes are available.

All probes and sensors are calibrated, delivered with a certificate, and include stored calibration and device parameters. When connected to the MAGNETOSCOPE 1.070 or the MAGNETOMAT, the probes and sensors are automatically detected and ready for immediate use.

The different probe types allow both the detection of smallest local magnetic field anomalies and the measurement of large-scale magnetic disturbances. Differential probes effectively compensate for the Earth's magnetic field and external influences from distant sources.

Permeability probes enable standard-compliant measurement of relative permeability in accordance with IEC 60404-15 and ASTM A342/A342M, supporting quality control of stainless steels and low-permeable (non-magnetic) alloys.

YOUR ADVANTAGES AT A GLANCE

Adapted to every measurement task: Different probes for local and large-scale magnetic field measurements

High measurement accuracy: Calibrated components with stored calibration data

Fast setup: Automatic probe detection by the MAGNETOSCOPE & MAGNETOMAT

Effective interference compensation: Differential probes reduce influence of Earth's field and distant disturbances

Flexible measurement concepts: Suitable for absolute and differential measurements

Standard-compliant permeability testing: Measurement according to IEC 60404-15 and ASTM A342/A342M

Wide application range: From remanence testing to long-term monitoring of magnetic environments

Reliable results: Calibration traceable to national standards

TECHNICAL INFORMATION

PD-100-100 (DIFFERENTIAL PROBE):	— Sensor spacing 100 mm — Probe length approx. 208 mm, cable length approx. 3 m — Measuring range 1 nT – 100 μT — For large-scale magnetic field anomalies — Compensation of Earth's field and distant disturbances — Low spatial dependency in homogeneous magnetic fields (< 50 nT) — Suitable for large-area disturbances
PD-100-20 (DIFFERENTIAL PROBE):	— Sensor spacing 20 mm — Probe length approx. 104.5 mm, cable length approx. 3 m — Compact design, tip $\varnothing$ 6.5 mm — Measuring range 10 nT – 100 μT — For small local anomalies and remanence detection — High spatial resolution — Low spatial dependency (< 100 nT)
PFD-100 (ABSOLUTE OR DIFFERENTIAL PROBE)	— Sensor length approx. 60 mm, cable length approx. 3 m — Usable as absolute or differential probe — Measuring range 1 nT – 100 μT / 200 μT — For residual field and remanence measurements on individual components — Flexible adaptation to measurement tasks — Optional non-magnetic holder
PF-1000 (ABSOLUTE PROBE)	— Sensor housing approx. 60 × 4.6 × 3.5 mm, cable length approx. 3 m — Measuring range 10 nT – 1 mT — Axial sensor alignment — Determination of field strength and direction — Suitable for component and field measurements
PP-2-5 (PERMEABILITY PROBE)	— Housing approx. 65 × 27 mm, cable length approx. 3 m — Measuring range μr 1.00000 – 2.00000 — Determination of relative magnetic permeability measurement according to IEC 60404-15 and ASTM A342/A342M — Calibration traceable to national standards — Suitable for quality control of stainless steels and non-magnetic alloys

MAGDATA SOFTWARE

Software Solutions for Data Transfer, Analysis and HotSpot Evaluation



Efficient visualization, analysis and documentation of magnetic measurement data. MAGDATA software supports the acquisition, transfer, visualization and analysis of measurement data from the MAGNETOSCOP 1.070 and MAGNETOMAT 1.790.

The modular software concept combines communication, data evaluation and reporting functions for different measurement and analysis tasks:

- **MAGDATA TRANSFER:** Standard module for communication, data import/export and firmware updates
- **MAGDATA HOTSPOT:** Optional module for visualization, HotSpot analysis and API Spec 7 reporting of MAGNETOSCOP data
- **MAGDATA MAGNETOMAT:** Optional module for measurement acquisition, visualization and evaluation of MAGNETOMAT data
- **MAGDATA DLL:** Optional interface module for integration of the measurement system into customer-specific applications and software solutions

Measurement data can be displayed graphically and in tabular form, analyzed statistically and processed for dynamic measurement procedures including position and trigger information. Reference measurements for offset compensation as well as threshold values and magnetic HotSpots can also be visualized and evaluated.

The software additionally supports report generation for single and series measurements, including documentation according to API Spec 7.

YOUR ADVANTAGES AT A GLANCE

Modular software concept: Software modules for data transfer, analysis and measurement acquisition

Efficient data evaluation: Graphical and tabular analysis of measurement data and series

HotSpot analysis: Visualization and marking of magnetic anomalies

Dynamic measurement procedures: Processing of position- and trigger-based measurement data

Reproducible results: Offset compensation using reference measurements

Flexible data export: Export to .txt, .csv, .xml and .tdm (LabVIEW™)

Comprehensive documentation: Reports for single and series measurements including API Spec 7

Flexible licensing: Multiple software licenses can be stored on one dongle

TECHNICAL INFORMATION

OPERATING SYSTEM	Windows 7 or higher
SYSTEM ARCHITECTURE	32 bit / 64 bit
DATA EXPORT	.txt, .csv, .xml, .tdm (LabVIEW™)
VISUALIZATION	Graphical and tabular display
REPORT FORMATS	Single measurements, series measurements, API Spec 7
LANGUAGES	German and English
LICENSING	— MAGDATA TRANSFER included — HOTSPOT, MAGNETOMAT, DLL available as optional modules
DONGLE REQUIRED	For HOTSPOT and MAGNETOMAT
DOTNET FRAMEWORK	Version 4.5 or higher
HOTSPOT EVALUATION	Threshold values, markers and offset compensation
SIMULTANEOUS CHARTS	Up to 16 charts in MAGDATA HOTSPOT



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The FOERSTER Group is represented by subsidiaries and representatives in over 60 countries worldwide. You can find a complete overview on our website.

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