



MAGNETOSCOP

Portable Solution For Magnetic Field and Permeability Measurement



MAGNETOSCOP 1.070

MAGNETOSCOPE

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Precise magnetic field and permeability measurements for mobile inspection applications. The MAGNETOSCOPE 1.070 is a portable microprocessor-controlled magnetometer system for measuring magnetic flux density and relative magnetic permeability. Using fluxgate probes, the system measures magnetic fields as absolute values or gradients for reliable detection of remanence, magnetic anomalies and material changes.

The system is designed for mobile inspection and quality assurance applications requiring precise magnetic measurements. Typical applications include testing feebly magnetic materials and components for remanence, determining the demagnetization status of steel parts, detecting ferrous inclusions in austenitic steels and non-ferrous alloys, as well as permeability measurements on low-permeable and non-magnetic materials.

MAGNETOSCOPE additionally supports long-term monitoring of magnetic environmental conditions, for example prior to the installation of magnetically sensitive systems such as MRI equipment. Comparative permeability measurements also enable verification of material changes caused by carburization, corrosion, coating reduction or microstructural alterations.

The compact measuring instrument features a clear menu structure, integrated data logging and editable measuring procedures with graphical operator guidance. Measurement data and parameters can be stored directly on the SD card and transferred via USB interface for further analysis and report generation using the MAGDATA software.

The system supports single and batch measurements, peak value detection, threshold monitoring as well as visual and acoustic alarms. Automatic probe recognition simplifies operation and enables fast setup during mobile inspections.

YOUR ADVANTAGES AT A GLANCE

Precise magnetic measurements: Measurement of magnetic flux density as absolute value or gradient

Versatile inspection applications: Suitable for remanence testing, demagnetization verification and inclusion detection

Reliable material evaluation: Detection of material changes through comparative permeability measurements

Long-term magnetic monitoring: Monitoring of magnetic environmental conditions for sensitive installations

Efficient mobile operation: Compact lightweight design for portable inspection tasks

Integrated data logging: SD card storage, USB interface and MAGDATA software support

Advanced operator support: Editable procedures, automatic probe recognition and alarm functions

Flexible power supply: Battery, rechargeable battery pack or mains operation

NORMS

IEC 60404-15 Section 6: Describes the determination of the relative permeability μ_r in the range from 1.0 to 2.0 using the probe measuring method. The method described above is advantageous as it provides the option to perform measurements of materials and finished components directly on site. It is not required to manufacture special measuring samples.

ASTM A342M method 4: Describes the determination of the relative permeability μ_r in the range from 1.0 to 2.0 using the probe measuring method. The method described above is advantageous as it provides the option to perform measurements of materials and finished components directly on site. It is not required to manufacture special measuring samples.

STANAG 2897 and AEODP-7: Specify the framework for the testing of non-magnetic tools for use in explosive ordnance disposal (EOD). The test method is based on the measurement of the magnetic residual field of the components to be tested using an absolute or gradient magnetometer.

API Spec 7: Describes the testing of oil drilling rigs for the detection of non-magnetic properties. The test method is based on the measurement of the magnetic residual field and relative permeability μ_r .

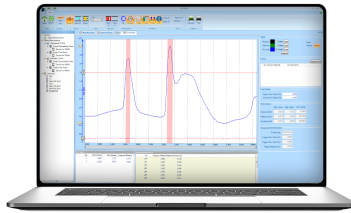
VG 95578: Describes the determination of the relative permeability μ_r in the range from 1.0 to 2.0 using the probe measuring method. The method described above is advantageous as it provides the option to perform measurements of materials and finished components directly on site. It is not required to manufacture special measuring samples.

TECHNICAL INFORMATION

MEASUREMENT RANGE:	0.1 nT to 50 mT μ r 1.0 to 2.0
UNCERTAINTY OF FIELD MEASUREMENT:	1.5 % of the measurement range
UNCERTAINTY OF PERMEABILITY MEASUREMENT:	5 % of the measured value
RESOLUTION:	24 Bit ADC
DIMENSIONS MEASUREMENT INSTRUMENT:	221 × 102 × 41 mm
DISPLAY SIZE:	3,5"
WEIGHT MEASUREMENT INSTRUMENT INCL. BATTERIES:	0.62 kg
PROTECTION GRADE:	IP 54
AMBIENT TEMPERATURE:	0 to 40 °C
BATTERY TYPE:	— Alkaline: 4 × 1,5 V, Mignon, Typ AA, IEC LR6 — NiMH: 4 × 1,2 V, Type AA, 2850mAh

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

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

MAGNETOSCOP POWER KIT

Extended Operating Time for Mobile Measurements



Reliable external power supply for extended mobile operation. The MAGNETOSCOP POWER KIT enables extended mobile operation of the MAGNETOSCOP using an external USB power bank. The device remains securely stored inside the carrying bag and remains fully operable through the transparent front panel.

A dedicated rear compartment allows quick and easy replacement of the power bank without removing the instrument from the bag, ensuring uninterrupted measurements during extended measurement campaigns. An integrated internal USB-A cable provides a reliable external power supply and significantly increases operating time in mobile applications.

The MAGNETOSCOP POWER KIT includes the carrying bag and USB connection cable. Two cable lengths are available: a short cable (150 mm) for use with the power bank inside the carrying bag, and a longer cable (800 mm) for operation with a power bank stored in a belt pouch. Optionally, the kit can be supplied with a suitable power bank and charger. It is compatible with FOERSTER power banks as well as standard USB-A power banks.

With power banks >10,000 mAh, operating time can be extended from approximately 4 hours (battery operation) to more than 10 hours.

YOUR ADVANTAGES AT A GLANCE

Extended operating time: More than 10 h operation with power banks >10,000 mAh

Continuous measurements: Power bank replacement without removing the device from the bag

Reliable field use: Stable external power supply via USB connection

Protected operation: Safe device handling inside the carrying bag during measurements

Clear visibility: Display remains readable through transparent front panel

Flexible power supply: Compatible with FOERSTER and standard USB-A power banks

TECHNICAL INFORMATION

COMPONENTS:	— Carrying bag — USB-A connection cable (150 mm)
OPTIONAL COMPONENTS:	— Power bank (>10,000 mAh) — Power bank charger — Belt pouch + USB-A connection cable (800 mm)
POWER SUPPLY INTERFACE:	USB-A
OPERATING TIME (WITH POWER BANK >10,000 MAH):	> 10 h

REFERENCE STANDARDS FOR PERMEABILITY MEASUREMENT

Reference standards for checking and setting up permeability measurement



Reliable reference values for reproducible measurement results. The reference standards are used for verification and setup of permeability measurements with the MAGNETOSCOP 1.070. They enable functional checks of the measurement setup as well as regular verification of measurement performance directly on site.

Precisely defined and certified reference values support reproducible and reliable measurement results for the determination of relative magnetic permeability.

Reference standards with different certified μ_r values are available for various testing requirements.

The reference standards have a diameter of 34.2 mm and a thickness of 25 mm. These dimensions also correspond to the minimum dimensions of the test material required for permeability measurements.

YOUR ADVANTAGES AT A GLANCE

Reliable measurement results: Reproducible reference values for permeability measurements

Reliable functional checks: Verification of the complete measurement setup before testing

On-site verification: Fast validation of measurement performance during operation

Certified standards: Delivered with calibration or inspection certificate

Defined minimum dimensions: Reference standard dimensions correspond to the minimum size of the test material

TECHNICAL INFORMATION

REFERENCE VALUES:	Individually certified μ_r values for each standard (e.g. μ_r 1,0055 / 1,0368 / 1,153)
REFERENCE FIELD STRENGTH:	30 kA/m
DIAMETER:	34,2 mm
THICKNESS:	25 mm



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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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