MAGNETOMAT® 1.782

PC-CONTROLLED MAGNETOMETER

proof.

FEATURES

- MAGNETOMAT® 1.782 – a PC-controlled system for versatile applications in the area of precise determination of magnetic flux density and magnetic permeability.
- Fluxgate magnetometers as sensing elements
- Measuring DC magnetic fields and AC magnetic fields up to 1 kHz.
- MAGNETOMAT application software for setting parameters, real-time result display, data sampling and report generation
- A wide range of different probes to fit versatile applications

MEASUREMENTS

Depending on probe type and selected application software, the following measurements are possible:

- Magnetic flux density as absolute value up to 100 µT or gradient up to 200 µT
- Relative magnetic permeability μ_r in the range 1.0 to 2.0

APPLICATIONS

- Long term monitoring of magnetic environmental conditions, e.g. prior to installation of magnetic sensitive devices like MRI systems
- Testing low permeability materials and machined components for magnetic remanence.
- Detection of ferrous inclusions in austenitic steels and nonferrous alloys
- Determination of relative magnetic permeability as part of the quality inspection for austenitic steels and nonmagnetic alloys
- Verify the nonmagnetic property of components for integration into magnetic sensitive devices
- Verify material changes caused by high temperature, corrosion, coating reduction or micro structural alteration

COMPONENTS

To complete a measuring kit, the following components are necessary:

- Probe
- Sensor electronics (Probe power supply and ADC)
- Power supply (Mains adapter or battery pack)
- PC
- Application software

MAGNETOMAT® 1.782 SENSOR ELECTRONICS (DESKTOP TYPE)

- Electronics including RS 232 PC interface

- Ports S1 and S2 to link two identical probes type A

- Port S1 to link one probe type B or permeability probe

- Port 3-A to link 1-Axis miniaturized sensor

- Power supply 12 – 24 VDC

- Socket „TRIG" as trigger input (connector supplied)

1-AXIS-PROBES TYPE A, UP TO 2 IDENTICAL PROBES PER SENSOR ELECTRONICS

Field and gradient probe pair

- Flexible arranged probe pair for determination of absolute magnetic field or gradient, depending on orientation of the probe elements
- Additional mounting device required for proper fixture and alignment of the sensor elements

Differential probe

- Probe with coaxially at 100 mm distance arranged sensor elements, for detection larger magnetic anomalies

1-AXIS-PROBES, TYPE B, 1 PROBE PER SENSOR ELECTRONICS

Micro field probe, axial

- Probe with axially arranged sensor elements, for field detection with high spatial resolution

Micro field probe, transversal

- Probe with transversal arranged sensor elements, for field detection with high spatial resolution

Point pole probe

- Probe with coaxially at 20 mm distance arranged sensor elements, for detection of fields emerging from a component perpendicular to the surface

Micro differential probe

- Probe with parallel arranged sensor elements,for detection of field gradients with high spatial resolution

Permeability probe

- Probe with integrated permanent magnet for determination of relative magnetic permeability μ_r in the range 1.0 ... 2.0.
- Probe with ten times higher sensitivity (for μ_r < 1.05 static use recommended)
- For precise measurement the probe must be set on a plane surface, dimension of test specimen must be same size of calibration standard or larger

1-AXIS MINIATURIZED PROBE, 1 PROBE PER SENSOR ELECTRONICS

- Probe with axial arranged sensor elements,for field detection with high spatial resolution
- Compact, rugged design, water proof

MAGNETOMAT® STANDARD-SOFTWARE

Application software for multi channel magnetic data acquisition with high sampling rates. The measuring values are recorded by the probe- and sensor electronics (desktop type) and transferred to the PC.
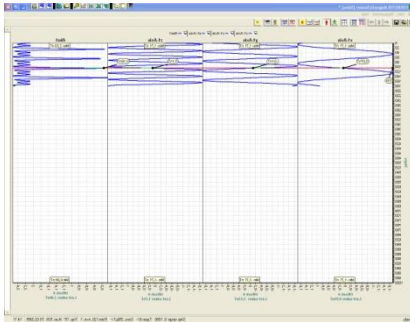
- Realtime data display
- Display of absolute and differential values
- Data storage and administration
- Adjustable sampling rate
- Zoom function for data display
- Low pass filter
- Single value selection
- Storage and export of selected values as .csv and.txt file

MAGNETOMAT® HOTSPOT-SOFTWARE

Application software for recording magnetic anomalies during testing of semi-finished steel materials like tubes, bars and wire. A differential probe is being used as sensing element. The test specimen is being moved along the probe, with time based triggering of the data sampling.
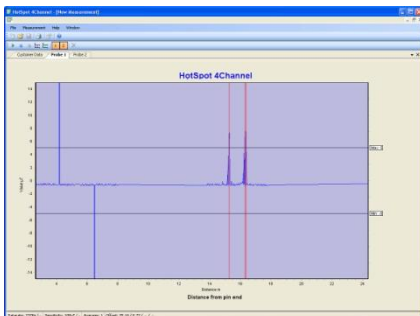
- Adjustable test parameters
- Data sampling rate, measuring range and threshold values are adjustable
- Test order, batch numbers, comments to be edited by the operator
- Adjustable color setting for screen and test report
- Test report with test data display as graphical chart or value table

MAGNETOMAT® CLIENT-SOFTWARE

Application software for data display on a monitor when manually testing components for their magnetic remanence or relative permeability; optionally display of measured value or measured value combined with strip chart.
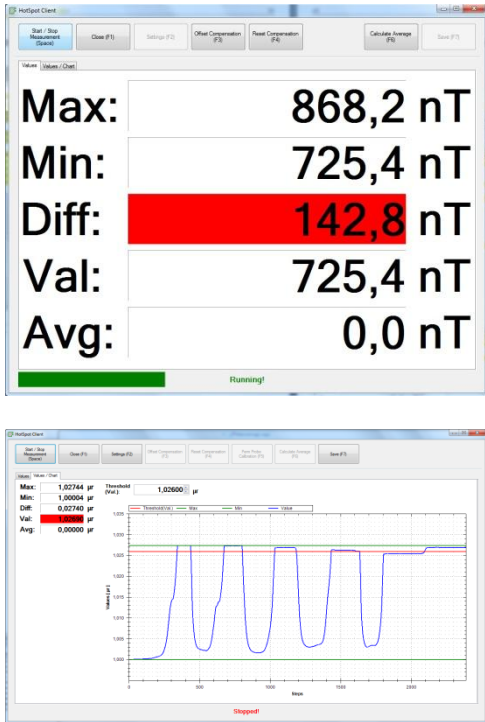
- Display of maximum and minimum peak values
- Display of peak value difference
- Indication of exceeding thresholds
- Display of measuring value in realtime
- Data storage and administration
- Adjustable sampling rate
- Low pass filter
- Datalogging and storage of measured values in a text file in tabular form

TECHNICAL SPECIFICATION

SENSOR ELECTRONICS

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Measuring range	100 µT / option: 1mT
Resolution	24 Bit ADC
Limiting frequency	1 kHz
Power supply	12 – 24 VDC
PC-interface	RS 232
Trigger input	5 V TTL/CMOS level trigger on falling edge trigger pulse width = 2/sampling rate
Dimension (LxWxH)	130x187x100 mm
Weight	approx. 0.5 kg

PROBES

Field and gradient probe pair
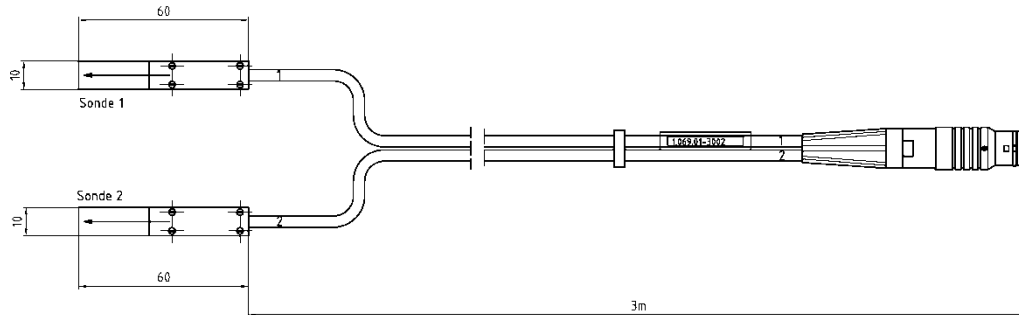
Measuring range, probe	250 µT (500 µT Gradient)
Measuring range probe + electronics	100 µT (200 µT Gradient)
Noise	30 (60) pT/√Hz@1Hz
Cable	3 m, 12-pin connector

Differential probe
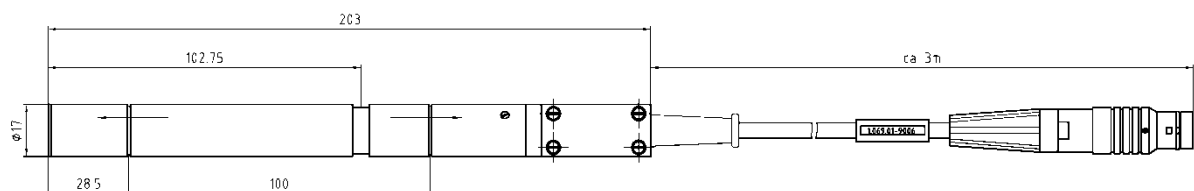
Measuring range, probe	250 µT Gradient
Measuring range probe + electronics	200 µT Gradient
Noise	50 pT/√Hz@1Hz
Cable	3 m, 12-pin connector
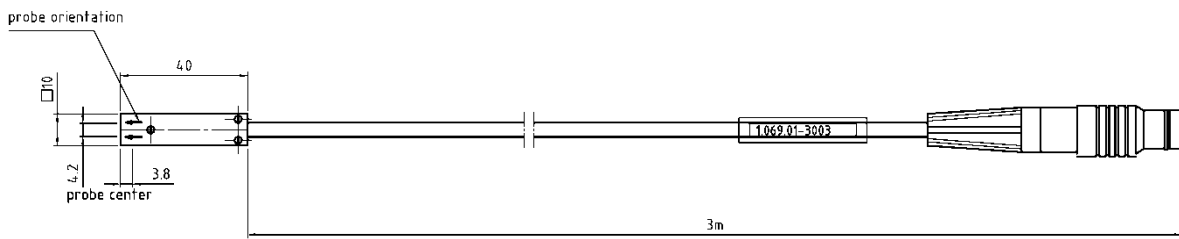
Micro field probe, axial

Measuring range, probe	1 mT
Measuring range probe + electronics	100 µT
Noise	500 pT/√Hz@1Hz
Cable	3 m, 12-pin connector

Micro field probe, transversal
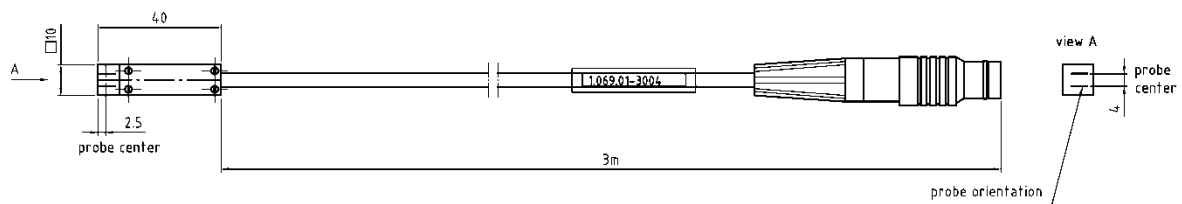
Measuring range, probe	1 mT
Measuring range probe + electronics	100 µT
Noise	500 pT/√Hz@1Hz
Cable	3 m, 12-pin connector

Point pole probe
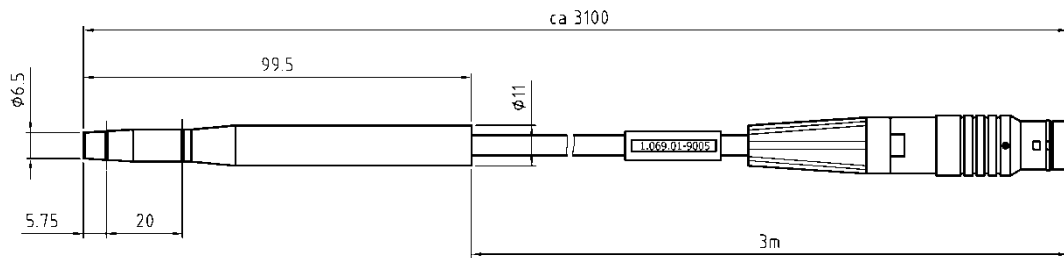
Measuring range, probe	1 mT
Measuring range probe + electronics	200 µT Gradient
Noise	1 nT/√Hz@1Hz
Cable	3 m, 12-pin connector

Micro differential probe
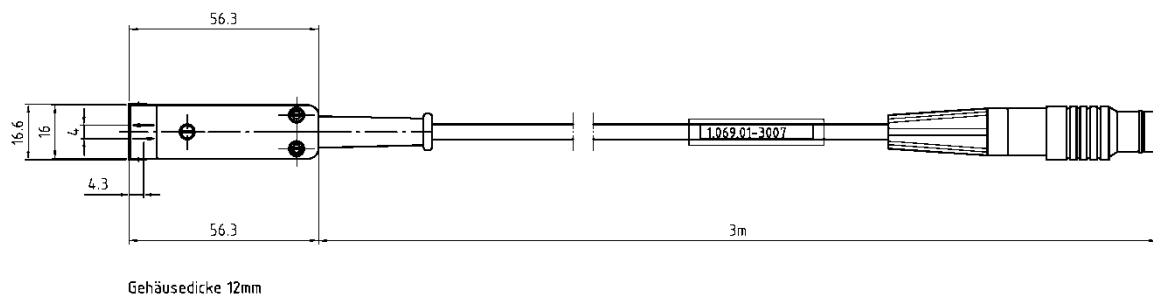
Gehäusedicke 12mm

Measuring range, probe	1 mT
Measuring range probe + electronics	200 µT Gradient
Noise	1 nT/√Hz@1Hz
Cable	3 m, 12-pin connector

Permeability probe
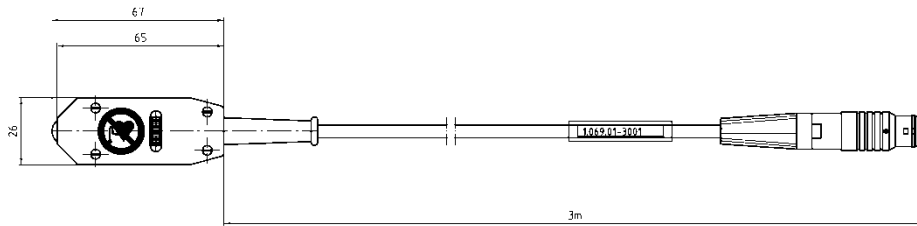
Measuring range, probe	μ_r 1.0 – 2.0
Measuring range probe + electronics	μ_r 1.0 – 1.08 (1.0 – 2.0 on request)
Cable	3 m, 12-pin connector

1-Axis Miniaturized Probe
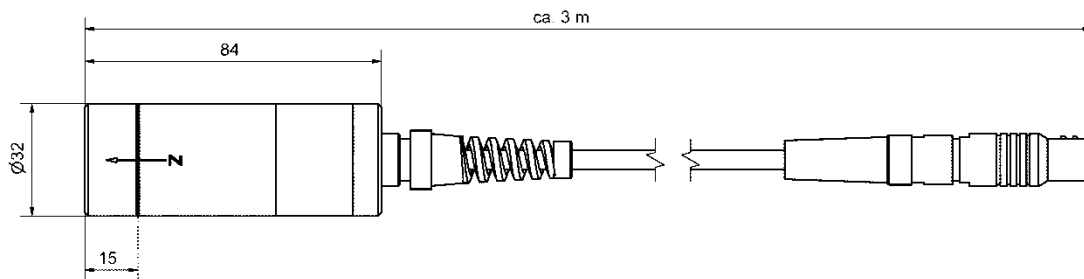
Measuring range, probe	100 µT
Measuring range probe + electronics	100 µT
Noise	35 pT/√Hz@1Hz
Vable	3 m, 12-pin connector
Protection grade	IP 68

POWER SUPPLY

Mains adapter	24 VDC, 1 A, 90 – 264 VAC
Battery pack, rechargeable	NiMH 12 VDC, 3,3 Ah

CABLE

Probe extension cables	3 / 10 / 15 m

PERMEABILITY CALIBRATION REFERENCE STANDARDS

Nominal value, traceable to national standards (PTB)	µr 1.2 / 1.05 / 1.025 / 1.005
Dimensions	Cylinder, 34 mm OD, 25 mm long

SOFTWARE

PC requirements for all applications	32 / 64 bit OS Windows XP SP3 Windows 7 or higher