

PRODUCT INFORMATION



MAGNETOMAT 1.790

PC-controlled Magnetometer



proof.

Features

- MAGNETOMAT 1.790 – a PC-controlled 4 channel system for versatile applications in the area of precise determination of magnetic flux density and magnetic permeability
- Fluxgate magnetometers as sensing elements
- Suitable for measuring static or low frequency dynamic magnetic fields
- MAGDATA application software for setting parameters, real-time result display, data sampling and report generation
- A wide range of different probes to fit versatile applications
- The MAGNETOMAT can be operated either as a desktop unit or in a control cabinet mounted on the top hat rail - for automation applications
- Up to 6 I/O interfaces can be used for automation tasks without additional control
- The evaluation/control of the I/O interfaces can be programmed by the operator

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 1,00000 to 2,00000

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
- Integration in automated measuring and testing devices

Components

The sensor electronics as well as the probes are calibrated. They are delivered with a calibration certificate. The device and calibration parameters are electronically stored in the respective component. The sensor electronics automatically recognizes the probes, when it is connected.

Application-specific software modules support the operator to perform his special measuring and testing task.

A comprehensive range of accessories such as nonmagnetic test benches and drive tables enable the set up of tailor-made testing equipment for components and semi-finished products.

MAGNETOMAT 1.790 Sensor electronics



- Electronics including USB / Ethernet interface
- Connection of up to 4 magnetic field measuring or permeability probes
- Power supply by mains adapter
Supply voltage 24 V
- Trigger input
- 6 I/O interfaces each

Probe PD-100-100



- Differential probe with 100 mm sensor distance
- 1 nT to 100 μ T measuring range
- For detection of larger local magnetic field anomalies
- Compensation of the earth magnetic field or large disturbances caused by anomalies at bigger distance

Probe PD-100-20



- Differential probe with 20 mm sensor distance
- 10 nT to 100 μ T measuring range
- For detection of smaller local magnetic field anomalies
- Detection of locally limited remanences
- Compensation of the earth magnetic field or large disturbances caused by anomalies at bigger distance

Probe PFD-100



- Probe pair for the optional arrangement as an absolute or differential probe- with variable sensor element distance
- 1 nT to 100 μ T / 200 μ T measuring range by absolute or differential arrangement
- Determination of magnetic remanence of single components, whereby the probe has to be in a fixed position and compensated to zero
- When using differential arrangement with parallel arranged sensor elements: compensation of the earth magnetic field or bigger disturbances from the distant field
- Nonmagnetic probe mount – as an option

Probe PF-1000



- Probe for determination of absolute magnetic field
- 10 nT to 1 mT measuring range
- Sensor elements are installed parallel in axial direction of the probe housing
- Determination of magnetic fields (orientation + value)
- Determination of magnetic remanence of single components, whereby the probe has to be in a fixed position and compensated to zero

Probe PP-2-5

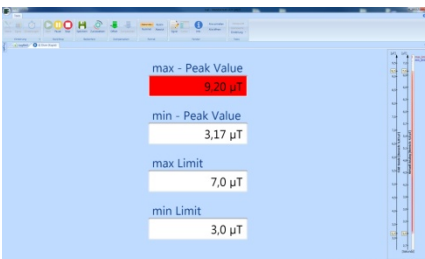
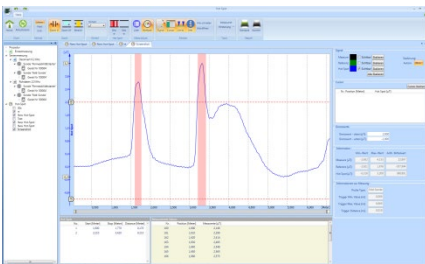
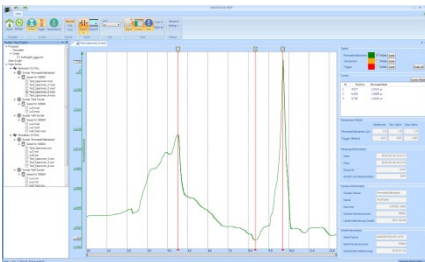


- Probe for the determination of the relative magnetic permeability μ_r on semi-finished products and components
- Measuring range μ_r 1,00000 to 2,00000
- „Permeability Meter“ method according to IEC 60404-15 or „Flux Distortion Method“ according to ASTM A342/A342M, method 4
- Calibrated traceable to national standards (PTB-Braunschweig), measured in accordance with IEC 60404-15“Solenoid / magnetic moment“ Method, ASTM A342/A342M Method 1, H=30 kA/m

Software

Application software for multi channel magnetic data acquisition with high sampling rates. The measuring values are recorded by the probe- and sensor electronics and transferred to the PC.

MAGDATA MAGNETOMAT-Software



- Parameterisation and control of the measuring procedure
- Programming of the evaluation/control of the I/O interfaces
- Visualization of measuring data (oscilloscope, digital values, value list)
- Processing of dynamic measurement methods including trigger information (time, distance)
- Data selection and reduction
- Processing of reference measurements for Offset-compensation
- Definition and display of treshold values, highlighting of magnetic anomalies
- Report generation and printing (e.g. API Spec 7)
- Statistical evaluation of measurement series

MAGDATA DLL-Software

- Interface for integration of the measuring system in customer own applications/ software
- Transfer of measuring data, parameterisation, I/O control
- No visualization of measuring data

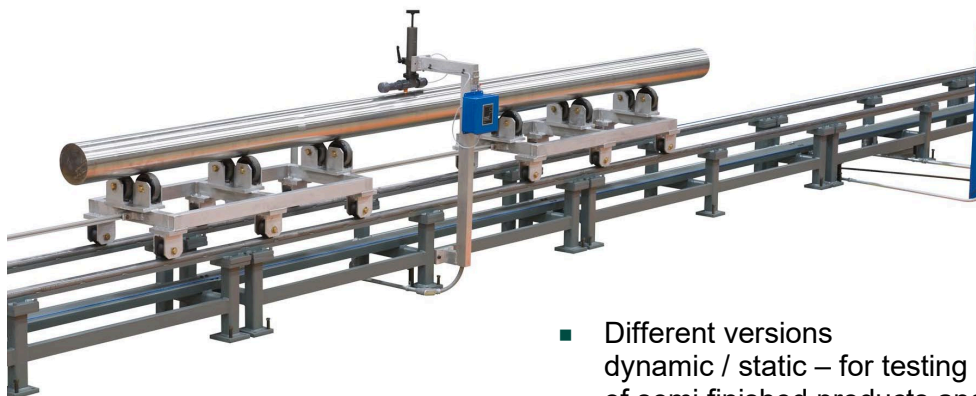
Accessories

Nonmagnetic test bench



- Testing of components in terms of magnetic remanence
- Measuring of the magnetic residual field on taped and loose components
- Further accessories on request

Mechanics– drive table



- Different versions
dynamic / static – for testing
of semi finished products and tubes

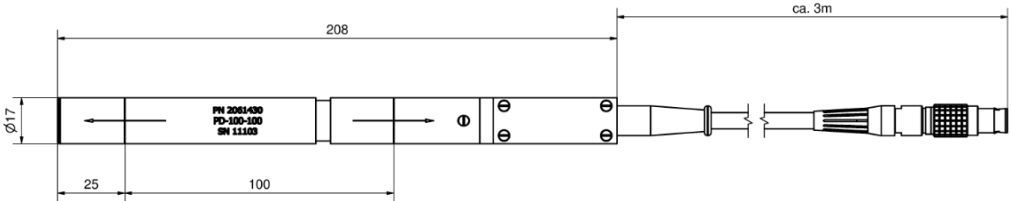
Technical specification

Sensor electronics

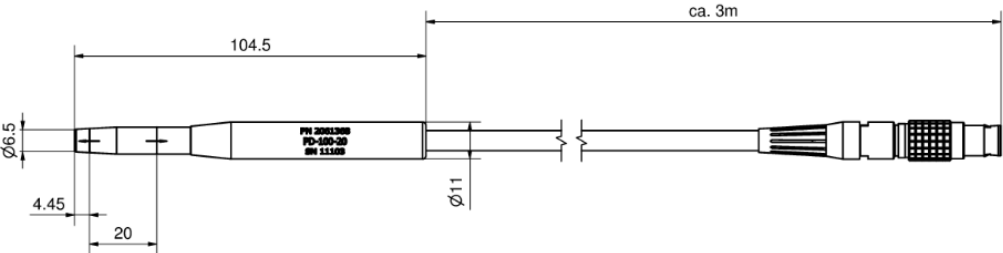
| | |
|---|--|
| Measuring range – magnetic field measurement | 100 μ T / 1 mT switchable |
| Measuring range – permeability measurement | μ_r 1,00000 bis 2,00000 |
| Measurement uncertainty, field measurement | 1,5% of the measured value |
| Measurement uncertainty, permeability measurement | 5% of the measured value |
| Ambient temperature | 0 to +40°C |
| Resolution | 24 Bit ADC |
| Power supply | 24 V DC |
| PC-interface | USB / Ethernet |
| Trigger input | Incremental encoder Sensors (4..20 mA) Digital Input |
| Data rate | 2 kHz |
| Dimension (L x W x H) | 190 x 172 x 85 mm |
| Weight | approx. 1,48 kg |

Probe dimensions and position of the sensors

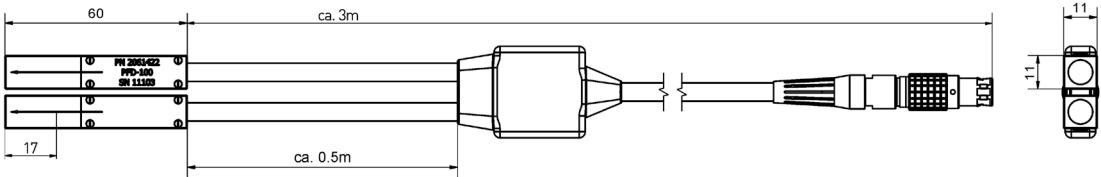
PD-100-100



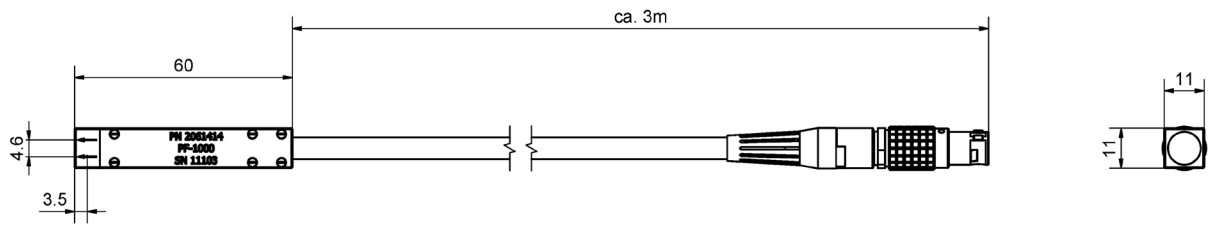
PD-100-20



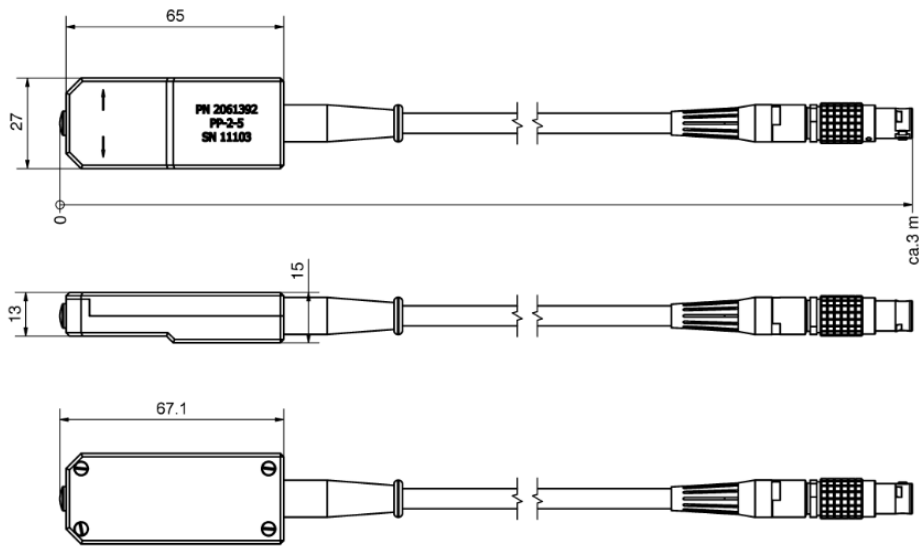
PFD-100



PF-1000



PP-2-5



Power supply

| | |
|-------------------|---------------------------------|
| Mains adapter | 100-240 V AC, 50-60 Hz, 24 V DC |
| Mains adapter PLC | 100-240 V AC, 50-60 Hz, 24 V DC |

Cables

| | |
|---|---------------|
| Power supply cable MAGNETOMAT (customers' own industrial power supply) | 1 m |
| Power supply cable PLC (customers' own industrial power supply) | 1 m |
| Extension cables - probes | 5 / 15 / 20 m |
| Trigger cable | 1 m / 5 m |
| Ethernet cable | 5 m |
| USB cable | 2 m |

Reference standards

| | |
|--|---|
| Reference standard | μ_r 1.005/ 1.025/ 1.05/ 1.2 for probe PP-2-5 calibrated traceable to national standards (PTB-Braunschweig), measured in accordance with IEC 60404-15 "Solenoid / magnetic moment" Method, ASTM A342/A342M Method 1, H=30 kA/m |
| Adapter for precise probe centering on the reference standard | for probe PP-2-5 |

Software

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|--------------------|--|
| MAGDATA MAGNETOMAT | System requirements: 64 Bit OS Windows 7 or higher |
| MAGDATA DLL | |

Imprint



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