

PRODUCT INFORMATION



# MAGNETOMAT 1.790

PC-controlled Magnetometer

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## 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  $\mu\text{T}$  or gradient up to 200  $\mu\text{T}$
- Relative magnetic permeability  $\mu_r$  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  $\mu$ 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  $\mu$ 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  $\mu$ T / 200 $\mu$ 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

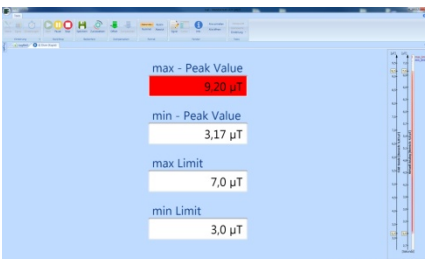
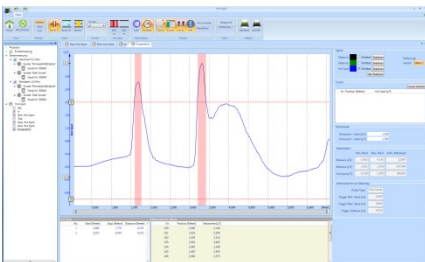
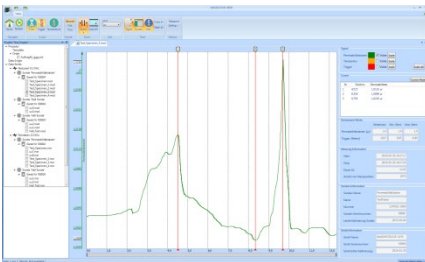


- Probe for the determination of the relative magnetic permeability  $\mu_r$  on semi-finished products and components
- Measuring range  $\mu_r$  1,00000 to 2,00000
- „Permeability Meter“ method according to IEC 60404-15 or „Flux Distortion Method“ according to ASTM A342/A342M, method 4
- Calibrated 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

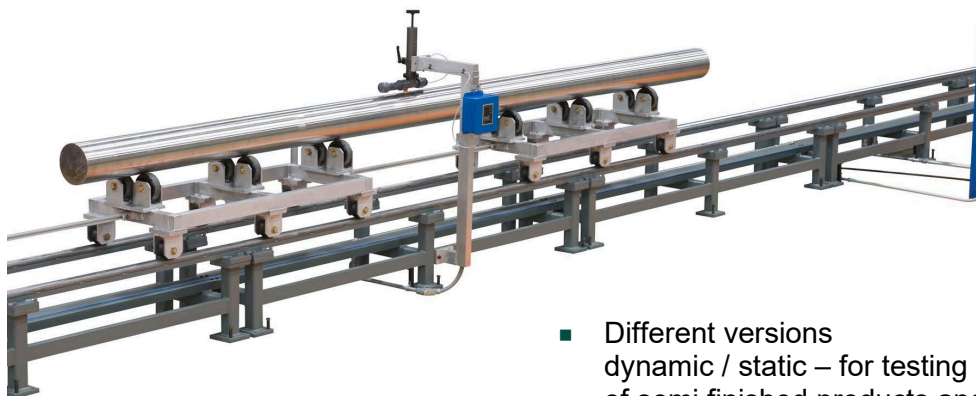
## Accessories

### 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

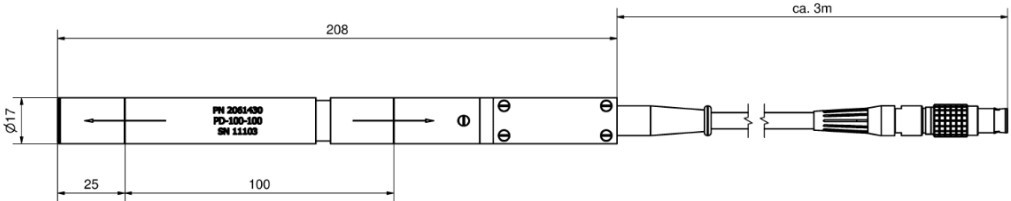
### Sensor electronics

Measuring range – magnetic field measurement	100 $\mu$ T / 1 mT switchable
Measuring range – permeability measurement	$\mu_r$ 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

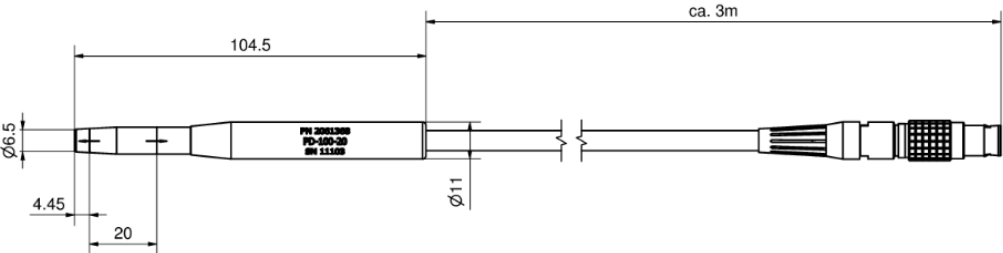


# Probe dimensions and position of the sensors

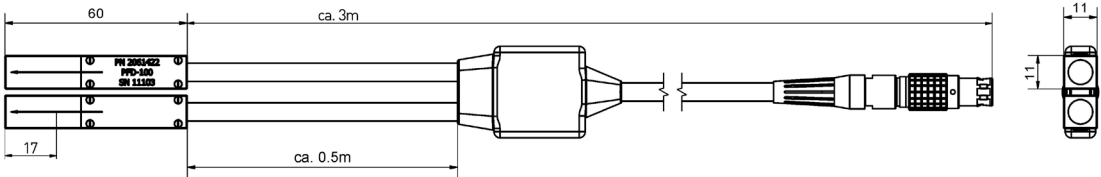
## PD-100-100



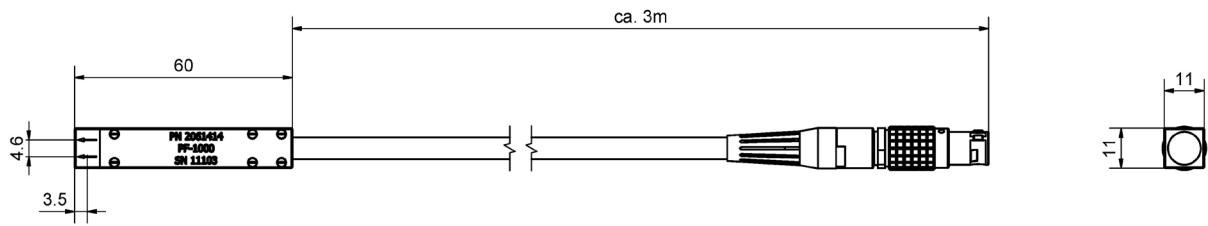
## PD-100-20



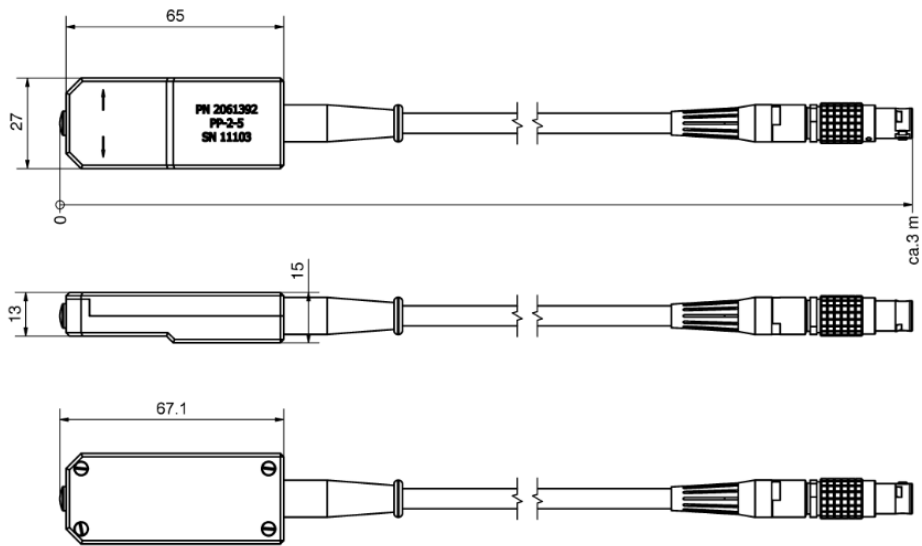
## PFD-100



## 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	$\mu_r$ 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

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

## Imprint



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