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per il sistema qualità

T A B L E O F C O N T E N T S

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INTRODUCTION

You have chosen the

MP-1000

magnetic field meter and you have done so for a good reason, because you have bought a device that is not only designed and manufactured according to the state of the art, but is above all light and convenient to operate.

The devices are manufactured exclusively in Germany.

We have made every effort to make this operating manual as short and as clear as possible.

Nevertheless, if you should have any questions about operation, please contact our competent service technicians, who are always ready to help. They will be pleased to assist you.

Which magnetic fields can the MP-1000 measure?

The **MP-1000** field meter measures all practically occurring magnetic fields, both DC and AC, in a range from 0.1 to 20,000 A/cm (Oersted).

The device has three measurement ranges:

0 - 200 A/cm (Oersted)

0 - 2,000 A/cm (Oersted)

0 -20,000 A/cm (Oersted)

(1 A/cm = 0.1 kA/m = 1.256 Oe(Gauss) = 0.1256 mT)

Measurement range switching takes place automatically.

DC fields, AC fields (effective value RMS) or peak value are displayed with storage.

Either a **P-T2** tangential field probe, a **P-A2** axial field probe or a special **P-Z2** reed probe (0.7 mm thick) can be connected to the device.

A calibration standard is available on request for checking the calibration of the device.

And what is really unique:

For the first time, the **MP-1000** uses measuring probes in which an integrated microcontroller digitises and linearises the special analogue signals directly in the probe. This new technique is highly immune to interference and permits extremely precise measurements even with high magnetic field strengths, where Hall probes no longer operate linearly.

The built-in rapid peak value memory can measure pulse fields down to 0.1 msec.

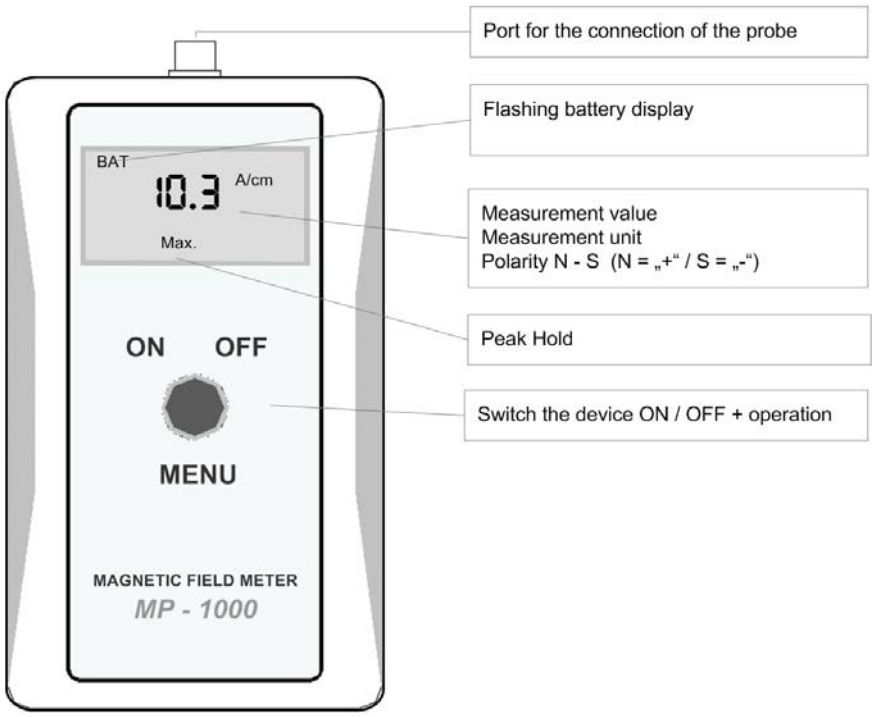
In this device, the probe cable is pluggable at both ends (display device and probe) and is therefore particularly service-friendly, because the customer can simply replace the cable in the event of a cable breakage.

SHORT OPERATION

You can measure immediately with the device and do not need to make any complicated settings.

Just switch on the device with the red button. Automatic zero balancing takes place when the device is switched on, therefore the probe should not be in a magnetic field when doing so. The last measured value appears briefly on the display, followed by the current measured value.
That’s all, now you are ready to take the first measurement in the DC range.

MENU FUNCTIONS



Switch on the device with the button until the current measured value appears on the display and a short *beep* sounds. The last measured value is displayed automatically when switching on.

If you keep the button depressed for a longer time when switching on, the program version of the device and the connected probe will be displayed.

To operate the device, press the button until the following functions appear one after the other:

Display:	Function:
-0-	Carry out zero balancing
off	Switch off
dc	Select DC field range
Ac	Select alternating field range
P1	Select peak value range PEAK < 200.0 A/cm (Oe)
P2	Select peak value range PEAK >= 200.0 A/cm (Oe)
un	Change the measurement unit (A/cm – Oe (Gauss))
res	Reset the device – load factory calibration

In order to activate the function "**Zero balancing**" and "**Switch off**" briefly release the button, when the function is displayed, to activate the other functions, briefly release the button and then press the button again within **5 sec**.

If the device is switched on without a measuring probe connected, ***<n.Pb>*** (no probe connected) is displayed and the device automatically switches off again.

OPERATION OF THE MENU FUNCTIONS

< -0- Calibrate > **- Zero Point Setting**

Release the button when ***<-0 Calibrate->*** is displayed; zero point adjustment is then performed. The probe must not be in a magnetic field during this time! After the zero balancing is complete, the display shows *± 0.2* (influence of the earth's magnetic field when moving the measuring probe).

< off > **- Switch off**

Release the button when ***< off >*** is displayed; the unit will be switched off. The unit also switched off automatically when the last value does not change within 2 minutes !

<dc> **- Select DC Field Range**

In order to switch to the ***DC*** field range, keep the button pressed until ***<dc>*** is displayed.

In DC fields, the north polarity is displayed with a **+**, the south polarity with a **–** sign.

<Ac> **- Select Alternating Field Range**

In order to switch to the ***AC*** field range, keep the button pressed until ***<Ac>*** is displayed.

In the ***AC*** field range, the unit of measurement is displayed **blinking** without polarity.

In the case of sinusoidal AC fields, the respective effective value (true RMS) is displayed.

The respective conversion factors for full-wave and half-wave rectification are given in the DIN standard 54 131 Part 1.

<P1> **/** ***<P2>*** **- Select Peak Value Memory PEAK – P1/P2**

In order to switch on the peak value memory, keep the button pressed until ***<P1>*** or ***<P2>*** appears on the display.

Use the peak value memory ***P1*** to measure magnetic fields **< 500 A/cm(Oe)** and the peak value memory ***P2*** to measure magnetic fields **>= 500 A/cm(Oe).**

After the peak value memory is switched on, the → ***Max*** symbol appears on the display to show that that peak value memory is switched on.

If there is already a measured value in the peak value memory and a higher measured value is recorded, then the old measured value will be overwritten by the new one. A short acoustic signal is sounded when the measured value is exceeded.

When measuring AC fields in peak value memory mode, the peak value and not the effective value will be saved if the AC field is sinusoidal!

<un> **- Change the Measuring Unit (A/cm – Oe(Gauss))**

The device is set as standard to the measuring unit **A/cm**.

This changes the measuring unit to **Oe(Gauss).** The measuring unit is retained after switching off the device. (1 A/cm = 1.256 Oe(Gauss))

In the case of magnetic fields > 10,000 A/cm (Oe-Gauss), the measured value is displayed in kA/cm or kOe(kG)!

<rES> **- Reset the Device – Reload Factory Calibration**

Reset returns all device settings to the factory settings. This function should be used if settings have been changed and the device does not work properly (strongly fluctuating measured values) or if the calibration of the probe does not work properly.

MEASURING PROBES

Table of available measuring probes:

Probe type	Measuring range [A/cm / Gauss]	Dimensions
Axial field probe P-A2	0 – 20.000 A/cm / Gauss	
Tangential field probe P-T2	0 – 20.000 A/cm / Gauss	
Reed probe P-Z2	0 – 20.000 A/cm / Gauss	

(1 A/cm = 0.1 kA/m = 1.256 Oe(Gauss) = 0.1256 mT)

CHECKING WITH THE PRECISION CALIBRATION STANDARD

It is not necessary to calibrate the device. The measuring probes are pre-calibrated and are interchangeable.

A precision calibration standard with **180 A/cm** is optionally available in order to check the device with a measuring probe.

Tangential field probe:

Insert the probe, with the lettering N = north pole pointing upwards, into the slot of the calibration standard until the probe latches at the front. Compare the displayed value with the value of the calibration standard.

Axial field probe:

Insert the probe vertically into the cut-out with the red recess of the calibration standard and rotate it until the maximum value is displayed. Compare the displayed value with that of the calibration standard.

IMPORTANT NOTES

- **'- - -' appears on the display. The measurement range in the peak value memory P1 has been exceeded – select measurement range P2, or the measurement range of 20,000 A/cm (Oe-Gauss) has been exceeded!**

- **The battery must be replaced as soon as the *BAT* symbol is displayed steadily when the device is switched on.**

- **The device switches itself off automatically 2 minutes after the last measurement. The device can also be switched off via the red button.**

BATTERY REPLACEMENT

The batteries must be replaced as soon as the ***<BAT>*** symbol blinks on the display when the device is switched on.

The device switches itself off automatically at a battery voltage of < 1.5 V (***<BAT<*** symbol is displayed steadily).

Please use only leak-proof batteries!

CHARGING THE 1.2 V RECHARGEABLE BATTERIES WITH THE MAINS CHARGER

If the **MP-1000** is used with 1.2 V rechargeable batteries, the batteries must be charged if the battery symbol blinks.

Please use the external mains adaptor supplied for this purpose – refer to the operating instructions for the mains adaptor for more details.

TECHNICAL DATA

Model	***MP - 1000***
Display:	3-digit
Measuring units:	A/cm – Gauss(Oe) selectable
Measuring ranges:	DC: 0 – 2000 kA/m DC: 0 – 20.000 A/cm (Gauss/Oe) DC: 0 – 2000 mT AC: 20 – 20.000A/cm (Gauss/Oe) AC: 20 – 2000 kA/m AC: 20 – 2000 mT Automatic measuring range selection
Resolution:	0 – 100 A/cm (Gauss): 0.1 A/cm (G) > 1000 A/cm (Gauss): 1 A/cm (G) > 10,000 A/cm (Gauss): 0.1 kA/cm (KG)
Accuracy (in homogeneous field)	DC/AC range - 0-20000 A/cm ± 2 %
AC frequency range: (AC = effective value RMS)	10 Hz – 5 KHz
Peak value memory (PEAK HOLD):	Impulse duration > 0.1 msec.
Usable measuring probes	Axial and tangential field probes: P-A2 / P-T2 / P-Z2 (see Page 3)
Power supply:	2 x 1.5V AA Mignon, alternatively 2 x 1.2V AA rechargeable
Operating time:	Approx. 80 hrs.
Automatic switch-off:	2 min. if measured value does not change
Dimensions:	105 x 65 x 26 mm
Weight with batteries:	137 g
Warranty:	Display device: 12 months Measuring probe: 3 months