

## ThyssenKrupp manual GaussMeter with polarity display

Type: 181002

This value-for-money device has been designed for simple operation and easy handling. Unnecessary switches, buttons, range changers and the like have been omitted. A simple press button (4) on the front switches the device on for as long as the button is depressed, thus ensuring a long battery life.

### Intended use

This measuring device is used to display both the field strength and to determine the polarity of permanent magnets and d.c. coils.

### Description of functioning

#### Displaying the field strength

The ThyssenKrupp manual GaussMeter has a 3 ½ character LCD display (3) to display the field strength precisely.

#### Measuring range

The range extends from 0 mT to 1999mT. If this value is multiplied by a factor of 10, the display gives the Gaussian equivalent, namely 100mT=1000G. These are the most common units in the world for flow density.

#### Units

The option of displaying the field strength in A/m according to the SI system was not applied. ThyssenKrupp Magnettechnik remains true to the world-wide use and the tradition of displaying the measuring results in G or in T. Conversion: 10 G = 10 Oe = 796 A/m = 1 mT

#### Accuracy

The resolution of the display is approx. 0.5 % corresponding to 10G = 1mT. All devices are calibrated at a value of 325 mT. The accuracy with this value is thus particularly high and can be stated absolutely to  $\pm 1\%$ . The use of high-quality sensors makes the linearity better than 1%. Due to the **neutral-to-ground compensation implemented** and the **high linearity of the sensor**, accuracy can be stated over the complete measuring range to  $\pm 2\%$ .

#### Measuring procedure

In order to achieve the accuracy described above, care should be taken to ensure that the field lines are always vertical to the sensor area. Avoid air gaps between the sensor and the magnet or the item to be measured. Taking a flat magnet as an example (see drawing on page 2), this means that the field strength is measured by lightly laying the sensors onto the magnet.

#### Polarity display

A green LED shows a south pole, a red LED the north pole (2). Measurements are always taken by laying the device with the sensor gently "from above" onto the magnetic pole under investigation. It is essential to follow this convention as otherwise exactly the opposite polarity will be displayed.

**Remark:** A LED lights up as soon as the device is switched on, whether there is a magnet in the vicinity or not. The sensitive comparator favours a LED, even without a magnetic field. The correct polarity is first displayed when a magnetic pole is approached.



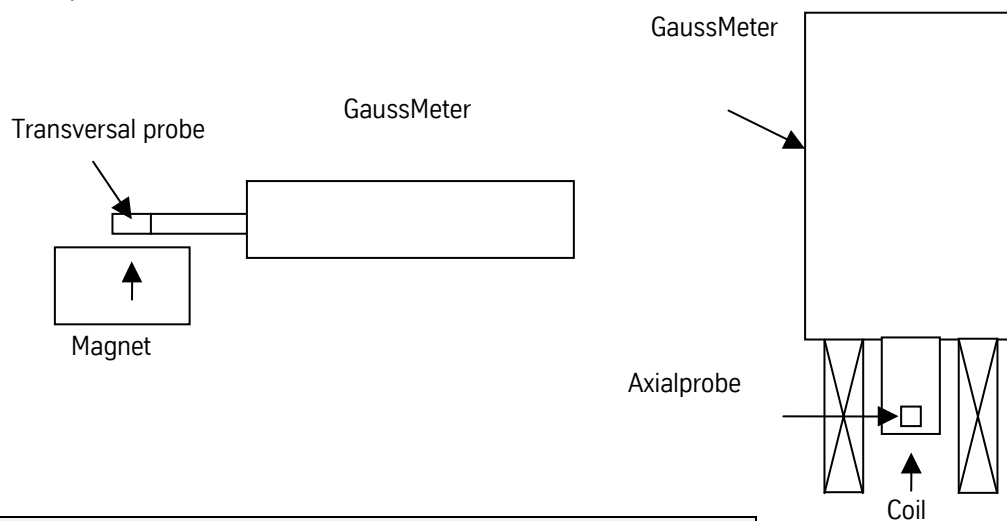
### Changing the battery

An indicator in the display shows when the batteries are running low. Although the polarity display is still always correct, the accuracy of the display can no longer be guaranteed. It is then necessary to replace the 9V battery, with a new one. To do this, open the housing cover (5) on the bottom by pressing the marked position and removing the cover with a gentle push. It is essential that the new battery is inserted with the correct polarity.

### Sensors

The manual GaussMeter from ThyssenKrupp Magnettechnik is equipped with a transversal probe (1) as standard. On request, the measuring devices can also be provided with axial probes. Whilst the transversal probe is required for measuring the field strength in air gaps in particular, the axial probes serve for measurements in coils in particular. Both types of sensor are based on the Hall effect. These sensors are produced on Si-basis and have an internal reference voltage. This enables the accuracy to be retained even when the batteries are running down. The integrated pre-amplification makes it possible to minimise the usually high temperature path of the Hall sensors, to keep the supply current low and to compensate the neutral-to-ground potential. Nevertheless, due to the diversity of models, each sensor must be calibrated to the particular measuring device.

**Changing the sensor:** A change of sensor is not normally foreseen as the device needs to be calibrated in the manufacturer's works and the sensor is permanently fixed into the housing. However, if a change of sensor is still required, the device must be sent to ThyssenKrupp Magnettechnik. The sensor will then be replaced and the device calibrated once more.



### Technical Data

<b>Dimensions:</b>	140mm*63mm*30mm (without sensor)
<b>Weight:</b>	approx. 130g (incl. battery)
<b>Display:</b>	3½ character LCD display
<b>Measuring range:</b>	10G to 19.99 kG equals 10 Oe to 19.99 Oe equals 1mT to 1999mT
<b>Temperature range:</b>	0°C to 50°C
<b>Storage temperature:</b>	-20°C to +70°C
<b>Battery:</b>	9 V alkaline
<b>Supplied as standard:</b>	Transverse probe, operating manual, battery
<b>Accessories:</b>	Calibrating magnet, sturdy leather pouch