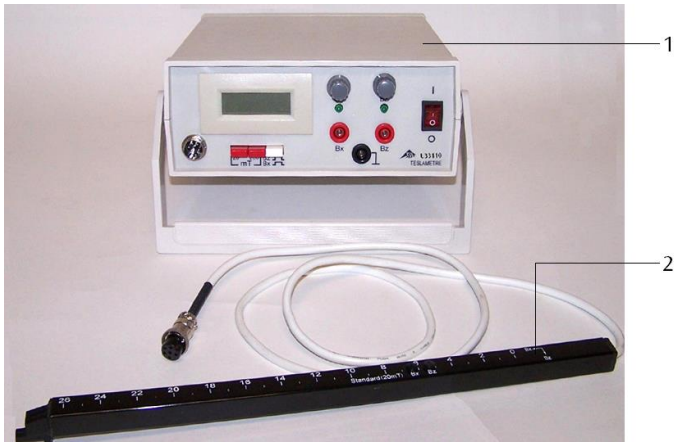
Teslameter, 20 mT, 200 mT (115 V, 50/60 Hz)
Teslameter, 20 mT, 200 mT (230 V, 50/60 Hz)

1003313 (115 V, 50/60 Hz)
1003314 (230 V, 50/60 Hz)

Instruction sheet

10/15 ALF



1 Teslameter
2 Magnetic field probe

1. Safety instructions

The teslameter, 20 mT, 200 mT conforms to all safety regulations for electrical measuring, control, monitoring and laboratory equipment, as specified under DIN EN 61010, Section 1, and the equipment has been designed to meet protection class II. It is intended for operation in a dry environment, suitable for the operation of electrical equipment and systems.

Safe operation of the equipment is guaranteed, provided it is used correctly. However, there is no guarantee of safety if the equipment is used in an improper or careless manner.

If it may be assumed for any reason that non-hazardous operation will not be possible (e.g. visible damage), the equipment should be switched off immediately and secured against any unintended use.

- Before using the power supply unit for the first time, confirm that the specifications printed on the rear side of the housing are compatible with the local mains voltage.
- Before using the power supply unit for the first time, check the housing and the mains lead for any damage. In the event of any malfunction/operational defect or visible damage, switch off the unit immediately and secure it against unintended use.
- The equipment may only be opened/repaired by qualified and trained personnel.

2. Description

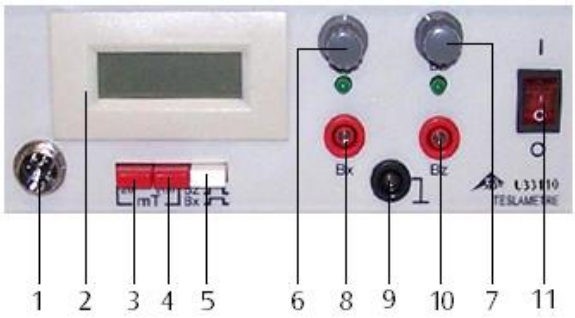
The teslameter is used for the measurement of flux densities in steady magnetic fields.

The unit includes a Hall sensor probe for measuring axial and tangential magnetic fields up to 200 mT. The magnetic field probe is provided with a metric scale for measuring distances.

In addition to having a digital display, the unit outputs a voltage proportional to the magnetic field which can be measured with a data logger, XY-recorder or analogue multimeter.

The teslameter is available in 2 versions for differing mains voltages. The teslameter with the order number 1003314 is for mains supplies of 230 V (±10%) while the one with order no. 1003313 is for 115 V (±10%) systems.

2.1 Operating controls and connections



1 Connecting socket for magnetic field probe
2 Digital display
3 Measurement range selector, 20 mT
4 Measurement range selector, 200 mT
5 Measurement mode switch, axial (B_X) and tangential (B_Z)
6 Zero adjustment knob for B_X with LED indicator
7 Zero adjustment knob for B_Z with LED indicator
8 Output socket for axial mode B_X
9 Earth (ground) socket
10 Output socket for tangential mode B_Z
11 On/off switch

Magnetic field probe: 1 tangential Hall probe (z-direction), 2 axial Hall probe (x-direction), 3 probe carrier

3. Technical data

Measurement range 20 mT	
Resolution:	0.01 mT
Accuracy:	2 % ±3 digits
Measurement range 200 mT	
Resolution:	0.1 mT
Accuracy:	2 % ±1 digits
Digital display:	3½ digit LCD with sign showing field direction
Height of digits:	13 mm
Input:	BNC socket
Output:	4 mm safety sockets
Output voltage:	10 mV / mT (20 mT)
	1 mV / mT (200 mT)
Dimensions of unit:	205 x 230 x 85 mm³
Dimensions of probe:	360 x 15 x 25 mm³

4. Operation

4.1 Zero adjustment

It is recommended that the zero adjustment should be carried out with the measurement range set to 20 mT. If the range is subsequently changed to the larger one, it is not necessary to repeat the adjustment.

If the magnetic field of a permanent magnet is to be measured, the zero adjustment must be carried out at a sufficiently large distance from the magnet.

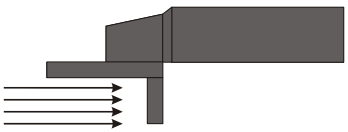
If the fields of current-carrying conductors are to be measured, it is recommended to first switch off the magnetic field current and position the probe at the point where the measurement is to be made.

- Connect the magnetic field probe to the probe socket 1.
- Select the 20 mT measurement range.
- Rotate the zero adjustment knob until the indicated field value is zero or as small as possible.

4.2 Measurement of axial magnetic fields

The axial Hall probe measures the component of the magnetic flux density along the direction of the probe axis.

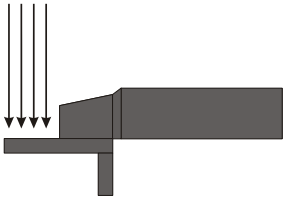
It is also possible to determine the direction of the magnetic field: if the field lines are directed towards the probe carrier (e.g., like the field coming from the north pole of a bar magnet), the indicated value is positive, whereas for the opposite direction it is negative.



4.3 Measurement of tangential magnetic fields

The tangential Hall probe measures the component of the magnetic flux density in the direction perpendicular to the carrier plate.

It is also possible to determine the direction of the magnetic field: a positive reading indicates that the field entering the tangential probe comes from the direction of the carrier surface with the scale markings, whereas a negative reading indicates that it is in the opposite direction.

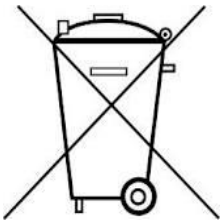


4.4 Using the analogue output signals

The output sockets (8, 9, 10) provide voltages proportional to the magnetic field components that can be fed to external measuring devices (data loggers, XY graph plotters, or analogue multimeters). The output voltage corresponds to the digital reading. It amounts to 10 mV per mT field value in the 20 mT operating range and 1 mV per mT field value in the 200 mT operating range.

5. Storage, cleaning and disposal

- Keep the equipment in a clean, dry and dust-free place.
- Before cleaning the equipment, disconnect it from its power supply.
- Do not clean the unit with volatile solvents or abrasive cleaners.
- Use a soft, damp cloth to clean it.
- The packaging should be disposed of at local recycling points.
- Should you need to dispose of the equipment itself, never throw it away in normal domestic waste. Local regulations for the disposal of electrical equipment will apply.



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