

Measuring device for static magnetic fields

For isotropic measurement of constant magnetic fields



- Measurement of static magnetic fields
- Automatic or manual ranging
- Isotropic measurement
- Hall sensors
- RS232 interface

Applications

The probe is designed for use in measuring constant magnetic fields, as occur with medical equipment (magnetic resonance imaging, MRI), metal production and railway systems.

Features

The ETM-1 extends the EFA-1 to EFA-3 family of low-frequency field analyzers to cover measurement of constant fields. The device has automatic ranging, or one of three ranges can be selected manually (19.99 mT, 199.9 mT and 1999 mT). Results have units of mT in the 3½ digit LC display. All three axes can be evaluated, or just one of the three (x, y, z). The probe is connected via a 1.5 m shielded cable to the test instrument. The small size of the probe (dimensions: 12 × 12 × 100 mm) enables measurements in tight places.

Calibration

The device is factory-calibrated.

Recalibration is recommended every two years. Calibration data are traceable to national/international standards. The specified confirmation interval is only a recommendation. Users can choose a confirmation interval to suit their needs, based on the type of application and ambient conditions.

Rugged design

The rugged mechanical and electrical design of the device destines it for field use. The ETM-1 runs for about 15 hours on a standard 9 V lithium battery. The ETM-1 can also be powered from an a.c. line unit (included).

Functional principle

The probe uses three separate sensors. Hall probes are used as sensor elements for the magnetic field. The three channels are realized separately and evaluated in the mainframe. This assures display of the RMS value across a wide measuring range. Usage of these detector elements guarantees excellent overload protection, making it practically impossible to destroy the sensors through everyday usage. For remote control, the ETM-1 has an RS232 interface. The device can be remotely controlled via the supplied cable and the serial interface of a PC. This allows users to control the device from a remote site while it measures very powerful fields.

Directional characteristic isotropic, three-dimensional	Dimensions in mm
Meas. range automatic ranging, three ranges	Device 160 × 80 × 30
Temperature range 0 to +40 °C	Probe 12 × 12 × 100
Sensor type magnetic field (H)	Weight 250 g
Frequency range static; 0 Hz	Unless otherwise stated, all specifications hold under the following conditions:
Specified measuring range 19.99, 199.9 and 1999 mT	Ambient temperature +23 °C ± 3 K
Accuracy ± 2% of measured value	Relative humidity 40% to 60%
Drift ± 0.05%/°C starting at +25 °C	Storage temperature -20 to +40 °C
Update range 400 ms or "Hold"	
Ambient field for device with battery 0.1 T	
Ambient field for device without battery (a.c. line power) 1.5 T	

Ordering information

ETM-1 Teslameter, isotropic	BN 2259/01
Includes: Constant magnetic field meter, separate probe and zero-field chamber, transport case, RS232 connecting cable, battery and a.c. line unit.	

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