Fluxgate Magnetometer  FLUXMASTER
Measurement range 1 nT to 200 µT, DC to 1 kHz

Features
• Resolution 1 nT
• Three full scale ranges: ±2 µT, ±20 µT und ±200 µT
• Accuracy 0.5 %
• Offset <5 nT
• $3 \frac{1}{2}$ digit LC-display
• Analog output for strip chart recorder, oscilloscope, etc.
• Waterproof case (protection IP65)
• Selectable automatic ambient field cancelling ±60 µT

Applications
• Measurement of the Earth’s field vector components
• Monitoring stray magnetic fields near power cables, transformers, etc.
• Palaeomagnetic investigations: Measurement of weak fields in rocks
• Calibration of Helmholtz coils
• Package inspection
• Residual field measurements (shielding effectiveness)
• Magnetic field control and compensation via analog output
General description

The teslameter FLUXMASTER is a very compact hand-held instrument which has been
designed for accurate measurements of weak magnetic fields from 1 nT (nanotesla) to
200 µT. The instrument operates on the fluxgate principle. It consists of a cylindrical
sensor which is connected with the electronics unit via a 1.5 m cable. The magnetometer
is optimized for low offset, low noise and high stability. The magnitude of the measured
magnetic field component can be read in µT from from a 3¹/₂ digit LC-display. Three
full scale ranges are selectable.

With the FLUXMASTER one can measure DC fields (e. g. the Earth’s field) and AC
magnetic fields (e. g. powerline fields). For AC-field measurements an AC-voltmeter
or an oscilloscope may be connected to the analog output. The voltage at the analog
output follows magnetic fields up to a frequency of more than 1 kHz. Dynamic or
servo-controlled shielding solutions can be easily realized by using the analog output.

The automatic neutralization circuitry permits the user to cancel out the local ambient
magnetic field by just pressing a switch. This simplifies the measurement of small
variations about the ambient magnetic field. As a special feature the FLUXMASTER
is provided with a robust waterproof case (protection IP65) and is therefore well suited
to outdoor applications.

Specifications

Range switch ±2 µT, ±20 µT, ±200 µT
Highest resolution 1 nT
Accuracy at 20 °C 0.5 % ± 5 nT ± 1 Digit
Temperature range 0 to 50 °C
Zero drift <0.1 nT/K

Analog output 0.01 V/µT, 0.1 V/µT, 1 V/µT dep. on
pos. of range switch, BNC-socket
Bandwidth 0 to 1 kHz (∼3 dB)
Noise <0.7 nT RMS (0.1 Hz < f < 200 Hz),
typ. 20 pT/√Hz at f = 1 Hz

Battery 9 V (PP3, Alkaline)
Continuous operation with one battery ∼20 h
Automatic neutralization ±60 µT, selectable

Size of electronics unit 151 mm × 82 mm × 33 mm
Protection IP65
Size of sensor diam. 10 mm × 30 mm
Length of connecting cable 1.5 m
Weight of complete device 380 g

Subject to alterations.