

Measuring magnetic fields from 27 MHz to 1 GHz

using instruments in the NBM-500 family

- ▲ **Occupational field exposure from radio broadcasting, telecoms, industrial equipment**
- ▲ **Isotropic (non-directional) measurement**
- ▲ **Dynamic range 59 dB without changing measurement range**

The probe contains three orthogonally arranged coils with detector diodes. The three voltages, corresponding to the spatial components, are available individually at the probe output. The NBM basic unit calculates the resulting isotropic field strength.

APPLICATIONS

The probe detects magnetic fields from 27 MHz to 1 GHz. This wide frequency range for a magnetic field probe covers all the major areas of electromagnetic field exposure that can occur in radio and TV broadcasting, telecommunications, and in high frequency industrial applications.

PROPERTIES

The probe is designed with mechanical and electrical properties ideal for field use. The probe head is made of foam material to provide effective protection for the sensors, while having excellent RF characteristics. The electric destruction limit is above 20 A/m for continuous wave signals, which is several times more than any of the human safety limit values.

CALIBRATION

The probe is calibrated at several frequencies. The correction values are stored in an EPROM in the probe and are automatically taken into account by the NBM instrument. Calibrated accuracy is thus obtained regardless of the combination of probe and instrument.



SPECIFICATIONS ^a

Probe HF0191	Magnetic (H-)Field	
Frequency range ^(b)	27 MHz to 1 GHz	
Type of frequency response	Flat	
Measurement range	0.018 to 16 A/m (CW) 0.018 to 1 A/m (True RMS)	12 μ W/cm ² to 10 W/cm ² (CW) 12 μ W/cm ² to 38 mW/cm ² (True RMS)
Dynamic range	59 dB	
CW damage level	20 A/m	15 W/cm ²
Peak damage level ^(c)	200 A/m	1.5 kW/cm ²
Sensor type	Diode based system	
Directivity	Isotropic (Tri-axial)	
Readout mode / spatial assessment	3 separate axes	
UNCERTAINTY		
Flatness of frequency response ^(d) Calibration uncertainty not included	± 0.7 dB (50 to 80 MHz) ± 0.5 dB (80 to 250 MHz) ± 0.8 dB (250 to 1000 MHz)	
Linearity Referred to 2 mW/cm ² (0.23 A/m)	± 3 dB (0.026 to 0.05 A/m) ± 1 dB (0.05 to 0.1 A/m) ± 0.5 dB (0.1 to 3 A/m) ± 1 dB (3 to 16 A/m)	± 3 dB (25 to 100 μ W/cm ²) ± 1 dB (100 to 380 μ W/cm ²) ± 0.5 dB (0.38 to 340 mW/cm ²) ± 1 dB (0.34 to 10 W/cm ²)
Isotropic response ^(e)	± 1 dB	
Temperature response	+0.5/-0.8 dB (± 0.025 dB/K @ 10 to 50 °C)	
GENERAL SPECIFICATIONS		
Calibration frequencies	10/ 15/ 20/ 27.12/ 30/ 35/ 40/ 50/ 60/ 70/ 80/ 90/ 100/ 120/ 150/ 180/ 200/ 250/ 300/ 400/ 433/ 500/ 600/ 700/ 800/ 900/ 1000 MHz	
Recommended calibration interval	24 months	
Temperature range		
Operating	-10 °C to +50 °C	
Non-operating (transport)	-40 °C to +70 °C	
Humidity	5 to 95 % RH @ ≤ 28 °C	≤ 26 g/m ³ absolute humidity
Size	318 mm x 66 mm \emptyset	
Weight	90 g	
Compatibility	NBM-500 series meters	
Country of origin	Germany	

(a) Unless otherwise noted specifications apply at reference condition: device in far-field of source, ambient temperature 23 \pm 3 °C, relative air humidity 25% to 75%, sinusoidal signal

(b) Cutoff frequency at approx. -3 dB

(c) Pulse length 1 μ sec, duty cycle 1:100

(d) Frequency response can be compensated for by the use of correction factors stored in the probe memory

(e) Results are calculated from the maximum and minimum response obtained during the full revolution about the stem of the probe, oriented 54.7° to the electric field vector.

ORDERING INFORMATION

	Part number
Probe HF0191, H-field for NBM, 27 MHz – 1 GHz, isotropic	2402/06B

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