

## H-FIELD PROBE

**HF0191**

# 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 <sup>a</sup>

Probe HF0191		Magnetic (H-)Field	
Frequency range <sup>(b)</sup>	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 $\mu$ W/cm <sup>2</sup> to 10 W/cm <sup>2</sup> (CW) 12 $\mu$ W/cm <sup>2</sup> to 38 mW/cm <sup>2</sup> (True RMS)	
Dynamic range	59 dB		
CW damage level	20 A/m	15 W/cm <sup>2</sup>	
Peak damage level <sup>(c)</sup>	200 A/m	1.5 kW/cm <sup>2</sup>	
Sensor type	Diode based system		
Directivity	Isotropic (Tri-axial)		
Readout mode / spatial assessment	3 separate axes		
<b>UNCERTAINTY</b>			
Flatness of frequency response <sup>(d)</sup> Calibration uncertainty not included	$\pm 0.7$ dB (50 to 80 MHz) $\pm 0.5$ dB (80 to 250 MHz) $\pm 0.8$ dB (250 to 1000 MHz)		
Calibration uncertainty <sup>(e)</sup> @ 2 mW/cm <sup>2</sup> (0.23 A/m)	$\pm 0.9$ dB (27 to 700 MHz) $\pm 1.5$ dB (> 700 MHz)		
Linearity Referred to 2 mW/cm <sup>2</sup> (0.23 A/m)	$\pm 3$ dB (0.026 to 0.05 A/m) $\pm 1$ dB (0.05 to 0.1 A/m) $\pm 0.5$ dB (0.1 to 3 A/m) $\pm 1$ dB (3 to 16 A/m)	$\pm 3$ dB (25 to 100 $\mu$ W/cm <sup>2</sup> ) $\pm 1$ dB (100 to 380 $\mu$ W/cm <sup>2</sup> ) $\pm 0.5$ dB (0.38 to 340 mW/cm <sup>2</sup> ) $\pm 1$ dB (0.34 to 10 W/cm <sup>2</sup> )	
Isotropic response <sup>(f)</sup>	$\pm 1$ dB		
Temperature response	+0.5/-0.8 dB ( $\pm 0.025$ dB/K @ 10 to 50 °C)		
<b>GENERAL SPECIFICATIONS</b>			
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 @ $\leq 28$ °C	$\leq 26$ g/m <sup>3</sup> absolute humidity	
Size	318 mm x 66 mm $\varnothing$		
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 $\mu$ sec, duty cycle 1:100

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

(e) Accuracy of the fields generated to calibrate the probes

(f) Uncertainty due to varying polarization (verified by type approval test for meter with probe). Ellipse ratio included and calibrated for each probe

## ORDERING INFORMATION

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

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