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

<table>
<thead>
<tr>
<th>Probe HF0191</th>
<th>Magnetic (H-)Field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency range</strong> (^{(b)})</td>
<td>27 MHz to 1 GHz</td>
</tr>
<tr>
<td><strong>Type of frequency response</strong></td>
<td>Flat</td>
</tr>
<tr>
<td><strong>Measurement range</strong></td>
<td>0.018 to 16 A/m (CW) / 0.018 to 1 A/m (True RMS) / 12 µW/cm² to 10 W/cm² (CW) / 12 µW/cm² to 38 mW/cm² (True RMS)</td>
</tr>
<tr>
<td><strong>Dynamic range</strong></td>
<td>59 dB</td>
</tr>
<tr>
<td><strong>CW damage level</strong></td>
<td>20 A/m / 15 W/cm²</td>
</tr>
<tr>
<td><strong>Peak damage level</strong> (^{(c)})</td>
<td>200 A/m / 1.5 kW/cm²</td>
</tr>
<tr>
<td><strong>Sensor type</strong></td>
<td>Diode based system</td>
</tr>
<tr>
<td><strong>Directivity</strong></td>
<td>Isotropic (Tri-axial)</td>
</tr>
<tr>
<td><strong>Readout mode / spatial assessment</strong></td>
<td>3 separate axes</td>
</tr>
</tbody>
</table>

### 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)
- **Calibration uncertainty** \(^{(e)}\) @ 2 mW/cm² (0.23 A/m): ±0.9 dB (27 to 700 MHz), ±1.5 dB (> 700 MHz)
- **Linearity**
  - Referred to 2 mW/cm² (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)
- **Isotropic response** \(^{(f)}\): ±1 dB
- **Temperature response**: +0.5'/-0.8 dB (±0.025 dB/K @ 10 to 50 °C)

### GENERAL SPECIFICATIONS

- **Calibration frequencies**
  - 10/15/20/27.12/30/40/50/60/70/80/90/100/120/150/180/200/250/300/400/433/500/600/700/800/900/1000 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/m³ absolute humidity
- **Size**: 318 mm x 66 mm Ø
- **Weight**: 90 g
- **Compatibility**: NBM-500 series meters
- **Country of origin**: Germany

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 modifies unless otherwise noted specifications apply at reference condition: device in far-field of source, ambient temperature 23±3 °C, relative air humidity 25% to 75%, sinusoidal signal

- **Cutoff frequency at approx. -3 dB (c)**
- **Pulse length 1µsec, duty cycle 1:100 (c)**
- **Frequency response can be compensated for by the use of correction factors stored in the probe memory (d)**
- **Accuracy of the fields generated to calibrate the probes (e)**
- **Uncertainty due to varying polarization (verified by type approval test for meter with probe). Ellipse ratio included and calibrated for each probe (f)**

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Probe HF0191, H-field for NBM, 27 MHz – 1 GHz, isotropic</td>
<td>2402/06B</td>
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