Measuring electric fields from 3 MHz to 18 GHz

using instruments in the NBM-500 family

▲ General public and occupational field exposure from radio broadcasting, telecoms, and radar
▲ Isotropic (non-directional) measurement
▲ 64 dB dynamic range without changing measurement range

The probe contains three orthogonally arranged dipoles 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 electric fields from 3 MHz to 18 GHz, covering the fields generated by broadcasting, telecoms, and radar. The dynamic range from 0.6 V/m up to 1,000 V/m (64 dB) makes the probe ideal for measuring exposure in both the general public and the occupational environment.

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 of 1,600 V/m for continuous wave signals is several times higher 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

## Probe EF1891

<table>
<thead>
<tr>
<th>Electric (E)-Field</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency range [b]</td>
<td>3 MHz to 18 GHz</td>
</tr>
<tr>
<td>Type of frequency response</td>
<td>Flat</td>
</tr>
<tr>
<td>Measurement range</td>
<td>0.6 to 1000 V/m (CW)</td>
</tr>
<tr>
<td>Dynamic range</td>
<td>64 dB</td>
</tr>
<tr>
<td>CW damage level</td>
<td>1600 V/m</td>
</tr>
<tr>
<td>Peak damage level [c]</td>
<td>16 kV/m</td>
</tr>
<tr>
<td>Sensor type</td>
<td>Diode based system</td>
</tr>
<tr>
<td>Directivity</td>
<td>Isotropic (Tri-axial)</td>
</tr>
<tr>
<td>Readout mode / spatial assessment</td>
<td>3 separate axes</td>
</tr>
</tbody>
</table>

## Uncertainty

### Flatness of frequency response [d]
- ±1 dB (10 MHz to 3 GHz)
- +2/-1 dB (3 to 7 GHz)
- +3/-1 dB (7 to 11 GHz)
- +3/-4 dB (11 to 18 GHz)

### Calibration uncertainty [e]
- @ 0.2 mW/cm² (27.5 V/m)
  - 0.8 dB (±300 MHz)
  - 1.5 dB (300 MHz to 1.2 GHz)
  - ±1.3 dB (1.2 GHz to 2.5 GHz)

### Linearity
- Referred to 0.2 mW/cm² (27.5 V/m)
  - ±3 dB (1.65 to 3.3 V/m)
  - ±0.5 dB (3.3 to 300 V/m)
  - ±0.8 dB (300 to 1000 V/m)

### Isotropic response [f]
- ±1 dB (27 MHz to 1 GHz)
- ±2 dB (1 GHz to 18 GHz)

### Temperature response
- +0.2/-1.5 dB (±0.025 dB/K @ 10 to 50 °C)

## General Specifications

- Factory calibration frequencies:
  - 3/10/27.12/100/200/300/500/750 MHz
  - 1/1.8/2.45/3/4/5/6/7/8.2/9.3/10/11/18 GHz
- Recommended calibration interval: 24 months
- Temperature range:
  - Operating: 0 °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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## Ordering Information

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2402/02B</td>
<td>Probe EF1891, E-Field for NBM, 3 MHz – 18 GHz, Isotropic</td>
</tr>
<tr>
<td>2402/02B/ACC</td>
<td>Probe EF1891, E-Field, ACC - with accredited (DAkkS) calibration, basic unit required</td>
</tr>
</tbody>
</table>

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