

E-FIELD PROBE

EF1891

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
- ▲ 62 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 800 V/m (62 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 1,100 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 a

Frequency range Name Flat Series Flat	Probe EF1891	Electric (E-)Field	
Measurement range	Frequency range (b)	3 MHz to 18 GHz	
Dynamic range 62.5 dB CW damage level 1100 V/m 320 mW/cm² to 1,12 mW/cm² (True RMS) 20 mW/cm² to 1,12 mW/cm² (True RMS) 20 mW/cm² 20	Type of frequency response	Flat	
CW damage level 1100 V/m 320 mW/cm² Peak damage level (Θ) 1400 V/m 520 W/cm² Sensor type Diode based system Directivity Isotropic (Tri-axial) Readout mode / spatial assessment 3 separate axes UNCERTAINTY Flatness of frequency response (Θ) Calibration uncertainty not included typ. +2 dB/-2 dB @ 3MHz +1/-1,5 dB (10 MHz to 3 GHz) +2/-1,5 dB (3 GHz to 11 GHz) Linearity ±2 dB (0,6 to 4 V/m) ±2 dB (0,1 to 4,2 μW/cm²) ±0,5 dB (4 to 300 V/m) ±0,5 dB (4,2 μW/cm² to 24 mW/cm²) ±0,5 dB (40 to 300 V/m) ±2 dB (300 to 800 V/m) ±2 dB (24 mW/cm² to 170 mW/cm²) ±2 dB (30 to 800 V/m) ±2 dB (24 mW/cm² to 170 mW/cm²) ±2 dB (24 mW/cm² to 170 mW/cm²) Isotropic response (Θ) ±1 dB (10 MHz to 5 GHz) ±2,25 dB (×5 GHz to 11 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 1.8/2.46.3 3/ 4/ 5/ 6/ 7/ 8.2/ 9.3/ 10/ 11/ 18 GHz Recommended calibration interval	Measurement range		
Peak damage level © 1400 V/m 520 W/cm²	Dynamic range	62.5 dB	
Sensor type	CW damage level	1100 V/m	320 mW/cm ²
Directivity Isotropic (Tri-axiall) 3 separate axes	Peak damage level (c)	1400 V/m	520 W/cm ²
Readout mode / spatial assessment 3 separate axes	Sensor type	Diode based system	
Selection uncertainty not included typ. +2 dB/-2 dB @ 3MHz typ3 dB @ 18 GHz typ3 dB (40 to 30 GHz) typ3 dB (40 to 30 GHz) typ3 dB (40 to 300 V/m) typ. 5 dB (40 to 40 V/m) typ. 5 d	Directivity	Isotropic (Tri-axial)	
typ. +2 dB/-2 dB @ 3MHz typ3 dB @ 18 GHz +1/-1,5 dB (10 MHz to 3 GHz) +2/-1,5 dB (0,6 to 4 V/m) +2/-1,5 dB (0,6 to 4 V/m) +2 dB (300 to 800 V/m) +2 dB (300 to 800 V/m) +2 dB (10 MHz to 5 GHz) +2 dB (24 mW/cm² to 24 mW/cm²) +2 dB (300 to 800 V/m) +2 dB (300 to 800 V/m) +2 dB (24 mW/cm² to 170 mW/cm²) Isotropic response (e) ### 1 dB (10 MHz to 5 GHz) +2,2 5 dB (-5 GHz to 11 GHz) ### 1 dB (10 MHz to 10 GHz) ### 1 dB (10 MHz to 3 GHz) ### 1 dB (10 Mtz to 3 GHz) #	Readout mode / spatial assessment	3 separate axes	
Flatness of frequency response (a) Calibration uncertainty not included typ3 dB @ 18 GHz +1/-1,5 dB (>3 GHz) +2/-1,5 dB (>3 GHz) +2/-1,5 dB (>3 GHz to 11 GHz) ±2 dB (0,6 to 4 V/m) ±0,5 dB (4 to 300 V/m) ±0,5 dB (4 to 300 V/m) ±2 dB (300 to 800 V/m) ±2 dB (300 to 800 V/m) ### 1 dB (10 MHz to 5 GHz) ±2,25 dB (>5 GHz to 11 GHz) ### 1 dB (10 MHz to 5 GHz) ±2,25 dB (>5 GHz to 11 GHz) ### 1 dB (10 MHz to 5 GHz) ±2,25 dB (>5 GHz to 11 GHz) ### 1 dB (10 MHz to 5 GHz) ±1,25 dB (±0.025 dB/K @ 10 to 50 °C) ### 1 dB (10 MHz to 5 GHz) ### 1 dB (10 MTz to 5	UNCERTAINTY		
Linearity Referred to 0.2 mW/cm² (27.5 V/m) ±0,5 dB (4 to 300 V/m) ±2 dB (300 to 800 V/m) ±2 dB (24 mW/cm² to 24 mW/cm²) ±2 dB (24 mW/cm² to 170 mW/cm²) ±1 dB (10 MHz to 5 GHz) ±2,25 dB (>5 GHz to 11 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 Temperature range Operating Non-operating (transport) O °C to +50 °C -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		typ3 dB @ 18 GHz +1/-1,5 dB (10 MHz to 3 GHz)	
#2,25 dB (>5 GHz to 11 GHz) Temperature response		±0,5 dB (4 to 300 V/m) ±2 dB (300 to 800 V/m)	±0,5 dB (4,2 µW/cm² to 24 mW/cm²)
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 Non-operating (transport) 0 °C to +50 °C -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	Isotropic response (e)		
Factory calibration frequencies $3/10/27.12/100/200/300/500/750 \text{ MHz} / 1/1.8/2.45/3/4/5/6/7/8.2/9.3/10/11/18 \text{ GHz}$ Recommended calibration interval 24 months Temperature range Operating (transport) $0 \text{ °C to } +50 \text{ °C} / 40 \text{ °C to } +70 \text{ °C}$ Humidity $5 \text{ to } 95 \text{ °R H} \text{ @ } \leq 28 \text{ °C}$ ≤26 g/m³ absolute humidity Size $318 \text{ mm x } 66 \text{ mm } \emptyset$ Weight 90 g Compatibility NBM-500 series meters	Temperature response	+0.2/ -1.5 dB (±0.025 dB/K @ 10 to 50 °C)	
Factory calibration frequencies $3/10/27.12/100/200/300/500/750 \text{ MHz} / 1/1.8/2.45/3/4/5/6/7/8.2/9.3/10/11/18 \text{ GHz}$ Recommended calibration interval 24 months Temperature range Operating (transport) $0 \text{ °C to } +50 \text{ °C} / 40 \text{ °C to } +70 \text{ °C}$ Humidity $5 \text{ to } 95 \text{ °R H} \text{ @ } \leq 28 \text{ °C}$ ≤26 g/m³ absolute humidity Size $318 \text{ mm x } 66 \text{ mm } \emptyset$ Weight 90 g Compatibility NBM-500 series meters			
Factory calibration frequencies 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 Non-operating (transport) -40 °C to +50 °C -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	GENERAL SPECIFICATIONS		
Temperature range 0 °C to +50 °C 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	Factory calibration frequencies		
Operating Non-operating (transport) 0 °C to +50 °C -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	Recommended calibration interval	24 months	
Size 318 mm x 66 mm Ø Weight 90 g Compatibility NBM-500 series meters	Operating		
Weight 90 g Compatibility NBM-500 series meters	Humidity	5 to 95 % RH @ ≤28 °C	≤26 g/m³ absolute humidity
Compatibility NBM-500 series meters	Size	318 mm x 66 mm Ø	•
***************************************	Weight	90 g	
Country of origin Germany	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±3 °C, relative air humidity 25% to 75%, sinusoidal signal (b) Cutoff frequency at approx. -3 dB @ 3 MHz/ -4 dB @ 18 GHz (c) Pulse length 1µsec, 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 EF1891, E-Field for NBM, 3 MHz – 18 GHz, Isotropic	2402/02C
Probe EF1891, E-Field, ACC - with accredited (DAkkS) calibration, basic unit required	2402/02C/ACC

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