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Safety Test Solutions

Datasheet | Probe HFD-3061

Isotropic measurement of magnetic fields from 300 kHz to 30 MHz

using the Field Meter FieldMan®

The probe detects magnetic fields from 300 kHz to 30 MHz. It contains three orthogonally arranged coils with detector diodes, in each of which voltages proportional to the spatial components of the magnetic flux density are induced. The probe detects magnetic fields from 300 kHz to 30 MHz, such as those generated caused by short and medium wave transmitters, some HF communication services and industrial plants. The probe is suitable for detecting limit values for people in public and in the workplace.

The probe interface transmits the measurement data digitally to the base unit, which has no individual influence on the measured values and therefore does not need to be calibrated. The probe is calibrated at several frequencies. The calibration data is stored in the probe and is automatically taken into account during the measurement. If the frequency of the prevailing field strength is known, an additional correction factor can be applied to increase the measurement accuracy.

- Isotropic (non-directional) measurement
- High dynamic range of 62 dB
- Wide True RMS range up to 0.7 A/m
- Digital probe interface - no more meter calibration
- Self-test of the probe interface with integrated sensor function test
- Automatic offset correction, no zero adjustment required
- Wide temperature range from -20 °C to +50 °C
- High Immunity at 50/60 Hz
- Accredited calibration in our accredited calibration laboratory in accordance with DIN EN ISO/IEC 17025:2018 by the Deutsche Akkreditierungsstelle (DAkkS)

Specifications [1]

Product Features		
Frequency range [2]	300 kHz to 30 MHz, magnetic (H-)field	
Type of frequency response	Flat	
Measurement range (nom.)	0.012 to 16 A/m (CW) 0.012 to 0.7 A/m (True RMS)	5.4 µW/cm² to 10 W/cm² (CW) 5.4 µW/cm² to 18 mW/cm² (True RMS)
Dynamic range (nom.)	62 dB	
CW damage level (nom.)	35 A/m	46 W/cm²
Peak damage level (nom.) [3]	350 A/m	4.6 kW/cm²
Sensor type	Diode based system	
Directivity	Isotropic (Tri-axial)	
Spatial assessment	3 separate axes	
Sampling rate / integration time (nom.)	5 Hz / 265 ms (±5%)	
Temperature sensors	Integrated sensors for displaying the ambient temperature and for automatic offset compensation	
Self-test	Interface function test and sensor test for interruption of diodes	

Uncertainty		
Flatness of frequency response [4, 5] Calibration uncertainty not included Referred to 0.6 mW/cm² (0.125 A/m)	Typ. -3 dB @ 300 kHz / 30 MHz +0.1 / -1.0 dB (500 kHz to 800 kHz) +0.1 / -0.5 dB (>800 kHz to 10 MHz) +0.1 / -1.0 dB (>10 MHz to 28 MHz)	
Linearity deviation (nom.) Referred to 0.6 mW/cm² (0.125 A/m @ 10 MHz)	+3.0 dB @ 0.017 to 0.033 A/m ±1.0 dB @ 0.033 to 0.068 A/m ±0.5 dB @ 0.068 to 3 A/m ±1.0 dB @ 3 to 16 A/m	±3 dB (10 to 40 µW/cm²) ±1 dB (40 to 175 µW/cm²) ±0.5 dB (175 to 340 mW/cm²) ±1 dB (0.34 to 10 W/cm²)
Isotropic deviation [5] Referred to 0.6 mW/cm² (0.125 A/m)	±1 dB (300 kHz to 30 MHz)	
Temperature response (nom.) Referred to 0.6 mW/cm² (0.125 A/m @ 10 MHz)	±0.2 dB (0 °C to 35 °C, related to 23 °C) ±0.3 dB (-20 °C to +50 °C, related to 23 °C)	

General Specifications		
Calibration		Accredited calibration in our accredited calibration laboratory in accordance with DIN EN ISO/IEC 17025:2018 by the Deutsche Akkreditierungsstelle (DAkkS)
Recommended calibration interval		24 months
Operating temperature		-20 °C to +50 °C
Humidity		< 29 g/m³ (< 93 % RH at +30 °C), non-condensing
Ingress protection		IP54 (probe screwed on)
Climatic conditions	Storage	1K5 (IEC 60721-3) -40 °C to +70 °C
	Transport	2K4 (IEC 60721-3) -40 °C to +70 °C
	Operating	7K2 (IEC 60721-3) extended to -20 °C to +50 °C
Size		292 mm x 127 mm Ø
Weight		< 250 g
Country of origin		Germany

1 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, probe sampling rate 5 Hz.
2 Cutoff frequency at typ. -3 dB.
3 Pulse length 1µsec, duty cycle 1:100.
4 Frequency response can be compensated for by the use of correction factors stored in the probe memory.
5 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.

Conditions

Unless otherwise noted, specifications apply after 30 minutes warm-up time within the specified environmental conditions. The product is within the recommended calibration cycle.

Specifications with limits

These describe product performance for the given parameter covered by warranty. Specifications with limits (shown as <, ≤, >, ≥, ±, max., min.) apply under the given conditions for the product and are tested during production, considering measurement uncertainty.

Specifications without limits

These describe product performance for the given parameter covered by warranty. Specifications without limits represent values with negligible deviations, which are ensured by design (e.g. dimensions or resolution of a setting parameter).

Typical values (typ.)

These characterize product performance for the given parameter that is not covered by warranty. When stated as a range or as a limit (shown as <, ≤, >, ≥, ±, max., min.), they represent the performance met by approximately 80% of the instruments. Otherwise, they represent the mean value. The measurement uncertainty is not taken into account.

Nominal values (nom.)

These characterize expected product performance for the given parameter that is not covered by warranty. Nominal values are verified during product development but are not tested during production.

Uncertainties

These characterize the dispersion of the values attributed to the measurands with an estimated confidence level of approximately 95%. Uncertainty is stated as the standard uncertainty multiplied by the coverage factor k=2 based on the normal distribution. The evaluation has been carried out in accordance with the rules of the “Guide to the Expression of Uncertainty in Measurement” (GUM).

Ordering Information

Digital Broadband Probe	Part number
Probe HFD-3061, H-Field, 300 kHz–30 MHz	**2462/05**

Optional Accessories	Part number
Cable, Digital Probe Extension, 2m [6]	**2460/90.02**

[6] The device specifications apply without an extension cable.

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