

BRÜEL & KJÆR® Transducers

1/4-inch Free-field Microphone Type 4954

Type 4954 is a 1/4-inch prepolarized free-field microphone and is specially designed for high-level and high-frequency measurements.

The use of a laser-welded stainless steel diaphragm and a stainless steel protection grid, make this microphone capable of withstanding rough environments.



Uses

- High-level measurements
- High-frequency measurements
- Cost-effective measurements

Features

- Robust
- Prepolarized
- Sensitivity: 3.16 mV/Pa
- Frequency: 4 Hz to 100 kHz
- Dynamic Range: Up to 165 dB
- Excellent phase response
- Excellent long-term stability

The Microphone

Prepolarized Free-field Microphone Type 4954 has been optimised for a flat, free-field response and is suited for measurements far beyond the audible range. Due to its wide frequency range, the frequency response in the audible range is typically within ± 1 dB.

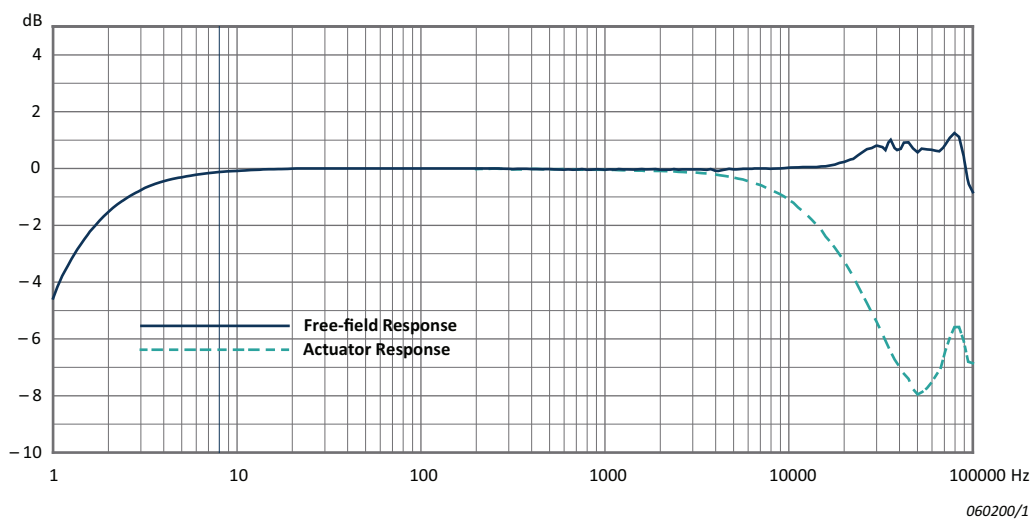
Carefully selected materials and advanced production techniques such as artificial aging and clean room assembly, guarantee excellent long-term stability and low noise even in harsh environments.

Type 4954 has excellent amplitude and phase matching over wide ranges of temperature and humidity, and is side-vented for pressure equalization.

The microphone does not need an external polarization voltage, thus enabling the use of inexpensive 2-wire system (CCLD*) input.

Each microphone is individually calibrated and comes with a calibration chart and a mini CD with calibration data and information about the influence of different measurement conditions and accessories.

Fig. 1 Frequency response without protection grid



* CCLD: Constant current line drive, also known as DeltaTron (IEPE compatible)

Specifications

NOTE: All values are typical at 23 °C (73.4 °F), 101.3 kPa and 50% RH unless otherwise specified

STANDARD		
IEC 61094-4 Type Designation		WS 3F (up to 100 kHz)
DYNAMIC CHARACTERISTIC		
Polarization Voltage		0 V (prepolarized)
Sensitivity		– 50 dB re 1 V/Pa ± 3 dB 3.16 mV/Pa (re 250 Hz)
Free-field Frequency Response* (re 250 Hz)		± 2 dB, 4 Hz to 80 kHz ± 3 dB, 3 Hz to 100 kHz
Lower Limiting Frequency		0.3 to 3 Hz
Pressure Equalization Vent		Side vented
Diaphragm Resonance Frequency		83 kHz
Cartridge Capacitance		5.1 pF
Cartridge Inherent Noise		< 35 dB SPL(A) (< 1.6 µV) < 45 dB SPL (Lin, 20 Hz to 100 kHz) (< 2.52 µV)
Combined Noise Level (with preamplifier Type 2670)		< 40 dB SPL(A) < 50 dB SPL (Lin, 20 Hz to 100 kHz)
Upper Limit of Dynamic Range (3% distortion)		> 164 dB SPL (RMS)
Maximum Sound Pressure Level		174 dB(peak)
ENVIRONMENTAL CHARACTERISTICS		
Operating Temperature Range		– 40 to +150 °C (– 40 to +302 °F)
Storage Temperature	In microphone box	– 30 to +70 °C (– 22 to +158 °F)
	With mini CD	– 20 to +70 °C (– 4 to +158 °F)
Temperature Coefficient (250 Hz)		+0.009 dB/°C @ 250 Hz (– 10 to +50 °C (+14 to 122 °F))
Pressure Coefficient		– 0.007 dB/kPa
Operating Humidity Range		0 to 100% RH (without condensation)
Influence of Humidity		< 0.1 dB in the absence of condensation
Vibration Sensitivity		60 dB equivalent SPL for 1 m/s ² axial vibration
Magnetic Field Sensitivity		Equivalent to 10 dB SPL for 80 A/m, 50 Hz field
Estimated Long-term Stability		< 0.001 dB/year @ 20 °C < 0.5 dB/hr @ 150 °C
PHYSICAL CHARACTERISTICS		
Thread for Preamplifier Mounting		5.7 mm to 60 UNS
Diameter	With grid	7 mm (0.28 in)
	Without grid	6.35 mm (0.25 in)
Height	With grid	10.5 mm (0.41 in)
	Without grid	6.35 mm (0.35 in)

* Without protection grid

COMPLIANCE WITH STANDARDS



Ordering Information

Type 4954 ¼-inch Free-field Microphone

Includes a mini CD with calibration data and information about the influence of different measurement conditions and accessories

TEDS COMBINATION	
Type 4954-A	¼-inch CCLD Free-field Microphone, integral preamplifier with SMB connector
Type 4954-B	¼-inch CCLD Free-field Microphone, integral preamplifier with 10–32 UNF connector
OPTIONAL ACCESSORIES	
Type 4231	Sound Calibrator
Type 4228	Pistonphone
UA-0033	Electrostatic Actuator (for ½-inch microphones)
DB-0264	¼-inch Adaptor for Electrostatic Actuator
UA-0385	Noise Cone for ¼-inch Microphones
UA-1588	¼-inch Microphone Holder
UA-0122	Flexible Flush Mounting Adaptor, angle
UA-0123	Flexible Flush Mounting Adaptor, straight
CALIBRATION SERVICES	
MIC-CAI	Accredited Initial Calibration
MIC-CAF	Accredited Calibration
MIC-CFF	Factory Standard Calibration



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