

BRÜEL & KJÆR® Acoustic Sensors

Prepolarized 1/4" Microphone Type 4944

Prepolarized 1/4" Pressure-field Microphone Type 4944 is specially designed for high-level and high-frequency measurements. By using new materials and a new way of mounting the diaphragm, the microphone is geared to withstand rough handling. The assembly of the microphone in a clean room environment ensures that the microphone can be used in high-humidity environments and still produce reliable results. Type 4944 can be used with sound level meters to measure high sound pressure levels.

Uses

- High-level measurements
- High-frequency measurements
- Flush mounting
- Connects to CCLD preamplifiers

Features

- Sensitivity: 1.0 mV/Pa
- Frequency: 4 – 70,000 Hz
- Dynamic Range: 30 – 170 dB
- Temperature: – 40 to +150 °C (– 40 to +302 °F)
- Polarization: 0 V



Description

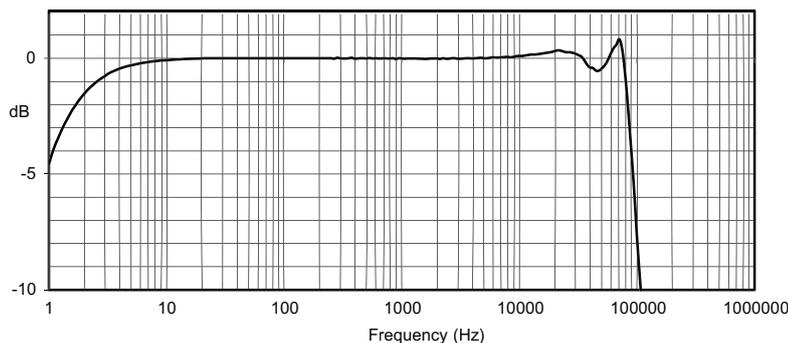
Use of Type 4944

A pressure-field microphone is designed to be used in small closed couplers or close to hard reflective surfaces or flush-mounting. The sensitivity has been optimised to allow measurement of high sound pressure levels without clipping in the CCLD preamplifier. Type 4944 is available in a side-vented as well as a rear-vented version, ensuring that vents remain unblocked when flush-mounted.

Design and Robustness

The shape of the microphone front ensures excellent performance when flush-mounted. The laser-welded diaphragm on the microphone housing ensures that the sensitivity is resistant to rough handling during flush mounting.

Fig. 1 Type 4944 pressure-field response without grid



The robustness of the microphone makes it capable of withstanding 1-metre drops in accordance with IEC 60068-2-32.

Microphone Data Mini CD

The microphone is supplied with a data mini CD. This CD carries all individual calibration data as well as random-incidence and pressure-field corrections. The influence of the 1/4" Nose Cone UA-0385 is also available.

Calibration

The sensitivity can be calibrated at 250 Hz using Pistonphone Type 4228 with 1/4" Adaptor DP-0775. The pressure-field response can be measured using Actuator UA-0033 with Adaptor DB-0264. The pressure-field response is equal to the actuator response.

Specifications - Type 4944*

Specification	Value
Nominal Diameter	¼ inch
Open-circuit Sensitivity (250 Hz)	-60 ±3 dB re 1 V/Pa, 1.0 mV/Pa
Polarization Voltage	0 V
Frequency Response†	4 Hz to 70 kHz: ±2 dB
Lower Limiting Frequency (-3 dB)	0.3 Hz to 3 Hz
Pressure Equalization Vent	Side-vented Type 4944 Rear-vented Type 4944-001
Pressure-field Response 4 Hz to 70 kHz	±2 dB. In accordance with IEC 61094-4 WS3P
Diaphragm Resonance Frequency	60 kHz (90° phase shift)
Cartridge Capacitance (Polarized)†	Diameter: 52 mm (2.05")
Equivalent Air Volume	0.25 mm ³ (250 Hz)
Cartridge Thermal Noise	30 dB(A), 37 dB (Lin, 20 - 100 kHz)
Upper Limit of Dynamic Range	3% Distortion: >170 dB SPL
Maximum Sound Pressure Level	182 dB (peak)
Environmental	
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: +5 to +150 °C (-41 to +122 °F)
Temperature Coefficient (250 Hz)	+0.008 dB/°C (-10 to +50 °C/+14 to 122 °F)
Pressure Coefficient	-0.003 dB/kPa, typical
Operating Humidity Range	0 to 100% RH (without condensation)
Influence of Humidity	<0.1 dB in the absence of condensation
Vibration Sensitivity (<1000 Hz)	69 dB, ≈ SPL for 1 m/s ² axial vibration
Magnetic Field Sensitivity	10 dB SPL for 80 A/m, 50 Hz field
Estimated Long-term Stability	>1000 years/dB in dry air at 20 °C (68 °F) >2 hours/dB in dry air at 150 °C (302 °F)
Physical	
Thread for Preamp Mounting	5.7 mm - 60 UNS
Diameter with Grid	7 mm (0.28")
Diameter without Grid	6.35 mm (0.25")
Height with Grid	10.5 mm (0.41")
Height without Grid	9 mm (0.35")

Ordering Information

Type 4944 Prepolarized ¼" Pressure-field Microphone (side-vented)

Type 4944-001 Prepolarized ¼" Pressure-field Microphone (rear-vented)

Includes the following accessories:

- BC-5002: Microphone Mini-CD‡

Optional Accessories	
Type 2670	¼" Microphone Preamp
Type 2671	½" CCLD Microphone Preamp
DP-0775	Calibration Adaptor for ¼" Microphones
DB-0264	½" to ¼" Adaptor for UA-0033
UA-0033	Electrostatic Actuator
UA-0385	Nose Cone for ¼" Microphone
UA-0035	¼" to ½" Microphone Adaptor
UA-1588	¼" Microphone Holder
Calibration Services	
MIC-CAF	Accredited Calibration
MIC-CAI	Accredited Initial Calibration
MIC-CFF	Factory Standard Calibration (with Calibration Chart for Type 4944)
MIC-CT2	CTF-2 Traceable Calibration
MIC-CTF	Traceable Calibration

Compliance with Standards



The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives



RCM mark indicates compliance with applicable ACMA technical standards - that is, for telecommunications, radio communications, EMC and EME



China RoHS mark indicates compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China



WEEE mark indicates compliance with the EU WEEE Directive

* All values are typical at 23°C (73.4°F), 101.3 kPa and 50% RH, unless measurement uncertainty or tolerance field is specified. All uncertainty values are specified at 2 σ (that is, expanded uncertainty using a coverage factor of 2)

† Individually calibrated

‡ State microphone serial number if re-ordering

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