PRODUCT DATA

Pressure-field ¼-inch Microphone — Type 4938

The Pressure-field ¼" Microphone 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 and high temperatures of up to 300°C (572°F). 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.

USES

- ❍ High temperature measurements
- ❍ High level measurements
- ❍ High frequency measurements
- ❍ Flush mounting

FEATURES

- ❍ Sensitivity: 1.6 mV/Pa
- ❍ Frequency: 4 – 70 000 Hz
- ❍ Dynamic Range: 30 – 172 dB
- ❍ Temperature: –40 to 300°C (–40 to 572°F)
- ❍ Polarization: 200 V External

Design and Robustness

The shape of the microphone front ensures excellent microphone performance when flush-mounted and the laser-welded diaphragm on the microphone housing ensures that the sensitivity is resistant to rough handling during flush mounting. The robustness of the microphone makes it capable of withstanding the IEC 68-2-32 1 metre drop.

Microphone Data Disk

The microphone is supplied with a 3½" microphone data disk. This disk carries all individual calibration data as well as random-incidence and pressure-field corrections. The influence of the ¼" Nose Cone is also available.

Calibration

The sensitivity can be calibrated at 250 Hz using Pistonphone Type 4228 with ¼" 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.

More Information

Further information on stability, the effect of environmental influence, directional characteristics and detailed specifications can be found in The Microphone Handbook (BA 5105).

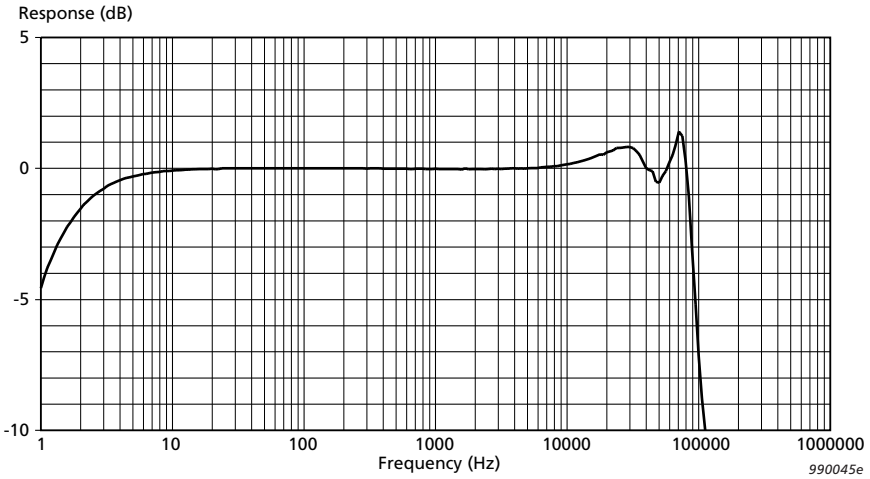

Fig. 1 Type 4938 pressure-field response without grid

Specifications – Pressure-field ¼-inch Microphone Type 4938

Typical Uses: For measurements in confined spaces and small cavities. High level, high frequency measurements. Optimised for flush mounting
Nominal Diameter: ¼″
Open Circuit Sensitivity (250 Hz)*: –56 ±3 dB re 1 V/Pa, 1.6 mV/Pa
Polarization Voltage: 200 V external
Frequency Response*:
Pressure-field response 4 Hz to 70 kHz: ±2 dB. In accordance with IEC 61094 – 4 WS3P
Lower Limiting Frequency (–3 dB): 0.3 Hz to 3 Hz
Pressure Equalization Vent: Side vented
Diaphragm Resonance Frequency: 60 kHz (90° phase-shift)
Capacitance (Polarized 250 Hz)*: 6.1 pF at 250 Hz
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): >172 dB SPL
Maximum Sound Pressure Level: 182 dB (peak)

Environmental

Operating Temperature Range: –40 to 150°C (–40 to 302°F). Can be used up to 300°C (572°F) but with a permanent sensitivity change of typically +0.6 dB which stabilises after 1 hour

*Individually calibrated

Storage Temperature: In case: –30 to 70°C (–22 to 158°F), **With data disk:** 5 to 50°C (41 to 122°F)
Temp. Coefficient (250 Hz): +0.003 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 equivalent SPL for 1 m/s^2
Magnetic Field Sensitivity: 10 dB SPL for 80 A/m, 50 Hz field
Estimated Long-term Stability: >1000 years/dB at 20°C (68°F), >100 hours/dB at 150°C (302°F)

Dimensions

Diameter with Grid: 7 mm (0.27 in)
Diameter without Grid: 6.35 mm (0.25 in)
Height with Grid: 10.5 mm (0.41 in)
Height without Grid: 9 mm (0.35 in)
Thread for Preamplifier Mounting: 5.7 mm – 60UNS
Note: 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 2σ (i.e., expanded uncertainty using a coverage factor of 2)
CE compliance with EMC Directive

Ordering Information

Type 4938 Pressure-field ¼″ Microphone
Includes the following accessories:
BC 0229 Calibration Chart†
BC 5002 Microphone Data Disk†

†Quote microphone serial number if re-ordering

Optional Accessories

Type 2670	¼″ Microphone Preamplifier
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″ microphones
BA 5105	The Microphone Handbook

Brüel & Kjær reserves the right to change specifications and accessories without notice.

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