PRODUCT DATA

Free-field ¼-inch Microphone — Type 4939

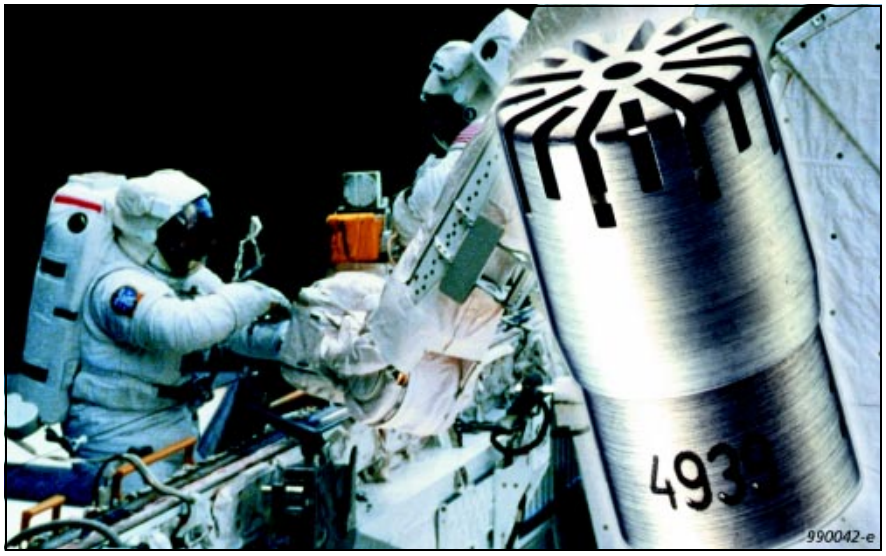
The Free-field ¼" Microphone is specially designed for high level and high frequency measurements. By using stainless steel diaphragm and protection grid, the microphone is optimised to withstand rough environments and is capable of working at high temperatures – up to 150°C (302°F).

USES

- ❍ High level measurements
- ❍ High frequency measurements
- ❍ Model work

FEATURES

- ❍ Sensitivity: 4 mV/Pa
- ❍ Frequency: 4 – 100,000 Hz
- ❍ Dynamic Range: 28 – 164 dB
- ❍ Temperature: –40 to 150°C (–40 to 302°F)
- ❍ Polarization: 200 V External



Robustness

The microphone is capable of withstanding the IEC 68-2-32 1 metre drop test.

Assembly

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.

Microphone Data Disk

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

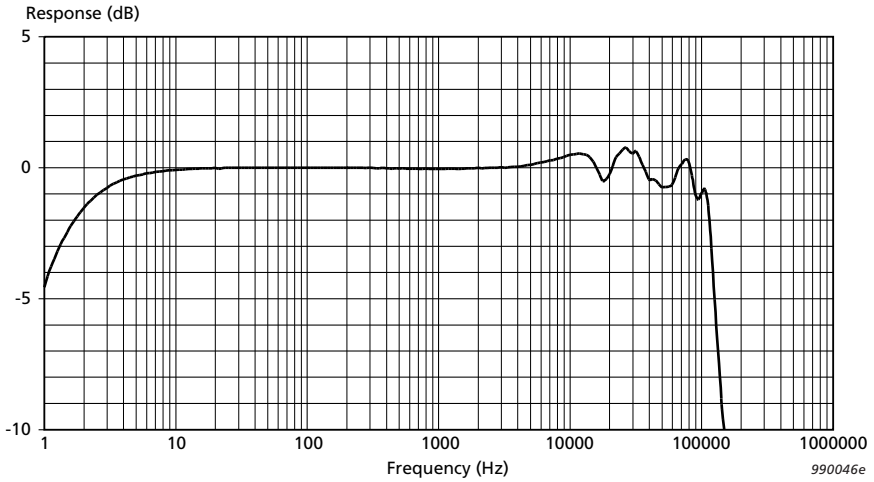
Calibration

The sensitivity can be calibrated at 250 Hz by using Pistonphone Type 4228 with ¼" Adaptor DP 0775. The actuator response can be measured using Actuator UA 0033 with Adaptor DB 0264. The free-field response can be obtained by adding the type-specific, free-field correction to the actuator response.

More Information

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

Fig. 1 *Type 4939 free-field response without grid*



Specifications – Free-field ¼-inch Microphone Type 4939

Typical Uses: General high level, high frequency measurements and model work
Nominal Diameter: ¼″
Open Circuit Sensitivity (250 Hz)*: –48 ±3 dB re 1 V/Pa, 4 mV/Pa
Polarization Voltage: 200 V external
Frequency Response*:
Free-field Response 4 Hz to 100 kHz: ±2 dB. In accordance with IEC 61094 – 4 WS3F
Lower Limiting Frequency (–3 dB): 0.3 Hz to 3 Hz
Pressure Equalization Vent: Side vented
Diaphragm Resonance Frequency: 80 kHz (90° phase-shift)
Capacitance (Polarized 250 Hz)*: 6.1 pF at 250 Hz
Equivalent Air Volume: 0.6 mm^3 (250 Hz)
Cartridge Thermal Noise: 28 dB(A) 33 dB (Lin, 20 – 100 kHz)
Upper Limit of Dynamic Range (3% Distortion): >164 dB SPL
Maximum Sound Pressure Level: 174 dB (peak)

Environmental

Operating Temperature Range: –40 to 150°C (–40 to 302°F)
Storage Temperature:
In case: –30 to +70°C (–22 to 158°F)
With data disk: 5 to 50°C (41 to 122°F)

*Individually calibrated

Temperature Coefficient (250 Hz): +0.003 dB/°C (–10 to 50°C, 14 to 122°F)
Pressure Coefficient: –0.007 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): 60 dB equivalent SPL for 1 m/s^2 axial vibration
Magnetic Field Sensitivity: 10 dB SPL for 80 A/m, 50 Hz field

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 4939 Free-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

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BP 1851 – 11

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