# PRODUCT DATA

## Prepolarized Diffuse-field ½-inch Microphone — Type 4942

*Prepolarized Diffuse-field ½-inch Microphone Type 4942 is optimised for general random-incidence measurements and for standardised noise measurements in accordance with ANSI standards. And being prepolarized it can connect to CCLD input conditioning.*

### *USES*

- ❍ Diffuse-field measurements
- ❍ In-car measurements
- ❍ Connects to CCLD input

### *FEATURES*

- ❍ Sensitivity: 50 mV/Pa
- ❍ Frequency: 6.3 – 16000 Hz
- ❍ Dynamic Range: 14.6 – 146 dB
- ❍ Temperature: –40 to 150°C (–40 to 302°F)
- ❍ Polarization: 0 V

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### Use of Diffuse-field Microphones

A diffuse-field microphone, also called a random-incidence microphone, is designed to have a flat response when signals arrive simultaneously from all directions. They should therefore not only be used for measurement in reverberation chambers, but in all situations where the sound field is diffuse, or where several sources contribute to the sound pressure at the measurement position. Practical examples are indoor situations, where the sound is reflected by walls, ceilings, and objects in the room, or measurements inside a car.

### Robustness, Ageing and Assembly

The microphone is capable of withstanding the IEC 68 –2–32 1 metre drop test. The ageing at high temperature and assembly of the microphone in a clean room environment ensures that the microphone can be used in high humidity conditions and still produce reliable results.

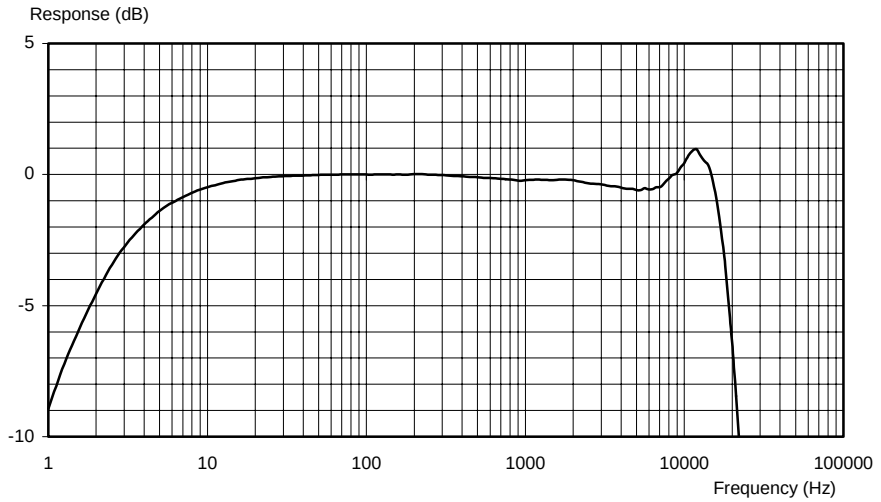
### Microphone Data Disk

The microphone is supplied with a 3½″ microphone data disk. This disk includes all calibration data and also free-field, random-incidence and pressure-field corrections. Information on the influence of different accessories is also available on the disk.

### Calibration

The sensitivity can be calibrated at 250 Hz by using Pistonphone Type 4228 with ½″ Adaptor DP 0776. The actuator response can be measured using Actuator UA 0033. The random-incidence response can be obtained by adding the type-specific, random-incidence correction to the actuator response. Please note that this microphone is not suitable for pressure-field measurements.

***Fig. 1***
*Typical random-incidence response of the microphone with protection grid. The low-frequency response is valid when the vent is exposed to the sound field*




# Specifications – Prepolarized Diffuse-field ½-inch Microphone Type 4942

**Typical Use:** Diffuse-field measurements
**Nominal Diameter:** ½-inch
**Open Circuit Sensitivity (250 Hz)*:** –26 ±1.5 dB re 1 V/Pa, 50 mV/Pa
**Polarization Voltage:** 0 V
**0° Incidence Random Incidence Response***:
10 Hz to 10 kHz: ±1 dB
6.3 Hz to 16 kHz: ±2 dB
**Lower Limiting Frequency (–3 dB):** 2 Hz to 4 Hz
**Pressure Equalization Vent:** Rear vented
**Diaphragm Resonance Frequency:** 14 kHz (90° phase shift)
**Capacitance (Polarized):** 14 pF at 250 Hz
**Equivalent Air Volume:** 46 $mm^3$ (250 Hz)
**Cartridge Thermal Noise:** 14.6 dB(A), 15.3 dB(Lin)
**Upper Limit of Dynamic Range (3% Distortion):** >146 dB SPL
**Maximum Sound Pressure Level:** 158 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)
**Temperature Coefficient (250 Hz):** –0.001 dB/°C (–10 to 50°C, 14 to 122°F)
**Pressure Coefficient:** –0.010 dB/kPa, typical

*.Individually calibrated

**Operating Humidity Range:** 0 to 100%RH (without condensation)
**Influence of Humidity:** < 0.1 dB in the absence of condensation
**Vibration Sensitivity (< 1000 Hz):** 62.5 dB equivalent SPL for 1 $m/s^2$ axial vibration
**Magnetic Field Sensitivity:** 6 dB SPL for 80 A/m, 50 Hz field
**Estimated Long-term Stability:**
> 1000 years/dB (dry air at 20°C (68°F))
> 2 hours/dB (dry air at 150°C (302°F))
> 40 years/dB (air at 20°C (68°F), 90%RH)
> 1 year/dB (air at 50°C (122°F), 90%RH)

**DIMENSIONS**
**Diameter with Grid:** 13.2 mm (0.52 in)
**Diameter without Grid:** 12.7 mm (0.50 in)
**Height with Grid:** 18.2 mm (0.72 in)
**Height without Grid:** 16.3 mm (0.64 in)
**Thread for Preamplifier Mounting:** 11.7 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 4942 Prepolarized Diffuse-field ½-inch Microphone
Includes the following accessories:

| | |
|---|---|
| BC 0224 | Calibration Chart† |
| BC 5002 | Microphone Data Disk† |

## Optional Accessories

| | |
|---|---|
| Type 2671 | ½-inch DeltaTron® Microphone Preamplifier |
| Type 2669B/L/C | ½-inch Microphone Preamplifier |
| Type 4231 | Sound Level Calibrator |
| Type 4228 | Pistonphone |
| Type 4226 | Multifunction Acoustic Calibrator |
| DP 0776 | Calibration Adaptor for ½-inch Microphones |
| UA 0033 | Electrostatic Actuator |
| UA 0237 | ½-inch Windscreen (90 mm) |
| UA 0459 | ½-inch Windscreen (65 mm) |
| BA 5105 | The Microphone Handbook |

†.Quote microphone serial number if re-ordering

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

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