

# PRODUCT DATA

## 1/2-inch Prepolarized Pressure-field Microphone — Type 4953

*This high sensitivity microphone is optimised for pressure-field response as required in applications such as coupler measurements. A good diffuse-field response also makes it well-suited for in-cabin noise measurements up to 10 kHz.*



### USES AND FEATURES

#### USES

- Coupler measurements
- Hearing aid testing
- Telephone testing
- In-cabin measurements
- Measurements to ANSI standards

#### FEATURES

- Sensitivity: 50 mV/Pa
- Frequency: 3–10000 Hz
- Dynamic Range: 16.2–146 dB
- Temperature: –30 to +150°C (–22 to +302°F)
- Prepolarized: connects directly to CCLD input

### Description

#### Use of Pressure-field Microphones

A pressure-field is characterised by a sound pressure that has the same magnitude at any position within the field. Pressure fields can be found when measuring sound in enclosures or cavities that are small compared to the wavelength. For measurements to be made close to hard reflective surfaces or inside closed couplers, a pressure-field microphone is the best choice.

The frequency response of Type 4953 has been carefully designed in such a way that this microphone also has a good random incidence response, making it suitable for in-cabin noise measurements, for instance in the automotive industry.

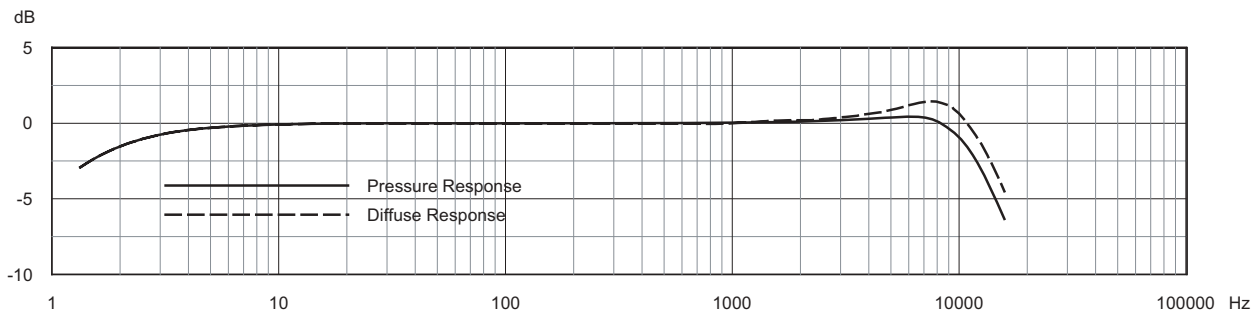
#### Manufacturing and Stability

The use of a press-fitted stainless steel diaphragm and the assembly of the microphone in a clean room environment, ensure superior long-term stability, and suitability for use in high-humidity environments with negligible error.

#### Calibration of Sensitivity and Frequency Response

Each Type 4953 comes with an individual calibration chart showing open-circuit sensitivity, as well as frequency response in both the pressure and diffuse field. An enclosed mini CD contains a wealth of technical information, such as the influence of accessories, free-field corrections, etc.

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



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## Specifications – 1/2-inch Prepolarized Pressure-field Microphone Type 4953



Compliance with EMC Directive and Low Voltage Directive of the European Community



Compliance with EMC Requirements of Australia and New Zealand

Unless otherwise specified the data below is valid at 23°C, 101.3 kPa and 50% RH

**Typical Use:** Pressure-field measurement

**Nominal Diameter:** 1/2-inch

**Open-circuit Sensitivity (250 Hz):**

50 mV/Pa, -26 dB re 1 V/Pa +2 dB -3 dB

**Polarization Voltage:** 0 V

**Pressure-field Response:** ±2 dB, 3 Hz to 10 kHz

**Lower Limiting Frequency (-3 dB):** 1 Hz to 2.4 Hz

**Pressure Equalization Vent:** Rear vented

**Diaphragm Resonance Frequency:**

10.6 kHz (90° phase-shift)

**Capacitance (Polarized):** 14.6 pF at 250 Hz

**Equivalent Air Volume:** 34.6 mm<sup>3</sup> (250 Hz)

### Cartridge Thermal Noise:

15.7 dB(A), 16.6 dB (Lin. 22.4 Hz - 22.4 kHz)

### Noise with Preamplifier Type 2669:

16.2 dB (A), 18 dB (Lin. 22.4 Hz to 22.4 kHz)

### Upper Limit of Dynamic Range

(3% Distortion): > 146 dB

### Maximum Sound Pressure Level:

160 dB (peak)

## Environmental

### Operating Temperature Range:

-30 to +150°C (-22 to +302°F)

### Storage Temperature:

**In Microphone Box:** -30 to +70°C (-22 to +158°F)

**With Mini CD:** 5 to +50°C (41 to 122°F)

**Without Mini CD:** -30 to +70°C (-22 to +158°F)

### Temperature Coefficient (250 Hz):

-0.006 dB/°C (-10 to +50°C, 14 to 122°F)

### Pressure Coefficient:

-0.008 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):** 62.5 dB equivalent SPL for 1m/s<sup>2</sup> 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))
- 4 years/dB (20°C and 90% RH)
- 1 year/dB (50°C and 90% RH)

## Dimensions

**Diameter with Grid:** 13.2 mm (0.52")

**Diameter without Grid:** 12.76 mm (0.50")

**Height with Grid:** 17.6 mm (0.69")

**Height without Grid:** 16.3 mm (0.64")

### Thread for Preamplifier Mounting:

11.7 mm – 60 UNS

**Mass:** 9.5 g (0.334 oz.)

## Ordering Information

Type 4953 1/2-inch Prepolarized Pressure-field Microphone

Includes the following accessories:

- BC-0359: Calibration Chart
- BC-5002: Microphone Data Disc

### OPTIONAL ACCESSORIES

Type 2671 1/2-inch DeltaTron<sup>®</sup> Microphone Preamplifier

Type 2695 1/2-inch DeltaTron<sup>®</sup> Microphone Preamplifier

Type 4231 Sound Calibrator

Type 4228 Pistonphone

DP-0776 Calibration Adaptor for 1/2-inch Microphones

UA-0033 Electrostatic Actuator

UA-0237 Windscreen for 1/2-inch Microphones (90 mm)

UA-0459 Windscreen for 1/2-inch Microphones (65 mm)

## Service Products

### ACCREDITED CALIBRATION

4953-CAF Accredited Calibration

### TRACEABLE CALIBRATION

4953-CAI Accredited Initial Calibration

4953-CFF Factory Standard Calibration (included in delivery)

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

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