

# PRODUCT DATA

## ½" Pressure-field Microphone — Type 4192

Type 4192 is designed for high-precision coupler measurements or ANSI noise measurements. Being externally polarized, Type 4192 must be used with a classical preamplifier.



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### USES

- Precision coupler measurement
- Premium class ANSI sound level meters
- General random incidence measurements

### FEATURES

- Sensitivity: 12.5 mV/Pa
- Frequency: 3.15 Hz – 20 kHz
- Dynamic Range: 19 – 162 dB
- Temperature: –30 to +300°C (–22 to +572°F)
- Polarization: 200 V

### Use of Pressure-field Microphones

Pressure-field microphones are optimised to have a flat frequency response in a pressure field. The microphones should be used for making measurements in small, closed couplers or close to hard, reflective surfaces.

Type 4192 is suited for situations where a robust and stable pressure-field microphone is required.

### Manufacturing and Stability

A press-fitted, stainless-steel diaphragm ensures superior long-term stability and mechanical robustness – Type 4192 will withstand the 1 m drop test of IEC 60068–2–32.

All Brüel & Kjær Measuring Microphones are assembled in a clean room. This ensures that the microphones maintain their inherent low noise floor and high stability, even when used in environments with a combination of high humidity and high temperature.

### Polarization Voltage

Type 4192 requires an external polarization voltage and must therefore must be used with a classical preamplifier. Externally polarized microphones may be used at higher temperatures without severe changes in sensitivity.

### TEDS Microphones

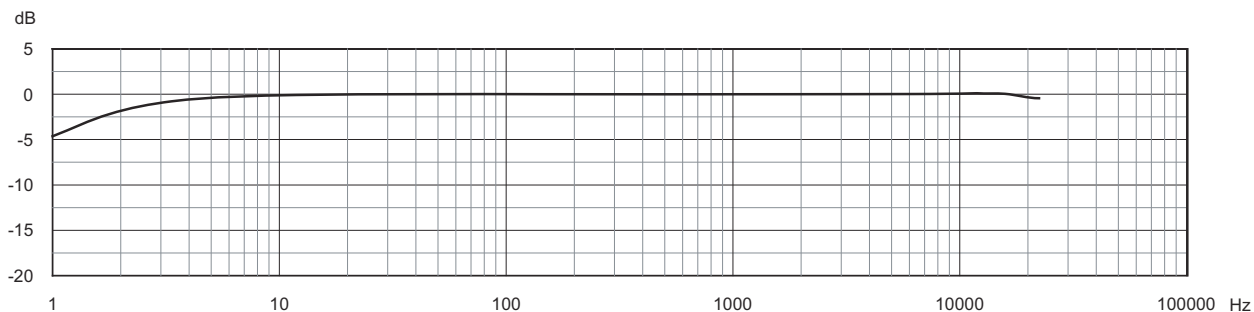
Type 4192 is available in TEDS combinations with the classical Microphone Preamplifier Type 2669. The TEDS microphone is considered one unit and has been sealed in a clean environment. The TEDS is programmed with the loaded sensitivity of the actual cartridge and the data is therefore readily available. The default TEDS template is to IEEE P 1451.4 but TEDS to IEEE 1451.4 is available on request.

### Individual Calibration Data

Each Type 4192 comes with an individual calibration chart with information about the open-circuit sensitivity and frequency response in a pressure field as well as the electrostatic actuator response.

An enclosed mini-CD contains the individual calibration data at 1/12-octave frequencies plus a wealth of technical information, such as the influence of different accessories, response in different sound fields and much more. Using the CD data and the REq-X feature of PULSE™, a real-time correction for different measurement situations, can increase measurement accuracy.

**Fig. 1** Typical pressure field 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" Pressure-field Microphone Type 4192 (valid from serial number 2496392)

**IEC 61094-4 Type Designation:** WS2P

**Polarization Voltage:** 200 V (external)

**Open-circuit Sensitivity (250 Hz)<sup>a</sup>:**

12.5 mV/Pa, -38 dB ± 1.5 dB re 1 V/Pa

**Pressure-field Response<sup>a</sup>:**

5 Hz to 7 kHz: ± 1 dB

3.15 Hz to 20 kHz ± 2 dB

**Lower Limiting Frequency (-3 dB)<sup>a</sup>:**

1 to 2 Hz

**Pressure Equalization Vent:** Side vented

**Diaphragm Resonance Frequency:**

23 kHz (90° phase shift)

**Cartridge Capacitance (Polarized)<sup>a</sup>:**

18 pF at 250 Hz

**Equivalent Air Volume:** 8.8 mm<sup>3</sup> (250 Hz)

**Pistonphone Correction** (Type 4228 with

DP-0776) 0.02 dB

**Cartridge Thermal Noise:**

19 dB(A), 21.3 dB(Lin)

**Upper Limit of Dynamic Range**

(3% Distortion): > 162 dB SPL<sup>b</sup>

**Max. Sound Pressure Level:** 171 dB (peak)

### ENVIRONMENTAL

**Operating Temperature Range:**

-30 to +150°C (-22 to +302°F)

Useable up to 300°C with a permanent sensitivity change of approx. 0.4 dB, which stabilizes after one hour.

**Storage Temperature:**

**In Microphone Box:** -30 to +70°C

(-22 to +158°F)

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

**Temperature Coefficient (250 Hz):**

-0.0045 dB/K (-10 to +50°C, 14 to 122°F)

**Pressure Coefficient:**

-0.005 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):** 65.5 dB equivalent SPL for 1 m/s<sup>2</sup> axial vibration

**Magnetic Field Sensitivity:**

16 dB SPL for 80 A/m, 50 Hz field

**Estimated Long-term Stability:**

> 1000 years/dB in dry air at 20°C (68°F)

> 100 hours/dB in dry air at 150°C (302°F)

### DIMENSIONS

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

**Diameter without Grid:** 12.7 mm (0.50")



**Height with Grid:** 13.5 mm (0.53")

**Height without Grid:** 12.6 mm (0.50")

**Thread for Preamp Mounting:**

11.7 mm-60 UNS

**Note:** All values are typical at 23°C (73.4°F), 101.3 kPa and 50% RH unless otherwise specified

  compliance with EMC Directive

a. Individually calibrated

b. 149 dB (152 dB peak) with ± 15 V supply

## Ordering Information

Type 4192 1/2" Pressure-field Microphone

Includes the following accessories:

- BC-0227: Calibration Chart<sup>c</sup>
- BC-5002: Microphone Data CD<sup>c</sup>

### TEDS COMBINATIONS

4192-B-001 1/2" Pressure-field Microphone with Preamp Type 2669-B

4192-C-001 1/2" Pressure-field Microphone with Preamp Type 2669-C

4192-L-001 1/2" Pressure-field Microphone with Preamp Type 2669-L

### OPTIONAL ACCESSORIES

Type 2669 1/2" Microphone Preamp

Type 4231 Sound Calibrator

Type 4228 Pistonphone

Type 4226 Multifunction Acoustic

Calibrator

DP-0776 Calibration Adaptor for 1/2" Microphones

UA-0033 Electrostatic Actuator

EU-4000 Angle Piece

UA-0386 Nose Cone for 1/2" Microphone

UA-0237 Windscreen for 1/2" Microphone, 90 mm diameter

UA-0459 Windscreen for 1/2" microphone, 65 mm diameter

BA 5105 The Microphone Handbook

### CALIBRATION SERVICES

4192-CAI Accredited Initial Calibration

4192-CAF Accredited Calibration

4192-CFF Factory Standard Calibration

c. State microphone serial number if re-ordering calibration data

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

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