BRÜEL & KJÆR® Transducers

1/2-inch Prepolarized Diffuse-field Microphone Type 4942

Type 4942 is optimised for general, random-incidence measurements and for noise measurements in accordance with ANSI standards. Being prepolarized, it can be used with both CCLD and classical preamplifiers.*

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Uses
- Diffuse-field measurements
- In-cabin measurements

Features
- Connects to CCLD input
- Sensitivity: 50 mV/Pa
- Frequency: 6.3 Hz – 16 kHz
- Dynamic Range: 14.6 – 146 dB
- Temperature: –40 to +150 °C (–40 to +302 °F)
- Polarization: 0 V

* Constant current line drive, also known as DeltaTron® (ICP and IEPE compatible)

Use of Diffuse-field Microphones
Diffuse-field microphones, also called random-incidence microphones, are designed to have a flat response to signals arriving simultaneously from all directions. They should be used in all situations where the sound field is diffuse, including measurements in reverberation chambers and where several sources contribute to the sound pressure at the measurement position. Applications include indoor measurements, where the sound is reflected by walls, ceilings and objects in the room. Another important application area is in-cabin measurements.

Manufacturing and Stability
The use of a press-fitted stainless steel diaphragm ensures superior long-term stability and mechanical robustness. In fact, Type 4942 will withstand the 1 m drop test specified in IEC 60068-2-32.

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

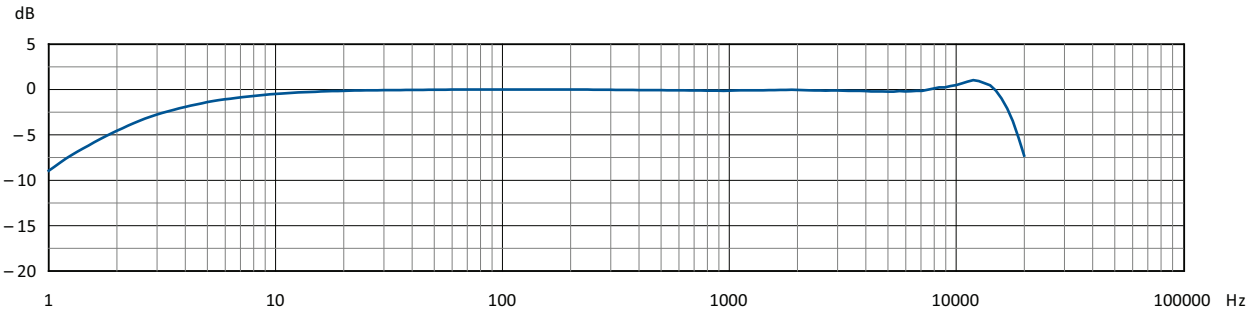
Polarization Voltage
Being prepolarized, Type 4942 is especially well-suited for battery operated equipment or for operation in humid environments.

Type 4942 can be used with CCLD as well classical type preamplifiers.

Individual Calibration Data
Each Type 4942 comes with an individual calibration chart including the open-circuit sensitivity, the frequency response in a diffuse 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, corrections in different sound fields and much more. Using the data on the mini-CD and the REq-X feature of BK Connect® and PULSE™, a real-time correction for different measurement situations, can increase measurement accuracy.

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*



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Specifications – Microphone Type 4942

Valid from serial number 2 504 591
NOTE: All values are typical at 23 °C (73.4 °F), 101.3 kPa and 50% RH unless otherwise specified

DYNAMIC CHARACTERISTIC		
Polarization Voltage		0 V Prepolarized
Open-circuit Sensitivity (250 Hz)*		−26 ±1.5 dB re 1 V/Pa, 50 mV/Pa
Random-incidence Response*		10 Hz to 10 kHz ±1 dB 6.3 Hz to 16 kHz ±2 dB
Lower Limiting Frequency (−3 dB)*		2 to 4 Hz
Pressure Equalization Vent		Rear vented
Diaphragm Resonance Frequency		14 kHz (90° phase shift)
Cartridge 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†
Max. Sound Pressure Level		158 dB(peak)
ENVIRONMENTAL CHARACTERISTICS		
Operating Temperature Range		−40 to +150 °C (−40 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)
Temperature Coefficient (250 Hz)		−0.006 dB/K (−10 to +50 °C, +14 to 122 °F)
Pressure Coefficient		−0.010 dB/kPa
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	20 °C (68 °F), dry air	>1000 years/dB
	150 °C (302 °F), dry air	>2 hours/dB
	20 °C (68 °F), 90% RH	>40 years/dB
	50 °C (122 °F), 90% RH	>1 year/dB
PHYSICAL CHARACTERISTICS		
Diameter	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 – 60 UNS

* Individually calibrated
† 137 dB (peak) with CCLD preamplifier and 24 V supply

COMPLIANCE WITH STANDARDS

Ordering Information

Type 4942 **½-inch Prepolarized Diffuse-field Microphone**
Includes the following accessories:
- Calibration Chart‡
- Microphone Mini -CD‡

TEDS COMBINATIONS	
Type 4942-A-021	½″ CCLD Diffuse-field Microphone Set with Preamplifier Type 2671 incl. TEDS and BNC connector
Type 4942-A-031	½″ CCLD Diffuse-field Microphone Set with A-weighted Preamplifier Type 2699 incl. TEDS and BNC connector
Type 4942-B-001	½″ CCLD Diffuse-field Microphone Set with Preamplifier Type 2669-B incl. TEDS, CIC and 3 m/9.8 ft cable
Type 4942-C-001	½″ CCLD Diffuse-field Microphone Set with Preamplifier Type 2669-C incl. TEDS, CIC and LEMO 1B connector
Type 4942-H-041	½″ CCLD Diffuse-field Microphone Set with High-temperature Preamplifier Type 1706 incl. TEDS and BNC connector
Type 4942-L-001	½″ CCLD Diffuse-field Microphone Set with Preamplifier Type 2669-L incl. TEDS, CIC and 3 m/9.8 ft cable
OPTIONAL ACCESSORIES	
Type 1706	½″ CCLD Microphone Preamplifier, for prepolarized microphones, 125 °C/257 °F, BNC connector (no cable incl.)
Type 2669	½″ A-weighted Microphone Preamplifier, for prepolarized microphones, BNC connector (no cable incl.)
Type 2669-B	½″ Microphone Preamplifier, conical shape, CIC, incl. 3 m/9.8 ft cable with B&K connector
Type 2669-C	½″ Microphone Preamplifier, cylindrical shape, CIC, LEMO 1B connector (no cable incl.)
Type 2669-L	½″ Microphone Preamplifier, conical shape, CIC, incl. 3 m/9.8 ft cable with 7-pin LEMO connector
Type 2671	½″ CCLD Microphone Preamplifier, for prepolarized microphones, BNC connector (no cable incl.)
Type 4231	Sound Calibrator, 94 or 114 dB at 1 kHz
Type 4228	Pistonphone, 124 dB at 250 Hz
Type 4226	Multifunction Acoustic Calibrator, with multiple frequencies and multiple calibration levels
DP-0776	Calibration Adaptor for ½″ Microphones
UA-0033	Electrostatic Actuator
UA-0237	Windscreen for ½″ Microphones, 90 mm diameter
UA-0459	Windscreen for ½″ Microphones, 65 mm diameter
SERVICES	
MIC-CAI	Microphone Cartridge, Initial accredited calibration
MIC-CAF	Microphone Cartridge, Accredited calibration
MIC-CFF	Microphone Cartridge, Factory standard calibration
MIC-TEDS-CAI	Microphone with TEDS Preamplifier, Initial accredited calibration
MIC-TEDS-CAF	Microphone with TEDS Preamplifier, Accredited calibration
MIC-TEDS-CFF	Microphone with TEDS Preamplifier, Factory standard calibration
MIC-EW1	Extended Warranty, one year for microphone cartridges
MIC-TEDS-EW1	Extended Warranty, one year for TEDS microphones

‡ State the microphone serial number if re-ordering calibration data

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