

PRODUCT DATA

½" Prepolarized Infrasond Microphone Type 4964

Type 4964 is designed for high-precision, acoustic measurements where an infrasond microphone with high sensitivity is required. Being prepolarized, Type 4964 can be used with both CCLD and classical preamplifiers.

Uses

- General noise measurements
- Wind turbine measurements
- Sonic boom measurements

Features

- Sensitivity: 50 mV/Pa
- Frequency: 0.02 Hz – 20 kHz (± 3 dB)
- Dynamic Range: 14.6 – 146 dB
- Temperature: -30 to $+150^{\circ}\text{C}$ (-22 to $+302^{\circ}\text{F}$)
- Polarization: Pre-polarized



Use of Free-field Microphones

Free-field means that the frequency response at 0 degrees incidence is flat. Free-field microphones are commonly used, for example, for recording sound measurements in anechoic chambers and far away from reflecting buildings. Another area for free-field microphones is for general electroacoustic measurement purposes like loudspeaker and microphone measurements.

At infrasond and frequencies below a few kHz, the pressure and free-field response are the same. At higher frequencies, reflections and diffractions cause pressure to increase in front of a microphone's diaphragm. Type 4964 has been optimized for free-field, and designed for use with the protection grid in place.

Type 4964 is also suited for use in class 1 sound level meters and for all high-precision acoustic measurements where a robust and stable free-field microphone with an upper frequency of 20 kHz is required.

Manufacturing and Stability

A press-fitted, stainless-steel diaphragm ensures superior long-term stability and mechanical robustness – Type 4964 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

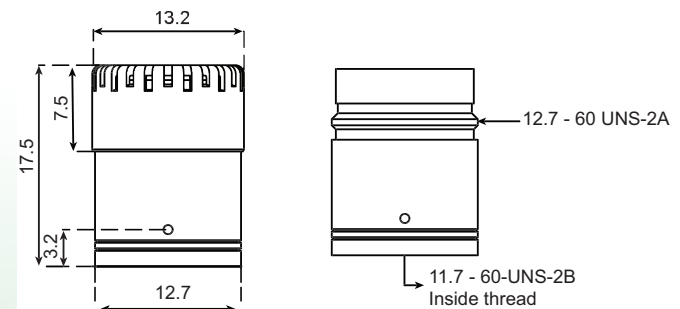
Being prepolarized, Type 4964 is especially well-suited for battery operated equipment and operation in environments with high humidity.

Individual Calibration Data

Each Type 4964 comes with an individual calibration chart including information about the open-circuit sensitivity, the frequency response in a free 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 Physical specifications of Type 4964



Specifications – Prepolarized Infrasound Microphone Type 4964 (valid for serial number 2495 387)

Specification	Value
IEC 61094-4 Type Designation	WS2F
Polarization Voltage (external)	0 V (prepolarized)
Open-circuit Sensitivity (250 Hz) [*]	50 mV/Pa, -26 dB ± 1.5 dB re 1 V/Pa
0° Incidence Free-field Response [*]	0.04 Hz to 8 kHz: ± 1 dB 0.03 Hz to 20 kHz: ± 2 dB
Lower Limiting Frequency (-3 dB) [*]	0.01 to 0.05 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)
Pistonphone Correction	0.00 dB (with Type 4228 and DP-0776)
Cartridge Thermal Noise	14.6 dB(A), 15.3 dB(Lin)
Upper Limit of Dynamic Range [†]	3% Distortion: > 148 dB SPL Max. SPL: 158 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 +150°C (+41 to 122°F)
Temperature Coefficient (250 Hz)	-0.006 dB/K (-10 to +50°C/+14 to 122°F)
Pressure Coefficient	-0.01 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, ≈ 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	> 1 dB/1000 years in dry air at 20°C (68°F) > 2 hours/ dB in dry air at 150°C (302°F) > 40 years/ dB in air at 20°C (68°F), 90% RH > 1 dB/year in air at 50°C (122°F), 90% RH
Physical	
Thread for Preamp Mounting	11.7 mm-60 UNS
Diameter with Grid	13.2 mm (0.52")
Diameter without Grid	12.7 mm (0.50")
Height with Grid	17.6 mm (0.69")
Height without Grid	16.3 mm (0.64")

^{*} Individually calibrated

[†] 137 dB (peak) with CCLD preamplifier and 24 V supply and 140 (peak) with ±15 V supply

Ordering Information

Type 4964 ½" Prepolarized Infrasound Microphone Type 4964

Includes the following accessories:

- BC-0224: Calibration Chart[‡]
- BC-5002: Microphone Mini-CD[‡]

Optional Accessories	
Type 1706	½" CCLD High Temperature Preamplifier
Type 2669	½" Microphone Preamplifier
2671-W-001	½" CCLD Preamplifier (version with LLF <1.2 Hz)
Type 2699	½" CCLD Preamplifier, A-weighted
Type 4231	Sound Calibrator
Type 4228	Pistonphone
Type 4226	Multifunction Acoustic Calibrator
DP-0776	Calibration Adapter for ½" Microphones
UA-0033	Electrostatic Actuator
UA-1260	½" Angle Adaptor (approx. 80°)
UA-0386	Nose Cone for ½" Microphone
UA-0237	Windscreen for ½" microphone, 90 mm diameter
UA-0459	Windscreen for ½" Microphone, 65 mm diameter
Calibration Services	
4964-CAI	Accredited Initial Calibration
4964-CAF	Accredited Calibration
4964-CFF	Factory Standard Calibration



Compliance with EMC Directive and Low Voltage Directive of the EU
Compliance with the EMC requirements of Australia and New Zealand

[‡] State microphone serial number if re-ordering calibration data

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