

PRODUCT DATA

Multi-field Microphone Type 4961 1/4" Microphone with TEDS

Multi-field Microphone Type 4961 is optimised for multi-field response, which means that it can be used to perform measurements in a wide range of sound fields.

Multi-field Microphones are ideal for any situation in which the nature of the sound field is unpredictable, or when the direction of the dominant noise source is difficult to pinpoint or shifts over time.



Uses

- Measurements in unpredictable sound field conditions
- Cabin noise measurements
- Near-field measurements
- Ad-hoc sound measurements

Features

- Sensitivity: 60 mV/Pa
- Frequency range: 5 Hz–20 kHz
- Dynamic Range: 20–130 dB
- TEDS: UTID No. 769, IEEE P1451.4 V0.9
- TEDS IEEE 1451.4 V 1.0 can be ordered
- Temperature: – 20 to +70°C (– 4 to +158°F)
- Connects directly to DeltaTron® (CCLD) input

The Multi-field Microphone

Brüel & Kjær's Multi-field Microphone Type 4961 combines the excellent directional response of a 1/4" condenser microphone with the high sensitivity and low noise floor of a 1/2" condenser microphone. Type 4961 is the world's first measurement microphone that can guarantee accuracy of measurement in free or diffuse fields – at any angle of incidence.

Manufacturing and Stability

Type 4961 has an all-titanium construction, which ensures maximum resistance to corrosion and insensitivity to magnetic fields. The laser-welded diaphragm results in superior robustness and long-term stability.

All Brüel & Kjær measurement microphones are assembled in a clean room environment. This guarantees that the microphones maintain their high stability and low inherent noise characteristics even when used in humid and high-temperature environments.

TEDS Microphone

Type 4961 is a prepolarized TEDS microphone with a high-quality DeltaTron preamplifier. The cartridge and preamplifier are welded into one unit to prevent contamination and ensure the validity of the TEDS data.

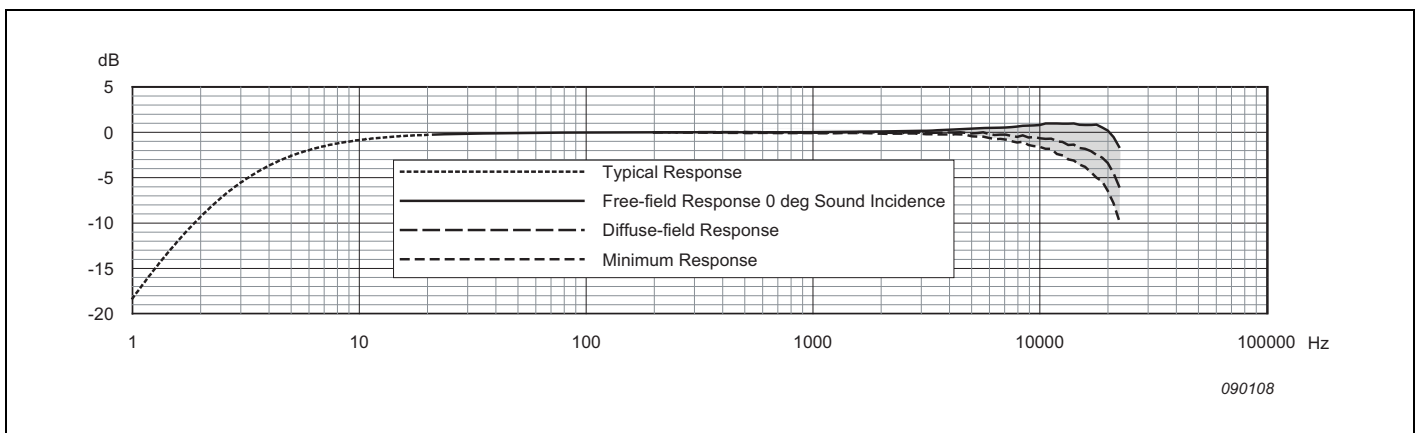
The Multi-field Microphone is designed to work in any sound field and for any angle of incidence with such high accuracy that the measurement error can be neglected in most practical situations.

The multi-field response cannot be shown as a simple line graph, but instead as a shaded area indicating the frequency response for any angle of incidence (see Fig. 1).

Each Multi-field Microphone comes with an individual calibration chart that includes information on the sensitivity, frequency responses in both free-field and diffuse-field conditions as well as the shaded area. Traditionally, the frequency response of a microphone is shown under ideal conditions, for example, in the case of a free-field microphone, the free-field response at zero degrees incidence is shown.

In most situations, the frequency response of Type 4961 will be between the two upper curves in the graph, meaning that the measurement error will be less than 4 dB all the way up to 20 kHz. The lower curve shows the response in the unlikely event that the microphone under free field conditions is pointed in the least sensitive direction, which is approximately 120 degrees away from the dominating noise source.

Fig. 1 Frequency responses of Type 4961



Each Multi-field Microphone Type 4961 comes with an individual mini-CD containing the electrostatic actuator calibration data at 1/12-octave frequencies, plus a wealth of technical information such as the influence of different accessories, corrections at different angles of incidence in a free field, corrections in a diffuse field and much more. Using the CD data and the REq-X feature of PULSE™, a real-time correction for different measurement situations can further improve the measurement accuracy.

Specifications – 1/4" Multi-field Microphone with TEDS Type 4961

General Specifications		Value
IEC 61094–4 Type Designation		None
Sensitivity (250 Hz) [*]		–24.4 ±2 dB re 1 V/Pa, 60 mV/Pa
Free-field response 0° Incidence		±2 dB 12 Hz – 20 kHz
Worst Case Response for Any Angle of Incidence		±2 dB 12 Hz – 10 kHz +2 to –8.5 dB 5 Hz – 20 kHz
Lower Limiting Frequency (–3 dB)		3 – 6 Hz
Pressure Equalization Vent		Front vented (with protection grid)
Calibrator Load Volume		80 mm ³
Pistonphone Correction		0.00 dB
Inherent Noise		20 dB(A) [†] 25 dB(Lin, 20 – 20 kHz)
Upper Limit of Dynamic Range (3% Distortion)		>130 dB SPL
Clipping Limit		>133 dB (peak)
Max. Sound Pressure Level		>150 dB (peak)
Power Requirements		DeltaTron supply 24 – 28 V
Power Supply	Nominally	4 mA, 22 – 28 V unloaded supply voltage
	Full specs with 10 m (32.8 ft) cable	3.5 – 20 mA, 22 – 28 V unloaded supply voltage
	With reduced specifications	Minimum 2 mA, 18 V
Output Bias Voltage		12 ±2 V at –20 to 50°C (–4 to 122°F) 12 ±4 V up to 70°C (158°F)
Output Voltage		>7 V (peak)
Maximum Output Current		Peak value 2.3 mA below supply current
Output Impedance		<15 Ω
TEDS Template		UTID No. 769, IEEE P 1451.4 V0.9 [‡]
Environmental Specifications		
Operating Temperature Range		–40 to 70°C (–40 to 158°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)		+ 0.01 dB/°C typical (–10 to + 50°C, 14 to 122°F)
Pressure Coefficient		–0.013 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)		55 dB equivalent SPL for 1 m/s ² axial vibration (typical)
Magnetic Field Sensitivity		No detectable influence from a 50 A/m, 50 Hz magnetic field
Estimated Long-term Stability		<1 dB in 1000 years (dry air at 20°C (68°F)) <1 dB in 1 year (air at 50°C (122°F), 90% RH)
Dimensions		
Diameter with Grid		7 mm (0.275")
Length with Grid		79 mm (3.1") with socket
Socket		SMB

^{*} Individually calibrated

[†] All microphones are tested to be below 20.5 dB(A)

[‡] TEDS IEEE 1451.4 V1.0 can be ordered

Note 1: All values are valid at 23°C (73.4°F), 101.3 kPa and 50% RH unless otherwise specified

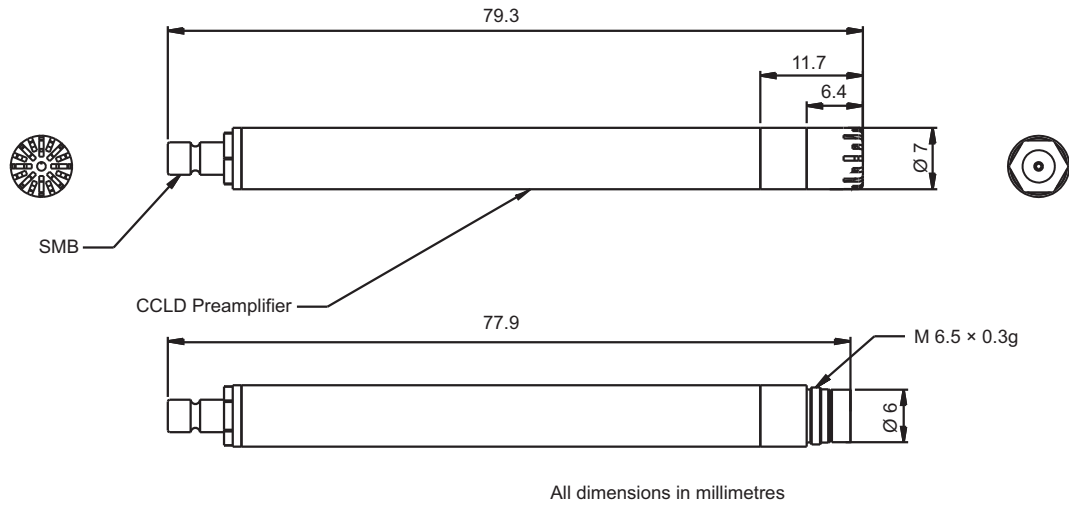
Note 2: Type 4961 is designed to be used with a mounted protection grid.



CE-mark indicates compliance with: EMC Directive and Low Voltage Directive.

C-Tick mark indicates compliance with the EMC requirements of Australia and New Zealand.

Fig. 2 Physical dimensions of the Multi-field Microphone with TEDS Type 4961



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Ordering Information

Type 4961 1/4" Multi-field Microphone with TEDS and SMB socket

Includes the following accessories:

- BC-0224: Calibration Chart*
- BC-5002: Microphone Data CD*

OPTIONAL ACCESSORIES

AO-0563	SMB Angle Cable
AO-0564	SMB Angle to BNC Cable
AO-0587	SMB Straight to BNC Cable
Type 4231	Sound Calibrator
Type 4228	Pistonphone
Type 4226	Multifunction Acoustic Calibrator

DP-0775	Calibration Adaptor for 1/4" Microphones
UA-0033	Electrostatic Actuator
DB-4121	Adaptor for Electrostatic Actuator UA-0033
WQ-1099	Spherical Windscreen Ø 65 mm (2.6")
WQ-1133	Elliptical Windscreen 38 x 55 mm (1.5" x 2.2")
UA-2129	Microphone Holder for Type 4961

CALIBRATION SERVICES

4961-CAI	Accredited Initial Calibration
4961-CAF	Accredited Re-calibration
4961-CFF	Factory Standard Calibration
4961-CTF	Traceable Calibration

* Quote microphone serial number if re-ordering

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