

## ¼" Prepolarized Free-field TEDS Microphone Types 4954-A and 4954-B

Types 4954-A and 4954-B are complete sound transducers, each consisting of a ¼" prepolarized, free-field microphone cartridge laser-welded to a ¼" CCLD\* preamplifier. The transducers connect to any CCLD input and support IEEE P 1451.4 V 0.9 transducer electronic data sheet (TEDS).

### USES

- Free-field measurements
- High-frequency measurements
- High-level measurements
- Wideband array measurements

### FEATURES

- Sensitivity: 2.8 mV/Pa
- Frequency: 9 Hz to 100 kHz  $\pm 3$  dB
- Dynamic Range: 40 – 159 dB



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- SMB or 10–32 UNF socket
- TEDS IEEE P 1451.4 V 0.9
- Temperature: –20 to +100 °C (–4 to +212 °F)

### Description

A free-field microphone is optimized for a flat response in a free field. Therefore, it is ideal for measurements far away from both the sound source and hard, reflective surfaces. The sensitivity is balanced for measurement of high sound pressure levels without clipping in the CCLD preamplifier while achieving a reasonably low noise floor. Due to the wide flat frequency range, this microphone is well suited for demanding array measurements.

### Design and Construction

The robust construction allows you to use Types 4954-A and 4954-B without a protection grid. This is necessary in order to achieve optimum performance at higher frequencies. The laser-welded, stainless steel diaphragm ensures that the sensitivity is resistant to rough handling and harsh environments. When not

in use, the microphone should be stored with its stainless steel protection grid in place.

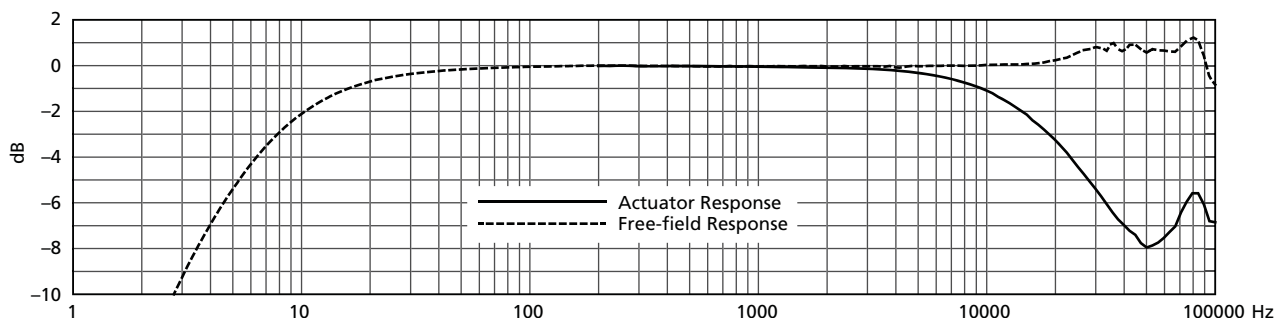
### Microphone Data CD

Each microphone is supplied with a mini CD that contains individual calibration data as well as random-incidence and free-field corrections. The CD also includes data for the influence of accessories on the microphone, such as Nose Cone for ¼" Microphones UA-0385.

### Calibration

The sensitivity can be calibrated at 250 Hz using Pistonphone Type 4228 with ¼" Calibration Adaptor DP-0775. The free-field response can be measured using Electrostatic Actuator UA-0033 with Adaptor DB-0264. The free-field response is equal to the actuator response plus the free-field correction.

Fig. 1 Frequency response without protection grid



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\* CCLD: Constant current line drive, also known as DeltaTron (IEPE compatible)

## Specifications – ¼" Microphone Types 4954-A and 4954-B

		4954-A, 4954-B*
<b>Dynamic Characteristics</b>		
Polarization Voltage (prepolarized)		0 V
Sensitivity (at 250 Hz)		2.8 mV/Pa –51 ±3 dB re 1 V/Pa
Free-field Frequency Response <sup>†</sup>		±2 dB, 16 to 80000 Hz ±3 dB, 9 to 100000 Hz
Lower Limiting Frequency (–3 dB)		7 to 9 Hz
Pressure Equalization Vent		Side vented
Thermal Noise	A-weighting	40 dB
	Linear weighting (20 to 100000 Hz)	51 dB
Upper Limit of Dynamic Range (3% Distortion)		>159 dB SPL
Maximum Sound Pressure Level (peak)		174 dB
Diaphragm Resonance Frequency (90° phase-shift)		84 kHz
Equivalent Air Volume (at 250 Hz)		0.73 mm <sup>3</sup>
Power Requirements (CCLD supply)		2 to 20 mA, nominally 4 mA
DC Output Level		12 ±2 V
Maximum Output Voltage (4 mA supply)		7 V peak for $f \leq 70000$ Hz
Output Impedance		<90 Ω, typically 60 Ω
TEDS UTID		769
<b>Environmental Characteristics</b>		
Operating Temperature Range		–20 to +100 °C (–4 to +212 °F)
Storage Temperature	In microphone box	–25 to +70 °C (–13 to +158 °F)
	With mini CD	5 to 50 °C (41 to 122 °F)
Temperature Coefficient (–10 to +50 °C at 250 Hz)		0.009 dB/°C
Pressure Coefficient (typical)		–0.007 dB/kPa
Operating Humidity Range (without condensation)		0 to 90% RH
Influence of Humidity (in the absence of condensation)		<0.1 dB
Vibration Sensitivity (<1000 Hz)		60 dB equivalent SPL for 1 m/s <sup>2</sup> axial acceleration
Magnetic Field Sensitivity	A-weighting	<40 dB
	Linear weighting, 20 to 100 kHz	51 dB equivalent SPL at 80 A/m, 50 Hz field
Estimated Long-term Stability	at 20 °C, dry air	>1000 years/dB
	at 20 °C, 90% RH	>40 years/dB
	at 50 °C, 90% RH	>1 year/dB
<b>Physical Characteristics</b>		
Nominal Diameter		¼"
Diameter	with grid	7 mm (0.28")
	without grid	6.35 mm (0.25")
Length	with grid	65 mm (2.56")
	without grid	63.5 mm (2.50")
Output Socket	4954-A	SMB coaxial socket, male
	4954-B	10–32 UNF socket

\* All values are typical at 23 °C (73.4 °F), 101.3 kPa, 50% RH and ≥4 mA power supply unless otherwise specified

† Individually calibrated frequency response without grid

## Ordering Information

**Type 4954-A** ¼" Free-field TEDS Microphone, SMB socket

**Type 4954-B** ¼" Free-field TEDS Microphone, 10–32 UNF socket

Includes the following accessories:

- Microphone Data CD

### OPTIONAL ACCESSORIES

Type 4228	Pistonphone
DP-0775	Calibration Adaptor for ¼" Microphones
UA-0033	Electrostatic Actuator
DB-0264	½" to ¼" Adaptor for UA-0033
UA-0385	Nose Cone for ¼" Microphones
UA-1588	¼" Microphone Holder
UA-0122	Flexible Flush Mounting Adaptor–Angle
UA-0123	Flexible Flush Mounting Adaptor–Straight
AO-0587-D-030	Cable 3 m SMB – BNC
AO-0531	PVC isolated cable with 10 – 32 UNF and BNC
ZG-0328	CCLD Power Supply, BNC to Brüel & Kjær 7-pin
BK-0068-010	TEDS remapping to IEEE 1451.4 V 1.0

### SERVICE PRODUCTS

4954-CAF	Accredited Calibration
4954-CFF	Factory Standard Calibration (included with delivery)

### COMPLIANCE WITH STANDARDS



The CE marking is the manufacturer's declaration that the product meets the requirements of the applicable EU directives



RCM mark indicates compliance with applicable ACMA technical standards – that is, for telecommunications, radio communications, EMC and EME



China RoHS mark indicates compliance with administrative measures on the control of pollution caused by electronic information products according to the Ministry of Information Industries of the People's Republic of China



WEEE mark indicates compliance with the EU WEEE Directive

