

½-inch Prepolarized Free-field Microphone Type 4188

Type 4188 is designed for free-field measurements where an economy microphone with medium sensitivity is required. Being prepolarized, Type 4188 can be used with both CCLD* and classical preamplifiers.



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Uses

- Medium-class sound level meters
- Equipment complying with IEC 61672 Class 1
- Random-incidence measurements
- Portable sound measuring equipment

Features

- Sensitivity: 31.6 mV/Pa
- Frequency: 8 Hz to 12500 Hz
- Dynamic Range: 15.8 to 146 dB
- Temperature: -30 to +125 °C (-22 to +257 °F)
- Polarization: Prepolarized

Description

The ½-inch prepolarized microphone Type 4188 is free-field optimized. This means that it has a flat free-field response at 0° incidence. It is suited for use in anechoic chambers or far away from reflective surfaces and to measure the general electroacoustics of loudspeakers and microphones.

The microphone can be used with IEC 61672 class 1 sound level meters and for general acoustic measurements where a robust and stable free-field microphone with an upper frequency of 12.5 kHz is sufficient. When used with Random Incidence Corrector (DZ-9566), Type 4188 can also be used for random-incidence measurements according to ANSI standards.

Microphone Type 4188 is optimized for use with the protection grid in place. For use in dusty environments, a specially designed protection grid (DD-0606) is available.

Manufacturing and Stability

A press-fitted, stainless-steel diaphragm and a special backplate mounting method make Type 4188 robust without sacrificing the long-term stability. Type 4188 withstands the 1 m drop test of IEC 60068-2-32.

All Brüel & Kjær measuring microphones are assembled in a clean room. This ensures that they 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 4188 is well-suited for battery-operated equipment or use in environments with high humidity.

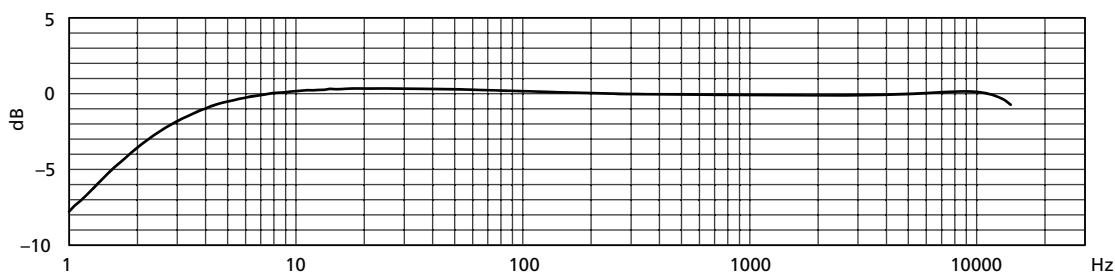
TEDS Microphones

Type 4188 is available in Transducer Electronic Data Sheet (TEDS) combinations with either classical or CCLD preamplifiers. TEDS microphones are considered one unit because the cartridge is sealed to the preamplifier during production. The TEDS is programmed with the loaded sensitivity of the actual cartridge and the data is therefore readily available. The default TEDS template is according to IEEE P1451.4, but TEDS according to IEEE 1451.4 is available on request.

Individual Calibration Data

Each Type 4188 is delivered with individual calibration of its open-circuit sensitivity and a graph showing the typical free-field frequency response.

Fig. 1 Typical free-field response of Type 4188 with protection grid. The low-frequency response is valid when the vent is exposed to the sound field



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

Specifications – ½-inch Free-field Microphone Type 4188

		4188*
Dynamic Characteristics		
Polarization Voltage (prepolarized)		0 V
Open-circuit Sensitivity (at 250 Hz) [†]		31.6 mV/Pa
		-30 ± 2 dB re 1 V/Pa
0° Incidence Free-field Response [†]		± 1 dB, 12.5 to 8000 Hz
		± 2 dB, 8 to 12500 Hz
Lower-limiting Frequency (-3 dB)		1 to 5 Hz
Pressure Equalization Vent		Rear vented
Cartridge Capacitance [†] (at 250 Hz)		12 pF
Cartridge Thermal Noise	A-weighting	14.2 dB
	Linear weighting	14.5 dB
Upper Limit of Dynamic Range (SPL [‡] , 3% distortion)		>146 dB
Maximum Sound Pressure Level (peak)		157 dB
Diaphragm Resonance Frequency (90° phase shift)		9 kHz
Equivalent Air Volume (at 250 Hz)		65 mm ³
Pistonphone Correction (Type 4228 with DP-0776)		0.02 dB
Environmental Characteristics		
Operating Temperature Range		-30 to +125 °C (-22 to +257 °F)
Maximum Operating Temperature with DZ-9566		70 °C (158 °F)
Storage Temperature (in microphone box)		-30 to +70 °C (-22 to +158 °F)
Temperature Coefficient (-10 to +50 °C at 250 Hz)		0.005 dB/°C
Pressure Coefficient		-0.021 dB/kPa
Operating Humidity Range (without condensation)		0 to 100% RH
Influence of Humidity (in the absence of condensation)		<0.1 dB
Vibration Sensitivity (<1000 Hz, equivalent SPL for 1 m/s ² axial acceleration)		63.5 dB
Magnetic Field Sensitivity (50 Hz field, equivalent SPL at 80 A/m)		7 dB
Estimated Long-term Stability	20 °C (68 °F), dry air	<1 dB/1000 years
	125 °C (257 °F), dry air	<1 dB/10 hours
	20 °C (68 °F), 90% RH	<1 dB/40 years
	50 °C (122 °F), 90% RH	<1 dB/6 months
Physical Characteristics		
Diameter	with grid	13.2 mm (0.52 in)
	without grid	12.7 mm (0.50 in)
	with DZ-9566	14.35 mm (0.56 in)
Height	with grid	14.9 mm (0.59 in)
	without grid	14 mm (0.55 in)
	with DZ-9566	16.7 mm (0.66 in)
Thread for Pre-amplifier Mounting		11.7 mm-60 UNS

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

[†] Individually calibrated

[‡] 140 dB (peak) with CCLD preamplifier and 24 V supply; 140 dB (143 dB peak) with ±15 V supply

Ordering Information

Type 4188 ½" Prepolarized Free-field Microphone

Includes the following accessories:

- BC-0251: Calibration Chart*
- DZ-9566: Random Incidence Corrector

TEDS COMBINATIONS

Type 4188-A-021	Microphone with Preamplifier Type 2671
Type 4188-C-001	Microphone with Preamplifier Type 2669-C
Type 4188-L-001	Microphone with Preamplifier Type 2669-L


OPTIONAL ACCESSORIES


Type 1706	High-temperature CCLD Microphone Preamplifier
Type 2669	½" Microphone Preamplifier
Type 2671	½" CCLD Preamplifier
Type 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
DD-0606	Production Test Protective Grid
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


4188-CFF	Factory Standard Calibration
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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

* Microphone serial number is required for re-ordering calibration data

