



1/2" Prepolarized Random Incidence Microphone

Model 377B20 is recommended for high accuracy applications where high sensitivity is required for signals arriving simultaneously from multiple directions

Applications

- Precision sound level measurements
- Research and development
- Cabin measurements
- Inside vehicle measurements
- Environmental testing
- Auditorium measurements
- Reverberation chamber tests

Highlights

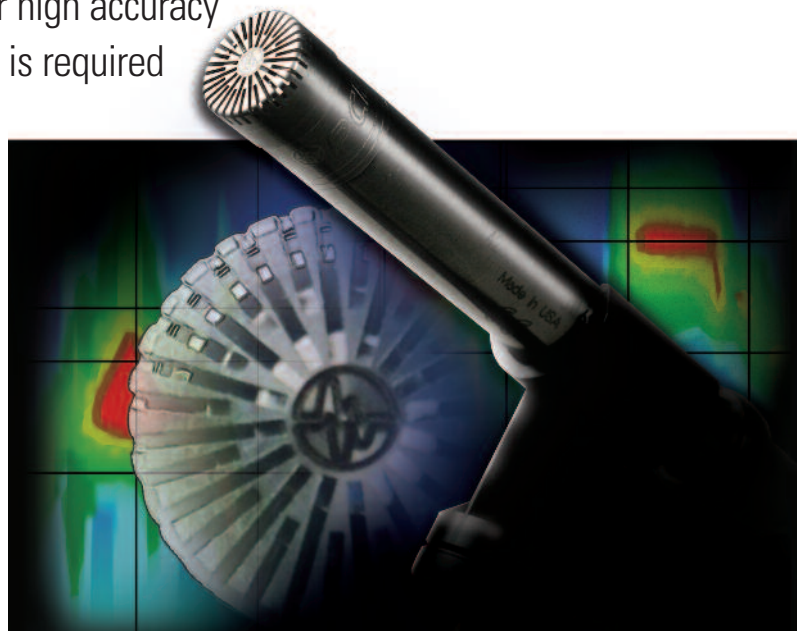
- Sensitivity: 50 mV/Pa
- Frequency: 3 Hz – 12.5 kHz
- Dynamic Range: 15 – 146 dB
- Temperature: -40 to +120° C
- Polarization: Prepolarized (0V)

Standards Compliance

- Designed to be used in an IEC 61672 & 60651 compliant system
- Calibration reference microphone traceable through PTB, compliant with ISO 9001 & 17025, A2LA approved



Model 377B20



Use of model 377B20 Random Incidence microphones

A random incidence (RI) microphone is designed to have an accurate (flat) response in applications where numerous signals approach the microphone from an assortment of directions, at the same time. This RI microphone is sometimes referred to as a diffuse field microphone.

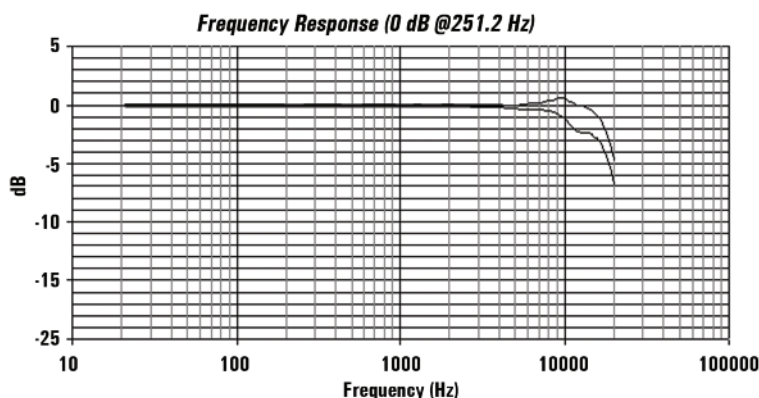
When a freely propagating sound wave encounters an object in its path, the wave will either, be reflected, absorbed or transmitted depending on the material properties and size of the object as well as the actual wavelength of the sound. In practice, the very microphones used to quantify the sound field introduce disturbances to the field which must be compensated for if an accurate measurement is desired. The 377B20 compensates for its own presence in the sound field and measures the true sound as if the microphone did not exist.

Polarization Voltage

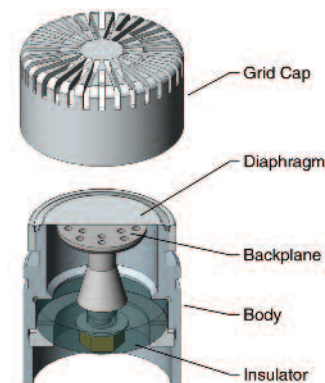
Model 377B20 is a prepolarized model that when combined with a preamplifier is designed to operate on ICP® sensor power, or any 2-20 mA constant current supply. This modern design is preferred for portable measurements or operation in high humidity applications. Design advantages are coaxial cables usage and interchangeability with other ICP® sensors (accelerometers, pressure sensors, stain gages, etc.) resulting in set-up time savings and low channel cost.

Calibration & Warranty

PCB® has a systematic quality control procedure in place utilizing the finest materials, assembled in a clean environment. These products are exposed to an extensive aging program in climate controlled test chambers to ensure the most stable product even in tough applications where high humidity or temperatures exist. Each unit is qualified and comes with a traceable calibration certification and is backed by our "Lifetime Warranty Plus" – A Total Customer Satisfaction no risk policy. Should this Microphone ever fail, PCB® will: Replace it or repair it for life, *plus* offer a full refund for the first year.



Typical random incidence microphone sensitivity response at different frequencies. This response is with the protective grid cap. The top curve is the corrected random incidence, or diffuse field curve and the bottom curve is the pressure response generated by the electronic actuator.

**Microphone Components****Specifications - 1/2" Free-Field Microphone Model 377B20**

Acoustic	
Nominal Microphone Diameter	1/2" (6mm)
Polarization Voltage	0V (prepolarized)
Open Circuit Sensitivity (at 250 Hz)	50 mV/Pa
Open Circuit Sensitivity (re 1 V/Pa)	-26 dB (± 1.5 dB)
Frequency range (+/- 2 dB)	3.15 to 12,500 Hz
Frequency range (+/- 1 dB)	5 to 6,300 Hz
Distortion Limit (3% distortion)	146 dB
Cartridge Thermal Noise	15 dB(A)
Cartridge Capacitance	11 pF
Pressure Equalization Vent	Rear Vented
Environmental	
Operating Temperature Range	-40 to 248 °F (-40 to 120 °C)
Temperature Coefficient (14 to 122 °F)	-0.005 dB/ °F
Temperature Coefficient (-10 to +50 °C)	-0.009 dB/ °C
Static Pressure Coefficient (at 250 Hz)	-0.01 dB/kPa
Influence of Humidity (non condensing)	<0.1 dB (for RH 0 to 100%)
Influence of Axial Vibration (0.1g (1 m/s ²))	63 dB re 20 μ Pa
Physical	
Size (Diameter x Height (without grid))	0.52" x 0.64"
Size (Diameter x Height (with grid))	0.5" x 0.6"
Mounting Thread (to preamplifier)	0.4606" (11.7mm) - 60 UNS

Optional Accessories:

- **426E01** – 1/2" preamplifier, low noise
- **426A10** – 1/2" preamplifier with 20 Hz high pass filter
- **426A11** – 1/2" preamplifier with 20 gain and filter switches
- **HT426E01** – 1/2" preamplifier, high temperature (120° C)
- **079A06** – windscreen for 1/2" microphones
- **079A11** – microphone holder
- **079A15** – tripod microphone stand with boom arm
- **079A16** – miniature microphone stand
- **079A18** – clamp on flexible extension arm
- **079B21** – 1/2" Nose Cone
- **079B23** – microphone holder with swivel mount
- **CAL200** – handheld calibrator
- **CAL250** – handheld calibrator
- **ACS-20** – microphone calibration
- **ACS-42** – microphone and preamplifier system calibration

Accredited initial calibration chart included.

TEDS Microphone & Preamplifier Combinations:

- **378B20** – TEDS 0.9 microphone and preamplifier
- **TLD378B20** – TEDS 1.0 microphone and preamplifier



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AS9100 CERTIFIED ■ ISO 9001 CERTIFIED ■ A2LA ACCREDITED to ISO 17025

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