

# 1/4-inch Prepolarized, Pressure Microphone Type 40BD

## Product Data and Specifications

### Typical applications

- Sound pressure measurements
- High frequency measurements
- High level pressure measurements
- Use with G.R.A.S. CCP<sup>1</sup> preamplifiers

The G.R.A.S. Microphone Type 40BD is a 1/4-inch precision condenser microphone for general purpose acoustic measurements, e.g. in couplers and at boundaries. It is a prepolarized pressure microphone with a large dynamic range and a wide frequency response.

As a pressure microphone, the Type 40BD measures the sound pressure at the location of its diaphragm. It has a flat pressure-frequency response over its entire working frequency range (see Fig. 2).

In an open sound field, a pressure microphone will also include the disturbing effects of its presence in the sound field. These are minimal for most of its frequency range because of its small dimensions (see Fig. 1 inset). At higher frequencies, the effects of reflections and diffractions must be accounted for. Generally, they lead to an increase in the measured sound pressure and corrections have to be made. Fig. 3 shows what these corrections are in a free field for various angles of incidence.

### Specifications

<b>Frequency response:</b>		<b>Dynamic range:</b>	
4 Hz - 70 kHz: .....	±2.0 dB	Upper limit (3 % distortion):	174 dB re. 20 µ Pa
10 Hz - 25 kHz: .....	±1.0 dB	Microphone thermal noise:	40 dBA re. 20 µ Pa
<b>Nominal sensitivity:</b>	1.6 mV/Pa	<b>Capacitance:</b>	7 pF
<b>Polarization voltage:</b>	0 V	<b>Temperature range:</b>	-40 °C to +120 °C
			...continued overleaf



Fig. 1 1/4-inch Prepolarized, Pressure Microphone Type 40BD

G.R.A.S. CCP<sup>1</sup> preamplifiers are also available for use with the Type 40BD, these are:

- 1/4-inch Preamplifier Type 26CB
  - 1/2-inch Preamplifier Type 26CA with adaptor RA0019
- (see separate data sheets)

All G.R.A.S. microphones comply with the specifications of IEC 1094: *Measurement Microphones, Part 4: Specifications for working standard microphones.*

Non-corrosive, stainless materials are used in manufacturing these microphones to enable them to withstand rough handling and corrosive environments.

All G.R.A.S. microphones are guaranteed for 5 years and are individually checked and calibrated before leaving the factory. An individual calibration chart is supplied with each microphone.

<sup>1</sup> Constant Current Power

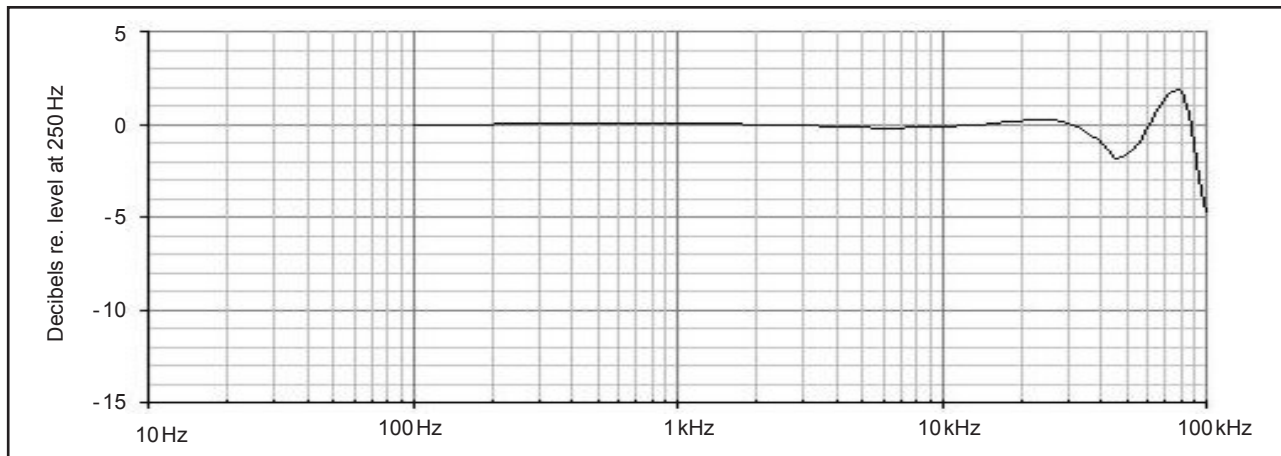


Fig. 2 Typical frequency response for Type 40BD (without protection grid)

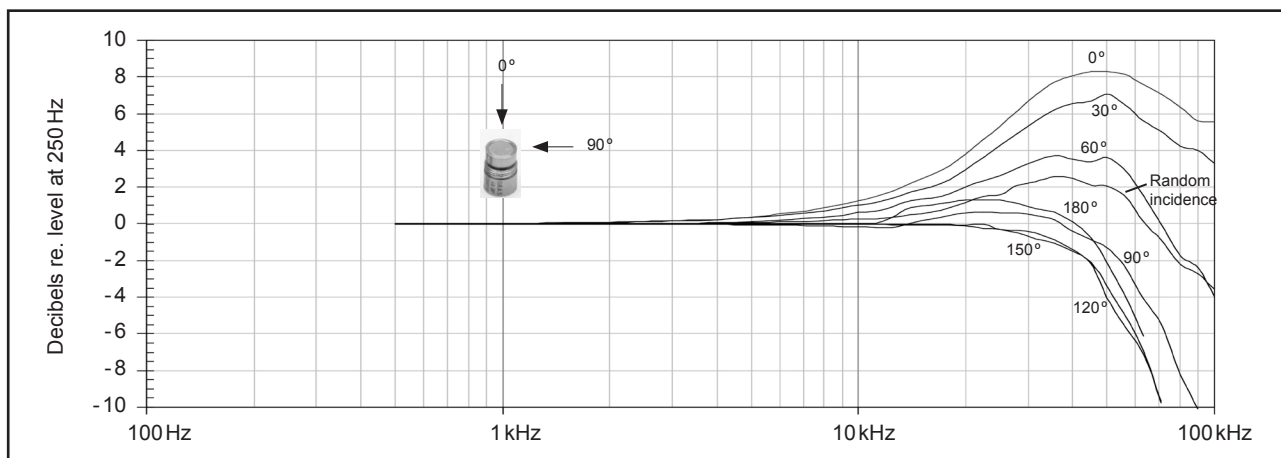


Fig. 3 Free-field corrections for various angles of incidence (without protection grid)

### Specifications (continued)

<p><b>Temperature coefficient (250 Hz):</b>          -10 °C - +50 °C: ..... -0.01 dB/°C</p> <p><b>Static-pressure coefficient:</b>          at 250 Hz: ..... -0.008 dB/k Pa</p> <p><b>Humidity range:</b>          0 - 100% (non-condensing)</p> <p><b>Influence of humidity (250 Hz):</b>          &lt;0.1 dB (0 - 100% RH)</p> <p><b>Influence of axial vibration, 1 m/s<sup>2</sup>:</b>          55 dB re. 20 μ Pa</p> <p><b>Venting:</b>          Rear vented          Note: for most applications, rear venting is more advantageous particularly where phase response is critical. If</p>	<p>front venting is preferred, please add “front venting” to the Type number of the microphone when ordering.</p> <p><b>Dimensions (with protection grid):</b>          Length: ..... 10.5 mm          Diameter: ..... 6.9 mm</p> <p><b>(without protection grid):</b>          Length: ..... 9.1 mm          Diameter: ..... 6.35 mm</p> <p><b>Diameter (diaphragm ring):</b>          5.9 mm</p> <p><b>Threads:</b>          Protection Grid: ..... 6.35 mm - 60 UNS          Preamplifier Mounting: ..... 5.7 mm - 60 UNS</p> <p><b>Weight:</b>          2 g</p>
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice