

# 1/2-inch Prepolarized, Pressure Microphone Type 40AD

## Product Data and Specifications

### Typical applications

- Precision acoustic measurements
- Coupler measurements
- Flush (boundary) measurements
- Use with G.R.A.S. CCP preamplifiers (ICP®)

The G.R.A.S. Microphone Type 40AD is a 1/2-inch precision condenser microphone for general purpose acoustic measurements, e.g. in couplers, boundaries and in enclosures; it can also be used as a random-incidence microphone. It is a prepolarized pressure microphone with a large dynamic range and a wide frequency response.

As a pressure microphone, the Type 40AD 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 at low frequencies (large wavelengths compared with microphone size).

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>			
3.15 Hz - 10 kHz:	.....	±2.0 dB	
12.5 Hz - 7.5 kHz:	.....	±1.0 dB	
<b>Nominal sensitivity:</b>			
at 250 Hz:	.....	50 mV/Pa	
<b>Polarization voltage:</b>			0V
<b>Upper limit of dynamic range:</b>			
3% distortion:	.....	148 dB re. 20 µ Pa	
<b>Lower limit of dynamic range:</b>			
Thermal noise:	.....	16 dB re. 20 µ Pa	
<b>Capacitance:</b>			
Polarized:	.....	20 pF	
<b>Temperature range:</b>			
			-40 °C to +120 °C
			...continued overleaf



Fig. 1 1/2-inch Prepolarized Pressure Microphone Type 40AD

G.R.A.S. CCP preamplifiers (ICP®) are also available for use with the Type 40AD, these are:

- 1/2-inch Preamplifier Type 26CA
  - 1/4-inch Preamplifier Type 26CB with adaptor RA0003
- (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.

® ICP is a registered trade mark of PCB Piezotronics.

# 1/2-inch Prepolarized, Pressure Microphone Type 40AD

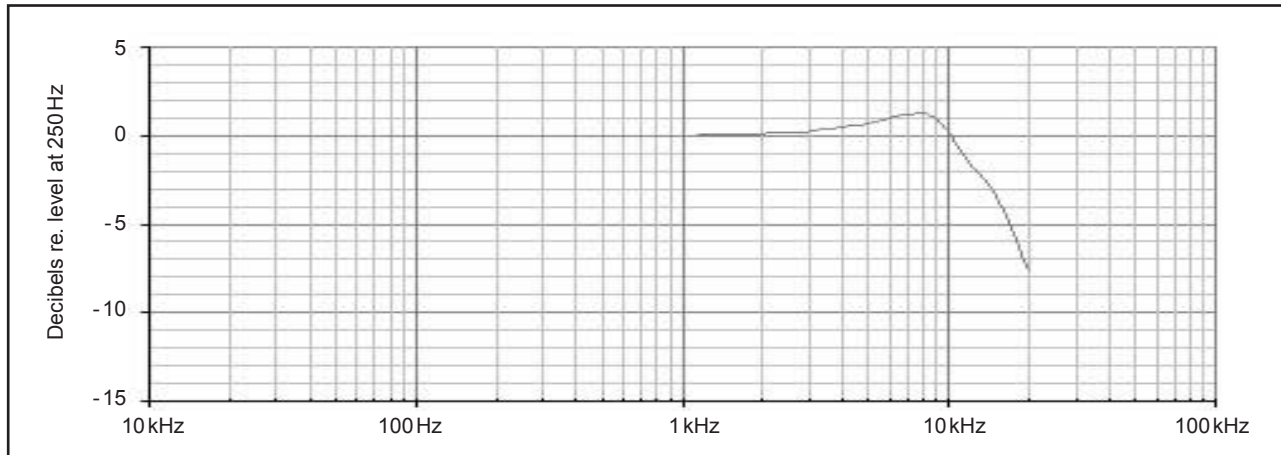


Fig. 2 Typical frequency response for Type 40AD

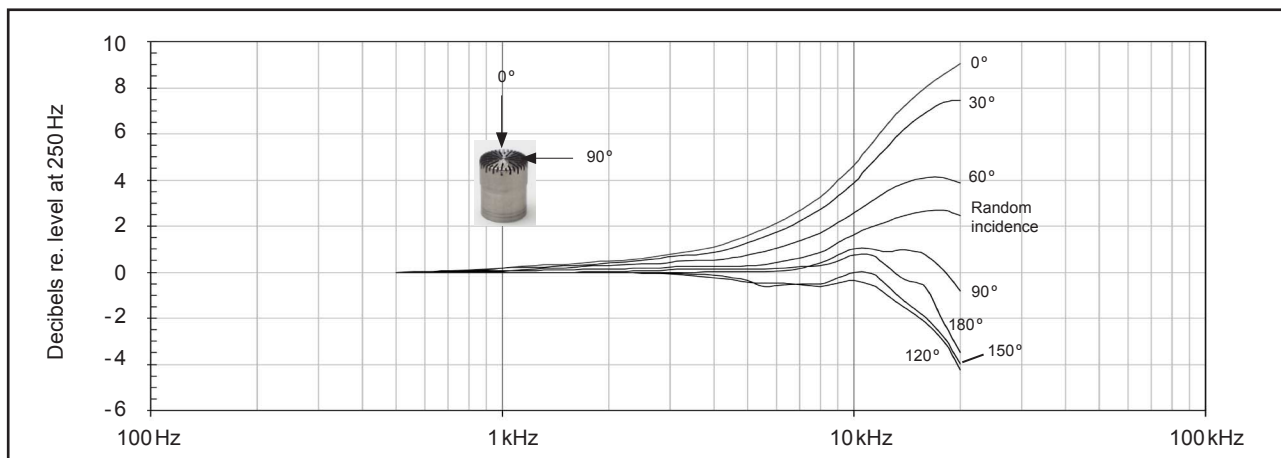


Fig. 3 Free-field corrections for various angles of incidence

## Specifications (continued)

<b>Temperature coefficient (250 Hz):</b> -10 °C to +50 °C: . . . . . -0.01 dB/°C	<b>Dimensions (with protection grid):</b> Length: . . . . . 16.2 mm Diameter: . . . . . 13.2 mm
<b>Static-pressure coefficient:</b> 250 Hz/25 °C: . . . . . -0.01 dB/k Pa	<b>(without protection grid):</b> Length: . . . . . 15.3 mm Diameter: . . . . . 12.7 mm
<b>Humidity range:</b> 0 - 100% (non-condensing)	<b>Diameter (diaphragm ring):</b> 12.1 mm
<b>Influence of humidity (250 Hz):</b> <0.1 dB (0 - 100% RH)	<b>Threads:</b> Protection Grid: . . . . . 12.7 mm - 60 UNS Preamplifier Mounting: . . . . . 11.7 mm - 60 UNS
<b>Influence of axial vibration, 1 m/s<sup>2</sup>:</b> 62 dB re. 20 μ Pa	<b>Weight:</b> 9 gm
<b>Venting:</b> Rear vented	
<b>IEC 1094-4 type designation:</b> W2SP	

G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

**G.R.A.S.**  
**Sound & Vibration**

Skovlytoften 33  
2840 Holte, Denmark  
Tel +45 45 66 40 46 Fax +45 45 66 40 47  
e-mail: gras@gras.dk www.gras.dk