

Probe Microphone Type 40SA

Product Data and Specifications

Typical applications

- *Acoustic-impedance measurements*
- *Exhaust-system measurements*
- *Near-field measurements*
- *Measurements at high temperatures*
- *Pressure-distribution measurements in small enclosures*

The Probe Microphone Type 40SA (Fig. 1) is a small, compact unit for sound-pressure measurements in small enclosures, in harsh environments and in very close proximity to sound sources. The high acoustic input impedance at the tip of the probe minimizes its influence on the acoustic field, while the stainless-steel tube of the probe (the 160 mm long GR0261) can withstand temperatures of up to 800°C.

The Type 40SA is constructed with detachable stainless-steel probes tubes which guide the acoustic signal to a microphone inside the housing of the Type 40SA. After being sensed by the microphone, the acoustic signal is passed on to an impedance-matching wave guide which eliminates unwanted internal reflections. The result is a smooth frequency-response ranging from 2 Hz up to 20 kHz (see Fig. 2). The internal microphone is connected to a low-noise preamplifier with a high dynamic range; ensuring a measurement range from approximately 40 dB to 166 dB re. 20 μ Pa. Fig. 3 shows the preamplifier's connections via its LEMO plug.

The Probe Microphone Type 40SA is internally compensated to equalize the internal pressure of the microphone with the static pressure at the probe's tip. The static pressure within the Type 40SA will

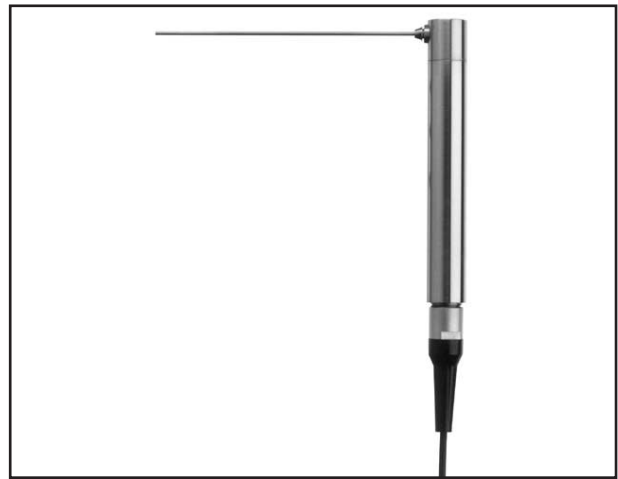


Fig. 1 Probe Microphone Type 40SA

therefore adjust itself to the static pressure existing at the probe's tip; which it does with a time constant of approximately 0.1 s.

The Type 40SA can be used with various probe lengths and is delivered with four standard probe lengths, i.e.: 20 mm, 40 mm, 80 mm and 160 mm. Intermediate lengths can be made by cutting these standard lengths. Also, the stainless steel tubes can be bent to a radius as low as 5 mm without downgrading the system's acoustics. A flexible probe tube is also provided for use in measurements where stiff stainless-steel tubes are not practical. This does, however, slightly downgrade the system's acoustic performance.

The right angled design of the Type 40SA makes it particularly well suited for measurements on exhaust-gas systems and other machinery in general as well as for scanning vibrating surfaces such as loudspeaker diaphragms and cabinets.

The compact size, low weight and all-stainless-steel construction of the Type 40SA make it robust, easy to handle and easy to mount.

Probe Microphone Type 40SA

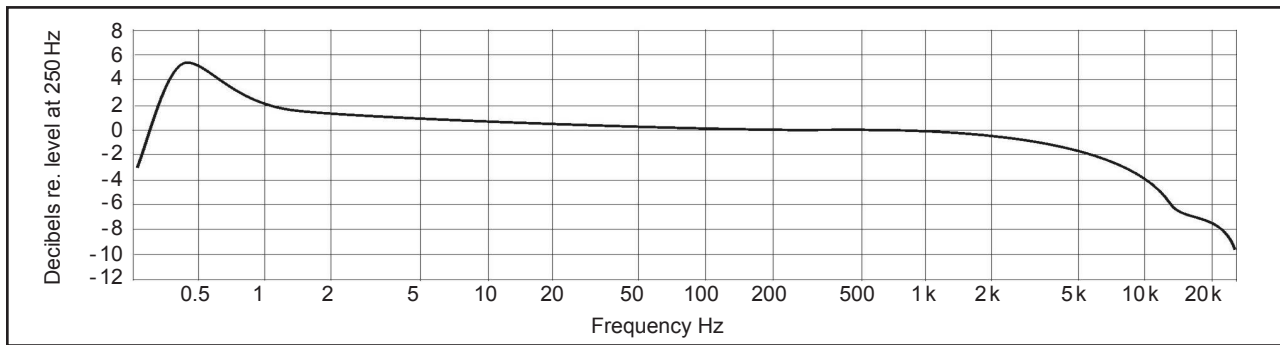


Fig. 2 Typical frequency response of the Type 40SA with a 40 mm probe tip

Warning: Do not use the Probe Microphone Type 40SA for measurements on the human body. It is neither intended nor approved for measurements on the human body and the internal high voltage may be harmful.

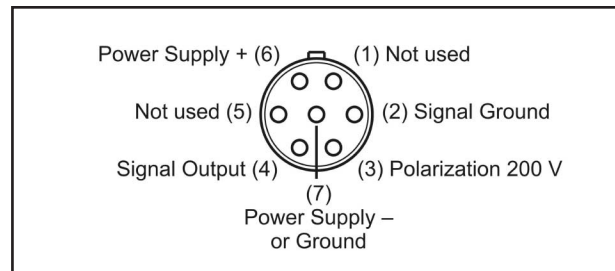


Fig. 3 7-pin LEMO plug 1B male (ext. view)

Specifications

<p>Nominal sensitivity at 250 Hz: 3 mV/Pa (individually calibrated)</p> <p>Dynamic range: 40 dB to 166 dB (re. 20 μPa)</p> <p>Frequency response (relative to tabular values):</p> <table> <tr><td>2 Hz - 20 Hz:</td><td>± 1.5 dB</td></tr> <tr><td>20 Hz - 250 Hz:</td><td>± 0.5 dB</td></tr> <tr><td>250 Hz - 1 kHz:</td><td>± 0.5 dB</td></tr> <tr><td>1 kHz - 2 kHz:</td><td>± 0.8 dB</td></tr> <tr><td>2 kHz - 5 kHz:</td><td>± 1 dB</td></tr> <tr><td>5 kHz - 10 kHz:</td><td>± 1.5 dB</td></tr> <tr><td>10 kHz - 20 kHz:</td><td>± 3 dB</td></tr> </table> <p>Electrical Output Impedance: < 50 Ω</p> <p>Power supply:</p> <table> <tr><td>Single</td><td>120 V (2.5 mA) to 28 V (0.7 mA)</td></tr> <tr><td>Dual</td><td>± 60 V (2.5 mA) to ± 14 V (0.7 mA)</td></tr> </table> <p>Temperature Range:</p> <table> <tr><td>Operating:</td><td>-25 $^{\circ}$C to 70 $^{\circ}$C</td></tr> <tr><td>Probe temp. (with heat sink):</td><td>max. 800 $^{\circ}$C</td></tr> </table> <p>Pressure-equalization time constant: Internal to tip static pressure: typically 0.1 s</p> <p>Dimensions:</p> <table> <tr><td>Length (housing):</td><td>83.8 mm</td></tr> <tr><td>Diameter:</td><td>12.7 mm</td></tr> <tr><td>Weight:</td><td>40 gm</td></tr> </table>	2 Hz - 20 Hz:	± 1.5 dB	20 Hz - 250 Hz:	± 0.5 dB	250 Hz - 1 kHz:	± 0.5 dB	1 kHz - 2 kHz:	± 0.8 dB	2 kHz - 5 kHz:	± 1 dB	5 kHz - 10 kHz:	± 1.5 dB	10 kHz - 20 kHz:	± 3 dB	Single	120 V (2.5 mA) to 28 V (0.7 mA)	Dual	± 60 V (2.5 mA) to ± 14 V (0.7 mA)	Operating:	-25 $^{\circ}$ C to 70 $^{\circ}$ C	Probe temp. (with heat sink):	max. 800 $^{\circ}$ C	Length (housing):	83.8 mm	Diameter:	12.7 mm	Weight:	40 gm	<p>Probe tube outside diameter: 1.25 mm</p> <p>Probe tube inside diameter: 1 mm</p> <p>Cable length: 3 m</p> <p>Cable diameter: 2.5 mm</p> <p>Accessories included:</p> <table> <tr><td>Pistonphone adaptor for 1.25 mm:</td><td>GR0265</td></tr> <tr><td>Pistonphone adaptor for 1.6 mm:</td><td>GR0266</td></tr> <tr><td>Heatsink and tool:</td><td>GR0267</td></tr> <tr><td>Calibration coupler:</td><td>GR0275</td></tr> <tr><td>1.3 mm pin for calibration coupler:</td><td>GR0263</td></tr> <tr><td>1.6 mm pin for calibration coupler:</td><td>GR0264</td></tr> <tr><td>Pair of pliers:</td><td>YY0004</td></tr> <tr><td>File:</td><td>YY0005</td></tr> <tr><td>Silicone grease:</td><td>MI0016</td></tr> <tr><td>Teflon tubing (L: 0.5 m Dia: 1.6 mm):</td><td>EK0018</td></tr> <tr><td>20 mm Probe tube:</td><td>GR0258</td></tr> <tr><td>40 mm Probe tube:</td><td>GR0259</td></tr> <tr><td>80 mm Probe tube:</td><td>GR0260</td></tr> <tr><td>160 mm Probe tube:</td><td>GR0261</td></tr> <tr><td>Flexible Probe tube:</td><td>GR0401</td></tr> </table> <p>Accessories available:</p> <table> <tr><td>Pistonphone:</td><td>Type 42AA</td></tr> <tr><td>Power modules:</td><td>Types 12AA, -AD or -AK</td></tr> <tr><td>Extension cable 3m:</td><td>AA0008</td></tr> <tr><td>Extension cable 10m:</td><td>AA0009</td></tr> </table>	Pistonphone adaptor for 1.25 mm:	GR0265	Pistonphone adaptor for 1.6 mm:	GR0266	Heatsink and tool:	GR0267	Calibration coupler:	GR0275	1.3 mm pin for calibration coupler:	GR0263	1.6 mm pin for calibration coupler:	GR0264	Pair of pliers:	YY0004	File:	YY0005	Silicone grease:	MI0016	Teflon tubing (L: 0.5 m Dia: 1.6 mm):	EK0018	20 mm Probe tube:	GR0258	40 mm Probe tube:	GR0259	80 mm Probe tube:	GR0260	160 mm Probe tube:	GR0261	Flexible Probe tube:	GR0401	Pistonphone:	Type 42AA	Power modules:	Types 12AA, -AD or -AK	Extension cable 3m:	AA0008	Extension cable 10m:	AA0009
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

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