

1/2" Low-noise Microphone System Type 40HL

Product Data

Applications

- Measurements at very low sound pressure levels
- Measurements on hard-disk drives, computer products, anechoic rooms, quiet rooms, etc.
- Sound-power measurements at low levels

Special Features

- Connects to most high-quality LEMO-connected input modules*
- Microphone and preamplifier assembled and sealed under clean-room conditions
- Preamplifier with built-in TEDS**, i.e., pre-programmed and programmable with calibration data as a complete unit
- Small and rugged design featuring true 1/2" dimensions
- Low power consumption (max. 5.5 mA)

Description

The G.R.A.S. 1/2" Low-noise Microphone System Type 40HL (Fig. 1) measures sound pressure levels well below the threshold of human hearing. It is thus generally suitable for sound-power measurements on even very quiet products. Its very wide dynamic range permits measurements down to below -2 dB re. 20 µPa (in 1/3-octave bands) from 20 Hz to 20 kHz.

Type 40HL comprises

- a special high-sensitive 1/2" free-field measurement microphone
- an integrated 1/2" low-noise preamplifier

The preamplifier and microphone is an individually optimized combination.

Type 40HL connects to most high-quality input modules with LEMO 1B connector (optional accessories from G.R.A.S. - refer to the section *What to Order*).



Fig. 1 1/2" Low-noise Microphone System Type 40HL

Preamplifier

The preamplifier, a true 1/2" low-noise amplifier with LEMO 1B connector, has a built-in compensation filter for free-field microphones.

Microphone

The 1/2" microphone is an externally-polarized free-field microphone with a specially reduced inherent noise floor in order to achieve a high dynamic range and wide frequency range. Its diaphragm is specially tuned to yield high sensitivity coupled with low internal-noise generation.

Frequency Response and Noise Floor

A typical free-field response of Type 40HL at 0° is shown in Fig. 2.

Fig. 3 shows the typical noise floor in 1/3-octave bands for both linear and A-weighted cases.

Operating Type 40HL

For holding the microphone, you can order Tripod AL0006 and Tripod Adapter RA0093

For level calibration of Type 40HL you need

- Pistonphone Type 42AP (recommended due to its built-in precision barometer) or
- Pistonphone Type 42AA and
- Calibration Adapter RA0090 for attenuating the pistonphone signal to 94 dB re. 20 µPa.

See also the section *What to Order*.

* The input module must be able to deliver min. 5.5 mA

** Transducer Electronic Data Sheet - as specified by IEEE-1451.4

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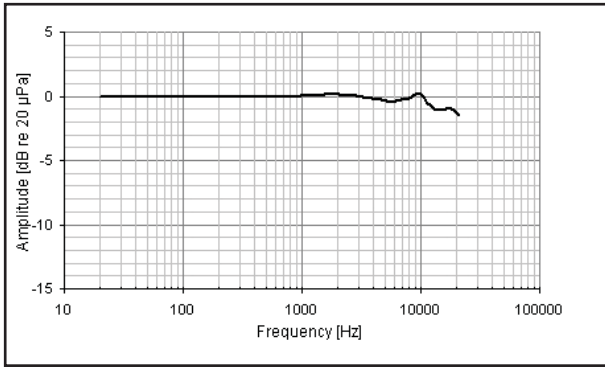


Fig. 2 Typical free-field frequency response of Type 40HL

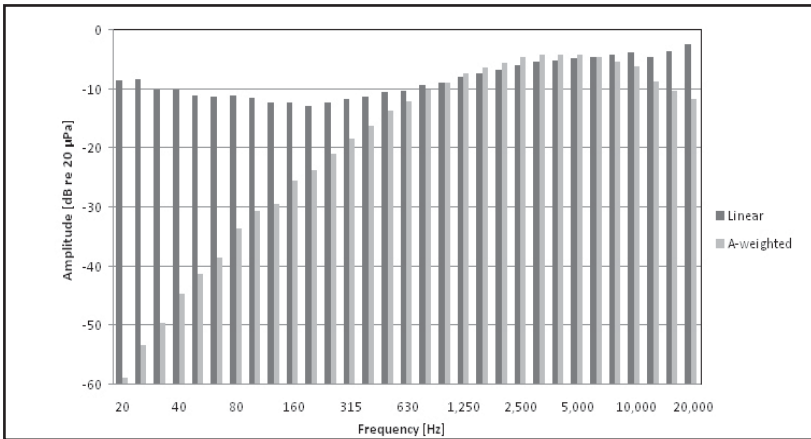


Fig. 3 Typical noise floor of Type 40HL. Shown in 1/3-octave bands - both linear and A-weighted

Specifications

Low-noise Microphone System Type 40 HL comprising:
 1/2" Microphone, free-field, ext.-polarized
 1/2" Preamplifier with 7-pin LEMO 1B connector

Frequency response:

12.5 Hz - 10 kHz: ±1.0 dB
 10 Hz - 16 kHz: ±2.0 dB
 6 Hz - 20 kHz: +2.0 dB, -3.0 dB

Nominal sensitivity, system:

850 mV/Pa ±2.0 dB

Microphone polarization voltage:

200 V

Power supply:

+/- 15 V to +/- 60 V or 30 -120 V

Power consumption:

max. 5.5 mA

Dynamic range:

Upper limit: 113 dB re. 20 µPa
 Lower limit: 6.5 dBA re. 20 µPa
 (inherent noise)

Temperature range:

-20 °C to +60 °C

What to Order

Power Module (2-ch., batt.-op.): Type 12AR
 Power Module (1-ch., batt.-op.): Type 12AD
 Power Module (1-ch.): Type 12AK
 Power Module (2-ch.): Type 12AA
 Power Module (2-ch.): Type 12AQ
 Windscreens (set of 5) AM0069
 Pistonphone with built-in precision barometer
 (250 Hz or 251.2 Hz, 114 dB +/- 0,05 dB): Type 42AP

Pistonphone
 (250 Hz, 114 dB +/- 0,08 dB): Type 42AA
 Pistonphone Coupler (94 dB re. 20 µPa): RA0090
 (required for both pistonphones)
 Tripod: AL0006
 Microphone Holder: RA0093
 3 m Extension cable*: AA0008
 10 m Extension cable*: AA0009
 30 m Extension cable*: AA0012

* These cables also function as connection cables
 (to connect directly from Type 40HL to a power module).

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