½-inch Low-noise Level Microphone System Type 40HH

Product Data and Specifications

Typical features/applications

- ***Very Low Sound pressure measurements***
- ***Low-noise product measurements***
- ***Low-level Sound power measurements***
- ***Measurements on hard-disk drives, computer products, quiet rooms etc.***

The G.R.A.S. ½-inch Low-noise Microphone System Type 40HH (Fig. 1) can measure sound pressure levels well below the threshold of human hearing; and is amply suitable for use in sound-power measurements on even very quiet products. Its very, wide dynamic range permits measurements down to below −2 dB re. 20 µPa (in ⅓-octave bands) from 20 Hz to 20 kHz. The Type 40HH comprises:

- a special high-sensitive ½-inch (12.7 mm) Condenser Microphone Type 40AH
- a special ½-inch (12.7 mm) Low-noise Preamplifier Type 26HH

The preamplifier and microphone are an individually-matched combination. To complete the system, a special single or 10-channel power module is required and is available from G.R.A.S., i.e.

- Type 12HF for single-channel measurements, as shown in Fig. 2

  Or

- Type 12HM for multi-channel (1 to 10) measurements

The chosen power module provides all necessary voltages for powering the preamplifier(s) as well as polarizing the microphone(s).

Preamplifier

The Preamplifier Type 26HH (Fig. 1) has a built-in overload indicator (which is repeated on the chosen power supply) and a frequency correction facility for both pressure-microphone operation as well as free-field microphone operation (Fig. 3).

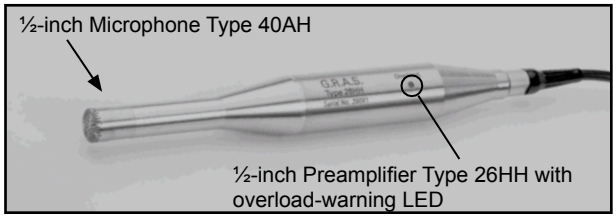

Fig. 1 ½-inch Low-noise Level Microphone System Type 40HH

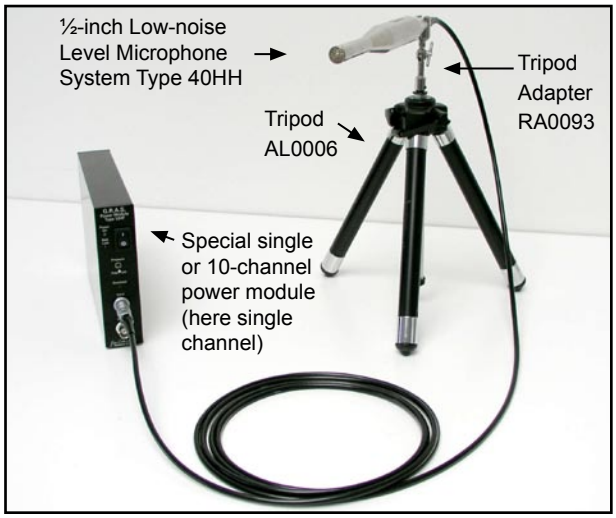

Fig. 2 A complete single-channel low-noise level measuring system

Microphone

The Microphone Type 40AH is an externally polarized 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

The chosen power supply has a two-position switch for selecting which microphone operation to use, i.e. pressure or free-field. A typical free-field response for an angle of incidence of 0° is shown in Fig. 3 when the Type 40HH is switched to free-field operation. Fig. 4 shows, for a complete low-noise measuring system, a typical noise floor in ⅓-octave bands for both the linear and A-weighted cases.

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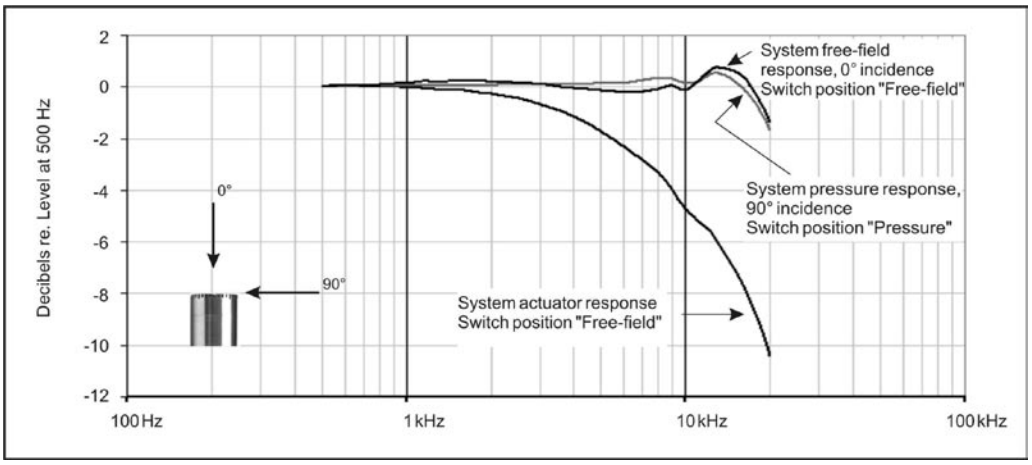
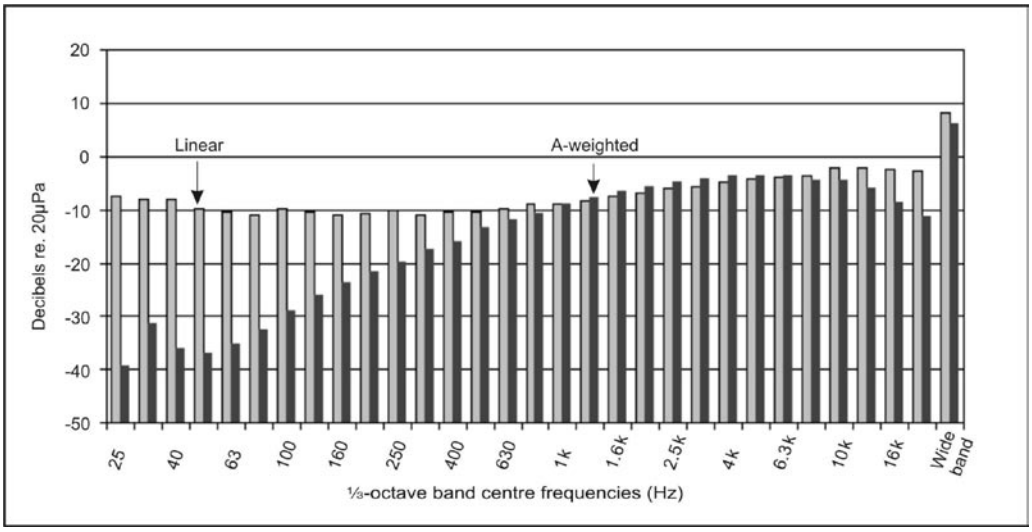


Fig. 3 Typical frequency response curves of Type 40HH

Fig. 4 Typical noise floor of Type 40HH for system and microphone. Shown in ⅓-octave bands for both the linear and A-weighted cases



Specifications

Low-noise Measuring System comprising:
½-inch (12.7 mm) Microphone:. . . . . Type 40AH
½-inch (12.7 mm) Preamplifier: . . . . . Type 26HH
(with 3 m cable and LEMO FGA.1B.307 plug)

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:. . . . . 800 mV/Pa
Microphone:. . . . . 80 mV/Pa

Microphone polarization voltage:
200 V

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

Accessories available:
Power Module (1 ch.): . . . . . Type 12HF
Power Module (10 ch.): . . . . . Type 12HM
Windscreens (set of 5) AM0069
Pistonphone . . . . . Type 42AA
Pistonphone Coupler:. RA0090
(for 94 dB re. 20 µPa)
Tripod: AL0006
Tripod Adapter: RA0093
3m Ext. cable:. AA0046
10m Ext. cable:. AA0047
30m Ext. cable:. AA0048

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