

# 1-inch Low-noise Level Microphone System Type 40HF

## 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. 1-inch Low-noise Microphone System Type 40HF (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  $-10$  dB re.  $20 \mu\text{Pa}$  (in  $1/3$ -octave bands) from 20 Hz to 10 kHz. The Type 40HF comprises:

- a special high-sensitive 1-inch (23.77 mm) Condenser Microphone Type 40EH
- a special 1-inch (23.77 mm) Low-noise Preamplifier Type 26HF

The preamplifier and microphone are an individually-matched combination. To complete the measuring system, a special 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).

### Microphone

The Microphone Type 40EH (Fig. 1) 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.

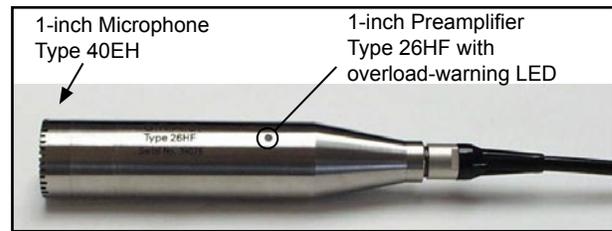


Fig. 1 1-inch Low-noise Level Microphone System Type 40HF



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

### Preamplifier

The Preamplifier Type 26HF 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).

### Dehumidifier RA0095 (optional)

For use when humidity is high and only with a rear-vented version of the Microphone Type 40EH. Order only at the time of ordering a Type 40HF.

### 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  $0^\circ$  is shown in Fig. 3 when the Type 40HF is switched to free-field operation. Fig. 4 shows, for a complete low-noise measuring system, a typical noise floor in  $1/3$ -octave bands for both the linear and A-weighted cases.

**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

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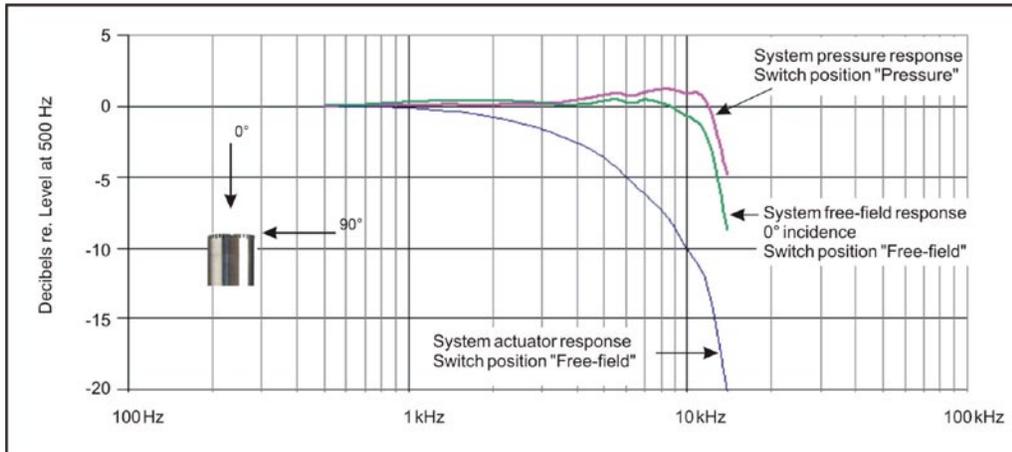
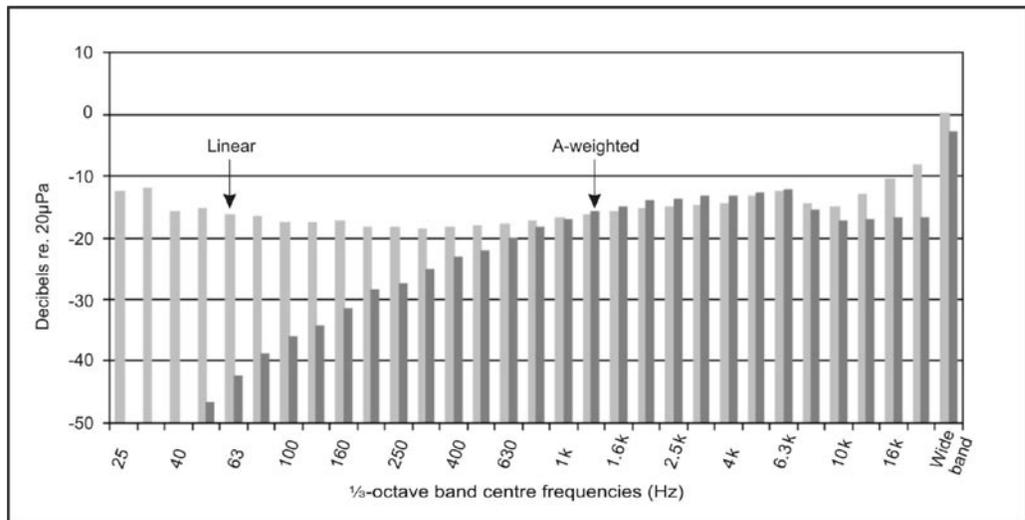


Fig. 3 Typical frequency response curves of Type 40HF

Fig. 4 Typical noise floor of Type 40HF for system and microphone. Shown in 1/3-octave bands for both the linear and A-weighted cases



## Specifications

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| <p><b>Low-noise Level Microphone System comprising:</b><br/>                 1-inch (23.77mm) Microphone: . . . . . Type 40EH<br/>                 1-inch (23.77mm) Preamplifier: . . . . . Type 26HF<br/>                 (with 3 m cable and LEMO FGA.1B.307 plug)</p> <p><b>Frequency response (pressure and 0° free field):</b><br/>                 12.5 Hz - 4 kHz: . . . . . ±1.0 dB<br/>                 10 Hz - 10 kHz: . . . . . ±2.0 dB<br/>                 6 Hz - 12.5 kHz: . . . . . +2.0 dB, -3.0 dB</p> <p><b>Nominal sensitivity:</b><br/>                 System: . . . . . 1.1 V/Pa<br/>                 Microphone: . . . . . 110 mV/Pa</p> <p><b>Microphone polarization voltage:</b><br/>                 200 V</p> <p><b>Dynamic range:</b><br/>                 Upper limit: . . . . . 110 dB re. 20 µPa<br/>                 Lower limit: . . . . . -2 dBA re. 20 µPa<br/>                 (inherent noise)</p> | <p><b>Temperature range:</b><br/>                 -20 °C to +60 °C</p> <p><b>Accessories available:</b><br/>                 Power Module (1 ch.): . . . . . Type 12HF<br/>                 Power Module (10 ch.): . . . . . Type 12HM<br/>                 Windscreens (set of 5): . . . . . AM0363<br/>                 Pistonphone: . . . . . Type 42AA<br/>                 Pistonphone Coupler: . . . . . RA0090<br/>                 (for 94 dB re. 20 µPa)<br/>                 Tripod: . . . . . AL0006<br/>                 Tripod Adapter: . . . . . RA0093<br/>                 Dehumidifier*: . . . . . RA0095<br/>                 3m Ext. cable: . . . . . AA0046<br/>                 10m Ext. cable: . . . . . AA0047<br/>                 30m Ext. cable: . . . . . AA0048</p> <p>* Please order only at the time of ordering a Low-noise Level Microphone System Type 40HF</p> |
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

**G.R.A.S.**  
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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