

# GRAS 40HF

1" Lownoise Microphone System



Freq range: 10 Hz to 10 kHz  
Dyn range: -2 dB(A) to 110 dB  
Sensitivity: 1.1 V/Pa

The GRAS 40HF 1-inch Lownoise Microphone System 40HF 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 Pa (in 1/3-octave bands) from 20 Hz to 10 kHz.

## Typical applications and use

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

## Design

The GRAS 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 GRAS, i.e. GRAS 12HF for single-channel measurements or GRAS 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 GRAS 40EH 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.

## Preamplifier

The GRAS 26HF Preamplifier 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.

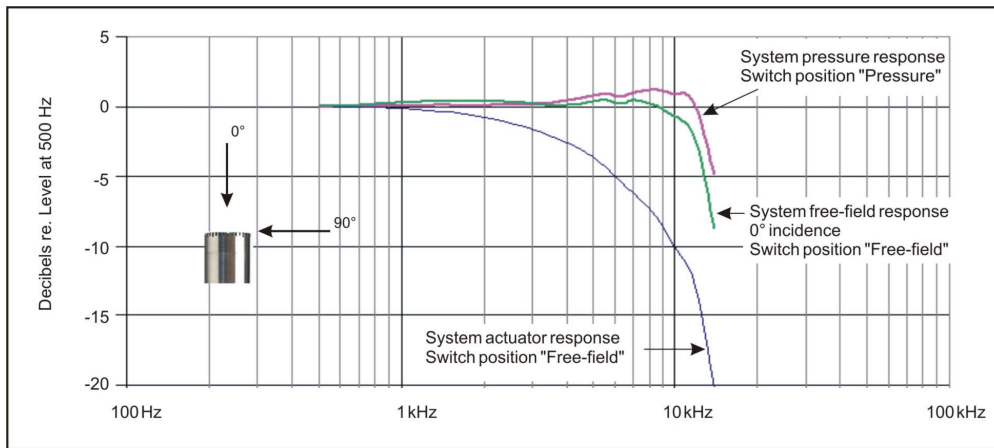
## Dehumidifier RA0095 (optional)

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

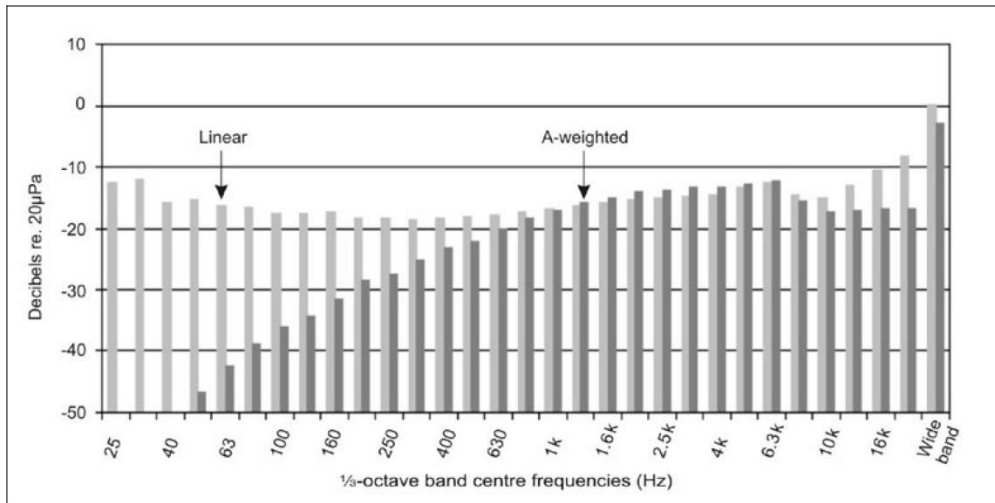
## Frequency response and noise floor

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 ° is shown in the data sheet when the GRAS 40HF is switched to free-field operation. Also shown in the data sheet is a complete low-noise measuring system, a typical noise floor in 1/3-octave bands for both the linear and A-weighted cases.

Polarization/Connection		200 V / Traditional
Frequency range ( $\pm 1$ dB)	Hz	12.5 to 4k
Frequency range ( $\pm 2$ dB)	Hz	10 to 10k
Frequency range ( $\pm 3$ dB)	Hz	6 to 12,5k
Dynamic range lower limit (microphone thermal noise)	dB(A)	-2
Dynamic range upper limit	dB	110
Set sensitivity @ 250 Hz ( $\pm 2$ dB)	mV/Pa	1100
Polarization voltage	V	200 V / Traditional
Microphone venting		Rear
Output impedance	$\Omega$	47
Temperature range, operation	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	-20 to 60 / -4 to 140
Temperature range, storage	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	-40 to 85 / -40 to 185
CE/RoHS compliant/WEEE registered		Yes/Yes/Yes
Weight	g / oz	620 / 22



Typical frequency response



Typical noise floor shown in 1/3-octave bands for both the linear and A-weighted cases

GRAS Sound & Vibration reserves the right to change specifications and accessories without notice.

## Included items

	High sensitive 1" microphone
	Lownoise 1" preamplifier

## Optional items

<a href="#">GRAS 12HF</a>	1-Channel Power Module for Lownoise Systems
<a href="#">GRAS 12HM</a>	10-Channel Power Module for Lownoise Systems
<a href="#">GRAS AM0363</a>	Windscreen for 1" Microphones
<a href="#">GRAS 42AA</a>	Pistonphone, Class 1
<a href="#">GRAS RA0090</a>	Pistonphone Coupler
<a href="#">GRAS AL0006</a>	Tripod
<a href="#">GRAS RA0093</a>	Adjustable, high quality, stainless steel tripod adapter
<a href="#">GRAS RA0095</a>	Dehumidifier for 1" microphones
<a href="#">GRAS AA0046</a>	3 m LEMO 7-pin - LEMO 7-pin Cable for Low-noise measuring system
<a href="#">GRAS AA0047</a>	10 m LEMO 7-pin - LEMO 7-pin Cable for Low-noise measuring system

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# GRAS Worldwide

Subsidiaries and distributors in more  
than 40 countries

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## About GRAS Sound & Vibration

GRAS is a worldwide leader in the sound and vibration industry. We develop and manufacture state-of-the-art measurement microphones and related equipment for industries where acoustic measuring accuracy and repeatability are of the utmost importance. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, consumer electronics and other highly demanding industries. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect, trust and require.

GRAS Sound & Vibration is represented through subsidiaries and distributors in more than 40 countries and is part of Axiometrix Solutions, a leading test solutions provider comprised of globally recognized measurement brands. Read more at [www.grasacoustics.com](http://www.grasacoustics.com)

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**GRAS**  
An Axiometrix Solutions Brand