

# GRAS 40PL-1

Short CCP Free-field Array  
Microphone, High Pressure



Freq range: 50 to 20 kHz  
Dyn range: 32 dB(A) to 150 dB  
Sensitivity: 10 mV/Pa

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The GRAS 40PL-1 Array Microphone is a low-cost microphone for general purpose measurements in arrays and matrices. It has a wide useful frequency range reaching up to 20 kHz and a large dynamic range topping at 150dB peak.

## Typical applications and use

- Multi-channel measurements
- Sound-field analyses
- Sound-power measurements
- Concurrent spatial and transient measurements

## Design

Array microphones are designed to be mounted on large or small arrays. Such systems are typically used for measuring and locating noise sources, and here the phase match is important to get good accuracy in the measurements. An important characteristic of array microphones are precisely that the microphones are phase-matched.

40PL-1 has a dynamic range from 32dBA to 150dB peak, the upper limit is the peak value before visible clipping.

It has an integrated CCP preamplifier and is delivered with a built-in TEDS chip which enables it to be programmed as a complete unit. The GRAS 40PL-1 requires a constant current power supply, e.g. the [GRAS 12AL](#) CCP Supply, or any other CCP compatible power supply.

Close manufacturing tolerances together with the advantages of the TEDS chip provide the GRAS 40PL-1 with a high degree of interchangeability; a major advantage when used in multiples forming arrays and matrices.

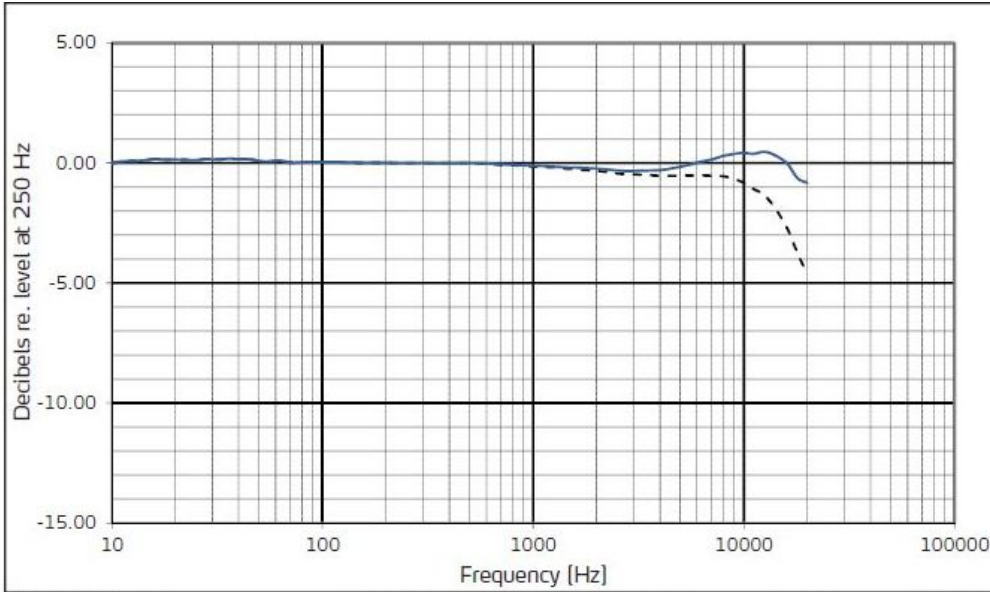
The low cost of the GRAS 40PL-1 is a key consideration when setting up measurements requiring a multiplicity of concurrent transient and spatial data.

Calibrating the GRAS 40PL-1 with a GRAS pistonphone (GRAS 42AP is recommended) is as straightforward as calibrating any other GRAS 1/4-inch microphone.

All GRAS microphones are individually checked and calibrated before leaving the factory. An individual calibration chart is supplied with each microphone.

Polarization/Connection		0 V / CCP
Frequency range ( $\pm 1$ dB)	Hz	50 to 5 k
Frequency range ( $\pm 2$ dB)	Hz	5 k to 20 k
Frequency range ( $\pm 3$ dB)	Hz	10 to 50 k
Dynamic range lower limit (microphone thermal noise)	dB(A)	< 32
Dynamic range upper limit	dB	150
Set sensitivity @ 250 Hz ( $\pm 3$ dB)	mV/Pa	10
Power supply (Constant Current Power)	mA	2 to 20
Power consumption	mA	2 to 20
Microphone venting		Front
Output impedance	$\Omega$	< 50
Temperature range, operation	$^{\circ}\text{C} / ^{\circ}\text{F}$	-10 to 50 / -50 to 122
Temperature range, storage	$^{\circ}\text{C} / ^{\circ}\text{F}$	-40 to 85 / -40 to 185
Influence of axial vibration @1 m/s <sup>2</sup>	dB re 20 $\mu\text{Pa}$	50
TEDS UTID (IEEE 1451.4)		27 v. 1.0
Connector type		SMB
CE/RoHS compliant/WEEE registered		Yes / Yes / Yes
Weight	g / oz	5.5 / 0.2
<b>Phase Match</b>		
50Hz - 100Hz		$\pm 5^{\circ}$
100Hz - 3kHz		$\pm 3^{\circ}$
3kHz - 5kHz		$\pm 5^{\circ}$
5kHz - 10kHz		$\pm 10^{\circ}$

## Frequency response



Typical frequency response

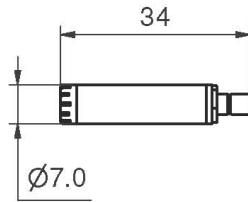
— Free-field response

--- Pressure response

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



Dimensions in mm



GS0773  
40PL-1

## Optional items

<a href="#">GRAS AA0027</a>	3 m SMB - BNC Cable
<a href="#">GRAS 12AL</a>	1-Channel CCP Power Module with A-weighting filter
<a href="#">GRAS PR0002</a>	Array Module
<a href="#">GRAS AM0364</a>	Windscreens (set of 6)
<a href="#">GRAS RA0092</a>	Rain-protection cap
<a href="#">GRAS 42AA</a>	Pistonphone
<a href="#">GRAS 42AG</a>	Multifunction Sound Calibrator, Class 1

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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 to industries where acoustic measuring accuracy and repeatability is of utmost importance in R&D, QA and production. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, and consumer electronics. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect and trust.

**GRAS** Sound  
& Vibration