

GRAS 40PM

EQset™ Miniature Production Line Microphone



Freq range: 20 Hz to 20 kHz
Dyn range: 30 dB(A) to 120 dB
Sensitivity: 25 mV/Pa

GRAS 40PM EQset™ is a short 20 kHz $\frac{1}{4}$ pressure microphone with a dynamic range from 30 dB (A) to 120 dB SPL (<3% THD) and the same length (34 mm) as traditional production line microphones. Its fixed sensitivity, flat response curve across all frequencies, and high environmental stability make GRAS 40PM the ideal production line microphone.

GRAS 40PM with EQset™

GRAS 40PM with EQset is designed for use in production line environments, and it provides many benefits over traditional production line- or array-style microphones. Designed to be cost-effective, easy to use, resistant to errors, and environmentally stable, GRAS 40PM is the best production line microphone option on the market. Each GRAS 40PM microphone has a flat response curve and fixed sensitivity. The tolerance for individual microphone sensitivities is less than ± 0.2 dB, and frequency-response variation is less than ± 0.5 dB up to 10 kHz. And because GRAS 40PM is dimensionally identical to the traditional production line microphones, it can easily replace them in existing setups.

EQset technology

EQset microphones all have a uniformly fixed sensitivity and flat curve. This reduces measurement uncertainty and greatly simplifies microphone setup, monitoring, replacement, and corrections. EQset means that everything can happen quickly and easily without any individual microphone adjustments or corrections. The simplification of setup and other tasks saves both time in the setup itself and time in operator training. There is, however, one additional benefit that outshines the time savings: EQset almost completely eliminates the inherent risk of false passes on production lines or correction error for frequencies outside the calibrated frequency in R&D—common issues with other microphones in the market.

Another benefit of the uniformly fixed sensitivity and flat response curve of each EQset microphone is that there is no need to make individual corrections for each microphone. There is, therefore, no need to store that correction information on the microphones via TEDS. This enables EQset

microphones to be used effectively with systems based on audio sound cards using 48 V phantom power as well as any CCP-based system already in use, so there is no need for price-prohibitive new equipment or retooling of existing CCP-based systems.

For more on EQset technology scan the QR-Code or visit grasacoustics.com/EQset.



Environmental stability

The unique design of the GRAS 40PM provides this range of microphones with unmatched environmental stability. The sensitivity deviation on a typical production line* is less than ± 0.3 dB, so there is no need for corrections due to temperature or humidity over the course of a normal day in a typical production-line environment.

*Typical environmental conditions on a production line are defined by temperature varying between 13 and 35°C (55 to 95°F), static pressure varying between 983 and 1043 hPa, and non-condensing humidity.

Typical applications and use

- Production-line testing of audio devices such as drivers, receivers, micro-speakers, and miniature microphones
- Measurements in confined spaces

When starting up, these microphones have a settling time of approximately 5 seconds for accuracy better than 0.1 dB or 1 minute for full accuracy.

Design

The GRAS 40PM is a robust, cost-effective microphone designed for use in production line testing of loudspeakers and acoustic transducers. It has a wide frequency range, from 20 Hz to 20 kHz, and a dynamic range from 30 dB (A) to 120 dB.

The cost-effectiveness of the GRAS 40PM is a key consideration when setting up multiple production lines. Each GRAS 40PM is interchangeable with any other GRAS 40PM without the need for recalibration or additional corrections.

GRAS 40PM is a 34 mm long $\frac{1}{4}$ microphone that can be used in space-challenged setups where larger microphones would not fit or provide difficulties in testing. Additionally, its small aperture provides an advantage in testing micro-speakers, or miniature microphones. It is good practice to use a microphone with a diameter similar to or smaller than the device to be measured.

Compatibility

This range of microphones is fully compatible with 48 V phantom power setups and CCP-based setups. As such the GRAS 40PM can be used in new cost-saving production-line setups or as replacements for less accurate TEDS-based microphones in existing CCP setups.

Using a phantom power setup along with an analyzer such as the [APx500 Flex Audio Analyzer](#) will create a budget-friendly setup that can be expanded or upgraded easily as need arises.

Calibration—measurement

chain

GRAS 40PM microphones can be calibrated to ensure that down-stream equipment (such as a sound card) is correctly set up using a pistonphone like GRAS 42AP or a hand-held calibrator like the GRAS 42AG Multifunction Sound Calibrator.

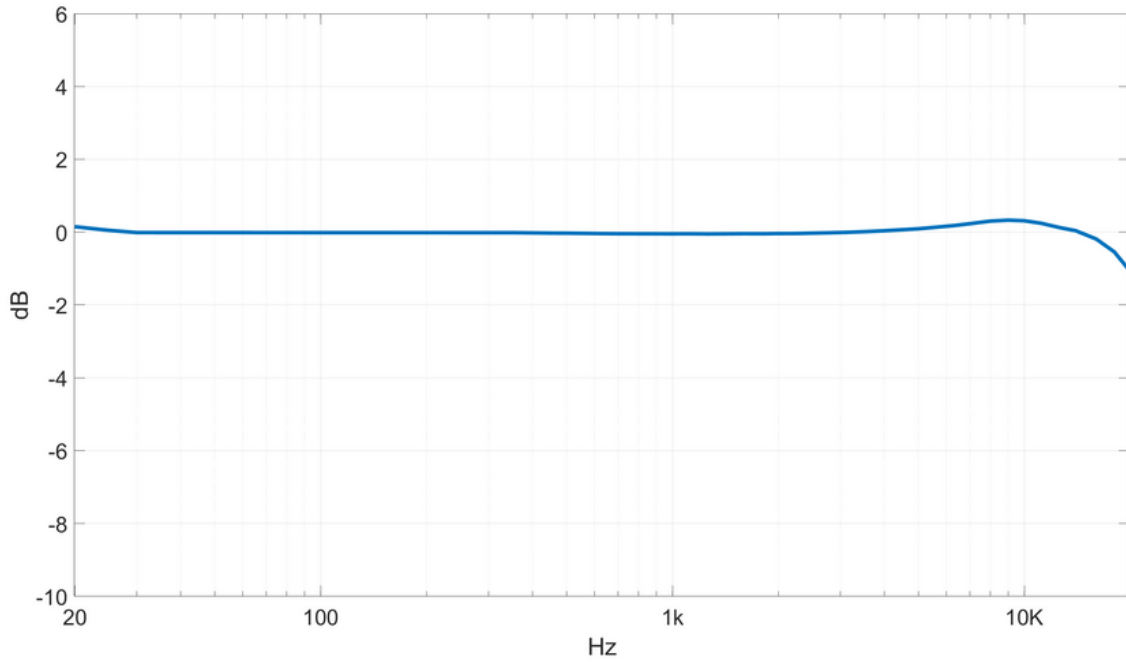
Quality and warranty

GRAS microphone sets are made of components from our proven standard portfolio and are all manufactured of high-quality material and branded parts that were chosen and processed to ensure life-long stability and robustness.

All parts are manufactured and assembled at the factory in Denmark by skilled and dedicated operators.

Thanks to the high quality, our warranty against defective materials and workmanship is two years.

| | | |
|--|-----------------|------------------------|
| Polarization/Connection | | 0 V / CCP |
| Dynamic range lower limit with GRAS preamplifier | dB(A) | <30 |
| Dynamic range upper limit | dB | 120 |
| Power supply (Constant Current Power) | mA | 4 to 10 (min. to max.) |
| Microphone venting | | Front |
| Output impedance | | <50 |
| Temperature range, operation | °C / °F | -10 to 55 / 14 to 131 |
| Temperature range, storage | °C / °F | -25 to 70 / -13 to 158 |
| Humidity range non condensing | % RH | 0 to 90 |
| Connector type | | SMB |
| CE/RoHS compliant/WEEE registered | | Yes/Yes/Yes |
| Weight | g / oz | 3.5 / 0.12346 |
| Sensitivity (250 Hz; ±0.2 dB) | mv/Pa | 25 |
| Sensitivity (250 Hz; ±0.2 dB) | dB re 1 V/Pa | -32.04 |
| Pressure response (±0.5 dB) | Hz | 20 - 10k |
| Pressure response (±2 dB) | Hz | 10k - 20k |
| Output DC bias voltage | V | 13.7 ±0.5 |
| Max cable length | m | 10 (@ 4 mA) |



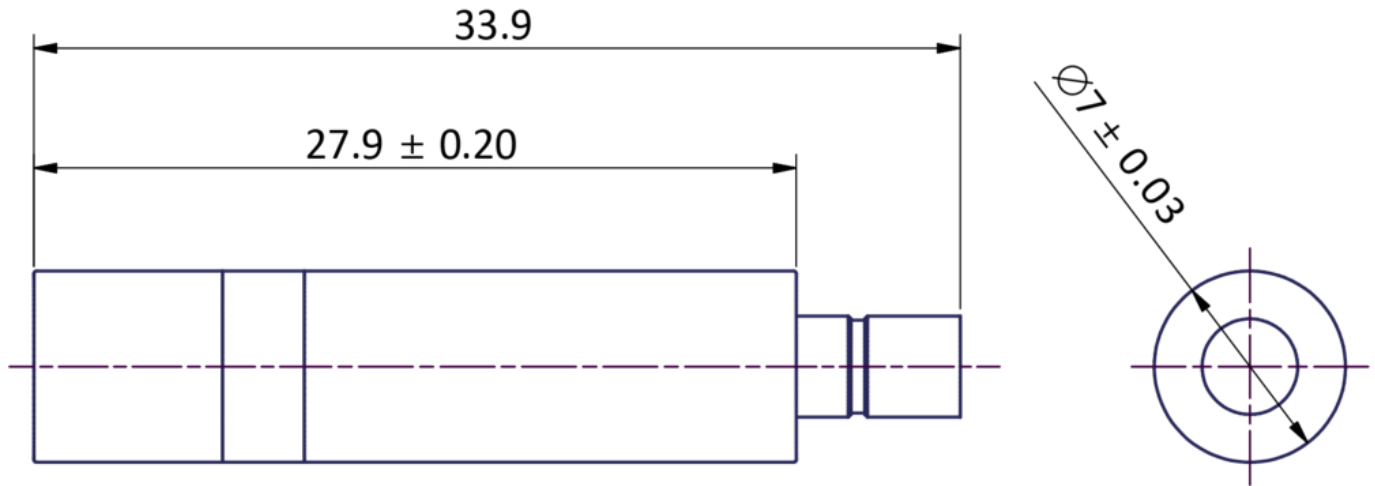
Typical pressure response

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

Dimensions in millimeters:

Length (incl. connector): 34

Diameter: 7



Optional items

| | |
|-----------------------------|--|
| GRAS AA0027 | 3 m SMB - BNC Cable |
| AA0028 | 10 m SMB - BNC Cable |
| GRAS AA0078 | 3 m SMB angled - BNC Cable |
| GRAS AG0003 | Adapter for CCP preamplifier to 48V phantom power (BNC to XLR) |
| GRAS AL0028 | 7 mm Microphone Holder, POM |
| GRAS 42AG | Multifunction Sound Calibrator, Class 1 |
| GRAS 42AP | Intelligent Pistonphone, Class 0 |

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

GRAS Worldwide

Subsidiaries and distributors in more than 40 countries

HEAD OFFICE, DENMARK
GRAS SOUND & VIBRATION
Skovlytoften 33
2840 Holte
Denmark
Tel: +45 4566 4046
www.GRASacoustics.com
gras@grasacoustics.com

USA
GRAS SOUND & VIBRATION
9290 SW Nimbus Avenue
Beaverton, OR 97008
Tel: 503-627-0832
Toll Free: 800-231-7350
www.GRASacoustics.com
sales-usa@grasacoustics.com

UK
GRAS SOUND & VIBRATION
Unit 115, Gibson House,
Ermine Business Park, Huntingdon,
Cambridgeshire, PE29 6XU
Tel: +44 (0) 7762 584 202
www.GRASacoustics.com
sales-uk@grasacoustics.com

CHINA
GRAS SOUND & VIBRATION
Room 315, RuiBo Center(T1)
Lane683, Shenhong Rd,
Minhang District,
Shanghai, China, 201107
Tel: +86 21 64203370
www.GRASacoustics.cn
cnsales@grasacoustics.com



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

grasacoustics.com

GRAS
An Axiometrix Solutions Brand