GRAS 40PI

Production Line Microphone

Freq range: 20 Hz to 20 kHz
Dyn range: 30 dB(A) to 146 dB
Sensitivity: 12 mV/Pa

The 40PI is a 1/4" pressure microphone designed for precise measurements up to 20 kHz. It features a high-quality condenser capsule, ensuring exceptional environmental stability. Its compact design makes it an ideal choice for production line environments. Additionally, the 40PI includes a TEDS chip for quick channel adjustment and verification.

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GRAS 40PI with TEDS

The GRAS 40PI is a ¼" pressure microphone designed for production line environments, offering significant advantages over traditional production line and array-style microphones. It is cost-effective, easy to use, and built for long-term stability, making it a go-to choice for production line applications.

With a high-quality condenser capsule and advanced internal electronics, the 40PI ensures consistent performance in typical production line conditions. It also features TEDS technology for quick sensor adjustment and verification. Plus, its standardized dimensions and CCP-powered operation allow for seamless replacement of most common production line microphones without requiring changes to existing setups.

Environmental stability

The design of the 40PI TEDS Production Line Microphone provides unmatched environmental stability. The deviation on a typical production line is better than ±0.2 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.

Design

The GRAS 40PI 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 146 dB.

Compatibility

40PI microphones require a constant current power (CCP) supply to work. Most modern data acquisition systems and analyzers used for sound and vibration measurements have this type of sensor supply built into their analogue inputs. For devices where this type of supply is not available, GRAS offers a range of power modules with CCP supply that can be connected in between the microphone set and the data acquisition system.

40PI can also be powered using +48V Phantom Power supply by using an adapter like GRAS AG0003 XLR-BNC adapter. This opens for the possibility of using 40PI with a large range of pro audio equipment that uses this type of microphone power supply

40PI is also compatible with TEDS (Transducer Electronic Data Sheet) IEEE 1451.4 v1.0. TEDS is a small memory inside the sensor that is used to store the essential data of the sensor such as sensor type, serial number, sensitivity, calibration date, etc. Any data acquisition system compatible with TEDS will be able to read the TEDS data inside the 40PI and use it to setup the measurement channel.

TEDS can also be used for sensor identification or storing other data relevant for the user.

System verification

The functionality of TEDS is very useful for

determining what microphone is connected to your respective input channels. However, it is not a check of whether the microphone is within specifications or not. For daily verification and check of your measurement setup, see Calibration, below.

Calibration

GRAS 40PI microphones can be calibrated using a hand-held calibrator like the GRAS 42AG Multifunction Sound Calibrator.

For proper sensitivity calibration we recommend using a reference sound source like the GRAS 42AP Intelligent Pistonphone.

When leaving the factory, all GRAS microphones have been calibrated in a controlled laboratory environment using traceable calibration equipment. Depending on the use, measurement environment, and internal quality control programs we recommend that the microphone is recalibrated at least once a year.

We offer two kinds of calibration as an optional after-sales service: GRAS Traceable Calibration and GRAS Accredited Calibration.

GRAS Traceable Calibration is a traceable calibration performed by trained personnel under controlled conditions according to established procedures and standards. This is identical to the rigorous calibration that all GRAS microphones are subjected to as an integral part of our quality assurance.

GRAS Accredited Calibration is performed by the GRAS Accredited Calibration Laboratory that has been accredited in accordance with ISO 17025 by DANAK,the Danish Accreditation Fund. It includes all the required traceability and test uncertainty information.

If you want a new microphone set delivered with an accredited calibration instead of the default traceable calibration, specify this when ordering.

Learn more at gras/calib.

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.

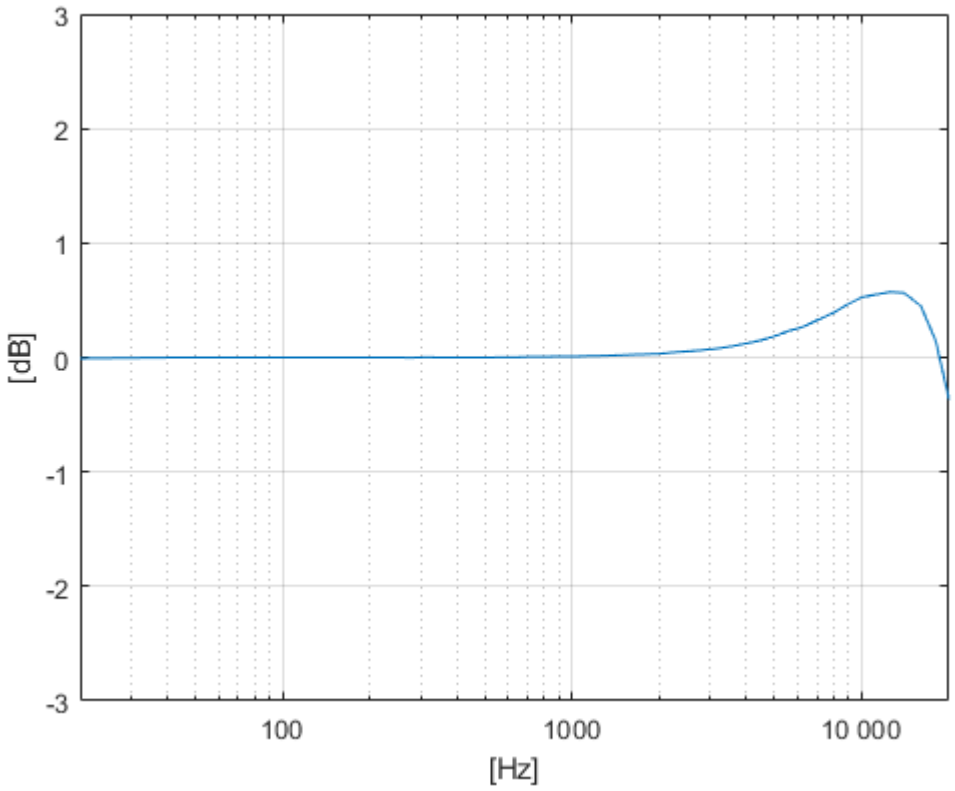
Thanks to the high quality, our warranty against defective materials and workmanship is two years.

Service

Most GRAS microphones are designed to be repairable, allowing them to be restored from certain types of damage. If a microphone is accidentally damaged, affordable repair services are available, helping to maintain a low cost of ownership.

Specifications

Acoustic field type		Pressure Field
Acoustic Polarity		Positive
Power Supply		CCP
Frequency range (±1.5 dB)	Hz	20 Hz to 20 kHz
Dynamic Range Lower Limit	dB(A)	30
Dynamic range upper limit	dB peak	146
Sensitivity @ 250 Hz (±1.5 dB)	dB re 1V/Pa	-38.4
Output impedance	Ω	50
Output impedance	Ω	50
Environmental Stability*	dB	±0.2
Supported CCP Current	mA	2 to 20 (min to max)
DC Bias Voltage, typical	V	12
Microphone venting		Front
Temperature range, operation	°C / °F	-10 to 55 / 14 to 131
Temperature range, storage	°C / °F	-10 to 55 / 14 to 131
Humidity range non condensing	% RH	0 to 90
TEDS UDID (IEEE 1451.4)		I27-0-0-0U
Connector type		SMB
CE/RoHS compliant/WEEE registered		YES/YES/YES
Weight	g / oz	5.8 / 0.2
Maximum cable length tested @ 4mA CCP	m	10
Diameter	mm	6.35
Length (incl. connector)	mm	6.35



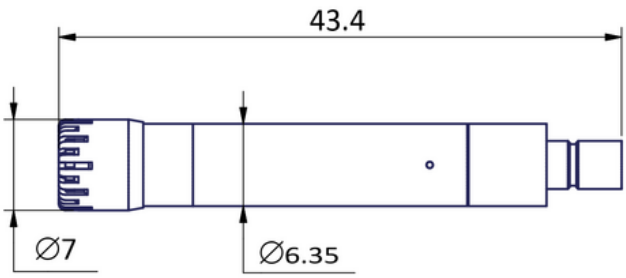
Typical pressure response

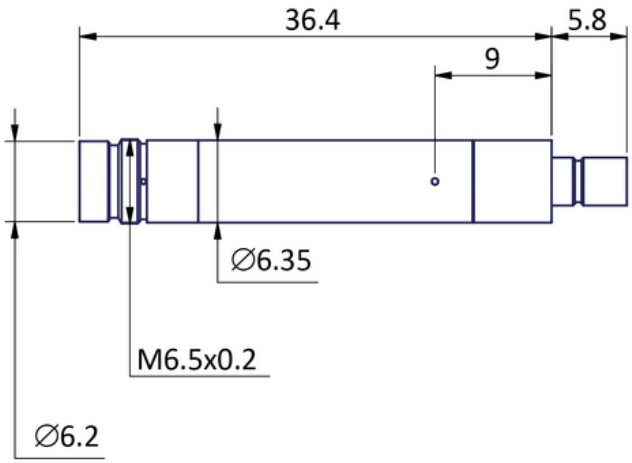
GRAS Sound & Vibration reserves the right to change specifications and accessories without notice.

Dimensions

Dimensions in millimeters:

Length (incl. connector): 43.4
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

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GRAS Worldwide

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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 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

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