GRAS 40AD

1/2" Prepolarized Pressure Microphone, High Sensitivity

Freq range: 3.15 Hz to 10 kHz
Dyn range: 16 dB(A) to 148 dB
Sensitivity: 50 mV/Pa

The 40AD is an IEC 61094 WS2P ½" prepolarized pressure microphone with rear-venting. The externally polarized equivalent is GRAS 40AP

GRAS Sound & Vibration
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Introduction

GRAS 40AD a high-precision condenser microphone made according to IEC 61094-4 requirements and is ideal for coupler measurements in both laboratory and production environments. It is extremely robust and reliable and can measure sound pressure levels up to 148 dB and down to 16 dB(A) in the range of 3.15 Hz to 10 kHz. The presence of the 40AD in a sound field at low frequencies is minimal due to its small size compared to the large wavelengths.

40AD is individually factory-calibrated and delivered with a calibration chart stating its specific open-circuit sensitivity and pressure frequency response.

A front-vented version is available, 40AD-FV 1/2" Prepolarized Pressure Microphone, High Sens. Front Vented.

Typical applications and use

It is the ideal partner for testing headsets, headphones, and earphones, as well as hearing aids, in coupler setups. The small size makes it well suited for making flush (boundary) measurements.

The 40AD is a very versatile microphone when connected to the RA0067 Transmitter Adapter for ½" Microphones. The 40AD becomes a high-impedance sound source when the RA0067 takes a calibration signal directly from the signal generator and makes the microphone behave like an electrostatic loudspeaker. In a coupler, this gives a frequency response that is as good as when the 40AD behaves like a microphone.

40AD can be used in

- GRAS RA0038 IEC 60318-5 2cc Coupler (including protection grid)
- GRAS 45BB KEMAR Manikin

Other coupler systems can be configured with the 40AD and a CCP preamplifier on request

Compatibility

The 40AD requires a standardized ½" or ¼" CCP preamplifier and an input module that supports this technology with a BNC, SMB, or Microdot connector.

System verification

For daily verification and check of your measurement setup, we recommend using a calibrator like GRAS 42AG Multifunction Sound Level Calibrator.

For proper sensitivity calibration, we recommend using a pistonphone like GRAS 42AP Intelligent Pistonphone.

Calibration

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.

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

Learn more at gras/calib.

Quality and warranty

All GRAS microphones are made of high-quality materials that will ensure life-long stability and robustness. The microphones are all assembled in verified clean-room environments by skilled and dedicated operators with many years of expertise in this field.

The microphone diaphragm, body, and improved protection grid are made of high-grade stainless steel, which makes the microphone resistant to physical damage, as well as corrosion caused by aggressive air or gasses.

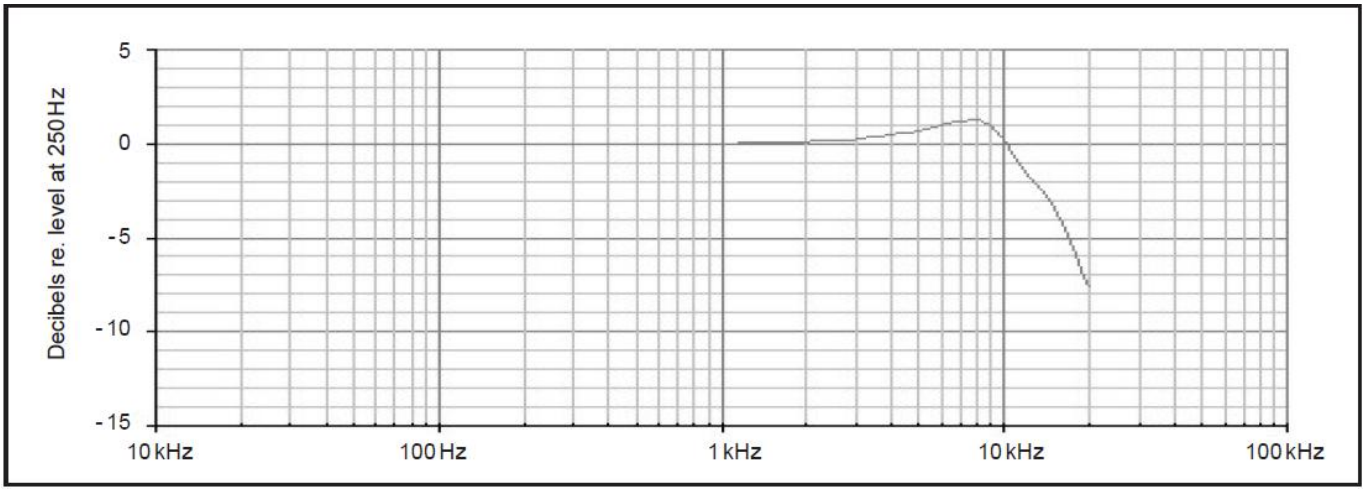
This, combined with the reinforced gold-plated microphone terminal which guarantees a highly reliable connection, enables GRAS to offer 5 years warranty against defective materials and workmanship.

Service

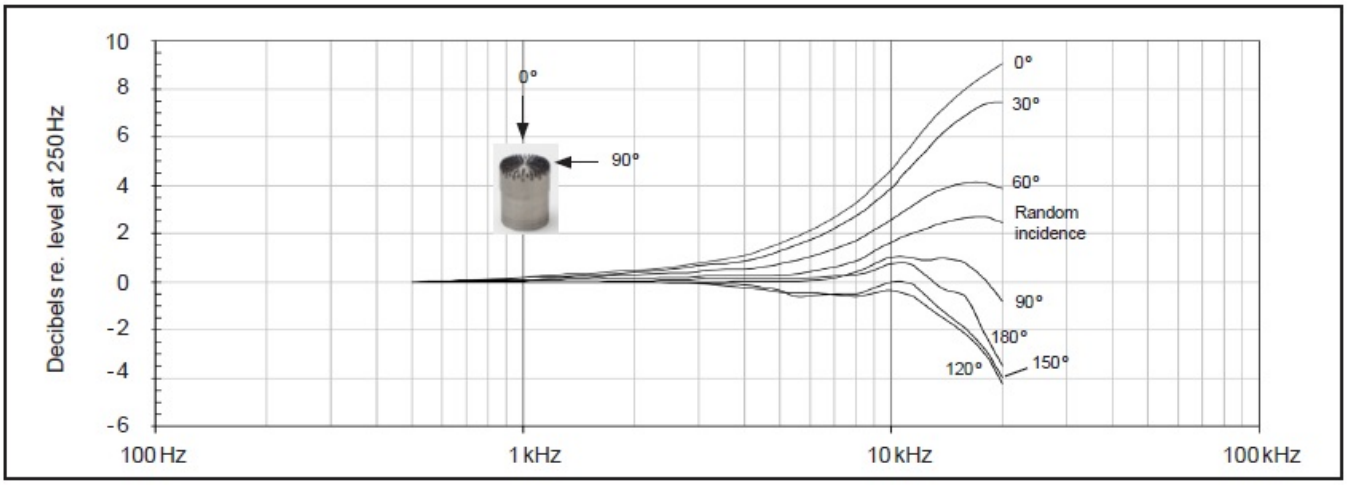
If you accidentally damage the diaphragm on a GRAS microphone, we can — in most cases — replace it at a very reasonable cost and with a short turn-around time. This not only protects your investment, but also pleases your quality assurance department because you don't have to worry about new serial numbers, etc.

Specifications

Polarization/Connection		0 V / CCP
Frequency range (±1 dB)	Hz	12.5 to 7.5 k
Frequency range (±2 dB)	Hz	3.15 to 10 k
Dynamic range lower limit (microphone thermal noise)	dB(A)	16
Dynamic range lower limit with GRAS preamplifier	dB(A)	18
Dynamic range upper limit	dB	148
Dynamic range upper limit with GRAS preamplifier @ +28 V / ±14 V power supply	dB	142
Dynamic range upper limit with GRAS preamplifier @ +120 V / ±60 V power supply	dB	148
Dynamic range upper limit with GRAS preamplifier	dB	138
Open-circuit sensitivity @ 250 Hz (±2 dB)	mV/Pa	50
Open-circuit sensitivity @ 250 Hz (±2 dB)	dB re 1V/Pa	-26
Resonance frequency	kHz	14
Microphone cartridge capacitance, typ.	pF	20
Microphone venting		Rear
Temperature range, operation	°C / °F	-40 to 120 / -40 to 248
IEC 61094-4 Designation		WS2P
Temperature range, storage	°C / °F	-40 to 85 / -40 to 185
Temperature coefficient @250 Hz	dB/°C / dB/°F	-0.01 / -0.006
Humidity range non condensing	% RH	0 to 90
Static pressure coefficient @250 Hz	dB/kPa	-0,014
Humidity coefficient @250 Hz	dB/% RH	0,001
Influence of axial vibration @1 m/s²	dB re 20 µPa	62
CE/RoHS compliant/WEEE registered		Yes / Yes, Yes
Weight	g / oz	9 / 0,317



Typical frequency response

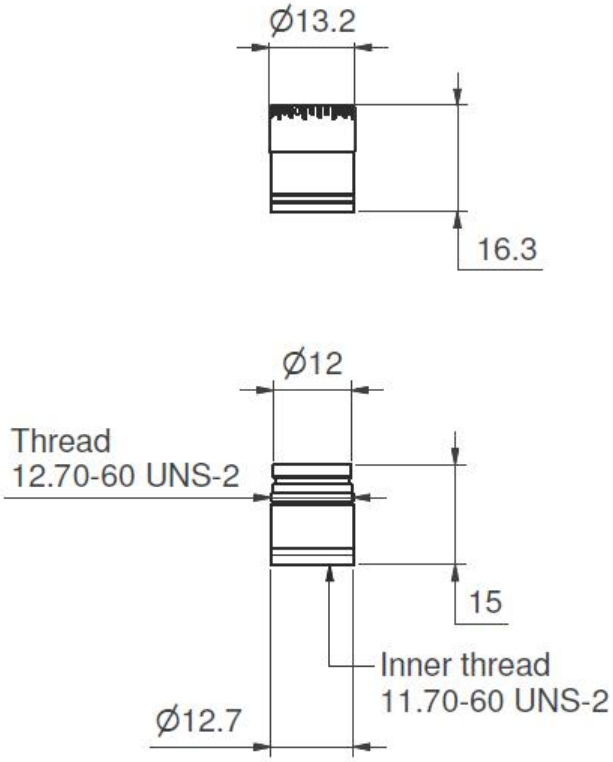


Free-field corrections for different angles of incidence

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

Dimensions

Dimensions in mm



Ordering info

40AD	40AD 1/2" Prepolarized Pressure Microphone, High Sens. This is the rear vented "standard" version.
40AD-FV	40AD-FV 1/2" Prepolarized Pressure Microphone, High Sens., Front Vented. Identical to 40AD, but front vented.
GRAS CA0001	Traceable Calibration of Microphone
GRAS CA2001	Accredited Calibration of Microphone

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

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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