

GRAS 40AU-1

1/2" Ext. Polarized Reference
Pressure Microphone



Freq range: 3.15 Hz to 20 kHz
Dyn range: 20 dB(A) to 164 dB
Sensitivity: 12.5 mV/Pa

The 40AU-1 is an IEC 61094 LS2aP 1/2" externally polarized reference microphone that is rear-vented. It is a 1/2" laboratory-standard pressure microphone that is ideal for precision sound pressure measurements. It has a front cavity as specified in IEC 61094-1 and is supplied with a protective dust cap. 40AU-1 is individually accredited-calibrated and delivered with a calibration chart stating its specific open-circuit sensitivity and pressure frequency response.

Introduction

The 40AU-1 is an IEC 61094 LS2aP ½" externally polarized reference microphone that is rear-vented.

It is a ½" laboratory-standard pressure microphone that is ideal for precision sound pressure measurements. It has a front cavity as specified in IEC 61094-1 and is supplied with a protective dust cap.

40AU-1 is individually calibrated (accredited calibration) and delivered with a calibration chart stating its specific open-circuit sensitivity and pressure frequency response.

A 1/2" Electrostatic Actuator especially designed to fit the 40AU-1 is part of the delivery.

Typical applications and use

The 40AU-1 can be used for precision sound pressure measurements, calibrations at high frequencies, laboratory reference measurements, and measurements in couplers and ear simulators.

The 40AU-1 can be used in couplers, ear simulators, enclosures, and at boundaries.

Compatibility

The 40AU-1 requires a standardized ½" LEMO preamplifier and an input module that supports this technology with a 7-pin LEMO connector.

System verification

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

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

For frequency calibration, the special electrostatic

actuator that is part of the delivery must be used, the RA0014-S1.

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.

40AU-1 is delivered with an accredited calibration.

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](https://www.gras.com/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.

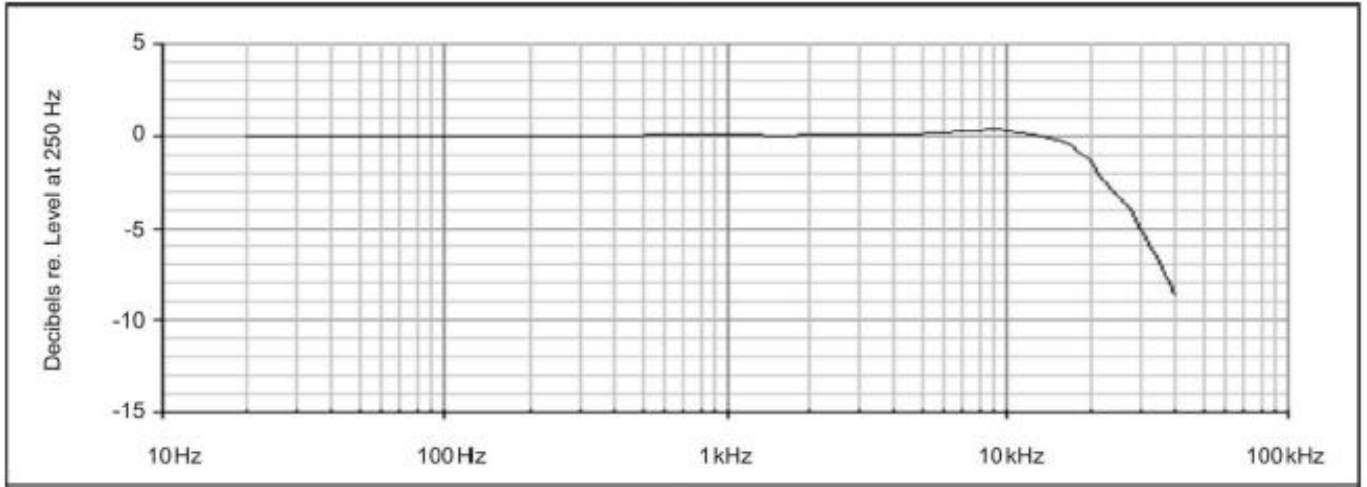
The microphone diaphragm, body, and improved protection grid are made of high-grade stainless steel, which makes the microphone resistant to physical damage, as well as corrosion caused by aggressive air or gasses.

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.

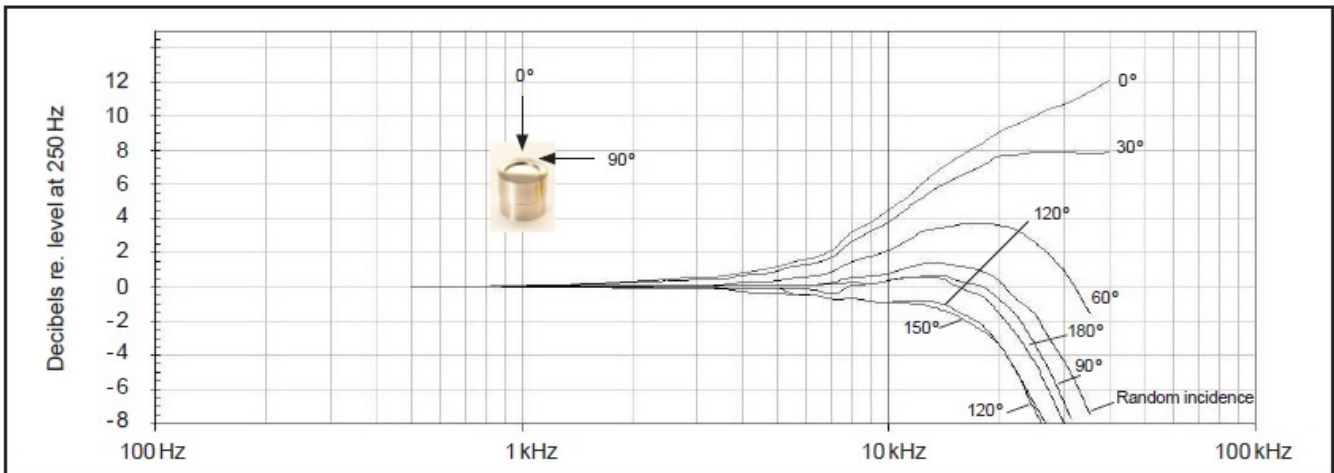
Service

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.

Polarization/Connection		200 V / Traditional
Frequency range (± 1 dB)	Hz	5 to 12.5 k
Frequency range (± 2 dB)	Hz	3.15 to 20 k
Dynamic range lower limit (microphone thermal noise)	dB(A)	20
Dynamic range lower limit with GRAS preamplifier	dB(A)	25
Dynamic range upper limit	dB	160
Dynamic range upper limit with GRAS preamplifier @ +28 V / ± 14 V power supply	dB	153
Dynamic range upper limit with GRAS preamplifier @ +120 V / ± 60 V power supply	dB	160
Open-circuit sensitivity @ 250 Hz (± 2 dB)	mV/Pa	12.5
Open-circuit sensitivity @ 250 Hz (± 2 dB)	dB re 1V/Pa	-38
Resonance frequency	kHz	32
Microphone cartridge capacitance, typ.	pF	20
Microphone venting		Rear
Temperature range, operation	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	5 to 50 / 41 to 122*
IEC 61094 compliance		LS2aP
Temperature range, storage	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	5 to 50 / 41 to 122*
Temperature coefficient @250 Hz	dB/ $^{\circ}\text{C}$ / dB/ $^{\circ}\text{F}$	0.006 / 0.003
Static pressure coefficient @250 Hz	dB/kPa	-0.007
Humidity range non condensing	% RH	0 to 90
Humidity coefficient @250 Hz	dB/% RH	-0.001
Influence of axial vibration @1 m/s ²	dB re 20 μPa	66
CE/RoHS compliant/WEEE registered		Yes / Yes, Yes
Weight	g / oz	7 / 0.247



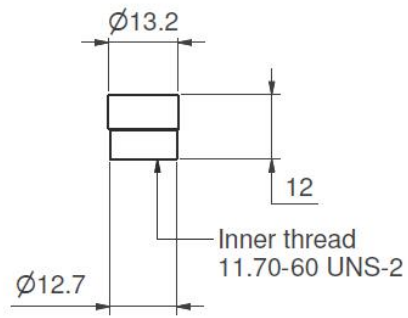
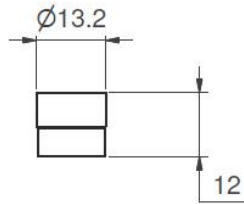
Typical frequency response



Free-field corrections for different angles of incidence

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

Dimensions in mm



Included items

GRAS 40AU-1	1/2" Ext. Polarized Reference Pressure Microphone
GRAS RA0014-S1	Electrostatic Actuator for 40AU-1 only

Optional items

GRAS AF0008	Adapter for ¼" preamplifier and ½" microphone
GRAS GR0010	Adapter for ¼" preamplifier and ½" microphone
GRAS RA0001	Right-angled (90°) adapter for ½" microphone and ¼" preamplifier
GRAS RA0003	Adapter for ¼" preamplifier and ½" microphone
GRAS RA0016	20 dB Attenuator for externally polarized ½" microphones
GRAS CA0001	Traceable Calibration of Microphone
GRAS CA2001	Accredited Calibration of Microphone

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GRAS Worldwide

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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.

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& Vibration