GRAS 40AZ

1/2" Prepolarized Free-field Microphone, Low Frequency

Freq range: 0.5 Hz to 20 kHz
Dyn range: 14 dB(A) to 148 dB
Sensitivity: 50 mV/Pa

The 40AZ is a prepolarized free-field microphone with a large dynamic range and a wide frequency response. Its externally polarized equivalent is GRAS 40AN.

GRAS Sound & Vibration
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Introduction

The GRAS 40AZ 1/2" free-field microphone is a precision condenser microphone for low-frequency (including infra-sound) measurements in open acoustic fields.

As a free-field microphone, 40AZ is designed essentially to measure the sound pressure as it would appear if the microphone were not present, the sound field pointing towards the microphone.

At low frequencies, the disturbing effects of its presence in the sound field are minimal (large wavelengths compared to the size of the microphone).

At higher frequencies (>1 kHz), the effects of diffractions generally cause microphones to measure sound pressure levels increasing with frequency. In a free-field microphone, the effects of diffraction are compensated for to provide a flat frequency response in a free-field for 0° incidence.

The GRAS 26CG 1/4" high impedance preamplifier is available for use with 40AZ. The mounting thread (11.7 mm - 60 UNS-2) is compatible with microphone preamplifiers for WS2P/F microphones.

Typical applications and use

The low-frequency property combined with its high sensitivity and robust design make 40AZ the obvious choice for infra-sound measurements - a fast growing discipline following the need for monitoring and reducing low-frequency noise from, for example, power and production plants and the increasing number of wind turbines.

Compatibility

The 40AZ requires a standardized 1/2" or 1/4" CCP preamplifier and an input module that supports this technology with a BNC, SMB, or Microdot connector.

To benefit from 40AZ's low frequency capabilities, it is important that the microphone preamplifier, analyzer input module, or sound level meter is designed to match 40AZ.

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/calibration.

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.

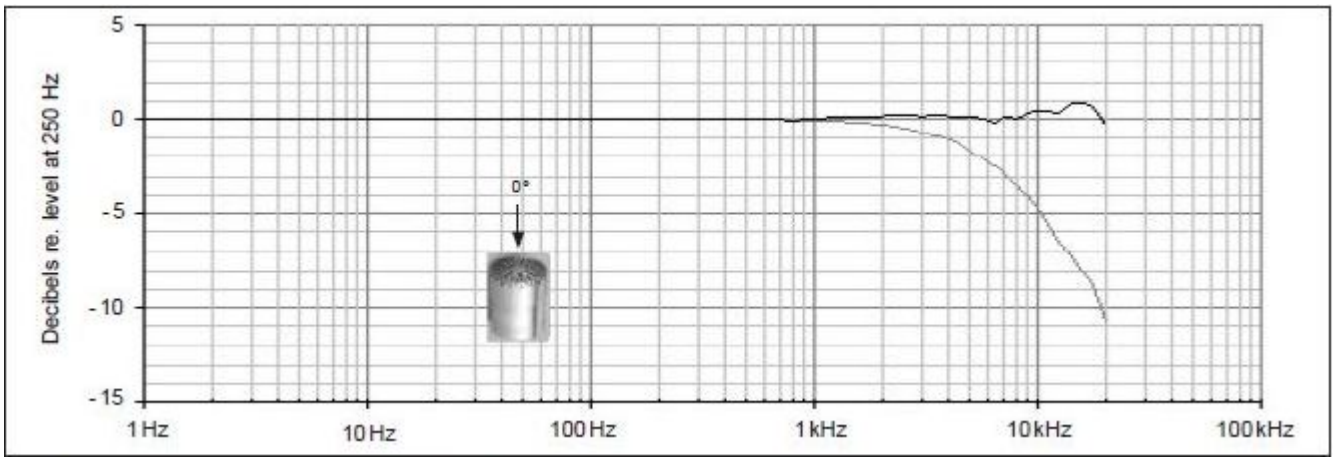
This, combined with the reinforced gold-plated microphone terminal which guarantees a highly reliable connection, enables GRAS to offer 5 years warranty against defective materials and workmanship.

Service

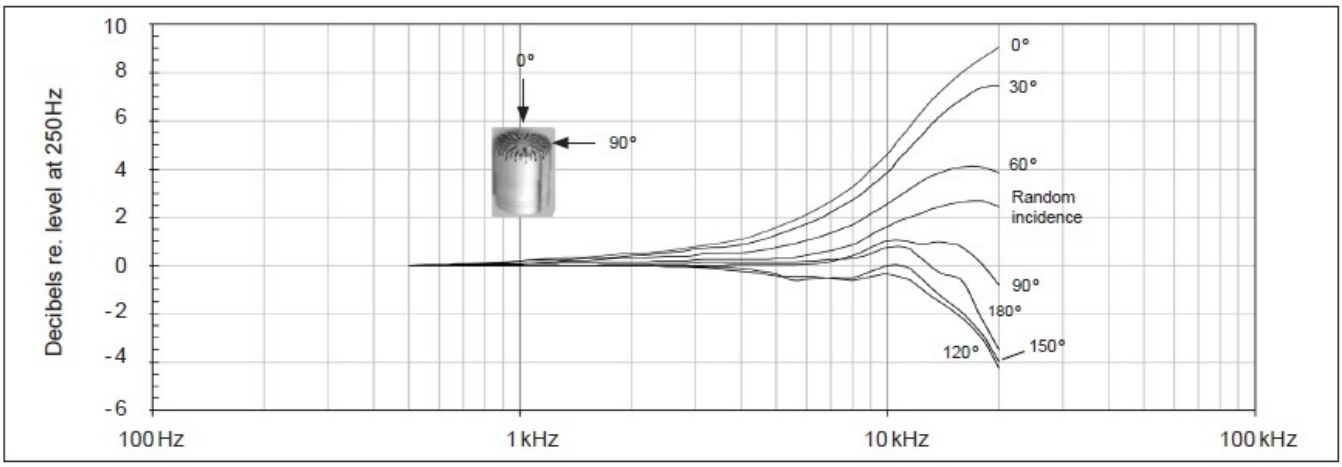
If you accidentally damage the diaphragm on a GRAS microphone, we can - in most cases - replace it at a very reasonable cost and with a short turn-around time. This not only protects your investment, but also pleases your quality assurance department because you don't have to worry about new serial numbers,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

Specifications

Polarization/Connection		0 V / CCP
Frequency range (±1 dB)	Hz	1 to 10 k
Frequency range (±2 dB)	Hz	0.5 to 20 k
Dynamic range lower limit (microphone thermal noise)	dB(A)	14
Dynamic range lower limit with GRAS preamplifier	dB(A)	17
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	12-16
Microphone venting		Rear
Temperature range, operation	°C / °F	-40 to 120 / -40 to 248
IEC 61094-4 Designation		WS2F
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	-0,008
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

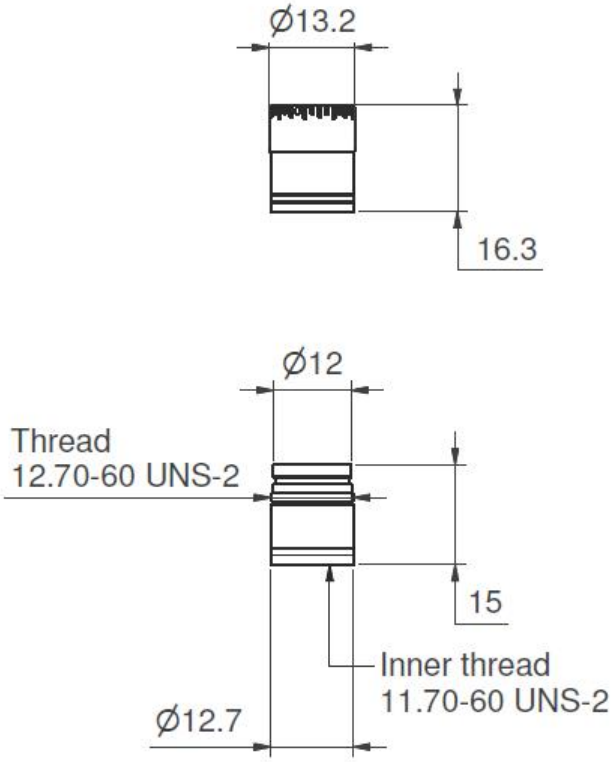


Free-field corrections for different angles of incidence

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

Dimensions

Dimensions in mm



Ordering info

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

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 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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