



## G.R.A.S. 46AQ 1/2" CCP Random Incidence Standard Microphone Set

Freq range: 3.15 Hz to 12.5 kHz  
Dyn range: 17 dB(A) to 138 dB  
Sensitivity: 50 mV/Pa

The 46AQ is a 1/2" CCP microphone set for random-incidence measurements.

### Technology

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#### Introduction

The 46AQ is a 1/2" CCP microphone set for random-incidence measurements. Read about the LEMO equivalent [46AR]

The set consists of the 1/2" random-incidence microphone 40AQ and the 1/2" preamplifier 26CA with a BNC coaxial connector.

This combination was chosen to save you time and give you the best possible properties and reliability in the microphone/preamplifier match. Your workflow is optimized and typical handling errors are minimized.

Not only have we made a set of the best possible combination of microphone and preamplifier, we have also included TEDS, the Transducer Electronic Data Sheet standard according to IEEE-1451.4. Multi-channel users appreciate having an intelligent transducer, like 46AF, that can supply properties, types, and calibration

data directly to measurement platforms that support TEDS.

The signal wire in the CCP transducer is used for reading the TEDS information directly from the transducer.

46AQ is individually factory-calibrated and delivered with a calibration chart stating its specific open-circuit sensitivity and pressure frequency response.

## **Typical applications and use**

The 46AQ is optimized to measure sound correctly in random, diffuse, and reverberant sound fields.

## **Compatibility**

The 46AQ uses BNC connector, which requires an input module that supports this technology.

For more information, see System Setup.

## **System verification**

For daily verification and check of your measurement setup, we recommend using a calibrator like G.R.A.S. Sound Level Calibrator 42AB

For proper sensitivity calibration, we recommend using a pistonphone like G.R.A.S. Intelligent Pistonphone 42AP

## **Quality and warranty**

All G.R.A.S. microphone sets are made of high-quality materials that will ensure life-long stability and robustness. The microphone sets 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 G.R.A.S. to offer 5 years warranty against defective materials and workmanship.

Learn more about G.R.A.S.' unique warranty policies.

## **Service**

If you accidentally damage the diaphragm on a G.R.A.S. 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.

Learn more about G.R.A.S.' service program.

## **Calibration**

Before leaving the factory, all G.R.A.S. microphone sets are calibrated as a unit in a controlled laboratory environment using traceable calibration equipment. The sets are delivered with calibration charts including sensitivity values and frequency response graphs for the complete set. You can use the sensitivity value directly in your system setup.

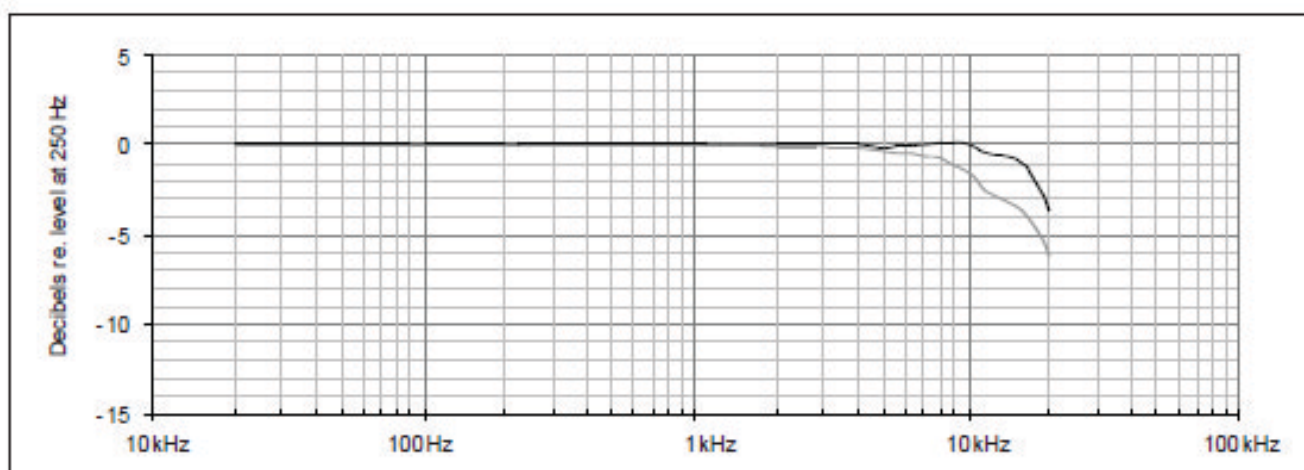
Depending on the use, measurement environment, and internal quality control programs, we recommend recalibrating the microphone set at least every second year.

Learn more about G.R.A.S.' calibration services.

## Specifications

Frequency range ( $\pm 1$ dB)	Hz	12.5 to 8 k
Frequency range ( $\pm 2$ dB)	Hz	3.15 to 12.5 k
Frequency range ( $\pm 3$ dB)	Hz	3.15 to 16 k
Dynamic range lower limit with G.R.A.S. preamplifier	dB(A)	17
Dynamic range upper limit with G.R.A.S. CCP preamplifier	dB	138
Set sensitivity @ 250 Hz ( $\pm 2$ dB)	mV/Pa	50
Set sensitivity @ 250 Hz ( $\pm 2$ dB)	dB re 1V/Pa	-26
Output impedance	$\Omega$	< 50
Output Voltage Swing, min. @ 24-28 V CCP voltage supply	Vp	$\pm 8$
Power supply min. to max.	mA	2 to 20
Microphone venting		Rear
IEC 61094 Compliance		WS2P/D
Temperature range, operation	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	-30 to 60 / -22 to 140
Temperature range, storage	$^{\circ}\text{C}$ / $^{\circ}\text{F}$	-40 to 85 / -40 to 185
Temperature coefficient @250 Hz	dB/ $^{\circ}\text{C}$ / dB/ $^{\circ}\text{F}$	-0,01
Static pressure coefficient @250 Hz	dB/kPa	-0,011
Humidity range non condensing	% RH	0 to 100
Humidity coefficient @250 Hz	dB/% RH	-0,001

Influence of axial vibration @1 m/s <sup>2</sup>	dB re 20 µPa	62
TEDS UTID (IEEE 1451.4 )		27 v. 1.0
Connector type		BNC
CE/RoHS compliant/WEEE registered		Yes/Yes/Yes
Weight	g / oz	33 / 1.164



Typical frequency response. Upper curve shows response in a diffuse sound field (random incidence), lower curve shows pressure response.

## Ordering info

Pistonphone	42AA
Intelligent pistonphone	42AP
1-Channel CCP Power Module with A-Weighting filter	12AL
2-Channel CCP/LEMO Power Module with Signal Conditioning and Computer Interface	12AQ
3 m BNC-to-BNC cable	AA0035
10 m BNC-to-BNC cable	AA0037



## **We make Microphones**

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### **Tradition**

Since the establishment in 1994, G.R.A.S. have been 100% dedicated to developing and manufacturing high-quality measurement microphones and related acoustic equipment. Founded by the Danish acoustics pioneer Gunnar Rasmussen who for more than 60 years has contributed to the world of sound and vibration with his unique ideas and designs. From the first reproducible 1" condenser measurement microphone that enabled quality measurements and instrumentation for acoustic calibration, Mr. Rasmussen's ingenuity and foresight led to the world's most popular acoustic sensor: The 1/2" measurement microphone. Then the 1/4" and 1/8" microphones followed with outstanding dynamic and high-frequency capability that brought higher definition and transparency into impulse noise diagnostics. Many variants have been made available over the years; all based on Gunnar Rasmussen's original 1" pressure microphone design.

### **Innovation**

At G.R.A.S., we and our customers benefit daily from Mr. Rasmussen's exceptional understanding of acoustics, physics, electronics and measurement needs. Not only in R&D but throughout the organisation, we are proud to develop, produce and offer the broadest range of high-quality measurement microphones and accessories in the industry. And as a family company, now owned and managed by the two sons, Per Rasmussen and Peter Wulf-Andersen, we safeguard our heritage and knowledge to help create new opportunities with our customers. We work with everybody with an interest in sound or noise within the fields of aerospace, automotive, audiology, consumer electronics, noise monitoring, building acoustics and telecommunications, metrology, education, consultancy, legislation and system integration.

### **Quality**

All our microphones are solely produced in stainless steel and in a quality that allows for a 5 year warranty. Should you by mistake damage the diaphragm on a G.R.A.S. microphone, our special technique enables repair at very reasonable price.

### **Partners**

G.R.A.S. is represented worldwide in more than 40 countries by subsidiaries and distributors. Whether you are searching for a multi-channel solution or just a replacement microphone for your sound level meter G.R.A.S. will help solve your needs. Visit [gras.dk](http://gras.dk) for your local G.R.A.S. partner.