

# 1/4" Preamplifier Type 26AN, Insert-voltage

## Product Data

### Typical Applications

- Insert-voltage calibration\*
- Precision measurements
- Low-pressure measurements
- General-purpose preamplifiers

### Special Features

- Wide frequency range
- Wide dynamic range

### Description

The G.R.A.S. 1/4" Preamplifiers Type 26AN is a small robust unit optimised for acoustic measurements using condenser microphones. It has a very low inherent noise level, a wide dynamic range and a frequency response from below 2 Hz to above 200 kHz.

Type 26AN is configured to permit use of the insert-voltage-technique\* for determining the open-circuit sensitivity of a microphone.

### Design

All G.R.A.S. microphone preamplifiers are based on a small ceramic thick-film substrate with a very high input impedance. The ceramic substrate is shielded by a guard ring to minimise the influence of stray capacitance and microphonic interference. The casing is made of stainless steel for maximum strength and durability. The small dimensions of these preamplifiers ensure reliable operation under humid conditions owing to the heat generated by internal power dissipation.

These preamplifiers are compatible with 1/2" microphones as defined in international standard IEC 1094 *Measurement Microphones, Part 4: Specifications for working standard microphones*. The mounting thread (11.7 mm - 60 UNS-2) is compatible with other available makes of similar microphone preamplifiers.

### Dynamic Range

Type 26AN can handle both single and dual-sided power supplies. The supply can vary between 28 VDC and 120 VDC single-sided or  $\pm 14$ VDC and  $\pm 60$  VDC dual-sided. When using the high supply voltage (120VDC or  $\pm 60$ VDC), the dynamic range exceeds 140 dB.



Fig. 1 1/4" Preamplifier Type 26AB incl. adapter for 1/2" microphones

### Noise

The electrical circuit in Type 26AN is built on a ceramic substrate using selected low-noise components to gain very low self-noise. The electrical self-noise is so low that system noise is mainly determined by the microphone capsule's thermal noise.

### Frequency response

The low-frequency cut-off of the Type 26AN preamplifier is mainly determined by the input impedance of the preamplifier and the capacitance of the microphone capsule (see Fig. 3). The capacities 20 pF, 6.5 pF and 3 pF equal the typical capacitances of 1/2", 1/4" and 1/8" microphone capsules respectively.

The high-frequency cut-off is determined by the preamplifier's ability to drive capacitive loads (slew rate), caused by the cable. For large-signals, the effects of these parameters must be accounted for when measurements are performed. Fig. 4 shows the large-signal response for Type 26AN for various capacitive loads corresponding to different cable lengths. The output level is in decibels relative to 1 Volt. Typical capacitance for the cable is 100pF/m (30pF/foot).

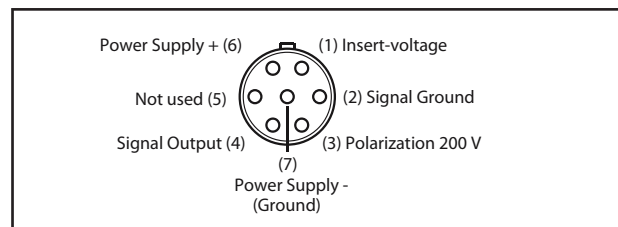


Fig. 2 7-pin LEMO plug 1B male (ext. view)

\* A normal microphone calibration involves the determination of the open-circuit sensitivity, which is defined as the microphone output for a given input signal when the microphone's output terminal is unloaded. The closed-circuit sensitivity, however, depends on the type of amplifier. As the load from the preamplifier reduces the output signal from the microphone, the closed-circuit sensitivity will be lower than the open-circuit sensitivity. The open-circuit sensitivity is determined with the Insert-Voltage technique using a preamplifier such as Type 26AN, where a test signal can be injected directly onto the preamplifier input terminal.

# 1/4" Preamplifier Type 26AN, Insert-voltage

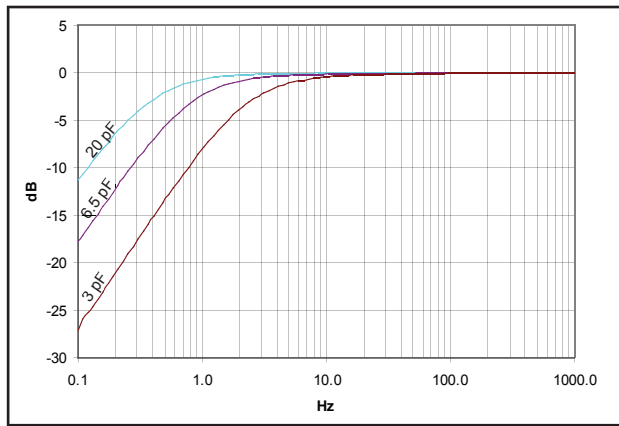


Fig. 3 Typical low-frequency response of Type 26AN for 1/2" (20 pF), 1/4" (6.5 pF) and 1/8" (3 pF) microphones

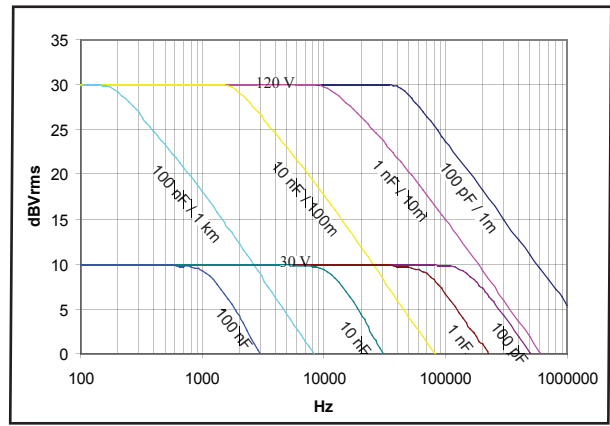


Fig. 4 Typical max. rms output signal with 120 V and 30 V supply

## Technical Data

### Frequency response (18pF/small signal):

2 Hz - 200 kHz ..... ±0.2 dB

### Input impedance:

20 GΩ, 0.4 pF

### Output impedance (Cs = 20 pF, f=1000Hz):

Typical ..... 55 Ω

### Noise (measured with 20 pF 1/2" dummy mic.):

A-weighted: ..... ≤2.2 μV rms  
(typically 1.8 μV rms)

Linear (20 Hz - 20 kHz): ..... ≤6 μV rms  
(typically 3.5 μV rms)

### Gain:

Typical: ..... -0.25 dB

### Power supply:

Single: ..... 28 V (0.7 mA) to 120 V (2.5 mA)

Dual: ..... ±14 V (0.7 mA) to ±60 V (2.5 mA)

### Maximum signal-output voltage (peak):

from ±10 V to ±50 V

### Temperature:

Operation: ..... -30°C to +70°C

Storage: ..... -40°C to +85°C

### Relative humidity:

Operation: ..... 0 to 95%

Storage: ..... 0 to 95%

### Dimensions (ex. cable):

Diameter: ..... 12.7 mm (1/2")

Length: ..... 77.5 mm (3.05")

Weight: ..... 33g (1.1 oz)

## Accessories

### Included

AA0008: 1/4" to 1/2" Adapter for use with G.R.A.S. 1/2" microphones

### Optional

RA0017: 1" to 1/2" adaptor for use with G.R.A.S. 1" microphones

RA0019: 1/4" to 1/2" adaptor for use with G.R.A.S. 1/4" microphones

RA0001: Right-angled (90°) Adapter for 1/2" microphone and 1/4" preamplifier

RA0003: Adapter for 1/2" microphone and 1/4" preamplifier

RA0006: Angled (90°) Adapter 1/4" to 1/4".

AA0008: Extension cable, 3 metres

AA0009: Extension cable, 10 metres

AA0012: Extension cable, 30 metres

AA0014: Extension cable, 100 metres

AA0020\_XX: Extension cable, XX metres (customer-specified length)

AA0013: Tripod adapter for 1/4" preamplifier

RA0096: Tripod adapter for 1/4" preamplifier with angular adjustment

G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice.

**G.R.A.S.**  
SOUND & VIBRATION

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