¼″ Preamplifier Type 26AL, Built-in SysCheck

Product Data

Typical Applications

- General-purpose preamplifier
- High-frequency measurements
- High-pressure measurements
- In-situ check of complete measurement chains

Special Properties

- Wide Frequency Range
- Low Noise Level
- Very Small
- Built-in SysCheck for easy validation of the measurement chains

Description

The G.R.A.S. ¼″ Preamplifier Type 26AL is a small robust unit optimised for acoustic measurements using condenser microphones. Type 26AL has a very low inherent noise level, a wide dynamic range and a frequency response from below 2 Hz to above 200 kHz. It is similar to Type 26AC, but has a built-in SysCheck capability. This enables in-situ checks of the complete measurement chain from microphone to analyser. The SysCheck technique works by modulating the microphone polarisation voltage.

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 this preamplifier ensure reliable operation under humid conditions owing to the heat generated by internal power dissipation.

Dynamic Range

Type 26AL can handle both single and dual-sided power supplies. The supply can vary between 28 V_{DC} and 120 V_{DC} single-sided or ±14V_{DC} and ±60 V_{DC} dual-sided. When using the high supply voltage (120V_{DC}or ±60V_{DC}), the dynamic range exceeds 140 dB.

Fig. 1 ¼″ Preamplifier Type 26AL, Built-in SysCheck

Noise

The electrical circuit in Type 26AL 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 26AL 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 ½″, ¼″ and ⅛″ 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 26AL 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).

Connector

Preamplifier Type 26AL (Fig. 1) is provided with a 3-m lightweight cable terminating in a 7-pin LEMO series 1B plug (Fig. 2). The cable is only 2.5 mm in diameter and will withstand temperatures from -40 °C to +150 °C. An adapter (GR0010) for G.R.A.S. ½″ microphones is included.

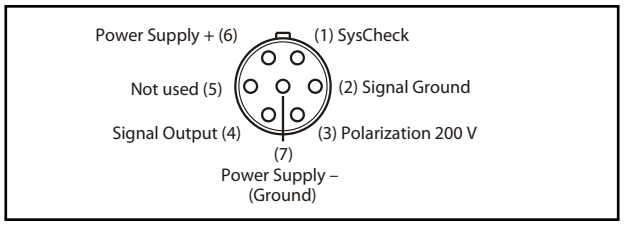

Fig. 2 7-pin LEMO plug 1B male (ext. view)

G.R.A.S.
SOUND & VIBRATION

Skovlytoften 33,
2840 Holte, Denmark
www.gras.dk gras@gras.dk

Specifications

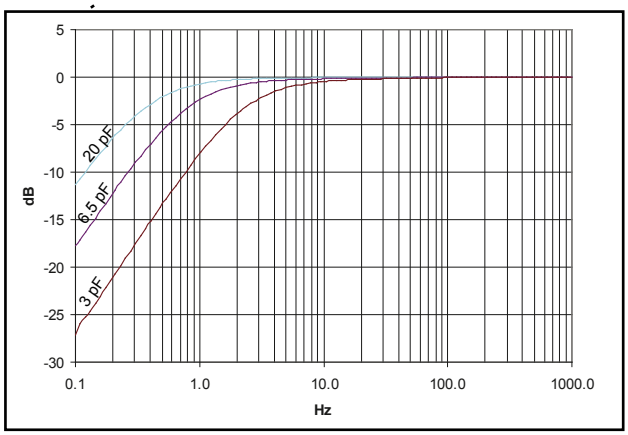

Fig. 3 Typical low-frequency response of Type 26AL for ½(20 pF), ¼″ (6.5 pF) and ⅛″ (3 pF) microphones

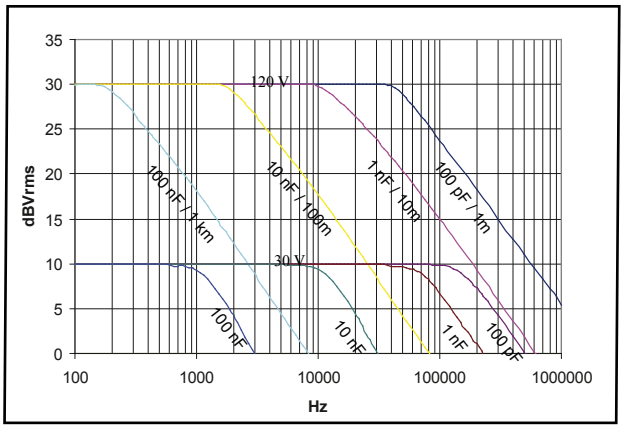

Fig. 4 Typical max. rms output signal with 120 V and 30 V supply

Technical Data

Frequency response (18pF/small signal):
2.5 Hz - 200 kHz . . . . . ±0.2 dB

Slew rate:
20 V/µs

Input impedance:
20 GΩ, 0.65 pF

Output impedance (Cs = 20 pF, f = 1000Hz):
Typical . . . . . 75 Ω

Noise (measured with 20 pF ½″ dummy mic.):
A-weighted:. . . . . ≤2.5 µV rms
(typically 1.8 µV rms)
Linear (20 Hz - 20 kHz): . . . . . ≤6 µV rms
(typically 3.5 µV rms)

Gain*:
Typical: . . . . . -0.35 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 and Weight:
Diameter: . . . . . 6.35 mm (¼″)
Length: . . . . . 43 mm (1.7″)
Weight (without cable):. . . . . 6 g (0.2 oz)
Weight (with cable + LEMO conn.): 50 g (1.8 oz)

Accessories

Included

GR0010:	¼″ to ½″ adapter for use with G.R.A.S. ½″ microphones

Optional

RA0001:	Right-angled (90°) Adapter for ½″ microphone and ¼″ preamplifier
RA0003:	Adapter for ½″ microphone and ¼″ preamplifier
RA0006:	Angled (90°) Adapter ¼″ to ¼″.
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 ¼″ preamplifier
RA0096:	Tripod adapter for ¼″ preamplifier with angular adjustment
Type 12AK:	1-Channel Power Module incl. SysCheck Generator
Type 12AA:	2-Channel Power Module incl. SysCheck Generator
Type 12AP:	8-Channel Power Module incl. SysCheck Generator
Type 12AQ:	Computer-controlled Power Module incl. SysCheck Generator

* Measured with 20 pF ½″ dummy microphone

G.R.A.S.
SOUND & VIBRATION

Skovlytoften 33,
2840 Holte, Denmark
www.gras.dk gras@gras.dk