

Voltage Preamplifier Type 12CA

Product Data and Specifications

Features

- 1 Hz to 1 MHz bandwidth
- 12 selectable hi-pass filter settings
- Six selectable gain settings
- 100 MΩ input impedance
- Excellent low-noise characteristics

The G.R.A.S. Voltage Preamplifier Type 12CA (Fig. 1) is a 1 MHz bandwidth single-ended voltage preamplifier for use with piezoelectric hydrophones and a variety of transducers. It has excellent low-noise performance over its entire frequency range.

It has 12 selectable hi-pass filter settings and six selectable gain settings.

Its high input impedance of 100 MΩ allows for low-frequency measurements with even very small sensor-element capacities.

The Type 12CA has a water splash proof aluminium cabinet.

Brief Operating Guide

The Voltage Preamplifier Type 12CA will amplify hydrophone signals. It has two BNC connectors (one input, one output), one power-supply input (for volt-



Fig. 1 The Voltage Preamplifier Type 12CA

ages ranging from 12 - 18V DC) and two rotary switches; one for hi-pass filters, and one for gain settings (see Fig. 2).

The Type 12CA transforms high-impedance signals to low-impedance signals. This allows the output signal of the Type 12CA to be fed directly to measuring apparatus such as oscilloscopes, analyzers, and recorders. It can be used with high-frequency measurement hydrophones, but still allows hydrophones to measure down to 1 Hz (its inherent noise decreases with increasing frequency, see Fig. 3).

Hi-pass filters are for excluding signals below certain cut-off frequencies. Fig. 5. shows graphically

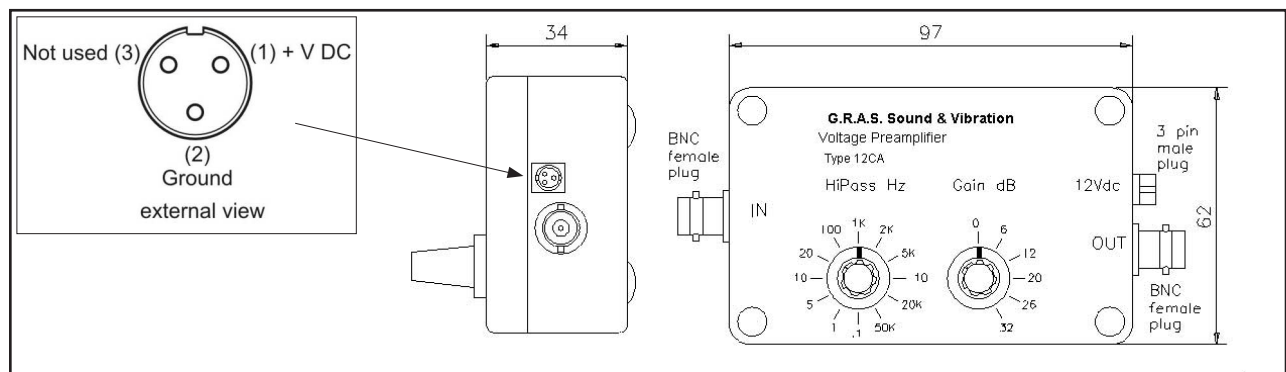


Fig. 2 Overall physical dimensions of the Voltage Preamplifier Type 12CA

G.R.A.S.
Sound & Vibration

Skovlytoften 33
2840 Holte, Denmark
Tel +45 45 66 40 46 Fax +45 45 66 40 47
e-mail: gras@gras.dk www.gras.dk

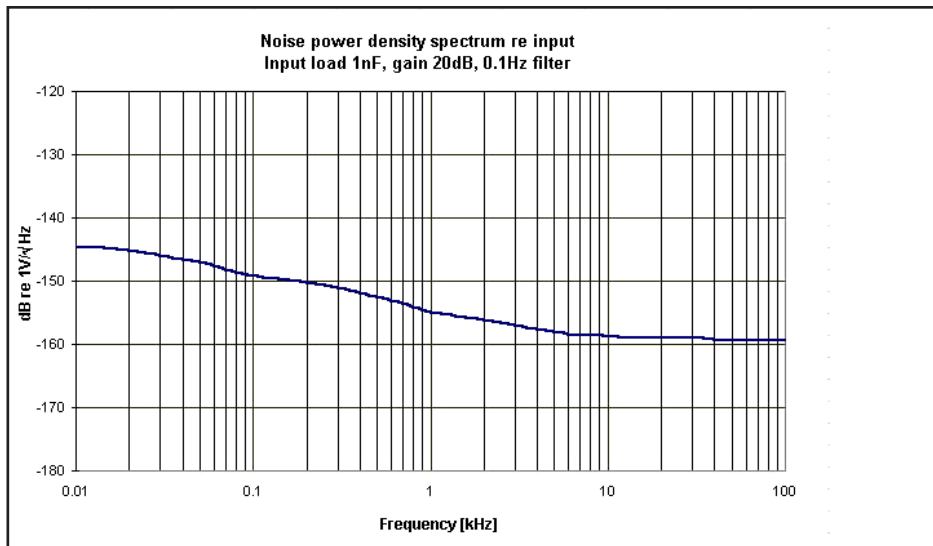


Fig. 3 Power spectral density of inherent noise re. input.
Input load 1 nF, gain setting 20 dB, 0.1 Hz filter

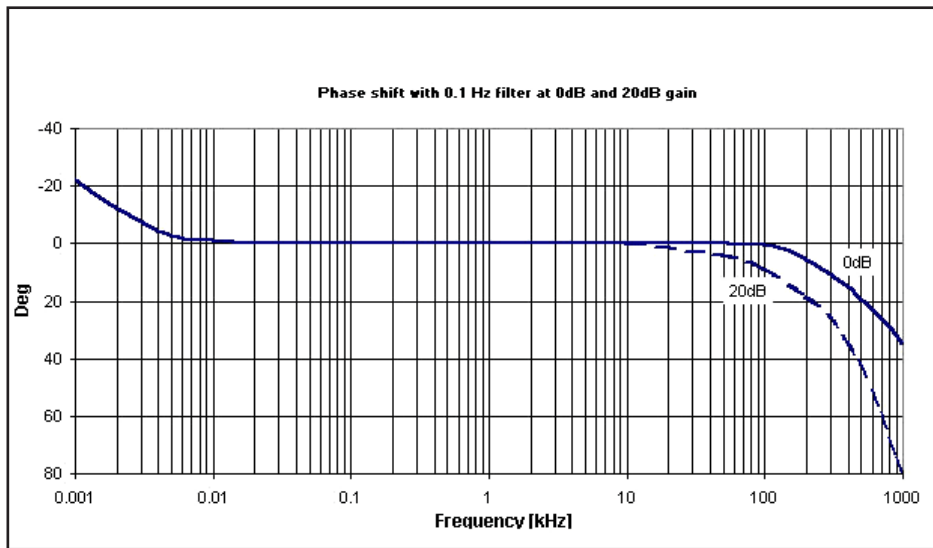


Fig. 4 Phase response with 0.1 Hz filter and gain settings of 0 dB and 20 dB

the cut-off frequency of each hi-pass filter in the Type 12CA.

The gain function is for raising the hydrophone signal above the level of inherent noise in the subsequent chain of measuring equipment, which may otherwise be dominant. However, note that gain settings above 20 dB will result in a roll off at the higher frequencies (see Fig. 6).

Fig. 3 shows a plot of the inherent noise of the Type 12CA in terms of power spectral density and Fig. 4 shows its phase response for gain settings of 0 dB and 20 dB.

Fig. 7 shows details of the Supply Cable TL 8088.

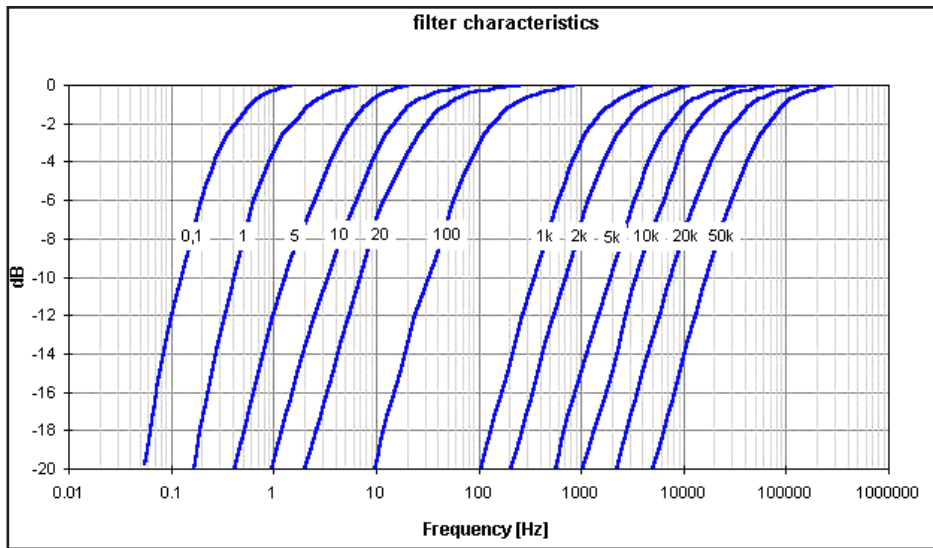


Fig. 5 Characteristics of each hi-pass filter and cut-off frequency

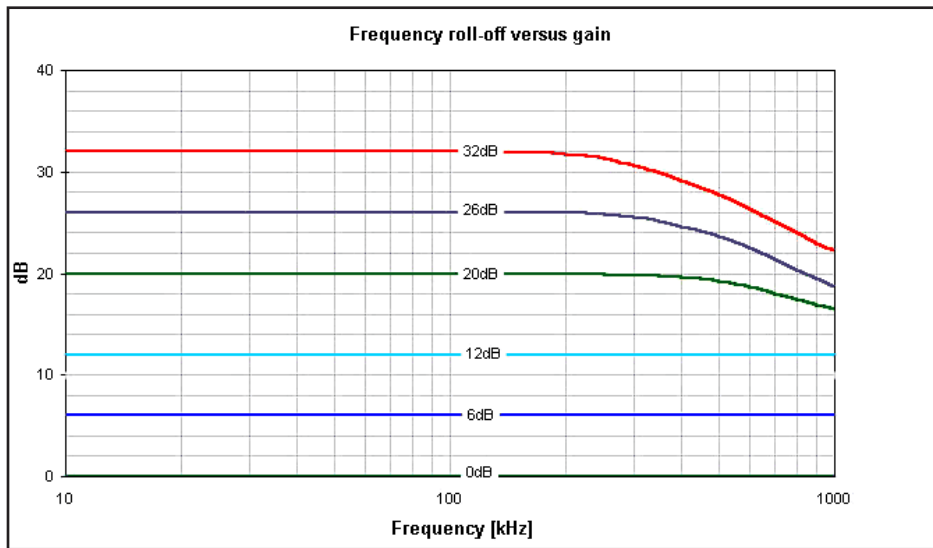


Fig. 6 High-frequency roll-off for each gain setting

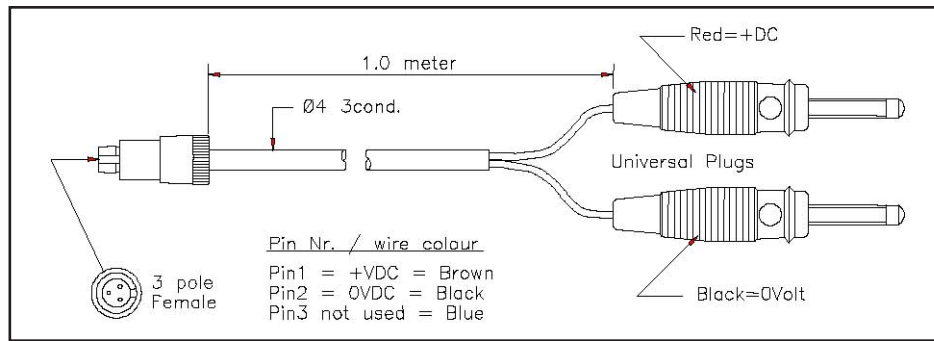


Fig. 7 Details of Supply Cable TL 8088

Specifications

<p>Input: Max. impedance: 100MΩ/2.5 pF Maximum level: 2.8 V RMS for a 12 V power supply</p> <p>Output: Impedance: 10Ω/100μF Maximum level: 2.8 V RMS at 0 dB gain Maximum load: 10 nF (= 100 m cable) DC offset: 0 V Phase absolute -180°</p> <p>Gain: Gain settings: 0, 6, 12, 20, 26, 32 dB Tolerance: \pm0.5 dB</p> <p>Noise (power spectrum density): at 1 kHz: 20 nV/\sqrtHz</p>	<p>Hi-pass filters (dB @ Hz): -3 dB: 1, 5, 10, 20, 100, 1 k, 2k, 10k, 20k and 50kHz -12 dB: 0.1 Hz</p> <p>Bandwidth: Operating frequency range -3 dB at 20 dB gain: 0.5 Hz to 1 MHz</p> <p>Power supply: Nominal voltage: 12 VDC (min. 9 VDC, max. 18 VDC) Quiescent current : 12 mA at 12 VDC</p> <p>Weight (including cable and LEMO adapter): 305 gm</p> <p>Accessories included: Supply cable: TL 8088 (see Fig. 7)</p>
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice

G.R.A.S.
Sound & Vibration

Skovlytoften 33
 2840 Holte, Denmark
 Tel +45 45 66 40 46 Fax +45 45 66 40 47
 e-mail: gras@gras.dk www.gras.dk