# GRAS 12AQ

## 2-Channel Universal Power Module with signal conditioning and PC interface


Connection: Traditional 200 V / CCP
Channel(s): 2

The GRAS 12AQ Power Module is a dual-channel power supply for preamplifiers (CCP as well as traditional) used with measurement condenser microphones.

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## Typical applications and use

- General-purpose dual-channel precision measurements
- Intensity measurements
- Standard and custom signal conditioning
- Manual and digital control
- CCP and traditional power supplies
- 0 V or 200 V polarization

## Design

It has facilities for both manual control and remote control. Manual control is via its front-panel switches and push-buttons. Remote control is via its RS232 interface.

The 12AQ is for general use in acoustic measurements as well as for intensity measurements; both in the laboratory and in the field.

### Traditional Preamplifiers

For traditional preamplifiers such as 26AL (¼ ) or 26AJ and 26AH (½ ), the 12AQ provides:

- Voltage supply (± 15 V or ± 60 V) for powering up to two microphone preamplifiers
- Polarization voltage (200 V or 0 V) for two condenser microphones

### CCP Preamplifiers

For CCP (constant-current power) preamplifiers such as 26CB and 26CC (¼ ) or 26CA and 26CF (½ ), the 12AQ provides a constant current supply (4 mA) sourced at 28 V DC for two CCP microphone preamplifiers.

### Signal Conditioning

Each channel can be set-up independently in terms of gain, filter, input, output and polarization voltage.

### Gain

The gain can be set from – 20 dB to 70 dB in discrete steps of 10 dB.

A series of front-panel LEDs follows and indicates the current gain setting.

### Filter

The filter characteristics can be selected from one of the following:

- Lin for linear response with a high-pass filter of 0.2 Hz
- HP for linear response with a high-pass filter of 20 Hz
- AW for an A-weighted response
- Ext for an optional, customized signal-response network (contact GRAS for further details)

### Input

The microphone signal can enter the 12AQ via either of the following input sockets on the rear panel.

- BNC sockets for microphones used with CCP preamplifiers
- 7-LEMO sockets for microphones used with traditional preamplifiers

### Output

The conditioned output signals, via the BNC output sockets on the rear panel, can be made available as either floating or non-floating.

### Polarization voltage

Applicable to 7-pin LEMO preamplifier inputs on the rear panel. Can be set to either 0 V or 200 V.

### Preamplifier supply voltage

This can be set to either ± 15 V or ± 60 V. The chosen value will apply to both 7-pin LEMO preamplifier inputs.

### Power Supply

The 12AQ can be powered either by internal standard alkaline cells (6 x LR14 {C}) or from the included mains/line Adapter for either 115 V AC or 230 V AC.

## Warranty

All GRAS products are made of high-quality materials that will ensure life-long stability and robustness. The 12AQ is delivered with a two-year warranty. The warranty does not cover products that are damaged due to negligent use.

## Service and Repairs

All repairs are made at GRAS International Support Center located in Denmark. Our Support Center is equipped with the newest test equipment and staffed with dedicated and highly skilled engineers. Upon request, we make cost estimates based on fixed repair categories. If a product covered by warranty is sent for service, it is repaired free of charge, unless the damage is the result of negligent use or other violations of the warranty.

| | | |
|---|---|---|
| Frequency response (±0.1 dB) @ Gain ≤50 dB | Hz | 10 to 100 k |
| Frequency response (±0.2 dB) @ Gain ≤50 dB | Hz | 2 to 200 k |
| Frequency response (±0.1 dB) @ Gain >50 dB | Hz | 10 to 20 k |
| Output channel(s) | | 2 |
| Output impedance | | 100 |
| Direct coupling input to output | | No |
| Inherent noise, LIN (20 Hz to 20 kHz) re input, when not dominated by output | µVrms | <2 |
| Inherent noise, LIN (20 Hz to 200 kHz) re input, when not dominated by output | µVrms | <5 |
| Inherent noise, (20 Hz to 20 kHz) re input, when dominated by output | µVrms | <10 |
| Inherent noise, (20 Hz to 200 kHz) re input, when dominated by output | µVrms | <30 |
| Gain settings, 10 dB steps | dB | -20 to +70 |
| Gain error | dB | ± 0.1 |
| Phase matching, equal gain, no filters | | IEC 61043 |
| A-weighting filter according to | | IEC 61672 Class 1 |
| High-pass filter | | 3-pole Butterworth, -3 dB @ 20 Hz |
| Linear mode | | Yes |
| SysCheck level @ 1 kHz | Vrms | 1 |
| Type | | Constant Current Power (CCP) and Traditional power supply (LEMO) |
| Input channel, CCP | | 2 |
| Input channel(s), traditional power supply | | 2 |
| Preamplifier supply | V | ±15 / ±60 |
| CCP preamplifier supply @ +28 V | mA | 4 |
| Polarization voltage | V | 0 / 200 |
| Overload indication | | Yes |

| | | |
|---|---|---|
| Overload level | Vp | 9 |
| PC controlable | | Yes |
| External filter option | | Yes |
| Power amplifier overload detection | | No |
| Power supply, battery | | 6 x LR14 (C) |
| Power supply, external | Vdc | 8 to 18 |
| Battery low indication | | Yes |
| Temperature range, operation | °C / °F | -10 to +50 / 14 to 122 |
| Weight | g / oz | 1,350 / 47.62 |
| Weight with batteries | g / oz | 1,750 / 61.7 |

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

## Included Items

| | |
|---|---|
| GRAS EL0002 | Battery LR14 (6pcs incl.) |
| GRAS AA2005 | RS-232 cable, 1,8 m |
| One of these Power Supplies: | (Depending on country) |
| GRAS AB0002 | Power supply 230 VAC to 15 VDC. EU-connector |
| GRAS AB0006 | Power supply 230 VAC to 15 VDC. UK-connector |
| GRAS AB0003 | Power supply 120 VAC to 15 VDC. USA-connector |

## Optional Items

| | |
|---|---|
| GRAS RP0001-XX | Customised Signal-response Network for switch pos.<br>**Ext.** To be factory mounted.<br>Contact your GRAS representative if needed |
| 12 AQ-S20 | 12AQ Power Module (Excluding Power Supply) |

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# 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 and related equipment for industries where acoustic measuring accuracy and repeatability are of the utmost importance. This includes applications and solutions for customers within the fields of aerospace, automotive, audiology, consumer electronics and other highly demanding industries. GRAS microphones are designed to live up to the high quality, durability and accuracy that our customers have come to expect, trust and require.
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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