

GRAS 12AU

1-Channel Universal Power Module with signal conditioning and power amplifier



Connection: Traditional 200 V / CCP
Channel(s): 1

The GRAS 12AU is a supply and conditioning amplifier for simultaneously powering a preamplifier for a condenser microphone and an amplifier for a loudspeaker. It is ideally suited for automated production line testing of micro speakers and mobile devices with built-in speaker.

Typical applications and use

Electroacoustic tests of:

- Telephones
- Hearing aids
- Loudspeakers
- Portable devices, for example, tablets, GPS, etc.

Design

It is designed for automated production line testing of key loudspeaker parameters, such as frequency response, rub and buzz, THD, and impedance. The 12AU's design makes it ideally suited for test of portable devices with built-in loudspeaker such as mobile phones, hearing aids, tablets, and GPS devices.

The inherent noise is very low, and by design, it avoids system-generated noise, for example from ground loops. In a measurement setup, it controls the paths of (a) the signal sent out to the loudspeaker and (b) the resulting acoustic signal picked up by a condenser microphone fitted to the preamplifier.

It is remotely controlled via its USB interface and is delivered with a control program for Microsoft Windows®.

Features

- Single-channel conditioning amplifier suited for both CCP and 200 V LEMO preamplifiers
- Very low inherent noise
- The speaker input and the analog outputs are floating with respect to common ground to avoid system-generated noise
- Speaker amplifier with measurement of loudspeaker impedance without disturbing the

speaker

- Fulfills EMC requirements according to EU regulations
- Full remote control via USB interface
- Gain settings:
 - Microphone conditioner: 0 to 50 dB in 10 dB steps
 - Speaker amplifier: -20 dB to +10 dB in 10 dB steps
 - Current output: 0 dB and +20 dB
- Filters:
 - Microphone amplifier: 1 Hz or 20 Hz
 - Speaker amplifier: DC or AC coupling (10 Hz)
- Comprehensive status and overload indication
- Rack-mountable in 19" rack.

Measurement Control with 12AU

In a complex measurement setup, it is often difficult to avoid system-generated noise. Also, it can be tedious to correctly set up all the parameters of the measurement chain with respect to sensitivity, gain, filtering and overload handling.

With the 12AU, you can control the loudspeaker amplifier and microphone conditioner simultaneously.

The 12AU is remote-controlled via its USB interface and a control program for Windows. You can operate the 12AU using a graphical user interface or by entering commands. Multiple 12AUs can be controlled from the same PC.

These features make the 12AU ideal for automated production line testing.

Technical Specifications

All outputs except the speaker amplifier output have

fixed 100 kHz (3 dB) low pass filters to minimize the need for anti-aliasing filtering in the following analyzing equipment. There is no phase shift between microphone input and output due to prepolarized or externally polarized microphones. It is designed without relays.

Warranty

All GRAS products are made of high-quality materials that will ensure life-long stability and robustness. The 12AU is delivered with a 2-year warranty. The warranty does not cover products that are damaged due to negligent use.

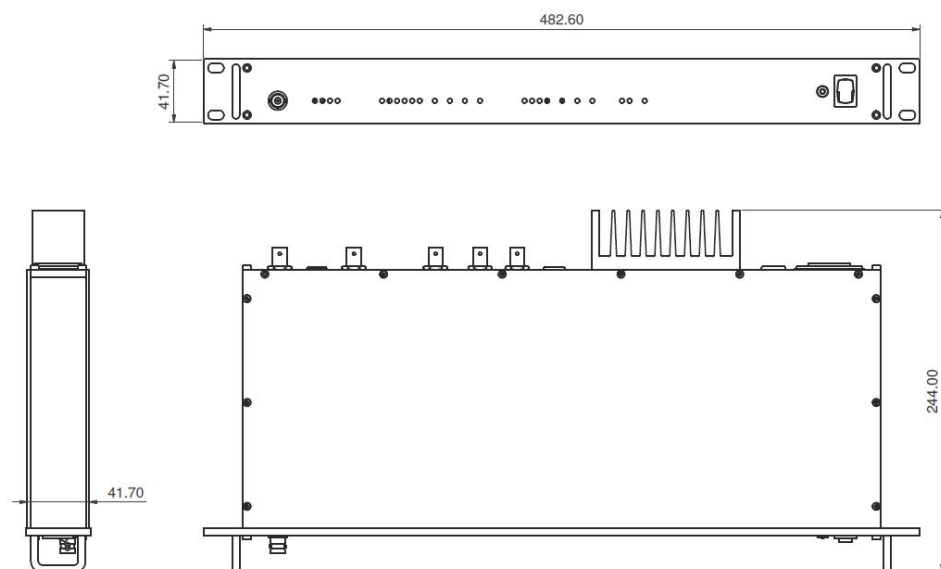
Service and Repairs

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.

| | | |
|---|------------------|--|
| CONDITIONING | | |
| Frequency range (± 3 dB) | Hz | 1 to 100 k |
| Output channel(s) | | 1 |
| Output impedance | Ω | 100 |
| Direct coupling input to output | | No |
| Inherent noise, LIN (20 Hz to 20 kHz), grounded input | μVrms | <1.5 (≥ 20 dB Gain) |
| Inherent noise, LIN with dummy microphone (20 Hz to 20 kHz) | μVrms | < 5 |
| Gain settings, 10 dB steps | dB | 0 to + 50 |
| Gain error | dB | < 0.2 |
| High-pass filter | | 3-pole Butterworth, -1 dB @ 20 Hz |
| Linear mode | | Yes |
| Type | | Constant Current Power (CCP) and Traditional power supply (LEMO) |
| Input channel, CCP | | 1 |
| Input channel(s), traditional power supply | | 1 |
| Preamplifier supply | V | ± 15 |
| CCP preamplifier supply @ +28 V | mA | 4 |
| Polarization voltage | V | 0 / 200 |
| Overload indication | | Yes |
| PC controlable | | Yes |
| Monitor output connector | | BNC |
| Monitor output impedance | Ω | 100 |
| POWER AMPLIFIER | | |
| External filter option | | No |
| Power amplifier input impedance | Ω | 10 k |
| Power amplifier output connector | | 2-pin LEMO |
| Power amplifier output current monitor connector | | BNC |

| | | |
|---|---|------------------------|
| Power amplifier output current | Ap | 1.4 |
| Power amplifier gain settings, 10 dB steps | dB | -20 to 10 |
| Power amplifier frequency range | Hz | DC to 30 k |
| Power amplifier phase shift response (± 1 deg) | Hz | DC to 20 k |
| Power amplifier output voltage | Vp | ± 13.5 |
| Power amplifier overload detection | | Yes |
| POWER SUPPLY | | |
| Power supply, external (± 10 %) | Vac | 110 to 240 |
| Battery low indication | | No |
| Fuse | mA | 500 |
| Temperature range, operation | $^{\circ}\text{C}$ / $^{\circ}\text{F}$ | -10 to +50 / 14 to 122 |
| Weight | g / oz | 2500.00 / 88.18 |

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



All dimensions in mm.

GRAS Worldwide

Subsidiaries and distributors in more
than 40 countries

HEAD OFFICE, DENMARK

GRAS SOUND & VIBRATION

Skovlytoften 33
2840 Holte
Denmark
Tel: +45 4566 4046
www.GRASacoustics.com
gras@grasacoustics.com

USA

GRAS SOUND & VIBRATION

9290 SW Nimbus Avenue
Beaverton, OR 97008
Tel: 503-627-0832
Toll Free: 800-231-7350
www.GRASacoustics.com
sales-usa@grasacoustics.com

UK

GRAS SOUND & VIBRATION

Unit 115, Gibson House,
Ermine Business Park, Huntingdon,
Cambridgeshire, PE29 6XU
Tel: +44 (0) 7762 584 202
www.GRASacoustics.com
sales-uk@grasacoustics.com

CHINA

GRAS SOUND & VIBRATION

Room 315, RuiBo Center(T1)
Lane683, Shenhong Rd,
Minhang District,
Shanghai, China, 201107
Tel: +86 21 64203370
www.GRASacoustics.cn
cnsales@grasacoustics.com



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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