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.

GRAS Sound & Vibration
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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

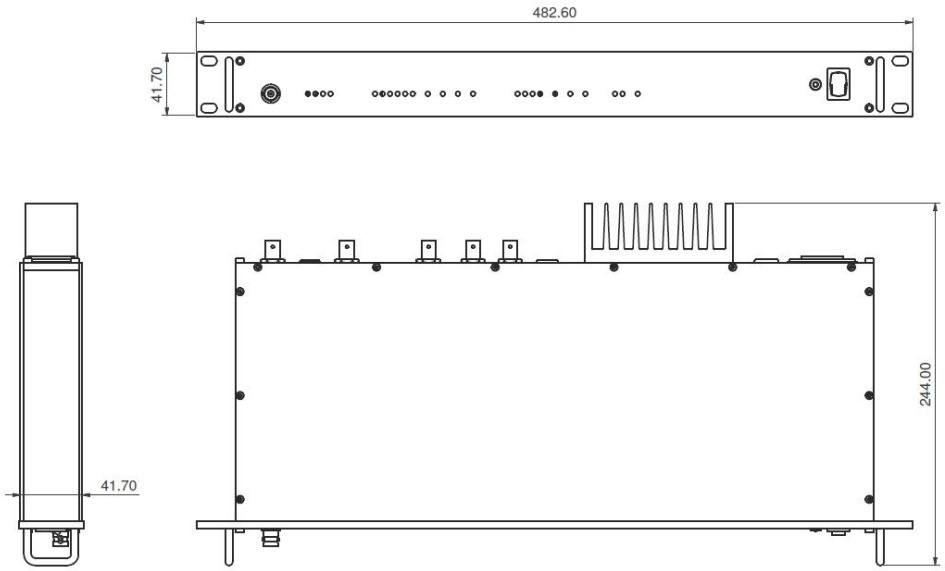
All repairs are made at GRAS International Support Center located in Denmark. Our Support Center is equipped with the newest test equipment and staffed with dedicated and highly skilled engineers. Upon request, we make cost estimates based on fixed repair categories. If a product covered by warranty 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 micophone (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 amplifer 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	°C / °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.

Dimensions



All dimensions in mm.

GRAS Worldwide

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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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