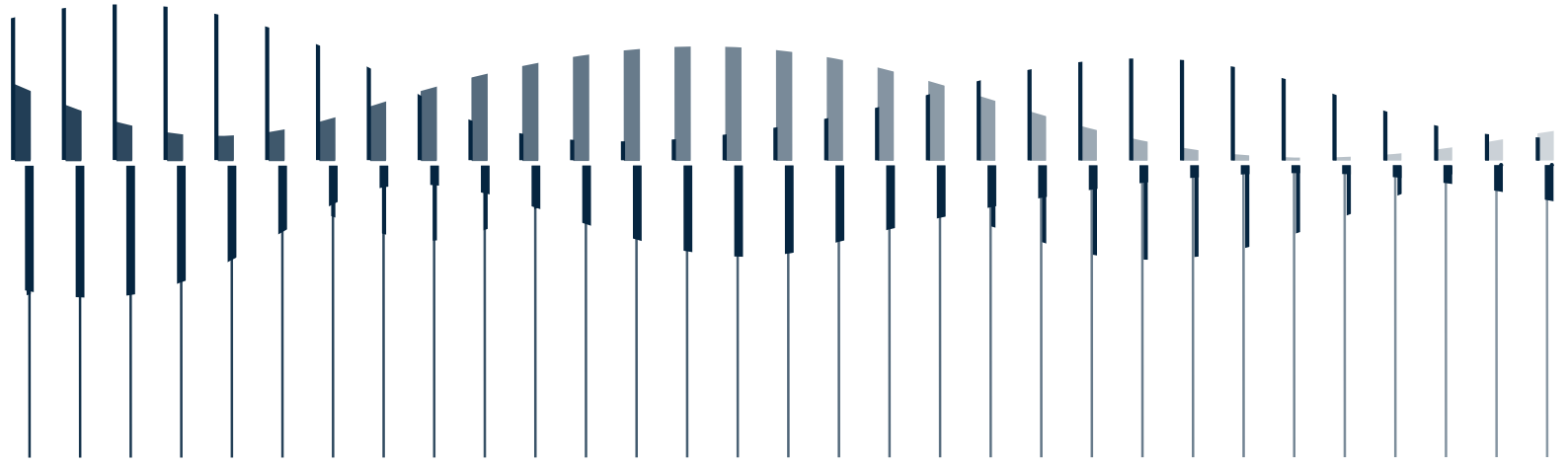
Instruction Manual

GRAS 12AN Power Module



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GRAS

An Axiometrix Solutions Brand

Revision History

Revision	Date	Description
1	2005	First edition
2	2026-06-24	Addede section 4.1: Hum and Noise in your Measurement Setup. New GRAS logo, Small layout design changes.

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1. Introduction and Description

The GRAS Power Module Type 12AN (Fig. 1) is a portable, four-channel power supply for use with microphone preamplifiers and condenser microphones. It provides:

- a polarization voltage for four condenser microphones
- a voltage supply of ±15 V DC for powering up to four microphone preamplifiers

1.1 Polarization Voltage

The polarization voltage can be set to either 0 V or 200 V via a switch on the rear panel (see Fig. 2.3). This switch is latched to avoid inadvertently changing its setting. Just pull the latch on the switch before changing the setting. Use:

- 0 V for prepolarized microphones, and
- 200 V for externally-polarized microphones

1.2 Power Supplies

The Type 12AN can run on batteries with a battery life of approximately 25 hours using GRAS preamplifiers, or from an external power supply of 6 - 20 V DC (see section 3).

1.3 Input/Output

The Type 12AN has four 7-pin LEMO input connectors for microphone preamplifiers such as the GRAS Preamplifiers Types 26AM, 26AC and 26AK. These input connectors are also compatible with a range of microphone preamplifiers from other suppliers such as Norsonic, L&D and Brüel & Kjær. The output signals of the four microphone preamplifiers are available via standard BNC sockets for direct use with analyzers, voltmeters, oscilloscopes etc. These output signals from the LEMO input connectors (pin 4 - see Fig. 2.2) are AC coupled to their respective BNC output connectors.

Fig. 1.1 Power Module Type 12AN

2. External Features

2.1 Front Panel

The front panel has the following features (see also Fig. 2.1):

- Four 7-pin LEMO input connectors for microphone preamplifiers. Wiring diagram is shown in Fig. 2.2.
- Four BNC output sockets for the output signal of each microphone preamplifier.
- Power switch with two LEDs: green “OK”, red “Batt. Low”.

2.2 Rear Panel

The rear panel has the following features (see also Fig. 2.3):

- Input socket for an external voltage supply of 6 - 20 V DC; centre pin +terminal.
- Twist/release holder for 200 mA low-impedance, slow-blow fuse.
- Latched switch for selecting a polarization voltage of either 0 V (for prepolarized microphones) or 200 V (for externally-polarized microphones).
- Detachable battery drawer for housing 4 alkaline cells LR 6 /AA. The use of an external voltage supply automatically disables power from the batteries.

Fig. 2.1 Front panel of the Power Supply Type 12AN

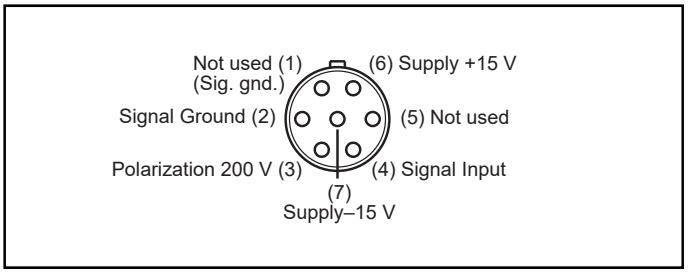

Fig. 2.2 7-pin LEMO female socket 1B (external view)

Fig. 2.3 Rear panel of Power Supply Type 12AN

3. Batteries and External Power

The Power Supply Type 12AN can be powered either by internal batteries or from an external power supply. If an external DC power supply is connected via the **Ext. Supply** socket on the rear panel; any batteries inside the unit will automatically be disconnected.

The external power supply should be a mains/line adapter regulated to supply 6 - 20 V DC with the centre pin as the + terminal. When the Type 12AN is switched on via the **I**–**O** switch on the front panel, the green **Power** LED will light up, and the red **Low Batt.** indicator should remain extinguished to ensure correct operation of the unit. If the **Low Batt.** LED lights up, either the external power supply voltage is too low, or the batteries need changing. To ensure valid measurements, we recommend that you change batteries whenever the **Low Batt.** LED is lit; there will be approximately ½ hour's use left after it first warns of low batteries.

To change the batteries, squeeze and pull out the battery drawer from the battery compartment on the rear panel (see Fig. 3.1). Remove all 4 batteries and replace them with fresh ones, making sure to observe the correct polarity as indicated in the battery drawer. Use alkaline batteries size AA or LR6. Replace the battery drawer in the battery compartment.

If the fuse blows, first rectify the cause then replace it with a new low-impedance slow-blow fuse rated at 200 mA.

Fig. 3.1 Battery drawer open: note polarity of batteries

4. Operation

1. Make sure that power is available to the Type 12AN (see section 3) but don't switch it on yet.
2. Select which polarization to use (200 V for externally polarized microphones or 0 V for pre-polarized microphones).
3. Mount the microphone(s) on to the preamplifier(s)
   Note: all four microphones must be compatible with the polarization voltage selected in step 2.
4. Insert the LEMO plugs of the preamplifiers into the **Input** sockets of the Type 12AN.
5. Using suitable leads, connect the **Output** sockets of the Type 12AN to analyzers, voltmeters, oscilloscopes etc., and switch them on.
6. Switch on the Type 12AN.
7. Adjust the analyzers, voltmeters, oscilloscopes etc. to gauge correctly the signals from the Type 12AN.

4.1 Hum and Noise in your Measurement Setup

If you unexpectedly experience hum and noise in your measurement setup, this can be caused by ground loops or interference from other equipment, EMC interference.

Ground Loops:

Ground loops are primary caused by difference in electrical potential between the instrumentation in a measurement setup due to separate grounding points between the different instruments.

This can result in an unwanted current flow through the ground conductor, which will cause hum, buzz, and interference in the whole system, typically at lower frequencies around 50 – 60 Hz and their higher harmonics.

To avoid ground loops the different instruments in the measurement setup must be connected to the same power outlet or have the same ground connection.

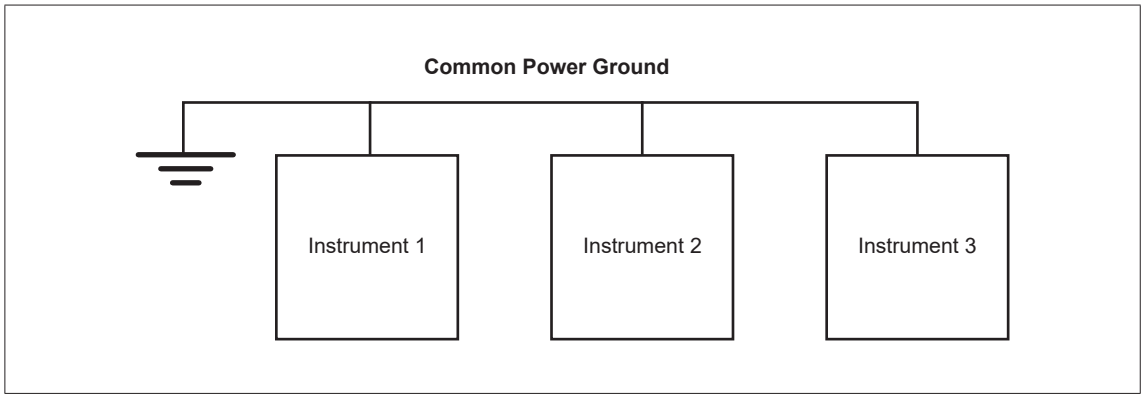

Fig. 4.1 *Correct Ground Connection*

Interference from other instruments, EMC Interference:

Other instruments might create a field which will interfere with the rest of the instruments in the measurement setup. This interference is normally caused by an electromagnetic interference. In most cases due to an electrical transformer and switching circuit, such as the one used in many Mains Power Supplies, such as GRAS AB0002, AB0003, AB0005 (12AL only) and AB0006, available for the GRAS Microphone Power Modules.

For switching circuit in power supply AB0005, the interference might be seen at the mains frequency and its higher harmonics as well as the switching frequencies.

Note: To avoid this interference, the instruments creating the electromagnetic interference must be isolated from the rest of the measurement setup. This can be done by moving these instruments away from the rest of the instrumentation and place signal cables as far away as possible from these instruments.

Note: Cables transporting high power might also interfere with low power signal cables. To avoid this, the High-Power cables must be separated from the signal cables and placed in a certain distance from each other.

5. Service and Repair

Repairs should be carried out only by qualified personal. The Power Module Type 12AN should not be dismantled with power on because of high-voltage circuits.

6. Specifications

Input/Output:

Inputs: Four 7-pin LEMO 1B female sockets for microphone preamplifiers

Outputs: Four BNC coaxial sockets for the output signals of the microphone preamplifiers

Output impedance:

30 Ω

Frequency response:

±0.2 dB: 0.05 Hz - 200 kHz

Preamplifier supply voltages:

Preamplifier: ±15 V

Polarization: 200 V (can be switched to 0 V when using prepolarized microphones)

Power supplies:

4 x LR6 (AA) standard alkaline cells or

Mains/line adapter supply regulated to 6 - 20 V DC

Power consumption:

With external power supply 130 mA with four GRAS preamplifiers

Battery life:

Approximately 25 hours using alkaline batteries and four GRAS preamplifiers (Valid at 23 ºC)

Fuse:

200 mA (Slow), 250 V

(Low-impedance fuse)

Operating temperature range:

–10 °C to +50 °C

Dimensions:

Height: 44 mm

Width: 210 mm

Depth: 194 mm

Weight:

1.2 kg without batteries.

Accessories included:

EL0001: 4 x LR6 (AA) batteries

Mains/line adapter supply regulated to 15 V DC

AB0002: for 230 V AC or

AB0003: for 120 V AC

Manufactured to conform with:

CE marking directive: 93/68/EEC

WEEE directive: 2002/96/EC

RoHS directive: 2002/95/EC