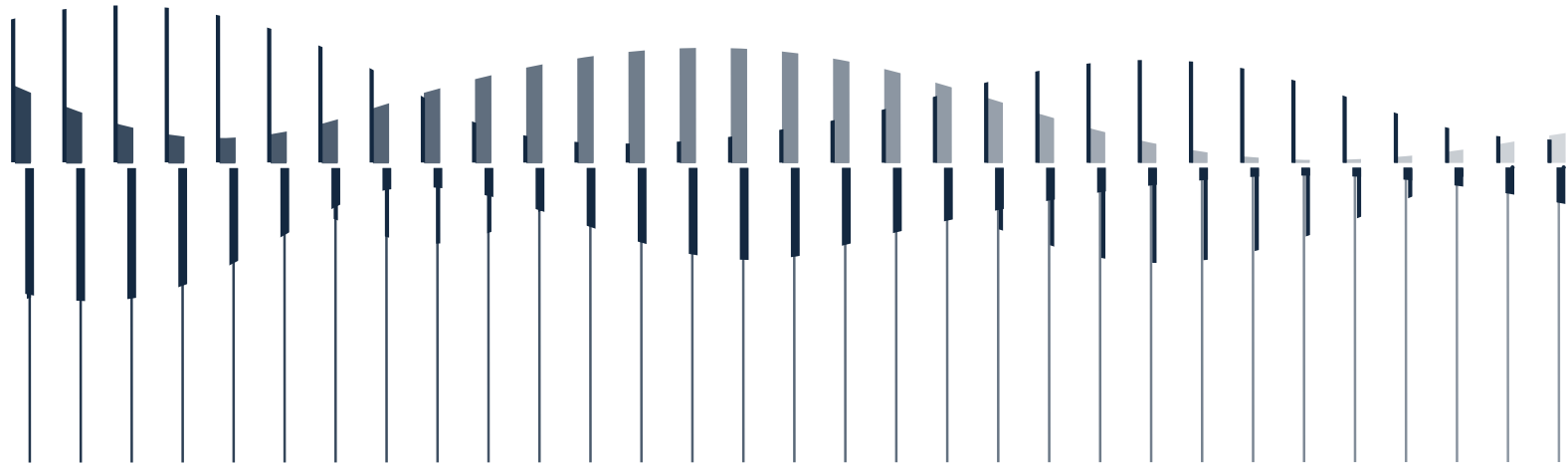




Instruction Manual

GRAS 12AC 6-Channel Power Module
for GRAS Vector-intensity Probe



Revision History

Revision	Date	Description
1	2019	First edition
2	2026-06-24	Addede section 4.1: Hum and Noise in your Measurement Setup. New GRAS logo, Small layout design changes. RoHS directive symbol added on page 8



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1. Introduction and Description

The GRAS Power Module Type 12AC (Fig. 1) is a portable, power supply for use with a GRAS 3-D Vector Intensity Probe Type 50VI - 1. For each pair* of intensity probes on the Type 50VI - 1, it provides:

- polarization voltages for the condenser microphones
- voltage supplies of $\pm 15\text{V}$ DC for powering the microphone preamplifiers

1.1 Polarization Voltage

The polarization voltage can be set to either 0V or 200V 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:

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

1.2 Power Supplies

The Type 12AC can run on batteries with a battery life of approximately 20 hours using the GRAS preamplifiers supplied with the Vector Intensity Probe Type 50VI - 1, or from an external power supply of 6 - 20V DC (see section 3).

1.3 Input/Output

The Type 12AC has a 24-pin LEMO input connector dedicated for use with a GRAS 3-D Vector Intensity Probe Type 50VI - 1. The output signals of the three pairs of intensity probes on the Type 50VI - 1 are available via corresponding pairs of standard BNC sockets (marked accordingly X, Y and Z) for direct use with sound-intensity analyzers, voltmeters, oscilloscopes etc. Each pair of BNC sockets is AC-coupled to its respective pair of pins on the LEMO connector (see Fig. 2.2 and Table 2.1).



Fig. 1.1 Power Module Type 12AC

* The Type 50VI - 1 has three pairs.

2. External Features

2.1 Front Panel

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

- Three pairs of BNC output sockets for the output signals of the three pairs of microphone preamplifiers representing the X, Y and Z axes of the 3-D Vector Intensity Probe Type 50VI - 1.
- 24-pin LEMO input connector for the 6 microphone preamplifiers used in the 3-D Vector Intensity Probe Type 50VI - 1. Pin numbers are shown in Fig. 2.2 and pin functions are shown in Table 2.1.
- 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.

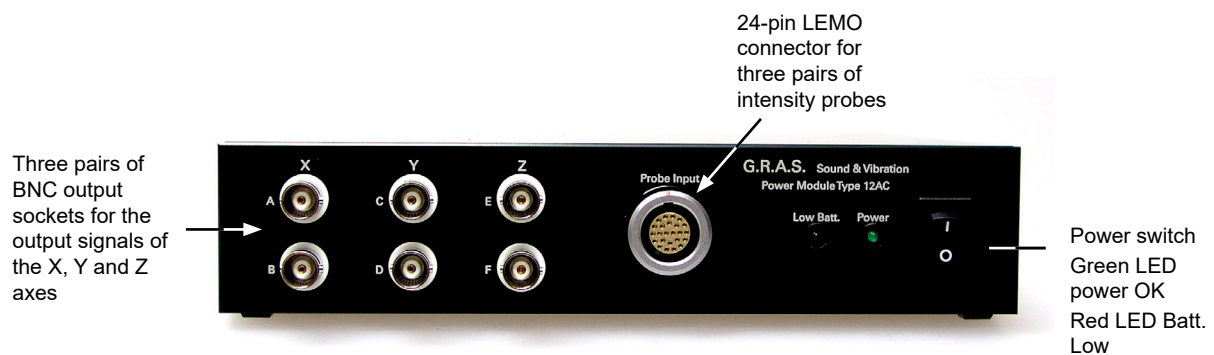


Fig. 2.1 Front panel of the Power Supply Type 12AC

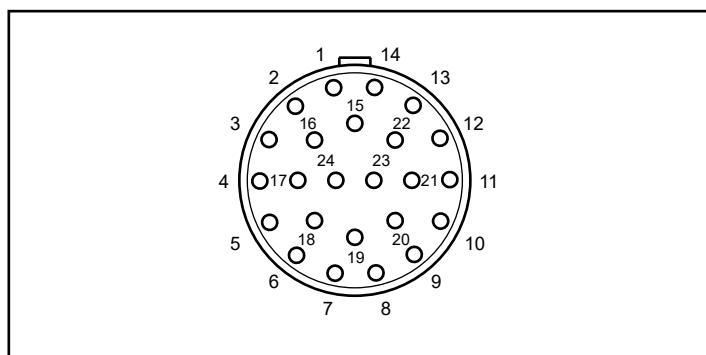


Fig. 2.2 External view of the pin numbers of the LEMO female socket ECG.3B.324 on the front panel of the Type 12AC (see also Table. 2.1)

Pin No.	Function	Pin No.	Function
1	Signal A	13	120V Preamp. supply C + D
2	Signal Gnd. A	14	Preamp. supply Gnd. C + D
3	200V Pol. Volt. A + B	15	Signal E
4	Signal B	16	Signal Gnd. E
5	Signal Gnd. B	17	200V Pol. Volt. E + F
6	120V Preamp. supply A + B	18	Signal F
7	Preamp. supply Gnd. A + B	19	Signal Gnd. F
8	Signal C	20	120V Preamp. supply E + F
9	Signal Gnd. C	21	Preamp. supply Gnd. E + F
10	200V Pol. Volt. C + D	22	not used
11	Signal D	23	not used
12	Signal Gnd. D	24	not used

Table. 2.1 Pin numbers (see Fig. 2.2) and their functions for the LEMO socket on the front panel of the Type 12AC



Fig. 2.3 Rear panel of Power Supply Type 12AC

3. Batteries and External Power

The Power Supply Type 12AC 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 - 20V DC with the centre pin as the + terminal. When the Type 12AC 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 200mA.



Fig. 3.1 Battery drawer open: note polarity of batteries

4. Operation

1. Make sure that power is available to the Type 12AC (see section 3) but don't switch it on yet.
2. Select which polarization to use (200V for externally polarized microphones or 0V for pre-polarized microphones).
3. Set-up the Vector Intensity Probe Type 50VI - 1 as described in its manual
Note: all six microphones must be compatible with the polarization voltage selected in step 2.
4. Connect the Type 12AC (**Probe Input**) to the Type 50VI - 1 (LEMO socket on base) using 10m cable AA0030 (supplied with the Type 50VI - 1).
5. Using suitable leads, connect the pairs of output sockets (**X, Y, Z**) of the Type 12AC to analyzers, voltmeters, oscilloscopes etc., and switch them on.
6. Switch on the Type 12AC.
7. Adjust the analyzers, voltmeters, oscilloscopes etc. to gauge correctly the signals from the Type 12AC.

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.

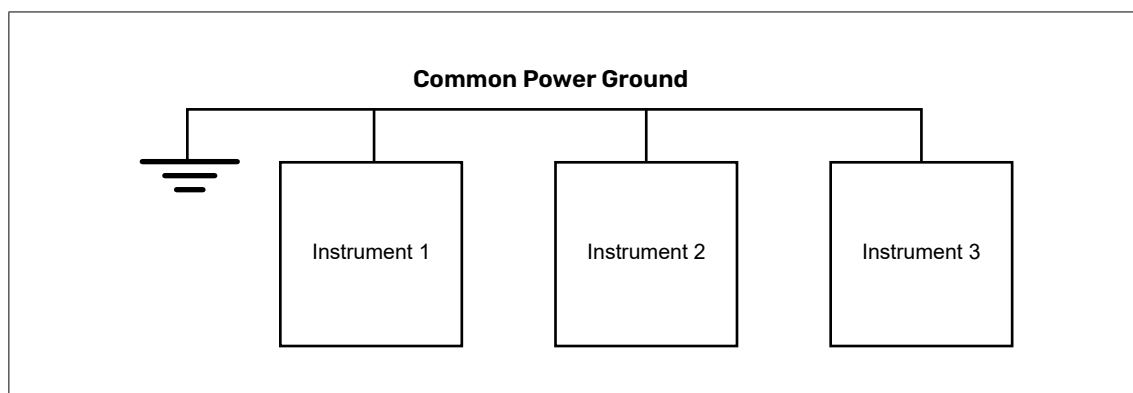


Fig 4.1 Correct Ground Connection

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 12AC should not be dismantled with power on because of high-voltage circuits.

6. Specifications

Input/Output:

Inputs:	24-pin LEMO female socket ECG.3B.324 for the three pairs of microphone preamplifiers of the Vector Intensity Probe Type 50VI - 1
Outputs:	Three pairs of BNC coaxial sockets (X , Y , Z) for the output signals of the Vector Intensity Probe Type 50VI - 1.

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 100 mA with six GRAS preamplifiers

Battery life:

Approximately 20 hours using alkaline batteries and four GRAS preamplifiers
(Valid at 23 °C)

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

