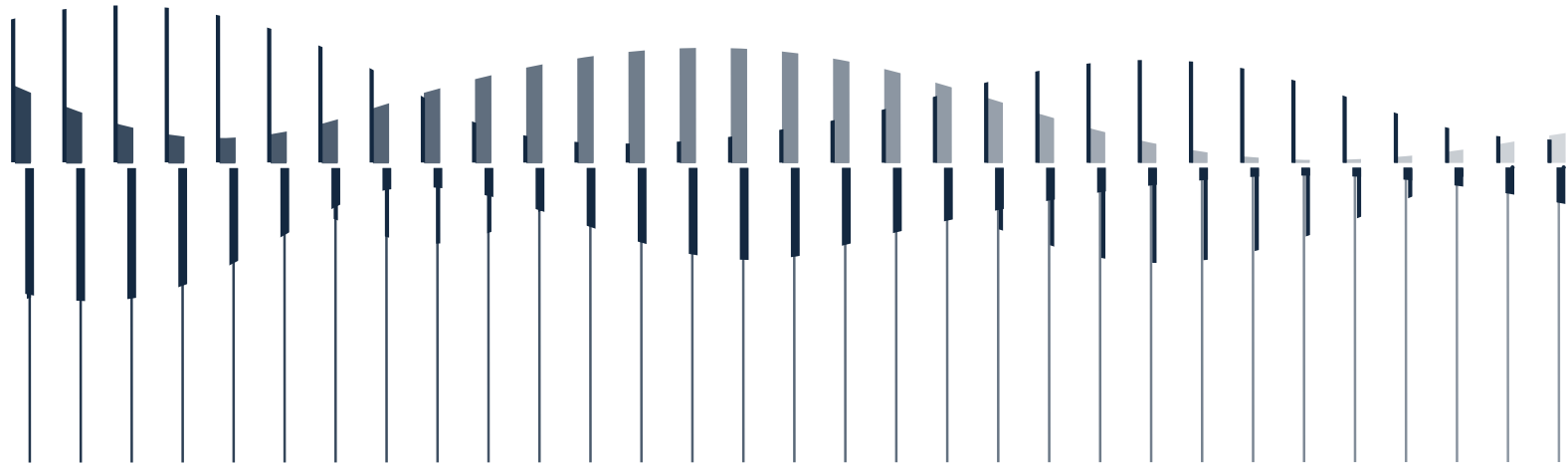




Instruction Manual

12AL-CCP Supply



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, Layout design changes.



Copyright Notice

© 2005-2026 GRAS Acoustics

<http://www.grasacoustics.com>

Any technical documentation that is made available by GRAS is the copyrighted work of GRAS and is owned by GRAS.

The content in this document is subject to change without notice. GRAS Acoustics is not liable or responsible for any errors or inaccuracies that may appear in this document.

Trademarks

Any product names mentioned in this document may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Contents

1. Introduction and Description	4
1.1 Frequency Range	4
1.2 Gain	4
1.3 Power Supplies	5
1.4 Input/Output	5
2. External Features	6
2.1 Front Panel	6
2.2 Side Panel	7
3. Batteries and External Power	8
4. Operation	8
4.1 Hum and Noise in your Measurement Setup	9
5. Service and Repair	9
6. Specifications	10

1. Introduction and Description

The GRAS CCP (Constant Current Power) Supply Type 12AL (Fig. 1.1) is a low-noise single-channel power supply for CCP transducers and preamplifiers (also known as ICP® transducers and preamplifiers). It will supply a transducer with a constant current of 4 mA.

Examples of GRAS products requiring a CCP supply are:

- ½-inch Preamplifier Type 26CA
- ¼-inch Preamplifier Type 26CB
- Array Microphones Type 40PR and Type 40PQ
- Probe Microphone Type 40SC

See separate data sheets.

The Type 12AL can also be used with similar products from other manufacturers. The size and weight of the Type 12AL make it a compact and handy power supply for ICP® transducers both in the laboratory and in the field.

1.1 Frequency Range

The Type 12AL has a wide operating frequency range from about 1 Hz (depending on load impedance) to well over 200 kHz. It also has an A-weighting filter which can be switched in or out.

1.2 Gain

The Type 12AL has zero gain since the output signal from the transducer is wired directly via 22 µF to the output connector. Zero gain is also preserved at 1 kHz when the A-weighting network has been switched in.



Fig. 1.1 The CCP Supply Type 12AL

® ICP is a registered trademark of PCB Piezotronics Inc.

1.3 Power Supplies

The Type 12AL can be powered either by two internal AA alkaline batteries or from an external DC supply of 3 - 6V. A regulated mains/line adapter AB0005 is available for supplying external DC power.

LEDs are used to indicate battery condition; green for power OK and red for battery low. Another red LED is used to indicate cable break, short circuit and overload.

1.4 Input/Output

Both input and output signals are via a pair of BNC sockets.

2. External Features

2.1 Front Panel

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

- Power switch with two LEDs: green “OK”, red “Batt. Low”.
- Warning LED to indicate signal overload, cable break or short circuit.
- On/Off toggle switch to select/deselect the A-weighting filter.
- Label for external DC power supply; 3 - 6 V, e.g. from a GRAS Mains/line adapter AB0005.
- Label for the input signal of an ICP® microphone preamplifier.
- Label for the output signal of an ICP® microphone preamplifier.

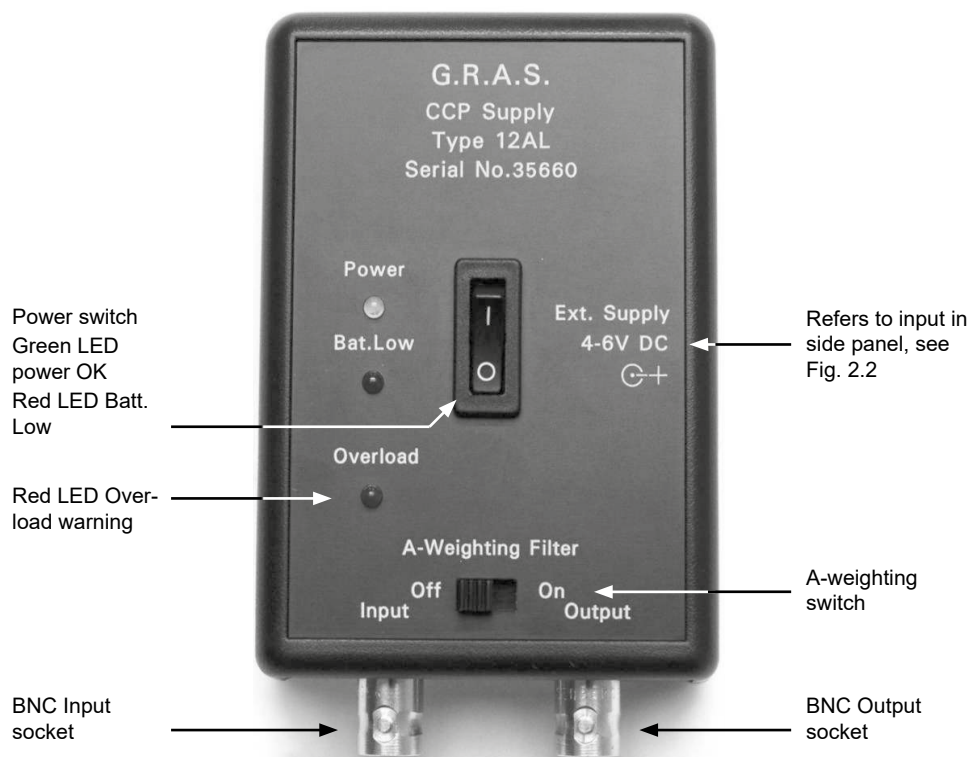


Fig. 2.1 Front panel of the CCP Supply Type 12AL

2.2 Side Panel

The side panel (Fig. 2.2) has the input socket for an external voltage supply of 3 - 6 V DC, centre pin + terminal. For example, from a GRAS Mains/line adapter AB0005.

The use of an external voltage supply automatically disables power from the internal batteries.

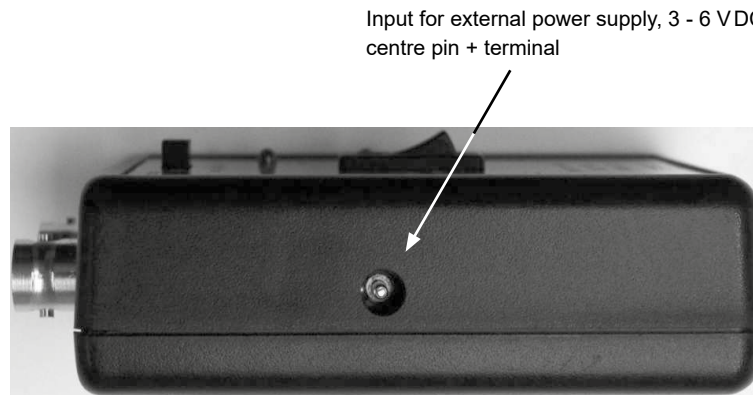


Fig. 2.2 Side panel of CCP Supply Type 12AL

3. Batteries and External Power

The CCP Supply Type 12AL 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 side panel; any batteries inside the unit will automatically be disconnected.

The external power supply should be a mains/line adapter regulated to supply 3 - 6V DC with the centre pin as the + terminal (e.g. a GRAS AB0005).

When the Type 12AL 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 at least one hour's use left after it first warns of low batteries.

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



Fig. 3.1 Battery cover removed and battery compartment open: note polarity of batteries

4. Operation

1. Make sure that power is available to the Type 12AL (see section 3) but don't switch it on yet.
2. Using a suitable lead, connect an ICP® preamplifier to the **Input** socket of the Type 12AL
3. Mount a microphone on to the preamplifier
Note: it must be a prepolarized microphone which matches the size (e.g. ¼ or ½-inch) of the preamplifier selected in step 2.
4. Using a suitable lead, connect the **Output** socket of the Type 12AL to an analyser, voltmeter, oscilloscope etc., and switch it on.
5. Switch on the Type 12AL.
6. Adjust the analyser, voltmeter, oscilloscope etc. to gauge correctly the signal from the Type 12AL.

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.

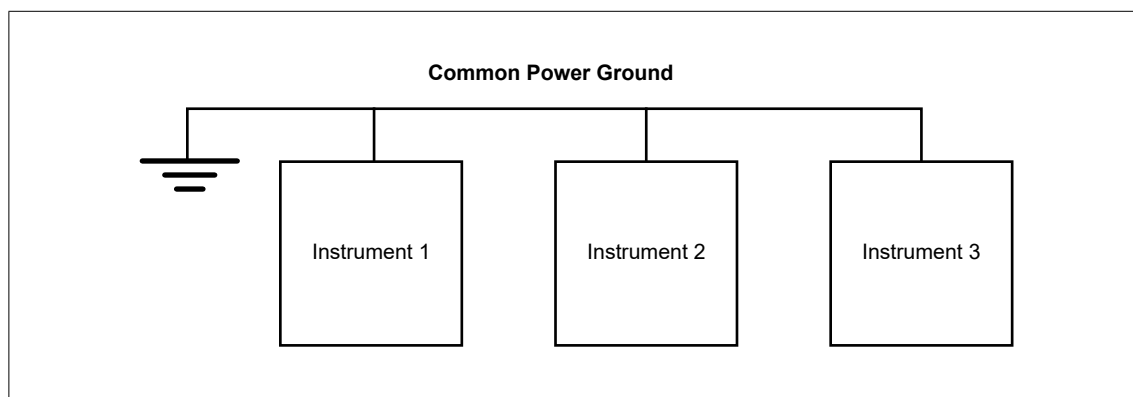


Fig. 4.1 Correct Ground Connection

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

Service and repair should be carried out only by qualified service personnel. The CCP Supply Type 12AL should not be dismantled. Apart from the battery compartment, there are no user-servicable parts inside the cabinet.

6. Specifications

Input:

Connector for transducer: BNC
Impedance >100 k Ω

Output:

Connector for transducer signal: BNC
Impedance with and without A-weighting:
with: 100 Ω in serial with 22 μ F
without: as source in serial with 22 μ F

Gain:

0 dB

Bandwidth (without A-weighting):

Upper limit: >>200 kHz
Lower-limit (–3 dB) when signal output is used with an impedance of:
10 k Ω : 0.7 Hz
100 k Ω : 0.07 Hz

Filter:

A-weighting: IEC 60651 Type 0

Noise:

(measured with GRAS Preamplifier Type 26CA from 20 Hz - 20 kHz)
A-weighting off: 4 μ V RMS
A-weighting on: 15 μ V RMS

Transducer supply:

Source voltage: 28 V
Current: 4 mA

Power supply:

Batteries: 2 x AA
Battery life (alkaline batteries): 24 hours
External DC:
voltage: 3 - 6 V DC
current consumption: 50 - 120 mA
connector (+ on centre): 5 mm with 2 mm pin
Internal switching frequency: 1.4 MHz

LED indicators:

Power OK: green
Bat. low: red
Overload, cable break, short circuit: red

Overload, cable break, short-circuit detection:

Hold time for indication: 1 sec
Detection levels: 4.4 V and 21.5 V

Operating temperature range:

−10 °C to +50 °C

Dimensions:

Casing: 91 mm x 66 mm x 28 mm

Weight:

With alkaline batteries: 160 g
Without batteries: 110 g

Accessories available:

¼-inch ICP® Preamplifier	Type 26CB
½-inch ICP® Preamplifier	Type 26CA
Prepolarized microphones:	
Free-field:	
¼-inch	Type 40BE
½-inch	Type 40AE
Pressure:	
¼-inch	Type 40BD
½-inch	Type 40AD
½-inch	Type 40AO
Random:	
½-inch	Type 40AQ
Array Microphone	Type 40PR
Array Microphone	Type 40PQ
Probe Microphone	Type 40SC
Mains/line adapter:	AB0005

Manufactured to conform with:

CE marking directive:
93/68/EEC

WEEE directive:
2002/96/EC

RoHS directive:
2002/95/EC

