

## Instruction Manual

# CCP Supply Type 12AL



---

**G.R.A.S.**  
SOUND & VIBRATION

Skovlytoften 33, 2840 Holte, Denmark  
[www.gras.dk](http://www.gras.dk) [gras@gras.dk](mailto:gras@gras.dk)

## **CCP Supply Type 12AL**

Acknowledgement: ICP® is a registered trademark of PCB Piezo-tronics Inc.

Revision 30 08 2005

## CONTENTS

<b>1. Introduction and Description</b> .....	<b>4</b>
1.1 Frequency Range .....	4
1.2 Gain .....	4
1.3 Power Supplies .....	5
1.4 Input/Output .....	5
<b>2. External Features</b> .....	<b>6</b>
2.1 Front Panel .....	6
2.2 Side Panel .....	7
<b>3. Batteries and External Power</b> .....	<b>8</b>
<b>4. Operation</b> .....	<b>9</b>
<b>5. Service and Repair</b> .....	<b>10</b>
<b>6. Specifications</b> .....	<b>11</b>

---

## 1. Introduction and Description

The G.R.A.S. 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<sup>®</sup> transducers and preamplifiers). It will supply a transducer with a constant current of 4 mA.

Examples of G.R.A.S. 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<sup>®</sup> 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

<sup>®</sup> 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 - 6 V. 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 G.R.A.S. Mains/line adapter AB0005.
- Label for the input signal of an ICP® microphone preamplifier.
- Label for the output signal of an ICP® microphone preamplifier.

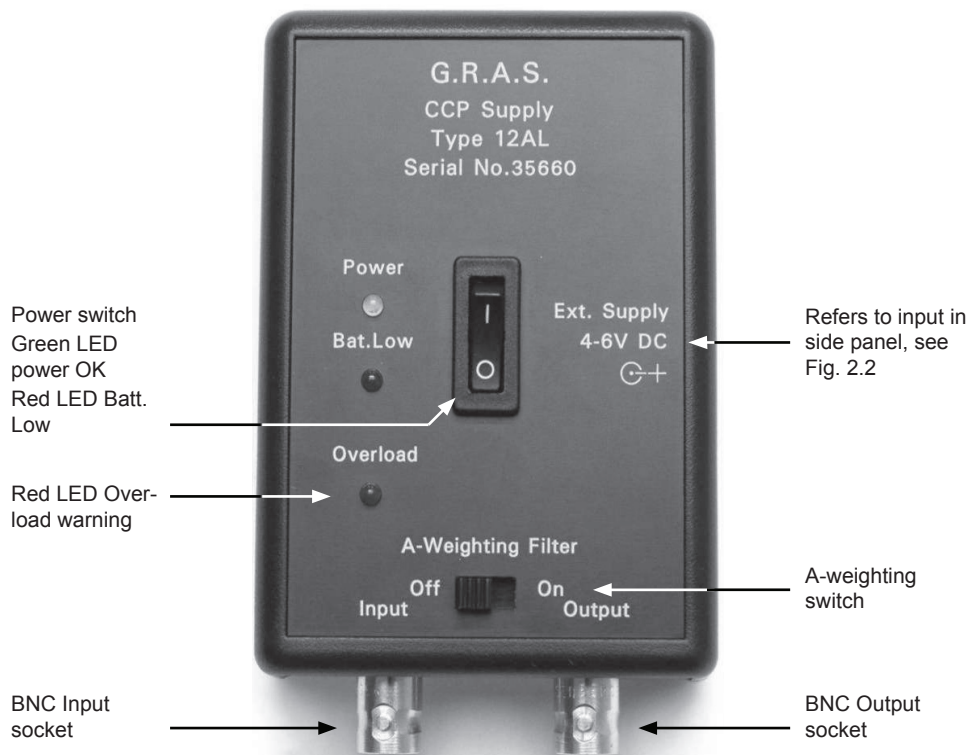
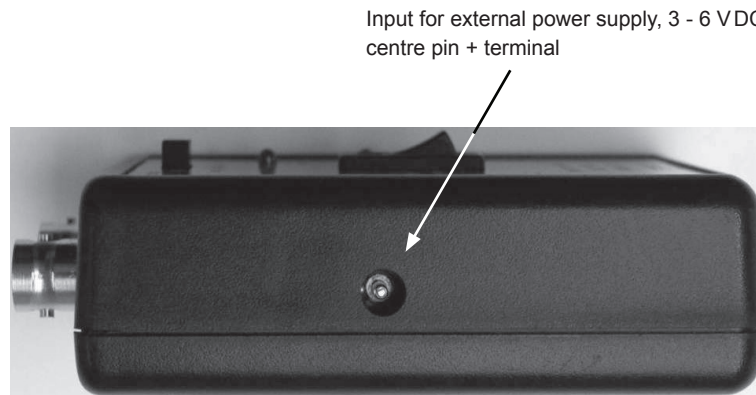


Fig. 2.1 Front panel of the CCP Supply Type 12AL

## 2.2 Side Panel

The side panel (Fig. 2.2) has the input socket for an external voltage supply of 3 - 6V DC, centre pin + terminal. For example, from a G.R.A.S. 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 G.R.A.S. 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.

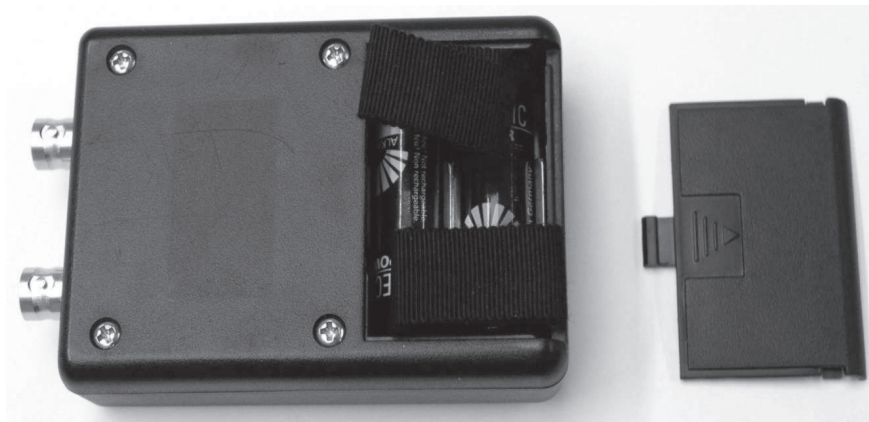


Fig. 3.1 Battery cover removed and battery compartment open: note polarity of batteries



#### 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.

## **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 $\Omega$

### Output:

Connector for transducer signal: BNC  
Impedance with and without A-weighting:  
with: 100  $\Omega$  in serial with 22  $\mu$ F  
without: as source in serial with 22  $\mu$ 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 $\Omega$ : 0.7 Hz  
100 k $\Omega$ : 0.07 Hz

### Filter:

A-weighting: IEC 60651 Type 0

### Noise:

(measured with G.R.A.S. Preamp Type 26CA from 20 Hz - 20 kHz)  
A-weighting off: 4  $\mu$ V RMS  
A-weighting on: 15  $\mu$ 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:**

1/4-inch ICP® Preamplifier Type 26CB

1/2-inch ICP® Preamplifier Type 26CA

Prepolarized microphones:

Free-field:

1/4-inch Type 40BE

1/2-inch Type 40AE

Pressure:

1/4-inch Type 40BD

1/2-inch Type 40AD

1/2-inch Type 40AO

Random:

1/2-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/EECWEEE directive:  
2002/96/ECRoHS directive:  
2002/95/EC